RADIOACTIVE AIR EMISSIONS LICENSE

For
The Department of Energy Richland Office
Hanford Site

Issued by

The State of Washington Department of Health

Office of Radiation Protection

Radioactive Air Emissions
License Number:
FF-01

Under the Nuclear Energy and Radiation Control Act, RCW 70.98 the State Clean Air Act, RCW 70.94 and the Radioactive Air Emissions Regulations, Chapters 246-247 WAC, and in reliance on statements and representations made by the Licensee designated below before the effective date of this license, the Licensee is authorized to vent radionuclides from the various emission units identified in this license. The State of Washington Department of Health generates this license subject to all applicable rules. This license does not relieve the Licensee of compliance with other State or Federal agencies jurisdiction pertaining to hazardous air pollutants.

Licensee

The Department of Energy
Hanford Site
Richland, Washington

Issue Date: February 23, 2012

Effective Date: February 23, 2012

Expiration Date: December 31, 2017

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Approved By:

P. John Martell
Manager, Radioactive Air Emissions

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Interpretation of the Regulations and Definitions
Use the following guidance when interpreting the combination of 40 CFR 61 Subparts A and H with WAC 173-480 and 246-247. The following definitions apply:

- Federal Clean Air Act and 40 CFR 61 Subparts A and H
  - Apply only those definitions given for these laws or regulations.
- Washington State Clean Air Act, WAC 173-480 and 246-247
  - Apply only those definitions given for these laws and regulations
- When a conflict of definition may arise, the more stringent definition as determined by the administrator applies.

Clarification of these general conditions will occur during the WAC 246-247 regulation rewrite. When determining applicability of a regulation the facility should contact the department for guidance prior to use. The department reserves the right to make final determination on applicability of regulations.

The emission unit specific information

The emission unit specific information (i.e., stack height and diameter, average temperature and velocity) are parameters used by the department to identify significant changes in operation of an emission unit. The emission unit specific information contained in this license is to assure consistent emission unit operation, the actual emission unit parameters must be maintained by the emission unit owner/operator and reported as required by both WAC 246-247 and 40CFR61 Subpart H.

Referenced documents in the emission unit specific conditions and limitations

If the document cited in the emission unit specific conditions and limitations reflects:

- Data that justifies the project or a specific requirement (i.e., design data, calculation data, etc.) it will stand as the referenced document.
- Description (i.e., monitoring process etc.), but does not change a requirement (i.e., frequency of monitoring etc) the latest approved revision of that document will stand as the referenced document.

When determining applicable referenced document the facility should contact the department for guidance prior to use. The department reserves the right to make final determination on which document will stand as the referenced document.

Definitions Used in This License.

40 CFR 61 Subpart A Definitions (61.02)

The terms used in this part are defined in the Act or in this section as follows:

Act means the Clean Air Act (42 U.S.C. 7401 *et seq.*).

Administrator means the Administrator of the Environmental Protection Agency or his authorized representative.

Alternative method means any method of sampling and analyzing for an air pollutant which is not a reference method but which has been demonstrated to the Administrator's satisfaction to produce results adequate for the Administrator's determination of compliance.

Approved permit program means a State permit program approved by the Administrator as meeting the requirements of part 70 of this chapter (40 CFR) or a Federal permit program established in this chapter pursuant to title V of the Act (42 U.S.C. 7661).

Capital expenditure means an expenditure for a physical or operational change to a stationary source which exceeds the product of the applicable “annual asset guideline repair allowance percentage” specified in the latest edition of Internal Revenue Service (IRS) Publication 534 and the stationary source's basis, as defined by section 1012 of the Internal Revenue Code. However, the total expenditure for a physical or operational change to a stationary source must not be reduced by any “excluded additions” as defined for stationary sources constructed after December 31, 1981, in IRS Publication 534, as would be done for tax purposes. In addition, “annual asset guideline repair allowance” may be used even though it is excluded for tax purposes in IRS Publication 534.

Commenced means, with respect to the definition of “new source” in section 111(a)(2) of the Act, that an owner or operator has undertaken a continuous program of construction or modification or that an owner or operator has entered into a contractual obligation to undertake and complete, within a reasonable time, a continuous program of construction or modification.

Compliance schedule means the date or dates by which a source or category of sources is required to comply with the standards of this part and with any steps toward such compliance which are set forth in a waiver of compliance under §61.11.

Construction means fabrication, erection, or installation of an affected facility.

Effective date is the date of promulgation in the Federal Register of an applicable standard or other regulation under this part.

Existing source means any stationary source which is not a new source.

Issuance of a part 70 permit will occur, if the State is the permitting authority, in accordance with the requirements of part 70 of this chapter (40 CFR) and the applicable, approved State permit program. When the EPA is the permitting authority, issuance of a title V permit occurs immediately after the EPA takes final action on the final permit.

Monitoring system means any system, required under the monitoring sections in applicable subparts, used to sample and condition (if applicable), to analyze, and to provide a record of emissions or process parameters.

New source means any stationary source, the construction or modification of which is commenced after the publication in the Federal Register of proposed national emission standards for hazardous air pollutants which will be applicable to such source.

Owner or operator means any person who owns, leases, operates, controls, or supervises a stationary source.

Part 70 permit means any permit issued, renewed, or revised pursuant to part 70 of this chapter (40 CFR).

Permit program means a comprehensive State operating permit system established pursuant to title V of the Act (42 U.S.C. 7661) and regulations codified in part 70 of this chapter (40 CFR) and applicable State regulations, or a comprehensive Federal operating permit system established pursuant to title V of the Act and regulations codified in this chapter.

Permitting authority means:

(1) The State air pollution control agency, local agency, other State agency, or other agency authorized by the Administrator to carry out a permit program under part 70 of this chapter (40 CFR); or

(2) The Administrator, in the case of EPA-implemented permit programs under title V of the Act (42 U.S.C. 7661).

Reference method means any method of sampling and analyzing for an air pollutant, as described in appendix B, 40 CFR 61.

Run means the net period of time during which an emission sample is collected. Unless otherwise specified, a run may be either intermittent or continuous within the limits of good engineering practice.

Standard means a national emission standard including a design, equipment, work practice or operational standard for a hazardous air pollutant proposed or promulgated under this part.

Startup means the setting in operation of a stationary source for any purpose.

State means all non-Federal authorities, including local agencies, interstate associations, and State-wide programs, that have delegated authority to implement:

(1) The provisions of this part; and/or

(2) The permit program established under part 70 of this chapter (40 CFR). The term State shall have its conventional meaning where clear from the context.

Stationary source means any building, structure, facility, or installation which emits or may emit any air pollutant (radionuclides in this case) which has been designated as hazardous by the Administrator.

Title V permit means any permit issued, renewed, or revised pursuant to Federal or State regulations established to implement title V of the Act (42 U.S.C. 7661). A title V permit issued by a State permitting authority is called a part 70 permit in this part.

40 CFR 61 Subpart H Definitions *(61.91)*

As used in this subpart, all terms not defined here have the meaning given them in the Clean Air Act or 40 CFR part 61, subpart A. The following terms shall have the following specific meanings:

(a) *Effective dose equivalent* means the sum of the products of absorbed dose and appropriate factors to account for differences in biological effectiveness due to the quality of radiation and its distribution in the body of reference man. The unit of the effective dose equivalent is the rem. For purposes of this subpart, doses caused by radon-222 and its respective decay products formed after the radon is released from the facility are not included. The method for calculating effective dose equivalent and the definition of reference man are outlined in the International Commission on Radiological Protection's Publication No. 26.

(b) *Facility* means all buildings, structures and operations on one contiguous site.

(c) *Radionuclide* means a type of atom which spontaneously undergoes radioactive decay.

(d) *Residence* means any home, house, apartment building, or other place of dwelling which is occupied during any portion of the relevant year.

WAC 246-247 Definitions *(WAC 246-247-030 January 19, 2012)*

Terms used in this chapter have the definitions set forth below with reference to radioactive air emissions.

(1) "Abatement technology" means any mechanism, process or method that has the potential to reduce public exposure to radioactive air emissions. Abatement control features include automatic mechanisms and administrative controls used in the operation and control of abatement technology from entry of radionuclides into the ventilated vapor space to release to the environment.

(2) "Administrative control" means any policy or procedure that limits the emission of radionuclides.

(3) "ALARA" means as low as reasonably achievable making every reasonable effort to maintain exposures to radiation as far below the dose standards in this chapter as is practical, consistent with the purpose for which the licensed activity is undertaken, taking into account the state of technology, the economics of improvements in relation to the state of technology, the economics of improvements in relation to benefits to the public health and safety, and other socioeconomic considerations, and in relation to the utilization of nuclear energy, ionizing radiation, and radioactive materials in the public interest. See WAC 246-220-007.

(4) "As low as reasonably achievable control technology" (ALARACT) means the use of radionuclide emission control technology that achieves emission levels that are consistent with the philosophy of ALARA. ALARACT compliance is demonstrated by evaluating the existing control system and proposed nonsignificant modifications in relation to applicable technology standards and other control technologies operated successfully in similar applications. In no event shall application of ALARACT result in emissions of radionuclides that could cause exceedance of the applicable standards of WAC 246-247-040. See the definition of ALARA in this section. Note that ALARACT is equivalent to, but replaces, RACT in the May 7, 1986, version of chapter 173-480 WAC.

(5) "Annual possession quantity" means the sum of the quantity of a radionuclide on hand at the beginning of the calendar year and the quantity of that radionuclide received or produced during the calendar year.

(6) "Best available radionuclide control technology" (BARCT) means technology that will result in a radionuclide emission limitation based on the maximum degree of reduction for radionuclides from any proposed newly constructed or significantly modified emission units that the licensing authority determines is achievable on a case-by-case basis. A BARCT compliance demonstration must consider energy, environmental, and economic impacts, and other costs through examination of production processes, and available methods, systems, and techniques for the control of radionuclide emissions. A BARCT compliance demonstration is the conclusion of an evaluative

process that results in the selection of the most effective control technology from all known feasible alternatives. In no event shall application of BARCT result in emissions of radionuclides that could exceed the applicable standards of WAC 246-247-040. Control technology that meets BARCT requirements also meets ALARACT requirements. See WAC 173-480-030 and 246-247-120.

(7) "Committed effective dose equivalent" (CEDE) means the sum of the products of absorbed dose from internally deposited radionuclides and appropriate factors to account for differences in biological effectiveness due to the quality of radiation and its distribution in the body of reference man over a fifty-year period.

(8) "Construction" means fabrication, erection, or installation of a new building, structure, plant, process, or operation within a facility tat has the potential to emit airborne radionuclides. Construction includes activities of a permanent nature aimed at completion of the emission unit, such as pouring concrete, putting in a foundation, or installing utilities directly related to the emission unit. It does not include preliminary activities such as tests to determine site suitability, equipment procurement and storage, site clearing and grading, and the construction of ancillary buildings.

(9) "Decommissioning" means actions taken to reduce or eliminate the potential public health and safety impacts of a building, structure, or plant that has permanently ceased operations, including, but not limited to, actions such as decontamination, demolition, and disposition.

(10) "Emission unit" means any single location that emits or has the potential to emit airborne radioactive material. This may be a point source, nonpoint source, or source of fugitive emissions.

(11) "Facility" means all buildings, structures, plants, processes, and operations on one contiguous site under control of the same owner or operator.

(12) "Fugitive emissions" are radioactive air emissions which do not and could not reasonably pass through a stack, vent, or other functionally equivalent structure, and which are not feasible to directly measure and quantify.

(13) "Indication device" means any method or apparatus used to monitor, or to enable monitoring, the operation of abatement controls or the potential or actual radioactive air emissions.

(14) "License" means a radioactive air emissions license, either issued by the department or incorporated by the department as an applicable portion of an air operating permit issued by the department of ecology or a local air pollution control authority, with requirements and limitations listed therein to which the licensed or permitted party must comply. Compliance with the license requirements shall be determined and enforced by the department.

(15) "Maximally exposed individual" (MEI) means any member of the public (real or hypothetical) who abides or resides in an unrestricted area, and may receive the highest TEDE from the emission unit(s) under consideration, taking into account all exposure pathways affected by the radioactive air emissions

(16) "Modification" means any physical change in, or change in the method of operation of, an emission unit that could increase the amount of radioactive materials emitted or may result in the emission of any radionuclide not previously emitted. This definition includes the cleanup of land contaminated with radioactive material, the decommissioning of buildings, structures, or plants where radioactive contamination exists, and changes that will cause an increase in the emission unit's operating design capacity. This definition excludes routine maintenance, routine repair, replacement-in-kind, any increases in the production rate or hours of operation, provided the emission unit does not exceed the release quantities specified in the license application or the operating design capacity approved by the department, addition of abatement technology as long as it is not less environmentally beneficial than existing, approved controls, and changes that result in an increase in the quantity of emissions of an existing radionuclide that will be offset by an equal or greater decrease in the quantity of emissions of another radionuclide that is deemed at least as hazardous with regard to its TEDE to the MEI.

(17) "Monitoring" means the measurement of radioactive material released to the ambient air by means of an in-line radiation detector, and/or by the withdrawal of representative samples from the effluent stream. Ambient air measurements may be acceptable for nonpoint sources and fugitive emissions.

(18) "Nonpoint source" is a location at which radioactive air emissions originate from an area, such as contaminated ground above a near-surface waste disposal unit, whose extent may or may not be well-defined.

(19) "Notice of construction" (NOC) is an application submitted to the department by an applicant that contains information required by WAC 246-247-060 for proposed construction or modification of a registered emission unit(s), or for modification of an existing, unregistered emission unit(s).

(20) "Point source" is a discrete, well-defined location from which radioactive air emissions originate, such as a stack, vent, or other functionally equivalent structure.

(21) "Potential-to-emit" means the rate of release of radionuclides from an emission unit based on the actual or potential discharge of the effluent stream that would result if all abatement control equipment did not exist, but operations are otherwise normal. Determine the potential-to-emit by one of the following methods:

(a) Multiply the annual possession quantity of each radionuclide by the release fraction for that radionuclide, depending on its physical state. Use the following release fractions:

(i) 1 for gases;

(ii) 10-3 for liquids or particulate solids; and

(iii) 10-6 for solids.

Determine the physical state for each radionuclide by considering its chemical form and the highest temperature to which it is subjected. Use a release fraction of one if the radionuclide is subjected to temperatures at or above its boiling point; use a release fraction of 10-3 if the radionuclide is subjected to temperatures at or above its melting point, but below its boiling point. If the chemical form is not known, use a release fraction of one for any radionuclide that is heated to a temperature of one hundred degrees Celsius or more, boils at a temperature of one hundred degrees Celsius or less, or is intentionally dispersed into the environment. Other release fractions may be used only with the department's approval; or

(b) Perform a back-calculation using measured emission rates and in situ measurements of the control equipment efficiencies, as approved by the department; or

(c) Measure the quantities of radionuclides captured in each control device, coupled with in situ measurements of the control equipment efficiencies, as approved by the department; or

(d) Sample the effluent upstream from all control devices, as approved by the department; or

(e) Use an alternative method approved by the department.

(22) "Replacement-in-kind" means the substitution of existing systems, equipment, components, or devices of an emission unit's control technology with systems, equipment, components, or devices with equivalent, or better, performance specifications that will perform the same function(s).

(23) "Routine" means:

(a) Maintenance, repair, or replacement-in-kind performed on systems, equipment, components, or devices of an emission unit's abatement technology as a planned part of an established inspection, maintenance, or quality assurance program that does not increase the emission unit's operating design capacity; or

(b) Normal, day-to-day operations of a facility.

(24) "Sealed source" means radioactive material that is permanently bonded or fixed in a capsule or matrix, or radioactive material in airtight containers, designed to prevent

release and dispersal of the radioactive material under the most severe conditions encountered in normal use and handling.

(25) "Significant" means the potential-to-emit airborne radioactivity at a rate that could increase the TEDE to the MEI by at least 1.0 mrem/yr as a result of a proposed modification.

(26) "Total effective dose equivalent" (TEDE) means the sum of the dose equivalent due to external exposures and the CEDE due to internal exposures.

(27) "Uranium fuel cycle" means the operations of milling uranium ore, chemical conversion of uranium, isotopic enrichment of uranium, fabrication of uranium fuel, generation of electricity in a nuclear power plant that uses uranium fuel, and reprocessing of spent uranium fuel, to the extent that these operations solely support the production of electrical power for public use.
Excluded are mining operations, waste disposal sites, transportation of any radioactive material, and the reuse of recovered nonuranium special nuclear and by-product materials from the cycle.

Hanford Site License General Conditions and Limitations Applicable to Sources of Radioactive Air Emissions

DOE Federal Facilities 40CFR61 Subparts A, H, and WAC 246-247 Standard Conditions and Limitations

02/23/2012

State and Federally Enforceable

1.0 40CFR61 Subpart A

1.1 List of pollutants and applicability of part 61

The following list presents the substances that, pursuant to section 112 of the Act, have been designated as hazardous air pollutants. The Federal Register citations and dates refer to the publication in which the listing decision was originally published.

Radionuclides (44 FR 76738; Dec. 27, 1979) **(61.01(a))**

This part applies to the owner or operator of any stationary source for which a standard is prescribed under this part. **(61.01(c))**

In addition to complying with the provisions of this part, the owner or operator of a stationary source subject to a standard in this part may be required to obtain an operating permit issued to stationary sources by an authorized State air pollution control agency or by the Administrator of the U.S. Environmental Protection Agency (EPA) pursuant to title V of the Clean Air Act (Act) as amended November 15, 1990 (42 U.S.C. 7661). For more information about obtaining an operating permit see part 70 of this chapter. **(61.01(d))**

1.2 Address

Section 112(d) of the Act directs the Administrator to delegate to each State, when appropriate, the authority to implement and enforce national emission standards for hazardous air pollutants for stationary sources located in such State. If the authority to implement and enforce a standard under this part has been delegated to a State, all information required to be submitted to EPA under paragraph (a) of this section shall also be submitted to the appropriate State agency (provided, that each specific delegation may exempt sources from a certain Federal or State reporting requirement). The Administrator may permit all or some of the information to be submitted to the appropriate State agency only, instead of to EPA and the State agency. If acceptable to both the Administrator and the owner or operator of a source, notifications and reports may be submitted on electronic media. **(61.04(b))**

1.3 Prohibitive activities.

After the effective date of any standard, no owner or operator shall construct or modify any stationary source subject to that standard without first obtaining written approval from the Administrator in accordance with this subpart, except under an exemption granted by the President under section 112(c)(2) of the Act. Sources, the construction or

modification of which commenced after the publication date of the standards proposed to be applicable to the sources, are subject to this prohibition. **(61.05(a))**

After the effective date of any standard, no owner or operator shall operate a new stationary source subject to that standard in violation of the standard, except under an exemption granted by the President under section 112(c)(2) of the Act. **(61.05(b))**

Ninety days after the effective date of any standard, no owner or operator shall operate any existing source subject to that standard in violation of the standard, except under a waiver granted by the Administrator under this part or under an exemption granted by the President under section 112(c)(2) of the Act. **(61.05(c))**

No owner or operator subject to the provisions of this part shall fail to report, revise reports, or report source test results as required under this part. **(61.05(d))**

1.4 Determination of construction or modification.

An owner or operator may submit to the Administrator a written application for a determination of whether actions intended to be taken by the owner or operator constitute construction or modification, or commencement thereof, of a source subject to a standard. The Administrator will notify the owner or operator of his determination within 30 days after receiving sufficient information to evaluate the application. **(61.06)**

1.5 Application for approval of construction or modification.

The owner or operator shall submit to the Administrator an application for approval of the construction of any new source or modification of any existing source **(of radionuclides to the ambient air).** The application shall be submitted before the construction or modification is planned to commence, or within 30 days after the effective date if the construction or modification had commenced before the effective date and initial startup has not occurred. A separate application shall be submitted for each stationary source. **(61.07(a))**

Each application for approval of construction shall include—

(1) The name and address of the applicant;

(2) The location or proposed location of the source; and

(3) Technical information describing the proposed nature, size, design, operating design capacity, and method of operation of the source, including a description of any equipment to be used for control of emissions. Such technical information shall include calculations of emission estimates in sufficient detail to permit assessment of the validity of the calculations. **(61.07(b)**

Each application for approval of modification shall include, in addition to the information required in paragraph (b) of this section—

(1) The precise nature of the proposed changes;

(2) The productive capacity of the source before and after the changes are completed; and

(3) Calculations of estimates of **(radionuclide)** emissions before and after the changes are completed, in sufficient detail to permit assessment of the validity of the calculations. **(61.07(c))**

1.6 Approval of construction or modification

The Administrator will notify the owner or operator of approval or intention to deny approval of construction or modification within 60 days after receipt of sufficient information to evaluate an application under §61.07. **(61.08(a))**

If the Administrator determines that a stationary source for which an application under §61.07 was submitted will not cause emissions in violation of a standard if properly operated, the Administrator will approve the construction or modification. **(61.08(b))**

Before denying any application for approval of construction or modification, the Administrator will notify the applicant of the Administrator's intention to issue the denial together with—

(1) Notice of the information and findings on which the intended denial is based; and

(2) Notice of opportunity for the applicant to present, within such time limit as the Administrator shall specify, additional information or arguments to the Administrator before final action on the application. **(61.08(c))**

A final determination to deny any application for approval will be in writing and will specify the grounds on which the denial is based. The final determination will be made within 60 days of presentation of additional information or arguments, or 60 days after the final date specified for presentation if no presentation is made. **(61.08(d))**

Neither the submission of an application for approval nor the Administrator's approval of construction or modification shall—

(1) Relieve an owner or operator of legal responsibility for compliance with any applicable provisions of this part or of any other applicable Federal, State, or local requirement; or

(2) Prevent the Administrator from implementing or enforcing this part or taking any other action under the Act. **(61.08(e))**

1.7 Notification of startup.

The owner or operator of each stationary source which has an initial startup after the effective date of a standard shall furnish the Administrator with written notification as follows:

(1) A notification of the anticipated date of initial startup of the source not more than 60 days nor less than 30 days before that date.

(2) A notification of the actual date of initial startup of the source within 15 days after that date. **(61.09(a))**

If any State or local agency requires a notice which contains all the information required in the notification in paragraph (a) of this section, sending the Administrator a copy of that notification will satisfy paragraph (a) of this section. **(61.09(b))**

1.8 Waiver of compliance.

Based on the information provided in any request under §61.10, or other information, the Administrator may grant a waiver of compliance with a standard for a period not exceeding 2 years after the effective date of the standard. **(61.11(a))**

The waiver will be in writing and will—

(1) Identify the stationary source covered;

(2) Specify the termination date of the waiver;

(3) Specify dates by which steps toward compliance are to be taken; and

(4) Specify any additional conditions which the Administrator determines necessary to assure installation of the necessary controls within the waiver period and to assure protection of the health of persons during the waiver period. **(61.11(b))**

The Administrator may terminate the waiver at an earlier date than specified if any specification under paragraphs (b)(3) and (b)(4) of this section are not met. **(61.11(c))**

Before denying any request for a waiver, the Administrator will notify the owner or operator making the request of the Administrator's intention to issue the denial, together with—

(1) Notice of the information and findings on which the intended denial is based; and

(2) Notice of opportunity for the owner or operator to present, within the time limit the Administrator specifies, additional information or arguments to the Administrator before final action on the request. **(61.11(d))**

A final determination to deny any request for a waiver will be in writing and will set forth the specific grounds on which the denial is based. The final determination will be made within 60 days after presentation of additional information or argument; or within 60 days after the final date specified for the presentation if no presentation is made. **(61.11(e))**

The granting of a waiver under this section shall not abrogate the Administrator's authority under section 114 of the Act. **(61.11(f))**

1.9 Compliance with standards and maintenance requirements.

Compliance with numerical emission limits shall be determined in accordance with emission tests established in §61.13 or as otherwise specified in an individual subpart. **(61.12(a))**

Compliance with design, equipment, work practice or operational standards shall be determined as specified in an individual subpart **(Subpart H). (61.12(b))**

The owner or operator of each stationary source shall maintain and operate the source, including associated equipment for air pollution control, in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Administrator which may include, but is not limited to, monitoring results, review of operating and maintenance procedures, and inspection of the source. **(61.12(c))**

For the purpose of submitting compliance certifications or establishing whether or not a person has violated or is in violation of any standard in this part, nothing in this part shall preclude the use, including the exclusive use, of any credible evidence or information, relevant to whether a source would have been in compliance with applicable requirements if the appropriate performance or compliance test had been performed. **(61.12(e))**

1.10 Emission tests and waiver of emission tests.

40CFR61.13 Does not apply

1.11 Monitoring requirements.

Unless otherwise specified, this section applies to each monitoring system required under each subpart **(Subpart H)** which requires monitoring. **(61.14(a))**

Each owner or operator shall maintain and operate each monitoring system as specified in the applicable subpart **(Subpart H)** and in a manner consistent with good air pollution control practice for minimizing emissions. Any unavoidable breakdown or malfunction

of the monitoring system should be repaired or adjusted as soon as practicable after its occurrence. The Administrator's determination of whether acceptable operating and maintenance procedures are being used will be based on information which may include, but not be limited to, review of operating and maintenance procedures, manufacturer recommendations and specifications, and inspection of the monitoring system. **(61.14(b))**

When required by the applicable subpart **(Subpart H)**, and at any other time the Administrator may require, the owner or operator of a source being monitored shall conduct a performance evaluation of the monitoring system and furnish the Administrator with a copy of a written report of the results within 60 days of the evaluation. Such a performance evaluation shall be conducted according to the applicable specifications and procedures described in the applicable subpart. The owner or operator of the source shall furnish the Administrator with written notification of the date of the performance evaluation at least 30 days before the evaluation is to begin. **(61.14(c))**

When the effluents from a single source, or from two or more sources subject to the same emission standards, are combined before being released to the atmosphere, the owner or operator shall install a monitoring system on each effluent or on the combined effluent. If two or more sources are not subject to the same emission standards, the owner or operator shall install a separate monitoring system on each effluent, unless otherwise specified. If the applicable standard is a mass emission standard and the effluent from one source is released to the atmosphere through more than one point, the owner or operator shall install a monitoring system at each emission point unless the installation of fewer systems is approved by the Administrator. **(61.14(d))**

The owner or operator of each monitoring system shall reduce the monitoring data as specified in each applicable subpart **(Subpart H)**. Monitoring data recorded during periods of unavoidable monitoring system breakdowns, repairs, calibration checks, and zero and span adjustments shall not be included in any data average. **(61.14(e))**

The owner or operator shall maintain records of monitoring data, monitoring system calibration checks, and the occurrence and duration of any period during which the monitoring system is malfunctioning or inoperative. These records shall be maintained at the source for a minimum of 2 years and made available, upon request, for inspection by the Administrator. **(61.14(f))**

(1) Monitoring shall be conducted as set forth in this section and the applicable subpart (Subpart H) unless the Administrator—

(i) Specifies or approves the use of the specified monitoring requirements and procedures with minor changes in methodology; or

(ii) Approves the use of alternatives to any monitoring requirements or procedures.

(2) If the Administrator finds reasonable grounds to dispute the results obtained by an alternative monitoring method, the Administrator may require the monitoring requirements and procedures specified in this part. **(61.14(g))**

1.12 Modification.

Except as provided under paragraph (d) of this section, any physical or operational change to a stationary source which results in an increase in the rate of emission to the atmosphere of a hazardous pollutant **(radionuclides)** to which a standard applies shall be considered a modification. **(61.15(a))**

Upon modification, an existing source shall become a new source for each hazardous pollutant **(radionuclides in this case)** for which the rate of emission to the atmosphere increases and to which a standard applies. **(61.15(b))**

The following shall not, by themselves, be considered modifications under this part:

(1) Maintenance, repair, and replacement which the Administrator determines to be routine for a source category.

(2) An increase in production rate of a stationary source, if that increase can be accomplished without a capital expenditure on the stationary source.

(3) An increase in the hours of operation.

(5) The relocation or change in ownership of a stationary source. However, such activities must be reported in accordance with §61.10(c). **(61.15(d))**

1.13 Circumvention

No owner or operator shall build, erect, install, or use any article machine, equipment, process, or method, the use of which conceals an emission which would otherwise constitute a violation of an applicable standard. Such concealment includes, but is not limited to, the use of gaseous dilutants to achieve compliance with a visible emissions standard, and the piecemeal carrying out of an operation to avoid coverage by a standard that applies only to operations larger than a specified size. **(61.19)**

2.0 40CFR61 Subpart H

2.1 Designation of facilities

The provisions of this subpart apply to operations at any facility owned or operated by the Department of Energy that emits any radionuclide other than radon-222 and radon-220 into the air, except that this subpart does not apply to disposal at facilities subject to 40 CFR part 191, subpart B or 40 CFR part 192. **(61.90)**

2.2 Standard

Emissions of radionuclides to the ambient air from Department of Energy facilities shall not exceed those amounts that would cause any member of the public to receive in any year an effective dose equivalent of 10 mrem/yr. **(61.92)**

2.3 Determining compliance

To determine compliance with the standard, radionuclide emissions shall be determined and effective dose equivalent values to members of the public calculated using EPA approved sampling procedures, computer models CAP–88 or AIRDOS-PC, or other procedures for which EPA has granted prior approval. DOE facilities for which the maximally exposed individual lives within 3 kilometers of all sources of emissions in the facility, may use EPA's COMPLY model and associated procedures for determining dose for purposes of compliance. **(61.93(a))**

2.4 Emissions monitoring and test procedures.

Radionuclides emission rates from existing point sources (stacks or vents) shall be measured in accordance with the following requirements or with the requirements of paragraph (c) of this section, or other procedures for which EPA has granted prior approval:

(1) Effluent flow rate measurements shall be made using the following methods:

(i) Reference Method 2 of appendix A to part 60 of this chapter shall be used to determine velocity and volumetric flow rates for stacks and large vents.

(ii) Reference Method 2A of appendix A to part 60 of this chapter shall be used to measure flow rates through pipes and small vents.

(iii) The frequency of the flow rate measurements shall depend upon the variability of the effluent flow rate. For variable flow rates, continuous or frequent flow rate measurements shall be made. For relatively constant flow rates only periodic measurements are necessary.

(2) Radionuclides shall be directly monitored or extracted, collected and measured using the following methods:

(i) Reference Method 1 of appendix A to part 60 of this chapter shall be used to select monitoring or sampling sites.

(ii) The effluent stream shall be directly monitored continuously with an in-line detector or representative samples of the effluent stream shall be withdrawn continuously from the sampling site following the guidance presented in ANSIN13.1–1969 “Guide to Sampling Airborne Radioactive Materials in Nuclear Facilities” (including the guidance presented in appendix A of ANSIN13.1) (incorporated by reference—see §61.18). The requirements for continuous sampling are applicable to batch processes when the unit is in operation. Periodic sampling (grab samples) may be used only with EPA's prior approval. Such approval may be granted in cases where continuous sampling is not practical and radionuclide emission rates are relatively constant. In such cases, grab samples shall be collected with sufficient frequency so as to provide a representative sample of the emissions.

(iii) Radionuclides shall be collected and measured using procedures based on the principles of measurement described in appendix B, Method 114. Use of methods based on principles of measurement different from those described in appendix B, Method 114 must have prior approval from the Administrator. EPA reserves the right to approve measurement procedures.

(iv) A quality assurance program shall be conducted that meets the performance requirements described in appendix B, Method 114.

(3) When it is impractical to measure the effluent flow rate at an existing source in accordance with the requirements of paragraph (b)(1) of this section or to monitor or sample an effluent stream at an existing source in accordance with the site selection and sample extraction requirements of paragraph (b)(2) of this section, the facility owner or operator may use alternative effluent flow rate measurement procedures or site selection and sample extraction procedures provided that:

(i) It can be shown that the requirements of paragraph (b) (1) or (2) of this section are impractical for the effluent stream.

(ii) The alternative procedure will not significantly underestimate the emissions.

(iii) The alternative procedure is fully documented.

(iv) The owner or operator has received prior approval from EPA.

(4)(i) Radionuclide emission measurements in conformance with the requirements of paragraph (b) of this section shall be made at all release points which have a potential to discharge radionuclides into the air in quantities which could cause an effective dose

equivalent in excess of 1% of the standard. All radionuclides which could contribute greater than 10% of the potential effective dose equivalent for a release point shall be measured. With prior EPA approval, DOE may determine these emissions through alternative procedures. For other release points which have a potential to release radionuclides into the air, periodic confirmatory measurements shall be made to verify the low emissions.

(ii) To determine whether a release point is subject to the emission measurement requirements of paragraph (b) of this section, it is necessary to evaluate the potential for radionuclide emissions for that release point. In evaluating the potential of a release point to discharge radionuclides into the air for the purposes of this section, the estimated radionuclide release rates shall be based on the discharge of the effluent stream that would result if all pollution control equipment did not exist, but the facilities operations were otherwise normal.

(5) Environmental measurements of radionuclide air concentrations at critical receptor locations may be used as an alternative to air dispersion calculations in demonstrating compliance with the standard if the owner or operator meets the following criteria:

(i) The air at the point of measurement shall be continuously sampled for collection of radionuclides.

(ii) Those radionuclides released from the facility, which are the major contributors to the effective dose equivalent must be collected and measured as part of the environmental measurement program.

(iii) Radionuclide concentrations which would cause an effective dose equivalent of 10% of the standard shall be readily detectable and distinguishable from background.

(iv) Net measured radionuclide concentrations shall be compared to the concentration levels in Table 2 of appendix E to determine compliance with the standard. In the case of multiple radionuclides being released from a facility, compliance shall be demonstrated if the value for all radionuclides is less than the concentration level in Table 2, and the sum of the fractions that result when each measured concentration value is divided by the value in Table 2 for each radionuclide is less than 1.

(v) A quality assurance program shall be conducted that meets the performance requirements described in appendix B, Method 114.

(vi) Use of environmental measurements to demonstrate compliance with the standard is subject to prior approval of EPA. Applications for approval shall include a detailed description of the sampling and analytical methodology and show how the above criteria will be met. **(61.93(b))**

Radionuclide emission rates from new point sources (stacks or vents) as defined in subpart A shall be measured in accordance with the following requirements, or other procedures for which EPA has granted prior approval:

(1) Effluent flow rate measurements shall be made using the following methods:

(i) ANSI/HPS N13.1–1999 “Sampling and Monitoring Releases of Airborne Radioactive Substances from the Stacks and Ducts of Nuclear Facilities' (incorporated by reference—see §61.18) shall be used to determine velocity and volumetric flow rates for stacks and large vents.

(ii) ANSI/HPS N13.1–1999 shall be used to measure flow rates through pipes and small vents.

(iii) The frequency of the flow rate measurements shall depend upon variability of the effluent flow rate. For variable flow rates, continuous or frequent flow rate measurements shall be made. For relatively constant flow rates only periodic measurements are necessary.

(2) Radionuclide shall be directly monitored or extracted, collected and measured using the following methods:

(i) ANSI/HPS N13.1–1999 shall be used to select monitoring or sampling sites.

(ii) The effluent stream shall be directly monitored continuously with an in-line detector or representative samples of the effluent stream shall be withdrawn continuously from the sampling site following the guidance presented in ANSI/HPS N13.1–1999. The requirements for continuous sampling are applicable to batch processes when the unit is in operation. Periodic sampling (grab samples) may be used only with EPA's prior approval. Such approval may be granted in cases where continuous sampling is not practical and radionuclide emission rates are relatively constant. In such cases, grab samples shall be collected with sufficient frequency so as to provide a representative sample of the emissions.

(iii) Radionuclides shall be collected and measured using procedures based on the principles of measurement described in appendix B, Method 114 of this part. Use of methods based on principles of measurement different from those described in appendix B, Method 114 of this part must have prior approval from the Administrator. EPA reserves the right to approve measurement procedures.

(iv) A quality assurance program shall be conducted that meets the performance requirements described in ANSI/HPS N13.1–1999. **(61.93(c))**

When it is impractical to measure the effluent flow rate at a source in accordance with the requirements of paragraph (b)(1) or (c) of this section or to monitor or sample an effluent stream at a source in accordance with the site selection and sample extraction

requirements of paragraph (b)(2) or (c) of this section, the facility owner or operator may use alternative effluent flow rate measurement procedures or site selection and sample extraction procedures provided that:

(1) It can be shown that the requirements of paragraph (b)(1) or (2) or (c) of this section are impractical for the effluent stream.

(2) The alternative procedure will not significantly underestimate the emissions.

(3) The alternative procedure is fully documented.

(4) The owner or operator has received prior approval from EPA. (61.93(d))

Radionuclide emission measurements in conformance with the requirements of paragraph (b) or (c) of this section shall be made at all release points that have a potential to discharge radionuclides into the air in quantities that could cause an effective dose equivalent in excess of 1% of the standard. All radionuclides that could contribute greater than 10% of the potential effective dose equivalent for a release point shall be measured. With prior EPA approval, DOE may determine these emissions through alternative procedures. For other release points that have a potential to release radionuclides into the air, periodic confirmatory measurements shall be made to verify the low emissions. **(61.93(e))**

To determine whether a release point is subject to the emission measurement requirements of paragraph (b) or (c) of this section, it is necessary to evaluate the potential for radionuclide emissions for that release point. In evaluating the potential of a release point to discharge radionuclides into the air for the purposes of this section, the estimated radionuclide release rates shall be based on the discharge of the effluent stream that would result if all pollution control equipment did not exist, but the facilities operations were otherwise normal. **(61.93(f))**

Environmental measurements of radionuclide air concentrations at critical receptor locations may be used as an alternative to air dispersion calculations in demonstrating compliance with the standard if the owner or operator meets the following criteria:

(1) The air at the point of measurement shall be continuously sampled for collection of radionuclides.

(2) Those radionuclides released from the facility that are the major contributors to the effective dose equivalent must be collected and measured as part of the environmental measurement program.

(3) Radionuclide concentrations that would cause an effective dose equivalent of 10% of the standard shall be readily detectable and distinguishable from background.

(4) Net measured radionuclide concentrations shall be compared to the concentration levels in Table 2 appendix E of this part to determine compliance with the standard. In the case of multiple radionuclides being released from a facility, compliance shall be demonstrated if the value for all radionuclides is less than the concentration level in Table 2 of appendix E of this part, and the sum of the fractions that result when each measured concentration value is divided by the value in Table 2 of appendix E of this part for each radionuclide is less than 1.

(5) A quality assurance program shall be conducted that meets the performance requirements described in appendix B, Method 114 of this part.

(6) Use of environmental measurements to demonstrate compliance with the standard is subject to prior approval of EPA. Applications for approval shall include a detailed description of the sampling and analytical methodology and show how the above criteria will be met. **(61.93(g))**

2.5 Compliance and reporting

Compliance with this standard shall be determined by calculating the highest effective dose equivalent to any member of the public at any offsite point where there is a residence, school, business or office. The owners or operators of each facility shall submit an annual report to both EPA headquarters and the appropriate regional office by June 30 which includes the results of the monitoring as recorded in DOE's Effluent Information System and the dose calculations required by §61.93(a) for the previous calendar year.

In addition to the requirements of paragraph (a) of this section, an annual report shall include the following information:

(1) The name and location of the facility.

(2) A list of the radioactive materials used at the facility.

(3) A description of the handling and processing that the radioactive materials undergo at the facility.

(4) A list of the stacks or vents or other points where radioactive materials are released to the atmosphere.

(5) A description of the effluent controls that are used on each stack, vent, or other release point and an estimate of the efficiency of each control device.

(6) Distances from the points of release to the nearest residence, school, business or office and the nearest farms producing vegetables, milk, and meat.

(7) The values used for all other user-supplied input parameters for the computer models (e.g., meteorological data) and the source of these data.

(8) A brief description of all construction and modifications which were completed in the calendar year for which the report is prepared, but for which the requirement to apply for approval to construct or modify was waived under §61.96 and associated documentation developed by DOE to support the waiver. EPA reserves the right to require that DOE send to EPA all the information that normally would be required in an application to construct or modify, following receipt of the description and supporting documentation.

(9) Each report shall be signed and dated by a corporate officer or public official in charge of the facility and contain the following declaration immediately above the signature line: "I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment. See, 18 U.S.C. 1001." **(61.94(b))**

If the facility is not in compliance with the emission limits of §61.92 in the calendar year covered by the report, then the facility must commence reporting to the Administrator on a monthly basis the information listed in paragraph (b) of this section, for the preceding month. These reports will start the month immediately following the submittal of the annual report for the year in noncompliance and will be due 30 days following the end of each month. This increased level of reporting will continue until the Administrator has determined that the monthly reports are no longer necessary. In addition to all the information required in paragraph (b) of this section, monthly reports shall also include the following information:

(1) All controls or other changes in operation of the facility that will be or are being installed to bring the facility into compliance.

(2) If the facility is under a judicial or administrative enforcement decree, the report will describe the facilities performance under the terms of the decree. **61.94(c))**

In those instances where the information requested is classified, such information will be made available to EPA separate from the report and will be handled and controlled according to applicable security and classification regulations and requirements. **(61.94(d))**

2.6 Recordkeeping requirements.

All facilities must maintain records documenting the source of input parameters including the results of all measurements upon which they are based, the calculations and/or analytical methods used to derive values for input parameters, and the procedure used to determine effective dose equivalent. This documentation should be sufficient to allow an

independent auditor to verify the accuracy of the determination made concerning the facility's compliance with the standard. These records must be kept at the site of the facility for at least five years and, upon request, be made available for inspection by the Administrator, or his authorized representative. **(61.95)**

2.7 Applications to construct or modify

In addition to any activity that is defined as construction under 40 CFR part 61, subpart A, any fabrication, erection or installation of a new building or structure within a facility that emits radionuclides is also defined as new construction for purposes of 40 CFR part 61, subpart A. **(61.96(a))**

An application for approval under §61.07 or notification of startup under §61.09 does not need to be filed for any new construction of or modification within an existing facility if the effective dose equivalent, caused by all emissions from the new construction or modification, is less than 1% of the standard prescribed in §61.92. For purposes of this paragraph the effective dose equivalent shall be calculated using the source term derived using appendix D as input to the dispersion and other computer models described in §61.93. DOE may, with prior approval from EPA, use another procedure for estimating the source term for use in this paragraph. A facility is eligible for this exemption only if, based on its last annual report, the facility is in compliance with this subpart. **(61.96(b))** **[[*This applies to 40CFR61 subpart H only. State exemption process requires more information for exemption determination.*]]**

Conditions to approvals granted under §61.08 will not contain requirements for post approval reporting on operating conditions beyond those specified in §61.94. **(61.96(c))** **[[*This applies to 40CFR61 subpart H approvals granted under 61.08.*]]**

2.8 Exemption from the reporting and testing requirements of 40CFR61.10

All facilities designated under this subpart are exempt from the reporting requirements of 40 CFR 61.10. **(61.97)**

State Enforceable ONLY

3.0 WAC 246-247 (January 19, 2012)

3.1 Applicability

The standards and requirements of this chapter apply to point sources, nonpoint sources, and fugitive emissions. **(WAC 246-247-010(2))**

The standards and requirements of this chapter apply to stationary and mobile emission units, whether temporary or permanent. **(WAC 246-247-010(3))**

The control technology standards and requirements of this chapter apply to the abatement technology and indication devices of facilities and emission units subject to this chapter. Control technology requirements apply from entry of radionuclides into the ventilated vapor space to the point of release to the environment. **(WAC 246-247-010(4))**

3.2 Exemptions

The following types of facilities or sources of radiation are exempt from the requirements of this chapter because they release no airborne radioactivity, or they prima facie comply with the standards in WAC 246-247-040, or they are already adequately regulated under other requirements:

(a) Users of only sealed sources;

(b) Sealed sources;

(c) Accelerators less than 200 MeV;

(d) Nuclear-powered vessels underway or moored dockside unless under a maintenance condition with a potential-to-emit;

(e) Uranium mill tailings piles disposed of under 40 CFR Part 192

(WAC 246-247-020(1))

Any exemptions shall be consistent with 40 CFR 61. No exemptions from the standards in WAC 246-247-040 will be granted.

A federal facility may request exemption from some of the requirements of WAC 246-247-060 and 246-247-075 if the potential-to-emit, for the emission unit(s) under consideration, results in a TEDE to the MEI from all pathways less than 0.1 mrem/yr. **(WAC 246-247-020(c))**

The facility shall submit all the data necessary to make the exemption determinations of (b) and (c) of this subsection. The department shall determine if any exemptions apply. **(WAC 246-247-020(2)(d))**

The department may require a facility with exempt emission units to submit a radioactive air emissions report to confirm compliance with applicable standards. The department reserves the right to conduct inspections and audits of the facility to confirm the status of its exempt emission units. **(WAC 246-247-020(3))**

(4) Naturally occurring airborne radionuclides are exempt from the requirements of this chapter unless the concentrations or rates of emissions have been enhanced by industrial processes. **(WAC 246-247-020(4))**

3.3 National standards adopted by reference for sources of radionuclulide emissions

The following federal standards, as in effect on July 1, 2011, are adopted by reference except as provided in paragraphs (2) and (3) below.
These standards apply in addition to other requirements of this Chapter.

(a) For federal facilities:

(i) 40 CFR Part 61, Subpart A - General Provisions

(ii) 40 CFR Part 61, Subpart H - National Emission Standards for Emissions of Radionuclides Other Than Radon From Department of Energy Facilities

(WAC 246-247-035(1))

References to “Administrator” or “EPA” in 40 CFR Part 61 include the Department of Health except in any section of 40 CFR Part 61 for which a federal rule or delegation indicates that the authority will not be delegated to the State. **(WAC 246-247-035(2))**

Any change or alternative to standards, emission monitoring and test procedures, compliance and reporting requirements, or recordkeeping requirements must be approved by EPA. **(WAC 246-247-035(3))**

3.4 General standards

Standards for radioactive air emissions in the state of Washington are contained in WAC 173-480-040, 173-480-050, and 173-480-060. Additional standards for emissions of radionuclides other than radon from United States Department of Energy facilities are

contained in 40 CFR Part 61, subparts H (as effective on October 9, 2002). **(WAC 246-247-040(1))**

All new construction and significant modifications of emission units commenced after August 10, 1988 (the date this chapter originally became effective) shall utilize BARCT (see Appendix B). **(WAC 246-247-040(3))**

All existing emission units and nonsignificant modifications shall utilize ALARACT (see Appendix C). **(WAC 246-247-040(4))**

In order to implement these standards, the department may set limits on emission rates for specific radionuclides from specific emission units and/or set requirements and limitations on the operation of the emission unit(s) as specified in a license. **(WAC 246-247-040(5))**

All emissions of radionuclides, including those due to emergency conditions resulting from startup, shutdown, maintenance activities, or process upsets are subject to the standards of this section and, therefore, subject to the enforcement actions of WAC 246-247-100. **(WAC 246-247-040(6))**

3.5 Applications, registration and licensing

For those facilities subject to the operating permit regulations in chapter 173-401 WAC, the radioactive air emissions license will be incorporated as an applicable portion of the air operating permit issued by the department of ecology or a local air pollution control authority. The department will be responsible for determining the facility's compliance with and enforcing the requirements of the radioactive air emissions license. **(WAC 2460-247-060)**

Requirements for new construction or modification of emission units.

(a) Early in the design phase, the applicant shall submit a NOC containing the information required in Appendix A **(WAC 246-247)**.

(b) Within thirty days of receipt of the NOC, the department shall inform the applicant if additional information is required. The department may determine, on the basis of the information submitted, that the requirements of BARCT or ALARACT have been met, or may require the applicant to submit a BARCT or ALARACT demonstration compatible with Appendix B or C, respectively.

(c) Within sixty days of receipt of all required information, the department shall issue an approval or denial to construct. The department may require changes to the final proposed control technology.

(d) The applicant may request a phased approval process by so stating and submitting a limited application. The department may grant a conditional approval to construct for such activities as would not preclude the construction or installation of any control or monitoring equipment required after review of the completed application.

(e) The department shall issue a license, or amend an existing license, authorizing operation of the emission unit(s) when the proposed new construction or modification is complete. For facilities subject to the air operating permit requirements of chapter 173-401 WAC, the license shall become part of the air operating permit issued by the department of ecology or a local air pollution control authority. For new construction, this action shall constitute registration of the emission unit(s). **(WAC 246-247-060 (1))**

Requirements for modification of unregistered emission units that are not exempt from these regulations.

(a) The applicant shall submit an application containing the information required in WAC 246-247 Appendix A.

(b) Within thirty days of receipt of the application, the department shall inform the applicant if additional information is required. The department may determine, on the basis of the information submitted, that the requirements of BARCT or ALARACT have been met, or may require the applicant to submit a BARCT or ALARACT demonstration compatible with Appendix B or C, respectively.

(c) Within sixty days of receipt of all required information, the department shall issue or amend the license. For facilities subject to the air operating permit requirements of chapter 173-401 WAC, the license shall become part of the air operating permit issued by the department of ecology or a local air pollution control authority. This action shall constitute registration of the emission unit(s). A determination of noncompliance may result in the issuance of a notice of violation.

(d) The department reserves the right to require the owner of an existing, unregistered emission unit to make modifications necessary to comply with the applicable standards of WAC 246-247-040. **(WAC 246-247-060(2))**

If an emission unit is in violation of any standards contained in WAC 246-247-040, the facility shall either submit a compliance plan which describes how it intends to achieve compliance with the standards, and/or cease operation of the emission unit(s). The facility shall submit the compliance plan within forty-five days of the notice of violation. The cessation of operation of the emission unit(s) shall not necessarily exempt the facility from the requirements of this chapter if active or passive ventilation and radioactive air emission controls will still be required. The department reserves the

right to take further enforcement action, if necessary, in accordance with WAC 246-247-100. **(WAC 246-247-060(3))**

The facility shall notify the department at least seven calendar days prior to any planned preoperational tests of new or modified emission units that involve emissions control, monitoring, or containment systems of the emission unit(s). The department reserves the right to witness or require preoperational tests involving the emissions control, monitoring, or containment systems of the emission unit(s). **(WAC 246-247-060(4))**

The license shall specify the requirements and limitations of operation to assure compliance with this chapter. The facility shall comply with the requirements and limitations of the license. **(WAC 246-247-060(5))**

All radioactive air emissions licenses issued by the department, except those issued to radioactive materials licensees, shall have an expiration date of five years from date of issuance or as specified in the air operating permit. **(WAC 246-247-060(6))**

Each federal facility that comes under the authority of this chapter shall hold one license for each site, base, or installation. When applicable, the license shall be part of the facility's air operating permit. **(WAC-246-247-060(7))**

Facilities may request a single categorical license which identifies limits and conditions of operation for similar multipurpose temporary and/or portable emission units. When applicable, the license shall be part of the facility's air operating permit. **(WAC 246-247-060(8))**

All facilities with licensed emission units, except for radioactive materials licensees, shall submit a request to the department for renewal of their radioactive air emissions license at least sixty days prior to expiration of the license or as required by the air operating permit. All renewal requests shall include a summary of the operational status of all emission units, the status of facility compliance with the standards of WAC 246-247-040, and the status of any corrective actions necessary to achieve compliance with the requirements of this chapter. Facilities with licensed emission units that also hold a radioactive materials license issued by the department shall submit this information along with their radioactive material license renewal submittal. If the department is unable to renew a radioactive air emissions license before its expiration date, the existing license, with all of its requirements and limitations, remains in force until the department either renews or revokes the license. **(WAC 246-247-060(9))**

3.6 Fees

For non-air operating permit costs, all facilities under the authority of this chapter shall submit fees in accordance with WAC 246-254-160. **(WAC 246-247-065(1))**

Those facilities required by WAC 246-254-160(2) to submit an application fee, shall submit the fee with the application. **(WAC 246-247-065(2))**

3.7 Monitoring, testing and quality assurance

Equipment and procedures used for the continuous monitoring of radioactive air emissions shall conform, ***as applicable***, to the guidance contained in ANSI N13.1, ANSI N42.18, ANSI N323, ANSI N317, reference methods 1, 1A, 2, 2A, 2C, 2D, 4, 5, and 17 of 40 CFR Part 60, Appendix A, 40 CFR Part 52, Appendix E, and any other methods approved by the department. **(WAC 246-247-075(2))**

The operator of an emission unit with a potential-to-emit of less than 0.1 mrem/yr TEDE to the MEI may estimate those radionuclide emissions, in lieu of monitoring, in accordance with 40 CFR 61 Appendix D, or other procedure approved by the department. The department may require periodic confirmatory measurements (e.g., grab samples) during routine operations to verify the low emissions. Methods to implement periodic confirmatory monitoring shall be approved by the department. **(WAC 246-247-075(3))**

The department may allow a facility to use alternative monitoring procedures or methods if continuous monitoring is not a feasible or reasonable requirement. **(WAC 246-247-075(4))**

Licensed facilities shall conduct and document a quality assurance program. Except for those types of facilities specified in subsection (5) of this section, the quality assurance program shall be compatible with applicable national standards such as ANSI/ASME NQA-1-1988, ANSI/ASME NQA-2-1986, QA/R-2, and QA/R-5. **(WAC 246-247-075(6))**

Facilities shall monitor nonpoint and fugitive emissions of radioactive material. **(WAC 246-247-075(8))**

The department may conduct an environmental surveillance program to ensure that radiation doses to the public from emission units are in compliance with applicable standards. The department may require the operator of any emission unit to conduct stack sampling, ambient air monitoring, or other testing as necessary to demonstrate compliance with the standards in WAC 246-247-040. **(WAC 246-247-075(9))**

The department may require the owner or operator of an emission unit to make provision, at existing emission unit sampling stations, for the department to take split or collocated samples of the emissions. **(WAC 246-247-075(10))**

The planning for any proposed new construction or significant modification of the emission unit must address accidental releases with a probability of occurrence during the expected life of the emission unit of greater than one percent. **(WAC 246-247-075(11))**

All facilities must be able to demonstrate that appropriate supervisors and workers are adequately trained in the use and maintenance of emission control and monitoring

systems, and in the performance of associated test and emergency response procedures. **(WAC 246-247-075(12))**

All facilities must be able to demonstrate the reliability and accuracy of the radioactive air emissions monitoring data. **(WAC 246-247-075(13))**

A facility owner or operator, or any other person may not render inaccurate any monitoring device or method required under chapter 70.98 RCW, or any ordinance, resolution, regulation, permit, or order in force pursuant thereto. **(WAC 246-247-075(14))**

3.8 Inspections, reporting, and recordkeeping

The department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data, and other records related to compliance with the requirements of this chapter. The department may require a demonstration of ALARACT at any time. **(WAC 246-247-080(1))**

The facility shall annually submit to the department the information requirements adopted in subsection (2) of this section, as applicable, along with the following additional information, as applicable:

(a) The results of emission measurements for those emission units subject only to periodic confirmatory measurements;

(b) Wind rose or joint frequency table;

(c) Annual average ambient temperature;

(d) Annual average emission unit gas temperature, if available;

(e) Annual total rainfall;

(f) Annual average emission unit flow rate and total volume of air released during the calendar year.

If this additional information is available in another annual report, the facility may instead provide a copy of that report along with the information requirements in this subsection. Annual reports are due by June 30 for the previous calendar year's operations. **(WAC 246-247-080(3))**

Any report or application that contains proprietary or procurement-sensitive information shall be submitted to the department with those portions so designated. The department shall hold this information confidential, unless required to release the information pursuant to laws, regulations, or court order. **(WAC 246-247-080(4))**

The facility shall notify the department within twenty-four hours of any shutdown, or of any transient abnormal condition lasting more than four hours or other change in facility operations which, if allowed to persist, would result in emissions of radioactive material in excess of applicable standards or license requirements. If requested by the department, the facility shall submit a written report within ten days including known causes, corrective actions taken, and any preventive measures taken or planned to minimize or eliminate the chance of recurrence. **(WAC 246-247-080(5))**

The facility shall file a report of closure with the department whenever operations producing emissions of radioactive material are permanently ceased at any emission unit (except temporary emission units) regulated under this chapter. The closure report shall indicate whether, despite cessation of operations, there is still a potential for radioactive air emissions and a need for an active or passive ventilation system with emission control and/or monitoring devices. If decommissioning is planned and will constitute a modification, a NOC is required, as applicable, in accordance with WAC 246-247-060. **(WAC 246-247-080(6))**

The facility shall maintain a log for each emission unit that has received categorical approval under WAC 246-247-060(8). The log shall contain records of important operations parameters including the date, location, and duration of the release, measured or calculated radionuclide concentrations, the type of emissions (liquid, gaseous, solid), and the type of emission control and monitoring equipment. **(WAC 246-247-080(7))**

The facility shall maintain readily retrievable storage areas for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years. **(WAC 246-247-080(8))**

The facility shall ensure all emission units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restrictions or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. **(WAC 246-247-080(9))**

The facility shall make available, in a timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know. **(WAC 246-247-080(10))**

The facility shall respond in writing in a timely manner, or within a time limit set by the department, to inspection results which require the facility to implement corrective actions or any other actions so directed by the department. **(WAC 246-247-080(11))**

A facility owner or operator, or any other person may not make any false material statement, representation, or certification in any form, notice or report required under chapter 70.98, or any ordinance, resolution, regulation, permit, or order in force pursuant thereto. **(WAC 246-247-080(12))**

3.9 Compliance determination for existing emission units and facilities

All procedures for determining compliance with the dose equivalent standards of 40 CFR 61, subparts H (as effective on October 9, 2002), are adopted by reference, as applicable as specified by the referenced subparts. **(WAC 246-247-085(1))**

Facilities subject to 40 CFR 61 shall use computer codes or procedures approved by the EPA to determine the TEDE to the MEI; all other facilities shall use computer codes or procedures approved by the department. **(WAC 246-247-085(2))**

The determination of compliance with the dose equivalent standard of WAC 246-247-040 shall include all radioactive air emissions resulting from routine and nonroutine operations for the past calendar year. **(WAC 246-247-085(3))**

3.10 Enforcement actions

In accordance with RCW 70.94.422, the department may take any of the following actions to enforce compliance with the provisions of this chapter:

(a) Notice of violation and compliance order (RCW 70.94.332).

(b) Restraining order or temporary or permanent injunction (RCW 70.94.425; also RCW 70.98.140).

(c) Penalty: Fine and/or imprisonment (RCW 70.94.430).

(d) Civil penalty: Up to ten thousand dollars for each day of continued noncompliance (RCW 70.94.431 (1) through (7)).

(e) Assurance of discontinuance (RCW 70.94.435).

(WAC 246-247-100(1))

The department, in accordance with RCW 70.98.050 (4)(l), may issue subpoenas in order to compel attendance of witnesses and/or production of records or documents in connection with any adjudicative or other administrative proceeding. **(WAC 246-247-100(2))**

The department, in accordance with RCW 70.98.160, may impound sources of ionizing radiation. **(WAC 246-247-100(3))**

The secretary of the department, in accordance with RCW 43.70.190, is authorized to bring an action to prohibit a violation or a threatened violation of any department rules or regulation, or to bring any legal proceeding authorized by law to a county superior court. **(WAC 246-247-100(4))**

Any party, against which an enforcement action is brought by the department, has the right to submit an application for the adjudicative process in accordance with chapter 246-10 WAC and chapter 34.05 RCW. **(WAC 246-247-100(5))**

3.11 Appendix A -- Application information requirements.

(1) Name and address of the facility, and location (latitude and longitude) of the emission unit(s).

(2) Name, title, address, and phone number of the responsible manager.

(3) Identify the type of proposed action for which this application is submitted:

(a) Construction of new emission unit(s);

(b) Modification of existing emission unit(s); identify whether this is a significant modification;

(c) Modification of existing unit(s), unregistered.

(4) If this project is subject to the requirements of the State Environmental Policy Act (SEPA) contained in chapter 197-11 WAC, provide the name of the lead agency, lead agency contact person, and their phone number.

(5) Describe the chemical and physical processes upstream of the emission unit(s).

(6) Describe the existing and proposed (as applicable) abatement technology. Describe the basis for the use of the proposed system. Include expected efficiency of each control device, and the annual average volumetric flow rate(s) in meters3/sec for the emission unit(s).

(7) Provide conceptual drawings showing all applicable control technology components from the point of entry of radionuclides into the vapor space to release to the environment.

(8) Identify each radionuclide that could contribute greater than ten percent of the potential-to-emit TEDE to the MEI, or greater than 0.1 mrem/yr potential-to-emit TEDE to the MEI.

(9) Describe the effluent monitoring system for the proposed control system. Describe each piece of monitoring equipment and its monitoring capability, including detection limits, for each radionuclide that could contribute greater than ten percent of the potential-to-emit TEDE to the MEI, or greater than 0.1 mrem/yr potential-to-emit TEDE to the MEI, or greater than twenty-five percent of the TEDE to the MEI, after controls. Describe the method for monitoring or calculating those radionuclide emissions. Describe the method with detail sufficient to demonstrate compliance with the applicable requirements.

(10) Indicate the annual possession quantity for each radionuclide.

(11) Indicate the physical form of each radionuclide in inventory: Solid, particulate solids, liquid, or gas.

(12) Indicate the release form of each radionuclide in inventory:
Particulate solids, vapor, or gas. Give the chemical form and ICRP 30 solubility class, if known.

(13) Release rates.

> (a) New emission unit(s): Give predicted release rates without any emissions control equipment (the potential-to-emit) and with the proposed control equipment using the efficiencies described in subsection (6) of this section.
>
> (b) Modified emission unit(s): Give predicted release rates without any emissions control equipment (the potential-to-emit) and with the existing and proposed control equipment using the efficiencies described in subsection (6) of this section. Provide the latest year's emissions data or emissions estimates.

In all cases, indicate whether the emission unit is operating in a batch or continuous mode.

(14) Identify the MEI by distance and direction from the emission unit(s). The MEI is determined by considering distance, windrose data, presence of vegetable gardens, and meat or milk producing animals at unrestricted areas surrounding the emission unit.

(15) Calculate the TEDE to the MEI using an approved procedure (see WAC 246-247-085). For each radionuclide identified in subsection (8) of this section, determine the TEDE to the MEI for existing and proposed emission controls, and without any emission controls (the potential-to-emit) using the release rates from subsection (13) of this section. Provide all input data used in the calculations.

(16) Provide cost factors for construction, operation, and maintenance of the proposed control technology components and system, if a BARCT or ALARACT demonstration is not submitted with the NOC.

(17) Provide an estimate of the lifetime for the facility process with the emission rates provided in this application.

(18) Indicate which of the following control technology standards have been considered and will be complied with in the design and operation of new or modified emission unit(s) described in this application:

> ASME/ANSI AG-1, Code on Nuclear Air and Gas Treatment (where there are conflicts in standards with the other listed references, this standard shall take precedence)
>
> ASME/ANSI N509, Nuclear Power Plant Air-Cleaning Units and Components
>
> ASME/ANSI N510, Testing of Nuclear Air Treatment Systems
>
> ANSI/ASME NQA-1, Quality Assurance Program Requirements for Nuclear Facilities
>
> 40 CFR 60, Appendix A, Methods 1, 1A, 2, 2A, 2C, 2D, 4, 5, and 17
>
> ANSI/HPS N13.1.1999, Sampling and Monitoring Releases of Airborne Radioactive Substances from the Stacks and Ducts of Nuclear Facilities if the unit's potential-to-emit exceeds 0.1 mrem/yr TEDE to the MEI and the unit is required to meet ANSI/HPS N13.1.1999 under federal regulations.
>
> ANSI N13.1.1969, Guide to Sampling Airborne Radioactive Materials in Nuclear Facilities if the unit's potential-to-emit exceeds 0.1 mrem/yr TEDE to the MEI and the unit is not required to meet ANSI/HPS N13.1.1999 under federal regulations.

For each standard not so indicated, give reason(s) to support adequacy of the design and operation of the emission unit(s) as proposed. **(WAC 246-247-110)**

4.0 Quality Assurance Requirements for PCM Using Stack Sampling (AIR 05-303 dated March 18, 2005) State Only Requirement. (WAC 246-247-040(5) and 060(5))

The following is being provided as clarification to those licenses issued for all minor/point source emission units that use sample extraction as the approved form of periodic confirmatory measurement. This clarification deals with the “State Only” requirement concerning 40 CFR 61, Appendix B, Method 114 for minor/point sources.

When the quality assurance method referenced in Attachment 2 of the Hanford Site Air Operating Permit, 00-05-006, states either Method 114 or Method 114(3) the following will be the meaning:

> Actions to assure quality of periodic confirmatory measurement shall be as follows:
> (1) Implementation of quality checks supporting the periodic confirmatory measurements. These checks shall assure that the emissions measurements are sufficient to verify low emissions;
> (2) Stack flow measurements will be conducted annually;
> (3) An annual calibration will be performed on the existing sample flow meter or an annual function check will be performed if the flow meter is replaced by either a rotameter or a magnahelic gauge;
> (4) The effluent samples will be collected on standard (very high efficiency particulate air) sample filters;
> (5) The laboratory sample analysis will meet the requirements of Appendix B, Method 114(3); and
> (6) The following items shall be documented in a NESHAP Quality Assurance Project Plan or other documents:
> (i) The sample collection and analysis procedures used;
> (ii) The quality control program for evaluating and tracking the quality of the periodic confirmatory measurement data against preset criteria. The quality control program should include, where applicable, a system of replicates, spiked samples, split samples, blanks and control charts. The number and frequency of such quality control checks shall be identified; and
> (iii) The sample tracking system to provide positive identification of samples and data through all phases of the sample collection, analysis, and reporting system. Sample handling and preservation procedures to maintain the integrity of the samples during collection, storage, and analysis.

5.0 Method for Monitoring and Reporting of Diffuse and Fugitive Sources and Emissions. (WAC 246-247-040(5) and 060(5))

5.1 Diffuse and Fugitive Sources at Hanford

The ambient air monitoring conducted at the Hanford Site has been accepted by the department as the method for demonstrating compliance to emissions limits for diffuse and fugitive sources. Those sources with Emission Unit specific conditions and limitations within the FF-01 License must be monitored; meet the applicable quality assurance and analysis requirements. All required ambient air monitors shall be identified along with their data measurements in the annual Radionuclide Air Emissions Report.

5.1.1 Monitoring

Monitoring of diffuse and fugitive emissions must be conducted to estimate public dose. This is accomplished by conducting monitoring or other testing as required by the department (WAC 246-247-075(8) and (9). Environmental air pathways are monitored near facilities emitting radionuclides from either point sources or diffuse and fugitive sources. The environmental air pathways for air emissions from the Hanford Site must be monitored using a network of ambient air samplers.

5.1.2 Near-Facility Monitoring

Near-facility environmental monitoring is defined as the Department of Energy's monitoring on the Hanford Site near facilities with radioactive materials that are potentially dispersible. Monitoring locations are associated mostly with major nuclear facilities and waste storage or disposal facilities such as container storage, burial grounds, underground tanks (i.e., Tank Farms in the 200 Areas), ponds, cribs, trenches, and ditches.

In accordance with the definition of "Monitoring" provided in WAC 246-247-030(17), required monitoring activities include the measurement of radionuclides in ambient air. Samples are collected from known or expected transport pathways, which are generally downwind of potential or actual airborne release points and down-gradient of liquid discharges. The accepted primary method of monitoring diffuse and fugitive emissions is ambient air sampling, with other media samples (e.g., surface soil, vegetation for deposition, radiological surveys and thermoluminescent dosimeters) used as qualitative indicators.

5.1.3 Site-Wide Monitoring

In addition, the Department of Energy conducts air monitoring at site-wide locations away from the facilities, offsite around the perimeter of the Hanford Site, and in nearby and distant communities. Because a person could live as close to the Hanford Site as some of the perimeter stations, their data represent maximum exposures for a member of the public. Therefore, ambient air sampling data from the perimeter locations most closely reflect the actual impacts of radionuclide air emissions from point sources and diffuse and fugitive sources at the Hanford Site.

5.1.4 Quality Assurance and Analysis

All required ambient air samples collected and analyzed must be compatible with the quality assurance requirements of national standards such as NQA-1, EPA QA/R-5, and Method 114 as applicable. Near-facility ambient air samples from individual stations must be composited at a frequency no greater than 6 months. Analysis of other media samples will be conducted at labs with the appropriate quality assurance programs in-place.

5.1.5 Reporting

The average results from the analysis of composite ambient air samples must be reported on an annual basis as required by WAC 246-247-080.

5.1.5.1 Near Facility Monitoring and Reporting

Comparison against 10% of the values listed in Table 2 of 40 CFR 61 Appendix E must be performed. Any analytical result that exceeds these values will be reported to the department. Notification may take the form of an email. These comparisons shall be used to demonstrate that

activities being conducted under various approvals are being maintained as ALARACT or BARCT.

5.1.5.2 Hanford Facility Off-site Diffuse and Fugitive Ambient Air Concentration Procedure for Annual Reporting of Emissions

For purposes of annual reporting of emissions, any emissions from diffuse and fugitive sources are estimated from ambient air monitoring data collected at the Hanford Site perimeter. Radionuclide air concentrations resulting from monitored stack emissions at Hanford facilities and other nearby non-DOE sources are calculated for each of the perimeter sample locations using the CAP88-PC atmospheric dispersion modeling code. The combined contributions to airborne radionuclide concentrations attributable to the stack emissions from these sources will be subtracted from the ambient air sampling results. Averaged regional background concentrations for each radionuclide will be calculated from the air sample results obtained at distant community sampling stations located outside the 80-km (50-mile) radius from Hanford sources. The average background concentration at these stations will also be subtracted from the ambient monitoring results at Hanford perimeter stations. The air concentrations at the site perimeter, corrected as described for monitored emissions sources and background concentrations, are assumed to be attributable to emissions from diffuse sources.

Annual emissions from diffuse and fugitive sources will be estimated using the corrected perimeter air concentrations attributable to fugitive emissions, and by performing a back-calculation using CAP88-PC. For purposes of conservatism in estimating emissions, the 200 West Area near the center of the Hanford Site is assumed to be the source of all diffuse and fugitive emissions. The average aggregate emissions from diffuse sources will then be used to estimate the dose at the Hanford Site perimeter with the CAP88-PC code. The annual Hanford Site Radionuclide Air Emissions Report will contain results for the perimeter location having the highest dose and separately the dose at the location of the maximally exposed member of the public from monitored stack sources. The maximum combined dose to a member of the public from monitored stack emissions and potential diffuse source emissions will be reported to demonstrate compliance with the 10 mrem/year standard in 40 CFR Part 61, Subpart H, as adopted by WAC 246-247.

5.1.6 Additional Monitoring Requirements for Specific Activities with Diffuse/Fugitive Emissions

Additional monitoring or testing requirements (issued as Notice of Construction Approval Conditions and Limitations) may be placed on emissions units for a specific activity as authorized in WAC 246-247-075(9).

5.1.7 Changes to the Diffuse and Fugitive Environmental Monitoring

Prior to making a change (i.e., moving, or removing air sample locations, or changing the sampling period) to the accepted periodic confirmatory measurement (for minor diffuse and fugitive sources) or continuous measurement (for major diffuse and fugitive sources), the Department of Energy shall provide a written request describing the change to the Department of Health, Air Emissions and Defense Waste Section for approval. The request for approval may take the form of an email or formal letter.

5.1.8 Air Monitoring Stations

Enclosure 4, “Air Monitoring Stations”, Table 4-1 lists those monitoring stations subject to the applicable portions of Section 5.0, while Table 4-2 identifies those that are not. Clarification bullets are contained in Enclosure 4

6.0 Interpretation of "Continuous" for Office of River Protection Emission Units (WAC 246-247-040(5) and 060(5))

Tank Farm Emission Units - Continuous Sampling (PIC 1 and 2) or monitoring (PIC 1) Section 4.4 and Table 3 of ANSI N13.1 1999

For the case of interruption of "Continuous" sampling of an effluent stream as required by this license as it applies solely to the Tank Farms emission units operated by the DOE Office of River Protection contractors and not to other contractors on the Hanford Site;

1) As defined by this license and the license reference to ANSI N13.1 1999, continuous sampling for a PIC1 or 2- exhauster shall mean sampler availability greater than 95% of the time the associated exhauster is operating. Lack of availability shall not exceed three (3) days (72 hours) per calendar month or a maximum of 18 days (432 hours) per calendar year and shall be tracked in the operating record.

2) The facility shall notify the department within 24 hours, or the next business day in the event of;

a. an unplanned failure, or degraded performance, of the record sampling system lasting more than 4 hours, or

b. a lack of sampler availability exceeding 3 days (72 hours) in a calendar month during which the associated exhauster has operated, or

c. a lack of sampler availability more than 18 days (432 hours) in a calendar year during which the associated exhauster has operated.

3) During sampler system outages, the facility shall safely cease waste disturbing activities of material upstream of the exhauster, and

a. Assure required abatement systems are operating within normal operating parameters (e.g., differential pressure, temperature, stack flow) to prevent inadvertent release of radioactive air emissions and the sampling and/or monitoring system shall be reestablished within the time limits cited in 1) above, or

b. Secure/Shutdown the emission unit and repair the sampling and/or monitoring system before restart of activities.

7.0 Interpretation of "Every 365 Days" for Office of River Protection Emission Units (WAC 246-247-040(5) and 060(5))

As required by this license as it applies solely to the Tank Farms emission units operated by the DOE Office of River Protection contractors and not to other contractors on the Hanford Site , "every 365 days" shall mean that the actions shall take place in a timeframe of equal to or less than every 365 days with respect to the actions of record keeping, calibration, or testing to be completed as measured from the last date of record keeping, calibration, or testing unless otherwise more restrictive as specified by a standard or rule (e.g., annual report under subpart H). WDOH will, on a case-by-case basis review requests for alternative approvals and accept or reject these request based onthe individual case. ***(WAC 246-247-040(5) and 060(5))***

Enclosure 1 Emission Unit Specific License

Emission Unit Specific License List of Contents

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NOC_ID 810
Emission Unit 1185
NOC_ID 862
Emission Unit 1186
NOC ID 844
Emission Unit 1187
NOC ID 844
Emission Unit 1207
Emission Unit 1208
Emission Unit 1209
Emission Unit 1210
Emission Unit 1211

Emission Unit 1212
Emission Unit 1213
Emission Unit 1219
Emission Unit 1220
Emission Unit 1221
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Emission Unit 1224
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Emission Unit 1228
Emission Unit 1229
Emission Unit 1230
Emission Unit 1231
Emission Unit 1232
NOC_ID 865
Emission Unit 1243
NOC_ID 851
Emission Unit 1244
NOC_ID 851
Emission Unit 1249
Emission Unit 1250
NOC_ID 749
Emission Unit 1289
NOC_ID 856
Emission Unit 1290
NOC_ID 857
Emission Unit 1291
NOC_ID 856
Emission Unit 1292
NOC_ID 857
Emission Unit 1293
NOC_ID 825
Emission Unit 1294
NOC_ID 864
Emission Unit 1322
NOC_ID 804
Emission Unit 1326
NOC_ID 804
Emission Unit 1327
NOC_ID 804
Emission Unit 1328
NOC_ID 818
Emission Unit 1329
NOC_ID 818
Emission Unit 1330
NOC_ID 819
Emission Unit 1331
NOC_ID 819
Emission Unit 1333
NOC_ID 815
Emission Unit 1334
NOC_ID 825
Emission Unit 1335
NOC_ID 817
Emission Unit 1342
NOC_ID 817
Emission Unit 1343
NOC_ID 825

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ALARACT 12.1
ALARACT 13.1
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ALARACT 30.1

Emission Unit ID: 1

200E P-241C111-001

241-C-111

This is a MINOR, PASSIVELY ventilated emission unit.

241-C TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 50

200 W-296P045-001

296-P-45

This is a MAJOR, ACTIVELY ventilated emission unit.

Tank Farms

Emission Unit Information

Stack Height: 21.00 ft. 6.40 m. Stack Diameter 0.50 ft. 0.15 m.

Average Stack Effluent Temperature: 90 degrees Fahrenheit. 32 degrees Celsius.

Average Stack ExhaustVelocity: 38.22 ft/second. 11.65 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Prefilter	1	
	Heater	1	
	HEPA	2	2 HEPAs in series
	Fan	1	
	Demister	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	Cs-137, Sr-90	Continuous

Sampling Requirements Record sample.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a skid/mobile type portable exhauster used to support tank farm operations, such as but not limited to, waste characterization, waste retrieval, decommissioning, deactivation, maintenance, and construction and operation support activities. The emission unit is a portable exhauster that operates intermittently.

This Emission Unit has 2 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Categorical Tank Farm Facility Waste Retrieval and Closure: Phase II Waste Retrieval Operations (Replaced NOC ID 816)	AIR 12-307	2/23/2012	825

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.31E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.61E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted.

The operation of the waste retrieval system(s) for the removal of radioactive wastes from all 149 Single Shell Tanks (SST) at the Hanford Site.

SALTCAKE DISSOLUTION WASTE RETRIEVAL SYSTEM

The saltcake dissolution waste retrieval system may be used to retrieve soluble saltcake waste. This method retrieves the soluble portion of the waste only, resulting in very few of the solids being pumped from the tank. The

saltcake dissolution waste retrieval system deployed in the SSTs is for water, chemical agent, or catalyst liquid to be added to the tank using a variety of spray nozzles or "sprinklers". The approach is to sprinkle the waste surface with water, chemical agent, or catalyst liquid. The added water, chemical agent, or catalyst liquid must stay in contact with the saltcake for a long enough period of time for the brine to become saturated. Once the brine is saturated, it is pumped from the SST to a receiver tank, staging tank, storage DST or other staging/storage vessel associated with the supplemental treatment, packaging or disposal. Salt solution will be removed using the existing saltwell pump or other pump placed into the tank.

A tank not equipped with a saltwell pump, a transfer pump (progressive cavity, vertical turbine) can be installed and operated.

Remotely directable water distribution devices will be located in risers spaced as far apart as practical. A combination of spraying waster, chemical agent, or catalyst liquid to dissolve the saltcake can be used in conjunction with directing a flow of water or recirculating water at the waste to move it to the pump suction to allow the pumping of waste from the tank. Recirculated waste from the pump may be sent back to the tank as an alternative to using water to direct dissolution waste to the pump suction.

MODIFIED SLUCING WASTE RETRIEVAL SYSTEM

Modified sluicing can be used for some SST waste retrieval. Modified sluicing is the introduction of liquid at low to moderate pressures and volumes into the waste. The liquid dissolves and breaks apart solid materials and suspends them in the waste slurry. A transfer pump installed in the tank provides the motive force to transfer the liquid slurry to a receiver tank.

Modified sluicing introduces sluice liquid in a controlled fashion using multiple sluicing nozzles at varying pressures and flows, then pumps out the resultant waste slurry. This maintains minimal liquid inventories within the tank at all times. The liquids that could be used in modified sluicing include water, recirculated supernatant/water from the receiving Double Shell Tank, recirculated supernatant/water, chemical agent or catalyst liquid.

VACUUM WASTE RETRIEVAL SYSTEM

A vacuum waste retrieval system can be used for waste retrieval activities in the (SSTs). The vacuum waste retrieval system is introduced into the SSTs by means of an articulating mast system (AMS). The AMS has a horizontal reach and rotational capabilities of 360 degrees. The AMS has a retracted position and can be extended vertically. Air is mixed at the suction end of the AMS enabling the required vertical lift for the waste to a topside receiver tank, batch vessel or a staging SST, storage DST, or other staging/storage vessels associated with supplemental treatment, packaging or disposal.

The AMS will be deployed through and attached to standard riser flanges that are available on the SSTs. Cameras can also be installed in other risers for in-tank viewing and control of the AMS.

For the 200-series tanks in the 241-C, 241-U, 241-B and 241-T Tank Farms a vacuum retrieval process tank, staging tank, staging SST, storage DST or other staging/storage vessel will be deployed. The receiver tank will receive waste in batches from whichever tank is connected into the vacuum retrieval system. The vacuum pressure used to draw up the waste from the tank to the receiver tank is relieved back into the SST being retrieved.

MOBILE RETRIEVAL SYSTEM

A Mobile Retrieval System (MRS) can be used to retrieve waste from some SSTs. The MRS consists of two in-tank systems. The first is a robotic crawler inserted through one riser the second is an AMS inserted through a second riser. The AMS retrieves the sludge from the tank using a vacuum with assisting pneumatic conveyance. The AMS vacuum tube has a horizontal reach and can be extended to the bottom of the tank. The arm rotates 360 degrees. The vacuum will be directed through the AMS in the tank to the end effector, which is in contact with the waste. The pneumatic conveyance-assisted vacuum retrieval system will draw the waste up through the vacuum to the waste vessel in the vessel skid in batches. The AMS is then valved out while the waste vessel is emptied and pumped out through the over ground transfer lines to a DST, a staging SST or other treatment/disposal options. When the waste vessel is nearly empty, the transfer line will be valved out and the

AMS will be valved back in and another batch of waste will be removed from the tank. This process will be repeated until waste near the center of the tank is removed. The robotic crawler will be remotely controlled to move and/or wash waste toward the center of the tank.

The robotic crawler is equipped with a plow blade at the front for pushing/pulling wastes, a screw pump to jet wastes through a small nozzle towards the center of the tank, the ability to direct hot or cold water through the same nozzle to wash wastes off of in-tank equipment, dissolve waste agglomerations in the tank, and wash waste toward the center of the tank for removal.
Any new retrieval methods or changes to processes will need to be provided to WDOH in a revised NOC prior to implementation.

MOBILE ARM RETRIEVAL SYSTEM

The Mobile Arm Retrieval System (MARS) is a waste retrieval system used to retrieve waste from single-shell tanks (SSTs) and move the waste to the double-shell tanks (DSTs). The MARS employs two design options similar to currently permitted systems: 1) a sluicing retrieval option which is intended for retrieval of non1eaker tanks and 2) a vacuum retrieval option is intended for retrieval of assumed 1eaker tanks. Both options use an arm and sluicing jets and/or a high pressure water scarifier to break up the waste. The sluicer uses waste supernatant recycled from the DST to form a liquid jet using a nozzle. The scarifier uses filtered, pressurized water that comes from a high pressure water skid.

The equipment portion of the MARS includes a vertical, carbon steel mast (square cross section) as the main structural member. Attached to the vertical mast is a carbon fiber robotic arm. The arm is attached to a traveler that raises and lowers the arm relative to the vertical mast. The arm rotates 360 degrees - 380 degrees on a turntable located in the pit box. The arm also pivots up and down from an elbow at the traveler (hydraulic system) and extends and retracts (hydraulic system). The end of the arm articulates. The arm thus provides for a large range of motion such that the sluicing devices (recycle sluicer, water scarifier) located at the end of the arm can aim at most portions of the tank and from varying (e.g., short) distances.

The containment box which encloses the MARS will be ventilated by two parallel installed radial filters. The purpose of these filters is to minimize contamination from migrating up from the tank into the containment box via the open space on the large riser during retrieval operations. Minimization of contamination inside the containment box is desired should entry into the box ever be required for repairs. Inflow through these filters during retrieval is estimated to reach up to 60 cubic feet per minute (cfm). A valve will be installed between the filters and the containment box so filters can be isolated from the box. However, because the location of the valve will be approximately 12 feet above ground and difficult to reach without properly installed and inspected scaffolding, the valve will be left open at all times until retrieval of the tank is complete. Once retrieval is complete the valve will be closed.

REMOTE WATER LANCE

The completion of tank retrieval may also be aided by a Remote Water Lance (RWL) that is a high pressure water device, or hydro laser. Alternatively, a High Pressure Mixer (HPM) may be used in the same capacity. The systems will consist of both ex-tank and in-tank components. The ex-tank components will be comprised of; high pressure systems, operating controls, cables, and hoses. The in-tank components will be comprised of; umbilical, in-tank vehicle, high pressure nozzle(s), or the high pressure mixer.

The high pressure water systems will provide the water at the desired pressure, not to exceed 37,000 psig. A conditioning system will be used to filter the raw water entering the skid to ensure that no abrasive materials are entrained in the water. The water volumetric flow rate will be on the order of 4 to 18 gpm for the HPM and from 6 to 15 gpm for the RWL. The operating controls will be located in a control trailer outside of the farm fence. The cables and hoses will connect hydraulically powered in-tank vehicle with the ex-tank controls and water skid via the umbilical. The HPM consists of an adjustable height pipe with two pairs of opposed, high pressure, low volume water orifices located on the bottom of the pipe. The mixer is capable of being rotated 360 degrees and has an adjustable height range of approximately 7 feet. The positioning of the mixer is performed remotely using a hydraulic system. Additionally, the mixer has a single orifice on the bottom of the unit that can be used as an operational or installation aid. The in-tank vehicle will house one to four high pressure water nozzles. The RWL

will be operated with the nozzle submerged to avoid aerosols in the tank. A rupture disc will be used to prevent reaching pressures above 37,000 psig.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	5.99E+00	Am - 241	8.68E+03	Am - 243	3.39E-01
Ba - 137 m	4.26E+07	C - 14	6.25E+02	Cd - 113 m	4.95E+03
Cm - 242	1.97E+01	Cm - 243	1.80E+00	Cm - 244	1.90E+01
Co - 60	2.52E+03	Cs - 134	3.44E+04	Cs - 137	4.89E+07
Eu - 152	8.49E+02	Eu - 154	1.45E+04	Eu - 155	9.54E+03
H - 3	5.95E+03	I - 129	2.95E+01	Nb - 93 m	1.01E+03
Ni - 59	1.05E+02	Ni - 63	9.30E+03	Np - 237	9.50E+01
Pa - 231	1.25E+01	Pu - 238	1.65E+02	Pu - 239	3.17E+03
Pu - 240	5.36E+02	Pu - 241	4.80E+03	Pu - 242	3.34E-02
Ra - 226	1.27E-02	Ra - 228	1.15E+01	Ru - 106	1.22E-02
Sb - 125	1.73E+04	Se - 79	6.36E+01	Sm - 151	8.93E+05
Sn - 126	2.59E+02	Sr - 90	2.91E+06	Tc - 99	2.24E+04
Th - 229	4.20E-01	Th - 232	1.26E+00	U - 232	3.66E+00
U - 233	3.02E+01	U - 234	1.07E+01	U - 235	4.44E-01
U - 236	2.73E-01	U - 238	9.86E+00	Y - 90	2.91E+06
Zr - 93	1.25E+03				

4) ABATEMENT TECHNOLOGY- Ductwork insulation
All ventilation ductwork from the exit of the tank to the inlet of the exhauster filter housing shall be insulated. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

5) ABATEMENT TECHNOLOGY- Annual testing
Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1 Section TA. HEPA filters shall have a minimum efficiency of 99.95%. (WAC 246-247-040(5)), (WAC 246-247-060(5)) and (WAC 246-247-075(2))

6) ABATEMENT TECHNOLOGY- Filter protection
Relative humidity shall be monitored, at least once a month, downstream of the heater and prior to the HEPA filters to ensure the air stream does not exceed 70% relative humidity. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

7) RELEASE RATES - WDOH Log
The annual possession quantity shall be tracked on a WDOH approved log. (WAC 246-247-080(7))

8) WDOH ALTERNATE APPROVAL- Standards
General WAC 246-247 technology standard exemptions justified and documented in RPP-19233, WAC 246-247 technology standard exemption justification for waste tank ventilation systems, may be applied to Phase II NOC retrieval exhauster operations. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

9) ALTERNATE APPROVAL - NDA Method

A pre-operational NDA of the exhauster(s) HEPA filters and a post-operational NDA will be performed the first time each of the four waste retrieval methods (mobile retrieval system, vacuum retrieval, supernatant sluicing, and saltcake dissolution with supernatant) when placed into service. The post-operational NDA should occur after one cycle or phase of waste retrieval operation is completed, a method replaces another method during a cycle/phase or six months from the in-service date, whichever occurs first. The facility may opt to replace the exhauster's HEPA filters prior to placing a new waste retrieval method in service and eliminate the pre-operational NDA. (WAC 246-247-040(5)), (WAC 246-247-060(5)) and (WAC 246-247-075(4))

10) WDOH NOTIFICATIONS - Differential pressure out of range
The differential pressure readings for the pre-filters and both stages of HEPA filters shall be monitored, recorded and trended daily. The exhaust system will be configured to automatically shut down at 5.9 inches of water (or less) pressure differential across the HEPA filter(s) for the first filter in series or multiple filters in series as indicated by the local readout. If the final HEPA filter in the system exceeds 5.9 inches of water pressure differential across the filter, the cause will be determined and WDOH will be notified through normal established channels. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

11) STANDARDS - stack monitoring systems
The emission unit stack monitoring system shall meet the requirements of ANSI/HPS N13.1-1999 including the stack monitoring system inspection requirements. (WAC 246-247-040(5)), (WAC 246-247-060(5)) and (WAC 246-247-075(2))

12) STANDARDS - Startup leak testing
New or altered sections of ductwork shall be leak tested in accordance with the requirements of ASME AG-1 Section SA prior to use. Normal maintenance of the system (e.g. replacing gaskets, replacement of in kind components, flow profile analysis in the ductwork, air sampling from test ports in the duct and demister flushing) are not considered to be alteration. (WAC 246-247-040(5)), (WAC 246-247-060(5)) and (WAC 246-247-075(2))

13) CONTAMINATION CONTROL- Max operating pressure
During waste retrieval operations the maximum pressure for any waste retrieval method shall not exceed 37,000 psig. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

14) CONTAMINATION CONTROL- Monthly Radiological Survey
While the exhauster is operating, and/or tank waste retrieval is underway, all ductwork connections shall have a radiological survey performed monthly to ensure ductwork connections are not degrading. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

15) CONTAMINATION CONTROL exhauster alternate usages
The exhauster will be operated occasionally during periods of non-retrieval in support of tank waste retrieval preparation activities and to aid in evaporation of residual flush water or sluicing liquid that remains in the tank. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

16) CONTAMINATION CONTROL- Active ventilation
All receiver tanks (including waste retrieval process tanks for tank TRU retrieval (staging) SSTs, storage DSTs, or other staging/storage vessels, but not including batch vessel supporting vacuum retrieval) shall have active ventilation during waste receipt, unless alternative controls are documented and approved by WDOH. If the exhauster goes down due to off-normal conditions while retrieval is occurring, the system should be placed into a safe configuration, minimizing dose to personnel and the environment. These steps may include: flushing the lines, pumps, and the waste transfer system of slurry solution using DST supernatant or water; pumping down the tank liquid to minimize remaining liquids; and halting waste retrieval. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.47E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.47E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The action will include the operation of a 500 cfm portable exhauster connected to a riser in conjunction with a inlet HEPA filter to remove evaporate liquid in the 241-ER-311 Catch Tank. A small volume of the liquid may be pumped out during this activity. There may also be an insertion of a sleeve inside the existing risers to direct air flow closer to the liquid surface.

During riser preparation controls will be established using as low as reasonably achievable control technology (ALARACT 1) "Demonstration for riser preparation/opening", ALARACT 4 "Demonstration for packaging and transportation of waste", ALARACT 6 "Demonstration for pit access", ALARACT 13 "Demonstration for installation, operation, and removal of tank equipment", ALARACT 14 "Demonstration for pit work", ALARACT 15 "Demonstration for size reduction of waste equipment for disposal", and ALARACT 16 "Demonstration for work on potentially contaminated ventilation system components".

A portable, 500 cfm ventilation system will be installed on a riser on the 241-ER-311 Catch Tank. The portable exhauster consists of a skid mounted air clean-up train, which includes a heater, a pre-filter, two HEPA filters in series, and a fan, prior to the stack. During exhauster operation air from the tank will be heated before passing through the pre-filter and two HEPA filters to ensure that condensation of air stream moisture is minimized through this section. Drains in each of the filter and heater housings allow entry condensed liquid to flow away from the components and to be collected in a seal pot for removal.

Ductwork will be used to connect the exhauster inlet to the tank riser. Ductwork will essentially be fabricated in conformance with ASME B31.3 Process Piping, and it will meet the requirements of ASME AG-1, Section SA, with the exceptions noted in RPP-1923, "General WAC 246-247 Technology Standards Exemption Justification for Waste Tank Ventilation Systems".

A 500 cfm inlet HEPA filter in an ASME AG-1 compliant housing will be installed on a second riser on the 241-ER-311 to accommodate the inlet air stream created by the use of the portable exhauster. When the exhauster is not running, the inlet HEPA filter will serve as a tank barometric breather filter to provide abatement of particulate emissions from the tank.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Am - 241	4.79E-04	Cs - 137	9.36E+00	Pu - 239/240	3.36E-04
Sr - 89/90	2.88E+00				

4) Once every 24 hours a visual inspection of the HEPA filter housing shall be made, including the drain line and seal pot, to look for formation of liquid in the HEPA filter housing. If moisture is present or seal pot level is increasing DOH shall be notified and a path forward established to verify and maintain the integrity of the HEPA filters.

5) All ventilation ductwork from the exit of the tank to the inlet of the exhauster filter housing shall be insulated.

6) Relative Humidity shall be monitored, at least once every 7 days, to ensure the air stream does not exceed 70% relative humidity downstream of the heater and prior to the HEPA filters.

7) Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1 Section TA. HEPA filters shall have a minimum efficiency of 99.95%.

8) All ductwork shall be pressure tested in accordance with the requirements of ASME AG-1 Section SA.

9) The emission unit stack monitoring system shall meet the requirements of ANSI/HPS N13.1-1999.

10) The emission unit shall not operate at a flow rate which will exceed the rated capacity of the inlet/breather filter installed on the tank.
11) All ductwork connections shall have a radiological survey performed monthly to ensure ductwork connections are not degrading.
12) The demister identified as required abatement technology is not required to be operational during liquid removal operations at the 241-ER-311 Catch Tank.

Emission Unit ID: 53

200W P-296P022-001

296-P-22

This is a MINOR, ACTIVELY ventilated emission unit.

241-SY TANK FARM

Emission Unit Information

Stack Height: 13.17 ft. 4.01 m. Stack Diameter 0.69 ft. 0.21 m.

Average Stack Effluent Temperature: 68 degrees Fahrenheit. 20 degrees Celsius.

Average Stack ExhaustVelocity: 33.04 ft/second. 10.07 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	2	2 in series
	Fan	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	1 week sample/4 times per year

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a DST annulus exhauster used to support tank farm operations and ventilates the annuli of DSTs 241-SY Tank Farm. The tanks store radioactive waste until the waste is retrieved, treated, and properly disposed under the applicable federal and state regulations and/or permits. The annulus is the space between the inner wall and outer wall of the tank, and is used for leak detection. The emission unit operates continuously.

Emission Unit ID: 56

200W P-296SY-001

296-P-23

This is a MINOR, ACTIVELY ventilated emission unit.

241-SY TANK FARM

Emission Unit Information

Stack Height: 17.30 ft. 5.27 m. Stack Diameter 0.51 ft. 0.16 m.

Average Stack Effluent Temperature: 68 degrees Fahrenheit. 20 degrees Celsius.

Average Stack ExhaustVelocity: 83.07 ft/second. 25.32 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Deentrainer	1	
	Heater	Non-Operational	
	Prefilter	1	
	HEPA	2	In series
	Fan	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	1 week sample/4 times per year.

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit (241-SY B Train - western most unit) is a primary exhauster used to support tank farm operations by ventilating the DSTs in 241-SY Tank Farm during storage, maintenance, and normal operations. Any activity other than storage, maintenance, and normal operations will be regulated and/or permitted under the applicable regulations and/or permits for the activity being performed and the emission units associated with the activity. This emission unit is operated in alternation with the "A" train (296-S-25) when "B" train is not operational. The emission unit operates intermittently.

Emission Unit ID: 57

200 W-296P043-001

296-P-43

This is a MAJOR, ACTIVELY ventilated emission unit.

Tank Farms

Emission Unit Information

Stack Height: 21.00 ft. 6.40 m. Stack Diameter 0.50 ft. 0.15 m.

Average Stack Effluent Temperature: 90 degrees Fahrenheit. 32 degrees Celsius.

Average Stack ExhaustVelocity: 38.22 ft/second. 11.65 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Prefilter	1	
	Heater	1	
	HEPA	2	2 HEPAs in series
	Fan	1	
	Demister	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	Cs-137, Sr-90	Continuous

Sampling Requirements Record sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a skid/mobile type portable exhauster used to support tank farm operations, such as but not limited to, waste characterization, waste retrieval, decommissioning, deactivation, maintenance, and construction and operation support activities. The emission unit is a portable exhauster that is not planned for further use at the 241-S-112. When used it operates intermittently.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Categorical Tank Farm Facility Waste Retrieval and Closure: Phase II Waste Retrieval Operations (Replaced NOC ID 816)	AIR 12-307	2/23/2012	825

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.31E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.61E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted.

The operation of the waste retrieval system(s) for the removal of radioactive wastes from all 149 Single Shell Tanks (SST) at the Hanford Site.

SALTCAKE DISSOLUTION WASTE RETRIEVAL SYSTEM

The saltcake dissolution waste retrieval system may be used to retrieve soluble saltcake waste. This method retrieves the soluble portion of the waste only, resulting in very few of the solids being pumped from the tank. The

saltcake dissolution waste retrieval system deployed in the SSTs is for water, chemical agent, or catalyst liquid to be added to the tank using a variety of spray nozzles or "sprinklers". The approach is to sprinkle the waste surface with water, chemical agent, or catalyst liquid. The added water, chemical agent, or catalyst liquid must stay in contact with the saltcake for a long enough period of time for the brine to become saturated. Once the brine is saturated, it is pumped from the SST to a receiver tank, staging tank, storage DST or other staging/storage vessel associated with the supplemental treatment, packaging or disposal. Salt solution will be removed using the existing saltwell pump or other pump placed into the tank.

A tank not equipped with a saltwell pump, a transfer pump (progressive cavity, vertical turbine) can be installed and operated.

Remotely directable water distribution devices will be located in risers spaced as far apart as practical. A combination of spraying waster, chemical agent, or catalyst liquid to dissolve the saltcake can be used in conjunction with directing a flow of water or recirculating water at the waste to move it to the pump suction to allow the pumping of waste from the tank. Recirculated waste from the pump may be sent back to the tank as an alternative to using water to direct dissolution waste to the pump suction.

MODIFIED SLUCING WASTE RETRIEVAL SYSTEM

Modified sluicing can be used for some SST waste retrieval. Modified sluicing is the introduction of liquid at low to moderate pressures and volumes into the waste. The liquid dissolves and breaks apart solid materials and suspends them in the waste slurry. A transfer pump installed in the tank provides the motive force to transfer the liquid slurry to a receiver tank.

Modified sluicing introduces sluice liquid in a controlled fashion using multiple sluicing nozzles at varying pressures and flows, then pumps out the resultant waste slurry. This maintains minimal liquid inventories within the tank at all times. The liquids that could be used in modified sluicing include water, recirculated supernatant/water from the receiving Double Shell Tank, recirculated supernatant/water, chemical agent or catalyst liquid.

VACUUM WASTE RETRIEVAL SYSTEM

A vacuum waste retrieval system can be used for waste retrieval activities in the (SSTs). The vacuum waste retrieval system is introduced into the SSTs by means of an articulating mast system (AMS). The AMS has a horizontal reach and rotational capabilities of 360 degrees. The AMS has a retracted position and can be extended vertically. Air is mixed at the suction end of the AMS enabling the required vertical lift for the waste to a topside receiver tank, batch vessel or a staging SST, storage DST, or other staging/storage vessels associated with supplemental treatment, packaging or disposal.

The AMS will be deployed through and attached to standard riser flanges that are available on the SSTs. Cameras can also be installed in other risers for in-tank viewing and control of the AMS.

For the 200-series tanks in the 241-C, 241-U, 241-B and 241-T Tank Farms a vacuum retrieval process tank, staging tank, staging SST, storage DST or other staging/storage vessel will be deployed. The receiver tank will receive waste in batches from whichever tank is connected into the vacuum retrieval system. The vacuum pressure used to draw up the waste from the tank to the receiver tank is relieved back into the SST being retrieved.

MOBILE RETRIEVAL SYSTEM

A Mobile Retrieval System (MRS) can be used to retrieve waste from some SSTs. The MRS consists of two in-tank systems. The first is a robotic crawler inserted through one riser the second is an AMS inserted through a second riser. The AMS retrieves the sludge from the tank using a vacuum with assisting pneumatic conveyance. The AMS vacuum tube has a horizontal reach and can be extended to the bottom of the tank. The arm rotates 360 degrees. The vacuum will be directed through the AMS in the tank to the end effector, which is in contact with the waste. The pneumatic conveyance-assisted vacuum retrieval system will draw the waste up through the vacuum to the waste vessel in the vessel skid in batches. The AMS is then valved out while the waste vessel is emptied and pumped out through the over ground transfer lines to a DST, a staging SST or other treatment/disposal options. When the waste vessel is nearly empty, the transfer line will be valved out and the

AMS will be valved back in and another batch of waste will be removed from the tank. This process will be repeated until waste near the center of the tank is removed. The robotic crawler will be remotely controlled to move and/or wash waste toward the center of the tank.

The robotic crawler is equipped with a plow blade at the front for pushing/pulling wastes, a screw pump to jet wastes through a small nozzle towards the center of the tank, the ability to direct hot or cold water through the same nozzle to wash wastes off of in-tank equipment, dissolve waste agglomerations in the tank, and wash waste toward the center of the tank for removal.
Any new retrieval methods or changes to processes will need to be provided to WDOH in a revised NOC prior to implementation.

MOBILE ARM RETRIEVAL SYSTEM

The Mobile Arm Retrieval System (MARS) is a waste retrieval system used to retrieve waste from single-shell tanks (SSTs) and move the waste to the double-shell tanks (DSTs). The MARS employs two design options similar to currently permitted systems: 1) a sluicing retrieval option which is intended for retrieval of non1eaker tanks and 2) a vacuum retrieval option is intended for retrieval of assumed 1eaker tanks. Both options use an arm and sluicing jets and/or a high pressure water scarifier to break up the waste. The sluicer uses waste supernatant recycled from the DST to form a liquid jet using a nozzle. The scarifier uses filtered, pressurized water that comes from a high pressure water skid.

The equipment portion of the MARS includes a vertical, carbon steel mast (square cross section) as the main structural member. Attached to the vertical mast is a carbon fiber robotic arm. The arm is attached to a traveler that raises and lowers the arm relative to the vertical mast. The arm rotates 360 degrees - 380 degrees on a turntable located in the pit box. The arm also pivots up and down from an elbow at the traveler (hydraulic system) and extends and retracts (hydraulic system). The end of the arm articulates. The arm thus provides for a large range of motion such that the sluicing devices (recycle sluicer, water scarifier) located at the end of the arm can aim at most portions of the tank and from varying (e.g., short) distances.

The containment box which encloses the MARS will be ventilated by two parallel installed radial filters. The purpose of these filters is to minimize contamination from migrating up from the tank into the containment box via the open space on the large riser during retrieval operations. Minimization of contamination inside the containment box is desired should entry into the box ever be required for repairs. Inflow through these filters during retrieval is estimated to reach up to 60 cubic feet per minute (cfm). A valve will be installed between the filters and the containment box so filters can be isolated from the box. However, because the location of the valve will be approximately 12 feet above ground and difficult to reach without properly installed and inspected scaffolding, the valve will be left open at all times until retrieval of the tank is complete. Once retrieval is complete the valve will be closed.

REMOTE WATER LANCE

The completion of tank retrieval may also be aided by a Remote Water Lance (RWL) that is a high pressure water device, or hydro laser. Alternatively, a High Pressure Mixer (HPM) may be used in the same capacity. The systems will consist of both ex-tank and in-tank components. The ex-tank components will be comprised of; high pressure systems, operating controls, cables, and hoses. The in-tank components will be comprised of; umbilical, in-tank vehicle, high pressure nozzle(s), or the high pressure mixer.

The high pressure water systems will provide the water at the desired pressure, not to exceed 37,000 psig. A conditioning system will be used to filter the raw water entering the skid to ensure that no abrasive materials are entrained in the water. The water volumetric flow rate will be on the order of 4 to 18 gpm for the HPM and from 6 to 15 gpm for the RWL. The operating controls will be located in a control trailer outside of the farm fence. The cables and hoses will connect hydraulically powered in-tank vehicle with the ex-tank controls and water skid via the umbilical. The HPM consists of an adjustable height pipe with two pairs of opposed, high pressure, low volume water orifices located on the bottom of the pipe. The mixer is capable of being rotated 360 degrees and has an adjustable height range of approximately 7 feet. The positioning of the mixer is performed remotely using a hydraulic system. Additionally, the mixer has a single orifice on the bottom of the unit that can be used as an operational or installation aid. The in-tank vehicle will house one to four high pressure water nozzles. The RWL

will be operated with the nozzle submerged to avoid aerosols in the tank. A rupture disc will be used to prevent reaching pressures above 37,000 psig.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	5.99E+00	Am - 241	8.68E+03	Am - 243	3.39E-01
Ba - 137 m	4.26E+07	C - 14	6.25E+02	Cd - 113 m	4.95E+03
Cm - 242	1.97E+01	Cm - 243	1.80E+00	Cm - 244	1.90E+01
Co - 60	2.52E+03	Cs - 134	3.44E+04	Cs - 137	4.89E+07
Eu - 152	8.49E+02	Eu - 154	1.45E+04	Eu - 155	9.54E+03
H - 3	5.95E+03	I - 129	2.95E+01	Nb - 93 m	1.01E+03
Ni - 59	1.05E+02	Ni - 63	9.30E+03	Np - 237	9.50E+01
Pa - 231	1.25E+01	Pu - 238	1.65E+02	Pu - 239	3.17E+03
Pu - 240	5.36E+02	Pu - 241	4.80E+03	Pu - 242	3.34E-02
Ra - 226	1.27E-02	Ra - 228	1.15E+01	Ru - 106	1.22E-02
Sb - 125	1.73E+04	Se - 79	6.36E+01	Sm - 151	8.93E+05
Sn - 126	2.59E+02	Sr - 90	2.91E+06	Tc - 99	2.24E+04
Th - 229	4.20E-01	Th - 232	1.26E+00	U - 232	3.66E+00
U - 233	3.02E+01	U - 234	1.07E+01	U - 235	4.44E-01
U - 236	2.73E-01	U - 238	9.86E+00	Y - 90	2.91E+06
Zr - 93	1.25E+03				

4) ABATEMENT TECHNOLOGY- Ductwork insulation
All ventilation ductwork from the exit of the tank to the inlet of the exhauster filter housing shall be insulated. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

5) ABATEMENT TECHNOLOGY- Annual testing
Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1 Section TA. HEPA filters shall have a minimum efficiency of 99.95%. (WAC 246-247-040(5)), (WAC 246-247-060(5)) and (WAC 246-247-075(2))

6) ABATEMENT TECHNOLOGY- Filter protection
Relative humidity shall be monitored, at least once a month, downstream of the heater and prior to the HEPA filters to ensure the air stream does not exceed 70% relative humidity. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

7) RELEASE RATES - WDOH Log
The annual possession quantity shall be tracked on a WDOH approved log. (WAC 246-247-080(7))

8) WDOH ALTERNATE APPROVAL- Standards
General WAC 246-247 technology standard exemptions justified and documented in RPP-19233, WAC 246-247 technology standard exemption justification for waste tank ventilation systems, may be applied to Phase II NOC retrieval exhauster operations. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

9) ALTERNATE APPROVAL - NDA Method

A pre-operational NDA of the exhauster(s) HEPA filters and a post-operational NDA will be performed the first time each of the four waste retrieval methods (mobile retrieval system, vacuum retrieval, supernatant sluicing, and saltcake dissolution with supernatant) when placed into service. The post-operational NDA should occur after one cycle or phase of waste retrieval operation is completed, a method replaces another method during a cycle/phase or six months from the in-service date, whichever occurs first. The facility may opt to replace the exhauster's HEPA filters prior to placing a new waste retrieval method in service and eliminate the pre-operational NDA. (WAC 246-247-040(5)), (WAC 246-247-060(5)) and (WAC 246-247-075(4))

10) WDOH NOTIFICATIONS - Differential pressure out of range
The differential pressure readings for the pre-filters and both stages of HEPA filters shall be monitored, recorded and trended daily. The exhaust system will be configured to automatically shut down at 5.9 inches of water (or less) pressure differential across the HEPA filter(s) for the first filter in series or multiple filters in series as indicated by the local readout. If the final HEPA filter in the system exceeds 5.9 inches of water pressure differential across the filter, the cause will be determined and WDOH will be notified through normal established channels. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

11) STANDARDS - stack monitoring systems
The emission unit stack monitoring system shall meet the requirements of ANSI/HPS N13.1-1999 including the stack monitoring system inspection requirements. (WAC 246-247-040(5)), (WAC 246-247-060(5)) and (WAC 246-247-075(2))

12) STANDARDS - Startup leak testing
New or altered sections of ductwork shall be leak tested in accordance with the requirements of ASME AG-1 Section SA prior to use. Normal maintenance of the system (e.g. replacing gaskets, replacement of in kind components, flow profile analysis in the ductwork, air sampling from test ports in the duct and demister flushing) are not considered to be alteration. (WAC 246-247-040(5)), (WAC 246-247-060(5)) and (WAC 246-247-075(2))

13) CONTAMINATION CONTROL- Max operating pressure
During waste retrieval operations the maximum pressure for any waste retrieval method shall not exceed 37,000 psig. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

14) CONTAMINATION CONTROL- Monthly Radiological Survey
While the exhauster is operating, and/or tank waste retrieval is underway, all ductwork connections shall have a radiological survey performed monthly to ensure ductwork connections are not degrading. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

15) CONTAMINATION CONTROL exhauster alternate usages
The exhauster will be operated occasionally during periods of non-retrieval in support of tank waste retrieval preparation activities and to aid in evaporation of residual flush water or sluicing liquid that remains in the tank. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

16) CONTAMINATION CONTROL- Active ventilation
All receiver tanks (including waste retrieval process tanks for tank TRU retrieval (staging) SSTs, storage DSTs, or other staging/storage vessels, but not including batch vessel supporting vacuum retrieval) shall have active ventilation during waste receipt, unless alternative controls are documented and approved by WDOH. If the exhauster goes down due to off-normal conditions while retrieval is occurring, the system should be placed into a safe configuration, minimizing dose to personnel and the environment. These steps may include: flushing the lines, pumps, and the waste transfer system of slurry solution using DST supernatant or water; pumping down the tank liquid to minimize remaining liquids; and halting waste retrieval. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

Emission Unit ID: 58

200 W-296P044-001

296-P-44

This is a MAJOR, ACTIVELY ventilated emission unit.

Tank Farms

Emission Unit Information

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Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Prefilter	1	
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	Fan	1	
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Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	Cs-137, Sr-90	Continuous

Sampling Requirements Record sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a skid/mobile type portable exhauster used to support tank farm operations, such as but not limited to, waste characterization, waste retrieval, decommissioning, deactivation, maintenance, and construction and operation support activities. The emission unit is a portable exhauster that is not planned for further uwse at 241-S-102. When used it operates intermittently.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Categorical Tank Farm Facility Waste Retrieval and Closure: Phase II Waste Retrieval Operations (Replaced NOC ID 816)	AIR 12-307	2/23/2012	825

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.31E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.61E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

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The operation of the waste retrieval system(s) for the removal of radioactive wastes from all 149 Single Shell Tanks (SST) at the Hanford Site.

SALTCAKE DISSOLUTION WASTE RETRIEVAL SYSTEM

The saltcake dissolution waste retrieval system may be used to retrieve soluble saltcake waste. This method retrieves the soluble portion of the waste only, resulting in very few of the solids being pumped from the tank. The

saltcake dissolution waste retrieval system deployed in the SSTs is for water, chemical agent, or catalyst liquid to be added to the tank using a variety of spray nozzles or "sprinklers". The approach is to sprinkle the waste surface with water, chemical agent, or catalyst liquid. The added water, chemical agent, or catalyst liquid must stay in contact with the saltcake for a long enough period of time for the brine to become saturated. Once the brine is saturated, it is pumped from the SST to a receiver tank, staging tank, storage DST or other staging/storage vessel associated with the supplemental treatment, packaging or disposal. Salt solution will be removed using the existing saltwell pump or other pump placed into the tank.

A tank not equipped with a saltwell pump, a transfer pump (progressive cavity, vertical turbine) can be installed and operated.

Remotely directable water distribution devices will be located in risers spaced as far apart as practical. A combination of spraying waster, chemical agent, or catalyst liquid to dissolve the saltcake can be used in conjunction with directing a flow of water or recirculating water at the waste to move it to the pump suction to allow the pumping of waste from the tank. Recirculated waste from the pump may be sent back to the tank as an alternative to using water to direct dissolution waste to the pump suction.

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Co - 60	2.52E+03	Cs - 134	3.44E+04	Cs - 137	4.89E+07
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H - 3	5.95E+03	I - 129	2.95E+01	Nb - 93 m	1.01E+03
Ni - 59	1.05E+02	Ni - 63	9.30E+03	Np - 237	9.50E+01
Pa - 231	1.25E+01	Pu - 238	1.65E+02	Pu - 239	3.17E+03
Pu - 240	5.36E+02	Pu - 241	4.80E+03	Pu - 242	3.34E-02
Ra - 226	1.27E-02	Ra - 228	1.15E+01	Ru - 106	1.22E-02
Sb - 125	1.73E+04	Se - 79	6.36E+01	Sm - 151	8.93E+05
Sn - 126	2.59E+02	Sr - 90	2.91E+06	Tc - 99	2.24E+04
Th - 229	4.20E-01	Th - 232	1.26E+00	U - 232	3.66E+00
U - 233	3.02E+01	U - 234	1.07E+01	U - 235	4.44E-01
U - 236	2.73E-01	U - 238	9.86E+00	Y - 90	2.91E+06
Zr - 93	1.25E+03				

4) ABATEMENT TECHNOLOGY- Ductwork insulation
All ventilation ductwork from the exit of the tank to the inlet of the exhauster filter housing shall be insulated. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

5) ABATEMENT TECHNOLOGY- Annual testing
Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1 Section TA. HEPA filters shall have a minimum efficiency of 99.95%. (WAC 246-247-040(5)), (WAC 246-247-060(5)) and (WAC 246-247-075(2))

6) ABATEMENT TECHNOLOGY- Filter protection
Relative humidity shall be monitored, at least once a month, downstream of the heater and prior to the HEPA filters to ensure the air stream does not exceed 70% relative humidity. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

7) RELEASE RATES - WDOH Log
The annual possession quantity shall be tracked on a WDOH approved log. (WAC 246-247-080(7))

8) WDOH ALTERNATE APPROVAL- Standards
General WAC 246-247 technology standard exemptions justified and documented in RPP-19233, WAC 246-247 technology standard exemption justification for waste tank ventilation systems, may be applied to Phase II NOC retrieval exhauster operations. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

9) ALTERNATE APPROVAL - NDA Method

A pre-operational NDA of the exhauster(s) HEPA filters and a post-operational NDA will be performed the first time each of the four waste retrieval methods (mobile retrieval system, vacuum retrieval, supernatant sluicing, and saltcake dissolution with supernatant) when placed into service. The post-operational NDA should occur after one cycle or phase of waste retrieval operation is completed, a method replaces another method during a cycle/phase or six months from the in-service date, whichever occurs first. The facility may opt to replace the exhauster's HEPA filters prior to placing a new waste retrieval method in service and eliminate the pre-operational NDA. (WAC 246-247-040(5)), (WAC 246-247-060(5)) and (WAC 246-247-075(4))

10) WDOH NOTIFICATIONS - Differential pressure out of range
The differential pressure readings for the pre-filters and both stages of HEPA filters shall be monitored, recorded and trended daily. The exhaust system will be configured to automatically shut down at 5.9 inches of water (or less) pressure differential across the HEPA filter(s) for the first filter in series or multiple filters in series as indicated by the local readout. If the final HEPA filter in the system exceeds 5.9 inches of water pressure differential across the filter, the cause will be determined and WDOH will be notified through normal established channels. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

11) STANDARDS - stack monitoring systems
The emission unit stack monitoring system shall meet the requirements of ANSI/HPS N13.1-1999 including the stack monitoring system inspection requirements. (WAC 246-247-040(5)), (WAC 246-247-060(5)) and (WAC 246-247-075(2))

12) STANDARDS - Startup leak testing
New or altered sections of ductwork shall be leak tested in accordance with the requirements of ASME AG-1 Section SA prior to use. Normal maintenance of the system (e.g. replacing gaskets, replacement of in kind components, flow profile analysis in the ductwork, air sampling from test ports in the duct and demister flushing) are not considered to be alteration. (WAC 246-247-040(5)), (WAC 246-247-060(5)) and (WAC 246-247-075(2))

13) CONTAMINATION CONTROL- Max operating pressure
During waste retrieval operations the maximum pressure for any waste retrieval method shall not exceed 37,000 psig. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

14) CONTAMINATION CONTROL- Monthly Radiological Survey
While the exhauster is operating, and/or tank waste retrieval is underway, all ductwork connections shall have a radiological survey performed monthly to ensure ductwork connections are not degrading. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

15) CONTAMINATION CONTROL exhauster alternate usages
The exhauster will be operated occasionally during periods of non-retrieval in support of tank waste retrieval preparation activities and to aid in evaporation of residual flush water or sluicing liquid that remains in the tank. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

16) CONTAMINATION CONTROL- Active ventilation
All receiver tanks (including waste retrieval process tanks for tank TRU retrieval (staging) SSTs, storage DSTs, or other staging/storage vessels, but not including batch vessel supporting vacuum retrieval) shall have active ventilation during waste receipt, unless alternative controls are documented and approved by WDOH. If the exhauster goes down due to off-normal conditions while retrieval is occurring, the system should be placed into a safe configuration, minimizing dose to personnel and the environment. These steps may include: flushing the lines, pumps, and the waste transfer system of slurry solution using DST supernatant or water; pumping down the tank liquid to minimize remaining liquids; and halting waste retrieval. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

Emission Unit ID: 59

200W S-296S025-001

296-S-25

This is a MINOR, ACTIVELY ventilated emission unit.

241-SY TANK FARM

Emission Unit Information

Stack Height: 19.08 ft. 5.82 m. Stack Diameter 0.67 ft. 0.20 m.

Average Stack Effluent Temperature: 78 degrees Fahrenheit. 26 degrees Celsius.

Average Stack ExhaustVelocity: 47.27 ft/second. 14.41 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Deentrainer	1	
	Heater	1	Heater runs intermittently due to temperature Regulation
	Prefilter	1	
	HEPA	2	In series
	Fan	1	Emission unit operates intermittently

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	1 week sample/4 times per year

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit (241-sy a Train - eastern most unit) is a primary exhauster used to support tank farm operations by ventilating the DSTs in 241-SY Tank Farm during storage, maintenance, and normal operations. Any activity other than storage, maintenance, and normal operations will be regulated and/or permitted under the applicable regulations and/or permits for the activity being performed and the emission units associated with the activity. This emission unit is operated in alternation with the "B" train (296-P-23) when "A" train is not operational. The emission unit operates intermittently.

Emission Unit ID: 62

600 S-6266-001

696-W-1

This is a MINOR, ACTIVELY ventilated emission unit.

Waste Sampling and Characterization Facility WSCF

Emission Unit Information

Stack Height: 46.50 ft. 14.17 m. Stack Diameter 4.50 ft. 1.37 m.

Average Stack Effluent Temperature: 70 degrees Fahrenheit. 21 degrees Celsius.

Average Stack ExhaustVelocity: 56.60 ft/second. 17.25 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Prefilter	2	In parallel
	HEPA	2	In parallel
	Fan	2	In parallel

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	2 week sample/quarter

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Operations at the Waste Sampling and Characterization Facility involve low level radiological and chemical sample analyses and storage on the Hanford Site

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Use of Portable Tanks and Revised Source Term Description at Waste Sampling and Characterization Facility (WSCF)(Replaced NOC 669)	AIR 12-303	2/23/2012	820

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 2.80E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   * Analytical Laboratory Building (696-W-1) - Solid, liquid, and vapor samples contaminated with low levels of radioactive material are processed, on a bench-scale basis, in fume hoods or other controlled air spaces in the building. Evaporation and wet chemistry also are used to prepare samples for analysis. Low-level waste drums are filled inside the laboratory building and transferred either to the Solid Waste Storage Building (described as follows) or other approved facilities on the Hanford Site, or the low-level waste drums are moved to various locations within WSCF.

   * Radiochemistry Laboratory (696-W-2) - This is a below grade counting room in the Analytical Laboratory Building with a separately controlled airspace within the building.

   * Environmental Data/Computer Center (6270) - This is a non-radiological building and will not be addressed further.

* Environmental Sample Archive Buildings (6267) - These buildings provide for controlled storage, indexing, categorizing and retrieval of low-level contaminated samples. Building 6267 provides storage for up to 1750 one liter samples requiring refrigerated storage and up to 40,320 one liter samples requiring ambient storage. Modular storage trailer MO-188 provides storage for up to 7,000 soil samples requiring ambient storage. Additional storage buildings will be installed and operated, as necessary, within the constraints of WSCF's maximum annual throughput curie limit. These buildings also provide for temporary storage of unvented drums or other low-level waste, packaged in accordance with applicable laboratory procedures. Less than 100 low-level waste packages are stored at any one time.

* Mobile Laboratory Storage Facility (6269) - This structure houses up to five mobile laboratories and provides protection from adverse weather conditions for the instrumentation and computers inside the mobile laboratories. This area contains calibration laboratory instrumentation used in the mobile laboratories, and a sample preparation area for adding chemical buffers and preservatives to sample containers. This building provides temporary storage of drums, or other waste packages contained with low-levels of radioactive material. Less than 100 low-level waste packages are stored at any one time.

* Solid Waste Storage Building (6265A) - This open-sided building shall provide for temporary storage of drums or other low-level waste packages. Less than 100 low-level waste packages are stored at any one time and will not be addressed further in this license, as these are unvented drums.

* Contaminated Liquid Waste Retention Vault (6266A) - Consists of two 3,785 liter polyethylene tanks contained in a common concrete vault. The tanks are designed to receive low-level inorganic and radiologically contaminated liquid waste or sample excess from the analytical laboratory. The liquid is transferred to an approved disposal facility on the Hanford Site using the portable tanker described below. This building also provides temporary storage of drums, or other waste packages contaminated with low-levels of radioactive material. Less than 100 low-level waste packages are stored at any one time. [THE TWO 3,785 LITER POLYETHYLENE TANKS THAT ARE CONTAINED IN THE COMMON CONCRETE VAULT MUST BE REGISTERED AS RADIOACTIVE AIR EMISSION UNIT PRIOR TO USE.]

* Sample Equipment Cleaning Facility - This is a non-radiological building and will not be addressed further.

* Portable Tanker(s) used for Wastewater Transport - Wastewater drums containing liquid waste contaminated with low-levels of radioactive material are stored temporarily at various locations within WSCF. In some cases, the contents of these drums are pumped into a portable tanker at the various locations for transport to other facilities. To accomplish the pumping, a small pump has its drop leg inserted into each drum through the bunghole or other opening, and flexible hose transfers the liquid to the tanker.[SEE NOC 696 (Tanker Truck Loading of Radioactively Contaminated Waste Water) or current version of NOC.]

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 1.40E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	3.30E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

License PTE limit bounds 3.3E-04 Ci/yr 239Pu and release fraction of 0.001. Any radionuclide on the chart of the nuclides could be encountered during operation of the WSCF. The radionuclides specifically listed in the NOC application were chosen to conservatively represent all radionuclide emissions that may occur in particulate form. A small contribution from the gaseous radionuclides may be encountered. Although any radionuclide could be present, for conservatism all alpha is assumed to be 239Pu and all beta/gamma is assumed to be 90Sr for dose calculation estimates. Other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta/gamma constituents.

B/G - 0	6.80E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

License PTE limit bounds 6.8E-03 Ci/yr 90Sr and release fraction of 0.001. Any radionuclide on the chart of the nuclides could be encountered during operation of the WSCF. The radionuclides specifically listed in the NOC application were chosen to conservatively represent all radionuclide emissions that may occur in particulate form. A small contribution from the gaseous radionuclides may be encountered. Although any radionuclide could be present, for conservatism all alpha is assumed to be 239Pu and all beta/gamma is assumed to be 90Sr for dose calculation estimates. Other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta/gamma constituents.

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) POTENTIAL RELEASE RATES - Annual verification

The potential release rates of plutonium and strontium are considered conservative and noted that these radionuclides are representative types of alpha and beta radiation that WSCF expects to handle. The WSCF needs to verify annually that plutonium and strontium are the most conservative radionuclides WSCF handles.

Emission Unit ID: 63

600 S-6266-002

696-W-2

This is a MINOR, ACTIVELY ventilated emission unit.

Waste Sampling and Characterization Facility WSCF

Emission Unit Information

Stack Height: 32.00 ft. 9.75 m. Stack Diameter 1.83 ft. 0.56 m.

Average Stack Effluent Temperature: 70 degrees Fahrenheit. 21 degrees Celsius.

Average Stack ExhaustVelocity: 11.10 ft/second. 3.38 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Prefilter	2	In parallel
	HEPA	2	In parallel
	Fan	1	An additional standby fan recirculates the air flow back to Building (Bldg. 6266) or can vent it to the atmosphere.

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	2 week sample/quarter

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Operations at the Waste Sampling and Characterization Facility involve low level radiological and chemical sample analyses and storage on the Hanford Site. The stack is a 3' X 1' rectangular duct.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Use of Portable Tanks and Revised Source Term Description at Waste Sampling and Characterization Facility (WSCF)(Replaced NOC 669)	AIR 12-303	2/23/2012	820

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 2.80E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   * Analytical Laboratory Building (696-W-1) - Solid, liquid, and vapor samples contaminated with low levels of radioactive material are processed, on a bench-scale basis, in fume hoods or other controlled air spaces in the building. Evaporation and wet chemistry also are used to prepare samples for analysis. Low-level waste drums are filled inside the laboratory building and transferred either to the Solid Waste Storage Building (described as follows) or other approved facilities on the Hanford Site, or the low-level waste drums are moved to various locations within WSCF.

   * Radiochemistry Laboratory (696-W-2) - This is a below grade counting room in the Analytical Laboratory Building with a separately controlled airspace within the building.

* Environmental Data/Computer Center (6270) - This is a non-radiological building and will not be addressed further.

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* Mobile Laboratory Storage Facility (6269) - This structure houses up to five mobile laboratories and provides protection from adverse weather conditions for the instrumentation and computers inside the mobile laboratories. This area contains calibration laboratory instrumentation used in the mobile laboratories, and a sample preparation area for adding chemical buffers and preservatives to sample containers. This building provides temporary storage of drums, or other waste packages contained with low-levels of radioactive material. Less than 100 low-level waste packages are stored at any one time.

* Solid Waste Storage Building (6265A) - This open-sided building shall provide for temporary storage of drums or other low-level waste packages. Less than 100 low-level waste packages are stored at any one time and will not be addressed further in this license, as these are unvented drums.

* Contaminated Liquid Waste Retention Vault (6266A) - Consists of two 3,785 liter polyethylene tanks contained in a common concrete vault. The tanks are designed to receive low-level inorganic and radiologically contaminated liquid waste or sample excess from the analytical laboratory. The liquid is transferred to an approved disposal facility on the Hanford Site using the portable tanker described below. This building also provides temporary storage of drums, or other waste packages contaminated with low-levels of radioactive material. Less than 100 low-level waste packages are stored at any one time. [THE TWO 3,785 LITER POLYETHYLENE TANKS THAT ARE CONTAINED IN THE COMMON CONCRETE VAULT MUST BE REGISTERED AS RADIOACTIVE AIR EMISSION UNIT PRIOR TO USE.]

* Sample Equipment Cleaning Facility - This is a non-radiological building and will not be addressed further.

* Portable Tanker(s) used for Wastewater Transport - Wastewater drums containing liquid waste contaminated with low-levels of radioactive material are stored temporarily at various locations within WSCF. In some cases, the contents of these drums are pumped into a portable tanker at the various locations for transport to other facilities. To accomplish the pumping, a small pump has its drop leg inserted into each drum through the bunghole or other opening, and flexible hose transfers the liquid to the tanker.[SEE NOC 696 (Tanker Truck Loading of Radioactively Contaminated Waste Water) or current version of NOC.]

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 1.40E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	3.30E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

License PTE limit bounds 3.3E-04 Ci/yr 239Pu and release fraction of 0.001. Any radionuclide on the chart of the nuclides could be encountered during operation of the WSCF. The radionuclides specifically listed in the NOC application were chosen to conservatively represent all radionuclide emissions that may occur in particulate form. A small contribution from the gaseous radionuclides may be encountered. Although any radionuclide could be present, for conservatism all alpha is assumed to be 239Pu and all beta/gamma is assumed to be 90Sr for dose calculation estimates. Other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta/gamma constituents.

B/G - 0	6.80E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

License PTE limit bounds 6.8E-03 Ci/yr 90Sr and release fraction of 0.001. Any radionuclide on the chart of the nuclides could be encountered during operation of the WSCF. The radionuclides specifically listed in the NOC application were chosen to conservatively represent all radionuclide emissions that may occur in particulate form. A small contribution from the gaseous radionuclides may be encountered. Although any radionuclide could be present, for conservatism all alpha is assumed to be 239Pu and all beta/gamma is assumed to be 90Sr for dose calculation estimates. Other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta/gamma constituents.

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) POTENTIAL RELEASE RATES - Annual verification
The potential release rates of plutonium and strontium are considered conservative and noted that these radionuclides are representative types of alpha and beta radiation that WSCF expects to handle. The WSCF needs to verify annually that plutonium and strontium are the most conservative radionuclides WSCF handles.

Emission Unit ID: 65

200W P-241T105-001

241-T-105

This is a MINOR, PASSIVELY ventilated emission unit.

241-T TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 66

200W P-241T106-001

241-T-106

This is a MINOR, PASSIVELY ventilated emission unit.

241-T TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 67

200W P-241T109-001

241-T-109

This is a MINOR, PASSIVELY ventilated emission unit.

241-T TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 68

200W P-241T102-001

241-T-102

This is a MINOR, PASSIVELY ventilated emission unit.

241-T TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 69

200W P-241T107-001

241-T-107

This is a MINOR, PASSIVELY ventilated emission unit.

241-T TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 70

200W P-241T111-001

241-T-111

This is a MINOR, PASSIVELY ventilated emission unit.

241-T TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 71

200W P-241T104-001

241-T-104

This is a MINOR, PASSIVELY ventilated emission unit.

241-T TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 72

200W P-241T112-001

241-T-112

This is a MINOR, PASSIVELY ventilated emission unit.

241-T TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 73

200W P-241T108-001

241-T-108

This is a MINOR, PASSIVELY ventilated emission unit.

241-T TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 74

200W P-241T203-001

241-T-203

This is a MINOR, PASSIVELY ventilated emission unit.

241-T TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 75

200W P-241T204-001

241-T-204

This is a MINOR, PASSIVELY ventilated emission unit.

241-T TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 76

200W P-241T110-001

241-T-110

This is a MINOR, PASSIVELY ventilated emission unit.

241-T TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 77

200W P-241T202-001

241-T-202

This is a MINOR, PASSIVELY ventilated emission unit.

241-T TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 78

200W P-241T103-001

241-T-103

This is a MINOR, PASSIVELY ventilated emission unit.

241-T TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 79

200W P-241T101-001

241-T-101

This is a MINOR, PASSIVELY ventilated emission unit.

241-T TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 80

200W P-241T201-001

241-T-201

This is a MINOR, PASSIVELY ventilated emission unit.

241-T TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 81

200W P-241TY106-001

241-TY-106

This is a MINOR, PASSIVELY ventilated emission unit.

241-TY TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 82

200W P-241TY102-001

241-TY-102

This is a MINOR, PASSIVELY ventilated emission unit.

241-TY TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 83

200W P-241TY105-001

241-TY-105

This is a MINOR, PASSIVELY ventilated emission unit.

241-TY TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 84

200W P-241TY104-001

241-TY-104

This is a MINOR, PASSIVELY ventilated emission unit.

241-TY TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 85

200W P-241TY103-001

241-TY-103

This is a MINOR, PASSIVELY ventilated emission unit.

241-TY TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 86

200W P-241TY101-001

241-TY-101

This is a MINOR, PASSIVELY ventilated emission unit.

241-TY TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 87

200E P-241A103-001

241-A-103

This is a MINOR, PASSIVELY ventilated emission unit.

241-A TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 88

200E P-241A104-001

241-A-104

This is a MINOR, PASSIVELY ventilated emission unit.

241-A TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 90

200E P-241A102-001

241-A-102

This is a MINOR, PASSIVELY ventilated emission unit.

241-A TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 91

200E P-241A105-001

241-A-105

This is a MINOR, PASSIVELY ventilated emission unit.

241-A TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 92

200E P-241A101-001

241-A-101

This is a MINOR, PASSIVELY ventilated emission unit.

241-A TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 93

200E P-296A042-001

296-A-42

This is a MAJOR, ACTIVELY ventilated emission unit.

241-AY/AZ TANK FARM

Emission Unit Information

Stack Height: 55.00 ft. 16.76 m. Stack Diameter 0.83 ft. 0.25 m.

Average Stack Effluent Temperature: 75 degrees Fahrenheit. 24 degrees Celsius.

Average Stack ExhaustVelocity: 30.56 ft/second. 9.31 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Condenser	1	(In the common exhaust train) At common header. Downtime to be reported by the Tank Farm air emissions notification procedure.
	Water Chiller	1	(In the common exhaust train) Downtime to be reported by the Tank Farm air emissions notification procedure.
	HEME	1	(In the common exhaust train) Downtime to be reported by the Tank Farm air emissions notification procedure.
	Heater	1	(In the common exhaust train) 2 parallel flow paths with 1 operational. Downtime to be reported by the Tank Farm air emissions notification procedure.
	HEPA	2	(In the common exhaust train) 2 parallel flow paths. Downtime to be reported by the Tank Farm air emissions notification procedure.
	Chiller Pump	1	(In the common exhaust train) Downtime to be reported by the Tank Farm air emissions notification procedure.
	Fan	1	(In the common exhaust train) 2 parallel flow paths. Downtime to be negotiated with the department.

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	Sr-90, Cs-137, and Am-241	Continuous

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a primary exhauster used to support tank farm operations by ventilating the DSTs in 241 AY/AZ Tank Farm during storage, maintenance, and normal operations. Any activity other than storage, maintenance, and normal operations will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is a primary exhauster ventilation system that operates intermittently.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
License to Operate Ventilation of the 241 AY/AZ Tank Farm (Replaced NOC ID 782)	AIR 12-319	2/23/2012	840

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.28E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.75E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The 241-AY-101, 241-AY-102, 241-AZ-101, and 241-AZ-102 tanks are double shell tanks. The inner shell is constructed from heat treated, stress-relieved steel. The outer shell is constructed of non stress relieved steel. The two shells are separated by a 2.5 ft annulus and contained inside a concrete shell. The tanks have a usable waste volume of approximately 1,001,000 gal.

The 241 AY and 241 AZ tanks are part of a Resource Conservation and Recovery Act treatment, storage, and/or disposal unit. The tanks contain mixed waste in the form of liquids or contained solids (suspended or settled). The contents in each of the four tanks may be mixed periodically to control gas entrapment in the settled solids, to control temperature, for chemical treatment to control corrosion, or for waste retrieval. Contained solids will be mobilized, as required, as part of this process by hydraulic action of the mixer pumps or by use of air-lift circulators in each of the tanks. During such activities, as well as during storage, the ventilation system maintains the vapor space in each tank below atmospheric pressure.

Airflow is from the tank to a glycol-cooled recirculation system and to a common header. The common header is the point in the overall system at which ventilation flow is provided to the emissions control system. Also, a portion of each tank's exhaust can be recirculated to assist in maintaining temperature.

The recirculation system cools, condenses, removes vapor and some entrained particulates, further removes moisture via a separator, and returns a portion of the cooled vapor to the tank. This provides cooling for the tank while reducing air emissions. Nominal flow rates in the recirculation system vary from zero m3/sec (bypassed) to 0.25 m3/sec per tank, at standard temperature and pressure conditions. At the higher flow rate, approximately 0.05 m3/sec is provided to the emission control system with the remainder to the tank. Similar airflow from the other three tanks is combined in the common ventilation header connecting the discharges of the other recirculation coolant systems. The combined flow is discharged to the emissions control system. The recirculation system is considered part of the process because the collected material is returned to the tank.

When mixer pumps are operating in a tank, the 0.25 m^3/sec drawn from this tank may not be recirculated but may be combined with the flow from the other tanks for a total discharge to the emissions control system flow range of 0.4 to 0.5 m^3/sec. Numerous other combinations of discharge flow rates are possible but the combined annual average discharge flow rate to the emissions control system will not be greater than 0.5 m^3/sec. During system upset conditions, such as an automatic shutdown of one exhaust train and start of the opposite train, discharge flow rates could reach 0.6 m^3/sec for several seconds.

The portion of the stream discharged to atmosphere will flow through a condenser, high-efficiency mist eliminator, heater, and two high-efficiency particulate air (HEPA) filters in series. For purposes of calculating abated emissions, only the HEPA filter control efficiencies are used.

The central pump pits on the 241-AY and 241-AZ Tank Farm tanks are approximately 14 ft long x 10 ft wide x 10 ft depth (outside dimensions). Sluice pits and annulus pump pits are somewhat smaller with outside dimensions of

7 ft x 7 ft x 10 ft deep and 5 ft x 5 ft x 10 ft deep.

With the previous NOC revision, modifications to all four tanks and associated equipment were permitted to allow for installation of waste retrieval systems and equipment, through issuance of letter AIR-05-708, including the following major components.

New In Tank Equipment
•Two mixer pumps each in tanks 241-AZ-102, 241-AY-101, and 241-AY-102 for mobilizing the settled solids. Two mixer pumps were installed in tank 241-AZ-101 and permitted previously by WDOH through issuance of AIR-98-708. All of the pumps will be capable of pumping waste through each of two horizontally opposed discharge nozzles.

•A riser extension/spray wash system on top of each of the risers used for mixer pumps. The spray wash system will be used for future decontamination of the mixer pumps if they are removed from the tank.

•One transfer pump in each tank for the transfer of waste.

•New temperature probes for each tank.

•New decant pumps in the AY tanks and associated transfer piping; to include a one-time use hose-in-hose transfer line approximately 40 ft in length.

Ancillary Equipment and Buildings
•Electrical power and instrument cables and other utility tie ins and/or upgrades (e.g., sanitary and raw water, and telecommunications).
•Tie-in to the existing dilution and caustic supply system to bring waste properties into compliance with the feed specifications and to flush and preheat transfer lines. The dilution system will have the capacity of providing approximately 140 gal/minute of pH adjusted water.
•Pit cover blocks.
•Water/diluent piping to and from the process pits.
•Process jumpers.
•Miscellaneous concrete pads for electrical and mechanical equipment.
•Chain link fencing and gates.

Removal, Repair, Decontamination, and Demolition of Existing Equipment
•Removal/repair of transfer and/or mixer pumps, as necessary, during the life of the facility.
•Removal and disposal of several thermocouple probes/instrument trees.
•Removal and disposal of several existing pumps and other miscellaneous equipment (e.g., slurry distributers and process jumpers).
•Additionally, this revision includes removal of HEGA filters.

CONSTRUCTION ACTIVITIES
Construction activities with the PTE could include soil excavation, work in pump pits, pipe cutting, and removal and installation of in tank equipment. Some of these activities are described in, and will be done in accordance with, an applicable tank farm as low as reasonably achievable control technology (ALARACT) demonstration (HNF 4327, Control of Airborne Radioactive Emissions for Frequently Performed TWRS Work Activities (ALARACT Demonstrations). The specific activities and corresponding ALARACT demonstration are called out as applicable in the following sections.

If needed or chosen for use during these activities, the regulated guzzler, a portable/temporary radioactive air emission unit, and a HEPA filtered vacuum radioactive air emission unit may be used in accordance with the most current version of Guzzler DOE application,(See DOE Letter 09-ESQ-542 Dated November 30, 2009), Notice of Construction for Guzzler Evacuation and Backfill Activities in Support of the 200 East and West Tank Farm Complex or the latest WDOH approved Site wide Guzzler (See DOE Letter 99-SID-021 Dated February 1,1999) , “Radioactive Air Emissions Notice of Construction Portable/Temporary Radioactive Air Emission Units”; and DOE/RL-97-50, “Radioactive Air Emissions Notice of Construction for HEPA Filtered Vacuum Radioactive Air Emission Units,” respectively].

Because of the possibility of encountering previously undetected subsurface contamination, all work will be performed in accordance with appropriate radiological controls and the River Protection Project (RPP) as low as reasonably achievable (ALARA) program. These requirements are carried out through work packages and associated Radiological Work Permits (RWP).

Soil Excavation
Soil will be excavated inside and outside the 241-AZ and 241-AY Tank Farms for the dilution piping that will tie-in to the existing AN Tank Farm caustic supply system and to remove soil in preparation for mixer pump foundations and miscellaneous equipment support structures, to remove soil around pits in preparation of core drilling, and for placement of control building foundations (as required). A total of approximately 6000 yd^3 per farm could be excavated. Backfill will be made with the original removed soil or noncontaminated controlled density fill (sand, water, and a small amount of cement).

Soil excavation activities inside the tank farm fence will be performed in accordance with ALARACT Demonstration 5, TWRS ALARACT Demonstration for Soil Excavation (Using Hand Tools). If contamination is discovered outside the tank farm fence, ALARACT 5 will be followed. Clean soil piles could be moved from one place to another within the tank farm with heavy equipment (backhoe, front-end loader, etc.). Soil excavation outside the tank farm fence in noncontaminated soil also could be performed with heavy equipment. The regulated guzzler also could be used as described in the NOC for use in the 241-A Tank Farm Complex (EPA 1998 letter).

Pipe Cutting and Welding
Any required cuts of contaminated piping will be made inside a glove bag using appropriate equipment such as a sawzall or tri tool. To perform a cut without a glove bag, the piping will be surveyed/smeared to verify removable contamination levels are equal to or less than 10,000 disintegrations per minute (dpm) per 100 cm^2 beta gamma and 200 dpm/100 cm^2 alpha.

Welding may be necessary to join various pieces of equipment. If this is necessary, welding will commence once removable contamination levels in the weld area are reduced to ALARA. The goal will be to achieve 1000 dpm/100 cm2 beta gamma and 20 dpm/100 cm^2 alpha or less, but might not always be attainable.

If needed or chosen for use during these activities, a portable/temporary radioactive air emission unit and a HEPA filtered vacuum radioactive air emission unit could be used in accordance with the latest revisions of the NOCs (DOE/RL-96-75 and DOE/RL-97-50, respectively).

Pit Work
Work to be performed in pits may include replacing existing sets of cover blocks with newly designed cover blocks, core drilling (equivalent of one hundred 14-in. diameter holes for AZ Farm and ten 14 in. diameter holes for AY Farm), installing new nozzles, and removing existing jumpers.

Pit access and work will be performed in accordance with ALARACT Demonstrations 6 and 14, TWRS ALARACT Demonstration for Pit Access, and TWRS ALARACT Demonstration for Pit Work. Activities not covered in these ALARACTs are described in the following.

If needed or chosen for use during these activities, a portable/temporary radioactive air emission unit and HEPA filtered vacuum radioactive air emission unit could be used in accordance with the latest revisions of their NOCs (DOE/RL-96-75 and DOE/RL-97-50, respectively).

At the start of the pit work, the cover blocks will be lifted off and radiologically surveyed to determine an appropriate disposal method. New cover blocks will be installed when all work in the pits is completed.

Core drilling may be performed and will occur below grade level on the outside of the pit. The hole will be drilled from the outside to the inside, with the temporary pit cover in place. Nozzle installation generally will proceed immediately after the hole is completed. If immediate nozzle installation is not possible, the hole will be temporarily sealed with a plug, tape, or equivalent device until the nozzle can be installed.

Installation of new nozzles in existing pits will take place in an open pit. All parts of the nozzle will be assembled ahead of time and will be lowered into position as a single unit. The piping in the back of the nozzle will be

threaded through the hole (from the inside of the pit to the outside) and pulled tight into place from the outside of the pit. Grout will be used to secure and seal the nozzle into place. The front opening of the nozzle, inside the pit, will be fitted with a temporary cap/seal until a jumper is connected to the nozzle. Once the nozzle(s) is/are installed, the temporary pit cover will be replaced until other work inside the pit requires pit cover removal.

Removal of In Tank Equipment
Various in-tank equipment will be removed from the tanks to make room for the waste retrieval equipment, or to be replaced with equivalent equipment built to withstand the mixer pump jet forces. Removed long-length equipment will either be packaged in long-length contaminated equipment disposal containers or size reduced for disposal in accordance with ALARACT Demonstration 15, Tank Farm ALARACT Demonstration for Size Reduction of Waste Equipment for Disposal. Equipment removal will be performed in accordance with ALARACT Demonstration 13, TWRS ALARACT Demonstration for Installation, Operation, and Removal of Tank Equipment. Activities not covered in this ALARACT are described in the following.

If needed or chosen for use during these activities, a portable/temporary radioactive air emission unit, and a HEPA filtered vacuum radioactive air emission unit may be used in accordance with the latest revisions of their NOCs (DOE/RL-96-75 and DOE/RL-97-50, respectively).

Decontamination of removed equipment is not anticipated. The fewer decontamination activities undertaken, the less exposure possibilities there are to the worker and the environment. Contingency decontamination plans, however, are in place if needed. The most likely equipment to be decontaminated would be sections of the flexible receiver. Equipment removal will be performed in accordance with TWRS ALARACT Demonstration 13, Installation, Operation, and Removal of Tank Equipment.

In Tank Equipment Installation
Equipment installation will be performed in accordance with TWRS ALARACT Demonstration 13, Installation, Operation, and Removal of Tank Equipment.

WASTE STAGING AND RETRIEVAL PROCESS OVERVIEW
Mixer pumps will be operated to maintain waste uniformity during staging and to mix the waste for a period before and during transfer. As required by operational directives, mixer pumps will be operated until waste samples verify that adequate mixing has been achieved. Waste samples will be collected in accordance with TWRS ALARACT Demonstration 7, Tank Waste Grab Sampling. If dilution/conditioning is needed, the pH and temperature of the diluents will be adjusted by means of a caustic supply system. Once the waste is verified acceptable, the transfer lines will be preheated/flushed with water, and the waste transfer to the treatment facility will follow. After the transfer, the lines will be flushed again with water.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	1.60E-02	Am - 241	8.20E+04	Am - 243	3.90E+01
Ba - 137 m	1.00E+07	C - 14	2.20E+01	Cd - 113 m	1.00E+03
Cm - 242	7.00E+01	Cm - 243	8.90E+00	Cm - 244	2.10E+02
Co - 60	2.40E+03	Cs - 134	2.90E+03	Cs - 137	1.10E+07
Eu - 152	8.30E+02	Eu - 154	3.60E+04	Eu - 155	3.40E+04
H - 3	2.20E+02	I - 129	1.30E+00	Nb - 93 m	4.20E+02
Ni - 59	1.00E+02	Ni - 63	9.80E+03	Np - 237	4.50E+01
Pa - 231	1.40E-01	Pu - 238	4.80E+02	Pu - 239	5.30E+03
Pu - 240	1.40E+03	Pu - 241	2.40E+04	Pu - 242	1.50E-01

Ra - 226	7.20E-04	Ra - 228	1.60E-01	Ru - 106	1.90E+02
Sb - 125	1.10E+04	Se - 79	8.10E+00	Sm - 151	7.90E+05
Sn - 126	3.40E+01	Sr - 90	1.80E+07	Tc - 99	2.40E+03
Th - 229	6.70E-04	Th - 232	1.60E-01	U - 232	1.70E-02
U - 233	8.90E-01	U - 234	5.40E+00	U - 235	2.20E-01
U - 236	4.00E-01	U - 238	4.20E+00	Y - 90	1.80E+07
Zr - 93	7.00E+02				

4) TANK VENTILATION AND EMISSIONS CONTROL SYSTEM

The existing ventilation and emissions control systems for the 241-AY/AZ Tank Farm will be used during the mixing and transferring of waste in the AY and AZ tanks. The tank farm exhaust system provides ventilation for all AZ and AY tank primary vapor spaces. The system removes heat, water vapor, and particulates, and maintains a negative pressure on the tanks. The emission point is the 296-A-42 Stack.

Inlet air for the AZ and AY tanks is provided through the inlet air filters. Air is exhausted from each tank independently through 10.5-in.-diameter exhaust ducts. The ducts connect to a 55 ft high stack (16.76 m). The exhaust station consists of two filtration subsystems and the stack. Either subsystem can collectively ventilate all the tanks together at a maximum flow rate of approximately 1000 ft^3/minute (approximately 0.42 m3/sec). Only one system operates at a time, while the other remains in standby as a backup.

Each filtration subsystem consists of a condenser, high-efficiency mist eliminator, heater, and two HEPA filters in series. Each HEPA filter is rated for 1000 ft3/minute and is equipped with fluid seals. The HEPAs are individually tested annually (in accordance with ASME N510, Testing of Nuclear Air Treatment System) to a minimum efficiency of 99.95% for the removal of particulates with a median diameter of 0.3 microns.

5) MONITORING DURING CONSTRUCTION ACTIVITIES

During soil excavation activities, periodic confirmatory monitoring (PCM) as described in ALARACT 5, will verify low emissions. If the regulated guzzler is used, PCM will be performed as required by the guzzler NOC.

During pipe cutting activities surface contamination surveys will constitute the PCM to verify low emissions. If a portable/temporary radioactive air emission unit or a HEPA filtered vacuum radioactive air emission unit is used, PCM will be performed as required by these NOCs.

During pit work activities, PCM as described in ALARACT 14 will verify low emissions. If a portable/temporary radioactive air emission unit or a HEPA filtered vacuum radioactive air emission unit is used, PCM will be performed as required by these NOCs.

During in tank equipment removal and installation activities surface contamination surveys, as described in ALARACT Demonstration 13, TWRS ALARACT Demonstration for Installation, Operation and Removal of Tank Equipment (HNF-4327) will constitute the PCM to verify low emissions. If a portable/temporary radioactive air emission unit or a HEPA filtered vacuum radioactive air emission unit is used, PCM will be performed as required by these NOCs.

6) MONITORING DURING OPERATIONS

Continuous monitoring will be obtained through use of the 241-AZ/AY Tank Farms existing sampling and monitoring system (296-A-42 stack). Samples will be collected approximately every 2 weeks and will include representative operation of the waste retrieval systems. The samples will be analyzed, at a minimum, for 90Sr, 137Cs, and 241Am, each of which constitutes 10%, or more, of the EDE. While in operation, the 296-A-42 record sampler instrumentation will be calibrated annually in accordance with approved procedures, and system inspections will be performed daily to ensure instrumentation is operating within specified parameters.

The sampling and monitoring system consists of a continuous sampling record sampler and a continuous air monitor

(CAM). The system collects samples at a variable flow rate, depending upon the stack effluent velocity. The system has been designed to match air velocities entering the sample probe with that of the duct in which it is installed. For example for stack flow rates of 400 and 1000 ft^3/minute, the sampling system will collect samples at 0.7 and 1.7 ft^3/minute, respectively. In this way, the design complies with those requirements specified in ANSI N13.1-1969, Guide to Sampling Airborne Radioactive Materials in Nuclear Facilities. There are two sample probes (one for the CAM, one for the sampler) located in the exhaust duct in compliance with the 40 CFR 60 Appendix A, Guide to Sampling Airborne Radioactive Materials in Nuclear Facilities, Method 1A requirement. The probe nozzles are configured in accordance with ANSI N13.1-1969. The sample flow totaling instruments are well within the 2.0% accuracy described by Method 2A. The record sampler's collection efficiency during normal operations ranges between 55% (for stack flows of 1000 ft^3/minute) and 63% (for stack flows of 400 ft^3/minute) for penetration of 10-micron particles (from Deposition 4.0 calculations). In addition, stack flow totalizers are installed that have been certified accurate to the requirements of 40 CFR 52, Appendix E.

Emission Unit ID: 94

200E P-241A106-001

241-A-106

This is a MINOR, PASSIVELY ventilated emission unit.

241-A TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously

Emission Unit ID: 96

200E P-204AR-001

296-A-26

This is a MINOR, ACTIVELY ventilated emission unit.

204 AR Building

Emission Unit Information

Stack Height: 27.00 ft. 8.23 m. Stack Diameter 1.17 ft. 0.36 m.

Average Stack Effluent Temperature: 78 degrees Fahrenheit. 26 degrees Celsius.

Average Stack ExhaustVelocity: 25.50 ft/second. 7.77 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	2	1 filter is located on the line directly to the catch tank. 2nd filter is on the shared/main line for the facility and catch tank
	Fan	1	
	Deentrainer	2	1 located just upstream of each HEPA filter
	Heater	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	1 week sample/4 times per year (if operated other than for HEPA filter testing).

Sampling Requirements Record Sample (if operated other than for HEPA filter testing)

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a building/facility exhauster that is used to ventilate building and facility operations such as but not limited to process vessels, contaminated rooms, catch tank, abandoned facilities awaiting decommissioning, and vaults that support tank farm operations, maintenance, and surveillance activities for tank farms. The exhauster can be used to support current surveillance, maintenance activities, operations or decommissioning, decontamination, and cleanup activities within the building/facility. Many of the activities other than normal surveillance, maintenance, and operation support will be or are regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is a building/facility exhauster ventilation system that currently inactive. The building is currently not used for operational activities: exhauster is operated for purpose of annual aerosol testing of HEPA filters.

Emission Unit ID: 97

200W P-241U103-001

241-U-103

This is a MINOR, PASSIVELY ventilated emission unit.

241-U TANK FARM

Emission Unit Information

Stack Height: 15.00 ft. 4.57 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 1.91 ft/second. 0.58 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

An alternative sampling method for breather filters with stack extensions may be performed by removing the test port cap downstream of the HEPA filter, surveying the cap and inserting smear media (e.g. swab, masslin) in the opening and smearing the interior ducting surface on the opposite side of the test port cap opening. Breather filters shall be aerosol tested every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 98

200W P-241U108-001

241-U-108

This is a MINOR, PASSIVELY ventilated emission unit.

241-U TANK FARM

Emission Unit Information

Stack Height: 15.00 ft. 4.57 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 1.91 ft/second. 0.58 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

An alternative sampling method for breather filters with stack extensions may be performed by removing the test port cap downstream of the HEPA filter, surveying the cap and inserting smear media (e.g. swab, masslin) in the opening and smearing the interior ducting surface on the opposite side of the test port cap opening. Breather filters shall be aerosol tested every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 99

200W P-241U107-001

241-U-107

This is a MINOR, PASSIVELY ventilated emission unit.

241-U TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 100

200W P-241U203-001

241-U-203

This is a MINOR, PASSIVELY ventilated emission unit.

241-U TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 101

200W P-241U102-001

241-U-102

This is a MINOR, PASSIVELY ventilated emission unit.

241-U TANK FARM

Emission Unit Information

Stack Height: 15.00 ft. 4.57 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 1.91 ft/second. 0.58 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

An alternative sampling method for breather filters with stack extensions may be performed by removing the test port cap downstream of the HEPA filter, surveying the cap and inserting smear media (e.g. swab, masslin) in the opening and smearing the interior ducting surface on the opposite side of the test port cap opening. Breather filters shall be aerosol tested every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 102

200W P-241U201-001

241-U-201

This is a MINOR, PASSIVELY ventilated emission unit.

241-U TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 103

200W P-241U101-001

241-U-101

This is a MINOR, PASSIVELY ventilated emission unit.

241-U TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 104

200W P-241U204-001

241-U-204

This is a MINOR, PASSIVELY ventilated emission unit.

241-U TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 105

200W P-241U109-001

241-U-109

This is a MINOR, PASSIVELY ventilated emission unit.

241-U TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 106

200W P-241U202-001

241-U-202

This is a MINOR, PASSIVELY ventilated emission unit.

241-U TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 107

200W P-241U111-001

241-U-111

This is a MINOR, PASSIVELY ventilated emission unit.

241-U TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 108

200W P-241U112-001

241-U-112

This is a MINOR, PASSIVELY ventilated emission unit.

241-U TANK FARM

Emission Unit Information

Stack Height: 15.00 ft. 4.57 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 1.91 ft/second. 0.58 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

An alternative sampling method for breather filters with stack extensions may be performed by removing the test port cap downstream of the HEPA filter, surveying the cap and inserting smear media (e.g. swab, masslin) in the opening and smearing the interior ducting surface on the opposite side of the test port cap opening. Breather filters shall be aerosol tested every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 109

200W P-241U104-001

241-U-104

This is a MINOR, PASSIVELY ventilated emission unit.

241-U TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 110

200W P-241U110-001

241-U-110

This is a MINOR, PASSIVELY ventilated emission unit.

241-U TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 111

200W P-241U106-001

241-U-106

This is a MINOR, PASSIVELY ventilated emission unit.

241-U TANK FARM

Emission Unit Information

Stack Height: 15.00 ft. 4.57 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 1.91 ft/second. 0.58 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

An alternative sampling method for breather filters with stack extensions may be performed by removing the test port cap downstream of the HEPA filter, surveying the cap and inserting smear media (e.g. swab, masslin) in the opening and smearing the interior ducting surface on the opposite side of the test port cap opening. Breather filters shall be aerosol tested every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 112

200W P-241U105-001

241-U-105

This is a MINOR, PASSIVELY ventilated emission unit.

241-U TANK FARM

Emission Unit Information

Stack Height: 15.00 ft. 4.57 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 1.91 ft/second. 0.58 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

An alternative sampling method for breather filters with stack extensions may be performed by removing the test port cap downstream of the HEPA filter, surveying the cap and inserting smear media (e.g. swab, masslin) in the opening and smearing the interior ducting surface on the opposite side of the test port cap opening. Breather filters shall be aerosol tested every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 113

200W P-241TX117-001

241-TX-117

This is a MINOR, PASSIVELY ventilated emission unit.

241-TX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 114

200W P-241TX107-001

241-TX-107

This is a MINOR, PASSIVELY ventilated emission unit.

241-TX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 115

200W P-241TX112-001

241-TX-112

This is a MINOR, PASSIVELY ventilated emission unit.

241-TX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 116

200W P-241TX105-001

241-TX-105

This is a MINOR, PASSIVELY ventilated emission unit.

241-TX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 117

200W P-241TX113-001

241-TX-113

This is a MINOR, PASSIVELY ventilated emission unit.

241-TX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 118

200W P-241TX104-001

241-TX-104

This is a MINOR, PASSIVELY ventilated emission unit.

241-TX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 119

200W P-241TX114-001

241-TX-114

This is a MINOR, PASSIVELY ventilated emission unit.

241-TX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 120

200W P-241TX103-001

241-TX-103

This is a MINOR, PASSIVELY ventilated emission unit.

241-TX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 121

200W P-241TX110-001

241-TX-110

This is a MINOR, PASSIVELY ventilated emission unit.

241-TX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 122

200W P-241TX116-001

241-TX-116

This is a MINOR, PASSIVELY ventilated emission unit.

241-TX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 123

200W P-241TX108-001

241-TX-108

This is a MINOR, PASSIVELY ventilated emission unit.

241-TX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 124

200W P-241TX102-001

241-TX-102

This is a MINOR, PASSIVELY ventilated emission unit.

241-TX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 125

200W P-241TX115-001

241-TX-115

This is a MINOR, PASSIVELY ventilated emission unit.

241-TX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 126

200W P-241TX106-001

241-TX-106

This is a MINOR, PASSIVELY ventilated emission unit.

241-TX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 127

200W P-241TX101-001

241-TX-101

This is a MINOR, PASSIVELY ventilated emission unit.

241-TX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 128

200W P-241TX109-001

241-TX-109

This is a MINOR, PASSIVELY ventilated emission unit.

241-TX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 129

200W P-241TX118-001

241-TX-118

This is a MINOR, PASSIVELY ventilated emission unit.

241-TX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 130

200W P-241TX111-001

241-TX-111

This is a MINOR, PASSIVELY ventilated emission unit.

241-TX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 131

200W P-241S104-001

241-S-104

This is a MINOR, PASSIVELY ventilated emission unit.

241-S TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 132

200W P-241S101-001

241-S-101

This is a MINOR, PASSIVELY ventilated emission unit.

241-S TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 133

200W P-241S103-001

241-S-103

This is a MINOR, PASSIVELY ventilated emission unit.

241-S TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 134

200W P-241S102-001

241-S-102

This is a MINOR, PASSIVELY ventilated emission unit.

241-S TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 135

200W P-241S108-001

241-S-108

This is a MINOR, PASSIVELY ventilated emission unit.

241-S TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 136

200W P-241S109-001

241-S-109

This is a MINOR, PASSIVELY ventilated emission unit.

241-S TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 137

200W P-241S105-001

241-S-105

This is a MINOR, PASSIVELY ventilated emission unit.

241-S TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 138

200W P-241S110-001

241-S-110

This is a MINOR, PASSIVELY ventilated emission unit.

241-S TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 139

200W P-241S106-001

241-S-106

This is a MINOR, PASSIVELY ventilated emission unit.

241-S TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 140

200W P-241S107-001

241-S-107

This is a MINOR, PASSIVELY ventilated emission unit.

241-S TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 141

200E P-242A-001

296-A-21

This is a MINOR, ACTIVELY ventilated emission unit.

242-A Evaporator

Emission Unit Information

Stack Height: 22.00 ft. 6.71 m. Stack Diameter 3.50 ft. 1.07 m.

Average Stack Effluent Temperature: 117 degrees Fahrenheit. 47 degrees Celsius.

Average Stack ExhaustVelocity: 37.70 ft/second. 11.49 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Prefilter	1	2 parallel flow paths with 1 bank per flow path
	HEPA	2	2 parallel flow paths with 2 banks per flow path
	Fan	1	2 parallel flow paths (Minimum 1 parallel path in operation)

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	1 week sample/4 times per year

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a building/facility exhauster that is used to ventilate building and facility operations such as but not limited to process vessels, contaminated rooms, cells, glove boxes, hoods, abandoned facilities awaiting decommissioning, and vaults that support tank farm operations, maintenance, and surveillance activities for tank farms. The exhauster can be used to support current surveillance, maintenance activities, operations or decommissioning, decontamination, and cleanup activities within the building/facility. Many of the activities other than normal surveillance, maintenance, and operation support will be or are regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is a building/facility exhauster ventilation system that operates intermittently.

Emission Unit ID: 142

200E P-242A-002

296-A-22

This is a MINOR, ACTIVELY ventilated emission unit.

242-A Evaporator

Emission Unit Information

Stack Height: 63.58 ft. 19.38 m. Stack Diameter 0.67 ft. 0.20 m.

Average Stack Effluent Temperature: 120 degrees Fahrenheit. 49 degrees Celsius.

Average Stack ExhaustVelocity: 33.43 ft/second. 10.19 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Heater	1	
	HEPA	2	In series
	Fan	1	Fan operates during 242-A processing.
	Prefilter	1	
	Deentrainer	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	During campaigns: 40 CFR 60, Appendix A, Method 2; 40 CFR 61, Appendix B, Method 114: During non-campaigns: 40 CFR 61, Appendix B, Method 114(3).	Campaign: TOTAL ALPHA, TOTAL BETA, 137Cs, 90Sr, 239Pu, 238Pu, and 241Am. Non-Campaign: Total Alpha, Total Beta.	One week sample per quarter, and continuous sampling during campaign.

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a Vessel Vent exhauster that is used to ventilate the process equipment including the evaporator vessel, C-100 tank and associated piping. The emission unit is a building/facility exhauster ventilation system that operates intermittently.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operation of the 242-A Evaporator emission unit 296-A-22 (Replaces NOC 651)	AIR 12-306	2/23/2012	824

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.00E-07 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.00E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The 242-A Evaporator facility is used to reduce the volume of waste solutions that do not self-boil, and thus reduce the number of underground double-shell tanks required for waste storage. The 242-A Evaporator employs a conventional forced-circulation, vacuum evaporation system to concentrate radioactive waste solutions.

Principal process components of the evaporator system are located in the 242-A Building. They include the reboiler, vapor-liquid separator, recirculation pump and pipe loop, slurry product pump, condensers, and vessel ventilation system.

The evaporator system receives a mixed blend feed from the feed tank. The feed consists of unprocessed and processed waste and recycled liquid that are removed from storage tanks after solids have settled. The feed is pumped into the recirculation line and blended with the main product slurry stream, which flows to the reboiler via the recirculation pump. The mixture is heated in the reboiler. The vapor liquid separator is maintained at a reduced pressure. Under this reduced pressure, a fraction of the water in the heated slurry flashes to steam and is drawn through two wire mesh deentrainer pads into a vapor line that leads to the primary condenser. As evaporation takes place in the separator vessel, the slurry becomes concentrated. When the process solution has been concentrated to the parameters specified by the campaigns process memo, a fraction is withdrawn from the upper recirculation line, upstream of the feed addition point, and is either gravity drained or pumped by the slurry pump to underground storage tanks.

Vapors removed from the vapor-liquid separator via the vapor line are condensed and routed to the condensate collection tank. The process condensate is discharged to the Liquid Effluent Retention Facility (LERF). Steam condensate is continuously monitored for excessive radiation, pH, and conductivity, and then discharged from the building to the 200 Area Treated Effluent Disposal Facility (TEDF). Upon detection of radioactive contamination, the radiation monitor will automatically divert the steam condensate stream to the feed tank. Cooling water from the condensers, which is also continuously monitored for excessive radiation, pH, and conductivity, is also discharged to the 200 Area TEDF. This used cooling water stream cannot be diverted, thus, if contamination is detected, an evaporator shutdown is required. Non-condensable vapors from the evaporator are filtered and discharged to the atmosphere via the vessel vent system. This system consists of a deentrainment pad, prefilter, heater, high-efficiency filter assembly, and vessel vent exhauster.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Am - 241	3.50E+04	C - 14	1.80E+05	Cm - 244	4.50E+02
Co - 60	4.20E+04	Cs - 134	5.20E+05	Cs - 137	5.20E+07
Eu - 154	1.70E+05	Eu - 155	2.40E+05	I - 129	9.10E+01
Nb - 94	3.40E+03	Pu - 238	4.50E+01	Pu - 239/240	5.60E+03
Pu - 241	5.20E+05	Ra - 226	1.10E+03	Ru - 106	1.80E+06
Se - 79	2.70E+03	Sr - 90	7.70E+06	Tc - 99	7.00E+04

Emission Unit ID: 146

200E P-242AL44-001

LERF Basin #44

This is a MINOR, PASSIVELY ventilated emission unit.

Liquid Effluent Retention Facility (LERF)

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 0.17 ft. 0.05 m.

Average Stack Effluent Temperature: 77 degrees Fahrenheit. 25 degrees Celsius.

Average Stack ExhaustVelocity: 32.50 ft/second. 9.91 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Charcoal filter	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	Air - every 2 weeks continuous/deposition - annually

Sampling Requirements Near Field Environment Sampling

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Operations at LERF involve receipt and storage of wastewaters on the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operation of the Liquid Effluent Retention Facility and the 200 Area Effluent Treatment Facility (Replaced NOC ID 690)	AIR 12-305	2/23/2012	822

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 4.59E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The operation of the Liquid Effluent Retention Facility/200 Area Effluent Treatment Facility (LERF/ETF), which includes the load-in station and load-in station filter skid.

Incoming wastewater can be added directly to the ETF process or received at the LERF or the load-in station. The LERF is allowed to receive wastewaters via underground pipelines from generator facilities, via pipeline from the load-in station, or directly through a series of access ports located at each basin. The load-in station accommodates wastewater receipt via container (e.g., drums, carboys, tankers, etc.).

The ETF wastewater treatment process shall be comprised of a main treatment train and a secondary treatment train. The main treatment train shall provide for the removal or destruction of dangerous and radioactive contaminants from incoming wastewater. After treatment, the effluent shall be transferred to the verification tanks where it is sampled then discharged. Treated effluent is comparable to deionized water and contains tritium, which cannot be economically removed. Contaminants removed in the main treatment train are concentrated in the secondary treatment train. The contaminants shall be heated and dried to a powder form or removed as sludge and dried by the addition of absorbents. These residues shall be containerized and

disposed onsite as radioactive waste.

Additional approval of the process for this activity is contained in the following Conditions/Limitations.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 8.48E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	4.45E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Alpha release rate is assumed to be Pu-239/240. The release rate assumes two full basins and the addition of waste water equivalent to ETF's annual operating capacity. In addition to the isotopes specifically listed as approved under this NOC, other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta-gamma constituents.			
Am - 241		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
B/G - 0	2.95E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Beta/Gamma release rate is assumed to be Sr-90/Cs-137. The release rate assumes two full basins and the addition of waste water equivalent to ETF's annual operating capacity. In addition to the isotopes specifically listed as approved under this NOC, other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta-gamma constituents.			
C - 14		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ce - 144		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Cm - 244		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Co - 60		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Cs - 134		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Eu - 154		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Eu - 155		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
H - 3		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
I - 129		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
K - 40		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Mn - 54		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Na - 22		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Nb - 94		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Np - 237		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			

Pu - 238	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 241	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ra - 226	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ru - 106	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sb - 125	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Se - 79	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 99	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 233	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 234	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 235	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 236	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 238	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zn - 65	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zr - 95	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	C - 14	Ce - 144	Cm - 244	Co - 60
Cs - 134	Cs - 137	Eu - 154	Eu - 155	H - 3
I - 129	K - 40	Mn - 54	Na - 22	Nb - 94
Np - 237	Pu - 238	Pu - 239/240	Pu - 241	Ra - 226
Ru - 106	Sb - 125	Se - 79	Sr - 90	Tc - 99
U - 233	U - 234	U - 235	U - 236	U - 238
Zn - 65	Zr - 95			

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) The emissions for this activity from the all LERF basins and diffuse/fugitive emissions are limited to 4.59E-02 mrem/year unabated and abated.

5) The LERF is approved to provide temporary storage, as well as flow and pH equalization, for wastewaters prior to treatment at ETF. The LERF shall consist of three high-density polyethylene double-lined basins, each with an operating capacity of 29.5 million liters. Each basin has a leachate collection system located between the primary and secondary composite liner systems and is also equipped with a floating low-density polyethylene cover firmly attached to the sidewalls to prevent unwanted material from entering the basins and to avoid evaporation of wastewater. To prevent the buildup of gas, each basin is passively vented through vent pipes. Gases exiting through a vent pipe shall be channeled through a carbon adsorption filter.

Emission Unit ID: 147

200E P-242AL43-001

LERF Basin #43

This is a MINOR, PASSIVELY ventilated emission unit.

Liquid Effluent Retention Facility (LERF)

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 0.17 ft. 0.05 m.

Average Stack Effluent Temperature: 77 degrees Fahrenheit. 25 degrees Celsius.

Average Stack ExhaustVelocity: 32.50 ft/second. 9.91 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Charcoal filter	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	Air - every 2 weeks continuous/deposition - annually

Sampling Requirements Near Field Environment Sampling

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Operations at LERF involve receipt and storage of wastewaters on the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operation of the Liquid Effluent Retention Facility and the 200 Area Effluent Treatment Facility (Replaced NOC ID 690)	AIR 12-305	2/23/2012	822

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 4.59E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The operation of the Liquid Effluent Retention Facility/200 Area Effluent Treatment Facility (LERF/ETF), which includes the load-in station and load-in station filter skid.

Incoming wastewater can be added directly to the ETF process or received at the LERF or the load-in station. The LERF is allowed to receive wastewaters via underground pipelines from generator facilities, via pipeline from the load-in station, or directly through a series of access ports located at each basin. The load-in station accommodates wastewater receipt via container (e.g., drums, carboys, tankers, etc.).

The ETF wastewater treatment process shall be comprised of a main treatment train and a secondary treatment train. The main treatment train shall provide for the removal or destruction of dangerous and radioactive contaminants from incoming wastewater. After treatment, the effluent shall be transferred to the verification tanks where it is sampled then discharged. Treated effluent is comparable to deionized water and contains tritium, which cannot be economically removed. Contaminants removed in the main treatment train are concentrated in the secondary treatment train. The contaminants shall be heated and dried to a powder form or removed as sludge and dried by the addition of absorbents. These residues shall be containerized and

disposed onsite as radioactive waste.

Additional approval of the process for this activity is contained in the following Conditions/Limitations.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 8.48E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	4.45E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Alpha release rate is assumed to be Pu-239/240. The release rate assumes two full basins and the addition of waste water equivalent to ETF's annual operating capacity. In addition to the isotopes specifically listed as approved under this NOC, other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta-gamma constituents.			
Am - 241		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
B/G - 0	2.95E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Beta/Gamma release rate is assumed to be Sr-90/Cs-137. The release rate assumes two full basins and the addition of waste water equivalent to ETF's annual operating capacity. In addition to the isotopes specifically listed as approved under this NOC, other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta-gamma constituents.			
C - 14		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ce - 144		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Cm - 244		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Co - 60		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Cs - 134		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Eu - 154		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Eu - 155		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
H - 3		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
I - 129		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
K - 40		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Mn - 54		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Na - 22		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Nb - 94		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Np - 237		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			

Pu - 238	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 241	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ra - 226	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ru - 106	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sb - 125	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Se - 79	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 99	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 233	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 234	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 235	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 236	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 238	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zn - 65	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zr - 95	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	C - 14	Ce - 144	Cm - 244	Co - 60
Cs - 134	Cs - 137	Eu - 154	Eu - 155	H - 3
I - 129	K - 40	Mn - 54	Na - 22	Nb - 94
Np - 237	Pu - 238	Pu - 239/240	Pu - 241	Ra - 226
Ru - 106	Sb - 125	Se - 79	Sr - 90	Tc - 99
U - 233	U - 234	U - 235	U - 236	U - 238
Zn - 65	Zr - 95			

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) The emissions for this activity from the all LERF basins and diffuse/fugitive emissions are limited to 4.59E-02 mrem/year unabated and abated.

5) The LERF is approved to provide temporary storage, as well as flow and pH equalization, for wastewaters prior to treatment at ETF. The LERF shall consist of three high-density polyethylene double-lined basins, each with an operating capacity of 29.5 million liters. Each basin has a leachate collection system located between the primary and secondary composite liner systems and is also equipped with a floating low-density polyethylene cover firmly attached to the sidewalls to prevent unwanted material from entering the basins and to avoid evaporation of wastewater. To prevent the buildup of gas, each basin is passively vented through vent pipes. Gases exiting through a vent pipe shall be channeled through a carbon adsorption filter.

Emission Unit ID: 148

200E P-242AL42-001

LERF Basin #42

This is a MINOR, PASSIVELY ventilated emission unit.

Liquid Effluent Retention Facility (LERF)

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 0.17 ft. 0.05 m.

Average Stack Effluent Temperature: 77 degrees Fahrenheit. 25 degrees Celsius.

Average Stack ExhaustVelocity: 32.50 ft/second. 9.91 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Charcoal filter	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	Air - every 2 weeks continuous/deposition - annually

Sampling Requirements Near FieldEnvironment Sampling

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Operations at LERF involve receipt and storage of wastewaters on the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operation of the Liquid Effluent Retention Facility and the 200 Area Effluent Treatment Facility (Replaced NOC ID 690)	AIR 12-305	2/23/2012	822

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 4.59E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The operation of the Liquid Effluent Retention Facility/200 Area Effluent Treatment Facility (LERF/ETF), which includes the load-in station and load-in station filter skid.

Incoming wastewater can be added directly to the ETF process or received at the LERF or the load-in station. The LERF is allowed to receive wastewaters via underground pipelines from generator facilities, via pipeline from the load-in station, or directly through a series of access ports located at each basin. The load-in station accommodates wastewater receipt via container (e.g., drums, carboys, tankers, etc.).

The ETF wastewater treatment process shall be comprised of a main treatment train and a secondary treatment train. The main treatment train shall provide for the removal or destruction of dangerous and radioactive contaminants from incoming wastewater. After treatment, the effluent shall be transferred to the verification tanks where it is sampled then discharged. Treated effluent is comparable to deionized water and contains tritium, which cannot be economically removed. Contaminants removed in the main treatment train are concentrated in the secondary treatment train. The contaminants shall be heated and dried to a powder form or removed as sludge and dried by the addition of absorbents. These residues shall be containerized and

disposed onsite as radioactive waste.

Additional approval of the process for this activity is contained in the following Conditions/Limitations.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 8.48E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	4.45E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Alpha release rate is assumed to be Pu-239/240. The release rate assumes two full basins and the addition of waste water equivalent to ETF's annual operating capacity. In addition to the isotopes specifically listed as approved under this NOC, other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta-gamma constituents.

Am - 241		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

B/G - 0	2.95E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Beta/Gamma release rate is assumed to be Sr-90/Cs-137. The release rate assumes two full basins and the addition of waste water equivalent to ETF's annual operating capacity. In addition to the isotopes specifically listed as approved under this NOC, other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta-gamma constituents.

C - 14		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ce - 144		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cm - 244		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Co - 60		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 134		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 154		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 155		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

H - 3		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 129		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

K - 40		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mn - 54		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Na - 22		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 94		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Np - 237		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 238	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 241	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ra - 226	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ru - 106	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sb - 125	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Se - 79	Liquid/Particulate Solid	

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 99	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 233	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 234	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 235	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 236	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 238	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zn - 65	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zr - 95	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	C - 14	Ce - 144	Cm - 244	Co - 60
Cs - 134	Cs - 137	Eu - 154	Eu - 155	H - 3
I - 129	K - 40	Mn - 54	Na - 22	Nb - 94
Np - 237	Pu - 238	Pu - 239/240	Pu - 241	Ra - 226
Ru - 106	Sb - 125	Se - 79	Sr - 90	Tc - 99
U - 233	U - 234	U - 235	U - 236	U - 238
Zn - 65	Zr - 95			

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) The emissions for this activity from the all LERF basins and diffuse/fugitive emissions are limited to 4.59E-02 mrem/year unabated and abated.

5) The LERF is approved to provide temporary storage, as well as flow and pH equalization, for wastewaters prior to treatment at ETF. The LERF shall consist of three high-density polyethylene double-lined basins, each with an operating capacity of 29.5 million liters. Each basin has a leachate collection system located between the primary and secondary composite liner systems and is also equipped with a floating low-density polyethylene cover firmly attached to the sidewalls to prevent unwanted material from entering the basins and to avoid evaporation of wastewater. To prevent the buildup of gas, each basin is passively vented through vent pipes. Gases exiting through a vent pipe shall be channeled through a carbon adsorption filter.

Emission Unit ID: 156

200E P-296A028-001

296-A-28

This is a MINOR, ACTIVELY ventilated emission unit.

241-AW TANK FARM

Emission Unit Information

Stack Height: 23.50 ft. 7.16 m. Stack Diameter 2.00 ft. 0.61 m.

Average Stack Effluent Temperature: 120 degrees Fahrenheit. 49 degrees Celsius.

Average Stack ExhaustVelocity: 31.34 ft/second. 9.55 m/second.

Abatement Technology

ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	2	2 filter in series for each train, trains may be operated independently or together
	Fan	1	1 for each train, trains may be operated independently or together
	Deentrainer	1	1 for each train
	Heater	1	1 for each train

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	1 week sample/4 times per year

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a DST annulus exhauster used to support tank farm operations and ventilates the annuli of DSTs 241-AW Tank Farm. The tanks store radioactive waste until the waste is retrieved, treated, and properly disposed under the applicable federal and state regulations and/or permits. The annulus is the space between the inner wall and outer wall of the tank, and is used for leak detection. The emission unit operates intermittently.

Emission Unit ID: 163

200W P-242S-001

296-S-18

This is a MINOR, ACTIVELY ventilated emission unit.

242-S Evaporator

Emission Unit Information

Stack Height: 22.00 ft. 6.71 m. Stack Diameter 3.50 ft. 1.07 m.

Average Stack Effluent Temperature: 117 degrees Fahrenheit. 47 degrees Celsius.

Average Stack ExhaustVelocity: 5.80 ft/second. 1.77 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	2	2 in parallel with 2 in series (1 fan abandoned in place, only one flow path is available for operations)
	Fan	1	2 parallel flow paths (1 fan abandoned in place, only one flow path is available for operations)

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	1 week sample/4 times per year

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a building/facility exhauster that is used to ventilate building and facility operations such as but not limited to process vessels, contaminated rooms, cells, glove boxes, hoods, abandoned facilities awaiting decommissioning, and vaults that support tank farm operations, maintenance, and surveillance activities for tank farms. The exhauster can be used to support current surveillance, maintenance activities, operations or decommissioning, decontamination, and cleanup activities within the building/facility. Many of the activities other than normal surveillance, maintenance, and operation support will be or are regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is a building/facility exhauster ventilation system that operates intermittently.

Emission Unit ID: 174

200E P-296A020-001

296-A-20

This is a MINOR, ACTIVELY ventilated emission unit.

241-AZ TANK FARM

Emission Unit Information

Stack Height: 15.70 ft. 4.79 m. Stack Diameter 2.00 ft. 0.61 m.

Average Stack Effluent Temperature: 68 degrees Fahrenheit. 20 degrees Celsius.

Average Stack ExhaustVelocity: 10.61 ft/second. 3.23 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	4	2 HEPA's in series for each train, 2 trains
	Fan	1	
	Radial Damper	1	Set to allow only 2,000 CFM (1,000 CFM per annulus)
	Heater	2	1 per train, 2 trains

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075[3]	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	1 week sample/4 times per year

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a DST annulus exhauster used to support tank farm operations by ventilating the annuli of DSTs 241-AZ-101 and 241-AZ-102. Each train of this emission unit supports an individual tank (Train A for 241-AZ-101 and Train B for 241-AZ-102). The tank stores radioactive waste until the waste is retrieved, treated, and properly disposed under the applicable federal and state regulations and/or permits. The annulus is the space between the inner wall and outer wall of the tank, and is used for leak detection. The emission unit operates intermittently.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-AZ Tank Farm Annulus Exhauster Operation (Replaces NOC 671)	AIR 12-308	2/23/2012	826

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.00E-07 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.00E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Exhausting the annulus of the 241-AZ-101 and 241-AZ-102 double-shell tanks (DSTs). The inner shell is constructed from heat-treated, stress-relieved steel. The outer shell is constructed of non-stress-relieved steel. The two shells are separated by a 2.5 foot annulus and are contained inside a concrete shell. The tanks have a usable waste volume of approximately 1,000,000 gallons each. The 296-A-20 stack exhauster ventilates the annular space of both 241-AZ-101and 241-AZ-102. The 241-AZ annulus exhaust fan draws outside air into a common

inlet filter assembly. The inlet filter assembly shall consists of two filter stages, a pre-filter bank, and an inlet filter. The air will pass through a distribution manifold and flow control valves into the annular space of both the 241-AZ-101 and 241-AZ-102 tanks, via underground ductwork. The flow control butterfly dampers can be adjusted to distribute air between the sides of the annuli and the air slots below the primary tanks. Exhaust air shall be drawn out of each annulus through underground ducting to individual aboveground exhaust HEPA filter banks (one for each tank), associated heaters, and isolation dampers. To allow for balancing flow between annuli or to allow isolation of an individual exhaust HEPA filter bank, dampers shall be installed upstream of each exhaust HEPA filter bank.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Alpha - 0	7.00E-05	Beta - 0	2.99E-02

4) Flow rate through the HEPA filters shall not exceed the manufactures rating of those HEPA filters.

Emission Unit ID: 175

300 EP-318-01-S

EP-318-01-S

This is a MINOR, ACTIVELY ventilated emission unit.

318 Building

Emission Unit Information

Stack Height: 29.00 ft. 8.84 m. Stack Diameter 0.82 ft. 0.25 m.

Average Stack Effluent Temperature: 73 degrees Fahrenheit. 23 degrees Celsius.

Average Stack ExhaustVelocity: 16.78 ft/second. 5.11 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
Exhaust Duct	HEPA	1	12" x 24" x 24" HEPA filter installed in the exhaust duct from the fume hood in Room 126.
Exhaust Duct	Exhaust Fan	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	Total Alpha and Total Beta	2 week sample/year

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities at the 318 Building support operations. This 29 foot tall stack exhausts emissions from room 126 through a single fume hood. Particulate emissions are sampled. The building contains areas for calibrating radiation survey instruments and processing personnel dosimeters.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Calibration and Development Activities in the Radiological Calibrations Laboratory (318 Building), Replaces NOC ID 681	AIR 12-304	2/23/2012	821

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.72E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   The 318 Building provides technical services such as internal dosimetry, external dosimetry, instrument calibration, repair, and testing in support of the Hanford and DOE missions. Research capabilities are also provided to support the development of radiation detection and measuring instruments.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 1.72E-05 mrem/year. Approved are the associated potential release rates (Curies/year) of:

   Alpha - 0 1.70E-06 Liquid/Particulate Solid WAC 246-247-030(21)(a)
   Alpha release rate based on Am-241/Pu-239.

   B/G - 0 4.50E-07 Liquid/Particulate Solid WAC 246-247-030(21)(a)
   Beta/gamma release rate based on Cs-137/Sr-90.

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	Ba - 133	Co - 57	Co - 60	Cs - 137
Eu - 154	Eu - 155	H - 3	Hg - 203	Kr - 85
Mn - 54	Na - 22	Pu - 239	Ra - 226	Rn - 220
Rn - 222	Sb - 125	Sr - 90	Th - 228	U(Nat) - 0
Y - 88				

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) HEPA filters shall be individually tested, annually, to the requirements of ASME N510, and shall have a minimum efficiency of 99.95%.

5) The radionuclides with potential to emit are limited to the following physical forms:

Gas: H-3, Kr-85, Rn-220, Rn-222
Solid: Am-241, Ba-133, Co-57, Co-60, Cs-137, Eu-154, Eu-155, Hg-203, Mn-54, Na-22, Pu-239, Sb-125, Sr-90, U(Nat), Y-88,
Particulates: Ra-226,Th-228

Emission Unit ID: 193

200W P-296W004 001

296-W-4

This is a MAJOR, ACTIVELY ventilated emission unit.

Waste Receiving and Processing Facility (WRAP)

Emission Unit Information

Stack Height: 47.00 ft. 14.33 m. Stack Diameter 2.63 ft. 0.80 m.

Average Stack Effluent Temperature: 70 degrees Fahrenheit. 21 degrees Celsius.

Average Stack ExhaustVelocity: 44.30 ft/second. 13.50 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
1	HEPA	2	Redundant systems in parallel consisting of two banks each
2	HEPA	2	Redundant systems in parallel consisting of two banks each
	Prefilter	1	Prefilter for each HEPA housing
	Fan	2	2 parallel paths (1-in use, 1 in backup)

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 60 Appendix A, Method 2; 40 CFR 61, Appendix B, Method 114; 61.93(b)(2)(ii) ANSI N13.1	Each radionuclide that could contribute greater than 10% of the potential TEDE	Continuous, Collect samples biweekly at a minimum

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Operations at the WRAP Facility involve storage, treatment, and disposal of waste containers at the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Waste Receiving and Processing Facility (Replaces NOC 638)	AIR 12-301	2/23/2012	810

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.42E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) The mission of the WRAP includes examining, assaying, characterizing, treating, verifying, and repackaging solid radioactive waste material and mixed radioactive waste to enable treatment, storage, or disposal. The WRAP manages many categories of radioactive materials such as low-level waste (LLW), transuranic (TRU) waste, TRU mixed waste, and low-level mixed waste (LLMW) in contact-handled (CH) containers where the external surface dose rate does not exceed 200 mrem/hr. CH containers are defined as packages having surface dose rates of less than 200 mrem/hr. Remote–handled (RH) containers (i.e., containers where the external surface dose rate is equal to or greater than 200 mrem/hr) also are processed and stored at WRAP in accordance with the approved safety analysis.
Building 2336-W at the WRAP consists of the following areas
- Shipping and receiving area
- Nondestructive examination/nondestructive assay (NDE/NDA) area

- Process area
- Ancillary support areas, including the heating, ventilation, and air conditioning (HVAC), electrical room, mechanical room, and administration areas

See the following emission units for a detailed description of additional controls/conditions and limits under this approval.
EU 193 296-W-4; Waste Receiving and Processing Facility
EU 486 200 Area Diffuse/Fugitive; Waste Receiving and Processing Facility
Eu 1183 HSGS Analysis Facility

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 1.02E+02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

DE - 0	1.80E+04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

DE-Ci is a method of normalizing the exposure risk of the Various isotopes, where the DE-Ci are represented as PU-239.

4) PROCESS DESCRIPTION - General Overview of WRAP Operations
This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Numerous activities within the WRAP complex, which now includes the 2404-WA, 2404-WB, and 2404 WC buildings, have been and will be conducted as routine activities. TRU and mixed wastes are received and processed at WRAP. The 2404-WA and 2404-WB buildings are used for waste container storage activities. The 2404-WC buildings are used for storage as well as for conducting some head space gas sampling (HSGS) utilizing a darting process.
WRAP also has support buildings to perform NDE and NDA of larger waste containers. These units include:
• MO-610 - MOBILE BOX ASSAY UNIT(SuperHENC)
MO-610 is a mobile box assay unit used to determine the AEA-regulated material content of a waste container. The mobile trailer is approximately 3.0 m (10 ft) by 12.2 m (40 ft) and is used to assay containers smaller than 2 m3 in volume.
2406-W Facility - HIGH ENERGY REAL-TIME RADIOGRAPHY (HERTR)
The HERTR unit is a mobile unit used to perform NDE of containers smaller than 2 m3 (71 ft3). The HERTR unit consists of two components: (1) a shielded vault where containers are examined, and (2) an operator control area. The vault is a shielded enclosure of modular concrete construction. The operator control area is a mobile trailer that is located in close proximity to the unit. The NDE is used to examine dense waste items to indicate the physical appearance of the waste, identify if liquids are present, and/or other identified suspect nonconformance waste forms are present to support waste characterization and processing, confirmation, treatment, and/or certification.
THE FOLLOWING SECTIONS BRIEFLY DISCUSS THE GENERAL OPERATIONAL ACTIVITIES CONDUCTED AT WRAP:
PACKAGING AND REPACKAGING WASTE
Packaging and repackaging activities are performed for waste generated at WRAP as well as for onsite and offsite generators. The repackaging of waste supports waste acceptance criteria for other TSD facilities. For example: prohibited items from waste packages (i.e., waste items that do not meet acceptance criteria) are removed and either staged for later handling or repackaged using remote or manual methods, and must have a void space of less than 10%. To meet the less than 10% requirement, void filler can be added. Packaging and repackaging activities can include the following:
• Adding absorbent
• Aerosol can/drum puncturing
• Compositing/aggregating solids or liquids
• Over packing
• Pressure relief/release (e.g., aerosol cans, gas cylinders, drums, or other similar containers)
• Removing prohibited items
• Segregation
• Size reduction [e.g., cutting (jaws, saws)], bending, folding, crushing (e.g., drum crusher), shredding, compacting, or similar methods that do not have a higher extent of disruption]
• Sorting
• Void filling
Some packaging of waste (e.g., personal protective equipment, maintenance waste, types of innocuous waste), as a result of surveillances/inspections and maintenance that does have a potential to create minimal airborne contamination, can occur within the 2336-W Building when the 296-W-4 exhaust stack emission system is

shutdown.

VERIFICATION ACTIVITIES

Verification support activities are provided for waste and other materials that are generated on or off the Hanford Site. Verification activities can consist of the following:

• Chemical field screening
• Chemical sampling
• NDE
• Physical observation

SAMPLING ACTIVITIES

Sampling of waste generated by operations or by other onsite or offsite generators is performed. The purpose of sampling is to confirm process knowledge, characterize waste, support verification, and determine applicable land disposal requirements. Sampling can consist of the following:

• Container sampling (liquid, sludge, salt cake, composites).
• Disposition of sample returns (e.g., placement back into the parent container or another approved container)
• Field screening [e.g., pH paper, oxidizer, volatile organic analyses (VOAs), or similar screening parameters]
• Headspace gas analysis [typically in support of the WIPP Project]
• Obtaining a sample for analysis (e.g., grab, composite, , or other similar sampling techniques)
• Shipping/transferring the samples to an approved laboratory for analysis.

DECONTAMINATION ACTIVITIES

Decontamination activities have been performed since 1997. Materials, equipment, and waste can be decontaminated (e.g., free release, reduce the radiological levels, or other similar criteria) using a variety of methods. Decontamination at WRAP can consist of the following:

• Abrasive tools
• Brushing
• Cutting (e.g., removal by sawing, or other similar methods)
• Electrical repairs
• Immersion
• Rust/paint removal
• Scraping
• Washing (e.g., chemicals/detergents)

In addition, WRAP also performs decontamination of WRAP structures (e.g., building walls, glove boxes, or other similar surfaces) by any of the above methods.

MAINTENANCE ACTIVITIES

Because of the age of WRAP, current mission, future mission, support of the cleanup of the Hanford Site, as well as waste and other materials from offsite generators, a variety of preventative and/or repair maintenance activities are performed at WRAP. Some maintenance activities involve the shutdown of the 296-W-4 exhaust stack. Maintenance activities can consist of the following:

• Calibrations
• Crane maintenance (bridge crane, jib crane, A frame hoist)
• Electronic systems functional checks and repairs [e.g., continuous air monitors (CAMs), personnel contamination monitors (PCMs), or other similar equipment]
• Painting
• Rollup doors
• Scale systems
• Stack systems (e.g., fan lubes or other similar maintenance activities)
• Transformers

Certain maintenance activities (e.g., wire rope inspections, lubrication, functional tests, calibrations, or similar innocuous activities) that do have a potential to generate minimal airborne contamination can occur within the 2336-W Building when the 296-W-4 exhaust stack emission system is shutdown.

WASTE TREATMENT ACTIVITIES

WRAP is a treatment facility permitted by the Washington State Department of Ecology (Ecology). Treatment activities can consist of the following:

Amalgamation
Deactivation
• Solidification or absorption of free liquids
• Microencapsulation
• Macroencapsulation

• Neutralization of corrosives
• Volume Reduction of waste (e.g., compaction)

STORAGE ACTIVITIES

WRAP is permitted for waste storage by Ecology. WRAP also stores other materials (e.g., chemicals, equipment, or similar materials) to support operations. Storage can consist of the following:

• Container storage (e.g., boxes, drums, ten-drum over packs (TDOP), transuranic package transporter containers, standard waste boxes, or similar containers)
• Equipment storage
•NucFil replacement

NucFil replacement will be done by reinstalling a filter. This activity will consist of sealing an unvented glove bag over the damaged filter, replacing the filter and removing the glove bag. Negligible emissions are assumed for this activity such that they are encompassed within the overall estimate of emissions for storage activities.

EQUIPMENT, MATERIALS, AND WASTE MOVEMENT ACTIVITIES

The movement of materials, equipment, waste, chemicals, or similar items involves the receipt and/or packaging/repackaging, transferring/shipping, and the movement and/or relocation within the WRAP TSD unit boundary. The movement of these items is necessary to support operations, maintenance, or similar activities. Movement activities (e.g., using a forklift, crane, truck, dolly, personnel, or similar equipment) can consist of, but are not limited to, the following:

• Placing and storing chemical products in flammable cabinets, over packing or other approved storage locations
• Receiving waste (e.g., liquid, solid, semi solid) for storage and/or treatment
• Waste container transfers (among outdoor storage pads, within buildings, glove boxes, or other approved locations)

HOUSEKEEPING ACTIVITIES

Housekeeping activities involve maintaining WRAP in a clean and orderly condition. Housekeeping activities include the following:

• Dusting
• Mopping (e.g., squeegees or other similar techniques)
• Picking up debris
• Removal of trash.
• Sweeping (e.g., brooms)
• Vacuuming
• Wiping (e.g., sponges, towels, or other similar methods)

SURVEILLANCE ACTIVITIES

Surveillance activities involve walking down and inspecting various areas, systems, and components. Surveillances typically consist of daily, weekly, and monthly inspections of waste containers, buildings, or similar locations. Surveillances are subject to change (adding, deleting and/or modifying) as operations, maintenance, engineering, and radiological control dictates. The following are examples of surveillances currently performed at WRAP:

• Cold weather surveillances (typically done between October 1 and March 31)
• Container storage areas (buildings, pads, conex boxes, or other similar locations)
• General condition of building structures
• Inspection/testing of equipment (e.g., 296-W-4 exhaust system sampling and components, differential pressure gauges, or similar equipment)
• Inspection/testing of HEPA-filtered vacuums
• Radiological surveys
• Safety equipment (e.g., decontamination showers, eye wash stations, first aid kits, fire extinguishers, fire suppression systems, communication equipment, spill kits, emergency lighting, Scott Air Pak or other similar units, personnel contamination monitors, masks)
• Treatment and storage locations and ancillary equipment

Surveillances, inspections, and maintenance activities that have the potential to create minimal airborne contamination can occur within the 2336-W Building when the 296-W-4 exhaust stack emission system is shutdown.

5) PROCESS DESCRIPTION - Nondestructive Examination/Nondestructive Assay Systems

This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The NDE/NDA area is used to examine and to certify LLW, MLLW, TRU, and TRU mixed waste container contents without opening the containers.

The primary function of NDE is to examine the physical contents of containers entering and leaving the WRAP to determine whether there are any noncompliant items or unacceptable conditions in the containers. This examination of the containers is accomplished by the use of the real-time radiography (RTR) systems. The RTR systems consists of an x-ray imaging systems used to identify noncompliant items, such as free or containerized liquids, compressed gas containers including aerosol cans, and other suspected dangerous waste/materials. Data from the x-ray examinations are entered into the data management system for each container.
The primary function of NDA is to determine the activity levels of radio nuclides in the radioactive material entering and leaving the WRAP. This information is used to categorize the radioactive material, provide inventory control information, determine appropriate handling of individual containers, and to determine if the material meets applicable transportation and disposal criteria. The NDA equipment includes passive-active neutron assay systems and/or gamma energy analysis systems. Data from the analysis of each container are entered into the data management system.

6) PROCESS DESCRIPTION - Process Area

This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
The process area consists of four glove box lines: a TRU waste process glove box, a TRU waste restricted waste management (RWM) glove box, a LLW process glove box, and a LLW RWM glove box. In the process glove boxes, drums are opened, the contents sorted and sampled, if necessary, noncompliant items are removed and transferred to the RWM glove boxes, and the remaining compliant waste repackaged into new drums.
The airborne radiological contaminants produced at the WRAP are expected to be primarily generated in these glove boxes. Incoming drums generally are opened in glove boxes. However, it might be necessary to loosen a lid or replace a damaged lid outside of a glove box. For example, an 85-gal drum lid is removed by placing the drum in an air exhauster canister, which vents to the process area through a high-efficiency particulate air (HEPA)-like filter. No credit is taken for this HEPA-like filter so far as estimating the abated emissions. Emissions from the process area will exhaust through the 296-W-4 stack emission system.
TRANSURANIC WASTE PROCESS LINE
The TRU waste process glove box line consists of stainless steel modular glove boxes that are bolted together in a linear configuration. Glove box ventilation is of the once through type. Air is drawn from the process room, through a nontestable high efficiency process filter, and into the glove box. The air is exhausted from the glove box through another nontestable high efficiency process filter to the combined glove box exhaust system.
Process operations are performed inside of the glove boxes by using the gloves and/or remote controlled manipulators. Drums are loaded into the glove box through an airlock and sealed type entry systems. Noncompliant items are labeled and transferred to the TRU RWM glove box using a reusable transfer system. Compliant waste is repackaged into new containers.
TRANSURANIC WASTE RESTRICTED MANAGEMENT LINE
The TRU waste RWM glove box line is constructed of stainless steel. Glove box ventilation is of the once through type. Air is drawn from the process room, through a nontestable high efficiency process filter, and into the glove box. The air is exhausted from the glove box through another nontestable high-efficiency process filter to the combined glove box exhaust system. Noncompliant waste is received from the TRU waste process line in a reusable transfer container.
The treatment and repackaging operations that occur in the TRU waste RWM glove box could include other treated LLW packages being loaded into new drums and routed to the LLW process glove box for compaction or loaded out of the RWM glove box for storage, disposal, or additional treatment.
LOW LEVEL WASTE PROCESS LINE
The LLW/TRU process glove box line consists of stainless steel modular glove boxes that are bolted together in a linear configuration. Glove box ventilation is of the once through type. Air is drawn from the process room, through a nontestab1e high efficiency process filter, and into the glove box. The air is exhausted from the glove box through another nontestable high efficiency process filter to the combined glove box exhaust system.
Drums enter the glove box through an airlock entry system. Noncompliant items are bar code labeled and transferred to the LLW RWM or TRU/RWM glove box using a reusable transfer system. Compliant waste is compacted and repackaged into new drums.

7) PROCESS DESCRIPTION - Shipping and Receiving

This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Containers are delivered to and transferred from the shipping and receiving area by truck or forklift. In the shipping

and receiving area, incoming boxes and drums are unloaded, visually inspected, labeled, and radiologically surveyed. The resulting information pertaining to each container is entered into the data management system. Following visual inspection, containers are transferred to the lag storage area. From the lag storage area, incoming drums are transferred to a weigh station and on to the NDE/NDA area for further characterization. If there are any noncompliant items or unacceptable conditions discovered in the NDE process, the containers are transferred to the process area for repackaging.

Once characterized, verified, and/or certified, the certified TRU waste is loaded into transuranic package transporter (TRUPACT-2 or equivalent) shipping casks for shipment to the Waste Isolation Pilot Plant (WIPP) in New Mexico or other approved facility.

Emission Unit ID: 200

200W P-241SX115-001

241-SX-115

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 201

200W P-241SX113-001

241-SX-113

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 202

200W P-241S111-001

241-S-111

This is a MINOR, PASSIVELY ventilated emission unit.

241-S TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 203

200W P-241S-001

241-S-112

This is a MINOR, PASSIVELY ventilated emission unit.

241-S TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows the SST to vent to the atmosphere under tank farm storage, maintenance, and operations. The tanks stores the radioactive waste awaiting retrieval , treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 204

200E P-296AP-001

296-A-40

This is a MINOR, ACTIVELY ventilated emission unit.

241-AP TANK FARM

Emission Unit Information

Stack Height: 19.58 ft. 5.97 m. Stack Diameter 0.55 ft. 0.17 m.

Average Stack Effluent Temperature: 110 degrees Fahrenheit. 43 degrees Celsius.

Average Stack ExhaustVelocity: 37.75 ft/second. 11.51 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Deentrainer	1	2 parallel flow paths
	Heater	1	2 parallel flow paths
	Prefilter	1	2 parallel flow paths
	HEPA	2	2 parallel flow paths with 2 HEPAs in series
	Fan	1	2 parallel flow paths, 1 in operation at a time

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	1 week sample/4 times per year

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a primary exhauster used to support tank farm operations by ventilating the DSTs in 241 AP Tank Farm during storage, maintenance, and normal operations. Any activity other than storage, maintenance, and normal operations will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit operates intermittently.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Installation and operation of Waste Retrieval System in Tanks 241-AP-102 and 241-AP-104 (Replaces NOC 666)	AIR 12-310	2/23/2012	828

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 2.17E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 4.50E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   Install and operate a waste retrieval system (one mixer pump and other required equipment) in the 241-AP-102 and the 241-AP-104 tanks. The pumps will operate in a batch mode as needed. The waste capacity of the tanks will not be altered, nor will the ventilation system.

The 241-AP-102 and 241-AP-104 tanks are 75-foot diameter double-shell tanks (DST) constructed from the latest generation of tank designs, with a reinforced concrete shell and dome, and an insulating concrete base. A heat-treated, stress relieved, primary steel liner and a non-stress-relieved, outer steel liner are separated by a 2.5 foot annulus and contained inside the concrete shell. The tanks have a flat bottom with a usable waste depth of approximately 35 feet (1,160,000 gallons).

Current design calls for modifications to the AP-102 and AP-105 tanks and associated equipment to allow installation and removal of waste retrieval system equipment, and shall be limited to the following major components.

New In-Tank Equipment:

Installation of one mixer pump in each tank for mobilizing the settled solids. The pumps will be equipped with an approximate 300-horse power motor with a variable speed drive to allow operation from approximately 60 percent speed to 100 percent speed. The pump will be capable of pumping waste at a flow rate of approximately 5,200 gallons per minute through each of two, horizontally opposed, discharge nozzles, located approximately 18 inches above the bottom of the tank.

Installation of a high-pressure spray wash system on top of each of the 42-inch risers used for the mixer pumps. The spray wash system will be used for future decontamination of the mixer pumps as they are removed from the tank.

Installation of one transfer pump in each tank for the transfer of waste. The pumps will be capable of maintaining a variable waste transfer at a top rate of up to 140 gallons per minute.

Installation of one closed circuit television for each tank.

New Ancillary Equipment and Buildings:

Construction of an annex to the existing 241-AP-271 Instrument Building to house retrieval instrumentation/electrical equipment and operator stations.

Installation of electrical power and instrument cables and other utility tie-ins and/or upgrades (e.g., sanitary and raw water, and telecommunications).

Upgrade of Existing Pits

Installation of new, double-contained waste transfer piping, water and diluent piping to and from the process pits, and 8-inch diameter annulus ventilation piping. A total of approximately 1,400 linear feet of piping will be installed approximately 5 feet underground.

Installation of jumpers inside existing AP02A, AP02D, and AP04A AP Farm pits.

Installation of three new sets of pit cover blocks for the AP02A, AP02D, AP04A pits.

Removal, Decontamination and Demolition of Existing Equipment:

Removal of one mixer pump from AP-102.

Removal of one transfer pump from AP-102 and one transfer pump from AP-104.

Removal of a slurry distributor from AP-104.

Removal of a drop-leg jumper from AP-102.

Relocation of a dip tube assembly to a different riser (AP-104).

Removal of jumpers form each of the three pits, central pump pit cover blocks, and pump pit cover blocks.

Removal of an existing 2-inch waste line, approximately 15 linear feet.

Use of equipment and containers for removal, cleaning, decontamination, transport, storage, and burial of in-tank components and soil.

Removal of existing 8-inch-diameter annulus ventilation piping, approximately 32 feet.

Construction Activities with the Potential to Emit are:

Construction activities with the potential to emit include soil excavation, work in pump pits, pipe cutting, removal of, and installation of in-tank equipment. Some of these activities are described in, and will be done in accordance with, an applicable Tank Farm ALARACT demonstration, HNF-4327 latest revision, Control of Airborne Radioactive Emissions for Frequently Performed TWRS Work Activities. The specific activities and corresponding ALARACT demonstration are called out as they apply in the following text.

If needed or chosen for use during these activities, the Regulated Guzzler, a Portable/Temporary Radioactive Air Emission Unit, and a HEPA Filtered Vacuum Radioactive Air Emission Unit may be used in accordance with the latest revisions of their NOCs (98-EAP-037, DOE/RL-96-75, and DOE/RL-97-50 respectively).

The AP Tank Farm is posted and maintained as a radiological buffer area, free of surface contamination (entrance is made in street clothes). There are no recorded spills or leaks. Therefore, encountering contamination is not expected during soil excavation activities. Because of the possibility of encountering previously undetected subsurface contamination, all work is performed in accordance with the Hanford Site Radiological Control Manual and the RPP As Low As Reasonably Achievable (ALARA) Program requirements. These requirements are carried out through the activity work packages and associated radiological work permit (RWP).

Soil Excavation:

Soil will be excavated inside and outside the AP Tank Farm to install new piping and construct a new pump pit. A total of approximately 1,000 cubic yards shall be excavated, which includes approximately 600 cubic yards inside the tank farm. Backfill shall be made with the original removed soil or controlled density fill (sand, water and a small amount of cement).

Soil excavation activities inside the tank farm fence will be performed in accordance with ALARACT Demonstration 5, TWRS ALARACT Demonstration for Soil Excavation (Using Hand Tools). Clean soil piles may be moved from one place to another within the tank farm with heavy equipment (backhoe, front-end loader, etc.). Soil excavation outside the tank farm fence also may be performed with heavy equipment. The Regulated Guzzler may also be used as described in its NOC for use in the A Tank Farm Complex (98-EAP-037).

Pipe Cutting:

One existing 2-inch diameter waste transfer line will be cut and replaced with a new 3-inch diameter waste transfer line. The cuts will be made, inside a glove bag, using appropriate equipment such as a sawzall or tri-tool. The tie-ins will be made at the new pit nozzles. If any welding is required, the glove bag will be removed and the weld made.

One 12-inch diameter tank riser will be cut to fit into the new pit being constructed. The riser will be opened and an expandable plug will be installed in the riser to maintain containment of the vapor space and prevent material from falling into the tank while the work takes place. In order to perform the cut without a glove bag, the riser will be surveyed/smeared to verify removable contamination levels are equal to or less than 10,000 dpm/100 cm2 beta gamma and 200 dpm/100 cm2 alpha. The cut will be made above the plug with equipment such as a tri-tool or sawzall. If a glove bag is used, it will be removed. The plug will be removed and a flange welded in place. Then the top of the riser flange will be sealed with a temporary shield plug.

Approximately thirty-two feet of 8-inch diameter annulus ventilation pipe will be cut and rerouted. The cuts will be made, inside a glove bag, using appropriate equipment such as a sawzall or tri-tool. The glove bag will be removed and the tie-ins will be made by welding.

If needed or chosen for use during these activities, a Portable/Temporary Radioactive Air Emission Unit, and a HEPA Filtered Vacuum Radioactive Air Emission Unit may be used in accordance with the latest revisions of their NOCs (DOE/RL-96-75, and DOE/RL-97-50 respectively).

Pit Work:

Work to be performed in pump pits includes replacing three existing sets of cover blocks with newly designed cover blocks, core drilling (core drills will be performed as necessary), installing new nozzles, removing existing jumpers, and installing riser extensions (total of two, 42-inch diameter).

Pit access and work will be performed in accordance with ALARACT Demonstrations 6 and 14, TWRS ALARACT Demonstration for Pit Access, and TWRS ALARACT Demonstration for Pit Work. Activities not covered in these ALARACTs are described below.

If needed or chosen for use during these activities, a Portable/Temporary Radioactive Air Emission Unit, and a HEPA Filtered Vacuum Radioactive Air Emission Unit may be used in accordance with the latest revisions of their NOCs (DOE/RL-96-75, and DOE/RL-97-50 respectively).

At the start of the pit work, the cover blocks will be lifted off and radiologically surveyed to determine appropriate disposal protocol and packaged for disposal. A new cover block will be installed when all work in the pit has been completed.

Core drilling will be performed below grade level, on the outside of the pit. The hole will be drilled from the outside to the inside, with the temporary pit cover in place. The drilling bit will be water-cooled. Nozzle installation will generally proceed immediately after the hole is completed. If immediate nozzle installation is not possible, the hole will be temporarily sealed with a plug, tape, or equivalent device, until the nozzle can be installed.

Installation of new nozzles in existing pits will take place in an open pit. All parts of the nozzle will be assembled ahead of time, and will be lowered into position as a single unit. The piping in the back of the nozzle will be threaded through the hole (from the inside of the pit to the outside) and pulled tight into place from the outside of the pit. Grout shall be used to secure and seal the nozzle into place. The front opening of the nozzle, inside the pit, will be fitted with a temporary cap/seal until a jumper is connected to it. Once the nozzle(s) is installed, the temporary pit cover will be replaced until other work inside the pit requires its removal.

Installation of the 42-inch diameter riser extensions will take place in an open pit. Only the risers that will house a mixer pump will have an extension installed. The depth-verification shield plug left in/on the riser from the previously removed mixer pump shall be removed and replaced with the riser extension that has a temporary shield plug inserted at the bottom end. The riser will be open during this step which takes approximately thirty minutes. The extension will be sealed to the cover block with metal bellows. The extensions shall be equipped with spray was rings that will provide a means of decontamination for future mixer pump removals. They will also provide confinement between the pump and the inside of the pit during future pump removals, which will be possible without removing the pit cover blocks.

Removal of In-Tank Equipment

Various in-tank equipment will be removed from both tanks to make room for the water retrieval equipment, or to be replaced with equivalent equipment built to withstand the mixer pump jet forces. The existing flexible receiver equipment will be used to remove and decontaminate, to acceptable levels, a mixer pump (from a 42-inch riser) and two transfer pumps (from 12-inch risers). The remaining equipment will be removed from 4-inch, 12-inch, and 42-inch risers using the general bag out process (sleeving equipment with plastic or piping as it is removed.

Equipment removal will be performed in accordance with ALARACT Demonstration 13, TWRS ALARACT Demonstration for Installation, Operation, and Removal of Tank Equipment. Activities not covered in this ALARACT are described below.

If needed or chosen for use during these activities, a Portable/Temporary Radioactive Air Emission Unit, and a

HEPA Filtered Vacuum Radioactive Air Emission Unit may be used in accordance with the latest revisions of their NOCs (DOE/RL-96-75, and DOE/RL-97-50 respectively).

Decontamination of removed equipment is not anticipated, the fewer decontamination activities undertaken the less exposure possibilities there are to the worker and the environment. Contingency decontamination plans, however, are in place if needed. The most likely equipment to be decontaminated would be sections of the flexible receiver. If contingency decontamination is required a two-roomed decontamination tent will be set up within the tank farm fence. Decontamination work will take place in one room and the other will be maintained "clean".

Flexible Receiver Bagging Process

Use of the flexible receiver involves connecting to and disconnecting from a tank riser or pit; lifting/removing the equipment; washing down/decontaminating the equipment; and bagging the equipment. The flexible receiver can be used in a manual or a completely automated mode. Various flexible receiver equipment includes a washer assembly, a radiation monitoring and camera assembly, a bag cinch and cut assembly, a secondary bag seal assembly, and an appropriately sized receiving bag.

The connection process to risers in a concrete pit is different than that to risers outside at, or below, grade level. For risers in pits, the cover block is removed and replaced with the flex receiver platform. The gap between the pit and the platform is sealed with plastic and tape. There is one opening in the platform that is directly above the equipment/riser. The equipment is lifted off the riser, to slightly above the platform, long enough to position the split plates that will support the equipment when it is lowered back down the platform. Generally this step takes less than fifteen minutes and during this time the riser is open around the equipment as it is raised. The equipment is lowered to rest/seal on the split plates. In some instances a gasket may be used between the split plates an the equipment to enhance the seal. At this point confinement is considered restored and work can take place on the upper portion of the piece of equipment, if needed, to prepare it for removal. Once the preparatory work is complete, the equipment is raised slightly to remove the split plates and then lowered back down to rest/seal on the riser. An adapter spool piece assembly (includes the spool piece, the spray wash unit, and alignment bellows) is placed over and around the riser, and the equipment setting on top of the riser. The adapter spool piece is equipped with a rubber seal on the bottom, which provides a seal against the floor of the pit, and the alignment bellows are bolted to the platform providing a seal against the platform. An impact limiter is installed on top of the platform, around the opening, as a precaution if the equipment free falls during the remote bagging process. The piece of equipment is again raised to rest/seal on the impact limiter. Subsequent confinement is provided by the gaskets between equipment/assembly pieces and the rubber seal on the bottom of the adapter spool piece. The remainder of the flex receiver equipment is bolted into place above the impact liner.

For risers that cannot accommodate an adapter spool piece (outside risers), a split spool piece is used to bolt the flex receiver equipment to the riser flange. In this instance, a seal against a floor cannot be made, so a glove bag is used to confine contamination. A glove bag, with the spool piece in it, is sealed around the riser, the riser is opened, the equipment is raised slightly to allow installation of the split spool piece onto the riser flange. Generally this step takes less than fifteen minutes and during this time the riser is open (within the glove bag) around the equipment as it's raised. The equipment is lowered back down to rest/seal on the split spool piece and the spray wash unit is bolted to the split spool piece. The remainder of the flex receiver equipment, in its entirety, is swung into position, the bottom component is slipped into the glove bag and then bolted to the spray wash unit within the glove bag.

After the riser connection process has been completed, the equipment is slowly lifted through the riser (approximately 1 foot per minute). The washing process takes place concurrently with lifting and uses preheated water pressurized up to 3,000 pounds per square inch. Washing takes place outside of the vapor space and the run-off is returned to the tank through the riser.

After a section of the equipment has been washed it is pulled through the radiation monitoring assembly. Here, spectrum analysis is performed on the equipment and it is viewed via the camera to determine if the washing process needs to be repeated. This process will be repeated until the equipment shows no visual signs of waste residue.

Once washed and dripped dry, the equipment is pulled into the flex receiver bag (herculite-type), which expands

as the equipment is hoisted up into it. Once the equipment is completely in the bag, an absorbent mat is attached inside the bag. The mat can absorb up to 8 gallons of liquid, if needed. Next, a mechanical sealing device cinches the bag closed with wire rope and crimps the bottom of the bag in two places, one below the other. The bag is then cut between the two crimps, leaving a sealed top section containing the equipment, and a sealed bottom section sealing the riser opening. The bag is then hoisted into position for secondary bagging of the first seal. Secondary bagging involves lowering the bagged equipment, sealed end first, into another bag that fits around the bottom of the first bag. The secondary bag is also cinched closed with wire rope. The portion of the first bag that was cinched at the riser is then removed and disposed of and the riser is closed. From here the equipment is ready for waste packaging for storage and/or burial.

LLCE Waste Packaging Process

The waste packaging process takes place immediately after the equipment bagging process. It is called the Long Length Contaminated Equipment (LLCE) Disposal System and was designed specifically for application at Hanford Tank Farms. It packages non-contact, remote handled, radioactive waste, for storage or burial. In general, the process involves pushing the LLCE into a storage/burial container (polyethylene piping, various diameters and lengths) and filling the container with lightweight grout (perlite concrete) to attain a greater than or equal to 90 percent filled container. Cold testing has shown that it takes approximately two hours to fill the largest container and dissection of the container has demonstrated that the voids around the bagged LLCE are filled 100 percent.

The previously bagged equipment is placed into the skid assembly of the tilt trailer (vertical position). The skid assembly is lowered to the horizontal position and the equipment is slowly pushed into the container already in place on the transport trailer. The endcap is welded closed, using electrical current to fuse the polyethylene together, and leak tested in place. A vent penetration is installed at the top of the end cap for venting displaced air while filling. Another penetration is also put into the endcap for installation of the "trimmie tube" (distributes grout evenly into the container). The vent penetration is fitted with, or piped to, a high-efficiency particulate air (HEPA) filter to satisfy ALARA requirements. At the storage/burial area, the container is removed from the transport trailer and placed for storage or burial.

In-Tank Equipment Installation

Equipment installation will be performed in accordance with TWRS ALARACT Demonstration 13, Installation, Operation, and Removal of Tank Equipment.

Waste Staging and Retrieval Process Overview

The retrieval process at the AP-102 and AP-104 tanks will provide feed stock to a waste treatment facility. The low activity waste received from the source tanks may be conditioned and/or diluted to deliver compliant waste. Mixing and dilution may also take place at the source tanks to meet the waste specifications of AP-102 and -104, i.e., solids content must be within a predetermined amount. In-coming waste will be staged in the tank(s) until enough has been accumulated to send, and the treatment facility is ready to receive, a batch. The mixer pump will then be operated to maintain waste uniformity during staging and to mix the waste for a short period of time before transferring it. The mixer pump will be operated at full speed until waste samples verify that adequate mixing has been achieved. Waste samples will be collected in accordance with TWRS ALARACT Demonstration 7, Tank Waste Grab Sampling. If dilution/conditioning is needed, the pH and temperature of the diluent will be adjusted. Once the waste is verified acceptable, the transfer lines will be preheated/flushed with diluent, and a transfer to the treatment facility will follow. After the transfer, the lines will be flushed again with diluent.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	5.65E-03	Am - 241	2.48E+04	Am - 243	3.11E-02
Ba - 137 m	2.20E+06	C - 14	2.04E+02	Cd - 113 m	5.65E+02
Cm - 242	9.87E-01	Cm - 243	4.85E+00	Cm - 244	1.54E+01
Co - 60	7.59E+02				

		Cs - 134	2.65E+02	Cs - 137	2.32E+06
Eu - 152	4.07E+01	Eu - 154	3.73E+03	Eu - 155	4.73E+03
H - 3	1.41E+03	I - 129	1.10E+01	Nb - 93 m	7.76E+01
Ni - 59	1.30E+01	Ni - 63	1.28E+03	Np - 237	3.10E+01
Pa - 231	2.50E-02	Pu - 238	3.48E+02	Pu - 239	8.17E+02
Pu - 240	2.25E+02	Pu - 241	8.33E+03	Pu - 242	3.19E-02
Ra - 226	4.81E+00	Ra - 228	2.05E+00	Ru - 106	1.39E+01
Sb - 125	1.33E+03	Se - 79	2.19E+01	Sm - 151	7.72E+04
Sn - 126	3.32E+01	Sr - 90	5.54E+05	Tc - 99	1.46E+04
Th - 229	4.74E-02	Th - 232	2.32E-01	U - 232	6.32E+00
U - 233	2.42E+01	U - 234	1.01E+01	U - 235	3.90E-01
U - 236	7.00E-01	U - 238	8.79E+00	Y - 90	5.54E+05
Zr - 93	1.06E+02				

4) Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1. HEPA filters shall have a minimum efficiency of 99.95%.
5) All pit work must be performed in accordance with TWRS ALARACT Demonstrations 6 and 14 for Pit Access and, ALARACT Demonstrations for Pit Work.
6) If the wind speeds exceed 30 miles per hour the work in the glove bags will stop. If sustained wind speed exceeds 25 miles per hour pit work must stop. Records of wind speeds reading must be kept and made available to DOH, if requested.
7) Pipe cuts will be made using a sawzall or tri-tool. If removable contamination on only cutting surface is greater than or equal to 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha it must be cut and prepared in a glove bag for welding. If contamination levels are below these levels cutting maybe done outside of a glove bag. Expandable foam and fixatives are approved to fix smearable contamination.
8) Prior to cutting an expandable plug must be in place when a riser is opened in order to maintain constant vapor space and prevent material from falling into the tank during cutting.
9) Sample collection flow rate shall be approximately 120 +/- 12 cubic feet per hour.
10) The use of the regulated Guzzler, Portable/Temporary Radioactive Air Emission Unit and HEPA filtered vacuum radioactive emission units may be used as needed as prescribed by DOH in their latest approved revision.

Emission Unit ID: 205

200E P-296A041-001

296-A-41

This is a MINOR, ACTIVELY ventilated emission unit.

241-AP TANK FARM

Emission Unit Information

Stack Height: 29.25 ft. 8.92 m. Stack Diameter 2.33 ft. 0.71 m.

Average Stack Effluent Temperature: 78 degrees Fahrenheit. 26 degrees Celsius.

Average Stack ExhaustVelocity: 35.05 ft/second. 10.68 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Heater	1	2 parallel flow paths with 1 heater
	HEPA	2	2 parallel flow paths with 2 HEPAs in series
	Fan	1	2 parallel flow paths, minimum of 1 in operation at a time; annulus exhauster

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	1 week sample/4 times per year

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a DST annulus exhauster used to support tank farm operations and ventilates the annuli of DSTs 241-AP Tank Farm. The tanks store radioactive waste until the waste is retrieved, treated, and properly disposed under the applicable federal and state regulations and/or permits. The annulus is the space between the inner wall and outer wall of the tank, and is used for leak detection. The emission unit operates intermittently.

Emission Unit ID: 210

200E P-296P031-001

296-P-31

This is a MAJOR, ACTIVELY ventilated emission unit.

209 E CRITICALITY LAB

Emission Unit Information

Stack Height: 33.00 ft. 10.06 m. Stack Diameter 2.00 ft. 0.61 m.

Average Stack Effluent Temperature: 78 degrees Fahrenheit. 26 degrees Celsius.

Average Stack ExhaustVelocity: 5.70 ft/second. 1.74 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Prefilter	4	1 bank (No Abatement Credit Taken)
	HEPA	8	2 banks of 4 HEPAs each (A 2 X 99.95% abatement credit taken for combined banks of HEPAs)
	Fan	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114. (Frequency of inspection/cleaning of the sample system is extended to 5 years) See Alternative Approval Letter AIR 07-1205.	All radionuclides which could contribute greater than 0.1 mrem/yr to the MEI, or represent greater than 10% of the unabated PTE or represent greater than 25% of the abated dose.	Continuous

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities at the 209-E Facility involve surveillance, maintenance, and deactivation activities at the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Deactivation of 209-E Building (Replaces NOC ID 793)	AIR 12-337	2/23/2012	858

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.80E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted. The approved activities are limited to:

Descriptions of the 209-E Building and associated deactivation activities are provided in the following sections:

1. Facility Description
The 209-E Building, constructed in 1960, is an L-shaped reinforced-concrete structure that includes offices, control room, shops, equipment room, change room, the mix room, and the critical assembly room (CAR).

The facility was designed to provide a heavily-shielded reactor room, the CAR, where quantities of plutonium or uranium could be brought into critical configurations under carefully controlled and monitored conditions. The rooms that contains contaminated equipment and material include the CAR, mix room, and a portion of the change room.

In the late 1980's the Pacific Northwest laboratory (as the responsible contractor) was directed by the U.S. Department of Energy (DOE) to prepare the facility for an unoccupied status. At the time, the facility underwent stabilization and deactivation activities that included removing bulk fissile material, flushing tanks, stabilizing contamination within glove boxes and hoods, and packaging and removing waste.

The radiological side of the 209-E Building is non-operational, stabilized with selected systems deactivated, and undergoing long-term surveillance and maintenance (S&M) until deactivation commences. The 209-E Building currently contains residual plutonium and uranium, primarily within inactive process tanks and equipment inside glove boxes and/or hoods in the mixed room and CAR.

2. Deactivation Activities

The proposed action is to deactivate the 209-E Building up to a point of dismantlement. Dismantlement is beyond the scope of this NOC, and would be conducted under the Comprehensive Environmental Response, Compensations and Liability Act of 1980 (CERCLA).

The proposed deactivation activities include the following:

Characterize and remove residual radiological materials from glove boxes, filter boxes, equipment, piping, above-grade vessels, ductwork, and the building surfaces and package for disposition to onsite or offsite disposal facilities.

Characterize and remove/isolate radiological material from below-grade vessels.

Remove internal equipment from glove boxes and building equipment/systems components and package for disposition to onsite or offsite disposal facilities.

Decontaminate glove boxes, filter boxes, ductwork, and equipment to less than transuarnic levels (i.e., less than 100nCi/g) if possible.

Remove glove boxes, filter boxes, ductwork, and equipment, including above-grade vessels and piping, and package for disposition to onsite disposal facilities.

Decontaminate or fix contamination on building interior and exterior surfaces,

Disconnect utilities and services.

Perform radiological and chemical characterization in preparation for dismantlement.

In preparation for and as part of the proposed deactivation activities, housekeeping, radiological assays, preventive maintenance, minor decontamination, and reactivation of gloves would occur.

Maintain/repair equipment and the facility structure.

Install temporary systems to support activities such as lighting, air recirculation systems, closed loop air conditioning systems, environmental monitoring or surveillance equipment , safety systems, etc.

The proposed methods for characterizing and removing residual contamination from equipment/systems, and for removing equipment, would be similar to methods in use today throughout the industry and the DOE Complex. Both direct contact and remote technologies/techniques could be used. These would include laboratory analyses and nondestructive assay; chemical cleaning, brushing, washing, scrubbing, high-efficiency particulate air (HEPA) filtered vacuum cleaning, and abrasive jetting; using nibblers, shears, circular saws; and potentially a remote-operated laser.

More specifically, the activities include the following:

Size reduction of equipment will be by mechanical means and may be accompanied by disassembly through the use of wrenches, nibblers, shears, cutters, grinders, and saws. This equipment may be manually, hydraulically, pneumatically or electrically powered.

Decontamination methods include: Scraping, sweeping, chemical cleaning, brushing, washing, scrubbing, scabbling, grinding, vacuum cleaning, use of strippable coatings, washing using wet rags, spraying, abrasive jetting, low pressure and high pressure wash using water and/or chemical cleaners, use of fixatives and/or physical removal of contamination by use of mechanical means such ad chipping or cutting. The application of fixatives for contamination control would be accomplished via aerosol fogging, paint brush/roller, hand-held spray bottle, or an electric or pneumatic powered sprayer.

Containment of waste may be accomplished by coating the material with fixative or placing the material in containers, bags and/or wrapping in plastic sheeting, utilizing adhesive tape, heat sealing or mechanical closure to prevent airborne emissions.

Miscellaneous mechanical processes that could be used to support the proposed activity could include threading of piping, use of piping, use of hot taps on piping, capping and plugging piping using treaded pipe components and use of expanding/compressive plugs or caps, drilling of holes in metal and concrete, core drilling concrete surfaces, installation of anchor bolts, installation and removal of bolts, installations of hose and tubing connectors and compression fittings, and installation and removal of pumps, agitators and filters.

Minor amounts of outdoor excavation might take place in the vicinity of the 209-E Building to support site stabilization and isolating/blanking utilities. Access to underground piping and cable would be gained by use of a bucket-type excavator. Manual digging methods with shovels picks, and rakes also could be used. Up to approximately 100 cubic meters of contaminated soil could be disturbed. Contaminated soil removed during excavation activities would be covered or treated with surface fixatives until either placed as fill into the excavation or otherwise dispositioned (backfill would consist of the original material removed or ‘clean’ soil).

If needed or chosen for use during these activities, the site wide Guzzler™ , a portable temporary radioactive air emission unit (PTRAEU) exhauster, or HEPA filtered vacuum radioactive air emission unit could be used in accordance with the latest revisions of their notices of construction (NOCs) (“Categorical Notice of Construction for use of the Guzzler™ Vacuum Excavation System for Radiological Limited Activities on the Hanford Site” [approved by State of Washington Department of Health {WDOH} on December 18, 1998] or ‘Guzzler™ NOC’; DOE/RL-96-75 or DOE/RL-97-50, respectively).

Wastes generated during deactivation would be packaged appropriately and transported in closed containers which meet established waste acceptance criteria for transport to approved locations/facilities pending final disposition.

3. De-energization of Ventilation System

After deactivation activities inside the building addressed in Section 2. have been completed, the ventilation system would be de-energized.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 3.90E+00 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Am - 241	1.40E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Uranium and Fission Products resulting from decay may be present.			
Np - 237	8.00E-07	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Uranium and Fission Products resulting from decay may be present.			
Pu - 238	2.20E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Uranium and Fission Products resulting from decay may be present.			
Pu - 239	9.60E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Uranium and Fission Products resulting from decay may be present.			

Pu - 240	5.10E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Uranium and Fission Products resulting from decay may be present.			
Pu - 241	8.40E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Uranium and Fission Products resulting from decay may be present.			
Pu - 242	2.30E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Uranium and Fission Products resulting from decay may be present.			

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	Np - 237	Pu - 238	Pu - 239	Pu - 240
Pu - 241	Pu - 242			

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) Alternative Approval for Stack Flow Measurement Method

1. The stack flow measurement at the sample location cannot meet 40 CFR 60, Method 2 or 2A of Appendix A as required by 40 CFR 61.93(b)(1)) because the sample location is not at least 8 duct diameters downstream from any flow disturbance. Because the flow measurement method at the sample location cannot reasonably be met, the alternative method of using the design capacity of the exhaust fan (5500 cfm) to report the effluent flow rate is approved. This approval to use the maximum design capacity as an alternative to flow measurement based on the following:
a. The fan capacity of the 296-P-31 stack exhaust fan is 5500 cfm. The HEPA filter design capacity is 5200 cfm. Flow measurements taken over the last 6 years show an average flow rate of 1100 cfm. This measured average flow rate is 70% less than the design based effluent flow rate of 5500 cfm, meeting the intent of 40 CFR 61.93 (b)(3)(ii) requirement to not significantly underestimate flow rate and thus emissions. (Note: the flow rate through the HEPAs cannot exceed the manufactures maximum designed flow rating.)
Request for Approval of Alternative Flow Measurement Method is approved in accordance with 40 CFR 61.93(b) (3) and its adoption by reference in WAC 246 247 035(1) (a) (ii) and WAC 246 247 075(1) and (4).

5) Alternative Approval for Alternative Sample Extraction System

1. Use of this procedure will result in a very conservative volume release flow rate. Additionally, the over reporting of release flow rate would compensate for any sampling error associated with the existing sample extraction design and equipment location.
2. the proposed use of the current sample extraction equipment, if operated continuously, will not significantly underestimate actual emissions since the sample flow is near isokinetic (0.5 cfm).
3. For other than those particulars described above or in the referenced material, representative samples of the effluent stream will be withdrawn continuously from the sampling site following the guidance presented in ANSI N13.1 - 1969.
4. Effluent samples collected by the system will be retrieved on a monthly frequency, with those samples composited for calendar quarterly analysis.
Request for Approval of Alternative Sample Extraction System is approved in accordance with 40 CFR 61.93(b) (3) and its adoption by reference in WAC 246 247 035(1) (a) (ii) and WAC 246 247 075(1) and (4).

6) Alternative Approval for Quality Assurance Requirements Related to Sample System Inspections, Sample Handling, and Sample Analysis

1. The sample extraction, sample handling, and sample analyses will comply with the current revision of the Hanford Site's NESHAP quality assurance project plan for radioactive air emissions data. [note: this will include laboratory analysis/identification of radioisotopes which contribute 10% or more of the potential emissions]

2. The 296-P-31 sampling system was inspected per 40 CFR 61, Appendix B, Method 114, Table 2 annual requirements. Because this was the first inspection in more than 10 years of stack operation, and a clean system was found to be in place, rather than an annual inspection, a 5 year frequency for inspection is approved as an alternative. Approval of this recommendation has been requested and approved, based on the S&M status of the facility and recent inspection which found the system to be acceptable without cleaning. If the facility is still in the surveillance, maintainance and deactivation phase or status in 2012, an inspection shall be performed. (Note: If status of the facility changes to another activity, a more frequent sample system inspection/cleaning will be required.)

This Request for Approval of Alternative Quality Assurance Method is approved in accordance with 40 CFR 61.93(b) (3) and its adoption by reference in WAC 246 247 035(1) (a) (ii) and WAC 246 247 075(1) and (4).

7) Radiological Control technician (RCT) coverage will be provided, as necessary, during all deactivation and excavation activities.

8) As appropriate, before starting deactivation activities (such as isolating utilities and piping or dismantling exhaust system), removable contamination in the affected area's) will be reduced to ALARA. Measures such as decontamination solutions, expandable foam, fixatives, or glove bags also could be used to help prevent the spread of contamination.

9) If a Guzzler ™, PTRAEU, OR HEPA-filtered vacuum radioactive air emission unit is used, controls as described in the Guzzler ™, NOC, DOE/RL-96-75 or DOE/RL-97-50 will be followed.

10) Prior to de-energization of the 296-P-31 Stack, DOH will be notified and perform an inspection for agreement that the building no longer requires active ventilation or monitoring. WAC 246-247-040(5) and WAC 246-247-060(5).

11) After de-energizing, the facility shall submit a report of closure and submit the new emission unit number and description for inclusion in the Hanford Site Radioactive Air Emission license #FF-01; Enclosure 2 Table 2-1 Diffuse and Fugitive Emission Units when the facility ventilation is shut down and the stack emissions sampling system is de-energized. At that date sampling at the facility will be monitored using the existing 200 East near-facility monitoring network of ambient air samplers. WAC 246-247-040(5) and WAC 246-247-060(5)

12) Gaseous radionuclides maybe emitted in minor amounts if a remote operated laser is used.

Emission Unit ID: 216

200E P-296A043-001

296-A-43

This is a MINOR, ACTIVELY ventilated emission unit.

241-AY/AZ TANK FARM

Emission Unit Information

Stack Height: 35.50 ft. 10.82 m. Stack Diameter 0.83 ft. 0.25 m.

Average Stack Effluent Temperature: 70 degrees Fahrenheit. 21 degrees Celsius.

Average Stack ExhaustVelocity: 30.56 ft/second. 9.31 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Prefilter	1	2 parallel flow paths
	HEPA	1	2 parallel flow paths
	Fan	1	2 parallel flow paths
	Isolation Damper	1	Allows for operation of one flow path at a time

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	1 week sample/4 times per year

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a building/facility exhauster that is used to ventilate building and facility operations such as but not limited to process vessels, contaminated rooms, cells, glove boxes, hoods, abandoned facilities awaiting decommissioning, and vaults that support tank farm operations, maintenance, and surveillance activities for tank farms. The exhauster can be used to support current surveillance, maintenance activities, operations or decommissioning, decontamination, and cleanup activities within the building/facility. Many of the activities other than normal surveillance, maintenance, and operation support will be or are regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is a building/facility exhauster ventilation system that operates intermittently.

Emission Unit ID: 217

200E P-296A018-001

296-A-18

This is a MINOR, ACTIVELY ventilated emission unit.

241-AY Tank Farm

Emission Unit Information

Stack Height: 12.50 ft. 3.81 m. Stack Diameter 1.33 ft. 0.41 m.

Average Stack Effluent Temperature: 68 degrees Fahrenheit. 20 degrees Celsius.

Average Stack ExhaustVelocity: 47.75 ft/second. 14.55 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	2	2 parallel flow paths with 2 HEPAs in series
	Fan	1	2 parallel flow paths
	Heater	1	2 parallel flow paths

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	1 week sample/4 times per year

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a DST annulus exhauster used to support tank farm operations and ventilates the annulus of DST 241-AY-101. The tank stores radioactive waste until the waste is retrieved, treated, and properly disposed under the applicable federal and state regulations and/or permits. The annulus is the space between the inner wall and outer wall of the tank, and is used for leak detection. The emission unit operates intermittently.

Emission Unit ID: 218

200E P-296A019-001

296-A-19

This is a MINOR, ACTIVELY ventilated emission unit.

241-AY Tank Farm

Emission Unit Information

Stack Height: 12.90 ft. 3.93 m. Stack Diameter 1.33 ft. 0.41 m.

Average Stack Effluent Temperature: 68 degrees Fahrenheit. 20 degrees Celsius.

Average Stack ExhaustVelocity: 47.75 ft/second. 14.55 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	2	2 parallel flow paths with 2 HEPAs in series
	Fan	1	2 parallel flow paths
	Heater	1	2 parallel flow paths

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	1 week sample/4 times per year

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a DST annulus exhauster used to support tank farm operations and ventilates the annulus of DST 241-AY-102. The tank stores radioactive waste until the waste is retrieved, treated, and properly disposed under the applicable federal and state regulations and/or permits. The annulus is the space between the inner wall and outer wall of the tank, and is used for leak detection. The emission unit operates intermittently.

Emission Unit ID: 227

200E P-296AN-001

296-A-29

This is a MINOR, ACTIVELY ventilated emission unit.

241-AN TANK FARM

Emission Unit Information

Stack Height: 16.79 ft. 5.12 m. Stack Diameter 0.83 ft. 0.25 m.

Average Stack Effluent Temperature: 110 degrees Fahrenheit. 43 degrees Celsius.

Average Stack ExhaustVelocity: 30.56 ft/second. 9.31 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Deentrainer	1	Normally 1 unit is operated for each fan in operation. If both fans are in operation both deentrainers should be in operation. Either unit may support either train. Located upstream of the split in flow path to individual trains
	Heater	1	1/train, 2 trains
	HEPA	2	2 HEPA banks in Series/train, 2 trains
	Fan	1	1/train, 2 trains
	Prefilter	2	1/train, 2 trains

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	Total Alpha Total Beta.	1 week sample/4 times per year

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a primary exhauster used to support tank farm operations by ventilating the DSTs in 241 AN Tank Farm during storage, maintenance, and normal operations. Any activity other than storage, maintenance, and normal operations will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is currently not operating.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Installation and Operation of a Waste Retrieval System in Tanks 241-AN-101,102,103, 104, 105, 106 and 107.(Replaced NOC 668)	AIR 12-309	2/23/2012	827

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 2.06E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.60E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Install and operate a waste retrieval system (up to two mixer pumps per tank and other required equipment) in the 241-AN-101, -AN-102, -AN-103, -AN-104, -AN-105, -AN-106 and the -AN-107 tanks. The pumps will operate in a batch mode as needed. The waste capacity of the tanks will not be altered, nor will the ventilation system.

The 241-AN-101, -102, -103, -104, -105, -106 and -107 tanks are 75-foot diameter double-shell tanks (DST) constructed from the latest generation of tank designs, with a reinforced concrete shell and dome, and an insulating concrete base. A heat-treated, stress relieved, primary steel liner and a non-stress-relieved, outer steel liner are separated by a 2.5-foot annulus and contained inside the concrete shell. The tanks have a flat bottom with a usable waste depth of approximately 35 feet (1,160,000 gallons).

Current design calls for modifications to the 241-AN-101, -102, -103, -104, -105, -106 and -107 tanks and associated equipment to allow installation and removal of waste retrieval system equipment, and shall be limited to the following major components.

New In-Tank Equipment:

Installation of up to two mixer pumps in each tank for mobilizing the settled solids. The pump will be capable of pumping waste through each of two, horizontally opposed, discharge nozzles, located approximately 18 inches above the bottom of the tank.

Installation of a high-pressure spray wash system on top of each of the risers used for the mixer pumps. The spray wash system will be used for future decontamination of the mixer pumps as they are removed from the tank.

Installation of one transfer pump in each tank for the transfer of waste.

Installation of one closed circuit television for each tank.

Installation of one thermocouple tree for each tank, as required.

Installation of caustic addition distribution lines to allow the addition of caustic.

New Ancillary Equipment and Buildings:

Installation of electrical power and instrument cables and other utility tie-ins and/or upgrades (e.g., sanitary and raw water, and telecommunications).

Construction of a dilution system, the Caustic Supply System, to bring waste properties into compliance with the feed specifications, to flush and preheat transfer lines. It will be capable of providing approximately 140 gallons per minute of the pH-adjusted water. It will consist of a package boiler, a chemical injection pump, a diluent/flush pump, a diluent/flush tank (approximately 5,000 gallons), and a spill containment pad for caustic delivery trucks. The system will be located in an area central to and outside of the 241-AN, -AY, and -AZ tank farms.

New pit coverblocks for AN-01A, AN-02A, AN-03A, AN-04A, AN-05A, AN-06A and AN-07A.

Installation of new water and diluent piping to and from the process pits. A total of approximately 2,800 linear feet of piping will be installed at a dept of up to 5 feet underground.

Installation of new process jumpers inside existing central pits (AN01A, AN02A, AN03A, AN04A, AN05A, AN06A and AN07A) and the 241-AN-A/B Valve Pits.

Installation of miscellaneous concrete pads for electrical and mechanical equipment.

Installation of chain-link fencing and gates.

Operation of Existing In-tank Equipment

Operation of existing transfer pumps, slurry distributors, and other in-tank equipment for the purpose of adding and mixing caustic to ensure wastes meet tank specifications.

Removal, Decontamination and Demolition of Existing Equipment:

Removal of mixer pumps.

Removal of transfer pumps.

Removal of thermocouple probes.

Removal of camera/multi-port riser from tanks AN-103, AN-104 and AN-105. (Camera will be reused in another riser on the tank).

Removal of a slurry distributors.

Removal of jumpers form each of the central pump pits, and central pump pit cover blocks.

Removal of multi-function instrument trees or multi-purpose probes from Tanks 241-AN-101, -102, -103, -104, -105 and -107.

Use of equipment and containers for removal, cleaning, decontamination, transport, storage, and burial of in-tank components and soil.

Performance of miscellaneous activities in support of construction and operation activities that will not increase emissions above those estimated in this NOC:

Repair of road crossings (asphalt paving).

Construction activities with the potential-to-emit include soil excavation, work in pump pits, pipe cutting, removal of, and installation of in-tank equipment. Some of these activities are described in, and will be done in accordance with, an applicable Tank Farm ALARACT demonstration, HNF-4327 latest revision, Control of Airborne Radioactive Emissions for Frequently Performed TWRS Work Activities. The specific activities and corresponding ALARACT demonstration are called out as they apply in the following text.

If needed or chosen for use during these activities, the Regulated Guzzler, a Portable/Temporary Radioactive Air Emission Unit, and a HEPA Filtered Vacuum Radioactive Air Emission Unit may be used in accordance with the latest revisions of their NOCs (98-EAP-037, DOE/RL-96-75, and DOE/RL-97-50 respectively).

The 241-AN Tank Farm is posted and maintained as a radiological buffer area, free of surface contamination (entrance is made in street clothes). There are no recorded spills or leaks. Therefore, encountering contamination is not expected during soil excavation activities. Because of the possibility of encountering previously undetected subsurface contamination, all work is performed in accordance with the Hanford Site Radiological Control Manual and the RPP As Low As Reasonably Achievable (ALARA) Program requirements. These requirements are carried out through the activity work packages and associated radiological work permit (RWP).

Soil Excavation:

Soil will be excavated inside and outside the 241-AN Tank Farm to install new piping and construct a new pump pit. A total of approximately 6,000 cubic yards will be excavated, which includes approximately 3,600 cubic yards inside the tank farm. Backfill will be made with the original removed soil or controlled density fill (sand, water and a small amount of cement).

Soil excavation activities inside the tank farm fence will be performed in accordance with ALARACT Demonstration 5, TWRS ALARACT Demonstration for Soil Excavation (using hand tools). Clean soil piles may be moved from one place to another within the tank farm with heavy equipment (backhoe, front-end loader, etc.).

Soil excavation outside the tank farm fence also may be performed with heavy equipment. The Regulated Guzzler may also be used as described in its NOC for use in the A Tank Farm Complex (98-EAP-037).

Pipe Cutting:

Any required cut of contaminated piping will be made, inside a glove bag, using appropriate equipment such as a sawzall or tri-tool. In order to perform the cut without a glove bag, the riser will be surveyed/smeared to verify removable contamination levels are equal to or less than 10,000 dpm/100cm2 beta gamma and 200 dpm/100cm2 alpha. The tie-ins will be made at the new pit nozzles. If any welding is required, the glove bag will be removed and the weld made.

If needed or chosen for use during these activities, a Portable/Temporary Radioactive Air Emission Unit, and a HEPA Filtered Vacuum Radioactive Air Emission Unit may be used in accordance with the latest revisions of their NOCs (DOE/RL-96-75, and DOE/RL-97-50 respectively).

Pit Work:

Work to be performed in pump pits includes replacing three existing sets of cover blocks with newly designed cover blocks, core drilling (equivalent of one hundred, 14-inch diameter, holes), installing new nozzles, removing existing jumpers, and installing riser extensions (total of two, 42-inch diameter per pit).

Pit access and work will be performed in accordance with ALARACT Demonstrations 6 and 14, TWRS ALARACT Demonstration for Pit Access, and TWRS ALARACT Demonstration for Pit Work. Activities not covered in these ALARACTs are described below.

If needed or chosen for use during these activities, a Portable/Temporary Radioactive Air Emission Unit, and a HEPA Filtered Vacuum Radioactive Air Emission Unit may be used in accordance with the latest revisions of their NOCs (DOE/RL-96-75, and DOE/RL-97-50 respectively).

At the start of the pit work, the cover blocks will be lifted off and radiologically surveyed to determine appropriate disposal protocol and packaged for disposal. A new cover block will be installed when all work in the pit has been completed.

Core drilling will be performed below grade level, on the outside of the pit. The hole will be drilled from the outside to the inside, with the temporary pit cover in place. The drilling bit will be water-cooled. Nozzle installation will generally proceed immediately after the hole is completed. If immediate nozzle installation is not possible, the hole will be temporarily sealed with a plug, tape, or equivalent device, until the nozzle can be installed.

Installation of new nozzles in existing pits will take place in an open pit. All parts of the nozzle will be assembled ahead of time, and will be lowered into position as a single unit. The piping in the back of the nozzle will be threaded through the hole (from the inside of the pit to the outside) and pulled tight into place form the outside of the pit. Grout will be used to secure and seal the nozzle into place. The front opening of the nozzle, inside the pit, will be fitted with a temporary cap/seal until a jumper is connected to it. Once the nozzle(s) is installed, the temporary pit cover will be replaced until other work inside the pit requires its removal.

Installation of the 42-inch diameter riser extensions will take place in an open pit. Only the risers that will house a mixer pump will have an extension installed. The depth-verification shield plug left in/on the riser from the previously removed mixer pump will be removed and replaced with the riser extension that has a temporary shield plug inserted at the bottom end. The riser will be open during this step which takes approximately thirty minutes. The extension will be sealed to the cover block with metal bellows. The extensions will be equipped with spray was rings that will provide a means of decontamination for future mixer pump removals. They will also provide confinement between the pump and the inside of the pit during future pump removals, which will be possible without removing the pit cover blocks.

Removal of In-Tank Equipment:

Various in-tank equipment will be removed from both tanks to make room for the water retrieval equipment, or to

be replaced with equivalent equipment built to withstand the mixer pump jet forces. The existing flexible receiver equipment will be used to remove long-length components to acceptable levels risers).

Equipment removal will be performed in accordance with ALARACT Demonstration 13, TWRS ALARACT Demonstration for Installation, Operation, and Removal of Tank Equipment, and TWRS ALARACT Demonstration 15, Size Reduction of Waste Equipment for Disposal. Activities not covered in this ALARACT are described below.

If needed or chosen for use during these activities, a Portable/Temporary Radioactive Air Emission Unit, and a HEPA Filtered Vacuum Radioactive Air Emission Unit may be used in accordance with the latest revisions of their NOCs (DOE/RL-96-75, and DOE/RL-97-50 respectively).

Decontamination of removed equipment is not anticipated, the fewer decontamination activities undertaken the less exposure possibilities there are to the worker and the environment. Contingency decontamination plans, however, are in place if needed. The most likely equipment to be decontaminated would be sections of the flexible receiver. If contingency decontamination is required a two-roomed decontamination tent will be set up within the tank farm fence. Decontamination work will take place in one room and the other will be maintained clean.

Flexible Receiver Bagging Process:

Use of the flexible receiver involves connecting to and disconnecting from a tank riser or pit; lifting/removing the equipment; washing down/decontaminating the equipment; and bagging the equipment. The flexible receiver can be used in a manual or a completely automated mode. Various flexible receiver equipment includes a washer assembly, a radiation monitoring and camera assembly, a bag cinch and cut assembly, a secondary bag seal assembly, and an appropriately sized receiving bag.

The connection process to risers in a concrete pit is different than that to risers outside at, or below, grade level. For risers in pits, the cover block is removed and replaced with the flex receiver platform. The gap between the pit and the platform is sealed with plastic and tape. There is one opening in the platform that is directly above the equipment/riser. The equipment is lifted off the riser, to slightly above the platform, long enough to position the split plates that will support the equipment when it is lowered back down the platform. Generally this step takes less than fifteen minutes and during this time the riser is open around the equipment as it is raised. The equipment is lowered to rest/seal on the split plates. In some instances a gasket may be used between the split plates an the equipment to enhance the seal. At this point confinement is considered restored and work can take place on the upper portion of the piece of equipment, if needed, to prepare it for removal. Once the preparatory work is complete, the equipment is raised slightly to remove the split plates and then lowered back down to rest/seal on the riser. An adapter spool piece assembly (includes the spool piece, the spray wash unit, and alignment bellows) is placed over and around the riser, and the equipment setting on top of the riser. The adapter spool piece is equipped with a rubber seal on the bottom, which provides a seal against the floor of the pit, and the alignment bellows are bolted to the platform providing a seal against the platform. An impact limiter is installed on top of the platform, around the opening, as a precaution if the equipment free falls during the remote bagging process. The piece of equipment is again raised to rest/seal on the impact limiter. Subsequent confinement is provided by the gaskets between equipment/assembly pieces and the rubber seal on the bottom of the adapter spool piece. The remainder of the flex receiver equipment is bolted into place above the impact liner.

For risers that cannot accommodate an adapter spool piece (outside risers), a split spool piece is used to bolt the flex receiver equipment to the riser flange. In this instance, a seal against a floor cannot be made, so a glove bag is used to confine contamination. A glove bag, with the spool piece in it, is sealed around the riser, the riser is opened, the equipment is raised slightly to allow installation of the split spool piece onto the riser flange. Generally this step takes less than fifteen minutes and during this time the riser is open (within the glove bag) around the equipment as it's raised. The equipment is lowered back down to rest/seal on the split spool piece and the spray wash unit is bolted to the split spool piece. The remainder of the flex receiver equipment, in its entirety, is swung into position, the bottom component is slipped into the glove bag and then bolted to the spray wash unit within the glove bag.

After the riser connection process has been completed, the equipment is slowly lifted through the riser (approximately one foot per minute). The washing process takes place concurrently with lifting and uses

preheated water pressurized up to 3,000 pounds per square inch. Washing takes place outside of the vapor space and the run-off is returned to the tank through the riser.

After a section of the equipment has been washed it is pulled through the radiation monitoring assembly. Here, spectrum analysis is performed on the equipment and it is viewed via the camera to determine if the washing process needs to be repeated.

Once washed and dripped dry, the equipment is pulled into the flex receiver bag. Once the equipment is completely in the bag, an absorbent mat is attached inside the bag. The mat can absorb up to 8 gallons of liquid, if needed. Next, a mechanical sealing device cinches the bag closed with wire rope and crimps the bottom of the bag in two places, one below the other. The bag is then cut between the two crimps, leaving a sealed top section containing the equipment, and a sealed bottom section sealing the riser opening. The bag is then hoisted into position for secondary bagging of the first seal. Secondary bagging involves lowering the bagged equipment, sealed end first, into another bag that fits around the bottom of the first bag. The secondary bag is also cinched closed with wire rope. The portion of the first bag that was cinched at the riser is then removed and disposed of and the riser is closed. From here the equipment is ready for waste packaging for storage and/or burial.

LLCE Waste Packaging Process:

The waste packaging process takes place immediately after the equipment bagging process. It is called the Long Length Contaminated Equipment (LLCE) Disposal System and was designed specifically for application at Hanford Tank Farms. It packages non-contact, remote handled, radioactive waste, for storage or burial. In general, the process involves pushing the LLCE into a storage/burial container and filling the container with lightweight grout to attain a greater than or equal to 90 percent filled container.

The previously bagged equipment is placed into the skid assembly of the tilt trailer (vertical position). The skid assembly is lowered to the horizontal position and the equipment is slowly pushed into the container already in place on the transport trailer. The endcap is welded closed, using electrical current to fuse the polyethylene together, and leak tested in place. A vent penetration is installed at the top of the end cap for venting displaced air while filling. Another penetration is also put into the endcap for installation of the "trimmie tube" (distributes grout evenly into the container). The vent penetration is fitted with, or piped to, a high-efficiency particulate air (HEPA) filter to satisfy ALARA requirements. At the storage/burial area, the container is removed from the transport trailer and placed for storage or burial.

In-Tank Equipment Installation:

Equipment installation will be performed in accordance with TWRS ALARACT Demonstration 13, Installation, Operation, and Removal of Tank Equipment.

Waste Staging and Retrieval Process Overview:

The retrieval process at the 241-AN-101, -102, -103, -104, -105, -106 and -107 tanks will provide feed stock to a waste treatment facility. The low activity waste received from the source tanks may be conditioned and/or diluted to deliver compliant waste. Mixing and dilution may also take place at the source tanks to meet the waste specifications of 241-AN-101, -102, -103, -104, -105, -106 and -107, i.e., solids content must be within a predetermined amount. In-coming waste will be staged in the tank(s) until enough has been accumulated to send, and the treatment facility is ready to receive, a batch. The mixer pump will then be operated to maintain waste uniformity during staging and to mix the waste for a short period of time before transferring it. The mixer pump will be operated at full speed until waste samples verify that adequate mixing has been achieved. Waste samples will be collected in accordance with TWRS ALARACT Demonstration 7, Tank Waste Grab Sampling. If dilution/conditioning is needed, the pH and temperature of the diluent will be adjusted by means of the Caustic Supply System. Once the waste is verified acceptable, the transfer lines will be preheated/flushed with diluent, and a decant waste transfer to the treatment facility will follow. After the transfer, the lines will be flushed again with diluent.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	5.65E-03

		Am - 241	3.65E+03	Am - 243	1.88E-02
C - 14	1.98E+03	Cd - 113 m	5.65E+02	Cm - 242	9.87E-01
Cm - 243	4.85E+00	Cm - 244	1.54E+01	Co - 60	7.59E+02
Cs - 134	2.08E+02	Cs - 137	2.32E+06	Eu - 152	4.07E+01
Eu - 154	3.03E+03	Eu - 155	4.73E+03	H - 3	1.41E+03
I - 129	1.10E+01	Nb - 93 m	7.76E+01	Ni - 59	1.15E+01
Ni - 63	1.14E+03	Np - 237	3.10E+01	Pa - 231	2.49E-02
Pu - 238	1.26E+01	Pu - 239	9.11E+00	Pu - 240	1.85E+00
Pu - 241	1.06E+03	Pu - 242	4.97E-03	Ra - 226	9.14E-04
Ra - 228	2.05E+00	Ru - 106	5.60E-02	Sb - 125	1.33E+03
Se - 79	2.19E+01	Sm - 151	7.72E+04	Sn - 126	3.32E+01
Sr - 90	5.54E+05	Tc - 99	1.17E+03	Th - 229	4.74E-02
Th - 232	2.32E-01	U - 232	6.32E+00	U - 233	2.42E+01
U - 234	5.50E+00	U - 235	2.16E-01	U - 236	2.85E-01
U - 238	6.53E+00	Y - 90	5.54E+05	Zr - 93	1.06E+02

4) When a Portable/Temporary Radioactive Air Emission Unit (DOE/RL-96-75), HEPA Filtered Vacuum (DOE/RL-97-50], or the regulated Guzzler are used all Conditions and Limitations associated with the latest approved revisions of those NOCs must be followed, all required logs must be maintained and emissions reported in the annual air emission report.

5) To ensure the potential-to-emit from these proposed activities remains less than 0.1 mrem/year, a non-destructive analysis (NDA) of the 296-A-29 HEPA filters will be performed annually during waste retrieval system operation. A baseline NDA will be performed prior to operation of the waste retrieval system.

6) Pipe cuts will be made with a sawzall/tri-tool or equivalent tool. If removable contamination levels are greater than 10,000 dpm/100 cm2 beta-gamma and 200 dpm/100 cm2 alpha, the cuts and welding preparation must be performed inside a glovebag.

7) Removal of in-tank equipment will be performed in accordance with ALARACT Demonstration 13, TWRS ALARACT Demonstration for Installation, Operation, and Removal of Tank Equipment, and ALARACT 12 TWRS ALARACT Demonstration for Packaging and Transportation of Equipment and Vehicles.

8) The HEPA filter on the endcap of the Long Length Contaminated Equipment Disposal System shall be installed and maintained in accordance with manufacturer's recommendations.

9) The TEDE to the MEI from pit work including equipment installation and removal will not exceed the calculated annual dose of 2.85E-02 mrem/year. The pit work will be performed in accordance with TWRS ALARACT Demonstration for Pit Access (6) and TWRS ALARACT Demonstration for Pit Work (14). When contamination levels inside the pit exceed those identified in the ALARACT Demonstrations a notification shall be made to the WDOH, identifying the additional controls to be added in accordance with the containment matrix guide from HNF-IP-0842. The APQ shall not exceed 5.77E+02 curies. The annual dose to the MEI and the APQ will be tracked on a WDOH approved log.

10) The TEDE to the MEI from soil excavation by hand digging will not exceed the calculated annual dose of 1.61E-02 mrem/year, and will be performed in accordance with ALARACT 5 TWRS ALARACT Demonstration for Soil

Excavation (using hand tools). The APQ shall not exceed 2.65E+01 curies. The annual dose to the MEI and the APQ will be tracked on a WDOH approved log.

11) The TEDE to the MEI from soil excavation by the Guzzler will not exceed 6.96E-02 mrem/year, and will be performed in accordance with the regulated Guzzler approval identified in (98-EAP-037). The APQ shall not exceed 1.15E-01 curies. The annual dose to the MEI and the APQ will be tracked on a WDOH approved log. Periodic confirmatory monitoring for soil excavation will consist of soil contamination surveys.

12) The TEDE to the MEI from transfer pipe cuts will not exceed 3.34E-02 mrem/year. The annual possession quantity (APQ) shall not exceed 6.79E+02 curies. The annual dose to the MEI and APQ will be tracked on a WDOH approved log.

13) To confirm low emissions during equipment removal and installation, periodic confirmatory monitoring will be as outlined in ALARACT 13; in addition, periodic confirmatory monitoring for the Flexible Receiver Bagging Process will consist of taking a smear survey of the cut bag. Documentation of the survey will be maintained in a WDOH approved log.

14) Total soil excavated during the project will not exceed 6,000 cubic yards, which includes approximately 3,600 cubic yards inside the tank farm.

15) Work in glovebags will not be performed if sustained wind speeds are greater than 30 miles per hour. This criterion applies to sustained wind speed as determined by the Hanford Meteorological Station.

Emission Unit ID: 228

200E P-296A030-001

296-A-30

This is a MINOR, ACTIVELY ventilated emission unit.

241-AN TANK FARM

Emission Unit Information

Stack Height: 23.40 ft. 7.13 m. Stack Diameter 2.00 ft. 0.61 m.

Average Stack Effluent Temperature: 68 degrees Fahrenheit. 20 degrees Celsius.

Average Stack ExhaustVelocity: 32.49 ft/second. 9.90 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Deentrainer	1	2 parallel flow paths with 1 de-entrainer in each train
	Heater	1	2 parallel flow paths with 1 heater in each train
	Fan	1	2 parallel flow paths with 1 fan in each train
	HEPA	2	2 parallel flow paths with 2 HEPAs in series in each train.

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	1 week sample/4 times per year

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a DST annulus exhauster used to support tank farm operations and ventilates the annuli of DSTs 241-AN Tank Farm. The tanks store radioactive waste until the waste is retrieved, treated, and properly disposed under the applicable federal and state regulations and/or permits. The annulus is the space between the inner wall and outer wall of the tank, and is used for leak detection. The emission unit operates intermittently.

Emission Unit ID: 230

200E P-241C107-001

241-C-107

This is a MINOR, PASSIVELY ventilated emission unit.

241-C TANK FARM

Emission Unit Information

Stack Height: 3.00 ft. 0.91 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 1.91 ft/second. 0.58 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 231

200E P-241C108-001

241-C-108

This is a MINOR, PASSIVELY ventilated emission unit.

241-C TANK FARM

Emission Unit Information

Stack Height: 3.00 ft. 0.91 m. Stack Diameter 1.00 ft. 0.30 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.17 ft/second. 0.05 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 232

200E P-241C112-001

241-C-112

This is a MINOR, PASSIVELY ventilated emission unit.

241-C TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 233

200E P-241C201-001

241-C-201

This is a MINOR, PASSIVELY ventilated emission unit.

241-C TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 235

200E P-241C204-001

241-C-204

This is a MINOR, PASSIVELY ventilated emission unit.

241-C TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 237

200E P-241C102-001

241-C-102

This is a MINOR, PASSIVELY ventilated emission unit.

241-C TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 242

200E P-241C203-001

241-C-203

This is a MINOR, PASSIVELY ventilated emission unit.

241-C TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 244

200E P-241C110-001

241-C-110

This is a MINOR, PASSIVELY ventilated emission unit.

241-C TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 245

200E P-241C109-001

241-C-109

This is a MINOR, PASSIVELY ventilated emission unit.

241-C TANK FARM

Emission Unit Information

Stack Height: 3.00 ft. 0.91 m. Stack Diameter 1.00 ft. 0.30 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.17 ft/second. 0.05 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 246

200E P-241C202-001

241-C-202

This is a MINOR, PASSIVELY ventilated emission unit.

241-C TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 247

200E P-241C101-001

241-C-101

This is a MINOR, PASSIVELY ventilated emission unit.

241-C TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 254

200W S-296S021-001

296-S-21

This is a MAJOR, ACTIVELY ventilated emission unit.

222-S LABORATORY

Emission Unit Information

Stack Height: 68.00 ft. 20.73 m. Stack Diameter 5.50 ft. 1.68 m.

Average Stack Effluent Temperature: 78 degrees Fahrenheit. 26 degrees Celsius.

Average Stack ExhaustVelocity: 63.16 ft/second. 19.25 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	3	In series for both the primary and backup exhaust systems (222-S Lab Hot Cells)
	HEPA	1	For both primary and backup exhaust systems (222-S Lab Complex)
	Fan	3	Primary exhaust operated in parallel, serves both hot cell addtion & main lab.
	Fan	1	Backup exhaust operates independently or in parallel with primary exhaust

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	Sr-90, Cs-137 and Pu-239	Continuous

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a laboratory building/facility exhauster that is used to ventilate building and facility operations such as but not limited to contaminated rooms, hot cells, glove boxes, and hoods, that support tank farm waste characterization activities, research and development, environmental sample analysis, and Hanford operations and remediation projects. The exhauster can be used to support current surveillance, maintenance activities, operations, decontamination, and cleanup activities within the building/facility. The emission unit is a laboratory building/facility exhauster ventilation system that operates continuously.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
License to Operate the 222-S Laboratory (Replaced NOC ID 716)	AIR 12-313	2/23/2012	831

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.02E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 3.00E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The 222-S Laboratory was built in the early 1950's to provide analytical services, first for the reduction and oxidation (REDOX) process, and later for several programs a5
nd plant operations. In 1994 Project W-041H, Environmental Hot Cell Expansion, provided the hot cell facility, an addition ot the east end of the 222-S Laboratory that includes the 11A hot cells and associated fume hoods. The increased hot cell capacity was required to support an increased demand for analytical services.

The 222-S Laboratory primarily receives, processes, and stores samples from various projects and packages samples for shipment to other onsite and offsite laboratories. The 222-S Laboratory is also used for sample analysis, testing, and process development. The majority of samples are from the single-shell tanks (SST) and double-shell tanks (DST) in the tank farm system with a few samples coming from other facilities such as the 242-A Evaporator, K Basins Project, Plutonium Finishing Plant (PFP), and the 219-S Waste Handling Facility. All SST and DST samples and most other samples are received through the 11A hot cell.

The 222-S Laboratory is also used for waste management activities, such as waste transfers to the 219-S Waste Handling Facility and other activities supporting laboratory and other Hanford Site operations. The 222-S Laboratory manages waste generated at 222-S Laboratory and small amounts of radioactive waste not generated as the 222-S Laboratory (i.e., for short-term storage or transfer to the 219-S Tank System).

The 222-S Laboratory undergoes operation and maintenance activities that occure in the radioactive portion of the facility and contribute to emissions through the 296-S-21 stack. Nonanalytical portions of the facility that exhaust through the 296-S-21 stack are the basement, tunnels, and other miscellaneous sources (e.g., vented storage cabinets).

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Am - 241 1.17E+01 Identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls.	Am - 243 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Ba - 137 m Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	C - 14 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cd - 113 m Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Cm - 242 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cm - 243 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cm - 244 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Co - 60 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cs - 134 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cs - 137 3.16E+03 Identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls.
Eu - 152 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Eu - 154 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Eu - 155 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
H - 3 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	I - 129 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Nb - 93 m Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Ni - 59 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Ni - 63 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Np - 237 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Pa - 231 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents		

less than 25% of the abated dose.

Pu - 238

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 239 6.85E+01

Identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls.

Pu - 240

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 241

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 242

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ra - 226

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ra - 228

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ru - 106

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sb - 125

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Se - 79

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sm - 151

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sn - 126

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sr - 90 9.00E+03

Identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls.

Tc - 99

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 229

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 232

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 232

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 233

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 234

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 235

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 236

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 238

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Y - 90 9.00E+03

Contributes less than 0.1 mrem/yr to the MEI and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zr - 93

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

4) HEPA Filters for the S-21 exhauster will meet the requirements of HNF-S-0477 and/or HNF-S-0552 which assure equivalency to ASME AG-1: Code on Nuclear Air and Gas Treatment.

5) Air sampling will be conducted in accordance with ANSI/HPS N13.1-1999: Sampling and Monitoring Releases of Airborne Radioactive Substances from the Stacks and Ducts of Nuclear Facilities.

6) Quality Assurance program will meet the requrements of 40 CFR 61, Appendix B, Method 114.

Emission Unit ID: 255

200E P-241BX104-001

241-BX-104

This is a MINOR, PASSIVELY ventilated emission unit.

241-BX TANK FARM

Emission Unit Information

Stack Height: 15.00 ft. 4.57 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 1.91 ft/second. 0.58 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

An alternate sampling method for breather filters with stack extensions may be performed by removing the test port cap downstream of the HEPA filter, surveying the cap and inserting smear media (e.g. swab, masslin) in the opening and smearing the interior ducting surface on the opposite side of the test port cap opening. Breather filters shall be aerosol tested every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 256

200E P-241BX110-001

241-BX-110

This is a MINOR, PASSIVELY ventilated emission unit.

241-BX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 257

200E P-241BX103-001

241-BX-103

This is a MINOR, PASSIVELY ventilated emission unit.

241-BX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 258

200E P-241BX107-001

241-BX-107

This is a MINOR, PASSIVELY ventilated emission unit.

241-BX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 259

200E P-241BX101-001

241-BX-101

This is a MINOR, PASSIVELY ventilated emission unit.

241-BX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 260

200E P-241BX112-001

241-BX-112

This is a MINOR, PASSIVELY ventilated emission unit.

241-BX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 261

200E P-241BX106-001

241-BX-106

This is a MINOR, PASSIVELY ventilated emission unit.

241-BX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 262

200E P-241BX102-001

241-BX-102

This is a MINOR, PASSIVELY ventilated emission unit.

241-BX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 263

200E P-241BX109-001

241-BX-109

This is a MINOR, PASSIVELY ventilated emission unit.

241-BX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 264

200E P-241BX111-001

241-BX-111

This is a MINOR, PASSIVELY ventilated emission unit.

241-BX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 265

200E P-241BX108-001

241-BX-108

This is a MINOR, PASSIVELY ventilated emission unit.

241-BX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 266

200E P-241B105-001

241-B-105

This is a MINOR, PASSIVELY ventilated emission unit.

241-B TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 267

200E P-241B201-001

241-B-201

This is a MINOR, PASSIVELY ventilated emission unit.

241-B TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 268

200E P-241B108-001

241-B-108

This is a MINOR, PASSIVELY ventilated emission unit.

241-B TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 269

200E P-241B101-001

241-B-101

This is a MINOR, PASSIVELY ventilated emission unit.

241-B TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 270

200E P-241B102-001

241-B-102

This is a MINOR, PASSIVELY ventilated emission unit.

241-B TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 271

200E P-241B204-001

241-B-204

This is a MINOR, PASSIVELY ventilated emission unit.

241-B TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 272

200E P-241B104-001

241-B-104

This is a MINOR, PASSIVELY ventilated emission unit.

241-B TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 273

200E P-241BX105-001

241-BX-105

This is a MINOR, PASSIVELY ventilated emission unit.

241-BX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 274

200E P-241B112-001

241-B-112

This is a MINOR, PASSIVELY ventilated emission unit.

241-B TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 275

200E P-241B107-001

241-B-107

This is a MINOR, PASSIVELY ventilated emission unit.

241-B TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 276

200E P-241B111-001

241-B-111

This is a MINOR, PASSIVELY ventilated emission unit.

241-B TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 277

200E P-241B109-001

241-B-109

This is a MINOR, PASSIVELY ventilated emission unit.

241-B TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 278

200E P-241B110-001

241-B-110

This is a MINOR, PASSIVELY ventilated emission unit.

241-B TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 279

200E P-241B103-001

241-B-103

This is a MINOR, PASSIVELY ventilated emission unit.

241-B TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 280

200E P-241B202-001

241-B-202

This is a MINOR, PASSIVELY ventilated emission unit.

241-B TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 281

200E P-241B106-001

241-B-106

This is a MINOR, PASSIVELY ventilated emission unit.

241-B TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 282

200E P-241B203-001

241-B-203

This is a MINOR, PASSIVELY ventilated emission unit.

241-B TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 283

200E P-241BY101-001

241-BY-101

This is a MINOR, PASSIVELY ventilated emission unit.

241-BY TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 284

200E P-241BY105-001

241-BY-105

This is a MINOR, PASSIVELY ventilated emission unit.

241-BY TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 285

200E P-241BY106-001

241-BY-106

This is a MINOR, PASSIVELY ventilated emission unit.

241-BY TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 286

200E P-241BY102-001

241-BY-102

This is a MINOR, PASSIVELY ventilated emission unit.

241-BY TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 287

200E P-241BY112-001

241-BY-112

This is a MINOR, PASSIVELY ventilated emission unit.

241-BY TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 288

200E P-241BY103-001

241-BY-103

This is a MINOR, PASSIVELY ventilated emission unit.

241-BY TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 289

200E P-241BY104-001

241-BY-104

This is a MINOR, PASSIVELY ventilated emission unit.

241-BY TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 290

200E P-241BY109-001

241-BY-109

This is a MINOR, PASSIVELY ventilated emission unit.

241-BY TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 291

200E P-241BY108-001

241-BY-108

This is a MINOR, PASSIVELY ventilated emission unit.

241-BY TANK FARM

Emission Unit Information

Stack Height: 15.00 ft. 4.57 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 1.91 ft/second. 0.58 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

An alternate sampling method for breather filters with stack extensions may be performed by removing the test port cap downstream of the HEPA filter, surveying the cap and inserting smear media (e.g. swab, masslin) in the opening and smearing the interior ducting surface on the opposite side of the test port cap opening. Breather filters shall be aerosol tested every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 292

200E P-241BY111-001

241-BY-111

This is a MINOR, PASSIVELY ventilated emission unit.

241-BY TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 293

200E P-241BY110-001

241-BY-110

This is a MINOR, PASSIVELY ventilated emission unit.

241-BY TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive HEPA Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 294

200E P-241BY107-001

241-BY-107

This is a MINOR, PASSIVELY ventilated emission unit.

241-BY TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 301

200E P-2025E ETF

296-E-1

This is a MINOR, ACTIVELY ventilated emission unit.

Effluent Treatment Facility(ETF)

Emission Unit Information

Stack Height: 51.00 ft. 15.54 m. Stack Diameter 6.00 ft. 1.83 m.

Average Stack Effluent Temperature: 72 degrees Fahrenheit. 22 degrees Celsius.

Average Stack ExhaustVelocity: 29.90 ft/second. 9.11 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
Vessel Off-Gas System	HEPA	3	1 heater and 2 filters in series, with 2 parallel fans (minimum of 1 in operations). VOG discharges into Building Ventilation
Vessel Off-Gas System	Fan	1	
Building Ventilation System	HEPA	2	3 parallel flowpaths each with 1 filter and 1 fan; minimum 2 in operation.
Building Ventilation System	Fan	2	Serves both areas

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	4 week sample/ year

Sampling Requirements Monitoring stations N498, N499, N972, and N999

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Operations at the 200 Area Effluent Treatment Facility (ETF) receive and treat liquid effluents at the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operation of the Liquid Effluent Retention Facility and the 200 Area Effluent Treatment Facility (Replaced NOC ID 690)	AIR 12-305	2/23/2012	822

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 4.59E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The operation of the Liquid Effluent Retention Facility/200 Area Effluent Treatment Facility (LERF/ETF), which includes the load-in station and load-in station filter skid.

Incoming wastewater can be added directly to the ETF process or received at the LERF or the load-in station. The LERF is allowed to receive wastewaters via underground pipelines from generator facilities, via pipeline

from the load-in station, or directly through a series of access ports located at each basin. The load-in station accommodates wastewater receipt via container (e.g., drums, carboys, tankers, etc.).

The ETF wastewater treatment process shall be comprised of a main treatment train and a secondary treatment train. The main treatment train shall provide for the removal or destruction of dangerous and radioactive contaminants from incoming wastewater. After treatment, the effluent shall be transferred to the verification tanks where it is sampled then discharged. Treated effluent is comparable to deionized water and contains tritium, which cannot be economically removed. Contaminants removed in the main treatment train are concentrated in the secondary treatment train. The contaminants shall be heated and dried to a powder form or removed as sludge and dried by the addition of absorbents. These residues shall be containerized and disposed onsite as radioactive waste.

Additional approval of the process for this activity is contained in the following Conditions/Limitations.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 8.48E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	4.45E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Alpha release rate is assumed to be Pu-239/240. ETF release rates are based on ETF operating capacity + 5 million gallon storage capacity (54.3 million gallons/yr plus 5.0 million gallons = 59.3 million gallons/yr). In addition to the isotopes specifically listed as approved under this NOC, other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta-gamma constituents.			
Am - 241		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
B/G - 0	2.95E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Beta/gamma release rate is assumed to be Sr-90/Cs-137. ETF release rates are based on ETF operating capacity + 5 million gallon storage capacity (54.3 million gallons/yr plus 5.0 million gallons = 59.3 million gallons/yr). In addition to the isotopes specifically listed as approved under this NOC, other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta-gamma constituents.			
C - 14		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ce - 144		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Cm - 244		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Co - 60		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Cs - 134		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Eu - 154		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Eu - 155		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
H - 3		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
I - 129		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
K - 40		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			

Mn - 54	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Na - 22	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 94	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Np - 237	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 238	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 241	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ra - 226	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ru - 106	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sb - 125	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Se - 79	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 99	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 233	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 234	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 235	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 236	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 238	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zn - 65	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zr - 95	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	C - 14	Ce - 144	Cm - 244	Co - 60
Cs - 134	Cs - 137	Eu - 154	Eu - 155	H - 3
I - 129	K - 40	Mn - 54	Na - 22	Nb - 94

Np - 237	Pu - 238	Pu - 239/240	Pu - 241	Ra - 226
Ru - 106	Sb - 125	Se - 79	Sr - 90	Tc - 99
U - 233	U - 234	U - 235	U - 236	U - 238
Zn - 65	Zr - 95			

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) The emissions for this activity from the 296-E-1 stack are limited to 3.89E-02 mrem/year unabated and 1.95E-05 mrem/year abated.

5) The following activities are approved for the 296-E-1 Emission Unit Point-Source Emissions:

- ETF operations and maintenance.
- Containerized wastewater additions to the ETF process.
- Leaks into the ETF secondary containment.
- Secondary waste packaging and storage.

Emission Unit ID: 302

200E P-241AX104-001

241-AX-104

This is a MINOR, PASSIVELY ventilated emission unit.

241-AX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 303

200E P-241AX102-001

241-AX-102

This is a MINOR, PASSIVELY ventilated emission unit.

241-AX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 304

200E P-241AX103-001

241-AX-103

This is a MINOR, PASSIVELY ventilated emission unit.

241-AX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 305

200E P-241AX101-001

241-AX-101

This is a MINOR, PASSIVELY ventilated emission unit.

241-AX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 308

200W P-213W-001

296-W-3

This is a MINOR, ACTIVELY ventilated emission unit.

213-W

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	Non-Operational	This emission unit is inactive and will require an NOC to resume operation or a report of closure to de-register.
	Fan	Non-Operational	This emission unit is inactive and will require an NOC to resume operation or a report of closure to de-register.
	Prefilter	Non-Operational	This emission unit is inactive and will require an NOC to resume operation or a report of closure to de-register.
	Heater	Non-Operational	This emission unit is inactive and will require an NOC to resume operation or a report of closure to de-register.
	Deentrainer	Non-Operational	This emission unit is inactive and will require an NOC to resume operation or a report of closure to de-register.

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
	Non-Operational		

Sampling Requirements Non-Operational

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status The emission unit is non-operational, removed from service and will not be utilized for future tank farm operations. If the emission unit is required for tank farm operations, the proper regulatory requirements and permits will be obtained prior to returning the emission unit to service. Closure is pending submittal of closure form and final inspection and approval by WDOH.

Emission Unit ID: 314

200W P-291T001-001

291-T-1

This is a MAJOR, ACTIVELY ventilated emission unit.

T PLANT COMPLEX

Emission Unit Information

Stack Height: 200.00 ft. 60.96 m. Stack Diameter 6.50 ft. 1.98 m.

Average Stack Effluent Temperature: 78 degrees Fahrenheit. 26 degrees Celsius.

Average Stack ExhaustVelocity: 20.10 ft/second. 6.13 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Prefilter	1	
	HEPA	2	In series
	Fan	2	2 in parallel (with one as a backup)

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B, Method 114 NDA as detailed in conditions below.	All radionuclides that contribute greater than 10 percent of the potential-to-emit TEDE to the MEI, greater than 0.1 mrem/yr potential-to-emit TEDE to the MEI, and greater than 25 percent of the TEDE to the MEI after controls	Particulates shall be continuously sampled and analyzed every two weeks for gross alpha and gross beta/gamma, composited quarterly, and analyzed isotopically.

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities at the T Plant Complex involve waste management operations in support of decontamination and decomissioning operations at the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Consolidated T Plant Operations (Replaces NOC 711)	AIR 12-312	2/23/2012	830

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.60E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

This consolidated T-Plant license supersedes all radioactive air licenses for 291-T-1.

a. This approval subsumes those activities approved in three previous license approvals, retains/revises the specific conditions and limitations of those approvals, and replaces them as the radioactive air license for T-Plant:

i. AIR 03-1208 (NOC ID # 445, "Storage in T-Plant Complex of Sludge from K-

Basins")
ii. AIR 01-1010 (NOC ID # 499, "T-Plant Complex Fuel Removal Project")
iii. AIR 02-704 (NOC ID # 500, "Entering and Characterizing of the 224-T Facility Process Cells")

b. With additional conditions and limitations provided herein, this approval also extends to new activities discussed in the NOC application "Radioactive Air Emissions Notice of Construction for Consolidated T Plant Operations", DOE/RL-2004-50, Rev. 0, September, 2004, described briefly:
i. Receipt, Storage, Treatment, and Load out of Contact-Handled and Remote-Handled Transuranic (TRU) and Transuranic Mixed Waste (M-91Initiative)
ii. Treatment (in addition to storage) of K-Basin Sludge from the North Load out Pit (NLOP)
iii. Such activities considered routine at T Plant as are described in succeeding conditions.

Activities a)i through a)iii may emit radioactive air through 291-T-1. Additionally, activity a)iii may emit to the 200 Areas Diffuse & Fugitive emission unit and to Portable Temporary Radioactive Air Emission Units.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 1.20E+02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Am - 241	1.38E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
isotopic distribution based on destrutive analysis of pre-filter four			
Cs - 137	1.46E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 239/240	1.38E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Sr - 90	1.94E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

The radioactive isotopes identified for this emission unit are (no quantities specified):
Am - 241 Cs - 137 Pu - 239/240 Sr - 90

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) All activities involving radioactive materials shall be conducted in accordance with radiation control procedures approved per applicable QA program. (WAC 246-247-040(5))

5) Calibrate all differential pressure gauges associated with 291-T-1 HEPA filters annually. (WAC 246-247-040(5))

6) Receipt, Storage, Treatment, and Load out of Contact-handled and Remote-handled transuranic (TRU) and transuranic mixed (TRUM) (M-91 Initiative):

A. M91 project activities shall be conducted in T-Plant within the head end, the railroad tunnel, and/or the T-Plant Canyon. M-91 waste shall be received at the head end or at the railroad tunnel. M91 waste is remote or contact handled transuranic, transuranic mixed, mixed, or mixed low level waste.

B. M-91 waste containers shall be opened and their contents treated in the head end of T-Plant only under containment, containment being defined here as either vented and HEPA-filtered glove box/bag, sealed glove box/bag, ventilated and HEPA-filtered containment tent or ventilated and HEPA-filtered solid-structure temporary containment, or PTRAEU. Where active ventilation is provided, that ventilation shall discharge into the T-Plant

canyon so that radioactive air emissions originating in this process are further controlled by the 291-T-1 ventilation system controls. Procedures (approved in accord with applicable QA program) to ensure the initial integrity of the containment and to ensure the continued integrity of the containment structures shall be followed, shall include periodic radiological surveys, and shall be kept available for WDOH review. The head end will be posted based on radiological conditions in accordance with radiation control procedures approved per applicable QA program.

C. M-91 waste containers shall be opened and their contents treated in the railroad tunnel and/or canyon of T-Plant, in accord with radiological control procedures (approved in accord with applicable QA program).

D. Lower risk M-91 containers may be received at the head end of T-Plant, and higher risk M-91 containers shall be received at the railroad tunnel. Risk criteria, including radiological risk considerations, governing receipt location shall be developed and documented.

E. Surface contamination and dose rate limits on M-91 waste containers received at T-Plant shall be governed by approved solid waste acceptance procedures. Deviations from approved solid waste acceptance procedures are allowed under a controlled waiver process. Stand-alone solid waste acceptance documents specifying surface contamination and dose rate limits shall be developed and approved for any M-91 containers received under the waiver process. These procedures shall be kept readily available for WDOH review. Documentation shall be sufficient to allow ready identification of the criteria under which each waste container is accepted, and shall note definite compliance with the applicable criteria on receipt.

F. Applicable surface contamination/dose rate criteria shall be documented for each container of M-91 waste repackaged at T-Plant for transshipment. Documentation of applicable criteria and compliance thereto shall be maintained for M-91 waste containers shipped from T-Plant.

G. Receipt, Storage, Treatment, and Load out of Contact-Handled and Remote-Handled Transuranic (TRU) and Transuranic Mixed Waste (M-91Initiative) includes the following activities:
G1) Receiving.
G2) Sorting.
G3) Storing.
G4) Size Reduction.
G5) Repackaging.
G6) Containerizing.
G7) Load out.
G8) Treatment. (WAC 246-247-040(5)).

7) Routine T-Plant Activities:

A1) Packaging and Repackaging Waste - Packaging and repackaging activities are performed for waste generated at T-Plant as well as for onsite and offsite generators. Packaging and repackaging activities are:
A1a) Sorting.
A1b) Segregation.
A1c) Removing prohibited items.
A1d) Compositing/aggregating solids or liquids.
A1e) Adding absorbent.
A1f) Size reduction [e.g., cutting (jaws, saws, torches)], bending, folding, crushing (e.g., drum crusher), shredding, compacting, or similar methods that do not have a higher extent of disruption].
A1g) Void filling.
A1h) Pressure relief/release (e.g., aerosol cans, gas cylinders, drums, or other similar containers).
A1i) Aerosol can/drum puncturing.
A2) Verification Activities - Verification support activities are provided for waste and other materials that are generated on or off the Hanford Site. Verification activities are:
A2a) Physical observation.
A2b) Nondestructive examination (NDE).
A2c) Nondestructive assay (NDA).
A2d) Chemical field screening.
A2e) Radiological surveys.
A2f) Radiological samples.

A2g) Headspace gas analysis.
A2h) Chemical sampling.
A3) Sampling Activities - Sampling of waste generated by operations or by other onsite or offsite generators is performed. The purpose of sampling is to confirm process knowledge, characterize waste, support verification, and determine land disposal requirements as applicable. Sampling activities are:
A3a) Field screening [e.g., pH paper, oxidizer, volatile organic analyses (VOAs), polychlorinated biphenyls (PCBs), or similar screening parameters].
A3b) Obtaining a sample for analysis [e.g., grab, composite, composite liquid waste sampler (COLIWASA), or other similar sampling techniques].
A3c) Shipping/transferring the samples to an approved laboratory for analysis.
A3d) Disposition of sample returns (e.g., placement back into the parent container or another approved container/tank).
A3e) Headspace gas analysis [typically in support of the Waste Isolation Pilot Plant (WIPP) Project].
A3f) Tank sampling (liquid, sludge, salt cake, composites).
A4) Decontamination/Refurbishment Activities - Materials, equipment, and waste can be decontaminated (e.g., free release, reduce the radiological levels, or other similar criteria) using a variety of methods. T-Plant also performs decontamination of T- Plant structural components (e.g., 221-T Building walls, cells, or other similar surfaces). Decontamination activities at T-Plant are:
A4a) Water (fog, high or low-pressure spraying).
A4b) Steam.
A4c) Ice blasting.
A4d) Vacuum blasting.
A4e) Brushing.
A4f) Abrasive tools.
A4g) Scraping.
A4h) Washing (e.g., chemicals/detergents).
A4i) Immersion.
A4j) Electro-polishing.
A4k) Cutting (e.g., removal by sawing, torch cutting more highly radioactive components or other similar methods).
A4l) Rust/paint removal.
A5) Maintenance Activities - A variety of preventative and/or repair maintenance activities are performed at T-Plant. Some maintenance activities involve the temporary shut down of the 291-T-1 exhaust stack. Maintenance activities are:
A5a) Painting.
A5b) Crane maintenance.
A5c) Electronic systems functional checks and repairs [CAMs, personnel contamination monitors (PCMs)].
A5d) Calibrations.
And may be performed on:
A5e) Rollup doors.
A5f) Heat pumps.
A5g) Exhaust fans.
A5h) Transformers.
A5i) Scale systems.
A5j) Wire rope.
A5k) Stack systems fan lubes.
A5l) Forklifts.
A6) Waste Treatment Activities - T-Plant is a treatment facility permitted by the Washington State Department of Ecology (Ecology). Treatment activities are:
A6a) Macroencapsulation.
A6b) Absorption.
A6c) Neutralization.
A6d) Immobilization.
A6e) Encapsulation.
A6f) Stabilization (solidification, cementation, grouting).
A6g) Compaction.
A6h) Amalgamation.
A6i) Segregation.
A6j) Shredding.

A6k) Venting.
A6l) Size Reduction.
A7) Recycling Activities - Materials are recycled whenever possible. Recycled materials are collected in accumulation containers in approved locations and transferred to the Recycling Center. Only nonradioactive materials are sent to the Recycling Center. Some radioactive materials (ferrous and nonferrous metals) can be recycled. Recycled materials are: ferrous and non-ferrous metal, light bulbs, aerosol cans, oils, and batteries.
A8) Storage Activities - T-Plant is permitted for waste storage by Ecology. Plant also stores other materials (chemicals, or equipment, or similar materials) to support operations. Radioactive wastes may be stored uncontainerized or in:
A8a) Containers (boxes, drums, tanker trucks/railcars, or large diameter containers).
A8b) Tanks.
A8c) Sumps and pipes.
A9) Equipment, Materials, and Waste Movement Activities - The movement of materials, equipment, waste, chemicals, or similar items involves the receipt and/or transferring/shipping, and movement and/or relocation within the T-Plant TSD unit boundary. Movement activities (using a forklift, crane, truck, dolly, personnel) are:
A9a) Receiving waste (liquid, solid, semi-solid) for storage and/or treatment.
A9b) Movement of waste (liquid, solid, semi-solid) and equipment in or out of process cells, canyon deck craneway, or tunnel in the 221-T Building.
A9c) Movement of liquids, sludges, or other waste from containers and/or tanks via transfer lines.
A9d) Waste container transfers (among outdoor storage pads, within buildings, process cells, canyon deck, or other approved locations).
A9e) Placing and storing chemical products in flammable cabinets or other approved storage locations.
A9f) Transloading from the 221-T tunnel to canyon deck and/or process cells.
A10) Housekeeping Activities - Housekeeping activities involve maintaining T-Plant in a clean and orderly condition. Housekeeping activities are:
A10a) Sweeping (brooms).
A10b) Mopping (squeegees or mops).
A10c) Vacuuming.
A10d) Dusting.
A10e) Wiping (sponges, towels).
A10f) Picking up debris.
A10g) Removal of trash.
A11) Surveillance Activities - Surveillance activities involve walking down and inspecting various areas, systems, and components. Surveillances typically consist of daily, weekly, and monthly inspections of waste containers, tanks, buildings, or similar locations. Surveillances are subject to change (adding, deleting and/or modifying) as operations, maintenance, engineering, and radiological control dictates. Surveillances, inspections, and maintenance activities that do not have the potential to create airborne contamination can occur within the 221-T Building when the 291-T-1 exhaust stack emission system is shutdown. The following surveillances are performed at T-Plant:
A11a) Container storage areas treatment and storage tanks and ancillary equipment.
A11b) General condition of building structures.
A11c) Safety Cold weather surveillances (typically, between October 1 and March 31).
A11d) Inspection of equipment.
A11e) Inspection of HEPA filtered vacuums.
A11f) Radiological surveys.
A12) Contamination Within the Canyon - The operational activities described inherently involve the spread of contamination within the canyon. The canyon is designed to provide containment for these operational activities. Job specific contamination controls are used (spreading paper to facilitate easy decontamination, fogging, fixing contamination, covering, performing operations remotely or other similar methods that cover, seal, or remove smearable contamination). (WAC 246-247-040(5))

8) The abated and unabated emissions for this license have been estimated using particulate 241-Am, 239/240-Pu, 137-Cs, and 90-Sr, based on the isotopic distribution measured in destructive analysis of a T-Plant pre-filter, a Dose Equivalent-Curie limit of 15,000 DE-Ci, and also include a small contribution from gaseous radionuclides that may be encountered. The amounts of radioactive gases included are: (3-H, 25 Ci), (85-Kr, 3000 Ci), (129-I, 0.05 Ci), (219-Rn, 0.2 Ci), (220-Rn, 30 Ci), (222-Rn, 2 Ci). Radionuclides that may be encountered as particulates are: 242-Cm, 243-Am, 244-Cm, 60-Co, 134-Cs, 154-Eu, 40-K, 94-Nb, 237-Np, 238-Pu, 241-Pu, 242-Pu, 244-Pu, 226-Ra, 106-Ru, 125-Sb, 228-Th, 234-Th, 232-U, 233-U, 234-U, 235-U, 236-U, 238-U. Other particulate radionuclides are

permitted, the total to remain within the DE-Ci limit of 15,000 DE-Ci and the abated emission limit of the license. Gaseous radionuclides are permitted, the sum of doses from radioactive gases to remain less than 6% of the total abated emission limit for this license.

This condition does not apply to naturally occurring Radon.

9) The alternative flow measurement method proposed for the 291-T-1 stack by USDOE letter 03-RCA-0210, dated April 9, 2003, is approved for use (WAC 246-247-075(3)).

10) The annual inspection and maintenance of the HEPAs must include visual inspection of the filter housing. Documentation of these activities must be made available to DOH upon request. (WAC 246-247-040(5))

11) The emission unit monitoring system shall have the following activities performed:
A1) By December 31, 2005 and annually thereafter:
A1a) A visual check of nozzle position and orientation as well as measurements of nozzle openings;
A1b) Checks to ensure the tightness of all fittings and connections as well as a leak test of the entire sampling system.
A1c) Visual inspections for corrosion, physical damage, or dust loading of the probe, sample lines, and monitoring system equipment.
A2) Annually, from December 31, 2003:
A2a) A functional/calibration check of monitoring system instrumentation shall be performed.
A2b) USDOE shall provide to WDOH for review copies of the procedures used to perform the above activities. (WAC 246-247-060(5)).

12) The PTE at T-Plant shall be tracked in DE curies. A running total of DE curies present at the beginning of the calendar year plus DE curies introduced into T-Plant during that year shall be maintained and kept available for WDOH review. This record shall be made current at no greater than weekly intervals. That the total does not exceed license limits shall be routinely verified, and documentation of that verification shall be maintained. (WAC 246-247-040(5)) (WAC 246-247-060(5))

13) The Quality Assurance Standards for the sampling of emissions and subsequent analysis must remain in compliance with HNF-0528 NESHAPS Quality Assurance Project Plan for Radioactive Airborne (all of sections 2.0, 3.0, 5.0). (WAC 246-247-060(5))

14) T-Plant must continue to demonstrate that the adequacy of their system design and operation is equivalent to the intent of ASME/ANSI N 510. Both stages of HEPA filtration must be individually aerosol tested in place, a minimum of annually (at a minimum control efficiency of 99.95 percent). (WAC 246-247-040(5))

15) Receipt and Storage of K-Basins Sludge:

A. Receipt, Treatment, Storage and Load out of north load out pit (NLOP) Sludge:

A1) Sludge treatment consists of mixing the sludge with grout via the following major process steps:
A1a) Transferring sludge from Large Diameter Container into the grout system.
A1b) Sampling to ensure grouted containers meet waste isolation project plant (WIPP) acceptance requirements.
A1c) Transferring aliquots into WIPP certified 55 gallon drums.
A1d) Grouting to meet WIPP waste acceptance criteria.
A2) Prior to treatment, NLOP sludge shall be stored in T-Plant process cells 3L, 10L, 13L, 15L, 8R, 9L, 14R, and/or 16R.
A3) Containerized and grouted sludge shall be stored for not longer than 23 years from the date of issue of this license within the T-Plant complex.
A4) Containerized and grouted sludge shall be stored within the TSD unit boundary, and disposed according to assay of individual containers.
A5) The potential-to-emit of NLOP sludge received at T-Plant shall not exceed 0.9 mrem/year, corresponding to 120 DE Ci.

B. Receipt and Storage of K-Basins Sludge:

B1) Preparation of cells to receive sludge containers, which shall be limited to the following activities:
B1a) Intrusive cell operations to relocate items within cells and to transfer items between cells.
B1b) Removal of cell contents, which shall be limited to the following operations.
B1b1) Remote crane operations using lifting bails and clamshells.
B1b2) Pumping of liquids.

B1b3) Vacuum suction.
B1b4) Storage, repackaging, and treatment of containerized and uncontainerized radioactive waste.
B1b5) Waste characterization, verification, repackaging, size reduction, segregation, immobilization, and consolidation.
B1b6) Preparation of waste shipments in accordance with acceptance criteria for other facilities.
B1b7) Treatment and storage of liquid mixed waste.
B1c) Storage of contaminated process equipment and debris in the 221-T Canyon Building cells and deck shall be limited to:
B1c1) Tanks, pulsers, precipitators, centrifuges, and jumpers/connectors.
B1c2) Decontamination equipment, immersion tanks, sprayers, and blasters.
B1c3) Equipment racks, pumps, mixers, and motors.
B1c4) Original equipment (prior to decontamination mission).
B1c5) Condensers, chillers, filter assemblies, and columns.
B1c6) Open and closed boxes, drums, and containers, filled with debris.
B1c7) Tools, concrete blocks, and loose debris.
B1d) Refurbishing, recycling, and maintenance of contaminated equipment shall be limited to the items of equipment listed above.
B1e) Decontamination of equipment and materials, which shall be limited to the following operations:
B1e1) Hand, spray, and abrasive methods.
B1e2) Steam cleaning.
B1e3) High pressure hot water.
B1e4) High pressure cold water
B1e5) Ice blasting.
B1e6) Abrasive tools.
B2) The chemical and physical processes associated with the sludge storage shall consist of the following:
B2b) Radioactive waste shall be managed in accordance with written facility and Hanford Site waste management procedures and acceptance criteria. Criteria for moving containers from the canyon into the tunnel include the requirements that smearable contamination on the outside of the container must be less than 400 dpm/100 cm2 alpha and less than 20,000 dpm/100 cm2 beta/gamma for low risk evolutions. For medium risk evolutions the criteria for moving containers from the canyon into the tunnel shall include the requirements that smearable contamination on the outside of the container must be less than 2,000 dpm/100 cm2 alpha and less than 100,000 dpm/100 cm2 beta/gamma.
B2c) New liner systems shall be installed in the pool if storage under water is required and in four to twelve of the process cells. Existing water conditioning systems (coolers, filtration system, ion exchange columns, and piping) shall be used, modified, replaced or removed if storage under water is required.
B2d) Spent nuclear fuel (SNF) sludge retrieved from the 105-KE and 105-KW Basins shall be managed as two separate waste streams. Sludge containers configured for dry storage shall be used for less reactive floor and pit sludge components, including windblown sand and rocks, spalled concrete from the basin walls, iron and aluminum corrosion products, ion exchange resin beads, uranium oxides, and uranium fuel particles. More reactive sludge collected in the knockout pots and settler tank during SNF retrieval and processing at K-Basins shall be stored in a container configured for storage under water or for dry storage if allowed by criticality and thermal analyses.
B2e) Physical upgrades to the 221-T Canyon, as determined in final design, shall include installation of new cell containment, liner bracing systems, sump pumps, leak detectors, and instrumentation and controls in the 221-T Canyon.
B2g) Canyon radiation detectors, alarms, and cameras will be upgraded to provide surveillance.
B2h) Sludge containers shall be designed to ensure a safe storage configuration, based on final design results determined in criticality and heat rejection requirements analysis. Final design shall analyze maximum sludge loading and container sizing to minimize the number of transfers and number of containers.
B2i) Contents of filled sludge containers shall consist of a layer of sludge below a layer of water and a layer of air to provide a void space in each container. Sludge containers shall be capable of maintaining sludge in a wet state during transport and storage.
B2j) Sludge containers shall be received and placed into interim storage in the 221-T Canyon, configured for dry cell storage or storage under water. All sludge container handling and placement within the 221-T Building shall be performed remotely via crane operations.
B2k) The containers shall be transported from K- Basins to the 221-T Building via tractor and trailer. Each transfer shall consist of one transport cask which shall be inspected upon receipt according to approved receipt methods.
B2l) Sludge container unloading operations shall be done remotely using the canyon crane system. T-Plant Complex personnel shall vent and purge the transport cask with non-radioactive inert gas within the controlled

airspace. The purge/venting system shall include a radiation detection method to verify that the storage container does not leak during transport and shall purge all hydrogen from the transport cask.
B2m) As a sludge container is moved from the tunnel into the canyon, operations personnel shall verify remotely the identification number and record the container number, via existing camera systems. After the container is removed from the cask, an empty container will be placed in the cask and the lid shall be replaced. The transport system shall be surveyed for possible contamination on exiting the Radiological Area and will return to K- Basins.
B2n) After the sludge containers are placed in the 221-T Canyon interim dry storage location, surveillance shall be performed to ensure that safety, regulatory, and safeguards and security requirements are met. Water levels within the dry storage containers shall be monitored (weight differential), and water additions shall be made remotely.
B2o) After sludge containers are placed in the interim underwater pool storage location, surveillance shall be performed to ensure that safety, regulatory, and safeguards and security requirements are met. Pool storage conditions (water quality, water temperature, water level, and ion exchange column status) shall be monitored, and water shall be added as needed to the pool to maintain the necessary water depth.
(WAC 246-247-040(5))

Emission Unit ID: 315

200W P-296T007-001

296-T-7

This is a MINOR, ACTIVELY ventilated emission unit.

T PLANT COMPLEX

Emission Unit Information

Stack Height: 28.00 ft. 8.53 m. Stack Diameter 2.30 ft. 0.70 m.

Average Stack Effluent Temperature: 78 degrees Fahrenheit. 26 degrees Celsius.

Average Stack ExhaustVelocity: 81.00 ft/second. 24.69 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Demister	1	To operate per Conditions and Limitations of the license.
	Heater	1	To operate per Conditions and Limitations of the license.
	Prefilter	1	
	HEPA	1	
	Fan	1	To operate per Conditions and Limitations of the license.

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(c)(4)(e) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	See special conditions.

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities at the 2706-T Facility involve waste management operations in support of decontamination and decomissioning operations at the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operation of the 2706-T Building(Replaces NOC 648)	AIR 12-311	2/23/2012	829

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 7.50E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted. The approved activities are limited to:

A1) Packaging and Repackaging Waste - Packaging and repackaging activities are performed for waste generated at 2706-T as well as for onsite and offsite generators. The repackaging of waste supports waste acceptance criteria for other TSD facilities. For example, prohibited items from waste packages are removed and either staged for later handling or repackaging using remote or manual methods.

Packaging and repackaging activities are:

A1a) Sorting.

A1b) Segregation.
A1c) Removing prohibited items.
A1d) Compositing/aggregating solids or liquids.
A1e) Adding absorbent.
A1f) Size reduction [e.g., cutting (jaws, saws, torches)], bending, folding, crushing (e.g., drum crusher), shredding, compacting, or similar methods that do not have a higher extent of disruption].
A1g) Void filling.
A1h) Pressure relief/release (e.g., aerosol cans, gas cylinders, drums, or other similar containers).

A2) Verification Activities - Verification support activities are provided for waste and other materials that are generated on or off the Hanford Site.

Verification activities are:

A2a) Physical observation.
A2b) Nondestructive examination (NDE).
A2c) Nondestructive assay (NDA).
A2d) Chemical field screening.
A2e) Radiological surveys.
A2f) Radiological samples.
A2g) Headspace gas sampling.
A2h) Chemical sampling.

A3) Sampling Activities - Sampling of waste generated by operations or by other onsite or offsite generators is performed. The purpose of sampling is to confirm process knowledge, characterize waste, support verification, and determine land disposal requirements as applicable.

Sampling activities are:

A3a) Field screening [e.g., pH paper, oxidizer, volatile organic analyses (VOAs), polychlorinated biphenyls (PCBs), or similar screening parameters].
A3b) Obtaining a sample for analysis [e.g., grab, composite, composite liquid waste sampler (COLIWASA), or other similar sampling techniques].
A3c) Shipping/transferring the samples to an approved laboratory for analysis.
A3d) Disposition of sample returns (e.g., placement back into the parent container or another approved container/tank).
A3e) Headspace gas analysis [typically in support of the Waste Isolation Pilot Plant (WIPP) Project].

A4) Decontamination/Refurbishment Activities - Materials, equipment, and waste can be decontaminated (e.g., free release, reduce the radiological levels, or other similar criteria) using a variety of methods. Equipment can also be repaired and refurbished within the 2706-T facility. Within 2706-T, decontamination of 2706-T structural components may be performed.

Decontamination and refurbishment activities at 2706-T are:

A4a) Water (fog, high or low-pressure spraying).
A4b) Steam.
A4c) Ice blasting.
A4d) Vacuum blasting.
A4e) Brushing.
A4f) Abrasive tools.
A4g) Scraping.
A4h) Washing (e.g., chemicals/detergents).
A4i) Immersion.
A4j) Electro-polishing.
A4k) Cutting (e.g., removal by sawing, torch cutting more highly radioactive components or other similar methods).
A4l) Rust/paint removal.

A4m) Sand blasting.
A4n) Vacuuming.

A5) Maintenance Activities - A variety of preventative and/or repair maintenance activities are performed at 2706-T. Some maintenance activities involve the temporary shut down of the 296-T-7 exhaust stack.

Maintenance activities are:

A5a) Painting.
A5b) Crane maintenance.
A5c) Electronic systems functional checks and repairs [CAMs, personnel contamination monitors (PCMs)].
A5d) Calibrations.
A5e) Mechanical overhaul and rebuild.
A5f) Bearing replacement.
A5g) Pump and motor alignment.
Maintenance may be performed on:
A5h) Rollup doors.
A5i) Heat pumps.
A5j) Exhaust fans.
A5k) Transformers.
A5l) Scale systems.
A5m) Wire rope.
A5n) Stack systems.
A5o) Forklifts.

A6) Waste Treatment Activities - 2706-T is a RCRA treatment and Storage facility permitted by the Washington State Department of Ecology (Ecology).

Treatment activities are:

A6a) Macroencapsulation.
A6b) Absorption.
A6c) Neutralization.
A6d) Immobilization.
A6e) Encapsulation.
A6f) Stabilization (solidification, cementation, grouting).
A6g) Compaction.
A6h) Amalgamation.
A6i) Segregation.
A6j) Shredding.
A6k) Venting and drilling.
A6l) Size Reduction.

A7) Recycling Activities - Materials are recycled whenever possible. Recycled materials are: ferrous and non-ferrous metal, light bulbs, aerosol cans, oils, and batteries.

A8) Storage Activities – 2706-T stores materials (chemicals, or equipment, or similar materials) to support operations. Radioactive wastes may be stored uncontainerized or in:
A8a) Containers (boxes, drums, tanker trucks/railcars, or large diameter containers).
A8b) Tanks.
A8c) Sumps and pipes.

A9) Equipment, Materials, and Waste Movement Activities - The movement of materials, equipment and waste is necessary to support operations and maintenance. Movement activities (using a forklift, crane, truck, dolly, personnel) are:
A9a) Receiving waste (liquid, solid, semi-solid) for storage and/or treatment.
A9b) Movement of waste (liquid, solid, semi-solid) and equipment.
A9c) Movement of liquids, sludges, or other waste from containers and/or tanks via transfer lines.

A9d) Waste container transfers.
A9e) Placing and storing chemical products in flammable cabinets or other approved storage locations.
A9f) Movement of contaminated material.

A10) Housekeeping Activities - Housekeeping activities involve maintaining 2706-T in a clean and orderly condition.

Housekeeping activities are:

A10a) Sweeping (brooms).
A10b) Mopping (squeegees or mops).
A10c) Vacuuming.
A10d) Dusting.
A10e) Wiping (sponges, towels).
A10f) Picking up debris.
A10g) Removal of trash.

A11) Surveillance Activities - Surveillance activities involve walking down and inspecting various areas, systems, and components. Surveillances typically consist of daily, weekly, and monthly inspections of waste containers, tanks, buildings, or similar locations. Surveillances are subject to change (adding, deleting and/or modifying) as operations, maintenance, engineering, and radiological control dictates. Surveillances, inspections, and maintenance activities that do not have the potential to create airborne contamination can occur within the 2706-T Building when the 296-T-7 exhaust stack emission system is shutdown.

The following surveillances are performed at 2706-T:

A11a) Container storage areas treatment and storage tanks and ancillary equipment.
A11b) General condition of building structures.
A11c) Cold weather surveillances (typically, between October 1 and March 31).
A11d) Inspection of equipment.
A11e) Inspection of HEPA filtered vacuums.
A11f) Radiological surveys.

2706-T: The 2706-T facility includes the 2706-T building and the 2706-TA Building. The 2706-T Building and the 2706-TA Building make up a single structure and are described briefly here. The 2706-T facility handles low-level waste, mixed low level waste, and transuranic (TRU) waste.

The 2706-T Building was built in 1959 as a low-level radiological decontamination building. The original building was 66 feet long and 50 ft wide. The 2706-TA Building was added in 1994/1995 over the concrete pad on the west side of the 2706-T. One rollup-door and one man-door provide access between 2706-T and 2706-TA Building. Three heat pumps provide heating, ventilation, and air conditioning for the 2706-T Building operations area. Waste handling and decontamination operational areas of the 2706-T Building are open and unobstructed. The 2706-T building is a pre-engineered metal building. The foundation is concrete slab on grade throughout. The 2706-T Building includes two pits, one for decontamination and treatment of motor vehicles and other large equipment, and one for rail car decontamination and treatment. These pits can also be used to support collection of liquids from waste handling activities.

Current operations in 2706-T Building include waste sampling, packaging and repackaging, head-gas sampling, managing waste containers, decontamination/refurbishment, maintenance, recycling, storage, housekeeping, surveillance, and movement activities. One egress door leads directly to the exterior of 2706-T Building. Other doors lead directly to the non-ventilated lean-to on the north side, and an air lock provides access to the 2706-TA Building operations area. The railway and auto pits have metal grating and some wooden covers to prevent falls into the pits. An epoxy floor sealant had been applied to all operational area floors. To support these operations, greenhouses are used as necessary in 2706-T. Greenhouses are temporary or semi-permanent radioactive material confinement structures, and can be used for contamination control. If used, greenhouses shall exhaust to the areas ventilated by the 296-T-7 ventilation system.

The atmosphere clean-up train (ACT-1) system, sprinkler system riser room, and electrical room are located in

the south lean-to (non-ventilated).

2706-TA: The 2706-TA Building is an addition to the 2706-T Building installed in the 1990s as an add-on over the concrete storage pad located west of the building. The 2706-TA Building is approximately 54 feet long, 45 ft wide, and 23 feet high. There are two rollup doors located at the west end of the building. The 2706-TA Building has steel primary and secondary structural elements and corrugated sheet metal exterior siding and roofing panels. Three heat pumps provide heating, ventilation, and air conditioning for the 2706-TA Building operations area. The floor is concrete slab on grade. An epoxy floor sealant had been applied to all operational area floors. Waste handling and decontamination operational areas of the 2706-TA Building are open and unobstructed.

Current operations in 2706-TA Building include waste sampling, packaging and repackaging, head-gas sampling, managing waste containers, decontamination/refurbishment, maintenance, recycling, storage, housekeeping, surveillance, and movement activities. To support waste activities, greenhouses are used if necessary. Greenhouses are temporary or semi-permanent radioactive material confinement structures, and can be used for contamination control. When used, greenhouses shall exhaust to the areas ventilated by the 296-T-7 ventilation system.

Attached to the south side of 2706-TA Building is a lean-to made up of two rooms. The larger room houses the new ACT-2 HEPA filter system, which serves the operational areas. The ACT-1 and ACT-2 systems exhaust through the 296-T-7 stack. The second room houses electronic controllers and electrical switchgear supporting operations.

Emissions from these activities are exhausted through 296-T-7, except for emissions resulting from vented TRU containers stored within the facility, which may be released to the 200 Area diffuse and fugitive emission unit when the ventilation system is not in operation.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 7.50E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

DE - 0	1.90E-05	Contained	WAC 246-247-030(21)(a)
Any radionuclide on the chart of the nuclides could be encountered. A small contribution from the gaseous radionuclides may be encountered. The radionuclides within the facility are controlled by the licensee in terms of dose-equivalent (DE) Curies. A conservative PTE tracking method for the demonstration of compliance to the licensed PTE limits is provided in the conditions of the license. "Contained" means "within typical TRU waste containers for which a release fraction of 2E-09 has been determined to be appropriate."			
DE - 0	2.90E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Any radionuclide on the chart of the nuclides could be encountered. A small contribution from the gaseous radionuclides may be encountered. The radionuclides within the facility are known to and controlled by the licensee in terms of dose-equivalent (DE) Curies. A conservative PTE tracking method for the demonstration of compliance to the licensed PTE limits is provided in the conditions of the license. This amount of DE curies is permitted within the facility uncontained in TRU waste containers as liquid/particulate for which a release fraction of 1E-03 is appropriate.			
H - 3	1.50E+01	Gas	WAC 246-247-030(21)(a)
Rn - 219	2.00E-01	Gas	WAC 246-247-030(21)(a)
Rn - 220	2.80E+01	Gas	WAC 246-247-030(21)(a)
Rn - 222	1.47E+00	Gas	WAC 246-247-030(21)(a)

The radioactive isotopes identified for this emission unit are (no quantities specified):

H - 3 Rn - 219 Rn - 220 Rn - 222

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) All activities involving potentially airborne radioactive materials in 2706-T shall be conducted in accordance with the ALARA principle. (WAC 246-247-040(5))

5) The PTE in the space ventilated by 296-T-7 shall be tracked for compliance to the license limit as described in this condition.

Waste Contained in Typical TRU Waste Containers: PTE < 9490 DE Ci/year * 2E-09. Compliance: maintain annual total of DE Ci * 2E-09 below limit. [Dose contribution of this activity to license limit estimated assuming each DE Ci is 241-Am].

Venting of Waste Contained in Typical TRU waste Containers: PTE < 9490 DE Ci/year * 1E-03 * 5.7E-05. Compliance: maintain annual total of DE Ci * 1E-03 * 5.7E-05 vented below limit. [Dose contribution of this activity to license limit estimated assuming each DE Ci is 241-Am].

Torch cutting: PTE< 9E-04 mrem/year. Compliance: Maintain the product of inches cut and contamination level to: < 8.8 E+09 in-dpm/100 sq.cm beta/gamma and < 8.8E+6 dpm/100 sq.cm alpha.
(Note: The release at the cut is assumed gaseous due to high cutting temperature, but it is also assumed that any gases thus formed will recondense into a particulate form by the time they reach the filters, and be subject to the standard removal efficiency of the HEPA filter.) [Dose contribution of this activity to license limit estimated assuming all alpha is 241-Am, all beta/gamma is 137-Cs.]

Gases in Waste Contained in Typical TRU Waste Containers: PTE < 7E-04 mrem/year. Compliance - maintain: tritium PTE below 15 Ci/yr; 219-Rn PTE below 0.2 Ci/yr; 220-Rn PTE below 28 Ci/yr; 222-Rn PTE below 1.47 Ci/year. These limits apply to process-enhanced radionuclides only, per (WAC 246-247-020(4)). [Dose contribution of this activity to license limit estimated using isotope-specific dose conversions factors.]

Other Processes: PTE < 4.9 E-02 mrem/year. Compliance: maintain total facility DE Ci/year (exclusive of TRU included above) * 1E-03 below 2.9 * 1E-03, or maintain the sum Ci(alpha) * 1E-03 * 17 + Ci(beta/gamma) * 1E-03 * 0.31 below 4.9 E-02 mrem/year. [Dose contribution of this activity's PTE to license limit estimated assuming DE Curies are 241-Am].

Residual Contamination: PTE < 7.1E-03 mrem/year. Accounts for residual contamination present in facility if posting is Contamination Area or below. Greater contamination levels result from other processes, and are accounted for in the PTE(s) associated with them. No specific compliance demonstration is necessary beyond the compliance with posting requirements. [Dose contribution of this activity to license limit estimated assuming all alpha is 241-Am, all beta/gamma is 137-Cs.]

The facility shall document and implement a program of inspection and maintenance to ensure the continuous integrity of contamination fixative used within the facility.

That the total PTE does not exceed licensed limits shall be routinely verified, and documentation of that verification shall be maintained. (WAC 246-247-040(5)) (WAC 246-247-060(5))

6) The ventilation system shall be in operation when activities involving radioactive or contaminated materials are performed within the ventilated space. The ventilation system shall be in operation if any part of the 2706-T Facility is posted as a high contamination area, or higher. Storage/movement of ventilated (NucFil or vent clip) TRU containers is permitted when the ventilation system is not operating (WAC 246-247-040(5)).

7) Record sampling shall be continuous whenever the ventilation system is operating. Samples shall be collected monthly, for periods in which the ventilation system has operated. Samples shall be composited and analyzed quarterly, if a sample was collected during that quarter. Licensee shall document minimum detectable concentrations for the stack emissions measurements (WAC 246-247-075 (3, 8, 9))

8) The demisters and heaters in the 296-T-7 ventilation system shall operate when: The ventilation system is operating and processes capable of elevating the ventilation system air humidity or capable of mechanical aerosolization of liquids are performed. Licensee shall develop and document specific and auditable process criteria governing heater and demister operation, sufficient to ensure continued effectiveness of the HEPA filters. (WAC 246-247-040(5))

Emission Unit ID: 332

200W P-291S001-001

291-S-1

This is a MINOR, ACTIVELY ventilated emission unit.

S PLANT (REDOX)

Emission Unit Information

Stack Height: 200.00 ft. 60.96 m. Stack Diameter 6.50 ft. 1.98 m.

Average Stack Effluent Temperature: 78 degrees Fahrenheit. 26 degrees Celsius.

Average Stack ExhaustVelocity: 33.10 ft/second. 10.09 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Sandfilter	1	
	Fan	2	In parallel, only 1 operates at a time

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	4 week sample/year

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities at the 202-S Facility involve surveillance and maintenance at the Hanford Site.

Emission Unit ID: 337

200W P-296S016-001

296-S-16

This is a MINOR, ACTIVELY ventilated emission unit.

219-S Building

Emission Unit Information

Stack Height: 12.50 ft. 3.81 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 78 degrees Fahrenheit. 26 degrees Celsius.

Average Stack ExhaustVelocity: 29.41 ft/second. 8.96 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	
	Fan	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	1 week sample/4 times per year

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a waste handling building/facility exhauster that is used to ventilate building and facility operations such as but not limited to liquid waste tanks that support tank farm waste characterization activities, research and development, environmental sample analysis, and Hanford operation and remediation projects. This emission unit operates continuously.

Emission Unit ID: 340

200E P-296B010-001

296-B-10, WESF

This is a MAJOR, ACTIVELY ventilated emission unit.

Waste Encapsulation and Storage Facility (WESF)

Emission Unit Information

Stack Height: 75.00 ft. 22.86 m. Stack Diameter 3.50 ft. 1.07 m.

Average Stack Effluent Temperature: 68 degrees Fahrenheit. 20 degrees Celsius.

Average Stack ExhaustVelocity: 42.20 ft/second. 12.86 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
K-1 Filter Bldg.	Prefilter	2	In series
K-1 Filter Bldg.	HEPA	2	In series
K-1 Filter Bldg.	Fan	1	2 in parallel
K-3 Filter Pit	Demister	1	Not operable
K-3 Filter Pit	Heater	1	Not operable
K-3 Filter Pit	Impingement Vanes	1	
K-3 Filter Pit	HEPA	2	2 parallel flow paths, in-series
K-3 Filter Pit	Fan	1	2 parallel paths (1 in-use, 1 backup)

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 60, Appendix A, Method 2; 40 CFR 61, Appendix B, Method 114; 61.93(b)(2)(ii) ANSI N13.1	Each radionuclide that could contribute greater than 10% of the potential TEDE	Continuous

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities for WESF involve surveillance, maintenance and storage of radioactive capsules on the Hanford Site.

Emission Unit ID: 361

300 EP-325-01-S

EP-325-01-S

This is a MAJOR, ACTIVELY ventilated emission unit.

325 Building Radiological Processing Laboratory

Emission Unit Information

Stack Height: 89.00 ft. 27.13 m. Stack Diameter 8.00 ft. 2.44 m.

Average Stack Effluent Temperature: 77 degrees Fahrenheit. 25 degrees Celsius.

Average Stack ExhaustVelocity: 46.53 ft/second. 14.18 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	2	2 in series
	Fan	1	Variable flow (4 in parallel, up to 3 operational) Variable flow4 in parallel (1 minimum operational). The system has the capability to going down to 1 fan during set back operations.

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B, Method 114	Each radionuclide that could contribute greater than 10% of the potential TEDE	Particulates are continuously sampled and collected every two-weeks for gross alpha and gross beta analysis, and composited on a semi-annual basis and analyzed isotopically. Tritium samples are collected on a monthly basis for analysis.

Sampling Requirements Record Sample; tritium by silica gel

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This 89 foot tall stack exhausts filtered building air. Emissions were sampled using a record particulate sampler and a tritium sampler. The building contains radiochemistry laboratories and hot cells used for research process development, mixed waste treatment activities, and radioanalytical services.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Radiochemical Processing Laboratory (325 Building) , Revision 2 , 300 Area, Hanford Site, Richland, Washington	AIR 11-704	7/7/2011	807

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.80E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) The research and development (R&D) operations in the 325 Building involve: radiochemical process science and engineering; evaluation, analysis, and testing of radioactive, radiochemical, chemical and physical

material properties; development and experimentation in the design and application of Radiation Generating Devices (RGDs); and the development and conduct of analytical procedures in support of research activities. Radiochemical work routinely conducted in the 325 Building includes the following:

Radiochemical and physical characterization of tank wastes, spent fuel, contaminated soils, and proposed final waste forms such as glass and ceramics, all at various stages of processing.

Radioactive material immobilization and stabilization process development and testing

Development and preparation of radioactive material standards for laboratory use

Radioisotope research, process development, and separations including development and testing of radioisotope-powered electrical generators

Nuclear material evaluation

Tritium producing burnable absorber rod (TPBAR) sample preparation and analysis and characterization testing of tritium and tritium-bearing materials

Chemical process development and rheology tests and experiments, such as:

Bench-scale testing of solid/liquid separation technologies including settle/decant, cross-flow filtration and dead-end filtration

Chemical process development for precipitation processes for waste treatment

Evaluation of ion exchange material performance

Evaluation and development of solvent extraction techniques

Retrieval and transport testing (sluicing, pumping, and pipe flow)

Gas generation testing

Irradiation testing

Development of methods for separation of radioisotopes

Evaluation and engineering testing of decontamination and decommissioning technologies

Electrochemical waste processing including salt splitting, nitrate destruction, organic destruction, and electroplating

Development and testing of plutonium and actinide technologies

Actinide chemistry R&D

Providing a treatment service for hazardous waste or mixed (hazardous and radioactive) waste, which includes: grouting, neutralization, and distillation; demonstrating new and emerging technologies for waste treatment and destruction; and developing and testing waste treatment technologies such as evaporation/concentration of radioactive solutions, or vitrification and testing of glass waste forms

Non-destructive analysis evaluations of waste drums and other materials and x-ray verification and compaction of LLW

Preparation and/or analysis of samples for x-ray diffraction, electron microscopy, optical microscopy, auger analysis, and other surface techniques

Spent nuclear fuel characterization and performance testing

Preparation of standard solutions of radionuclides from stock batches for use in R&D of analytical procedures and for quality control; analysis of performance evaluation samples submitted by the U.S. Environmental Protection Agency, the Environmental Monitoring Laboratory and other organizations as a routine part of the laboratory quality control program

Property testing of irradiated materials including performance of reactor dosimetry and hydrogen and helium measurements to characterize radiation damage in materials; analysis, fabrication, and characterization of radioactive colloids

Separation and processing of medically usable radioisotopes; development and testing of equipment for nuclear medicine

Characterization and testing of tritium and tritium-bearing materials

Analysis, characterization, and stabilization of sodium-bearing materials (Na and NaK)

Target sample extraction and purification

Research and laboratory activities that may include processes where the temperature may be equal to or exceed 100 degree Celsius.

Research activities involving mixed activation products (MAPs) and mixed fission products (MFPs)

Laboratory setup projects involving fume hood removals/upgrades and ductwork tie-in

Depending on the radioactive or hazardous nature of the work, activities in the 325 Building are divided among the two hot cell complexes and general laboratories containing glove boxes, fume hoods, and laboratory benches.

Hot cells are used for work with high-dose-rate materials when the additional shielding provided by the hot cell walls and remote handling capability provided by the manipulators are necessary for protecting workers from unnecessary occupational exposures to radiation. Glove boxes are used to provide control and confinement of dispersible radioactive materials as necessary for the work activity. Fume hoods are used for low-level radiochemical work to primarily protect workers from chemical fumes and to provide a limited degree of confinement for radioactive materials. Work with radioactive materials on bench tops is limited to activities in which the possibility of spreading contamination is low. Individual projects frequently involve working in and transferring materials among more than one of these locations. For example, sample preparation or dilution may be performed in a hot cell or glove box, and then the sample may be moved to a laboratory fume hoods for analysis.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 3.99E+02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Ac - 225		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ac - 227	4.10E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes greater than 0.1 mrem/yr PTE unabated TEDE to the MEI and requires monitoring.			
Ac - 228		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ag - 108		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ag - 108 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			

Ag - 109 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ag - 110		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ag - 110 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ag - 111		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Al - 26		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Al - 28		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Am - 241	5.10E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes greater than 0.1 mrem/yr PTE unabated TEDE to the MEI, and represents greater than 10% PTE unabated TEDE to the MEI and requires monitoring.			
Am - 241		Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Am - 242		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Am - 242 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Am - 243	2.40E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributed greater than 0.1 mrem/yr PTE unabated TEDE to the MEI and requires monitoring.			
Am - 245		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Am - 246		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ar - 37		Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ar - 39		Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ar - 41		Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ar - 42		Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
As - 74		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
As - 76		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
At - 217		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			

Au - 195	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Au - 198	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Au - 198 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 131	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 133	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 133 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 137 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 139	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 140	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 141	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 142	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 143	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Be - 10	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Be - 7	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 207	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 208	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 210	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 210 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 211	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 212	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 213	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 214	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bk - 249	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bk - 250	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Br - 82	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Br - 82 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Br - 82 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Br - 83	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Br - 84	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Br - 84 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Br - 85	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

C - 11	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

C - 14	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

C - 15	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ca - 41	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ca - 45	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ca - 47	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cd - 107	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cd - 109	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cd - 111 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cd - 113 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Cd - 113		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Cd - 115		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Cd - 115 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Cd - 117		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Cd - 117 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ce - 139		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ce - 141		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ce - 142		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ce - 143		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ce - 144		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Cf - 249		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Cf - 250		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Cf - 251		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Cf - 252		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Cl - 36		Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Cm - 241		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Cm - 242		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Cm - 243		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Cm - 244	3.00E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes greater than 0.1 mrem/yr PTE Unabated TEDE to the MEI and requires monitoring.			

Cm - 245		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Cm - 246		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Cm - 247		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Cm - 248		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Co - 56		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Co - 57		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Co - 58		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Co - 60		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Cr - 49		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Cr - 51		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Cr - 55		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Cs - 131		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Cs - 132		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Cs - 134		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Cs - 134 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Cs - 135		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Cs - 136		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Cs - 137		Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Cs - 137	7.50E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes greater than 0.1 mrem/yr PTE Unabated TEDE to the MEI and requires monitoring.			
Cs - 138		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			

Cs - 139		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 140		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 141		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cu - 64		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cu - 66		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Dy - 165		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Er - 169		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Er - 171		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Es - 254		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 150		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 152	1.20E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes greater than 0.1 mrem/yr PTE Unabated TEDE to the MEI and requires monitoring.

Eu - 152 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 154	1.20E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes greater than 0.1 mrem/yr PTE Unabated TEDE to the MEI and requires monitoring.

Eu - 155		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 156		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 157		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

F - 18		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Fe - 55		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Fe - 59		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Fr - 221		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Fr - 223		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ga - 67		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ga - 68		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ga - 72		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Gd - 148		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Gd - 149		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Gd - 151		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Gd - 152		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Gd - 153	1.80E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes greater than 0.1 mrem/yr PTE Unabated TEDE to the MEI and requires monitoring.

Ge - 68		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ge - 71		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ge - 71 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ge - 75		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ge - 77		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ge - 77 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

H - 3	1.10E+03	Gas	WAC 246-247-030(21)(a)

Contributes greater than 0.1 mrem/yr PTE unabated TEDE to the MEI and Represents greater than 25% of the TEDE to the MEI after controls and requires monitoring.

Hf - 175		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Hf - 178		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Hf - 178 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Hf - 181		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Hf - 182	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Hg - 203	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ho - 163	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ho - 166	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ho - 166 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 122	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 123	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 125	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 128	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 129	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 130 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 130	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 131	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 132 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 132	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 133 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 133	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 134 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 134	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 135	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

In - 106	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

In - 111	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

In - 113 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

In - 114	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

In - 114 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

In - 115	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

In - 115 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

In - 116	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

In - 116 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ir - 192	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

K - 40	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

K - 42	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Kr - 81 m	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Kr - 81	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Kr - 83 m	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Kr - 85	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Kr - 85 m	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Kr - 87	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Kr - 88	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Kr - 89	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Kr - 90	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
La - 137	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
La - 138	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
La - 140	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
La - 141	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
La - 142	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
La - 144	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Lu - 177	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Mg - 27	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Mg - 28	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Mn - 52	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Mn - 54	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Mn - 56	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Mo - 103	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Mo - 104	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Mo - 105	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Mo - 93	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Mo - 99	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
N - 13	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Na - 22	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

Na - 24 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Na - 24	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Nb - 100	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Nb - 101	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Nb - 103	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Nb - 91	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Nb - 91 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Nb - 92	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Nb - 93 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Nb - 94	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Nb - 95	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Nb - 95 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Nb - 97	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Nb - 97 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Nb - 98	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Nd - 144	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Nd - 147	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ni - 56	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ni - 59	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ni - 63	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

Ni - 65		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Np - 235		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Np - 236		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Np - 237	3.60E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Np - 238		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Np - 239		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Np - 240		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Np - 240 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

O - 15		Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

O - 19		Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Os - 191		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

P - 32		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

P - 33		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pa - 231		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pa - 233		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pa - 234		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pa - 234 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pb - 207		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pb - 209		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pb - 210		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pb - 211	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pb - 212	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pb - 214	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pd - 103	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pd - 107	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pd - 109	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 143	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 144	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 145	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 146	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 147	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 148	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 148 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 149	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 151	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 208	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 209	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 210	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 211	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 212	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 213		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 214		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 215		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 216		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 218		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pr - 143		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pr - 144		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pr - 144 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 234		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 236		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 237		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 238	4.10E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Represents greater than 10% PTE unabated TEDE to the MEI and Contributes greater than 0.1 mrem/yr PTE unabated TEDE to the MEI and requires monitoring.

Pu - 239	3.90E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Represenrts greater than 10% PTE unabated TEDE to the MEI and Contributes greater than 0.1 mrem/yr PTE unabated TEDE to the MEI and requires monitoring.

Pu - 240	8.90E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes greater than 0.1 mrem/yr PTE Unabated TEDE to the MEI and requires monitoring.

Pu - 241	2.60E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes greater than 0.1 mrem/yr PTE Unabated TEDE to the MEI and requires monitoring.

Pu - 242		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 243		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 244		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 246		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ra - 223		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ra - 224		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ra - 225		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ra - 226	2.20E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes greater than 0.1 mrem/yr PTE Unabated TEDE to the MEI and requires monitoring.

Ra - 228		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 81		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 83		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 84		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 86		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 87		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 88		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 89		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 90		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 90 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Re - 186		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Re - 187		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Re - 188		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rh - 101		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rh - 102		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rh - 102 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rh - 103 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rh - 104	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Rh - 105	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Rh - 105 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Rh - 106	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Rn - 219	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Rn - 219	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Rn - 220	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Rn - 222	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Rn - 224	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ru - 103	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ru - 105	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ru - 106	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ru - 97	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
S - 35	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sb - 122	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sb - 124	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sb - 125	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sb - 126	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sb - 126 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sb - 127	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

Sb - 129	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sc - 46	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sc - 47	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Se - 75	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Se - 79	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Se - 79 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Si - 31	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sm - 145	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sm - 146	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sm - 147	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sm - 148	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sm - 151	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sm - 153	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sm - 157	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sn - 113	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sn - 117 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sn - 119 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sn - 121 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sn - 121	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sn - 123	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sn - 125		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Sn - 126		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Sr - 85		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Sr - 87 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Sr - 89		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Sr - 90	1.00E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes greater than 0.1 mrem/yr PTE unabated TEDE to the MEI and requires monitoring.			
Sr - 91		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Sr - 92		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ta - 179		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ta - 182		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ta - 182 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ta - 183		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Tb - 157		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Tb - 158		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Tb - 160		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Tb - 161		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Tc - 101		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Tc - 103		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Tc - 106		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Tc - 95 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			

Tc - 97		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 97 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 98		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 99	8.50E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributed greater than 0.1 mrem/yr PTE unabated TEDE to the MEI and requires monitoring.

Tc - 99 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 121		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 121 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 123		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 123 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 125 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 127		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 127 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 129		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 129 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 131		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 131 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 132		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 133		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 133 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 134		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 227		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Th - 228	7.40E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Th - 229		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Th - 230		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Th - 231		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Th - 232		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Th - 233		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Th - 234		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ti - 44		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ti - 45		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ti - 51		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Tl - 201		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Tl - 204		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Tl - 206		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Tl - 207		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Tl - 208		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Tl - 209		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Tm - 168		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Tm - 170		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Tm - 171		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			

U - 232	2.70E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes greater than 0.1 mrem/yr PTE Unabated TEDE to the MEI and requires monitoring.

U - 233	8.10E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes greater than 0.1 mrem/yr PTE Unabated TEDE to the MEI and requires monitoring.

U - 234		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 235		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 236		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 237		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 238		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 239		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

U - 240		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

V - 48		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

V - 49		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

W - 181		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

W - 185		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

W - 187		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

W - 188		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Xe - 122		Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Xe - 123		Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Xe - 125		Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Xe - 127 m		Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Xe - 127		Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Xe - 129 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 131 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 133	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 133 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 135	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 135 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 137	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 138	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 139	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Y - 88	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Y - 90	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Y - 90 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Y - 91	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Y - 91 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Y - 92	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Y - 93	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Yb - 164	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Yb - 169	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Yb - 175	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Yb - 177	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

Zn - 65	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Zn - 69	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Zn - 69 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Zr - 88	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Zr - 89	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Zr - 93	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Zr - 95	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

The radioactive isotopes identified for this emission unit are (no quantities specified):

Ac - 225	Ac - 227	Ac - 228	Ag - 108 m	Ag - 108
Ag - 109 m	Ag - 110 m	Ag - 110	Ag - 111	Al - 26
Al - 28	Am - 241	Am - 242 m	Am - 242	Am - 243
Am - 245	Am - 246	Ar - 37	Ar - 39	Ar - 41
Ar - 42	As - 74	As - 76	At - 217	Au - 195
Au - 198	Au - 198 m	Ba - 131	Ba - 133	Ba - 133 m
Ba - 137 m	Ba - 139	Ba - 140	Ba - 141	Ba - 142
Ba - 143	Be - 10	Be - 7	Bi - 207	Bi - 208
Bi - 210 m	Bi - 210	Bi - 211	Bi - 212	Bi - 213
Bi - 214	Bk - 249	Bk - 250	Br - 82	Br - 82 m
Br - 83	Br - 84	Br - 84 m	Br - 85	C - 11
C - 14	C - 15	Ca - 41	Ca - 45	Ca - 47
Cd - 107	Cd - 109	Cd - 111 m	Cd - 113 m	Cd - 113
Cd - 115 m	Cd - 115	Cd - 117	Cd - 117 m	Ce - 139
Ce - 141	Ce - 142	Ce - 143	Ce - 144	Cf - 249
Cf - 250	Cf - 251	Cf - 252	Cl - 36	Cm - 241
Cm - 242	Cm - 243	Cm - 244	Cm - 245	Cm - 246
Cm - 247	Cm - 248	Co - 56	Co - 57	Co - 58
Co - 60	Cr - 49	Cr - 51	Cr - 55	Cs - 131
Cs - 132	Cs - 134	Cs - 134 m	Cs - 135	Cs - 136
Cs - 137	Cs - 138	Cs - 139	Cs - 140	Cs - 141
Cu - 64	Cu - 66	Dy - 165	Er - 169	Er - 171
Es - 254	Eu - 150	Eu - 152	Eu - 152 m	Eu - 154
Eu - 155	Eu - 156	Eu - 157	F - 18	Fe - 55
Fe - 59	Fr - 221	Fr - 223	Ga - 67	Ga - 68

Ga - 72	Gd - 148	Gd - 149	Gd - 151	Gd - 152
Gd - 153	Ge - 68	Ge - 71	Ge - 71 m	Ge - 75
Ge - 77	Ge - 77 m	H - 3	Hf - 175	Hf - 178
Hf - 178 m	Hf - 181	Hf - 182	Hg - 203	Ho - 163
Ho - 166	Ho - 166 m	I - 122	I - 123	I - 125
I - 128	I - 129	I - 130	I - 130 m	I - 131
I - 132	I - 132 m	I - 133	I - 133 m	I - 134
I - 134 m	I - 135	In - 106	In - 111	In - 113 m
In - 114 m	In - 114	In - 115	In - 115 m	In - 116
In - 116 m	Ir - 192	K - 40	K - 42	Kr - 81
Kr - 81 m	Kr - 83 m	Kr - 85	Kr - 85 m	Kr - 87
Kr - 88	Kr - 89	Kr - 90	La - 137	La - 138
La - 140	La - 141	La - 142	La - 144	Lu - 177
Mg - 27	Mg - 28	Mn - 52	Mn - 54	Mn - 56
Mo - 103	Mo - 104	Mo - 105	Mo - 93	Mo - 99
N - 13	Na - 22	Na - 24	Na - 24 m	Nb - 100
Nb - 101	Nb - 103	Nb - 91	Nb - 91 m	Nb - 92
Nb - 93 m	Nb - 94	Nb - 95	Nb - 95 m	Nb - 97
Nb - 97 m	Nb - 98	Nd - 144	Nd - 147	Ni - 56
Ni - 59	Ni - 63	Ni - 65	Np - 235	Np - 236
Np - 237	Np - 238	Np - 239	Np - 240	Np - 240 m
O - 15	O - 19	Os - 191	P - 32	P - 33
Pa - 231	Pa - 233	Pa - 234	Pa - 234 m	Pb - 207
Pb - 209	Pb - 210	Pb - 211	Pb - 212	Pb - 214
Pd - 103	Pd - 107	Pd - 109	Pm - 143	Pm - 144
Pm - 145	Pm - 146	Pm - 147	Pm - 148 m	Pm - 148
Pm - 149	Pm - 151	Po - 208	Po - 209	Po - 210
Po - 211	Po - 212	Po - 213	Po - 214	Po - 215
Po - 216	Po - 218	Pr - 143	Pr - 144	Pr - 144 m
Pu - 234	Pu - 236	Pu - 237	Pu - 238	Pu - 239
Pu - 240	Pu - 241	Pu - 242	Pu - 243	Pu - 244
Pu - 246	Ra - 223	Ra - 224	Ra - 225	Ra - 226
Ra - 228	Rb - 81	Rb - 83	Rb - 84	Rb - 86
Rb - 87	Rb - 88	Rb - 89	Rb - 90	Rb - 90 m
Re - 186	Re - 187	Re - 188	Rh - 101	Rh - 102
Rh - 102 m	Rh - 103 m	Rh - 104	Rh - 105	Rh - 105 m
Rh - 106	Rn - 219	Rn - 220	Rn - 222	Rn - 224
Ru - 103	Ru - 105	Ru - 106	Ru - 97	S - 35
Sb - 122	Sb - 124	Sb - 125	Sb - 126	Sb - 126 m
Sb - 127	Sb - 129	Sc - 46	Sc - 47	Se - 75
Se - 79	Se - 79 m	Si - 31	Sm - 145	Sm - 146

Sm - 147	Sm - 148	Sm - 151	Sm - 153	Sm - 157
Sn - 113	Sn - 117 m	Sn - 119 m	Sn - 121 m	Sn - 121
Sn - 123	Sn - 125	Sn - 126	Sr - 85	Sr - 87 m
Sr - 89	Sr - 90	Sr - 91	Sr - 92	Ta - 179
Ta - 182	Ta - 182 m	Ta - 183	Tb - 157	Tb - 158
Tb - 160	Tb - 161	Tc - 101	Tc - 103	Tc - 106
Tc - 95 m	Tc - 97	Tc - 97 m	Tc - 98	Tc - 99
Tc - 99 m	Te - 121 m	Te - 121	Te - 123	Te - 123 m
Te - 125 m	Te - 127 m	Te - 127	Te - 129 m	Te - 129
Te - 131	Te - 131 m	Te - 132	Te - 133	Te - 133 m
Te - 134	Th - 227	Th - 228	Th - 229	Th - 230
Th - 231	Th - 232	Th - 233	Th - 234	Ti - 44
Ti - 45	Ti - 51	Tl - 201	Tl - 204	Tl - 206
Tl - 207	Tl - 208	Tl - 209	Tm - 168	Tm - 170
Tm - 171	U - 232	U - 233	U - 234	U - 235
U - 236	U - 237	U - 238	U - 239	U - 240
V - 48	V - 49	W - 181	W - 185	W - 187
W - 188	Xe - 122	Xe - 123	Xe - 125	Xe - 127
Xe - 127 m	Xe - 129 m	Xe - 131 m	Xe - 133	Xe - 133 m
Xe - 135	Xe - 135 m	Xe - 137	Xe - 138	Xe - 139
Y - 88	Y - 90	Y - 90 m	Y - 91	Y - 91 m
Y - 92	Y - 93	Yb - 164	Yb - 169	Yb - 175
Yb - 177	Zn - 65	Zn - 69	Zn - 69 m	Zr - 88
Zr - 89	Zr - 93	Zr - 95		

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

Emission Unit ID: 369

200E P-291A001-001

291-A-1

This is a MAJOR, ACTIVELY ventilated emission unit.

PUREX

Emission Unit Information

Stack Height: 200.00 ft. 60.96 m. Stack Diameter 7.00 ft. 2.13 m.

Average Stack Effluent Temperature: 68 degrees Fahrenheit. 20 degrees Celsius.

Average Stack ExhaustVelocity: 15.50 ft/second. 4.72 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Fiberglass Filter	1	(Deep Bed Fiberglass filter)
	HEPA	2	In series
	Fan	2	In parallel, one operating, one back-up

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 60, Appendix A, Method 2; 40 CFR 61, Appendix B, Method 114 61.93(b)(2)(ii) ANSI N13.1	239/240Pu, 241Am	Continuous

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities at PUREX involve surveillance and maintenance operations at the Hanford Site.

Emission Unit ID: 384

200E P-296A010-001

296-A-10

This is a MINOR, ACTIVELY ventilated emission unit.

PUREX

Emission Unit Information

Stack Height: 15.00 ft. 4.57 m. Stack Diameter ft. m.

Average Stack Effluent Temperature: degrees Fahrenheit. degrees Celsius.

Average Stack ExhaustVelocity: ft/second. m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	1 bank
	Fan	1	Intermittent, as needed. Prior approval of operation is required.

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	1 week sample / year (when operating)

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activites at the PUREX tunnels involve surveillance and maintenance operations including equipment storage at the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Reactivation of PUREX Storage Tunnel Number 2	AIR 06-1026	10/5/2006	665

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.90E-07 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Receiving up to 3.5 Mci of radioactive waste loaded into 22-ton steel waste disposal boxes (SWDBs). The SWDBs will be transferred by truck, transferred onto railcars, and placed into the PUREX Tunnel.

Steel Waste Disposal Boxes

Waste placed in the PUREX Tunnel will be received in SWDBs. The inner container will be a rectangular grout container, which is an open, carbon steel box. Dispersible waste will be contained in engineered containers placed (maximum of eight) in the rectangular grout container. A filled rectangular grout container could hold engineered containers as well as nondispersible waste materials. Nondispersible waste (e.g., filters, ion exchange columns, cut-up metal tanks and racks, etc.) will be held directly inside the rectangular grout container. The rectangular overpack disposal container will be placed into a SWDB. This package configuration will be placed into the PUREX Tunnel.

The filled SWDB will be held by a SWDB overpack, which is inside the lower impact limiter. The SWDB overpack has a gasketed lid that is secured by bolts. The SWDB overpack is the containment boundary for the package, which is considered a closed container for transfer purposes. The upper impact limiter is bolted to the lower impact limiter, forming an additional seal. (The SWDB overpack and the impact limiter could be reused for subsequent transfers.)

Alternate packaging for receipt/storage, which will provide equivalent or greater degree of airborne control, would be presented to WDOH before use.

Transporting to PUREX

The upper and lower impact limiters form a seal for the SWDB. The package meets transportation requirements to move the material by truck to the PUREX Tunnel rail cut. As a closed container, there are no expected emissions during the transported phase.

Transfer to Railcars

The truck will be parked in the rail cut just outside the PUREX Tunnel. The upper impact limiter and SWDB overpack lid will be removed and set aside. A mobile crane will be used to transfer the SWDB from the truck to the railcar. (The impact limiter and overpack could be reused for subsequent transfers.) The railcar could remain in the rail cut, with appropriate postings, or could be moved just inside the exterior door into the outer area of the PUREX Tunnel while waiting the next transfer.

Placement of Waste Into PUREX Tunnel

At least two SWDBs will fit onto a single railcar. When the railcar is ready for placement into the PUREX Tunnel, the water-fillable door to the storage tunnel will be opened after closing the exterior door. The railcar will be placed into the storage tunnel and allowed to roll slowly to its storage position. Once the railcar is in position, the water-fillable door will be closed. The initial transfer could involve more than one railcar, and could include the majority of the total inventory to be transferred.

Storage of Waste in Tunnel

The PUREX Tunnel has been used for storage of radioactive and mixed waste from the PUREX Plant and from other onsite sources. Material selected for storage in the PUREX Tunnel is loaded on railcars modified to serve as both transport and storage platforms. The railcar storage positions are numbered sequentially, commencing with Position 1 that abuts the railstop bumper at the south end of the tunnel. Position 2 is the location of the railcar that abuts the railcar in position 1 and so forth. Each railcar is retrievable; however, because the railcars are stored on a single, dead-end railroad track, the railcars can be removed only in reverse order (i.e., last in, first out). Currently, 28 railcars are placed in the PUREX Tunnel. Additional waste could be placed into the remaining (approximately 12) railcar positions over the next 10 years.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 7.80E-04 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Release rates are not listed; emission release rates are controlled by special conditions.

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) All transfers of additional radioactive materials from various onsite facilities to the PUREX Tunnel must take place during the period in fiscal years 2000 through 2010.

5) Each SWDB container must be equipped with a minimum of two NucFil filters in series. If the container has dispersible material, it must have three NucFil filters. A maximum of twelve rail cars containing waste may be added to the tunnel.

6) If the stack is opened for any three-month period between transfers an NDA analysis of the filters is required. Environmental air samplers N158, N985, N970, N957, N969, N977 and N978 may not be removed without WDOH approval.

7) If the tunnel is opened for more than three months between transfers an NDA of the filters is required.

8) Periodic confirmatory measurements to confirm low emissions from the 296-A-10 stack will be performed by NDA. NDA provides detection of cesium-137 loaded on HEPA filters. The loading of strontium-90, plutonium-239/240 and americium-241 on the HEPA filters will be calculated from ratios with cesium-137 from reported 1995 actual emissions. NDA methodology for the 296-A-10 stack is provided in 97-EAP-225

9) Periodically smears will be taken of the SWDBs during transfer operations prior to insertion into the tunnel. Records of smears, HEPA tests and NDA analysis must be made available to DOH upon request.

10) Stack 296-A-10 HEPAs must be tested and determined to be operational prior to transfer of waste. This includes testing and nondestructive analysis/assay (NDA) of the testing of the high-efficiency particulate air (HEPA) filters on the tunnel exhauster as a baseline for determination of filter loading after the placement was completed.

11) The flow sampling system will be upgraded to include the installation of test ports that will conform to 40 CFR 60, Appendix A.

12) The processes will consist of receiving up to 3.5 million curries of radioactive waste loaded into 22-ton steel waste disposal boxes (SWDBs). The SWDBs will be transferred by truck, transferred onto rail cars, and placed into the PUREX Tunnel.

13) The required average stack flow rate is 2.0 cubic meters per second. The stack must have a single stage of HEPA filters (3x3) with a particulate removal efficiency of at least 99.95 percent.

14) The stack will operate during waste placement. Depending on the length of time before the next transfer, the stack should be shutdown and capped between transfers, especially if the next transfer is not expected for a year or more. If the next transfer is expected within the same year, the stack can be operated between transfers. Testing of the HEPA filters will be performed annually. NDA would be required each year when a rail car is placed in the tunnel, or when the stack is uncapped and used for powered ventilation. During years in which no waste is placed in the PUREX Tunnel and the 296-A-10 stack is capped (weather tight), testing of the HEPAs and NDA analysis would not be required until the stack is reactivated for the next transfer.

15) The steel waste disposal boxes (SWDBs) are engineered to minimize emissions during the loading, transportation, and transfer processes. Only waste received in SWDBs will be placed in the PUREX Tunnel. Dispersible waste must be contained in engineered containers placed (maximum of eight) in the rectangular grout container. Nondispersible waste (e.g., filters, ion exchange columns, cut-up metal tanks and racks, etc.) must be held directly inside the rectangular grout container.
Alternate packaging for receipt/storage, must provide equivalent or greater degree of airborne control, and be approved by WDOH before use.

16) Up to 3.5 million curries of radioactive waste can be placed into the remaining 12 rail car positions of the PUREX Tunnel over the next ten years. Up to one percent (35 thousand curies) of the additional waste can be transuranic.

Emission Unit ID: 385

400 P-437MN&ST-001

437-MN&ST

This is a MINOR, ACTIVELY ventilated emission unit.

437 Maintenance and Storage (MASF)

Emission Unit Information

Stack Height: 30.00 ft. 9.14 m. Stack Diameter 8.00 ft. 2.44 m.

Average Stack Effluent Temperature: 68 degrees Fahrenheit. 20 degrees Celsius.

Average Stack ExhaustVelocity: 4.90 ft/second. 1.49 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Fan	2	In parallel, serves all MN&ST, intermittent use
Decon 1 & 2 Activities	HEPA	1	2 parallel flow paths, minimum of one HEPA operational
Liquid Radioactive Waste Loadout Facility Ventilation	Prefilter	1	
Liquid Radioactive Waste Loadout Facility Ventilation	HEPA	1	
Radiological Waste Tank Room Ventilation	Prefilter	1	
Radiological Waste Tank Room Ventilation	HEPA	1	
Waste Tank 1 & 2 Vents	HEPA	1	1 stage with 2 parallel flowpaths
Contaminated Equipment Repair Area	Prefilter	1	
Contaminated Equipment Repair Area	HEPA	1	2 in parallel

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	4 week sample/ year

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities at the MASF support K Basin sludge research and development activities.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Sodium Residuals Reaction/Removal and other Deactivation Work Activities at the Fast Flux Test Facility Replaces NOC 776)	AIR 12-314	2/23/2012	833

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.70E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The activity will involve reaction of sodium residuals associated with the Fast Flux Test Facility Project systems and equipment. This activity could be conducted in place or at designated cleaning locations. Typically, the sodium residuals would be reacted with superheated steam. The primary advantages of the superheated steam process (SSP) are that it does not allow condensation to occur and component cleaning can be performed in a shorter time period. Prior to steam injection into the system to be cleaned the steam is heated to ~ 204 C (400 F). The equipment to be cleaned is heated to a minimum of 100 C (212 F) and higher if possible. Most systems will require multiple injection points. As the superheated steam reacts with the metallic sodium, the temperature increases. The temperature is controlled such that the maximum reaction temperature is no greater than ~538 C (1,000 F).

Because of the high initial temperature and the increase of the temperature caused by the reaction, no condensation occurs. The caustic formed is a liquid at the processing temperatures and because it is denser than the liquid sodium, it settles to the bottom of any pools leaving the sodium on top where it is always exposed to the superheated steam. Due to the continued exposure of the molten sodium to the superheated steam, the reaction continues at a constant rate. Superheated steam injection is continued until hydrogen is no longer being generated. The system is then cooled and rinsed and the fluid is drained from the system.

PERFORM IN PLACE CLEANING OF VESSELS, COMPONENTS, AND LARGE BORE PIPE
A PTRAEU would be used to clean, in place, large bore sodium pipe [greater than or equal to ~20 centimeter (8 inch) diameter], components and vessels in the primary and secondary sodium cooling systems. The PTRAEU also would be used to clean the Interim Decay Storage (IDS) and Fuel Storage Facility (FSF) vessels [Note: Select components in the primary sodium system, and large diameter piping and components in the secondary sodium system may be removed and cleaned in FSF or the Maintenance and Storage Facility (MASF), as described below].

Typically, penetrations into the piping/vessels would be made at appropriate locations using a low speed drill. Existing sodium heating systems would be energized, and piping/vessels heated to liquefy the existing sodium residuals. A PTRAEU would be connected to the penetration points, and used at various locations to inject the superheated steam into plant systems.

The superheated steam would be injected. Hydrogen generation would be monitored to follow the reaction. Sulfuric acid would be added to the resultant process liquid (i.e., sodium hydroxide solution) to reduce the pH to <13. This solution would be routed for offloading to tanker transport for overland transfer to Liquid Effluent Treatment Facility (LERF) and subsequent treatment at 200 Area Effluent Treatment Facility (ETF). If needed or chosen for use during these activities, the categorical NOC for sitewide use of tanker loading for wastewater could be used.

REMOVE SMALL BORE PIPE AND COMPONENTS FOR REACTION IN A CLEANING STATION
Small bore piping [<20 centimeter (8 inch) diameter], valves and other components [e.g., core component pots from IDS, fuel storage tubes from FSF, and dump heat exchangers (DHX) tube bundles] may be removed and processed in a proposed stationary cleaning station that would be located in FSF. Mechanical means (e.g., portable saws, pipe cutters) would be used to cut the pipe, valves, and components into manageable size. All heat exchanger tube bundles, which contain multiple parallel flow paths, would be dismantled to ensure effective cleaning.

The proposed FSF stationary cleaning station would consist of a chamber with removable rack for loading piping and components. The piping would be loaded at an angle, allowing the residual sodium to drain to a catch basin when heated before the injection of inert gas and/or reaction medium. The process in the cleaning station would be consistent with the in place process where the resultant waste sodium hydroxide solution is collected, the pH reduced to <13, and transported to the 200 Areas. The FSF is considered an appropriate

location due to availability of sufficient floor space, existing overhead crane, available utilities, and proximity to proposed operations. If needed or chosen for use during these activities, the categorical NOC for sitewide use of tanker loading for wastewater could be used.

Cleaned piping and components would be disposed of in a Hanford Site solid waste management facility.

REMOVE LARGE COMPONENTS FOR CLEANING
The large diameter cleaning vessel (LDCV) located in the existing MASF could be used for cleaning large components following removal (e.g., primary sodium pumps, intermediate heat exchanger (IHX) tube bundles, and instrument trees). The LDCV could be retrofitted with a new super heated steam supply and associated control system for use in cleaning the aforementioned components. The IHX tube bundles, which contain multiple parallel sodium flow paths, may be dismantled to ensure effective cleaning. Small bore pipe and components also could be cleaned in MASF, if necessary.

OTHER DEACTIVATION ACTIVITIES
Other related routine, continued deactivation activities that could occur as part of the proposed action are: remove/dispose of asbestos; remove/stabilize existing hazards in conjunction with systems and equipment deactivation associated with sodium residuals; remove/recycle/dispose excess deactivated equipment and components; and remove depleted uranium and/or lead shielding.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 5.70E-03 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0 Alpha release rate based on Pu-239.	2.00E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
B/G - 0 Beta/Gamma release rate based on Cs-137	3.30E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

The radioactive isotopes identified for this emission unit are (no quantities specified):

Ba - 137 m	Co - 60	Cs - 134	Cs - 137	H - 3
Mn - 54	Na - 22	Pu - 239	Ru - 106	Zn - 65

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) Operations shall be performed in accordance with the controls specified in radiation work planning documents and/or operating procedures and shall be available for inspection upon request.

5) All activities shall be conducted under the auspices of radiological or health physics control technicians or personnel. Routine field surveys, including swipes/smears, shall be conducted. Fixatives, covers, or other standard measures shall be used, as necessary to contain contamination.

6) Appropriate spill prevention procedures shall be in place to minimize the release of radioactive liquid waste to the environment, and to provide immediate cleanup of any liquid spills.

7) The total amount of sodium reacted from all emission units shall not exceed 4,000 gallons per year with no more than 2,000 gallons challenging a single emission unit.

8) Emissions would be routed through the existing MASF ventilation system; for conservatism no filtration is assumed.

9) Other radioisotopes may be present due to activation products, fission products, decay products, and tracer gases. These other isotopes are approved for this emission unit and will not contribute significantly to the calculated potential-to-emit.

Emission Unit ID: 395

400 P-FFTFRESB-001

FFTF-RE-SB

This is a MINOR, ACTIVELY ventilated emission unit.

FAST FLUX TEST FACILITY COMPLEX

Emission Unit Information

Stack Height: 20.00 ft. 6.10 m. Stack Diameter 4.40 ft. 1.34 m.

Average Stack Effluent Temperature: 68 degrees Fahrenheit. 20 degrees Celsius.

Average Stack ExhaustVelocity: 13.10 ft/second. 3.99 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Fan	1	Intermettent use No other controls

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	4 week sample/ year or continuously during operation whichever is less (if operated)

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities at the FFTF support surveillance and maintenance operations for decontamination and deactivation at the Hanford Site.

Emission Unit ID: 396

400 P-FFTFHTTR-001

FFTF-HT-TR

This is a MINOR, ACTIVELY ventilated emission unit.

FAST FLUX TEST FACILITY COMPLEX

Emission Unit Information

Stack Height: 29.00 ft. 8.84 m. Stack Diameter 2.20 ft. 0.67 m.

Average Stack Effluent Temperature: 68 degrees Fahrenheit. 20 degrees Celsius.

Average Stack ExhaustVelocity: 17.40 ft/second. 5.30 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Fan	1	Intermittent use

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	4 week sample/ year or continuously during operation whichever is less (if operated)

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities at the FFTF support surveillance and maintenance operations for decontamination and deactiviation at the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Sodium Residuals Reaction/Removal and other Deactivation Work Activities at the Fast Flux Test Facility Replaces NOC 776)	AIR 12-314	2/23/2012	833

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.70E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The activity will involve reaction of sodium residuals associated with the Fast Flux Test Facility Project systems and equipment. This activity could be conducted in place or at designated cleaning locations. Typically, the sodium residuals would be reacted with superheated steam. The primary advantages of the superheated steam process (SSP) are that it does not allow condensation to occur and component cleaning can be performed in a shorter time period. Prior to steam injection into the system to be cleaned the steam is heated to ~ 204 C (400 F). The equipment to be cleaned is heated to a minimum of 100 C (212 F) and higher if possible. Most systems will require multiple injection points. As the superheated steam reacts with the metallic sodium, the temperature increases. The temperature is controlled such that the maximum reaction temperature is no greater than ~538 C (1,000 F).

Because of the high initial temperature and the increase of the temperature caused by the reaction, no condensation occurs. The caustic formed is a liquid at the processing temperatures and because it is denser than the liquid sodium, it settles to the bottom of any pools leaving the sodium on top where it is always

exposed to the superheated steam. Due to the continued exposure of the molten sodium to the superheated steam, the reaction continues at a constant rate. Superheated steam injection is continued until hydrogen is no longer being generated. The system is then cooled and rinsed and the fluid is drained from the system.

PERFORM IN PLACE CLEANING OF VESSELS, COMPONENTS, AND LARGE BORE PIPE
A PTRAEU would be used to clean, in place, large bore sodium pipe [greater than or equal to ~20 centimeter (8 inch) diameter], components and vessels in the primary and secondary sodium cooling systems. The PTRAEU also would be used to clean the Interim Decay Storage (IDS) and Fuel Storage Facility (FSF) vessels [Note: Select components in the primary sodium system, and large diameter piping and components in the secondary sodium system may be removed and cleaned in FSF or the Maintenance and Storage Facility (MASF), as described below].

Typically, penetrations into the piping/vessels would be made at appropriate locations using a low speed drill. Existing sodium heating systems would be energized, and piping/vessels heated to liquefy the existing sodium residuals. A PTRAEU would be connected to the penetration points, and used at various locations to inject the superheated steam into plant systems.

The superheated steam would be injected. Hydrogen generation would be monitored to follow the reaction. Sulfuric acid would be added to the resultant process liquid (i.e., sodium hydroxide solution) to reduce the pH to <13. This solution would be routed for offloading to tanker transport for overland transfer to Liquid Effluent Treatment Facility (LERF) and subsequent treatment at 200 Area Effluent Treatment Facility (ETF). If needed or chosen for use during these activities, the categorical NOC for sitewide use of tanker loading for wastewater could be used.

REMOVE SMALL BORE PIPE AND COMPONENTS FOR REACTION IN A CLEANING STATION
Small bore piping [<20 centimeter (8 inch) diameter], valves and other components [e.g., core component pots from IDS, fuel storage tubes from FSF, and dump heat exchangers (DHX) tube bundles] may be removed and processed in a proposed stationary cleaning station that would be located in FSF. Mechanical means (e.g., portable saws, pipe cutters) would be used to cut the pipe, valves, and components into manageable size. All heat exchanger tube bundles, which contain multiple parallel flow paths, would be dismantled to ensure effective cleaning.

The proposed FSF stationary cleaning station would consist of a chamber with removable rack for loading piping and components. The piping would be loaded at an angle, allowing the residual sodium to drain to a catch basin when heated before the injection of inert gas and/or reaction medium. The process in the cleaning station would be consistent with the in place process where the resultant waste sodium hydroxide solution is collected, the pH reduced to <13, and transported to the 200 Areas. The FSF is considered an appropriate location due to availability of sufficient floor space, existing overhead crane, available utilities, and proximity to proposed operations. If needed or chosen for use during these activities, the categorical NOC for sitewide use of tanker loading for wastewater could be used.

Cleaned piping and components would be disposed of in a Hanford Site solid waste management facility.

REMOVE LARGE COMPONENTS FOR CLEANING
The large diameter cleaning vessel (LDCV) located in the existing MASF could be used for cleaning large components following removal (e.g., primary sodium pumps, intermediate heat exchanger (IHX) tube bundles, and instrument trees). The LDCV could be retrofitted with a new super heated steam supply and associated control system for use in cleaning the aforementioned components. The IHX tube bundles, which contain multiple parallel sodium flow paths, may be dismantled to ensure effective cleaning. Small bore pipe and components also could be cleaned in MASF, if necessary.

OTHER DEACTIVATION ACTIVITIES
Other related routine, continued deactivation activities that could occur as part of the proposed action are: remove/dispose of asbestos; remove/stabilize existing hazards in conjunction with systems and equipment deactivation associated with sodium residuals; remove/recycle/dispose excess deactivated equipment and components; and remove depleted uranium and/or lead shielding.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 5.70E-03 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0 Alpha release rate based on Pu-239	4.90E-09	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
B/G - 0 Beta/Gamma release rate based on Cs-137	1.30E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

The radioactive isotopes identified for this emission unit are (no quantities specified):

Ba - 137 m	Co - 60	Cs - 134	Cs - 137	H - 3
Mn - 54	Na - 22	Pu - 239	Ru - 106	Zn - 65

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) Operations shall be performed in accordance with the controls specified in radiation work planning documents and/or operating procedures and shall be available for inspection upon request.

5) All activities shall be conducted under the auspices of radiological or health physics control technicians or personnel. Routine field surveys, including swipes/smears, shall be conducted. Fixatives, covers, or other standard measures shall be used, as necessary to contain contamination.

6) Appropriate spill prevention procedures shall be in place to minimize release of radioactive liquid waste to the environment, and to provide immediate cleanup of any liquid spills.

7) The total amount of sodium reacted from all emission units shall not exceed 4,000 gallons per year with no more than 2,000 gallons challenging a single emission unit.

8) Other radioisotopes may be present due to activation products, fission products, decay products, and tracer gases. These other isotopes are approved for this emission unit and will not contribute significantly to the calculated potential-to-emit.

Emission Unit ID: 397

400 P-FFTFCBEX-001

FFTF-CB-EX

This is a MINOR, ACTIVELY ventilated emission unit.

FAST FLUX TEST FACILITY COMPLEX

Emission Unit Information

Stack Height: 47.00 ft. 14.33 m. Stack Diameter 4.90 ft. 1.49 m.

Average Stack Effluent Temperature: 70 degrees Fahrenheit. 21 degrees Celsius.

Average Stack ExhaustVelocity: 19.80 ft/second. 6.04 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
Bldg 405 Process Operations	Fan	2	In parallel (intermittent use)
Access Control Area Process	Fan	1	Intermittent use

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Engineering calculations based on WAC 246-247-030(21)(a)	TOTAL ALPHA TOTAL BETA Tritium	Annual (calculation)

Sampling Requirements Radionuclide emissions will be estimated annually using WAC 246-247-030(21)(a) calculation in lieu of monitoring.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities at the FFTF support surveillance and maintenance operations for decontamination and deactiviation at the Hanford Site. The FFTF is currently in Surveillance and Maintenance Mode, which began June 1, 2009.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Sodium Residuals Reaction/Removal and other Deactivation Work Activities at the Fast Flux Test Facility Replaces NOC 776)	AIR 12-314	2/23/2012	833

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.70E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The activity will involve reaction of sodium residuals associated with the Fast Flux Test Facility Project systems and equipment. This activity could be conducted in place or at designated cleaning locations. Typically, the sodium residuals would be reacted with superheated steam. The primary advantages of the superheated steam process (SSP) are that it does not allow condensation to occur and component cleaning can be performed in a shorter time period. Prior to steam injection into the system to be cleaned the steam is heated to ~ 204 C (400 F). The equipment to be cleaned is heated to a minimum of 100 C (212 F) and higher if possible. Most systems will require multiple injection points. As the superheated steam reacts with the metallic sodium, the temperature increases. The temperature is controlled such that the maximum reaction temperature is no greater than ~538 C (1,000 F).

Because of the high initial temperature and the increase of the temperature caused by the reaction, no condensation occurs. The caustic formed is a liquid at the processing temperatures and because it is denser than the liquid sodium, it settles to the bottom of any pools leaving the sodium on top where it is always exposed to the superheated steam. Due to the continued exposure of the molten sodium to the superheated steam, the reaction continues at a constant rate. Superheated steam injection is continued until hydrogen is no longer being generated. The system is then cooled and rinsed and the fluid is drained from the system.

PERFORM IN PLACE CLEANING OF VESSELS, COMPONENTS, AND LARGE BORE PIPE
A PTRAEU would be used to clean, in place, large bore sodium pipe [greater than or equal to ~20 centimeter (8 inch) diameter], components and vessels in the primary and secondary sodium cooling systems. The PTRAEU also would be used to clean the Interim Decay Storage (IDS) and Fuel Storage Facility (FSF) vessels [Note: Select components in the primary sodium system, and large diameter piping and components in the secondary sodium system may be removed and cleaned in FSF or the Maintenance and Storage Facility (MASF), as described below].

Typically, penetrations into the piping/vessels would be made at appropriate locations using a low speed drill. Existing sodium heating systems would be energized, and piping/vessels heated to liquefy the existing sodium residuals. A PTRAEU would be connected to the penetration points, and used at various locations to inject the superheated steam into plant systems.

The superheated steam would be injected. Hydrogen generation would be monitored to follow the reaction. Sulfuric acid would be added to the resultant process liquid (i.e., sodium hydroxide solution) to reduce the pH to <13. This solution would be routed for offloading to tanker transport for overland transfer to Liquid Effluent Treatment Facility (LERF) and subsequent treatment at 200 Area Effluent Treatment Facility (ETF). If needed or chosen for use during these activities, the categorical NOC for sitewide use of tanker loading for wastewater could be used.

REMOVE SMALL BORE PIPE AND COMPONENTS FOR REACTION IN A CLEANING STATION
Small bore piping [<20 centimeter (8 inch) diameter], valves and other components [e.g., core component pots from IDS, fuel storage tubes from FSF, and dump heat exchangers (DHX) tube bundles] may be removed and processed in a proposed stationary cleaning station that would be located in FSF. Mechanical means (e.g., portable saws, pipe cutters) would be used to cut the pipe, valves, and components into manageable size. All heat exchanger tube bundles, which contain multiple parallel flow paths, would be dismantled to ensure effective cleaning.

The proposed FSF stationary cleaning station would consist of a chamber with removable rack for loading piping and components. The piping would be loaded at an angle, allowing the residual sodium to drain to a catch basin when heated before the injection of inert gas and/or reaction medium. The process in the cleaning station would be consistent with the in place process where the resultant waste sodium hydroxide solution is collected, the pH reduced to <13, and transported to the 200 Areas. The FSF is considered an appropriate location due to availability of sufficient floor space, existing overhead crane, available utilities, and proximity to proposed operations. If needed or chosen for use during these activities, the categorical NOC for sitewide use of tanker loading for wastewater could be used.

Cleaned piping and components would be disposed of in a Hanford Site solid waste management facility.

REMOVE LARGE COMPONENTS FOR CLEANING
The large diameter cleaning vessel (LDCV) located in the existing MASF could be used for cleaning large components following removal (e.g., primary sodium pumps, intermediate heat exchanger (IHX) tube bundles, and instrument trees). The LDCV could be retrofitted with a new super heated steam supply and associated control system for use in cleaning the aforementioned components. The IHX tube bundles, which contain multiple parallel sodium flow paths, may be dismantled to ensure effective cleaning. Small bore pipe and components also could be cleaned in MASF, if necessary.

OTHER DEACTIVATION ACTIVITIES
Other related routine, continued deactivation activities that could occur as part of the proposed action are: remove/dispose of asbestos; remove/stabilize existing hazards in conjunction with systems and equipment

deactivation associated with sodium residuals; remove/recycle/dispose excess deactivated equipment and components; and remove depleted uranium and/or lead shielding.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 5.70E-03 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0 Alpha release rate based on Pu-239	3.10E-08	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
B/G - 0 Beta/Gamma release rate based on Cs-137	3.70E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

The radioactive isotopes identified for this emission unit are (no quantities specified):

Ba - 137 m	Co - 60	Cs - 134	Cs - 137	H - 3
Mn - 54	Na - 22	Pu - 239	Ru - 106	Zn - 65

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) Use of engineering calculations to provide periodic confirmatory measurement for the minor stack (emission unit) 400 P-FFTFCBX-001 as a compliant replacement for record sampling.

5) Operations shall be performed in accordance with the controls specified in radiation work planning documents and/or operating procedures and shall be available for inspection upon request.

6) All activities shall be conducted under the auspices of radiological or health physics control technicians or personnel. Routine field surveys, including swipes/smears, shall be conducted. Fixatives, covers, or other standard measures shall be used, as necessary to contain contamination.

7) Appropriate spill prevention procedures shall be in place to minimize release of radioactive liquid waste to the environment, and to provide immediate cleanup of any liquid spills.

8) The total amount of sodium reacted from all emission units shall not exceed 4,000 gallons per year with no more than 2,000 gallons challenging a single emission unit.

9) Other radioisotopes may be present due to activation products, fission products, decay products, and tracer gases. These other isotopes are approved for this emission unit and will not contribute significantly to the calculated potential-to-emit.

Emission Unit ID: 398

400 Sodium Storage Facility

FFTF-402-1

This is a MINOR, ACTIVELY ventilated emission unit.

FAST FLUX TEST FACILITY COMPLEX

Emission Unit Information

Stack Height: ft. m. Stack Diameter ft. m.

Average Stack Effluent Temperature: degrees Fahrenheit. degrees Celsius.

Average Stack ExhaustVelocity: ft/second. m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)		TOTAL ALPHA TOTAL BETA	

Sampling Requirements None

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities at the SSF support surveillance and maintenance operations for decontamination and deactivation at the Hanford Site by storing sodium. The Sodium Storage Facilitiy (SSF) stores the sodium in a solid state for an extended period. Approximately 984,100 liters of sodium from the FFTF was offloaded to four tanks SSF.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Construction and Operation of Sodium Storage Facility (Replaced NOC ID 639)	AIR 12-321	2/23/2012	842

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.60E-06 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Offloading approximately 984,100 liters of sodium from the FFTF to tank storage in the Sodium Storage Facility (SSF). Unused, carbon steel sodium tanks (three 302,800-liter tanks and one 196,800-liter tank) originally built for the Clinch River Breeder Reactor Plant shall be transported from their current location in the 300 Area and installed adjacent to the FFTF complex. Once the storage tanks are in place, a concrete building will be constructed around and over them to provide shielding and weather protection for the tanks and associated equipment. The sodium will be stored in a solid state, under an inert nitrogen or argon gas blanket.

Sodium shall be transferred to the SSF in batches from several different sodium storage/drain vessels within the FFTF. Following the transfer, the sodium shall be allowed to solidify.

Sodium transfers shall be accomplished in the following manner:

1. The receiving tank and interconnecting piping shall be preheated to between 150øC and 200øC by electric heaters.

2. When the proper temperatures have been established, the sodium shall be transferred from the supply tank to the receiving tank by establishing a differential pressure between the supply tank and receiving tank as needed to facilitate the transfer of sodium between the tanks.

The supply tank shall be pressurized using the existing FFTF argon piping. The receiving tank in the SSF will be evacuated using a vacuum pump and a high-efficiency particulate air (HEPA) type process filter connected to the tanks at the tank vent line.

3. The gas system valves shall be operated as needed to maintain the covergas differential pressure and the sodium valves opened, allowing the sodium to flow from one tank to the other. The transfers will occur in batches, with more than one cycle needed to completely fill one SSF storage tank. The inert gas displaced from the tanks during the filling evolution shall be directed out the HEPA or HEPA type filtered exhaust paths.

4. After all the transfers for a tank are complete, the inert gas system shall be used to establish the desired cover gas pressure and the tank shall be allowed to cool to ambient temperature, allowing the sodium to solidify.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 1.60E-06 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Cs - 137	1.70E-11	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Any radionuclide on the chart of nuclides could be encountered during Sodium Storage Facility loading operations. The radionuclides specifically listed in the NOC application were chosen to conservatively represent all radionuclide emissions that may occur in particulate or gaseous form. Although any radionuclide could be present, for conservatism all beta-gamma is assumed to be Cs-137 and all alpha is assumed to be Pu-239 for dose			
H - 3	4.60E-02	Gas	WAC 246-247-030(21)(a)
Any radionuclide on the chart of nuclides could be encountered during Sodium Storage Facility loading operations. The radionuclides specifically listed in the NOC application were chosen to conservatively represent all radionuclide emissions that may occur in particulate or gaseous form. Although any radionuclide could be present, for conservatism all beta-gamma is assumed to be Cs-137 and all alpha is assumed to be Pu-239 for dose			
Na - 22	3.50E-08	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Any radionuclide on the chart of nuclides could be encountered during Sodium Storage Facility loading operations. The radionuclides specifically listed in the NOC application were chosen to conservatively represent all radionuclide emissions that may occur in particulate or gaseous form. Although any radionuclide could be present, for conservatism all beta-gamma is assumed to be Cs-137 and all alpha is assumed to be Pu-239 for dose calculation estimates. Other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta-gamma constituents.			
Pu - 239	2.30E-13	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Any radionuclide on the chart of nuclides could be encountered during Sodium Storage Facility loading operations. The radionuclides specifically listed in the NOC application were chosen to conservatively represent all radionuclide emissions that may occur in particulate or gaseous form. Although any radionuclide could be present, for conservatism all beta-gamma is assumed to be Cs-137 and all alpha is assumed to be Pu-239 for dose			

The radioactive isotopes identified for this emission unit are (no quantities specified):

Cs - 137 H - 3 Na - 22 Pu - 239

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) During the periods when sodium transfers are performed, the estimated emissions from the SSF shall be calculated using the following method.

Assumptions:
The equivalent of one tank volume at standard temperature and pressure is evacuated after the initial contamination-free pump down.

If the uncontaminated receiving tank is initially evacuated, it may provide a sufficient pressure drop to complete the sodium transfer with no release of contaminated gas; however, for purposes of providing a conservative estimate of potential emissions it is assumed an entire tank volume of contaminated cover gas is released to the atmosphere.

The concentration of tritium in the primary sodium, conservatively assumed to fill three of the 302,800-liter tanks, is the same as historical concentrations of tritium in the reactor cover gas in 1992 (about 5 x 10-5 uCi/ml).

The concentration of tritium in the secondary sodium (assumed to fill the 196,800 liter tank) is equal to the historical concentration of the secondary sodium cover gas in 1992 (about 4E-6 uCi/ml). The remaining 52,996 liters of secondary sodium will go to a 302,800 liter tank.

The amount of tritium released during the fill of one tank with primary sodium would be:

(Volume of sodium transferred in liters) (103 ml/liter) (5 E-5 uCi/ml) = Amount in uCi

This shall be tracked via an approved log.

5) During the storage periods when no new sources are added to the SSF, the sodium shall be in a solid form after cooling. Radiological smear surveys of the facility and monitoring described in section 5 of the general condition in this license shall provide periodic confirmatory measurement.

Emission Unit ID: 399

400 P-437-002

437-1-61

This is a MINOR, ACTIVELY ventilated emission unit.

437 Maintenance and Storage (MASF)

Emission Unit Information

Stack Height: 38.40 ft. 11.70 m. Stack Diameter 1.10 ft. 0.34 m.

Average Stack Effluent Temperature: 72 degrees Fahrenheit. 22 degrees Celsius.

Average Stack ExhaustVelocity: 18.75 ft/second. 5.72 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Prefilter	1	16 Parallel flow paths, each path provides 1 prefilter minimum of 1 in operation intermittent operation
	HEPA	1	16 Parallel flow paths, each path provides 1 prefilter minimum of 1 in operation; intermittent operation
	Fan	1	Intermittent operation

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	4 week sample/ year

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities at the MASF support K Basin slduge research and development activities.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Sodium Residuals Reaction/Removal and other Deactivation Work Activities at the Fast Flux Test Facility Replaces NOC 776)	AIR 12-314	2/23/2012	833

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.70E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The activity will involve reaction of sodium residuals associated with the Fast Flux Test Facility Project systems and equipment. This activity could be conducted in place or at designated cleaning locations. Typically, the sodium residuals would be reacted with superheated steam. The primary advantages of the superheated steam process (SSP) are that it does not allow condensation to occur and component cleaning can be performed in a shorter time period. Prior to steam injection into the system to be cleaned the steam is heated to ~ 204 C (400 F). The equipment to be cleaned is heated to a minimum of 100 C (212 F) and higher if possible. Most systems will require multiple injection points. As the superheated steam reacts with the metallic sodium, the temperature increases. The temperature is controlled such that the maximum reaction

temperature is no greater than ~538 C (1,000 F).

Because of the high initial temperature and the increase of the temperature caused by the reaction, no condensation occurs. The caustic formed is a liquid at the processing temperatures and because it is denser than the liquid sodium, it settles to the bottom of any pools leaving the sodium on top where it is always exposed to the superheated steam. Due to the continued exposure of the molten sodium to the superheated steam, the reaction continues at a constant rate. Superheated steam injection is continued until hydrogen is no longer being generated. The system is then cooled and rinsed and the fluid is drained from the system.

PERFORM IN PLACE CLEANING OF VESSELS, COMPONENTS, AND LARGE BORE PIPE
A PTRAEU would be used to clean, in place, large bore sodium pipe [greater than or equal to ~20 centimeter (8 inch) diameter], components and vessels in the primary and secondary sodium cooling systems. The PTRAEU also would be used to clean the Interim Decay Storage (IDS) and Fuel Storage Facility (FSF) vessels [Note: Select components in the primary sodium system, and large diameter piping and components in the secondary sodium system may be removed and cleaned in FSF or the Maintenance and Storage Facility (MASF), as described below].

Typically, penetrations into the piping/vessels would be made at appropriate locations using a low speed drill. Existing sodium heating systems would be energized, and piping/vessels heated to liquefy the existing sodium residuals. A PTRAEU would be connected to the penetration points, and used at various locations to inject the superheated steam into plant systems.

The superheated steam would be injected. Hydrogen generation would be monitored to follow the reaction. Sulfuric acid would be added to the resultant process liquid (i.e., sodium hydroxide solution) to reduce the pH to <13. This solution would be routed for offloading to tanker transport for overland transfer to Liquid Effluent Treatment Facility (LERF) and subsequent treatment at 200 Area Effluent Treatment Facility (ETF). If needed or chosen for use during these activities, the categorical NOC for sitewide use of tanker loading for wastewater could be used.

REMOVE SMALL BORE PIPE AND COMPONENTS FOR REACTION IN A CLEANING STATION
Small bore piping [<20 centimeter (8 inch) diameter], valves and other components [e.g., core component pots from IDS, fuel storage tubes from FSF, and dump heat exchangers (DHX) tube bundles] may be removed and processed in a proposed stationary cleaning station that would be located in FSF. Mechanical means (e.g., portable saws, pipe cutters) would be used to cut the pipe, valves, and components into manageable size. All heat exchanger tube bundles, which contain multiple parallel flow paths, would be dismantled to ensure effective cleaning.

The proposed FSF stationary cleaning station would consist of a chamber with removable rack for loading piping and components. The piping would be loaded at an angle, allowing the residual sodium to drain to a catch basin when heated before the injection of inert gas and/or reaction medium. The process in the cleaning station would be consistent with the in place process where the resultant waste sodium hydroxide solution is collected, the pH reduced to <13, and transported to the 200 Areas. The FSF is considered an appropriate location due to availability of sufficient floor space, existing overhead crane, available utilities, and proximity to proposed operations. If needed or chosen for use during these activities, the categorical NOC for sitewide use of tanker loading for wastewater could be used.

Cleaned piping and components would be disposed of in a Hanford Site solid waste management facility.

REMOVE LARGE COMPONENTS FOR CLEANING
The large diameter cleaning vessel (LDCV) located in the existing MASF could be used for cleaning large components following removal (e.g., primary sodium pumps, intermediate heat exchanger (IHX) tube bundles, and instrument trees). The LDCV could be retrofitted with a new super heated steam supply and associated control system for use in cleaning the aforementioned components. The IHX tube bundles, which contain multiple parallel sodium flow paths, may be dismantled to ensure effective cleaning. Small bore pipe and components also could be cleaned in MASF, if necessary.

OTHER DEACTIVATION ACTIVITIES

Other related routine, continued deactivation activities that could occur as part of the proposed action are: remove/dispose of asbestos; remove/stabilize existing hazards in conjunction with systems and equipment deactivation associated with sodium residuals; remove/recycle/dispose excess deactivated equipment and components; and remove depleted uranium and/or lead shielding.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 5.70E-03 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0 Alpha release rate based on Pu-239	3.10E-08	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
B/G - 0 Beta/Gamma release rate based on Cs-137	3.70E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

The radioactive isotopes identified for this emission unit are (no quantities specified):

Ba - 137 m	Co - 60	Cs - 134	Cs - 137	H - 3
Mn - 54	Na - 22	Pu - 239	Ru - 106	Zn - 65

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) Emissions would be routed through the existing MASF ventilation system; for conservatism no filtration is assumed.

5) Operations shall be performed in accordance with the controls specified in radiation work planning documents and/or operating procedures and shall be available for inspection upon request.

6) All activities shall be conducted under the auspices of radiological or health physics control technicians or personnel. Routine field surveys, including swipes/smears, shall be conducted. Fixatives, covers, or other standard measures shall be used, as necessary to contain contamination.

7) Appropriate spill prevention procedures shall be in place to minimize release of radioactive liquid waste to the environment, and to provide immediate cleanup of any liquid spills.

8) The total amount of sodium reacted from all emission units shall not exceed 4,000 gallons per year with no more than 2,000 gallons challenging a single emission unit.

9) Other radioisotopes may be present due to activation products, fission products, decay products, and tracer gases. These other isotopes are approved for this emission unit and will not contribute significantly to the calculated potential-to-emit.

Emission Unit ID: 402

200E P-296B001-001

296-B-1

This is a MAJOR, ACTIVELY ventilated emission unit.

B- PLANT

Emission Unit Information

Stack Height: 90.00 ft. 27.43 m. Stack Diameter 2.67 ft. 0.81 m.

Average Stack Effluent Temperature: degrees Fahrenheit. degrees Celsius.

Average Stack ExhaustVelocity: ft/second. m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Prefilter	2	Two trains, one bank in each train
	HEPA	4	Two trains, 2 banks in each train
	Fan	2	Only one fan operates at a time.

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	137Cs, 90Sr	Continuous

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities at B Plant involve surveillance and maintenance operations at the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
B Plant Modification of the Ventilation System (Emission Point: 296-B-1)	AIR 06-1010	10/5/2006	645

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 4.52E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   Operate the installed ventilation systems and conduct S&M activities.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 7.87E+01 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Am - 241	2.56E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(b)
Cs - 137	8.40E+02	Liquid/Particulate Solid	WAC 246-247-030(21)(b)
Pu - 238	3.60E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(b)

Pu - 239/240	3.84E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(b)
Sb - 125		Liquid/Particulate Solid	WAC 246-247-030(21)(b)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% fo the abated dose.			
Sr - 90	3.48E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(b)
Y - 90		Liquid/Particulate Solid	WAC 246-247-030(21)(b)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% fo the abated dose.			

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	Cs - 137	Pu - 238	Pu - 239/240	Sb - 125
Sr - 90	Y - 90			

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) The new HEPA filters must be fully compatable with ANSI 509/510 standards.

Emission Unit ID: 412

300 EP-331-01-V

EP-331-01-V

This is a MAJOR, ACTIVELY ventilated emission unit.

331 LIFE SCI LAB

Emission Unit Information

Stack Height: 62.00 ft. 18.90 m. Stack Diameter 6.50 ft. 1.98 m.

Average Stack Effluent Temperature: 75 degrees Fahrenheit. 24 degrees Celsius.

Average Stack ExhaustVelocity: 26.53 ft/second. 8.09 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Labs and hoods and glove boxes.
	Fan	1	1 of 3 fans operating

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B, Method 114	Each radionuclide that could contribute greater than 10 percent of the potential-to-emit TEDE	Continuous

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This 62 foot tall stack exhausts filtered building ventilation air. Particulate emissions are sampled. The mission of the 331 Building is to conduct fundamental science and to develop environmental technology. The 331 Building provides research capabilities to study the interactions of chemicals and radionuclides with plants, animals, and microorganisms and the fate of chemicals and radionuclides in the environment. The building also has research capabilities for conducting studies on the uptake and transformation effects of radioactive material and chemicals in soils, plants, animals, and microorganisms.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Life Sciences Laboratory - 1 (331 Building), Revision 2, 300 Area, Hanford Site, Richland, Washington (Replaces NOC 712)	AIR 11-705	7/22/2011	808

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 9.30E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The mission of the 331 Building is to conduct fundamental science and to develop environmental technology. Research activities conducted in the 331 Building support the Hanford Site environmental mission and other key DOE missions of national and international importance. Research activities performed within the 331 Building include the use of radioactive materials. Laboratory processes are conducted “continuously” (i.e., year-round, during normal business, swing-shift, night-shift, and weekend hours). The 331 Building provides research capabilities to study the interactions of chemicals and radionuclides with plants, animals, and microorganisms and the fate of chemicals and radionuclides in the environment. The building also has

research capabilities for conducting studies on the uptake and transformation effects of radioactive material and chemicals in soils, plants, animals, and microorganisms.

The inventory of radioactive material in the building can include gram quantities of fissionable materials and up to curie quantities of other radionuclides. The laboratory activities conducted in the 331 Building include:
·Experimental studies with molecular and cellular processes.
·Studies to determine precise cross-species and low-dose extrapolation of health risks and to understand disease mechanisms.
·Basic and applied research concerning microorganisms and/or their processes in various environments.
·Subsurface microbiology including the physiology and ecology of subsurface microorganisms, degradation of organic contaminants and bioremediation, enzymatic reductions of metals, and biogeochemical cycling of nutrients.
·Studies investigating macromolecular structure and dynamics and consequences of observables on molecular function.
·Development of instrumentation and analytical methods.
·Development of comprehensive environmental monitoring programs.
·Development of advanced scientific and technological solutions for long-term stewardship of waste sites.
·Waste management activities including satellite accumulation areas and <90 day storage areas.
·Characterizing and monitoring aquatic and terrestrial ecosystems including the development and monitoring of new technologies and methods.
·Studies of impacts of water use practices on fisheries and wildlife and the response of the ecosystems to engineered structures and natural and man-induced stresses.
·Activities involving nuclear process engineering, radiomaterials characterization, and radiochemical separations and processing.
·Studies of the health effects of chemical and radiation exposure on animals (rodents) and in cells grown in culture.
·Examining the uptake and transformation effects of radionuclides in soils, plants, animals and microorganisms.
·Studies with radioactive tracer materials in biological and non-biologic systems.
·Research to promote the understanding of the chemical, biological, and biogeochemical processes that govern the mobility, transportation, and degradation of a range of inorganic, radionuclide, and organic contaminants in soils, sediments, and ground water systems.
·Measurements of exposures to physical, radiological, and chemical agents.
·Developing technology for the separation, purification, production, and delivery of radioisotopes (e.g., for medical purposes, and standards development).
·Research and laboratory activities that may include processes where the temperature may be equal to or exceed 100ºC.
·Research activities involving mixed activation products (MAP) and mixed fission products (MFP).
·Laboratory setup projects involving fume hood removals/upgrades and ductwork tie-in.
· Microscopic and spectroscopic characterization of the mass transfer of radioactive material in soils and sediments under the influence of biogeochemical reactions.
· Investigate the sorption and desorption processes of radioactive material in soils and sediments.
· Develop models to predict the geochemical retardation of radioactive material in sediments.
· Activities involving corrosion and stress-corrosion cracking studies of irradiated specimens of metals and other materials.
·Studies investigating structural properties, such as tensile and compression strengths, of irradiated materials.
·Activities involving corrosion and stress-corrosion studies of autoclaved materials.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 3.86E+00 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Ac - 225	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

Ac - 227		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ac - 228		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ag - 108		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ag - 108 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ag - 109 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ag - 110		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ag - 110 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ag - 111		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Al - 26		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Al - 28		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Am - 241		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Am - 241		Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Am - 242		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Am - 242 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Am - 243	8.40E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes greater than 0.1 mrem/yr PTE TEDE to the MEI and requires monitoring			
Am - 245		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Am - 246		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ar - 37		Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ar - 39		Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ar - 41		Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			

Ar - 42	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

As - 74	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

As - 76	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

As - 77	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

At - 217	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Au - 195	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Au - 198	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Au - 198 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 131	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 133	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 133 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 137 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 139	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 140	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 141	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 142	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 143	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Be - 10	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Be - 7	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 207	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 208	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 210 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 210	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 211	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 212	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 213	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 214	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bk - 249	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bk - 250	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Br - 82	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Br - 82 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Br - 83	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Br - 84	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Br - 84 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Br - 85	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

C - 11	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

C - 14	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

C - 14	Gas	

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

C - 15	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ca - 41	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ca - 45	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ca - 47	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cd - 107	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cd - 109	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cd - 111 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cd - 113	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cd - 113 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cd - 115	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cd - 115 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cd - 117	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cd - 117 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ce - 139	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ce - 141	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ce - 142	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ce - 143	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ce - 144	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cf - 249	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cf - 250	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cf - 251	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cf - 252	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cl - 36	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cm - 241	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cm - 242	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cm - 243	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cm - 244	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cm - 245	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cm - 246	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cm - 247	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cm - 248	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Co - 56	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Co - 57	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Co - 58	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Co - 60	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Co - 60 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cr - 49	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cr - 51	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cr - 55	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 131	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 131	Gas	

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 132	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 134	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 134 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 135	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 136	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 137	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 137	Gas	

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 138	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 139	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 140	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 141	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cu - 64	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cu - 66	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Dy - 165	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Dy - 169	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Er - 169	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Er - 171	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Es - 254	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 150	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 152	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 152 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 154	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Eu - 155	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Eu - 156	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Eu - 157	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
F - 18	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Fe - 55	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Fe - 59	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Fr - 221	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Fr - 223	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ga - 67	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ga - 68	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ga - 70	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ga - 72	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Gd - 148	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Gd - 149	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Gd - 151	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Gd - 152	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Gd - 153	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ge - 68	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ge - 71	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

Ge - 71 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ge - 75	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ge - 77	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ge - 77 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

H - 3	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Hf - 175	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Hf - 178	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Hf - 178 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Hf - 181	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Hf - 182	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Hg - 203	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ho - 163	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ho - 166	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ho - 166 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 122	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 123	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 125	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 126	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 128	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 129	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

I - 130	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 130 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 131	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 131	Gas	
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 132	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 132 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 133	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 133 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 134	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 134 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 135	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
In - 106	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
In - 111	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
In - 113 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
In - 114	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
In - 114 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
In - 115	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
In - 115 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
In - 116	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
In - 116 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

In - 117	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
In - 117 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ir - 192	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
K - 40	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
K - 42	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Kr - 81	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Kr - 81 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Kr - 83 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Kr - 85	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Kr - 85 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Kr - 87	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Kr - 88	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Kr - 89	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Kr - 90	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
La - 137	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
La - 138	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
La - 140	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
La - 141	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
La - 142	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
La - 144	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

Lu - 177	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mg - 27	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mg - 28	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mn - 52	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mn - 54	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mn - 56	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mo - 103	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mo - 104	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mo - 105	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mo - 93	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mo - 99	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

N - 13	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Na - 22	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Na - 24	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Na - 24 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 100	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 101	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 103	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 91	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 91 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 92		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Nb - 93 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Nb - 94		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Nb - 95		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Nb - 95 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Nb - 97		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Nb - 97 m		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Nb - 98		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Nd - 144		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Nd - 147		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ni - 56		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ni - 59		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ni - 63		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ni - 65		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Np - 235		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Np - 236		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Np - 237	1.20E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes greater than 0.1 mrem/yr PTE TEDE to the MEI and requires monitoring			
Np - 238		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Np - 239		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Np - 240		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			

Np - 240 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

O - 15	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

O - 19	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Os - 191	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

P - 32	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

P - 33	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pa - 231	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pa - 233	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pa - 234	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pa - 234 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pb - 209	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pb - 210	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pb - 211	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pb - 212	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pb - 214	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pd - 103	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pd - 107	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pd - 109	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 143	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 144	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 145	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 146	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 147	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 148	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 148 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 149	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 151	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 208	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 209	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 210	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 211	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 212	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 213	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 214	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 215	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 216	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 218	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pr - 143	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pr - 144	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pr - 144 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 234		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Pu - 236		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Pu - 237		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Pu - 238	3.60E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes greater than 0.1 mrem/yr PTE TEDE to the MEI, and represents greater than 10% of the unabated PTE TEDE to the MEI and requires monitoring			
Pu - 239	9.20E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes greater than 0.1 mrem/yr PTE TEDE to the MEI, and represents greater than 10% of the unabated PTE TEDE to the MEI and requires monitoring			
Pu - 240	2.90E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes greater than 0.1 mrem/yr PTE TEDE to the MEI, and represents greater than 10% of the unabated PTE TEDE to the MEI and requires monitoring			
Pu - 241		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Pu - 242		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Pu - 243		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Pu - 244		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Pu - 246		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ra - 223		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ra - 224		Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ra - 225		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ra - 226		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Ra - 228		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Rb - 81		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Rb - 83		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Rb - 84		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			
Rb - 86		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.			

Rb - 87	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Rb - 88	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Rb - 89	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Rb - 90	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Rb - 90 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Re - 186	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Re - 187	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Re - 188	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Rh - 101	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Rh - 102	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Rh - 102 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Rh - 103 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Rh - 104	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Rh - 105	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Rh - 105 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Rh - 106	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Rn - 219	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Rn - 220	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Rn - 222	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Rn - 224	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

Ru - 103	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ru - 105	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ru - 106	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ru - 97	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
S - 35	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sb - 122	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sb - 124	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sb - 125	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sb - 126	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sb - 126 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sb - 127	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sb - 129	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sc - 46	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sc - 47	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Se - 75	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Se - 79	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Se - 79 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Si - 31	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sm - 145	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sm - 146	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

Sm - 147	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sm - 148	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sm - 151	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sm - 153	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sm - 157	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sn - 113	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sn - 117 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sn - 119 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sn - 121	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sn - 121 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sn - 123	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sn - 125	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sn - 126	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sr - 85	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sr - 87 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sr - 89	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sr - 90	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sr - 91	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sr - 92	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ta - 179	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

Ta - 180	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ta - 182	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ta - 182 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ta - 183	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tb - 157	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tb - 158	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tb - 160	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tb - 161	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 101	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 103	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 106	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 95 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 97	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 97 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 98	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 99	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 99 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 121	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 121 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 123	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 123 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 125 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 127	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 127 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 129	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 129 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 131	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 131 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 132	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 133	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 133 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 134	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 227	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 228	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 229	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 230	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 231	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 232	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 233	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 234	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ti - 44	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ti - 45	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ti - 51	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Tl - 201	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Tl - 204	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Tl - 206	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Tl - 207	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Tl - 208	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Tl - 209	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Tm - 168	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Tm - 170	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Tm - 171	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 232	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 233	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 234	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 235	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 236	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 237	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 238	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 239	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

U - 240	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
V - 48	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
V - 49	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
W - 181	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
W - 185	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
W - 187	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
W - 188	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 122	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 123	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 125	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 127	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 127 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 129 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 131 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 133	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 133 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 135	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 135 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 137	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 138	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

Xe - 139	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Y - 88	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Y - 90	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Y - 90 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Y - 91	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Y - 91 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Y - 92	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Y - 93	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Yb - 164	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Yb - 169	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Yb - 175	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Yb - 177	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zn - 65	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zn - 69	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zn - 69 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zr - 100	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zr - 88	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zr - 89	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zr - 93	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zr - 95	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zr - 97	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Zr - 98	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Zr - 99	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

The radioactive isotopes identified for this emission unit are (no quantities specified):

Ac - 225	Ac - 227	Ac - 228	Ag - 108 m	Ag - 108
Ag - 109 m	Ag - 110 m	Ag - 110	Ag - 111	Al - 26
Al - 28	Am - 241	Am - 242 m	Am - 242	Am - 243
Am - 245	Am - 246	Ar - 37	Ar - 39	Ar - 41
Ar - 42	As - 74	As - 76	As - 77	At - 217
Au - 195	Au - 198	Au - 198 m	Ba - 131	Ba - 133
Ba - 133 m	Ba - 137 m	Ba - 139	Ba - 140	Ba - 141
Ba - 142	Ba - 143	Be - 10	Be - 7	Bi - 207
Bi - 208	Bi - 210 m	Bi - 210	Bi - 211	Bi - 212
Bi - 213	Bi - 214	Bk - 249	Bk - 250	Br - 82
Br - 82 m	Br - 83	Br - 84	Br - 84 m	Br - 85
C - 11	C - 14	C - 15	Ca - 41	Ca - 45
Ca - 47	Cd - 107	Cd - 109	Cd - 111 m	Cd - 113 m
Cd - 113	Cd - 115 m	Cd - 115	Cd - 117	Cd - 117 m
Ce - 139	Ce - 141	Ce - 142	Ce - 143	Ce - 144
Cf - 249	Cf - 250	Cf - 251	Cf - 252	Cl - 36
Cm - 241	Cm - 242	Cm - 243	Cm - 244	Cm - 245
Cm - 246	Cm - 247	Cm - 248	Co - 56	Co - 57
Co - 58	Co - 60	Co - 60 m	Cr - 49	Cr - 51
Cr - 55	Cs - 131	Cs - 132	Cs - 134	Cs - 134 m
Cs - 135	Cs - 136	Cs - 137	Cs - 138	Cs - 139
Cs - 140	Cs - 141	Cu - 64	Cu - 66	Dy - 165
Dy - 169	Er - 169	Er - 171	Es - 254	Eu - 150
Eu - 152	Eu - 152 m	Eu - 154	Eu - 155	Eu - 156
Eu - 157	F - 18	Fe - 55	Fe - 59	Fr - 221
Fr - 223	Ga - 67	Ga - 68	Ga - 70	Ga - 72
Gd - 148	Gd - 149	Gd - 151	Gd - 152	Gd - 153
Ge - 68	Ge - 71	Ge - 71 m	Ge - 75	Ge - 77
Ge - 77 m	H - 3	Hf - 175	Hf - 178	Hf - 178 m
Hf - 181	Hf - 182	Hg - 203	Ho - 163	Ho - 166
Ho - 166 m	I - 122	I - 123	I - 125	I - 126
I - 128	I - 129	I - 130	I - 130 m	I - 131
I - 131	I - 132	I - 132 m	I - 133	I - 133 m

I - 134	I - 134 m	I - 135	In - 106	In - 111
In - 113 m	In - 114 m	In - 114	In - 115	In - 115 m
In - 116	In - 116 m	In - 117	In - 117 m	Ir - 192
K - 40	K - 42	Kr - 81	Kr - 81 m	Kr - 83 m
Kr - 85	Kr - 85 m	Kr - 87	Kr - 88	Kr - 89
Kr - 90	La - 137	La - 138	La - 140	La - 141
La - 142	La - 144	Lu - 177	Mg - 27	Mg - 28
Mn - 52	Mn - 54	Mn - 56	Mo - 103	Mo - 104
Mo - 105	Mo - 93	Mo - 99	N - 13	Na - 22
Na - 24	Na - 24 m	Nb - 100	Nb - 101	Nb - 103
Nb - 91	Nb - 91 m	Nb - 92	Nb - 93 m	Nb - 94
Nb - 95	Nb - 95 m	Nb - 97	Nb - 97 m	Nb - 98
Nd - 144	Nd - 147	Ni - 56	Ni - 59	Ni - 63
Ni - 65	Np - 235	Np - 236	Np - 237	Np - 238
Np - 239	Np - 240	Np - 240 m	O - 15	O - 19
Os - 191	P - 32	P - 33	Pa - 231	Pa - 233
Pa - 234	Pa - 234 m	Pb - 209	Pb - 210	Pb - 211
Pb - 212	Pb - 214	Pd - 103	Pd - 107	Pd - 109
Pm - 143	Pm - 144	Pm - 145	Pm - 146	Pm - 147
Pm - 148 m	Pm - 148	Pm - 149	Pm - 151	Po - 208
Po - 209	Po - 210	Po - 211	Po - 212	Po - 213
Po - 214	Po - 215	Po - 216	Po - 218	Pr - 143
Pr - 144	Pr - 144 m	Pu - 234	Pu - 236	Pu - 237
Pu - 238	Pu - 239	Pu - 240	Pu - 241	Pu - 242
Pu - 243	Pu - 244	Pu - 246	Ra - 223	Ra - 224
Ra - 225	Ra - 226	Ra - 228	Rb - 81	Rb - 83
Rb - 84	Rb - 86	Rb - 87	Rb - 88	Rb - 89
Rb - 90	Rb - 90 m	Re - 186	Re - 187	Re - 188
Rh - 101	Rh - 102	Rh - 102 m	Rh - 103 m	Rh - 104
Rh - 105	Rh - 105 m	Rh - 106	Rn - 219	Rn - 220
Rn - 222	Rn - 224	Ru - 103	Ru - 105	Ru - 106
Ru - 97	S - 35	Sb - 122	Sb - 124	Sb - 125
Sb - 126	Sb - 126 m	Sb - 127	Sb - 129	Sc - 46
Sc - 47	Se - 75	Se - 79	Se - 79 m	Si - 31
Sm - 145	Sm - 146	Sm - 147	Sm - 148	Sm - 151
Sm - 153	Sm - 157	Sn - 113	Sn - 117 m	Sn - 119 m
Sn - 121 m	Sn - 121	Sn - 123	Sn - 125	Sn - 126
Sr - 85	Sr - 87 m	Sr - 89	Sr - 90	Sr - 91
Sr - 92	Ta - 179	Ta - 180	Ta - 182	Ta - 182 m
Ta - 183	Tb - 157	Tb - 158	Tb - 160	Tb - 161
Tc - 101	Tc - 103	Tc - 106	Tc - 95 m	Tc - 97

Tc - 97 m	Tc - 98	Tc - 99	Tc - 99 m	Te - 121 m
Te - 121	Te - 123	Te - 123 m	Te - 125 m	Te - 127 m
Te - 127	Te - 129 m	Te - 129	Te - 131	Te - 131 m
Te - 132	Te - 133	Te - 133 m	Te - 134	Th - 227
Th - 228	Th - 229	Th - 230	Th - 231	Th - 232
Th - 233	Th - 234	Ti - 44	Ti - 45	Ti - 51
Tl - 201	Tl - 204	Tl - 206	Tl - 207	Tl - 208
Tl - 209	Tm - 168	Tm - 170	Tm - 171	U - 232
U - 233	U - 234	U - 235	U - 236	U - 237
U - 238	U - 239	U - 240	V - 48	V - 49
W - 181	W - 185	W - 187	W - 188	Xe - 122
Xe - 123	Xe - 125	Xe - 127	Xe - 127 m	Xe - 129 m
Xe - 131 m	Xe - 133	Xe - 133 m	Xe - 135	Xe - 135 m
Xe - 137	Xe - 138	Xe - 139	Y - 88	Y - 90
Y - 90 m	Y - 91	Y - 91 m	Y - 92	Y - 93
Yb - 164	Yb - 169	Yb - 175	Yb - 177	Zn - 65
Zn - 69	Zn - 69 m	Zr - 100	Zr - 88	Zr - 89
Zr - 93	Zr - 95	Zr - 97	Zr - 98	Zr - 99

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) Total design flow through each HEPA filter bank shall not exceed the maximum rated flow rate for the individual HEPA filters multiplied by the number of filters. This does not limit the design flow rate of the stack, just that of the filters.

5) To account for all the radioisotopes that may be affected by a process in which the temperature may be equal to or exceed 100 degrees Celsius, a release factor of one is applied to a gaseous form of Am-241 and Cs-137.

Emission Unit ID: 435

200E P-296H212 001

296-H-212 (CSB)

This is a MAJOR, ACTIVELY ventilated emission unit.

CANISTER STORAGE BLDG (CSB)

Emission Unit Information

Stack Height: 75.00 ft. 22.86 m. Stack Diameter 2.30 ft. 0.70 m.

Average Stack Effluent Temperature: degrees Fahrenheit. degrees Celsius.

Average Stack ExhaustVelocity: 34.50 ft/second. 10.52 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	2	double stage, operates in parallel, one HEPA at a time and one in backup mode
	Fan	2	operates in parallel, one fan at a time and one in backup mode

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B, Method 114	Each radionuclide that could contribute greater than 10 percent of the potential-to-emit TEDE	Continuous

Sampling Requirements The record filter is replaced monthly and analyzed quarterly (either destructive or non-destructive technique) using a gamma spectrometer calibrated to Cs-137.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities at CSB involve surveillance and maintenance operations for the safe storage of radioactive containers holding SNF at the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Canister Storage Building, Building 212-H (Replaces NOC 652)	AIR 11-1104	11/4/2011	835

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.64E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The use of the Canister Storage Building (CSB) for storage of spent nuclear fuel (SNF) including Knock Out Pot (KOP) material. The CSB shall consist of load-in and load-out areas, mechanical and electrical support areas, a multi-canister Overpack (MCO) weld/sample station, and a sub grade vault storage area. The SNF and KOP material shall be received in MCOs that shall be shipped in a cask. Receipt of KOP and the remaining SNF MCOs will increase the number of unwelded MCOs at CSB from twelve to twenty-five.

The sub grade reinforced concrete vault area shall accommodate three equal-sized, below grade compartments with each compartment cooled by natural convection and having separate air inlet and exhaust plenums. Because there is physical separation from the SNF source term to the air space in this below grade vault, there

is no control technology or emission monitoring of the exhaust from this area. The physical separation shall consist of the following barriers: MCO and storage tube.

Over the vault shall be a structural steel and metal sided building with heating and ventilation systems, and a material handling machine for use in the handling and movement of MCOs. The air space above the operating deck shall be at a negative pressure with respect to atmosphere during all MCO handling, storage, and monitoring operations. The exhaust from this portion of the building ventilation system shall be filtered by testable high-efficiency particulate air (HEPA) filters and sampled before exhausting through a separate building operating area stack. An operating deck shall separate the sub grade vault from the above grade level working area.

A continuous air emission monitoring system (CAEMS) shall be installed in the process exhaust stack.

There shall be no more than 226 penetration holes in the operating deck in each of the three compartments in the vaulted area. MCOs containing the SNF shall be stored in the 226 vertical steel storage tubes in the north vault (also know as vault 1). Vaults 2 and 3 shall be used for the storage of sealed/immobilized high-level waste.

The steel storage tubes shall prevent migration of radiological contamination and shall be inserted through existing penetrations and extend from the operating deck to the floor of the vault. Access to the interior of the tubes shall be through penetrations in the operating deck. Each tube shall contain no more than two MCOs and be equipped with a shield plug that shall be vented to the operating deck but which can also be isolated.

The function of the MCO shall be to confine, contain, and maintain the SNF in a critically safe array to ensure safe operations and to support processing the 105 K Basins SNF at the Cold Vacuum Drying Facility, processing the Shippingport PWR SNF at the T Plant, and transport to the CSB.

A cover cap shall be welded on top of the MCO covering the MCO shield plug. This shall be performed at the sample and weld station located in the CSB, thus hermetically sealing the SNF contained in the MCO.

The sampling and weld station shall be located at the south end of the CSB operating area. This area shall consist of seven process pits, four feet in diameter and 19 feet 8 inches deep. Two of the pits shall be equipped for MCO gas sampling and for welding the cover caps on the MCOs. Weld inspection and helium leak checking of the seal weld shall also be accomplished here.

An exhaust enclosure shall be provided for confinement around the top of the MCO during sampling and welding. The function of the enclosure shall be to capture any potential airborne contamination. Airflow shall be into the enclosure. An exhaust duct shall run from the enclosure to a fan and through a testable HEPA filter that shall exhaust into the building ventilation exhaust system for the CSB operating area upstream of the building exhaust testable HEPA filters.

The tube vent and purge cart will house the storage tube purge system, which shall monitor and maintain an inert gas environment around any MCO placed in the Overpack storage tubes and to monitor the atmosphere in any of the other storage tubes as required. The vent and purge cart may be driven to any of the 226 storage tubes.

The vent and purge cart equipment shall include inert gas supply cylinders, flexible steel hoses, an airtight sampling connection, a radioactive gas monitor, a hydrogen gas monitor and associated interlocks and alarms, a vacuum pump and its cooling unit, a HEPA filter, and an oxygen monitor and associated alarms.

The heating, ventilation, and air conditioning (HVAC) system shall provide contamination confinement and contamination control within the CSB. The HVAC system shall provide a controlled pressure gradient flow of air from outside the CSB inward through uncontaminated areas to potentially contaminated areas of the building and out through HEPA filters and a monitored exhaust.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 3.64E+01 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Ag - 110	1.42E-09	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Ag - 110 m	1.07E-07	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Am - 241	1.87E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Am - 242	9.74E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Am - 242 m	9.79E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Am - 243	6.00E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Ba - 137 m	6.25E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
C - 14	8.66E-01	gas	WAC 246-247-030(21)(a)
C - 14	6.90E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Cd - 113 m	1.77E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Ce - 144	4.57E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Cm - 242	8.09E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Cm - 244	7.19E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Co - 60	1.98E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Cs - 134	7.94E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Cs - 135	3.87E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Cs - 137	6.59E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Eu - 152	4.72E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Eu - 154	5.35E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Eu - 155	1.10E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Fe - 55	1.83E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Gd - 153	6.39E-10	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
H - 3	3.65E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
H - 3	4.58E+01	gas	WAC 246-247-030(21)(a)
I - 129	6.34E-06	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
I - 129	7.96E-03	gas	WAC 246-247-030(21)(a)

In - 113 m	1.07E-12	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Kr - 85	7.38E+02	gas	WAC 246-247-030(21)(a)
Kr - 85	5.88E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Nb - 93 m	1.23E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Nb - 95	1.87E-17	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Nb - 95 m	6.25E-20	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Ni - 59	2.05E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Ni - 63	2.24E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Np - 237	2.86E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pd - 107	8.14E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pm - 147	2.31E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pr - 144	4.51E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pr - 144 m	5.50E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 238	5.55E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 239	1.09E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 240	5.95E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 241	3.34E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 242	2.74E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Rh - 106	9.09E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Ru - 106	9.09E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Sb - 124	1.51E-23	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Sb - 125	1.67E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Sb - 126	1.09E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Sb - 126 m	7.79E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Se - 79	4.31E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Sm - 151	8.79E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Sn - 113	1.07E-12	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Sn - 119 m	1.48E-06	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Sn - 121 m	3.98E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Sn - 123	8.69E-11	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Sn - 126	7.79E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Sr - 90	5.05E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Tb - 160	1.38E-20	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Tc - 99	1.44E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Te - 123 m	1.38E-16	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Te - 125 m	4.09E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Te - 127	4.74E-12	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Te - 127 m	4.84E-12	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
U - 234	4.37E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
U - 235	1.68E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
U - 236	6.34E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
U - 238	3.48E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Y - 90	5.05E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Y - 91	1.11E-19	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Zr - 93	2.00E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Zr - 95	8.44E-18	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

The radioactive isotopes identified for this emission unit are (no quantities specified):

Ag - 110 m	Ag - 110	Am - 241	Am - 242 m	Am - 242
Am - 243	Ba - 137 m	C - 14	Cd - 113 m	Ce - 144
Cm - 242	Cm - 244	Co - 60	Cs - 134	Cs - 135
Cs - 137	Eu - 152	Eu - 154	Eu - 155	Fe - 55
Gd - 153	H - 3	I - 129	In - 113 m	Kr - 85
Nb - 93 m	Nb - 95	Nb - 95 m	Ni - 59	Ni - 63
Np - 237	Pd - 107	Pm - 147	Pr - 144	Pr - 144 m
Pu - 238	Pu - 239	Pu - 240	Pu - 241	Pu - 242
Rh - 106	Ru - 106	Sb - 124	Sb - 125	Sb - 126

Sb - 126 m	Se - 79	Sm - 151	Sn - 113	Sn - 119 m
Sn - 121 m	Sn - 123	Sn - 126	Sr - 90	Tb - 160
Tc - 99	Te - 123 m	Te - 125 m	Te - 127 m	Te - 127
U - 234	U - 235	U - 236	U - 238	Y - 90
Y - 91	Zr - 93	Zr - 95		

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) Continuous monitoring must be in place prior to operating. This will include continuous ambient air sampling for this project. The ambient air monitors shall be checked for operability at least once per week, and if an ambient air monitor is found not operating, the ambient air monitor shall be returned to service within seven working days from when it was found not operating. Notification to DOH per (WAC 246-247-080(5)) is required when an ambient air monitor is shut down for more than seven consecutive working days from time of discovery. At that time, i.e. when the ambient air monitor is shut down for more than seven consecutive days from time of discovery, operations involving the handling of spent nuclear fuel shall be suspended until the ambient air monitor is returned to service.

5) The differential pressure shall be monitored and recorded daily during operational rounds to determine impacts due to moisture. If the differential pressures are outside of the designed operating range, the cause will be determined and the department will be notified within 24 hours.

6) The process for validating the process parameters with respect to storing the MCOs in a sealed configuration is approved, however, the total number of representative samples was not given to us. The total number of MCOs will not exceed 25.

7) Total system flow shall not exceed 9,000 CFM (allowing for the tolerances of the measuring devices).

8) Ventilation systems used to control the release of particulate airborne radiological contamination from individual processes must include:

1. MHM cask extract ventilation and HEPA exhaust system.
2. Sampling/weld station ventilation and HEPA exhaust system.
3. Overpack storage tube purge system.
4. Temporary containment enclosure with HEPA exhaust system for contamination control.
5. The building HEPA filters are still required.
6. All controls must be ANSI N509/510 compliant

Emission Unit ID: 436

100K P-296K142 001

296-K-142

This is a MAJOR, ACTIVELY ventilated emission unit.

COLD VACUUM DRY FACILITY (CVD)

Emission Unit Information

Stack Height: 48.00 ft. 14.63 m. Stack Diameter 2.50 ft. 0.76 m.

Average Stack Effluent Temperature: degrees Fahrenheit. degrees Celsius.

Average Stack ExhaustVelocity: 54.90 ft/second. 16.73 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
Process Bay Local Exhaust	Isolation Damper	2	
Process Bay Local Exhaust	Backdraft Damper	2	
Process Bay Recerculation	HEPA	4	
Process Bay Recerculation	Fan	4	
Process Bay General Exhaust	HEPA	1	Two Stage HEPA.
Process Bay General Exhaust	Prefilter	1	
Process Bay General Exhaust	Backdraft Damper	2	
Process Bay General Exhaust	Isolation Damper	2	
Process Bay General Exhaust	Fan	2	
Process Bay Local Exhaust	HEPA	1	Two stage HEPA.
Process Bay Local Exhaust	Fan	2	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B, Method 114	Each radionuclide that could contribute greater than 10 percent of the potential-to-emit TEDE	Monthly Sample

Sampling Requirements Record Sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities at the CVDF building involve operations in support of irradiated fuel management at the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Construction and Operation of the Cold Vacuum Drying Facility	AIR 11-1105	11/4/2011	836

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 4.95E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The CVDF located to the west of the K Basins in the 100 K Area of the Hanford Site. The CVDF is limited to the following three adjoining radiological areas: the process bay area, the process support area, and the process water tank room. The process bay area shall contain four process bays and one bay used to off load water. Immediately adjacent and contiguous to the process bay area is the process support area, a steel-framed, two-story metal building that encloses the traffic corridor, process bay support rooms, and the second floor mechanical equipment room. Immediately adjacent to the process bay area on the north side is a single-story concrete and structural steel building that encloses the process water tank room.

Each operational process bay shall contain a process equipment skid, a safety-class helium system, a process hood, and a process bay recirculation heating, ventilation, and air conditioning (HVAC) system. Each process equipment skid shall contain a vacuum and purge system and a tempered water (annulus) system.

The CVDF interfaces with the 100 K Area, Hanford Site infrastructure services, and the Canister Storage Basin (CSB). The CVDF operation interfaces with K Basins operations by receiving cask- MCO packages (including Knockout Pot Material) for processing. Water removed from the MCO and water used for system flushes shall be cleaned and transported by tanker truck for appropriate dispositioning. The CVDF also interfaces with the CSB operation when the cask-MCO packages are shipped to the CSB after the cold vacuum drying process has been completed.

The stack sample line shall be reconfigured in a manner to facilitate inspections and testing as required by ANSI N13.1-1999 (i.e. removable spool piece(s) and tees for installation of pressure gauges). During reconfiguration, there will be no stack sampling and no MCO processing within the facility.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 1.27E+01 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Ag - 110	2.57E-10	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Ag - 110 m	1.94E-08	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Am - 241	3.39E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Am - 242	1.76E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Am - 242 m	1.77E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Am - 243	1.09E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Ba - 137 m	1.13E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
C - 14	1.35E-01	gas	WAC 246-247-030(21)(a)
C - 14	3.46E-04	solid	WAC 246-247-030(21)(a)
Cd - 113 m	3.21E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Ce - 144	8.27E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Cm - 242	1.47E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Cm - 244	1.30E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Co - 60	3.58E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Cs - 134	1.44E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Cs - 135	7.01E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Cs - 137	1.19E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Eu - 152	8.55E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Eu - 154	9.68E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Eu - 155	2.00E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Fe - 55	1.66E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Gd - 153	1.16E-10	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
H - 3	7.13E+00	gas	WAC 246-247-030(21)(a)
H - 3	1.83E-02	solid	WAC 246-247-030(21)(a)
I - 129	1.24E-03	gas	WAC 246-247-030(21)(a)
I - 129	3.18E-06	solid	WAC 246-247-030(21)(a)
In - 113 m	1.94E-13	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Kr - 85	1.15E+02	gas	WAC 246-247-030(21)(a)
Kr - 85	2.95E-01	solid	WAC 246-247-030(21)(a)
Nb - 93 m	2.23E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Nb - 95	3.38E-18	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Nb - 95 m	1.13E-20	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Ni - 59	3.71E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Ni - 63	4.06E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Np - 237	5.17E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pd - 107	1.47E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Pm - 147	4.18E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pr - 144	8.17E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pr - 144 m	9.95E-06	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 238	1.00E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 239	1.97E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 240	1.08E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 241	6.04E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 242	4.97E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Rh - 106	1.65E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Ru - 106	1.65E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Sb - 124	2.74E-24	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Sb - 125	3.03E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Sb - 126	1.97E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Sb - 126 m	1.41E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Se - 79	7.80E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Sm - 151	1.59E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Sn - 113	1.94E-13	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Sn - 119 m	2.69E-07	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Sn - 121 m	7.20E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Sn - 123	1.57E-11	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Sn - 126	1.41E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Sr - 90	9.14E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Tb - 160	2.51E-21	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Tc - 99	2.61E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Te - 123 m	2.50E-17	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Te - 125 m	7.40E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Te - 127	8.85E-13	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Te - 127 m	8.77E-13	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
U - 234	7.91E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
U - 235	3.05E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
U - 236	1.15E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
U - 238	6.30E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Y - 90	9.14E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Y - 91	2.02E-20	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Zr - 93	3.62E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Zr - 95	1.53E-18	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

The radioactive isotopes identified for this emission unit are (no quantities specified):

Ag - 110 m	Ag - 110	Am - 241	Am - 242 m	Am - 242
Am - 243	Ba - 137 m	C - 14	Cd - 113 m	Cd - 115 m
Ce - 141	Ce - 144	Cm - 242	Cm - 244	Co - 60
Cs - 134	Cs - 135	Cs - 137	Eu - 152	Eu - 154
Eu - 155	Fe - 55	Gd - 153	H - 3	I - 129
In - 113 m	Kr - 85	Nb - 93 m	Nb - 95	Nb - 95 m
Ni - 59	Ni - 63	Np - 237	Pd - 107	Pm - 147
Pm - 148 m	Pm - 148	Pr - 143	Pr - 144	Pr - 144 m
Pu - 238	Pu - 239	Pu - 240	Pu - 241	Pu - 242
Rh - 103 m	Rh - 106	Ru - 103	Ru - 106	Sb - 124
Sb - 125	Sb - 126	Sb - 126 m	Se - 79	Sm - 151
Sn - 113	Sn - 119 m	Sn - 121 m	Sn - 123	Sn - 126
Sr - 89	Sr - 90	Tb - 160	Tc - 99	Te - 123 m
Te - 125 m	Te - 127 m	Te - 127	Te - 129 m	Te - 129
U - 234	U - 235	U - 236	U - 238	Y - 90
Y - 91	Zr - 93	Zr - 95		

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) The following shut down of the CVDF emission control systems under circumstances specified are allowed and are

excluded from the 24 hour reporting requirements:

a) Shutdown of the process bay recirculation system when there is no MCO processing within that bay.
b) Shutdown of the process bay local exhaust system when there is no MCO processing within that bay.
c) Shutdown of the general exhaust system for no more than eight hours during which time there will be no MCO within the CVDF nor transfer of water from process water conditioning tank PWC-TK-4001 to a tanker truck for disposal nor opening of the process bay roll up doors.

5) The first annual leak testing of the stack emissions sample line is allowed to be deferred until January 2002 to allow installation of an access port in the stack. Future annual leak test shall be based on this new test date.

Emission Unit ID: 438

200W S-296S023-001

296-S-23

This is a MINOR, ACTIVELY ventilated emission unit.

219-S Building

Emission Unit Information

Stack Height: 21.50 ft. 6.55 m. Stack Diameter 1.00 ft. 0.30 m.

Average Stack Effluent Temperature: 78 degrees Fahrenheit. 26 degrees Celsius.

Average Stack ExhaustVelocity: 42.46 ft/second. 12.94 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Prefilter	1	
	HEPA	2	In series
	Fan	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	1 every 2 years

Sampling Requirements NDA

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is an exhauster that is used to ventilate a hood located in the 219-S Sample Gallery. The hood is used to collect samples from two of the waste tanks located in the 219-S Waste Handling Facility. The emission unit is a hood exhauster ventilation system that operates intermittently.

Emission Unit ID: 439

200W J-CWC 001

Central Waste Complex

This is a MINOR, ACTIVELY ventilated emission unit.

Central Waste Complex

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)		Near field ambient monitoring program as specified in the Conditions and Limitations.

Sampling Requirements Environment Sampling; Ambient air monitors N-449, N-457, N-964, and N-433.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities at the CWC building involve operations in support of waste management at the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Central Waste Complex (CWC) Operations (Replaced NOC ID 295)	AIR 08-801	8/5/2008	654

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 2.40E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The following types of waste are managed at CWC: low-level (LLW), low-level mixed (LLMW), transuranic (TRU), TRU-mixed waste and Toxic Substance Control Act (TSCA) regulated waste. The LLW typically contains rags, paper, rubber gloves, disposal supplies, tools, industrial waste (e.g., failed equipment), solidified wastes that are contaminated with radioactive material. This waste is considered LLW if it contains radioactive material and is not classified as TRU waste, high-level waste, or spent nuclear fuel.

TRU and TRU-mixed waste typically contains rags, paper, rubber gloves, disposable supplies, tools, industrial waste (e.g., failed equipment), solidified process byproducts, and laboratory wastes that are contaminated with TRU material. This waste must contain at least 100 nCi of TRU material per gram of waste or it is considered LLW. The TRU waste accepted by CWC may contain varying concentrations of TRU radionuclides and limited amounts of non-TRU radionuclides. With some exceptions allowed based on safety analysis, the TRU content of waste containers is generally limited to 53 239/240 Pu dose equivalent curies (DE-Ci), where the DE-Ci is derived by multiplying the isotopic composition (i.e., weight fractions of the various TRU isotopes) by the specific activities of each isotope, and then converting that number with corrections factors taken from the Hanford Site Solid Waste Acceptance Criteria. The DE-Ci unit is designed to control inhalation dose impacts independent of radionuclide type. The radionuclides Pu-39 and Pu-240 are considered equivalent and are combined for calculation purposes.

The unabated emissions shall be tracked by DE curies.

The CWC stores low-level (LLW), low-level mixed (LLMW), transuranic (TRU), TRU-mixed and TSCA regulated waste.

The CWC is designed for the receipt and storage of contact-handled waste packages, which are defined as packages having surface dose rate of less than 2 mSv/h (200 mrem/h), but can store packages above this limit in accordance with the approved safety analysis. Each waste package is characterized before receipt and based on this information; incompatible forms of waste are physically segregated.

CWC personnel receive and inspect waste packages at the Waste Receiving and Staging Area. Transport off-load operations are performed by hand truck, forklift, or crane by qualified personnel. Packages are transported, generally by forklift to the assigned facility/area. Alternatively, waste packages may be received, inspected and unloaded at the specific facility/area where the waste will be stored.

Waste containers are not opened during normal operations at the CWC buildings. Under normal operating conditions there is no airborne release of radioactive material expected from opening waste containers.

Inventories of TRU content, non-TRU radionuclides, and hazardous waste constituents are controlled at all waste storage facilities at the CWC. The inventory control system ensures that each building, building quadrant, or module will comply with its established inventory limit.

TRU waste containers are generally equipped with a pressure relief vent device, such as the NucFil filter. This filter allows the release of any gases that may be produced as a result of radiolysis inside the container, while preventing release of any particulate matter.

Waste shipments are transported to the Waste Receiving and Staging Area where the waste containers are radiologically surveyed and the exterior visually inspected for physical integrity. Waste records are checked for completeness and accuracy in accordance with procedures that provide instructions for performing detailed entry-by-entry reviews of waste records. To the extent practicable, this work is performed before unloading. However, partial unloading of a shipment may be necessary to complete a thorough survey and inspection. Verification of container contents, which may involve the opening of containers and sampling of waste contents, is performed at a facility separate from the CWC (e.g., T-Plant).

Waste packages meeting all acceptance criteria are accepted for storage. Non-compliant waste packages (e.g., with paperwork errors or omissions and damaged containers) are held until the non-compliant condition is corrected to the satisfaction of the responsible Solid Waste Manager or designee.

To detect leaking or deteriorating containers, or deterioration of the containment system, all waste containers are inspected in accordance with regulatory requirements.

PermaCon unit:

This license allows the placement of a PermaCon modular containment unit in the existing CWC buildings for the purpose of sampling the head space gas within solid waste storage containers. The ventilation system for the 2404-W series Storage Buildings consists of two roof mounted exhausters, each rated at a minimum of 16, 775 cubic feet per minute. CWC storage building of similar dimensions and venting as the 2404-W series must be selected for the PermaCon Unit.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 4.80E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

DE - 0	9.38E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

The radioactive isotopes identified for this emission unit are (no quantities specified):

Ac - 228	Am - 241	Am - 243	Ar - 41	Ba - 137
Bi - 212	Bi - 214	C - 14	Ce - 141	Ce - 144

Cf - 252	Cm - 242	Cm - 243	Cm - 244	Co - 58
Co - 60	Cr - 51	Cs - 134	Cs - 137	Eu - 152
Eu - 154	Eu - 155	Fe - 59	H - 3	I - 129
I - 131	K - 40	Kr - 85	Mn - 54	Nb - 95
Np - 237	Pb - 212	Pb - 214	Pm - 147	Po - 210
Po - 212	Po - 216	Pu - 238	Pu - 239	Pu - 240
Pu - 241	Pu - 242	Ra - 224	Ra - 226	Rn - 220
Ru - 103	Ru - 106	Sb - 124	Sb - 125	Sn - 113
Sr - 89	Sr - 90	Tc - 99	Th - 228	Th - 232
Th - 234	Tl - 208	U - 232	U - 233	U - 234
U - 235	U - 236	U - 238	Y - 90	Zn - 65
Zr - 95				

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) Container inventory shall be tracked (logged) using the SWITS database.

5) Periodic confirmatory sampling is required. It must consist of: sampling quarterly using a portable sampler for a two-week interval inside the CWC building (excluding outdoor pads) containing vented containers with the highest cumulative inventory of DE curies during the quarter sampled. (Samples will be handled following the applicable sections of 40 CFR 61, Appendix B, Method 114.)

6) The facility must maintain a log in an approved format (SWITS database) for this activity or emission unit.

7) The required controls are:

   Emissions control for vented containers within the CWC will consist of NucFil {tm} filters. (Under normal operating conditions, non-vented containers are not expected to produce radioactive emissions.)

   A NucFil {tm} filter consists of a porous carbon/carbon composite of non-activated carbon fibers housed in stainless steel that as a minimum, restricts the release of 99.95% of particles with a mean 0.3 microns in size.

   In addition, housekeeping (e.g., decontamination and replacing leaking containers as needed) and frequent smears throughout the CWC will be used to ensure that the emission control equipment is working properly. Smears that exceed 20 dpm/100 sqcm for alpha and 1,000 dpm/100 sqcm for beta/gamma contamination will be investigated to determine the cause of the contamination and appropriate corrective actions will be implemented.

8) The radioactive isotopes identified in condition 3 represent all of the significant radionuclides historically present at the Central Waste Complex (CWC), including some that are not significant. Any radionuclide on the chart of the nuclides could be present or received at CWC in the future. Periodic confirmatory measurements to verify low emissions are preformed by taking a two-week air sample on a quarterly basis and analyzing for total alpha and total beta. Although any radionuclide could be present for conservatism all alpha is assumed to be Am-241 and all beta is assumed to be Cs-137 for dose calculation estimates.

Emission Unit ID: 443

300 Area Emissions

300 Area Diffuse/Fugitive

This is a MINOR, FUGITIVE, non-point source emission unit.

300 Diffuse/Fugitive Emissions

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Administrative Controls		Abatement controls as required in the following Conditions and Limitations.

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	Each radionuclide that could contribute greater than 10 percent of the potential-to-emit TEDE	Per the sitewide ambient monitoring program

Sampling Requirements Per the sitewide ambient monitoring program samples will be collected from the existing near-facility monitoring stations

Additional Requirements

See Section 5 of the general conditions in this license for additional information.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Associated with emissions from operations, deactivation, surveillance and maintenance in the 300 Area from sources not actively ventilated.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
300 Area Excavation Activities (Replaced NOC 684)	AIR 12-302	2/23/2012	811

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.70E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   This license is limited to the excavation in the vicinity of 300 Area structures and facilities in support of site stabilization, site infrastructure, and removing/isolating/blanking/routing/re-routing utilities; obtaining samples during 300 Area deactivation activities; and activities related to access for surveillance and maintenance, replacement-in-kind, and non-radiological equipment. Excavation may be conducted with mechanical methods such as an excavator or by drilling. Manual digging methods with shovels, picks, and rakes may also be used. Samples may be obtained by excavation or other coring or drilling methods. Backfill shall be made with the original material removed or brought in 'clean' soil.

   This license does not incorporate specific large remediation actions or final cleanup in the context of Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA).

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 1.70E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	1.00E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Beta - 0	4.30E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

The radioactive isotopes identified for this emission unit are (no quantities specified):

Sr - 90 U - 234

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) The radionuclide's of concern are strontium-90 (representing beta/gamma contamination during excavation, and uranium-234 (representing alpha contamination). Any fission product may be present, though all are conservatively represented by the isotopes specifically identified.

5) When a Portable/Temporary Radioactive Air Emission Unit (PTRAEU) is used during 300 Area excavation activities, the conditions, controls, monitoring requirements and limitations of the PTRAEU NOC, latest approved version, shall be required.

6) When the sitewide Guzzler is used during 300 Area excavation activities, the conditions, controls, monitoring requirements and limitations of the sitewide Guzzler NOC, latest approved version, shall be required.

7) The following controls are approved as low as reasonably achievable control technology (ALARACT) for excavation activities in the 300 Area:

a) Health physics coverage shall be provided during all excavation activities;

b) Appropriate controls such as water, fixatives, covers, containment tents, or windscreens shall be applied, if needed, as determined by the health physics personnel;

c) After leveling, the soil surface radiological contamination levels shall be verified less than 5,000 dpm/100 cm^2 beta/gamma and less than 100 dpm/100 cm^2 alpha. If contamination is present above these levels, soil shall be removed and containerized for disposal or covered or fixed to provide containment of the contamination;

d) As appropriate, before starting work on isolating utilities and piping, removable contamination in the affected area(s) shall be reduced to ALARA. Measures such as expandable foam, fixatives, or glovebags shall also be used as necessary to help reduce contamination;

e) If field surveys during excavation identify localized areas of contamination greater than 5,000 dpm/100 cm^2 beta/gamma and 100 dpm/100 cm^2 alpha, additional surveys shall be conducted on the perimeter of the 'hot spot' to verify the localized nature, ensuring that the overall average contamination limits are not exceeded;

f) Excavated soils will be stockpiled in appropriately posted area(s) adjacent to excavation locations;

g) Soil stockpiles that are inactive for greater than 24 hours shall require positive dust control measures be applied;

h) All soil excavation activities operating under this NOC must cease operations when sustained wind conditions reach or exceed 20 miles per hour.

8) The periodic confirmatory measurements for 300 Area excavation activities shall consist of radiological surveys (smear samples). To confirm that the actual emissions remain below the estimated emissions the surveys shall be

performed to demonstrate that contamination levels are below 5,000 dpm/100 cm^2 beta/gamma and 100 dpm/100 cm^2 alpha.

Clarification:

The estimated emissions are based on the amount of curies present if all the soil excavated was contaminated to 5,000 dpm/100 cm^2 beta/gamma and 100 dpm/100 cm^2 alpha (based on smear surveys). It is expected that the entire inventory of soil during excavation will not be contaminated to the levels used in the estimated emissions calculation, and there may be localized "hot spots" above these levels. The radiological surveys will be used to calculate and track that the estimated release rates of 1.00 E-04 curies of alpha and 4.3 E-03 curies of beta are not exceeded. Transferable contamination surveys are the functional equivalent of smear surveys.

9) When a HEPA Filtered Vacuum Radioactive Air Emission Unit (HEPA VAC) is used during 300 Area excavation activities, the conditions, controls, monitoring requirements and limitations of the HEPA VAC NOC, latest approved version, shall be required.

Emission Unit ID: 447

Hanford Sitewide type-1, type-2, type-3

type-1, type-2, type-3

This is a MINOR, ACTIVELY ventilated emission unit.

PTRAEU

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Type-1
	HEPA	1	Type-2 and Type-3
	Charcoal filter	1	Type-2 and Type-3

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114	GROSS ALPHA/BETA	Annual, unless specified by the NOC.

Sampling Requirements One of the following methods may be chosen for actual emissions reporting: nondestructive assay, record sampler, smears of the exhaust port or continuous air monitoring, whichever is more appropriate.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Operations using PTRAEUs involve mobile filtration, sample preparation, screening and analysis units, and ventilation of operations at the Hanford Site.

This Emission Unit has 6 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Consolidated T Plant Operations (Replaces NOC 711)	AIR 12-312	2/23/2012	830

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.60E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

This consolidated T-Plant license supersedes all radioactive air licenses for 291-T-1.

a. This approval subsumes those activities approved in three previous license approvals, retains/revises the specific conditions and limitations of those approvals, and replaces them as the radioactive air license for T-Plant:

i. AIR 03-1208 (NOC ID # 445, "Storage in T-Plant Complex of Sludge from K-Basins")
ii. AIR 01-1010 (NOC ID # 499, "T-Plant Complex Fuel Removal Project")
iii. AIR 02-704 (NOC ID # 500, "Entering and Characterizing of the 224-T Facility Process Cells")

b. With additional conditions and limitations provided herein, this approval also extends to new activities discussed in the NOC application "Radioactive Air Emissions Notice of Construction for Consolidated T Plant Operations", DOE/RL-2004-50, Rev. 0, September, 2004, described briefly:

i. Receipt, Storage, Treatment, and Load out of Contact-Handled and Remote-

Handled Transuranic (TRU) and Transuranic Mixed Waste (M-91Initiative)

ii. Treatment (in addition to storage) of K-Basin Sludge from the North Load out Pit (NLOP)

iii. Such activities considered routine at T Plant as are described in succeeding conditions.

Activities a)i through a)iii may emit radioactive air through 291-T-1. Additionally, activity a)iii may emit to the 200 Areas Diffuse & Fugitive emission unit and to Portable Temporary Radioactive Air Emission Units.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 1.20E+02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	9.86E-05
Beta - 0	5.11E-03

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) All activities involving radioactive materials shall be conducted in accordance with radiation control procedures approved in accord with applicable QA program. (WAC 246-247-040(5))

5) Characterization activities shall be stopped if general surface contamination levels in the containment tent reach 40,000 dpm/100 cm^2 alpha or 2,000,000 dpm/100 cm^2 beta/gamma or if general air concentration levels in the containment tent reach 2.0 E-9 microcuries/milliliter alpha or 2.0 E-6 microcuries/milliliter beta/gamma. In this event the Department of Health shall be notified of existing conditions and work stoppage. Following such a work stoppage, activities in the process cells shall not continue until a review of the work and encountered conditions has been performed and a determination made, in concurrence with the Department of Health, that no threat to the environment exists, or proper controls have been put in place to mitigate any further threat. (WAC 246-247-040(5))

6) If a Portable/Temporary Radioactive Air Emission Unit (PTRAEU) is used, the conditions, controls, monitoring requirements and limitations of the latest approved version of the PTRAEU Notice of Construction shall be required. (WAC 246-247-060(5)) (WAC 246-247-080(7))

7) Periodic confirmatory measurements (PCM) for emissions from the containment tent shall be performed and shall consist of the radiological surveys and CAM readings/log papers from the containment tent. Compliance shall be demonstrated by showing that actual emissions are inherently less than the estimated emissions, which are based and calculated from the same contamination levels. (WAC 246-247-040(5))

8) The dose to the maximally exposed member of the public from unabated emissions associated with this NOC and exhausted by the PTREAU shall not exceed 1.12E-03 mrem/year. For the purposes of dose estimation, gross beta air concentrations associated with this emission point shall be conservatively assumed to consist entirely of Sr-90. Gross alpha air concentrations associated with this emission point shall be conservatively assumed to consist entirely of Pu-239. (WAC 246-247-040(5))

9) When a HEPA Filtered Vacuum Radioactive Air Emission Unit (HEPA VAC) is used, the conditions, controls, monitoring requirements and limitations of the latest approved revision of the HEPA VAC Notice of Construction shall be required. (WAC 246-247-060(5)) (WAC 246-247-080(7))

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.91E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Type I PTRAEUs are portable ventilation-filter units. Type II PTRAEUs are mobile sample preparation units. Type III PTRAEUs are mobile screening and analysis units. Each type of PTRAEU is described in the following paragraphs.

Most of the PTRAEUs are portable ventilation-filterunits (Type I) with a capacity from approximately 50 to 2,000+ cubic feet per minute exhaust flow rate. The portable ventilation-filter units control radionuclide emissions by providing filtered ventilation on sites where work activities potentially could disturb areas with radioactive contamination. Type I units that are vacuums are listed to be used as ventilation units. If the vacuum is used in any other manner/process, the WDOH must approve its use under separate application before the activity commences.

Mobile sample preparation units (Type II) decrease the chance of unintentional cross-contamination of samples and enhance personnel radiological safety. The sample preparation units enable technicians to remove material from core barrels, homogenize the material, and fill prescribed sample containers for onsite and offsite analysis. In enclosed, self-contained sample preparation units, radiological exposure and interference from environmental conditions (i.e. wind, precipitation, and exhaust fumes) are minimized.

Mobile sample screening and analysis units (Type III) provide preliminary screening of samples to determine potential problem areas at a site. The units also screen samples to identify those samples requiring further in-depth analysis. Screening samples decreases the number of samples transported for analysis. The fast turnaround analysis time can provide results for a field situation requiring expeditious response.

The source of radionuclides handled by the mobile sample preparation facilities and mobile screening and analysis facilities is contaminated soils and/or liquids extracted from cribs, ditches, ponds, burial sites, and other such areas with surficial soil contamination. An additional source of radionuclides is preparation of radioactive standards to be used for instrument calibration.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 8.90E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Release rates are not listed; emission release rates are controlled by special conditions.

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) Department of Health reserves the right to request an nondestructive analysis/assay (NDA) after each exhaust job assignment (WAC 246-247-075(3)). The monitoring includes: emission estimates to include the methodology, all

monitoring measurement results taken during the operation, copy of all logs submitted to the department on June 30th. One of the following methods may be chosen for actual emissions reporting, nondestructive assay, record sampler, or continuous air monitoring, whichever is more appropriate.

5) Ductwork, seams, and potential release locations on the portable exhausters are to be monitored on a routine basis for potential radionuclide releases and noted on the log sheets (e.g., post survey results negative). These routine checks should be kept as retrievable records.

6) The required possession quantity is RHL's calculated for a daily use because many of the activities are of short duration. In calculating the RHL's, 0.1 mrem per year criteria will be used as a beginning point and the source term, which can be handled each day, is back calculate.

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 9.80E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Management of radioactive contamination during roof replacement activities.

All work shall be performed in accordance with written contractor radiological control requirements (associated with posting and downposting requirements for doing work in outdoor contamination areas and fixed contamination areas) and the as low as reasonably achievable (ALARA) program requirements. These requirements are to be carried out through activity work packages/procedures and associated radiological work permits.

Types of facilities allowed to use this NOC are active and operational, currently in surveillance and maintenance (S&M) mode, or in transition to S&M mode.

Activities are non-routine activities that have a potential to create a new temporary emission source and/or a modification of a source(s) of diffuse and fugitive emissions at facilities on the Central Plateau.

Screening Surveys

Roof replacement activities include radiological surveys to determine if radioactive contamination is present and the extent of such contamination. Spot contamination (e.g., bird droppings) managed before commencement of roof replacement work is handled per existing methods and is considered a routine housekeeping activity (similar to spot contamination found at ground levels).

Managing Radioactive Contamination

Contaminated roofing materials may be removed by manual or powered methods, including saws or other cutting devices, shovels, wheelbarrows, conveyors, chutes, or other similar equipment (conveyors or chutes may be used only for packaged radioactive waste or for non-contaminated roofing material). Radioactive waste shall be managed in accordance with existing onsite requirements and waste acceptance criteria. Radioactive waste either shall be containerized in drums, skiffs, boxes, or other containers, or handled as bulk waste (e.g., dump truck) and transferred to the appropriate disposal facility. Management of radioactive contamination is allowed to include removal and subsequent size reduction of contaminated equipment from a roof as well as isolation and blanking of utilities, vents, and ductwork.

Accumulated rainwater that has contacted contamination areas shall be allowed to evaporate in place or is characterized, collected, and managed in accordance with stormwater discharge requirements or transferred to an appropriate disposal facility.

A graded approach is allowed to be used to match controls with expected contamination levels per radiological control manuals and methods. Radiological contamination that is encountered will either be managed as a fixed contamination area (i.e., less than 20 dpm/100 cm2 smearable alpha and less than 1,000 dpm/100 cm2 smearable beta) or will be managed as a contamination area (radiological contamination levels are between 20 and 2,000 dpm/100 cm2 alpha or between 1,000 and 100,000 dpm/100 cm2 beta) using appropriate controls to minimize worker exposure. These controls include water for dust suppression, fixatives, covers, windscreens, or greenhouses (with PTRAEU exhausters) that will be applied, if needed, as determined by the Health Physics organization, and consist of ALARA techniques.

Process descriptions and abatement controls, as described in the latest approved revisions of the Guzzler NOC

(99-SID-021), the PTRAEU NOC (DOE/RL-96-75), or the HEPA Vacuum NOC (DOE/RL-97-50) shall be used; however, the activity-specific operational controls and tracking requirements shall follow these approval conditions. The Guzzler, PTRAEU, and HEPA vacuum units shall have a removal efficiency of 99.95% for radioactive airborne particles.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 4.80E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	1.50E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

License PTE limit bounds 1.5E-04 Ci/yr 241Am and release fraction of 0.001. Any radionuclide on the chart of the nuclides could be encountered during roof replacement activities. The radionuclides specifically listed in the NOC application were chosen to conservatively represent all radionuclide emissions that may occur in particulate form. A small contribution from the gaseous radionuclides may be encountered. Although any radionuclide could be present, for conservatism all alpha is assumed to be 241Am and all beta/gamma is assumed to be 137Cs for dose calculation estimates. Other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta/gamma constituents

B/G - 0	7.50E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

License PTE limit bounds 7.5E-03 Ci/yr 137Cs and release fraction of 0.001. Any radionuclide on the chart of the nuclides could be encountered during roof replacement activities. The radionuclides specifically listed in the NOC application were chosen to conservatively represent all radionuclide emissions that may occur in particulate form. A small contribution from the gaseous radionuclides may be encountered. Although any radionuclide could be present, for conservatism all alpha is assumed to be 241Am and all beta/gamma is assumed to be 137Cs for dose calculation estimates. Other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta/gamma constituents.

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241 Cs - 137

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) For dose modeling, the radionuclides of concern shall use cesium-137 (representing beta/gamma emitters) and americium-241 (representing alpha emitters).

5) The total radionuclide content of the material removed shall be tracked on a WDOH approved log.

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 4.90E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 4.90E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Categorical approval for facility entry and surveillance. The facilities covered under this NOC will be entered through a door or other existing access location to perform the activities as described below:

Accessing Facilities:
Accessing facilities shall be performed in accordance using the controls determined by the containment matrix from RPP Administration, HNF-IP-0842, Volume VII, Section 3.1, "Radiological Control".

Inspection/Surveillance:

-Visual inspections will be conducted to evaluate facilities integrity for future decommissioning work, to assure that utilities have been shut off, and/or identification of any environmental, radiological, or safety concerns.

Photographing/Videotaping:

-Photographing and videotaping are performed to assist personnel in recording a facility contents and to obtain knowledge of a facility and its contents. Photography/videotaping also assists personnel in planning future decommissioning work.

Sampling/Surveys:

-Swipes, smears, air sampling, and other surveys may be performed to characterize contamination levels present in a facility. These activities may be performed on containers, other equipment and interior surfaces associated with a facility.

-Removal of access port shield plugs may be performed to allow installation of video equipment and/or to perform radiological surveys.

-Electrical equipment inspections may be performed to assure that power has been shut off from facilities or to assure that equipment is in safe operation.

Housekeeping:

-Housekeeping will be performed to assure that a facility is in a safe condition that would not threaten workers safety or the environment. Housekeeping may include collecting containers, or miscellaneous debris for proper disposal.

Fixative Application

-Application of fixative materials serves to reduce the spread of contamination. The process of applying fixative materials varies depending on the type of material being applied. Fixative application may include using a glycerin-based substance followed by a permanent polymer urea based material or the glycerin-based substance alone, or other such process, which do not cause resuspension of smearable contamination.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Alpha - 0	2.80E-04	Beta - 0	4.00E-01	Gamma - 0	4.50E-02

4) Activities to this NOC are limited to no more than 2,160 hours/calendar year. This shall be documented on an approved log.

5) The annual possession quantity must be tracked for each entry.

6) The following radionuclides are allowed under this NOC: 3H, 14C, 59Ni, 60Co, 63Ni, 79Sc, 90Sr, 90Y, 93Zr, 93mNb, 99Tc, 106Ru, 113mCd, 125Sb, 126Sn, 129I, 134Cs, 137Cs, 137mBa, 151Sm, 152Eu, 154Eu, 155Eu, 227Ac, 228Ra, 229Th, 231Pa, 232Th, 232U, 233U, 234U, 235U, 236U, 237Np, 238Pu, 238U, 239Pu, 240Pu, 241Am, 241Pu, 242Cm, 243Cm, and 244Cm

7) The radiological control technology for all entries conducted under this NOC must follow the containment matrix HNF-IP-0842, Volume VII, Radiological Control.

8) The U.S. DOE shall monitor this emission unit as detailed in the most current PTRAEU Notice of Construction.

9) This NOC does not allow any decontaminating and decommissioning work to commence.

10) This NOC is only applicable to tank farm facilities.

11) Whenever active ventilation is in operation, a PTRAEU emission unit must be used as approved by the current PTRAEU NOC. All of the applicable Conditions and Limitations stated for the PTRAEU NOC approval must be adhered to and clearly documented. This includes the emission limits and controls. Emissions from these activities shall be subtracted from the overall handling limit of the PTRAEU NOC and reported under the Categorical Tank Farm Facility Entry and Surveillance NOC.

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.28E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.75E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The 241-AY-101, 241-AY-102, 241-AZ-101, and 241-AZ-102 tanks are double shell tanks. The inner shell is constructed from heat treated, stress-relieved steel. The outer shell is constructed of non stress relieved steel. The two shells are separated by a 2.5 ft annulus and contained inside a concrete shell. The tanks have a usable waste volume of approximately 1,001,000 gal.

The 241 AY and 241 AZ tanks are part of a Resource Conservation and Recovery Act treatment, storage, and/or disposal unit. The tanks contain mixed waste in the form of liquids or contained solids (suspended or settled). The contents in each of the four tanks may be mixed periodically to control gas entrapment in the settled solids, to control temperature, for chemical treatment to control corrosion, or for waste retrieval. Contained solids will be mobilized, as required, as part of this process by hydraulic action of the mixer pumps or by use of air-lift circulators in each of the tanks. During such activities, as well as during storage, the ventilation system maintains the vapor space in each tank below atmospheric pressure.

Airflow is from the tank to a glycol-cooled recirculation system and to a common header. The common header is the point in the overall system at which ventilation flow is provided to the emissions control system. Also, a portion of each tank's exhaust can be recirculated to assist in maintaining temperature.

The recirculation system cools, condenses, removes vapor and some entrained particulates, further removes moisture via a separator, and returns a portion of the cooled vapor to the tank. This provides cooling for the tank while reducing air emissions. Nominal flow rates in the recirculation system vary from zero m3/sec (bypassed) to 0.25 m3/sec per tank, at standard temperature and pressure conditions. At the higher flow rate, approximately 0.05 m3/sec is provided to the emission control system with the remainder to the tank. Similar airflow from the other three tanks is combined in the common ventilation header connecting the discharges of the other recirculation coolant systems. The combined flow is discharged to the emissions control system. The recirculation system is considered part of the process because the collected material is returned to the tank.

When mixer pumps are operating in a tank, the 0.25 m^3/sec drawn from this tank may not be recirculated but may be combined with the flow from the other tanks for a total discharge to the emissions control system flow range of 0.4 to 0.5 m^3/sec. Numerous other combinations of discharge flow rates are possible but the combined annual average discharge flow rate to the emissions control system will not be greater than 0.5 m^3/sec. During system upset conditions, such as an automatic shutdown of one exhaust train and start of the opposite train, discharge flow rates could reach 0.6 m^3/sec for several seconds.

The portion of the stream discharged to atmosphere will flow through a condenser, high-efficiency mist eliminator, heater, and two high-efficiency particulate air (HEPA) filters in series. For purposes of calculating abated emissions, only the HEPA filter control efficiencies are used.

The central pump pits on the 241-AY and 241-AZ Tank Farm tanks are approximately 14 ft long x 10 ft wide x 10 ft depth (outside dimensions). Sluice pits and annulus pump pits are somewhat smaller with outside dimensions of 7 ft x 7 ft x 10 ft deep and 5 ft x 5 ft x 10 ft deep.

With the previous NOC revision, modifications to all four tanks and associated equipment were permitted to allow for installation of waste retrieval systems and equipment, through issuance of letter AIR-05-708, including the following major components.

New In Tank Equipment
•Two mixer pumps each in tanks 241-AZ-102, 241-AY-101, and 241-AY-102 for mobilizing the settled solids. Two mixer pumps were installed in tank 241-AZ-101 and permitted previously by WDOH through issuance of AIR-98-708. All of the pumps will be capable of pumping waste through each of two horizontally opposed discharge nozzles.

•A riser extension/spray wash system on top of each of the risers used for mixer pumps. The spray wash system will be used for future decontamination of the mixer pumps if they are removed from the tank.

•One transfer pump in each tank for the transfer of waste.

•New temperature probes for each tank.

•New decant pumps in the AY tanks and associated transfer piping; to include a one-time use hose-in-hose transfer line approximately 40 ft in length.

Ancillary Equipment and Buildings
•Electrical power and instrument cables and other utility tie ins and/or upgrades (e.g., sanitary and raw water, and telecommunications).
•Tie-in to the existing dilution and caustic supply system to bring waste properties into compliance with the feed specifications and to flush and preheat transfer lines. The dilution system will have the capacity of providing approximately 140 gal/minute of pH adjusted water.
•Pit cover blocks.
•Water/diluent piping to and from the process pits.
•Process jumpers.
•Miscellaneous concrete pads for electrical and mechanical equipment.
•Chain link fencing and gates.

Removal, Repair, Decontamination, and Demolition of Existing Equipment
•Removal/repair of transfer and/or mixer pumps, as necessary, during the life of the facility.
•Removal and disposal of several thermocouple probes/instrument trees.
•Removal and disposal of several existing pumps and other miscellaneous equipment (e.g., slurry distributers and process jumpers).
•Additionally, this revision includes removal of HEGA filters.

CONSTRUCTION ACTIVITIES
Construction activities with the PTE could include soil excavation, work in pump pits, pipe cutting, and removal and installation of in tank equipment. Some of these activities are described in, and will be done in accordance with, an applicable tank farm as low as reasonably achievable control technology (ALARACT) demonstration (HNF 4327, Control of Airborne Radioactive Emissions for Frequently Performed TWRS Work Activities (ALARACT Demonstrations). The specific activities and corresponding ALARACT demonstration are called out as applicable in the following sections.

If needed or chosen for use during these activities, the regulated guzzler, a portable/temporary radioactive air emission unit, and a HEPA filtered vacuum radioactive air emission unit may be used in accordance with the most current version of Guzzler DOE application,(See DOE Letter 09-ESQ-542 Dated November 30, 2009), Notice of Construction for Guzzler Evacuation and Backfill Activities in Support of the 200 East and West Tank Farm Complex or the latest WDOH approved Site wide Guzzler (See DOE Letter 99-SID-021 Dated February 1,1999) , “Radioactive Air Emissions Notice of Construction Portable/Temporary Radioactive Air Emission Units”; and DOE/RL-97-50, “Radioactive Air Emissions Notice of Construction for HEPA Filtered Vacuum Radioactive Air Emission Units,” respectively].

Because of the possibility of encountering previously undetected subsurface contamination, all work will be performed in accordance with appropriate radiological controls and the River Protection Project (RPP) as low as reasonably achievable (ALARA) program. These requirements are carried out through work packages and associated Radiological Work Permits (RWP).

Soil Excavation

Soil will be excavated inside and outside the 241-AZ and 241-AY Tank Farms for the dilution piping that will tie-in to the existing AN Tank Farm caustic supply system and to remove soil in preparation for mixer pump foundations and miscellaneous equipment support structures, to remove soil around pits in preparation of core drilling, and for placement of control building foundations (as required). A total of approximately 6000 yd^3 per farm could be excavated. Backfill will be made with the original removed soil or noncontaminated controlled density fill (sand, water, and a small amount of cement).

Soil excavation activities inside the tank farm fence will be performed in accordance with ALARACT Demonstration 5, TWRS ALARACT Demonstration for Soil Excavation (Using Hand Tools). If contamination is discovered outside the tank farm fence, ALARACT 5 will be followed. Clean soil piles could be moved from one place to another within the tank farm with heavy equipment (backhoe, front-end loader, etc.). Soil excavation outside the tank farm fence in noncontaminated soil also could be performed with heavy equipment. The regulated guzzler also could be used as described in the NOC for use in the 241-A Tank Farm Complex (EPA 1998 letter).

Pipe Cutting and Welding

Any required cuts of contaminated piping will be made inside a glove bag using appropriate equipment such as a sawzall or tri tool. To perform a cut without a glove bag, the piping will be surveyed/smeared to verify removable contamination levels are equal to or less than 10,000 disintegrations per minute (dpm) per 100 cm^2 beta gamma and 200 dpm/100 cm^2 alpha.

Welding may be necessary to join various pieces of equipment. If this is necessary, welding will commence once removable contamination levels in the weld area are reduced to ALARA. The goal will be to achieve 1000 dpm/100 cm2 beta gamma and 20 dpm/100 cm^2 alpha or less, but might not always be attainable.

If needed or chosen for use during these activities, a portable/temporary radioactive air emission unit and a HEPA filtered vacuum radioactive air emission unit could be used in accordance with the latest revisions of the NOCs (DOE/RL-96-75 and DOE/RL-97-50, respectively).

Pit Work

Work to be performed in pits may include replacing existing sets of cover blocks with newly designed cover blocks, core drilling (equivalent of one hundred 14-in. diameter holes for AZ Farm and ten 14 in. diameter holes for AY Farm), installing new nozzles, and removing existing jumpers.

Pit access and work will be performed in accordance with ALARACT Demonstrations 6 and 14, TWRS ALARACT Demonstration for Pit Access, and TWRS ALARACT Demonstration for Pit Work. Activities not covered in these ALARACTs are described in the following.

If needed or chosen for use during these activities, a portable/temporary radioactive air emission unit and HEPA filtered vacuum radioactive air emission unit could be used in accordance with the latest revisions of their NOCs (DOE/RL-96-75 and DOE/RL-97-50, respectively).

At the start of the pit work, the cover blocks will be lifted off and radiologically surveyed to determine an appropriate disposal method. New cover blocks will be installed when all work in the pits is completed.

Core drilling may be performed and will occur below grade level on the outside of the pit. The hole will be drilled from the outside to the inside, with the temporary pit cover in place. Nozzle installation generally will proceed immediately after the hole is completed. If immediate nozzle installation is not possible, the hole will be temporarily sealed with a plug, tape, or equivalent device until the nozzle can be installed.

Installation of new nozzles in existing pits will take place in an open pit. All parts of the nozzle will be assembled ahead of time and will be lowered into position as a single unit. The piping in the back of the nozzle will be threaded through the hole (from the inside of the pit to the outside) and pulled tight into place from the outside of the pit. Grout will be used to secure and seal the nozzle into place. The front opening of the nozzle, inside the pit, will be fitted with a temporary cap/seal until a jumper is connected to the nozzle. Once the nozzle(s) is/are installed, the temporary pit cover will be replaced until other work inside the pit requires pit cover removal.

Removal of In Tank Equipment

Various in-tank equipment will be removed from the tanks to make room for the waste retrieval equipment, or to be replaced with equivalent equipment built to withstand the mixer pump jet forces. Removed long-length equipment will either be packaged in long-length contaminated equipment disposal containers or size reduced for disposal in accordance with ALARACT Demonstration 15, Tank Farm ALARACT Demonstration for Size Reduction of Waste Equipment for Disposal. Equipment removal will be performed in accordance with ALARACT Demonstration 13, TWRS ALARACT Demonstration for Installation, Operation, and Removal of Tank Equipment. Activities not covered in this ALARACT are described in the following.

If needed or chosen for use during these activities, a portable/temporary radioactive air emission unit, and a HEPA filtered vacuum radioactive air emission unit may be used in accordance with the latest revisions of their NOCs (DOE/RL-96-75 and DOE/RL-97-50, respectively).

Decontamination of removed equipment is not anticipated. The fewer decontamination activities undertaken, the less exposure possibilities there are to the worker and the environment. Contingency decontamination plans, however, are in place if needed. The most likely equipment to be decontaminated would be sections of the flexible receiver. Equipment removal will be performed in accordance with TWRS ALARACT Demonstration 13, Installation, Operation, and Removal of Tank Equipment.

In Tank Equipment Installation
Equipment installation will be performed in accordance with TWRS ALARACT Demonstration 13, Installation, Operation, and Removal of Tank Equipment.

WASTE STAGING AND RETRIEVAL PROCESS OVERVIEW
Mixer pumps will be operated to maintain waste uniformity during staging and to mix the waste for a period before and during transfer. As required by operational directives, mixer pumps will be operated until waste samples verify that adequate mixing has been achieved. Waste samples will be collected in accordance with TWRS ALARACT Demonstration 7, Tank Waste Grab Sampling. If dilution/conditioning is needed, the pH and temperature of the diluents will be adjusted by means of a caustic supply system. Once the waste is verified acceptable, the transfer lines will be preheated/flushed with water, and the waste transfer to the treatment facility will follow. After the transfer, the lines will be flushed again with water.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Alpha - 0	B/G - 0
See quantities listed under emission unit 486 for this NOC.	See quantities listed under emission unit 486 for this NOC.

4) MONITORING DURING CONSTRUCTION ACTIVITIES
During pipe cutting activities surface contamination surveys will constitute the PCM to verify low emissions. If a portable/temporary radioactive air emission unit is used, PCM will be performed as required by these NOC.

During pit work activities, PCM as described in ALARACT 14 will verify low emissions. If a portable/temporary radioactive air emission unit is used, PCM will be performed as required by these NOCs.

During in tank equipment removal and installation activities surface contamination surveys, as described in ALARACT Demonstration 13, TWRS ALARACT Demonstration for Installation, Operation and Removal of Tank Equipment (HNF-4327) will constitute the PCM to verify low emissions. If a portable/temporary radioactive air emission unit is used, PCM will be performed as required by these NOC.

5) If a portable/temporary radioactive air emission unit is used during the removal or installation of in tank equipment activities, controls as described in the NOC DOE/RL-96-75 wiill be followed. Descriptions of the emissions control technology for those units are provided in the NOC.

6) If a portable/temporary radioactive air emission unit is used during the pit work activities, controls as described in the NOC DOE/RL 96-75 will be followed. Descriptions of the emissions control technology for these units are provided in the NOC.

7) If a portable/temporary radioactive air emission unit is used during the pipe cutting activities, controls as described in the NOC DOE/RL 96-75 will be followed. Descriptions of the emissions control technology for these units are provided in the NOC.

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.38E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.38E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Work shall be performed outside of some tank farm fence boundaries such as the 241-AN, 241-AP, 241-AW, 241-AZ, and 241-SY tank farms; between the 241-AP tank farm and the 244-A double contained receiver tank as well as between the 244-S double-contained receiver tank and the 241-SY tank farm; the 219-S Waste Handling Facility located at the 222-S Laboratory; and near the 241-A-A valve pit (241-A Single-Shell Tank Farm).

EXCAVATION

Excavation within a tank farm, or in a known radioactive contamination area outside of a tank farm, shall be performed in accordance with As Low As Reasonably Achievable Control Technology (ALARACT) Demonstration 5, TWRS ALARACT Demonstration for Soil Excavation (Using Hand Tools), or non-mechanical methods such as vacuum excavation (Guzzler) in accordance with the latest WDOH approved Notice of construction Application for Guzzler Excavation and Backfilling activities in Support of the 200 East and West Area Tank Farm Complex (See DOE Letter 09-ESQ-542 Dated November 30, 2009) or the latest WDOH approved Site Wide Guzzler application(See DOE Letter 99-SID-021 Dated February 1,1999). Outside of a tank farm, in non-contaminated areas, excavation (or berm construction) may be performed using mechanical methods such as: trenchers, backhoes, and scrapers, in addition to hand tools or non-mechanical methods. Areas may be encountered during excavation where components are covered by very hard soil or controlled density fill (low-strength concrete). Mechanical impact tools, such as jackhammer/rototool, would be used to break up such areas before excavation. Removal of excavated material is normally done by mechanical methods such as a crane with skip bucket, powered skip, or front-end loader. Excavated material is placed in spoil piles. (NOTE: Industrial safety requirements may require use of intermediate transfer piles.) Contaminated soil (>100,000 dpm/100 cm2 beta/gamma) is segregated from other soil. Excavated areas shall be backfilled with the excavated soil or soil containing less contamination than the soil that was excavated. Backfilling of excavated areas is accomplished by first placing controlled density fill material when used, then soil in layers, into the excavated area. The distance from the skip bucket, powered skip, and front-end loader to the top of the excavation area is minimized. Contaminated soil is the first soil placed in the excavated areas, then covered with other excavated soil. To meet density requirements, soil compaction is done using hand-guided mechanical compaction equipment. Outside of a tank farm, in a non-contamination area, vibratory roller compactors may be used.

Excavation shall also be conducted to allow for the pouring of concrete pads for future placement of equipment within the tank farms.

PIT WORK

Frequently performed activities shall be done in accordance with activity descriptions found in ALARACT Demonstrations (HNF-4327):

- ALARACT 4 "Packaging and Transportation of Waste"
- ALARACT 6 "Pit Access"
- ALARACT 12 "Packaging and Transportation of Equipment & Vehicles"
- ALARACT 13 "Installation, Operation, and Removal of Tank Equipment"
- ALARACT 14 "Pit Work" and, if required,
- ALARACT 15 "Size Reduction of Waste Equipment for Disposal."

The process is establishment of controls to prevent the spread of radioactive contamination, removal of pit cover blocks by heavy rigging methods, decontamination of pit by water washing (pressure and non-pressure methods),

application of fixative material on contamination, disconnection of equipment, equipment removal by manual or mechanical methods, package equipment for disposal (size reduction if necessary), pit surface preparation by manual abrasion (scrapping, sanding, chipping; on a surface that is damp or has fixative) of existing pit coating, application of pit coating material by manual methods or pressure spray methods, installation of new or replacement equipment, installation of pit cover blocks by heavy rigging, packaging of waste, and transportation of waste and removed equipment.

Project pit activities will include preparation of pit surfaces and coring of walls or cover blocks. Project pit surface preparation is accomplished by mechanical abrasion of the existing pit coating, concrete substrate, and steel surfaces as needed. Needle guns, sanders, wet blasting, and grinders are typical tools used. In addition, surface preparation also may include repair of cracked concrete/concrete coatings. Repair will require removal of cracked material to allow application of grouting material. Removal of cracked material may be performed using manual and power tools, and may also include using a HEPA vacuum to assist in the removal of loose debris. Coring of pit walls and/or cover blocks for new nozzles or equipment installation comprised of replacing wall nozzles, leak detectors, cover blocks, pipe snub-outs, and jumpers will also be performed. A new AZ valve pit will be constructed and connected to the AZ tanks.

PIPE CUTS

The cutting of waste transfer lines, tank risers, or contaminated piping shall be made using a low or high speed reciprocating or cut-off saw (sawzall, bandsaw) or other mechanical methods, such as a tri-tool. Surveys of the exterior and/or interior of the pipe/riser shall be used to determine containment selection in accordance with Radiological Containment Selection, Design, & Specification Guide RPP-7933. Continuous health physic technician coverage shall be present during all pipe work activities. Abrasive methods, such as grinders or sanders, may be used to prepare the cut area for connection to the new section of transfer line. Mating of the new piping to the existing transfer lines or tank riser, and other similar connections if necessary, will be performed using mechanical connection methods or welded flange connections.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Am - 241	8.93E-04	Co - 60	1.06E-03	Cs - 137	7.11E+00
Eu - 152	1.95E-02	Eu - 154	3.32E-02	Pu - 238	6.98E-04
Pu - 239	6.39E-03	Pu - 240	2.31E-03	Pu - 241	5.08E-02
Pu - 242	6.90E-08	Sr - 90	3.97E+01	U - 233	1.46E+00
Y - 90	3.96E+02				

4) The Annual Possession Quantity and Potential-to-Emit to the MEI shall be tracked on a WDOH approved log.
5) The Radiological Containment Selection, Design & Specifications Guide, RPP-7933, Revision 0 shall be used. Changes made to RPP-7933, Revision 0 shall be provided to WDOH. The Department retains the right to change or add approval conditions and limitations based on the changes to RPP-7933.
6) To determine the potential-to-emit and calculate the annual dose to the Maximally Exposed Individual all gross alpha contamination shall be assumed to be Am-241 and all gross beta contamination shall be assumed to be Sr-90.
7) When HEPA vacuums are used they shall follow all the requirements of the latest revision of the Radioactive Air Emissions Notice of Construction for HEPA Vacuums.
8) When Portable Temporary Radioactive Air Emission Units are used they shall follow all the requirements of the latest revision of the Radioactive Air Emissions Notice of Construction for Portable Temporary Radioactive Air Emission Units (DOE/RL-96-75).

Emission Unit ID: 448

Hanford Sitewide Vented Containers

Vented Containers

This is a MINOR, PASSIVELY ventilated emission unit.

PTRAEU

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	Air - every 2 weeks continuous/deposition - annually

Sampling Requirements Environment Sampling

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities for vented containers involve storing, surveillance and monitoring operations on the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Sitewide Vented Container Storage	AIR 07-701	7/2/2007	641

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.40E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   Containers are used to store mixed and/or radioactive waste generated on and off the Hanford Site. Venting devices are installed when there is the potential for non-radioactive gases (i.e., hydrogen) to be generated as a result of radiolysis.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 1.00E-01 mrem/year. Approved are the associated potential release rates (Curies/year) of:

   Release rates are not listed; emission release rates are controlled by special conditions.

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) Containers other than drums are also approved if they meet the conditions of this NOC.

5) Establishes a categorical As Low As Reasonably Achievable Control Technology (ALARACT) demonstration for existing Hanford Site vented containers.

6) Establishes a categorical Best Available Radionuclide Control Technology (BARCT) demonstration for all future Hanford Site vented containers (i.e., up to 6667 vented container units (UVC) based on a total abated emissions offering less than 3.4E-05 mrem/year to the MEI). (WAC 246-247-040 (5))

7) NucFil(TM) filter or an equivalent filter shall be BARCT and ALARACT. Vent clips are accepted as ALARACT for existing systems to date, however, when conditions require repackaging vent clips shall be replaced by NucFil(TM) or equivalent filters.

8) Pu239/240 equivalent curies (PE-Ci) represents the radionuclide of concern as discussed in the Hanford Site Solid Waste Acceptance Criteria, HNF-EP-0063.

9) The vented container Latitude and Longitude coordinates (46 degrees 22' 13.8", 119 degrees 16' 12.3") refer to the location resulting in the highest impact to the MEI.

10) These containers are used for storing mixed and or radioactive waste generated on or off Hanford Site.

11) WDOH accepts vent clips as ALARACT since they are no longer installed.

Emission Unit ID: 454

200 200 Area ISA

200 Area Interim Storage Area (ISA)

This is a MINOR, ACTIVELY ventilated emission unit.

200 diffuse/fugitive emissions

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075(3)			Annual

Sampling Requirements Smear Survey

Additional Requirements

See Section 5 of the general conditions in this license for additional information.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Operations at the 200 Area ISA are for interim dry storage of SNF materials on the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Construction and Operation of the 200 Area Interim Storage Area (ISA)	AIR 06-1015	10/5/2006	650

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.92E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The construction and operation of the 200 Area ISA. The 200 Area ISA will be constructed and operated for the interim storage of non-defense production reactor SNF in dry cask storage systems (DCSSs). [Note: Dry cask storage system is a generic term referring to the various storage systems employed for SNF storage at the 200 Area ISA and does not refer to a specific storage system.]

Dry Cask Storage System Interim Storage

Once the DCSSs are prepared for interim storage the systems can be transferred to the 200 Area ISA for interim storage. Up to sixty Interim Storage Casks (ISCs) storing FFTF SNF, 7 NAC-1 casks storing LWR SNF, and 12 NRF TRIGA casks and 2 DOT-6M containers storing TRIGA<tm> SNF will be required for storage at the 200 Area ISA. Each of the dry cask storage systems will be transported via road to the 200 Area ISA and unloaded using a mobile crane. Each DCSS will be placed at a specific location within the 200 Area ISA.

Dry Cask Storage System Equipment

Different DCSSs are utilized for the different SNF types to be stored at the 200 Area ISA to accommodate the particular characteristics of the SNF. The FFTF SNF DCSS, the NRF TRIGA SNF DCSS, and the LWR SNF DCSS.

200 Area ISA Design and Construction

The 200 Area ISA consists of concrete pads, perimeter fencing and lighting, access for transporters and mobile cranes, and conduit for potential future electrical service and instrumentation. This construction will not involve contaminated items. The 200 Area ISA will be situated within the current CSB construction site. This site is currently not a radiological area nor does it contain an underground radioactive material area. No contaminated excavation will be involved.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 1.92E-03 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Am - 241	2.65E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Am - 242	1.11E-06	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Am - 242 m	1.12E-06	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Ba - 137 m	1.18E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
C - 14	5.75E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Ce - 144	1.92E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Cm - 242	1.21E-06	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Co - 60	1.07E+03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Cs - 134	1.56E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Cs - 137	1.25E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Eu - 154	3.30E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Eu - 155	1.21E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Fe - 55	1.01E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
H - 3	3.62E+00	gas	WAC 246-247-030(21)(a)
I - 129	3.07E-04	gas	WAC 246-247-030(21)(a)
Kr - 85	3.07E+01	gas	WAC 246-247-030(21)(a)
Mn - 54	9.55E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Ni - 63	9.18E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Np - 237	1.15E-09	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pm - 147	9.64E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pr - 144	1.92E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 238	1.30E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Pu - 239	5.56E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 240	4.81E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 241	1.79E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Rh - 106	5.51E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Ru - 106	5.51E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Sb - 125	1.21E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Sm - 151	5.15E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Sr - 90	4.55E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Tc - 99	1.83E-07	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Te - 125 m	2.95E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
U - 235	9.70E-12	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
U - 238	1.01E-09	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Y - 90	4.55E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	Am - 242 m	Am - 242	Ba - 137 m	C - 14
Ce - 144	Cm - 242	Co - 60	Cs - 134	Cs - 137
Eu - 154	Eu - 155	Fe - 55	H - 3	I - 129
Kr - 85	Mn - 54	Ni - 63	Np - 237	Pm - 147
Pr - 144	Pu - 238	Pu - 239	Pu - 240	Pu - 241
Rh - 106	Ru - 106	Sb - 125	Sm - 151	Sr - 90
Tc - 99	Te - 125 m	U - 235	U - 238	Y - 90

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) Any detectable contamination above 2200 dpm/100 cm ^2 Beta-Gamma or 220 dpm/100 cm^2 Alpha as a result of the ISA specific monitoring shall be reported to the department.

5) Periodic confirmatory monitoring shall consist of annual smears or swipes of the outer surfaces of the containers using hand held survey instruments capable of detecting contamination above 2200 dpm/100 cm ^2 Beta-Gamma or 220 dpm/100 cm^2 Alpha.

6) The emission limit for this emission unit is no smearable contamination above 2200 dpm/100 cm ^2 Beta-Gamma or 220 dpm/100 cm^2 Alpha using standard portable instruments used, and survey methods followed at Hanford

(WAC 246-247-040(5)).

Emission Unit ID: 455

Hanford Sitewide W-PORTEX 007

HEPA vacuums

This is a MINOR, ACTIVELY ventilated emission unit.

PTRAEU

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)			

Sampling Requirements None

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Operation of HEPA vacuums involve reduction of smearable and fixed contamination and evacuation of enclosures at the Hanford Site.

This Emission Unit has 4 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
HEPA Filtered Vacuum Radioactive Air Emission Units (HVU)	AIR 06-1024	10/5/2006	663

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 2.50E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The use of specified HVUs located and operated on the Hanford Site, and represents establishment of unregistered, portable and temporary, insignificant emission units.

For the purposes of estimating (modeling) offsite exposures for this application, all applicable HVU emissions at an individual facility (e.g., B Plant Complex, C Tank Farm, SX Tank Farm, T Plant Complex, 100-K East Basin, 100-K West Basin, 324 Building, 340 Complex, etc.) or activity (e.g., D&D of a building) will be considered as a single emission point for that facility.

HVUs are portable cleaners with exhaust flow rates ranging from 50 to 300 cubic feet per minute. The units control radionuclide emissions by providing filtered vacuuming for surfaces that radioactively are contaminated.

HVUs fall into two categories of use, those used for the reduction of smearable contamination and those used to reduce fixed contamination. For smearable contamination, the use of HVUs is limited to reduction of contamination on hard surfaces (e.g., concrete, permanently installed metal equipment such as risers, ventilation system components, piping, etc.). Soil matrices are excluded from this NOC. Smearable contamination on these hard surfaces will not exceed limits established in DOE/RL-96-109. These limits, if exceeded, require the affected are to be posted as a high contamination area. The limits are 2,000 disintegrations per minute per 100 square centimeters (dpm/100 cm2) alpha contamination and 100,000 dpm/100 cm2 beta/gamma contamination.

An exception to these limits is restricted to spot surface contamination areas found during outdoor radiological field surveys, and to clean up localized, radiologically contaminated material (e.g., dust, dirt, bird droppings, animal feces, insects, spider webs, tumbleweed fragments, etc.). These types of materials could have beta/gamma contamination levels exceeding 1 million dpm/100 cm2, but are very localized (i.e., a few square meters, rather than hundreds of square meters) and could occur in contamination areas, buffer zones, and clean zones. This exception does not apply to areas normally posted as high contamination areas.

The second category of use is for reduction of fixed contamination, involving the removal and/or penetration of contaminated surfaces. This category of use includes using HVUs and associated shrouded tools for sanding, stripping, spalling, drilling, and cutting operations. Limits in areas of fixed contamination to ensure compliance will be established before these tools are used.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 4.97E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	3.09E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Alpha release rate for 100 Areas, emission calculations will assume Pu-239/240			
Alpha - 0	2.29E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Alpha release rate for 300 Area, emission calculation will assume Pu-239/240.			
Alpha - 0	3.44E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Alpha release rate for 400 Area, emission calculation will assume Pu-239/240.			
Alpha - 0	4.57E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Alpha release rate for 200 East Area, emission calculation will assume Pu-239/240			
Alpha - 0	7.70E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Alpha release rate for 200 West Area, emission calculation will assume Pu-239/240.			
B/G - 0	3.88E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
B/G release rate for 200 West Area, emission calculations will assume Sr-90.			
B/G - 0	1.16E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
B/G release rate for 300 Area, emission calculations will assume Sr-90.			
B/G - 0	1.74E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
B/G release rate for 400 Area, emission calculations will assume Sr-90.			
B/G - 0	1.56E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
B/G release rate for 100 Areas, emission calculations will assume Sr-90.			
B/G - 0	2.30E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
B/G release rate for 200 East Area, emission calculations will assume Sr-90.			

The radioactive isotopes identified for this emission unit are (no quantities specified):

Pu - 239/240 Sr - 90

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) All HEPA vacuum logs shall be submitted to the department on a quarterly basis (beginning with the first quarter of 2002). This submittal shall be to the department 30 days after the end of each quarter.

5) Monitoring requirements are as follows: In the event that the exhauster is used on different emission units, the Department of Health reserves the right to request a nondestructive analysis/assay (NDA) after each exhaust job assignment (WAC 246-247-075(3)). The monitoring includes: emission estimates to include the methodology, all monitoring measurement results taken during the operation, copy of all logs kept on site and the summary submitted to the department on June 30th.

Log sheets will include the following information:

Results of smears on the exhaust ports;
Maximum contamination level encountered or analysis results,
area cleaned,
and air emission source constituents if other than plutonium 239 and strontium 90 potential radionuclide releases.

6) The approved process is as follows: The HVU's fall into two categories. The firse category is the use if the HVU's for the reduction of smearable contamination (including the special cases listed in Appendix C) and the other is to reduce fixed contamination. Soil matrices are excluded from this NOC.

7) The required controls are described as follows: The HVU's must be field tested annually requiring an aerosol test/efficiency test or equivalent pass/fail criteria of 95.95% using an aerosol defined in ASME N510 or approved equivalent. In addition, the HVU's filtration systems are to be tested whenever the configuration is modified and/or the filtration system is opened. A smear of the exhaust port shall be conducted before and after each use of HVU's. If the exhaust port smear is positive, the unit shall be tagged and removed from service.

8) This NOC shall be revised no later than September 1, 2002. Revision 2 was received in September, 2002. The NOC application was determined to be incomplete, a new NOC application shall be submitted.

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.00E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Transuranic waste retrieval involves the processes for removing and dispositioning buried suspect transuranic mixed low-level radioactive waste (hereafter called TRU waste) from Hanford Site burial trenches for storage or disposal at other approved locations. Dispositioning is the orderly administration and handling of waste (including contaminated soil) from the low level burial grounds to place it in approved storage or disposal status. The handling includes such actions as: packaging, labeling and tracking waste; venting, assaying, and staging waste; inspecting waste and waste staging areas; sampling/characterizing/designating waste; making arrangements for the transfer of waste; completing necessary paperwork; and performing radiological and/or industrial hygiene surveys. Two containment systems are associated with this approval. One is Emission Unit 1327, Next Generation Retrieval (NGR) and, the other system will be used for the retrieval of large containers and is referred to as Emission Unit 1322, Portable Enclosure System (PES). These emission units will be used when retrieval activities exceed EU 486: 200 Area diffuse and fugitive contamination limits. In addition there are 3 types of drum venting systems and HEPA-filtered Vacuum Units (HVU) used with these venting systems and also during excavation and retrieval.
See the following emission units for a detailed description of additional controls/conditions and limits under this approval:

EU 455	HEPA Vacuums
EU 486	200 Area Diffuse/ Fugitive; Operation of the Transuranic Waste Retrieval Project
EU 755	Mobile Drum Venting System (Active Ventilation) (MDVS)
EU 756	Mobile Drum Venting System (Passive Ventilation) (MDVS)
EU 1181	Categorical Drum Venting System 2 (DVS2)
EU 1322	Portable Enclosure System #1 (PES)
EU 1326	Vapor Extraction System (VES)
EU 1327	Next Generation Retrieval (NGR)

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 3.92E+01 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	1.40E-06	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Alpha release rate based on Am-241. It is recognized that other radionuclides may be present in very limited quantities. Release rate for contaminated soil removal using HEPA Vacuum. See condition: ALTERNATE APPROVAL RELEASE FRACTION; HVU USAGE.

B/G - 0	8.60E-06	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Beta/Gamma release rate based on Cs-137. It is recognized that other radionuclides may be present in very limited quantities. Release rate for contaminated soil removal using HEPA Vacuum. See condition: ALTERNATE APPROVAL RELEASE FRACTION; HVU USAGE.

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	Am - 243	Cf - 252	Cm - 244	Cs - 134
Cs - 137	Eu - 152	Eu - 154	Pu - 238	Pu - 239/240
Pu - 241	Sr - 90	U - 234	U - 235	U - 236
U - 238				

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) PROCESS DESCRIPTION: VENTING OF CONTAINERS

This approval applies to these additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

All work will be performed to meet ALARA practices and will be conducted according to applicable operating procedures, radiological control procedures, and radiological work permit (RWP's).
Vent filters will continue to be installed in designated containers via one of the drum venting systems described in this process description. These systems will ensure personnel and environmental protection. The methodology will require penetrating the container and inserting a vent. Penetration of the lid will be accomplished by either drilling through the lid or puncturing the lid with a filter dart (using Dart System). Container venting systems are described in the following text. Designated drums slated for venting will be vented with the Mobile Drum Venting System (MDVS), Drum Venting System 2 (DVS2), or other venting methods. (WAC 246-247-040(5) and WAC 246-247-060(5))

5) PROCESS DESCRIPTION: DART AND OTHER VENTING SYSTEMS

This approval applies to these additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The Dart System is a portable unit that clamps directly onto a drum or onto the drum lid restraint, using a pneumatic driver remotely activated by wire or radio transmitter. This system penetrates the drum lid with minimal risk of contamination release while installing a Nucfil® or equivalent filter with an aluminum bronze housing to prevent the possibility of sparking. Potential emissions from these outdoor operations will be considered diffuse and fugitive.

Venting of other containers will be done, the majority being fiberglass reinforced plywood (FRP) boxes but also metal containers hereafter referred to collectively as boxes, located in the Low Level Burial Grounds (LLBG). Two venting systems for the boxes will be used. Both systems will be capable of mating to various sized boxes and will be capable of installing a Nucfil® or equivalent filter to vent the box headspace.

One type of vent system uses a steel plate held in place against the side of a box by a forklift as a blast shield for personnel protection in the event the container is pressurized. A pressurization event has less than 1% likelihood during the life of the project. A rubber gasket will provide a seal between the steel plate and the box. A glove bag will then be attached to the steel plate and the box to provide for contamination control during the drilling of the box. The glove bag contains a HEPA type filter for passive control of contaminated particulates that may gradually escape from the box during the drilling operation. In the event contamination is encountered during filter installation, a HEPA vacuum could be connected for cleanup of any spot contamination that is found on the box surface after the filter is installed. The HEPA vacuum would be subject to the sitewide HEPA vacuum EU.

After the steel plate and glove bag are in place, personnel will drill a pilot hole into the box through the blast shield opening, monitor for the presence of contamination and hazardous gases, and install a Nucfil or equivalent filter. These activities will be conducted through glove ports that are an integral part of the glove bag. The drilling will be done with non sparking and cold drilling techniques. A static dissipating cleaner will be used to decay electrostatic build up in the fiberglass wall of the box during drilling.

The second type of vent system for FRP boxes that may be used is similar to the portable drum venting system operating at T Plant. There could be several of these units in use within the LLBG. A glove bag with HEPA type

filter is used but without the steel plate and the drilling will be done remotely. The drill assembly and motor and bit type will remain the same. The system uses a pneumatic cold drilling technique that utilizes remote activation. The FRP venting system is placed on the top or side of the box and held in place with straps or clamps throughout the drilling and filter installation operation. A static dissipating cleaner will be used to decay electrostatic build up in the fiberglass box wall during drilling. A time weighted release of 60 minutes per box is allowed for drilling and filter installation. After holes are drilled, Nucfil® filters or equivalent will be hand installed in the box using glove ports in the glovebag.

In the event contamination is encountered during the installation of a Nucfil® or equivalent filter, a HEPA vacuum would be connected for cleanup of spot contamination after the Nucfil® or equivalent filter is installed. The HEPA vacuum would be subject to the sitewide HEPA vacuum approved EU. (WAC 246-247-040(5) and WAC 246-247-060(5))

6) ABATEMENT TECHNOLOGY: EXCAVATION AND RETRIEVAL OF CONTAINERS
The administrative control points set in this emission unit for contamination, as monitored by standard radiological field instrumentation, will be used to bound emissions based on current efficiencies of typical RadCon field contamination instruments. The controls listed within this approval apply to TRU Waste Retrieval Project open air excavation and retrieval activities. (WAC 246-247-040(5) and WAC 246-247-060(5))

7) ABATEMENT TECHNOLOGY: DART SYSTEM AND OTHER VENTING SYSTEMS
The Dart System is designed to insert a non-sparking Nucfil® or equivalent filter or sample port remotely and nearly instantaneously (insertion time in milliseconds), even if the container is pressurized. Containers that already have vents installed may have Nucfil or equivalent filter sample ports installed (allowing subsequent HSGS collection) without creating a new pathway for potential emissions. Sample ports may be installed in drums with existing vent devices using the Dart System at the Low Level Burial Grounds (LLBG.) The two box venting systems use different approaches to venting boxes. The first system uses a passive HEPA filter to contain potential contamination that might be expelled from a box during the initial drilling. The glovebag will have ports to check for contamination, and if detected will have the capability of connecting a HEPA-Filtered Vacuum Unit (HVU) in order to exhaust the glovebag after the filter has been installed. In this situation a primary HVU provides contamination control during the disassembly of the glovebag .
The second box venting system uses a portable venting system that uses air to drive a remotely operated drill motor. The glovebag associated with this system will use a HVU to maintain negative pressure in the glovebag and effectively exhaust the air from the drill motor and drilling action. The glovebag will have ports to check for contamination and hazardous gases after venting. This box venting system will be secured to the box with tie down straps during the venting operation. (WAC 246-247-040(5) and WAC 246-247-060(5))

8) ALTERNATE APPROVAL, RELEASE FRACTION: HVU USAGE
HVU use is assumed to provide 2% of the total unabated dose rates for manual excavation, but a release fraction of 1.0 is used instead of the 1.0 E-3 release fraction used for manual excavation. This alternative release fraction is approved as being conservative for this emission unit. This yields a predicted release rate (unabated) without any emissions control equipment of 2.0E-02 Ci/year. HVU's are tested to assure a minimum 99.95% removal efficiency for aerosol test particles with a median diameter of 0.7 micron; therefore, the predicted release rate (abated) with emissions control equipment is 1.0E-05 Ci/year. The release rates for the representative radionuclides Am-241+Progeny and Cs-137+Progeny are as follows:

Unabated PTE;	Am-241+Progeny	2.9E-03 Ci/yr	:	Cs-137+Progeny	1.7E-02 Ci/yr
Abated PTE	Am-241+Progeny	1.4E-06 Ci/y	:	Cs-137+Progeny	8.6E-06 Ci/yr

(WAC 246-247-040(5), WAC 246-247-060(5), WAC 246-247-075(4))

9) WDOH NOTIFICATION - HVU annual cumulative dose exceeded
Records will be maintained of annual cumulative dose and WDOH will be notified if exposure from HVU or annual cumulative dose exceeds 10 mrem per hour at 1 foot from the HVU canister for any HVU used under this NOC. (WAC 246-247-040(5) and WAC 246-247-060(5))

10) CONTROL TECHNOLOGY-HVU
HVU's shall be tested at 99.95% removal efficiency and shall be aerosol tested annually using ANSI N-510 as guidance for non-ANSI N-509 systems. Records of this testing shall be maintained on file. (WAC 246-247-040(5) and WAC 246-247-060(5))

11) CONTAMINATION CONTROL - HVU use spot contamination
Use of HVUs for control of localized spot contamination is restricted to spot surface contamination areas found during outdoor radiological field surveys, and to the cleanup of localized radiologically contaminated material (e.g., dust dirt, bird droppings, animal feces, insects, spider webs, tumbleweed fragments, etc.) These types of materials

could have beta/gamma contamination levels each exceeding 1 million dpm/100 square cm. but are very localized. HVU use will follow the latest approved version of the HVU NOC (DOE-RL-97-50, as amended). Use of the Guzzler will be performed under the NOC applicable to the emission unit. (WAC 246-247-040(5) and WAC 246-247-060(5))

12) CONTAMINATION CONTROL- HVU removable contamination
HVU will not be used in high contamination areas where removable contamination limits of 2000 dpm/100 square cm alpha and/or 100,000 dpm/ 100 square cm beta/gamma on hard surfaces have been exceeded. (WAC 246-247-040(5) and WAC 246-247-060(5))

13) CONTAMINATION CONTROL - Soil excavation near containers
Manual methods or HVU will be used to excavate soil in close proximity to containers. (WAC 246-247-040(5) and WAC 246-247-060(5))

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 9.80E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Management of radioactive contamination during roof replacement activities.

All work shall be performed in accordance with written contractor radiological control requirements (associated with posting and downposting requirements for doing work in outdoor contamination areas and fixed contamination areas) and the as low as reasonably achievable (ALARA) program requirements. These requirements are to be carried out through activity work packages/procedures and associated radiological work permits.

Types of facilities allowed to use this NOC are active and operational, currently in surveillance and maintenance (S&M) mode, or in transition to S&M mode.

Activities are non-routine activities that have a potential to create a new temporary emission source and/or a modification of a source(s) of diffuse and fugitive emissions at facilities on the Central Plateau.

Screening Surveys

Roof replacement activities include radiological surveys to determine if radioactive contamination is present and the extent of such contamination. Spot contamination (e.g., bird droppings) managed before commencement of roof replacement work is handled per existing methods and is considered a routine housekeeping activity (similar to spot contamination found at ground levels).

Managing Radioactive Contamination

Contaminated roofing materials may be removed by manual or powered methods, including saws or other cutting devices, shovels, wheelbarrows, conveyors, chutes, or other similar equipment (conveyors or chutes may be used only for packaged radioactive waste or for non-contaminated roofing material). Radioactive waste shall be managed in accordance with existing onsite requirements and waste acceptance criteria. Radioactive waste either shall be containerized in drums, skiffs, boxes, or other containers, or handled as bulk waste (e.g., dump truck) and transferred to the appropriate disposal facility. Management of radioactive contamination is allowed to include removal and subsequent size reduction of contaminated equipment from a roof as well as isolation and blanking of utilities, vents, and ductwork.

Accumulated rainwater that has contacted contamination areas shall be allowed to evaporate in place or is characterized, collected, and managed in accordance with stormwater discharge requirements or transferred to an appropriate disposal facility.

A graded approach is allowed to be used to match controls with expected contamination levels per radiological control manuals and methods. Radiological contamination that is encountered will either be managed as a fixed contamination area (i.e., less than 20 dpm/100 cm2 smearable alpha and less than 1,000 dpm/100 cm2 smearable beta) or will be managed as a contamination area (radiological contamination levels are between 20 and 2,000 dpm/100 cm2 alpha or between 1,000 and 100,000 dpm/100 cm2 beta) using appropriate controls to minimize worker exposure. These controls include water for dust suppression, fixatives, covers, windscreens, or greenhouses (with PTRAEU exhausters) that will be applied, if needed, as determined by the Health Physics organization, and consist of ALARA techniques.

Process descriptions and abatement controls, as described in the latest approved revisions of the Guzzler NOC

(99-SID-021), the PTRAEU NOC (DOE/RL-96-75), or the HEPA Vacuum NOC (DOE/RL-97-50) shall be used; however, the activity-specific operational controls and tracking requirements shall follow these approval conditions. The Guzzler, PTRAEU, and HEPA vacuum units shall have a removal efficiency of 99.95% for radioactive airborne particles.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 4.80E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	1.00E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

License PTE limit bounds 1.0E-03 Ci/yr 241Am and release fraction of 1.0. Any radionuclide on the chart of the nuclides could be encountered during roof replacement activities. The radionuclides specifically listed in the NOC application were chosen to conservatively represent all radionuclide emissions that may occur in particulate form. A small contribution from the gaseous radionuclides may be encountered. Although any radionuclide could be present, for conservatism all alpha is assumed to be 241Am and all beta/gamma is assumed to be 137Cs for dose calculation estimates. Other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta/gamma constituents.

B/G - 0	5.00E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

License PTE limit bounds 5.0E-02 Ci/yr 137Cs and release fraction of 1.0. Any radionuclide on the chart of the nuclides could be encountered during roof replacement activities. The radionuclides specifically listed in the NOC application were chosen to conservatively represent all radionuclide emissions that may occur in particulate form. A small contribution from the gaseous radionuclides may be encountered. Although any radionuclide could be present, for conservatism all alpha is assumed to be 241Am and all beta/gamma is assumed to be 137Cs for dose calculation estimates. Other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta/gamma constituents.

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) For dose modeling, the radionuclides of concern shall use cesium-137 (representing beta/gamma emitters) and americium-241 (representing alpha emitters).

5) The total radionuclide content of the material removed shall be tracked on a WDOH approved log.

6) Total sum of the potential release rates of the Guzzler and HEPA Vacuums shall not exceed 1.0 E-3 Ci/Year Alpha and 5.0 E-2 Ci/Year Beta/Gamma.

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.28E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.75E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The 241-AY-101, 241-AY-102, 241-AZ-101, and 241-AZ-102 tanks are double shell tanks. The inner shell is constructed from heat treated, stress-relieved steel. The outer shell is constructed of non stress relieved steel. The two shells are separated by a 2.5 ft annulus and contained inside a concrete shell. The tanks have a usable waste volume of approximately 1,001,000 gal.

The 241 AY and 241 AZ tanks are part of a Resource Conservation and Recovery Act treatment, storage, and/or disposal unit. The tanks contain mixed waste in the form of liquids or contained solids (suspended or settled). The contents in each of the four tanks may be mixed periodically to control gas entrapment in the settled solids, to control temperature, for chemical treatment to control corrosion, or for waste retrieval. Contained solids will be mobilized, as required, as part of this process by hydraulic action of the mixer pumps or by use of air-lift circulators in each of the tanks. During such activities, as well as during storage, the ventilation system maintains the vapor space in each tank below atmospheric pressure.

Airflow is from the tank to a glycol-cooled recirculation system and to a common header. The common header is the point in the overall system at which ventilation flow is provided to the emissions control system. Also, a portion of each tank's exhaust can be recirculated to assist in maintaining temperature.

The recirculation system cools, condenses, removes vapor and some entrained particulates, further removes moisture via a separator, and returns a portion of the cooled vapor to the tank. This provides cooling for the tank while reducing air emissions. Nominal flow rates in the recirculation system vary from zero m3/sec (bypassed) to 0.25 m3/sec per tank, at standard temperature and pressure conditions. At the higher flow rate, approximately 0.05 m3/sec is provided to the emission control system with the remainder to the tank. Similar airflow from the other three tanks is combined in the common ventilation header connecting the discharges of the other recirculation coolant systems. The combined flow is discharged to the emissions control system. The recirculation system is considered part of the process because the collected material is returned to the tank.

When mixer pumps are operating in a tank, the 0.25 m^3/sec drawn from this tank may not be recirculated but may be combined with the flow from the other tanks for a total discharge to the emissions control system flow range of 0.4 to 0.5 m^3/sec. Numerous other combinations of discharge flow rates are possible but the combined annual average discharge flow rate to the emissions control system will not be greater than 0.5 m^3/sec. During system upset conditions, such as an automatic shutdown of one exhaust train and start of the opposite train, discharge flow rates could reach 0.6 m^3/sec for several seconds.

The portion of the stream discharged to atmosphere will flow through a condenser, high-efficiency mist eliminator, heater, and two high-efficiency particulate air (HEPA) filters in series. For purposes of calculating abated emissions, only the HEPA filter control efficiencies are used.

The central pump pits on the 241-AY and 241-AZ Tank Farm tanks are approximately 14 ft long x 10 ft wide x 10 ft depth (outside dimensions). Sluice pits and annulus pump pits are somewhat smaller with outside dimensions of 7 ft x 7 ft x 10 ft deep and 5 ft x 5 ft x 10 ft deep.

With the previous NOC revision, modifications to all four tanks and associated equipment were permitted to allow for installation of waste retrieval systems and equipment, through issuance of letter AIR-05-708, including the following major components.

New In Tank Equipment
•Two mixer pumps each in tanks 241-AZ-102, 241-AY-101, and 241-AY-102 for mobilizing the settled solids. Two mixer pumps were installed in tank 241-AZ-101 and permitted previously by WDOH through issuance of AIR-98-708. All of the pumps will be capable of pumping waste through each of two horizontally opposed discharge nozzles.

•A riser extension/spray wash system on top of each of the risers used for mixer pumps. The spray wash system will be used for future decontamination of the mixer pumps if they are removed from the tank.

•One transfer pump in each tank for the transfer of waste.

•New temperature probes for each tank.

•New decant pumps in the AY tanks and associated transfer piping; to include a one-time use hose-in-hose transfer line approximately 40 ft in length.

Ancillary Equipment and Buildings
•Electrical power and instrument cables and other utility tie ins and/or upgrades (e.g., sanitary and raw water, and telecommunications).
•Tie-in to the existing dilution and caustic supply system to bring waste properties into compliance with the feed specifications and to flush and preheat transfer lines. The dilution system will have the capacity of providing approximately 140 gal/minute of pH adjusted water.
•Pit cover blocks.
•Water/diluent piping to and from the process pits.
•Process jumpers.
•Miscellaneous concrete pads for electrical and mechanical equipment.
•Chain link fencing and gates.

Removal, Repair, Decontamination, and Demolition of Existing Equipment
•Removal/repair of transfer and/or mixer pumps, as necessary, during the life of the facility.
•Removal and disposal of several thermocouple probes/instrument trees.
•Removal and disposal of several existing pumps and other miscellaneous equipment (e.g., slurry distributers and process jumpers).
•Additionally, this revision includes removal of HEGA filters.

CONSTRUCTION ACTIVITIES
Construction activities with the PTE could include soil excavation, work in pump pits, pipe cutting, and removal and installation of in tank equipment. Some of these activities are described in, and will be done in accordance with, an applicable tank farm as low as reasonably achievable control technology (ALARACT) demonstration (HNF 4327, Control of Airborne Radioactive Emissions for Frequently Performed TWRS Work Activities (ALARACT Demonstrations). The specific activities and corresponding ALARACT demonstration are called out as applicable in the following sections.

If needed or chosen for use during these activities, the regulated guzzler, a portable/temporary radioactive air emission unit, and a HEPA filtered vacuum radioactive air emission unit may be used in accordance with the most current version of Guzzler DOE application,(See DOE Letter 09-ESQ-542 Dated November 30, 2009), Notice of Construction for Guzzler Evacuation and Backfill Activities in Support of the 200 East and West Tank Farm Complex or the latest WDOH approved Site wide Guzzler (See DOE Letter 99-SID-021 Dated February 1,1999) , “Radioactive Air Emissions Notice of Construction Portable/Temporary Radioactive Air Emission Units”; and DOE/RL-97-50, “Radioactive Air Emissions Notice of Construction for HEPA Filtered Vacuum Radioactive Air Emission Units,” respectively].

Because of the possibility of encountering previously undetected subsurface contamination, all work will be performed in accordance with appropriate radiological controls and the River Protection Project (RPP) as low as reasonably achievable (ALARA) program. These requirements are carried out through work packages and associated Radiological Work Permits (RWP).

Soil Excavation

Soil will be excavated inside and outside the 241-AZ and 241-AY Tank Farms for the dilution piping that will tie-in to the existing AN Tank Farm caustic supply system and to remove soil in preparation for mixer pump foundations and miscellaneous equipment support structures, to remove soil around pits in preparation of core drilling, and for placement of control building foundations (as required). A total of approximately 6000 yd^3 per farm could be excavated. Backfill will be made with the original removed soil or noncontaminated controlled density fill (sand, water, and a small amount of cement).

Soil excavation activities inside the tank farm fence will be performed in accordance with ALARACT Demonstration 5, TWRS ALARACT Demonstration for Soil Excavation (Using Hand Tools). If contamination is discovered outside the tank farm fence, ALARACT 5 will be followed. Clean soil piles could be moved from one place to another within the tank farm with heavy equipment (backhoe, front-end loader, etc.). Soil excavation outside the tank farm fence in noncontaminated soil also could be performed with heavy equipment. The regulated guzzler also could be used as described in the NOC for use in the 241-A Tank Farm Complex (EPA 1998 letter).

Pipe Cutting and Welding

Any required cuts of contaminated piping will be made inside a glove bag using appropriate equipment such as a sawzall or tri tool. To perform a cut without a glove bag, the piping will be surveyed/smeared to verify removable contamination levels are equal to or less than 10,000 disintegrations per minute (dpm) per 100 cm^2 beta gamma and 200 dpm/100 cm^2 alpha.

Welding may be necessary to join various pieces of equipment. If this is necessary, welding will commence once removable contamination levels in the weld area are reduced to ALARA. The goal will be to achieve 1000 dpm/100 cm2 beta gamma and 20 dpm/100 cm^2 alpha or less, but might not always be attainable.

If needed or chosen for use during these activities, a portable/temporary radioactive air emission unit and a HEPA filtered vacuum radioactive air emission unit could be used in accordance with the latest revisions of the NOCs (DOE/RL-96-75 and DOE/RL-97-50, respectively).

Pit Work

Work to be performed in pits may include replacing existing sets of cover blocks with newly designed cover blocks, core drilling (equivalent of one hundred 14-in. diameter holes for AZ Farm and ten 14 in. diameter holes for AY Farm), installing new nozzles, and removing existing jumpers.

Pit access and work will be performed in accordance with ALARACT Demonstrations 6 and 14, TWRS ALARACT Demonstration for Pit Access, and TWRS ALARACT Demonstration for Pit Work. Activities not covered in these ALARACTs are described in the following.

If needed or chosen for use during these activities, a portable/temporary radioactive air emission unit and HEPA filtered vacuum radioactive air emission unit could be used in accordance with the latest revisions of their NOCs (DOE/RL-96-75 and DOE/RL-97-50, respectively).

At the start of the pit work, the cover blocks will be lifted off and radiologically surveyed to determine an appropriate disposal method. New cover blocks will be installed when all work in the pits is completed.

Core drilling may be performed and will occur below grade level on the outside of the pit. The hole will be drilled from the outside to the inside, with the temporary pit cover in place. Nozzle installation generally will proceed immediately after the hole is completed. If immediate nozzle installation is not possible, the hole will be temporarily sealed with a plug, tape, or equivalent device until the nozzle can be installed.

Installation of new nozzles in existing pits will take place in an open pit. All parts of the nozzle will be assembled ahead of time and will be lowered into position as a single unit. The piping in the back of the nozzle will be threaded through the hole (from the inside of the pit to the outside) and pulled tight into place from the outside of the pit. Grout will be used to secure and seal the nozzle into place. The front opening of the nozzle, inside the pit, will be fitted with a temporary cap/seal until a jumper is connected to the nozzle. Once the nozzle(s) is/are installed, the temporary pit cover will be replaced until other work inside the pit requires pit cover removal.

Removal of In Tank Equipment

Various in-tank equipment will be removed from the tanks to make room for the waste retrieval equipment, or to be replaced with equivalent equipment built to withstand the mixer pump jet forces. Removed long-length equipment will either be packaged in long-length contaminated equipment disposal containers or size reduced for disposal in accordance with ALARACT Demonstration 15, Tank Farm ALARACT Demonstration for Size Reduction of Waste Equipment for Disposal. Equipment removal will be performed in accordance with ALARACT Demonstration 13, TWRS ALARACT Demonstration for Installation, Operation, and Removal of Tank Equipment. Activities not covered in this ALARACT are described in the following.

If needed or chosen for use during these activities, a portable/temporary radioactive air emission unit, and a HEPA filtered vacuum radioactive air emission unit may be used in accordance with the latest revisions of their NOCs (DOE/RL-96-75 and DOE/RL-97-50, respectively).

Decontamination of removed equipment is not anticipated. The fewer decontamination activities undertaken, the less exposure possibilities there are to the worker and the environment. Contingency decontamination plans, however, are in place if needed. The most likely equipment to be decontaminated would be sections of the flexible receiver. Equipment removal will be performed in accordance with TWRS ALARACT Demonstration 13, Installation, Operation, and Removal of Tank Equipment.

In Tank Equipment Installation
Equipment installation will be performed in accordance with TWRS ALARACT Demonstration 13, Installation, Operation, and Removal of Tank Equipment.

WASTE STAGING AND RETRIEVAL PROCESS OVERVIEW
Mixer pumps will be operated to maintain waste uniformity during staging and to mix the waste for a period before and during transfer. As required by operational directives, mixer pumps will be operated until waste samples verify that adequate mixing has been achieved. Waste samples will be collected in accordance with TWRS ALARACT Demonstration 7, Tank Waste Grab Sampling. If dilution/conditioning is needed, the pH and temperature of the diluents will be adjusted by means of a caustic supply system. Once the waste is verified acceptable, the transfer lines will be preheated/flushed with water, and the waste transfer to the treatment facility will follow. After the transfer, the lines will be flushed again with water.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Alpha - 0	B/G - 0
See quantities listed under emission unit 486 for this NOC.	See quantities listed under emission unit 486 for this NOC.

4) If a HEPA filtered vacuum radioactive air emission unit is used during the pipe cutting activities, controls as described in the NOC DOE/RL-97-50 will be followed.

5) If a HEPA filtered vacuum radioactive air emission unit is used during the pit work activities, controls as described in the NOC DOE/RL 97-50 will be followed. Descriptions of the emissions control technology for these units are provided in the NOC.

6) If a HEPA filtered vacuum radioactive air emission unit is used during the removal or installation of in tank equipment activities, controls as described in the NOC DOE/RL-97-50 will be followed. Descriptions of the emissions control technology for those units are provided in the NOC.

7) MONITORING DURING CONSTRUCTION ACTIVITIES

During pipe cutting activities surface contamination surveys will constitute the PCM to verify low emissions. If a HEPA filtered vacuum radioactive air emission unit is used, PCM will be performed as required by these NOC.

During pit work activities, PCM as described in ALARACT 14 will verify low emissions. If a HEPA filtered vacuum radioactive air emission unit is used, PCM will be performed as required by these NOC.

During in tank equipment removal and installation activities surface contamination surveys, as described in ALARACT Demonstration 13, TWRS ALARACT Demonstration for Installation, Operation and Removal of Tank Equipment (HNF-4327) will constitute the PCM to verify low emissions. If a HEPA filtered vacuum radioactive air emission unit is used, PCM will be performed as required by these NOC.

Emission Unit ID: 461

200 W-PORTEX 011

Permacon Unit

This is a MINOR, ACTIVELY ventilated emission unit.

Miscellaneous Support Facilities

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)		Quartery frequency revisited after a year for changes to annual.

Sampling Requirements Quarterly for 2 weeks of operations

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Operations at the PERMACON unit involve headspace gas sampling of waste containers at the CWC.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Central Waste Complex (CWC) Operations (Replaced NOC ID 295)	AIR 08-801	8/5/2008	654

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 2.40E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The following types of waste are managed at CWC: low-level (LLW), low-level mixed (LLMW), transuranic (TRU), TRU-mixed waste and Toxic Substance Control Act (TSCA) regulated waste. The LLW typically contains rags, paper, rubber gloves, disposal supplies, tools, industrial waste (e.g., failed equipment), solidified wastes that are contaminated with radioactive material. This waste is considered LLW if it contains radioactive material and is not classified as TRU waste, high-level waste, or spent nuclear fuel.

TRU and TRU-mixed waste typically contains rags, paper, rubber gloves, disposable supplies, tools, industrial waste (e.g., failed equipment), solidified process byproducts, and laboratory wastes that are contaminated with TRU material. This waste must contain at least 100 nCi of TRU material per gram of waste or it is considered LLW. The TRU waste accepted by CWC may contain varying concentrations of TRU radionuclides and limited amounts of non-TRU radionuclides. With some exceptions allowed based on safety analysis, the TRU content of waste containers is generally limited to 53 239/240 Pu dose equivalent curies (DE-Ci), where the DE-Ci is derived by multiplying the isotopic composition (i.e., weight fractions of the various TRU isotopes) by the specific activities of each isotope, and then converting that number with corrections factors taken from the Hanford Site Solid Waste Acceptance Criteria. The DE-Ci unit is designed to control inhalation dose impacts independent of radionuclide type. The radionuclides Pu-39 and Pu-240 are considered equivalent and are combined for calculation purposes.

The unabated emissions shall be tracked by DE curies.

The CWC stores low-level (LLW), low-level mixed (LLMW), transuranic (TRU), TRU-mixed and TSCA regulated waste.

The CWC is designed for the receipt and storage of contact-handled waste packages, which are defined as packages having surface dose rate of less than 2 mSv/h (200 mrem/h), but can store packages above this limit in accordance with the approved safety analysis. Each waste package is characterized before receipt and based on this information; incompatible forms of waste are physically segregated.

CWC personnel receive and inspect waste packages at the Waste Receiving and Staging Area. Transport off-load operations are performed by hand truck, forklift, or crane by qualified personnel. Packages are transported, generally by forklift to the assigned facility/area. Alternatively, waste packages may be received, inspected and unloaded at the specific facility/area where the waste will be stored.

Waste containers are not opened during normal operations at the CWC buildings. Under normal operating conditions there is no airborne release of radioactive material expected from opening waste containers.

Inventories of TRU content, non-TRU radionuclides, and hazardous waste constituents are controlled at all waste storage facilities at the CWC. The inventory control system ensures that each building, building quadrant, or module will comply with its established inventory limit.

TRU waste containers are generally equipped with a pressure relief vent device, such as the NucFil filter. This filter allows the release of any gases that may be produced as a result of radiolysis inside the container, while preventing release of any particulate matter.

Waste shipments are transported to the Waste Receiving and Staging Area where the waste containers are radiologically surveyed and the exterior visually inspected for physical integrity. Waste records are checked for completeness and accuracy in accordance with procedures that provide instructions for performing detailed entry-by-entry reviews of waste records. To the extent practicable, this work is performed before unloading. However, partial unloading of a shipment may be necessary to complete a thorough survey and inspection. Verification of container contents, which may involve the opening of containers and sampling of waste contents, is performed at a facility separate from the CWC (e.g., T-Plant).

Waste packages meeting all acceptance criteria are accepted for storage. Non-compliant waste packages (e.g., with paperwork errors or omissions and damaged containers) are held until the non-compliant condition is corrected to the satisfaction of the responsible Solid Waste Manager or designee.

To detect leaking or deteriorating containers, or deterioration of the containment system, all waste containers are inspected in accordance with regulatory requirements.

PermaCon unit:

This license allows the placement of a PermaCon modular containment unit in the existing CWC buildings for the purpose of sampling the head space gas within solid waste storage containers. The ventilation system for the 2404-W series Storage Buildings consists of two roof mounted exhausters, each rated at a minimum of 16, 775 cubic feet per minute. CWC storage building of similar dimensions and venting as the 2404-W series must be selected for the PermaCon Unit.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 4.80E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	9.50E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Alpha release rate based on Am-241.			
Beta - 0	7.60E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Beta release rate based on Cs-137.			

The radioactive isotopes identified for this emission unit are (no quantities specified):

Ac - 228	Am - 241	Am - 243	Ar - 41	Ba - 137
Bi - 212	Bi - 214	C - 14	Ce - 141	Ce - 144

Cf - 252	Cm - 242	Cm - 243	Cm - 244	Co - 58
Co - 60	Cr - 51	Cs - 134	Cs - 137	Eu - 152
Eu - 154	Eu - 155	Fe - 59	H - 3	I - 129
I - 131	K - 40	Kr - 85	Mn - 54	Nb - 95
Np - 237	Pb - 212	Pb - 214	Pm - 147	Po - 210
Po - 212	Po - 216	Pu - 238	Pu - 239	Pu - 240
Pu - 241	Pu - 242	Ra - 224	Ra - 226	Rn - 220
Ru - 103	Ru - 106	Sb - 124	Sb - 125	Sn - 113
Sr - 89	Sr - 90	Tc - 99	Th - 228	Th - 232
Th - 234	Tl - 208	U - 232	U - 233	U - 234
U - 235	U - 236	U - 238	Y - 90	Zn - 65
Zr - 95				

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) A fixed head sampler, located inside the PermaCon near the exhaust stack, shall be used at least quarterly (for the period of operation or two weeks which ever is lower) to obtain samples of the airspace within the PermaCon unit during operation for each quarter that the PermaCon is operated.

5) Emissions from the PermaCon shall be vented through a 2,000 cfm or less testable HEPA filter exhauster.

6) The isotopes identified in Condition 3 represent all of the significant radionuclides historically present at the Central Waste Complex (CWC), including some that are not significant. Any radionuclide on the chart of the nuclides could be present or received at CWC in the future. Periodic confirmatory measurements to verify low emissions are preformed by taking a two-week air sample on a quarterly basis and analyzing for total alpha and total beta. Although any radionuclide could be present for conservatism all alpha is assumed to be Am-241 and all beta is assumed to be Cs-137 for dose calculation estimates.

7) In accordance with WAC 246-247-080 (7), a log shall be maintained for the Permacon Unit. This log will be used to record the dates, locations, and duration of operation. In accordance with WAC 246-247-080 (8), the Permacon log will be maintained in a readily retrievable storage area and be available for review in order to ensure compliance for at least five years.

Emission Unit ID: 472

200W P-Trench31 001

Leachate Collection Tank for Trench 31

This is a MINOR, FUGITIVE, non-point source emission unit.

200 West Burial Grounds

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075(3)			Before and after emptying the tank. When the tank is not empty, take a monthly smear (after commencement of bulk waste disposal).

Sampling Requirements Smear sample of overflow pipe

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities in Trench 31 and 34 involve receipt and disposal of TSCA wastes on the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Trench 31 and 34: Leachate Collection and Storage Tank (LLBG Mixed Waste Disposal) (Replaced NOC 662)	AIR 12-315	2/23/2012	834

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.03E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Trenches 31 and 34 shall be used for the disposal of low-level waste, low-level mixed waste, and radioactive waste containing Toxic Substances Control Act regulated polychlorinated biphenyls resulting from current operations across the Hanford Site, cleanup activities across the Hanford Site and from other offsite facilities. Each trench shall provide disposal capacity for approximately 22,000 m3 (28,000 yd3) of waste. Waste to be disposed of in the trenches can consist of contaminated soil and debris (bulk waste), sealed containers, vented containers, and any other type of waste meeting Low Level Burial Grounds (LLBG) waste acceptance criteria.

The leachate collection systems for Trenches 31 and 34 share a common design. That design encompasses primary and secondary leachate collection systems. The primary and secondary leachate collection systems are comprised of alternating layers of soils, geomembrane liners, collection pipes, collection sumps, sump pumps, and a single collection tank for each trench. Liquid accumulates under the disposed material in the bottom of each trench in the primary liner of each trench (not exposed directly to atmosphere). When approximately one foot of precipitation of liquid is accumulated in the collection sumps, the pumps are activated to transfer the liquid to the tanks.

The leachate collection tanks at Trenches 31 and 34 are both above ground. Each tank has a capacity of

approximately 10,000 gallons. Both tanks are cylindrical and approximately 8 feet (2.5 meters) in diameter and 24 feet (7.2 meters) long. Both tanks are passively vented via a liquid overflow pipe.

For disposal, the liquid will be transferred from the tanks to a tanker truck. Based on past operational experience, it is anticipated that up to approximately 415,000 gallons, per tank, per year could be transferred to the tanker trucks. More than one truck may be used at the same time. The tanker truck(s) shall be fitted with a three-quarter inch vent that will be opened during filling and emptying operations.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 6.10E-03 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Pu - 239/240	9.74E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
U - 0 Isotopes of U-233/234/235/238	7.00E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	C - 14	Co - 60	Cs - 137	Eu - 152
Eu - 154	Eu - 155	Na - 22	Pu - 238	Pu - 239/240
Ra - 226	Sr - 90	Tc - 99	Th - 230	Th - 232
U - 0				

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) The radioactive isotopes identified for this emission unit represent all of the significant radionuclides historically present for the leachate collection tank 31, including some that are not significant. Any radionuclide on the chart of nuclides could be present or received at leachate collection tank 31 in the future.

5) Upon commencement of placing non-containerized radioactively contaminated waste in Trench 31 and/or Trench 34, a periodic confirmatory measurement (PCM) activity shall be implemented. This PCM activity shall consist of smearing the orifice(s) of the liquid overflow pipe(s) before and after emptying the tank(s). During those months when the tank(s) is/are not emptied, a smear shall be taken monthly. After the accumulation of one year's worth of smear data, the frequency of this PCM activity shall be reassessed based on the results of the smear data.

Emission Unit ID: 473

200W P-Trench34 001

Leachate Collection Tank for Trench 34

This is a MINOR, FUGITIVE, non-point source emission unit.

200 West Burial Grounds

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075(3)			Before and after emptying the tank. When the tank is not empty, take a monthly smear (after commencement of bulk waste disposal).

Sampling Requirements Smear sample of overflow pipe

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities in Trench 31 and 34 involve receipt and disposal of TSCA wastes on the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Trench 31 and 34: Leachate Collection and Storage Tank (LLBG Mixed Waste Disposal) (Replaced NOC 662)	AIR 12-315	2/23/2012	834

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.03E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Trenches 31 and 34 shall be used for the disposal of low-level waste, low-level mixed waste, and radioactive waste containing Toxic Substances Control Act regulated polychlorinated biphenyls resulting from current operations across the Hanford Site, cleanup activities across the Hanford Site and from other offsite facilities. Each trench shall provide disposal capacity for approximately 22,000 m3 (28,000 yd3) of waste. Waste to be disposed of in the trenches can consist of contaminated soil and debris (bulk waste), sealed containers, vented containers, and any other type of waste meeting Low Level Burial Grounds (LLBG) waste acceptance criteria.

The leachate collection systems for Trenches 31 and 34 share a common design. That design encompasses primary and secondary leachate collection systems. The primary and secondary leachate collection systems are comprised of alternating layers of soils, geomembrane liners, collection pipes, collection sumps, sump pumps, and a single collection tank for each trench. Liquid accumulates under the disposed material in the bottom of each trench in the primary liner of each trench (not exposed directly to atmosphere). When approximately one foot of precipitation of liquid is accumulated in the collection sumps, the pumps are activated to transfer the liquid to the tanks.

The leachate collection tanks at Trenches 31 and 34 are both above ground. Each tank has a capacity of

approximately 10,000 gallons. Both tanks are cylindrical and approximately 8 feet (2.5 meters) in diameter and 24 feet (7.2 meters) long. Both tanks are passively vented via a liquid overflow pipe.

For disposal, the liquid will be transferred from the tanks to a tanker truck. Based on past operational experience, it is anticipated that up to approximately 415,000 gallons, per tank, per year could be transferred to the tanker trucks. More than one truck may be used at the same time. The tanker truck(s) shall be fitted with a three-quarter inch vent that will be opened during filling and emptying operations.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 6.10E-03 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Pu - 239/240	9.70E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
U - 0 Isotopes of U-233/234/235/238	7.00E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	C - 14	Co - 60	Cs - 137	Eu - 152
Eu - 154	Eu - 155	Na - 22	Pu - 238	Pu - 239/240
Ra - 226	Sr - 90	Tc - 99	Th - 230	Th - 232
U - 0				

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) Upon commencement of placing non-containerized radioactively contaminated waste in Trench 31 and/or Trench 34, a periodic confirmatory measurement (PCM) activity shall be implemented. This PCM activity shall consist of smearing the orifice(s) of the liquid overflow pipe(s) before and after emptying the tank(s). During those months when the tank(s) is/are not emptied, a smear shall be taken monthly. After the accumulation of one year's worth of smear data, the frequency of this PCM activity shall be reassessed based on the results of the smear data.

5) The radioactive isotopes identified for this emission unit represent all of the radionuclides historically present for the leachate collection tank 34, including some that are not significant. Any radionuclide on the chart of nuclides could be present or received at leachate collection tank 34 in the future.

Emission Unit ID: 476

Hanford Sitewide Guzzler-001

Guzzler

This is a MINOR, ACTIVELY ventilated emission unit.

GUZZLER

Emission Unit Information

Stack Height: 12.00 ft. 3.66 m. Stack Diameter 0.75 ft. 0.23 m.

Average Stack Effluent Temperature: 54 degrees Fahrenheit. 12 degrees Celsius.

Average Stack ExhaustVelocity: ft/second. m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Collection Tank and Plate Separator	1	
	Cyclone Separator	2	
	Micro-strainer Device	1	
	HEPA	3	Three in-place tested HEPA filters in parallel.
	Baghouse	2	Baghouse system with a total of 68 bags (i.e., 34 bags per baghouse).

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61; Appendix B, Method 114(3)	Each radionuclide that could contribute greater than 10% of the potential-to-emit TEDE to the MEI, greater than 0.1 mrem/yr potential-to-emit TEDE to the MEI, and greater than 25% of the TEDE to the MEI, after controls.	When the HEPA filters are replaced and annually screening the HEPA filtration system.

Sampling Requirements Radiation surveys and to include but not limited to NDA testing of the HEPA filters and screening the HEPA filtration system using gamma spectroscopy.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status The Guzzler ® portable emission unit is a completely self-contained vacuum used to support operations, such as but not limited to, waste characterization, waste retrieval, decommissioning, deactivation, maintenance, and construction and operation support activities. The emission unit operates intermittently.

This Emission Unit has 7 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operation of the Guzzler ™ in Tank Farm Facilities (Replaced NOC ID 647)	AIR 10-506	5/26/2010	774

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 2.00E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.00E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the

approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The utilization of the Guzzler for excavation of soil and gravel within the 200 Area Tank Farm Complex. Activities shall include potholing for utility locations, and general soil/debris/gravel removal and excavation.

Backfilling activities shall be completed manually using shovels, backhoes, loaders, and packers.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Alpha - 0	2.40E+00	Beta - 0	3.00E+01
Based on Am241		Based on Sr90+D	

4) Aerosol testing and NDA of Guzzler HEPA filters shall be conducted annually per NOC ID 658 or subsequent revision.

WAC 246-247-040(5), 060(5).

5) HPT shall field surveys every vertical and linear foot of excavation. The "Stop Work Trigger" is 10,000 cpm per probe size (15cm^2-GM, P-11 Probe) beta-gamma and 20 cpm per probe size (50 cm^2-Portable Alpha Monitor (PAM)) alpha from direct contamination readings 1 cm above soil surface.

WAC 246-247-040(5), 060(5).

6) HPT shall survey (smear) the Guzzler exhaust (discharge) at the end of each shift of Guzzler use.

WAC 246-247-040(5), 060(5).

7) RELEASE FRACTION EVALUATION

A pre-operational Non-Destructive Analysis (NDA) of the HEPA filters will be required prior to use of the Guzzler pursuant to this license. Alternatively, a pre-operational NDA will not be required if the HEPA filters have not seen any use since the last NDA or the HEPA filters are new. An NDA of the HEPA filters will be required with every 90 calendar days of use within the 200 Area Tank Farm Complex. This 90 day period is defined as 90 calendar days past the first day the Guzzler is used within the 200 Area Tank Farm Complex. The Guzzler tracking log will track the accumulated PTE for this emission unit (EU ID 476) annually, where ever it is used on the Hanford Site. The Guzzler tracking log will be required to track the accumulated PTE based upon soil contamination readings and adjusted (only for operation under this approval) by the release fraction of 1.0E-03.

Once the Guzzler is in use under this license an NDA is required prior to exit from use in the 200 Area Tank Farm Complex to use elsewhere on the Hanford Site.

If the accumulated PTE, within the 200 Area Tank Farm Complex, based upon the tracking log reaches 0.025 mrem/yr, an additional NDA of the HEPA filters will be required and the 90 day NDA cycle will begin again. If the accumulated PTE, within the 200 Area Tank Farm Complex, based upon the tracking log reaches 0.0375 mrem/yr, another NDA of the HEPA filters will be required and the 90 day cycle will begin again. If the accumulated PTE, within the 200 Area Tank Farm Complex under this license, based upon the tracking log reaches 0.05 mrem/yr, use of the Guzzler must stop for the remainder of the calendar year.

After a year of operations under these approval conditions, an evaluation of the results shall be made available to WDOH to assess if the release fraction of 1.0E-03 is conservative. A minimum of 4 NDAs is required for the evaluation.

WAC 246-247-040(5), 060(5).

8) The request for approval for release fraction to be changed from 1 to 1.0E-03 is approved and will be verified as conservative using the condition 7.

WAC 246-247-040(5), 060(5).

9) 200 Area Tank Farm Complex:

For Guzzler Excavation: 1.60E-04 mrem/yr Beta based on Sr-90+D, 2.50E-02 mrem/yr Alpha based on Am-241,

2.50E-02 mrem/yr total unabated dose and 1.00E-05 mrem/yr abated dose.

For Backfilling: 1.60E-04 mrem/yr Beta based on Sr-90+D, 2.50E-02 mrem/yr Alpha based on Am-241, 2.50E-02 mrem/yr total unabated dose and 2.00E-2 mrem/yr abated dose.

WAC 246-247-040(5), 060(5).

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 9.80E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Management of radioactive contamination during roof replacement activities.

All work shall be performed in accordance with written contractor radiological control requirements (associated with posting and downposting requirements for doing work in outdoor contamination areas and fixed contamination areas) and the as low as reasonably achievable (ALARA) program requirements. These requirements are to be carried out through activity work packages/procedures and associated radiological work permits.

Types of facilities allowed to use this NOC are active and operational, currently in surveillance and maintenance (S&M) mode, or in transition to S&M mode.

Activities are non-routine activities that have a potential to create a new temporary emission source and/or a modification of a source(s) of diffuse and fugitive emissions at facilities on the Central Plateau.

Screening Surveys

Roof replacement activities include radiological surveys to determine if radioactive contamination is present and the extent of such contamination. Spot contamination (e.g., bird droppings) managed before commencement of roof replacement work is handled per existing methods and is considered a routine housekeeping activity (similar to spot contamination found at ground levels).

Managing Radioactive Contamination

Contaminated roofing materials may be removed by manual or powered methods, including saws or other cutting devices, shovels, wheelbarrows, conveyors, chutes, or other similar equipment (conveyors or chutes may be used only for packaged radioactive waste or for non-contaminated roofing material). Radioactive waste shall be managed in accordance with existing onsite requirements and waste acceptance criteria. Radioactive waste either shall be containerized in drums, skiffs, boxes, or other containers, or handled as bulk waste (e.g., dump truck) and transferred to the appropriate disposal facility. Management of radioactive contamination is allowed to include removal and subsequent size reduction of contaminated equipment from a roof as well as isolation and blanking of utilities, vents, and ductwork.

Accumulated rainwater that has contacted contamination areas shall be allowed to evaporate in place or is characterized, collected, and managed in accordance with stormwater discharge requirements or transferred to an appropriate disposal facility.

A graded approach is allowed to be used to match controls with expected contamination levels per radiological control manuals and methods. Radiological contamination that is encountered will either be managed as a fixed contamination area (i.e., less than 20 dpm/100 cm2 smearable alpha and less than 1,000 dpm/100 cm2 smearable beta) or will be managed as a contamination area (radiological contamination levels are between 20 and 2,000 dpm/100 cm2 alpha or between 1,000 and 100,000 dpm/100 cm2 beta) using appropriate controls to minimize worker exposure. These controls include water for dust suppression, fixatives, covers, windscreens, or greenhouses (with PTRAEU exhausters) that will be applied, if needed, as determined by the Health Physics organization, and consist of ALARA techniques.

Process descriptions and abatement controls, as described in the latest approved revisions of the Guzzler NOC

(99-SID-021), the PTRAEU NOC (DOE/RL-96-75), or the HEPA Vacuum NOC (DOE/RL-97-50) shall be used; however, the activity-specific operational controls and tracking requirements shall follow these approval conditions. The Guzzler, PTRAEU, and HEPA vacuum units shall have a removal efficiency of 99.95% for radioactive airborne particles.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 4.80E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	1.00E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

License PTE limit bounds 1.0E-03 Ci/yr 241Am and release fraction of 1.0. Any radionuclide on the chart of the nuclides could be encountered during roof replacement activities. The radionuclides specifically listed in the NOC application were chosen to conservatively represent all radionuclide emissions that may occur in particulate form. A small contribution from the gaseous radionuclides may be encountered. Although any radionuclide could be present, for conservatism all alpha is assumed to be 241Am and all beta/gamma is assumed to be 137Cs for dose calculation estimates. Other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta/gamma constituents.

B/G - 0	5.00E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

License PTE limit bounds 5.0E-02 Ci/yr 137Cs and release fraction of 1.0. Any radionuclide on the chart of the nuclides could be encountered during roof replacement activities. The radionuclides specifically listed in the NOC application were chosen to conservatively represent all radionuclide emissions that may occur in particulate form. A small contribution from the gaseous radionuclides may be encountered. Although any radionuclide could be present, for conservatism all alpha is assumed to be 241Am and all beta/gamma is assumed to be 137Cs for dose calculation estimates. Other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta/gamma constituents.

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) For dose modeling, the radionuclides of concern shall use cesium-137 (representing beta/gamma emitters) and americium-241 (representing alpha emitters).

5) The total radionuclide content of the material removed shall be tracked on a WDOH approved log.

6) Total sum of the potential release rates of the Guzzler and HEPA Vacuums shall not exceed 1.0 E-3 Ci/Year Alpha and 5.0 E-2 Ci/Year Beta/Gamma.

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.28E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.75E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The 241-AY-101, 241-AY-102, 241-AZ-101, and 241-AZ-102 tanks are double shell tanks. The inner shell is constructed from heat treated, stress-relieved steel. The outer shell is constructed of non stress relieved steel. The two shells are separated by a 2.5 ft annulus and contained inside a concrete shell. The tanks have a usable waste volume of approximately 1,001,000 gal.

The 241 AY and 241 AZ tanks are part of a Resource Conservation and Recovery Act treatment, storage, and/or disposal unit. The tanks contain mixed waste in the form of liquids or contained solids (suspended or settled). The contents in each of the four tanks may be mixed periodically to control gas entrapment in the settled solids, to control temperature, for chemical treatment to control corrosion, or for waste retrieval. Contained solids will be mobilized, as required, as part of this process by hydraulic action of the mixer pumps or by use of air-lift circulators in each of the tanks. During such activities, as well as during storage, the ventilation system maintains the vapor space in each tank below atmospheric pressure.

Airflow is from the tank to a glycol-cooled recirculation system and to a common header. The common header is the point in the overall system at which ventilation flow is provided to the emissions control system. Also, a portion of each tank's exhaust can be recirculated to assist in maintaining temperature.

The recirculation system cools, condenses, removes vapor and some entrained particulates, further removes moisture via a separator, and returns a portion of the cooled vapor to the tank. This provides cooling for the tank while reducing air emissions. Nominal flow rates in the recirculation system vary from zero m3/sec (bypassed) to 0.25 m3/sec per tank, at standard temperature and pressure conditions. At the higher flow rate, approximately 0.05 m3/sec is provided to the emission control system with the remainder to the tank. Similar airflow from the other three tanks is combined in the common ventilation header connecting the discharges of the other recirculation coolant systems. The combined flow is discharged to the emissions control system. The recirculation system is considered part of the process because the collected material is returned to the tank.

When mixer pumps are operating in a tank, the 0.25 m^3/sec drawn from this tank may not be recirculated but may be combined with the flow from the other tanks for a total discharge to the emissions control system flow range of 0.4 to 0.5 m^3/sec. Numerous other combinations of discharge flow rates are possible but the combined annual average discharge flow rate to the emissions control system will not be greater than 0.5 m^3/sec. During system upset conditions, such as an automatic shutdown of one exhaust train and start of the opposite train, discharge flow rates could reach 0.6 m^3/sec for several seconds.

The portion of the stream discharged to atmosphere will flow through a condenser, high-efficiency mist eliminator, heater, and two high-efficiency particulate air (HEPA) filters in series. For purposes of calculating abated emissions, only the HEPA filter control efficiencies are used.

The central pump pits on the 241-AY and 241-AZ Tank Farm tanks are approximately 14 ft long x 10 ft wide x 10 ft depth (outside dimensions). Sluice pits and annulus pump pits are somewhat smaller with outside dimensions of 7 ft x 7 ft x 10 ft deep and 5 ft x 5 ft x 10 ft deep.

With the previous NOC revision, modifications to all four tanks and associated equipment were permitted to allow for installation of waste retrieval systems and equipment, through issuance of letter AIR-05-708, including the following major components.

New In Tank Equipment
•Two mixer pumps each in tanks 241-AZ-102, 241-AY-101, and 241-AY-102 for mobilizing the settled solids. Two mixer pumps were installed in tank 241-AZ-101 and permitted previously by WDOH through issuance of AIR-98-708. All of the pumps will be capable of pumping waste through each of two horizontally opposed discharge nozzles.

•A riser extension/spray wash system on top of each of the risers used for mixer pumps. The spray wash system will be used for future decontamination of the mixer pumps if they are removed from the tank.

•One transfer pump in each tank for the transfer of waste.

•New temperature probes for each tank.

•New decant pumps in the AY tanks and associated transfer piping; to include a one-time use hose-in-hose transfer line approximately 40 ft in length.

Ancillary Equipment and Buildings
•Electrical power and instrument cables and other utility tie ins and/or upgrades (e.g., sanitary and raw water, and telecommunications).
•Tie-in to the existing dilution and caustic supply system to bring waste properties into compliance with the feed specifications and to flush and preheat transfer lines. The dilution system will have the capacity of providing approximately 140 gal/minute of pH adjusted water.
•Pit cover blocks.
•Water/diluent piping to and from the process pits.
•Process jumpers.
•Miscellaneous concrete pads for electrical and mechanical equipment.
•Chain link fencing and gates.

Removal, Repair, Decontamination, and Demolition of Existing Equipment
•Removal/repair of transfer and/or mixer pumps, as necessary, during the life of the facility.
•Removal and disposal of several thermocouple probes/instrument trees.
•Removal and disposal of several existing pumps and other miscellaneous equipment (e.g., slurry distributers and process jumpers).
•Additionally, this revision includes removal of HEGA filters.

CONSTRUCTION ACTIVITIES
Construction activities with the PTE could include soil excavation, work in pump pits, pipe cutting, and removal and installation of in tank equipment. Some of these activities are described in, and will be done in accordance with, an applicable tank farm as low as reasonably achievable control technology (ALARACT) demonstration (HNF 4327, Control of Airborne Radioactive Emissions for Frequently Performed TWRS Work Activities (ALARACT Demonstrations). The specific activities and corresponding ALARACT demonstration are called out as applicable in the following sections.

If needed or chosen for use during these activities, the regulated guzzler, a portable/temporary radioactive air emission unit, and a HEPA filtered vacuum radioactive air emission unit may be used in accordance with the most current version of Guzzler DOE application,(See DOE Letter 09-ESQ-542 Dated November 30, 2009), Notice of Construction for Guzzler Evacuation and Backfill Activities in Support of the 200 East and West Tank Farm Complex or the latest WDOH approved Site wide Guzzler (See DOE Letter 99-SID-021 Dated February 1,1999) , “Radioactive Air Emissions Notice of Construction Portable/Temporary Radioactive Air Emission Units”; and DOE/RL-97-50, “Radioactive Air Emissions Notice of Construction for HEPA Filtered Vacuum Radioactive Air Emission Units,” respectively].

Because of the possibility of encountering previously undetected subsurface contamination, all work will be performed in accordance with appropriate radiological controls and the River Protection Project (RPP) as low as reasonably achievable (ALARA) program. These requirements are carried out through work packages and associated Radiological Work Permits (RWP).

Soil Excavation

Soil will be excavated inside and outside the 241-AZ and 241-AY Tank Farms for the dilution piping that will tie-in to the existing AN Tank Farm caustic supply system and to remove soil in preparation for mixer pump foundations and miscellaneous equipment support structures, to remove soil around pits in preparation of core drilling, and for placement of control building foundations (as required). A total of approximately 6000 yd^3 per farm could be excavated. Backfill will be made with the original removed soil or noncontaminated controlled density fill (sand, water, and a small amount of cement).

Soil excavation activities inside the tank farm fence will be performed in accordance with ALARACT Demonstration 5, TWRS ALARACT Demonstration for Soil Excavation (Using Hand Tools). If contamination is discovered outside the tank farm fence, ALARACT 5 will be followed. Clean soil piles could be moved from one place to another within the tank farm with heavy equipment (backhoe, front-end loader, etc.). Soil excavation outside the tank farm fence in noncontaminated soil also could be performed with heavy equipment. The regulated guzzler also could be used as described in the NOC for use in the 241-A Tank Farm Complex (EPA 1998 letter).

Pipe Cutting and Welding

Any required cuts of contaminated piping will be made inside a glove bag using appropriate equipment such as a sawzall or tri tool. To perform a cut without a glove bag, the piping will be surveyed/smeared to verify removable contamination levels are equal to or less than 10,000 disintegrations per minute (dpm) per 100 cm^2 beta gamma and 200 dpm/100 cm^2 alpha.

Welding may be necessary to join various pieces of equipment. If this is necessary, welding will commence once removable contamination levels in the weld area are reduced to ALARA. The goal will be to achieve 1000 dpm/100 cm2 beta gamma and 20 dpm/100 cm^2 alpha or less, but might not always be attainable.

If needed or chosen for use during these activities, a portable/temporary radioactive air emission unit and a HEPA filtered vacuum radioactive air emission unit could be used in accordance with the latest revisions of the NOCs (DOE/RL-96-75 and DOE/RL-97-50, respectively).

Pit Work

Work to be performed in pits may include replacing existing sets of cover blocks with newly designed cover blocks, core drilling (equivalent of one hundred 14-in. diameter holes for AZ Farm and ten 14 in. diameter holes for AY Farm), installing new nozzles, and removing existing jumpers.

Pit access and work will be performed in accordance with ALARACT Demonstrations 6 and 14, TWRS ALARACT Demonstration for Pit Access, and TWRS ALARACT Demonstration for Pit Work. Activities not covered in these ALARACTs are described in the following.

If needed or chosen for use during these activities, a portable/temporary radioactive air emission unit and HEPA filtered vacuum radioactive air emission unit could be used in accordance with the latest revisions of their NOCs (DOE/RL-96-75 and DOE/RL-97-50, respectively).

At the start of the pit work, the cover blocks will be lifted off and radiologically surveyed to determine an appropriate disposal method. New cover blocks will be installed when all work in the pits is completed.

Core drilling may be performed and will occur below grade level on the outside of the pit. The hole will be drilled from the outside to the inside, with the temporary pit cover in place. Nozzle installation generally will proceed immediately after the hole is completed. If immediate nozzle installation is not possible, the hole will be temporarily sealed with a plug, tape, or equivalent device until the nozzle can be installed.

Installation of new nozzles in existing pits will take place in an open pit. All parts of the nozzle will be assembled ahead of time and will be lowered into position as a single unit. The piping in the back of the nozzle will be threaded through the hole (from the inside of the pit to the outside) and pulled tight into place from the outside of the pit. Grout will be used to secure and seal the nozzle into place. The front opening of the nozzle, inside the pit, will be fitted with a temporary cap/seal until a jumper is connected to the nozzle. Once the nozzle(s) is/are installed, the temporary pit cover will be replaced until other work inside the pit requires pit cover removal.

Removal of In Tank Equipment

Various in-tank equipment will be removed from the tanks to make room for the waste retrieval equipment, or to be replaced with equivalent equipment built to withstand the mixer pump jet forces. Removed long-length equipment will either be packaged in long-length contaminated equipment disposal containers or size reduced for disposal in accordance with ALARACT Demonstration 15, Tank Farm ALARACT Demonstration for Size Reduction of Waste Equipment for Disposal. Equipment removal will be performed in accordance with ALARACT Demonstration 13, TWRS ALARACT Demonstration for Installation, Operation, and Removal of Tank Equipment. Activities not covered in this ALARACT are described in the following.

If needed or chosen for use during these activities, a portable/temporary radioactive air emission unit, and a HEPA filtered vacuum radioactive air emission unit may be used in accordance with the latest revisions of their NOCs (DOE/RL-96-75 and DOE/RL-97-50, respectively).

Decontamination of removed equipment is not anticipated. The fewer decontamination activities undertaken, the less exposure possibilities there are to the worker and the environment. Contingency decontamination plans, however, are in place if needed. The most likely equipment to be decontaminated would be sections of the flexible receiver. Equipment removal will be performed in accordance with TWRS ALARACT Demonstration 13, Installation, Operation, and Removal of Tank Equipment.

In Tank Equipment Installation
Equipment installation will be performed in accordance with TWRS ALARACT Demonstration 13, Installation, Operation, and Removal of Tank Equipment.

WASTE STAGING AND RETRIEVAL PROCESS OVERVIEW
Mixer pumps will be operated to maintain waste uniformity during staging and to mix the waste for a period before and during transfer. As required by operational directives, mixer pumps will be operated until waste samples verify that adequate mixing has been achieved. Waste samples will be collected in accordance with TWRS ALARACT Demonstration 7, Tank Waste Grab Sampling. If dilution/conditioning is needed, the pH and temperature of the diluents will be adjusted by means of a caustic supply system. Once the waste is verified acceptable, the transfer lines will be preheated/flushed with water, and the waste transfer to the treatment facility will follow. After the transfer, the lines will be flushed again with water.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Alpha - 0	2.40E+00	Beta - 0	3.00E+01
Based on Am241		Based on Sr90+D	

4) ANNUAL POSSESSION QUANTITY
The annual possession quantity is limited to the limits of the most current Filter Vacuume Truck (FVT) NOC used- either Notice of Construction for Guzzler Excavation and Backfilling Activities in Support of the 200 East and West Area Tank Farm Complex (See DOE Letter 09-ESQ-542 Dated November 30, 2009) or the latest WDOH approved Site Wide Guzzler (See DOE Letter 99-SID-021 Dated February 1,1999)

5) MONITORING DURING CONSTRUCTION ACTIVITIES
During soil excavation activities, periodic confirmatory monitoring (PCM) as described in ALARACT 5, will verify low emissions. If the regulated FVT is used, PCM will be performed as required by the guzzler NOC.

6) SOIL EXCAVATION
If the regulated Filter Vacuum Truck is used to excavate soil, radiological and administrative controls as described in the most current version of Notice of Construction application for Guzzler Evacuation and Backfilling Activities in Support of the 200 East nand West Area Tank Farm Complex (See DOE Letter 09-ESQ-542 Dated November 30, 2009) or the latest WDOH approved site wide Guzzler (See DOE Letter 99-SID-021 Dated February 1,1999) will be followed. Description of the emissions control technology for the regulated guzzler is provided in that NOC.

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.38E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.38E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Work shall be performed outside of some tank farm fence boundaries such as the 241-AN, 241-AP, 241-AW, 241-AZ, and 241-SY tank farms; between the 241-AP tank farm and the 244-A double contained receiver tank as well as between the 244-S double-contained receiver tank and the 241-SY tank farm; the 219-S Waste Handling Facility located at the 222-S Laboratory; and near the 241-A-A valve pit (241-A Single-Shell Tank Farm).

EXCAVATION

Excavation within a tank farm, or in a known radioactive contamination area outside of a tank farm, shall be performed in accordance with As Low As Reasonably Achievable Control Technology (ALARACT) Demonstration 5, TWRS ALARACT Demonstration for Soil Excavation (Using Hand Tools), or non-mechanical methods such as vacuum excavation (Guzzler) in accordance with the latest WDOH approved Notice of construction Application for Guzzler Excavation and Backfilling activities in Support of the 200 East and West Area Tank Farm Complex (See DOE Letter 09-ESQ-542 Dated November 30, 2009) or the latest WDOH approved Site Wide Guzzler application(See DOE Letter 99-SID-021 Dated February 1,1999). Outside of a tank farm, in non-contaminated areas, excavation (or berm construction) may be performed using mechanical methods such as: trenchers, backhoes, and scrapers, in addition to hand tools or non-mechanical methods. Areas may be encountered during excavation where components are covered by very hard soil or controlled density fill (low-strength concrete). Mechanical impact tools, such as jackhammer/rototool, would be used to break up such areas before excavation. Removal of excavated material is normally done by mechanical methods such as a crane with skip bucket, powered skip, or front-end loader. Excavated material is placed in spoil piles. (NOTE: Industrial safety requirements may require use of intermediate transfer piles.) Contaminated soil (>100,000 dpm/100 cm2 beta/gamma) is segregated from other soil. Excavated areas shall be backfilled with the excavated soil or soil containing less contamination than the soil that was excavated. Backfilling of excavated areas is accomplished by first placing controlled density fill material when used, then soil in layers, into the excavated area. The distance from the skip bucket, powered skip, and front-end loader to the top of the excavation area is minimized. Contaminated soil is the first soil placed in the excavated areas, then covered with other excavated soil. To meet density requirements, soil compaction is done using hand-guided mechanical compaction equipment. Outside of a tank farm, in a non-contamination area, vibratory roller compactors may be used.

Excavation shall also be conducted to allow for the pouring of concrete pads for future placement of equipment within the tank farms.

PIT WORK

Frequently performed activities shall be done in accordance with activity descriptions found in ALARACT Demonstrations (HNF-4327):

- ALARACT 4 "Packaging and Transportation of Waste"
- ALARACT 6 "Pit Access"
- ALARACT 12 "Packaging and Transportation of Equipment & Vehicles"
- ALARACT 13 "Installation, Operation, and Removal of Tank Equipment"
- ALARACT 14 "Pit Work" and, if required,
- ALARACT 15 "Size Reduction of Waste Equipment for Disposal."

The process is establishment of controls to prevent the spread of radioactive contamination, removal of pit cover blocks by heavy rigging methods, decontamination of pit by water washing (pressure and non-pressure methods),

application of fixative material on contamination, disconnection of equipment, equipment removal by manual or mechanical methods, package equipment for disposal (size reduction if necessary), pit surface preparation by manual abrasion (scrapping, sanding, chipping; on a surface that is damp or has fixative) of existing pit coating, application of pit coating material by manual methods or pressure spray methods, installation of new or replacement equipment, installation of pit cover blocks by heavy rigging, packaging of waste, and transportation of waste and removed equipment.

Project pit activities will include preparation of pit surfaces and coring of walls or cover blocks. Project pit surface preparation is accomplished by mechanical abrasion of the existing pit coating, concrete substrate, and steel surfaces as needed. Needle guns, sanders, wet blasting, and grinders are typical tools used. In addition, surface preparation also may include repair of cracked concrete/concrete coatings. Repair will require removal of cracked material to allow application of grouting material. Removal of cracked material may be performed using manual and power tools, and may also include using a HEPA vacuum to assist in the removal of loose debris. Coring of pit walls and/or cover blocks for new nozzles or equipment installation comprised of replacing wall nozzles, leak detectors, cover blocks, pipe snub-outs, and jumpers will also be performed. A new AZ valve pit will be constructed and connected to the AZ tanks.

PIPE CUTS

The cutting of waste transfer lines, tank risers, or contaminated piping shall be made using a low or high speed reciprocating or cut-off saw (sawzall, bandsaw) or other mechanical methods, such as a tri-tool. Surveys of the exterior and/or interior of the pipe/riser shall be used to determine containment selection in accordance with Radiological Containment Selection, Design, & Specification Guide RPP-7933. Continuous health physic technician coverage shall be present during all pipe work activities. Abrasive methods, such as grinders or sanders, may be used to prepare the cut area for connection to the new section of transfer line. Mating of the new piping to the existing transfer lines or tank riser, and other similar connections if necessary, will be performed using mechanical connection methods or welded flange connections.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Alpha - 0	2.40E+00	Beta - 0	3.00E+01
Based on Am241		Based on Sr90+D	

4) The annual possession quantity is limited to the limits of the Filtered Vacuume Truck (FVT) NOC used- either Notice of Construction for Guzzler Excavation and Backfilling Activities in Support of the 200 East and West Area Tank Farm Complex See DOE Letter 09-ESQ-542 Dated November 30, 2009) or the latest WDOH approved Site Wide Guzzler (See DOE Letter 99-SID-021 Dated February 1,1999)

5) The operation of the Filter Vacuum Truck (FVT) shall meet all license conditions and limitations of the most current version of Site Wide Guzzler DOE application, (See 08-SED-0072)Notice of Construction application for Guzzler Excavation and Backfilling Activities in Support of the 200 East and West Area Tank Farm Complex or the latest WDOH approved site wide Guzzler DOE application (See 09-ESQ-592)

6) If the regulated Filter Vacuum Truck (FVT) is used to excavate soil, radiological and administrative controls as described in the latest WDOH approved Notice of Construction for Guzzler Excavation and Backfilling Activities in Support of the 200 East and West Area Tank Farm Complex (See DOE Letter 09-ESQ-542 Dated November 30, 2009) or the latest WDOH approved Site Wide Guzzler (See DOE Letter 99-SID-021 Dated February 1,1999) will be followed. Description of the emission control technology for the regulated FVT is provided in that NOC.

7) To determine the potential-to-emit and calculate the annual dose to the Maximally Exposed Individual all gross alpha contamination shall be assumed to be Am-241 and all gross beta contamination shall be assumed to be Sr-90.

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.32E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 3.32E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Site preparation for the retrieval of the waste from single-shell tanks covers the following activities described below.

Installation of the following in-tank equipment

- Waste distribution devices
- Transfer pumps
- Enraf-Nonius Series 854 (ENRAF) stilling wells
- Video cameras
- Instrument manifolds
- Central fury device
- Drain lines back to tank
- AMS (Articulated Mast System)
- Sluicing nozzles
- Ventilation inlet filter assemblies
- Connection of hose-in-hose transfer lines (HIHTL)
- New pit cover-plates
- Electrical power and instrument cables and other utility tie-ins and/or upgrades
- New above ground pits
- Jumpers
- Off riser sampling system
- Mobile Arm Retrieval System (MARS)

Removal, Decontamination and Disposal of Existing Equipment

- Remove/Replacement of Breather filters
- Removal of Sludge weights
- Removal of Liquid observation wells (LOW)
- Removal of Standard Hydrogen Monitoring System (SHMS) probe
- Removal of Thermocouple probes
- Removal of Sluicing nozzles
- Removal of Video cameras
- Removal of Liquid level reel
- Removal of Jumpers from pits
- Removal of Saltwell pumps
- Removal of Sluice pumps
- Removal of Corrosion probes
- Removal of Shield plugs
- Removal of Slurry distributors
- Removal of Air lift circulators
- Removal of Riser adapter cover plates
- Removal of Saltwell screens
- Removal of Dip tubes
- Removal of Protective foam coating on pits

Other similar equipment may be installed or removed provided all conditions and limitations outlined in this approval are met.

Pit Work

Pits will be accessed for installation of instrument manifolds, transfer pump installation, jumper removal, replacement of existing HIHTLs with new HIHTLs, connection of high efficiency particulate air (HEPA) filters, exhauster trunk for the portable exhausters, and removal of various jumpers, isolation of transfer lines, water lines, and drain lines.

Removal of In-Tank Equipment

Various in-tank equipment, listed above, will be removed from the tanks to make room for the waste retrieval equipment, or to be replaced with equivalent equipment built to withstand the forces of waste retrieval.

In-Tank Equipment Installation

Motor controlled spray devices and sluicers will be inserted into risers on some tanks near the outside perimeter of the tank and an automatic indexing spray device also will be installed on a centrally located riser. In-tank closed circuit television cameras will be installed into risers and connected to a master camera control system skid. This equipment will be in the riser for the duration of the project and will not contact the waste. Each spray assembly is equipped with a spray washer to provide a decontamination rinse during removal. The spray devices and cameras will be sleeved out of the risers at completion of the project.

An AMS will be installed through risers of some tanks for use during retrieval. The AMS may be removed and reused. Pumps and In Tank Vehicles (ITVs) will be waste contacting and may be abandoned in place following the conclusion of retrieval operations.

Ventilation inlet filter assemblies (breather filters) will be installed on those tanks whose breather filters have been removed to accommodate portable exhausters and other retrieval equipment.

Installation of the Off-Riser Sample Collection System (ORSS). The ORSS consists of a sample collector sub-system and its deployment sub-system. The sample collector is capable of sampling the various types of waste expected in a post-retrieval single shell tank environment. The waste may be liquid in an extreme range of viscosities, or solids in various states of friability. The sample collector crawler will return the sample to sample containers staged below the riser, where it will be retrieved into the glove bag mounted on the sampling riser. Monitoring of the sample collector will be accomplished visually using the in-tank camera. All activities associated with the ORSS will be accomplished thru a sealed glove bag. The riser used for sampling will be open to the atmosphere for a very short period of time (typically less than one minute) while installing and removing the glove bag.

Installation of new risers. In some cases it will be necessary to install new risers on some tanks, which may involve the removal of some pits that the riser is routed through. Nominal riser diameters range from four to 42 inches. Riser will be installed by first removing soil down to the concrete tank dome surface using hand digging, backhoe, and/or using the Filter Vacuum Truck (FVT). A steel caisson will be inserted into the hole for wall support. A small layer of grout will be added to the bottom of the hole to provide a level surface. A hole will be partially drilled into the concrete. After a cable is attached to the core, the drilling will be completed through the dome into the tank headspace. The new prefabricated riser will be lowered into the caisson until support brackets on the side are seated on the grout top.

For new riser installations where pits will also need to be removed the pits will be removed in one piece, if possible. If the riser does not come free then the pit will be broken into smaller pieces for removal. Prior to removal of the pits, however, the pits will be decontaminated as much as possible by washing them down or by application of fixative. Any liquid used for decontamination purposed will drain to the tank

The MARS will be installed through risers for use during retrieval. The MARS may be removed and reused after use.

Tank Preparation for Closure

Tank preparation for closure will include installation of equipment for introducing fill material, fill placement monitoring, and ventilation. In general, equipment residing in risers (e.g., pump, thermocouple tree, vacuum retrieval mast, etc.) will not be removed from the tank unless it obstructs a riser that is required to gain access for placing the fill material. Equipment obstructing a riser needed for access will be either removed, or cut and lowered into the tank. Equipment lowered into the tank during tank preparation will be completely covered when the fill material is added to the tank.

Soil Excavation

Soil will be excavated inside and outside the farms for various reasons such as tie in of instrumentation and power systems for monitoring transfer progress. Intermittent trenches will be excavated for this purpose.

The volume of soil removed during excavation activities are volumes of disturbed soil that will not leave the respective farms. Soil may be excavated by hand, using the FVT, and/or use of a backhoe. Soil piles may be moved from one place to another within the tank farm with heavy equipment (i.e. backhoe, front loader, etc.). The soil will be used to fill the trenches after the hose and the conduits are installed.

An initial survey is required of the area to be excavated. Surveys are performed throughout the excavation to assure that worker safety and environmental protection is maintained. Once the excavation begins, water is used, as necessary, to prevent the spread of dust. To the extent practicable using hand held instrument field survey techniques, the clean soil is separated from the soil identified as contaminated. The contaminated soil has a fixative applied or is covered by plastic at the end of the shift, and as necessary, to stabilize the contaminated soil.

A beta-gamma survey of the ground surface is required prior to excavation in Contamination Areas (CA's), High Contamination Areas (HCA's), Soil Contamination Areas (SCA's), and Underground Radioactive Material Areas (URMA's). An alpha survey may be required prior to excavation per the TWR-4675, TFC Radiological Source Term Report Including Technical Basis for Dual Survey Exemption, Revision 4.

For excavation in CA's, HCA's, SCA's, and URMA's, if beta-gamma activity greater than 1000 dpm/probe area (5000 dpm/100cm 2) is identified, alpha surveys will also be performed.

Suppressants such as water, fixatives, covers, or windscreens will be used as necessary, including at the end of each shift or when sustained or predicted winds are >20mph. Excavation of radioactive material shall not commence if sustained winds are predicted to exceed 20 mph during the work shift. Excavation of radioactive material shall cease if sustained winds exceed 20 mph.

A local wind-speed measurement device may be utilized in lieu of Hanford Meteorological Station readings, provided the reading is taken in an unobstructed location that is representative of the work area. Use of a local device and the measured wind-speed readings taken from it must be documented in the Work Record.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Alpha - 0	2.40E+00	Beta - 0	3.00E+01
Based on Am241		Based on Sr90+D	

4) The Annual Possession Quantity for pit entries, equipment removal and installation activities, soil excavation, filter vacuume truck operation, and backhoe excavation shall be tracked on a WDOH approved Log.

5) The operation of the Filter Vacuum Truck (FVT) shall meet all license conditions and limitations of the most current version of Site Wide Guzzler DOE application, (See DOE Letter 09-ESQ-542 Dated November 30, 2009) Notice of Construction application for Guzzler Excavation and Backfilling Activities in Support of the 200 East and West Area Tank Farm Complex or the latest WDOH approved site wide Guzzler DOE application (See DOE Letter 99-SID-021 Dated February 1,1999)

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.10E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.82E+01 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Sump Intrusion Mitigation:

Sump intrusion mitigation is limited to cells 001, 002, 003, and 011 only. From time to time if intrusion of precipitation and snow melt gets into the sumps, the sumps will need to be pumped. In order to accommodate this, submersible pump assemblies will be installed in each of the four CR Vault Cells. The pump assemblies will be installed on top of existing 6 inch riser extensions on cells 001, 002, 003, and 011. Riser extensions may be installed, or replaced if necessary. These extensions will be installed and/or removed as follows:

- the pit covers will be removed,

- above grade piping will be cut and capped,

- leak detectors and two zip cords will be removed,

- the riser extensions will be installed and/or removed remotely from a platform over the pit, and

- a new pit cover will be installed.

The sumps will be pumped by connecting a transfer line to a ventilated tank or to the Tanker Truck permitted under AOP Emission Unit Number 888 and licensed under WDOH NOC ID Number 696. The transfer line will be a hose-in sleeve line. The other end of the transfer line will be attached to the pump assembly on the first CR Vault cell to be pumped. After the first cell is pumped, flush water will be added and pumped to flush the system. Then the hose will be relocated to the next cell's pump assembly. The process will be repeated until all the cells are pumped. The CR Vault breather filter will not be modified and will be open during pumping. After the pumping is complete, the transfer line and pumps will be removed and disposed of as mixed waste. The pit foam covering will also be replaced to prevent, or at best minimize intrusion of precipitation and snow melt.

A fixative shall be applied with the pit covers on. The fixatives shall be applied to pit surfaces through a port in the pit cover using a 'whirly' or by fogging. A hand held sprayer is used to apply fixatives within the pit when the pit cover is off.

Temporary power installation will be limited to meet the needs to support the work described in this NOC. Temporary installations can be removed when no longer needed.

General Controls for Sump Intrusion Mitigation:

The general controls for sump intrusion mitigation is limited to cells 001, 002, 003, and 011 only. The required controls for each of the following actions are delineated by the specified ALARACT:

- ALARACT 1—Tank Farm ALARACT Demonstration for Riser Preparation/Opening.

- ALARACT 4—Tank Farm ALARACT Demonstration for Packaging and Transportation of Waste.

- ALARACT 5—Tank Farm ALARACT Demonstration for Soil Excavation (using hand tools).

- ALARACT 6—Tank Farm ALARACT Demonstration for Pit Access.

- ALARACT 7—Tank Farm ALARACT Demonstration for Tank Waste Grab Sampling.

- ALARACT 11—Tank Farm ALARACT Demonstration for Waste Transfers.

- ALARACT 12—Tank Farm ALARACT Demonstration for Packaging and Transportation of Equipment and Vehicles.

- ALARACT 13—Tank Farm ALARACT Demonstration for Installation, Operation, and Removal of Tank Equipment.

- ALARACT 14—Tank Farm ALARACT Demonstration for Pit Work.

- ALARACT 15—Tank Farm ALARACT Demonstration for Size Reduction of Waste Equipment for Disposal.

The activities performed at the 244-CR Vault Facility, ER-153 and/or 244-A Lift Station include:

Work Area Preparation:

- Miscellaneous work including equipment delivery, movement, set up and maintenance in the general work area around the 244-CR Vault Facility.

- Construction and take down of open top containment tents (bullpens) over the facility vault area.

- Installation of Portable/Temporary Radioactive Air Emission Unit(s) (PTRAEUs).

- Installation of portable 1,000 cubic feet per minute (cfm) exhauster.

- Removal and/or installation of vault foam covering.

- Application of fixative at pit interior.

- Temporary power installation.

Facility/Interim Stabilization Work:

- Operation of PTRAEU for bullpen ventilation.

- Removal and/or installation of pit covers.

- Inspection of pits, vaults, and tanks.

- Removal and disposition of excess equipment and waste in pits, risers, and tanks.

- Decontamination activities.

- Measurement of liquid level and sludge levels in tanks and sumps.

- Sampling activities in pits, vaults, and tanks including chemical addition and/or waste sampling to determine Double Shell Tank waste acceptance.

Facility Equipment Activities:

- Installation, disconnection, repair, replacement, and/or leak testing, of new and existing facility equipment (valves, jumpers, pumps, leak detectors, or other instrumentation/equipment).

- Modifications, maintenance, and/or isolation and sealing of existing risers, pits, vaults and incoming and/or outgoing piping (drain and transfer lines) from 244-CR Vault or connected facility.

Excavation:

- Installation of permanent power to 244-CR Vault Facility.

- Installation/Operation of Passive Breather Filter Assembly.

Waste Transfer and Support Activities:

- Operation of 1,000 cfm portable exhauster at 244-CR Vault.

- New waste transfer system, waste staging/consolidation.

Miscellaneous activities shall include:

- Construction and take down of open top contaminant tents over the facility vault area.

- Open top containment tents (bullpens) shall be constructed over the facility pit area to prevent potential airborne contamination from the effected work area to the environment. Two bullpens shall be erected around two instrumentation pits at the 244-CR Vault. Upon completion of the first pit's work, the bullpens shall be relocated to the other two pits and their work will be completed.

- Installation of Portable/Temporary Radioactive Air Emission Unit(s) (PTRAEUs)

- A Portable/Temporary Radioactive Air Emission Unit (2,000 cfm) or units (1,000 cfm each) shall be installed to ventilate the bullpens during activities that require work in the pits, cells and tank vault area prior to performing waste transfer activities. One thousand cfm PTRAEUs, if used, shall be directly connected to individual bullpens, while a 2,000 PTRAEU if used, shall be connected to two bullpens. Movement and installation of the PTRAEU can be performed to facilitate ventilation for the four vaults of the 244-CR Vault Facility. The PTRAEU shall operate intermittently (during work activities) and will be operated in accordance with the latest WDOH approval, AIR 99-1102, for the Portable/Temporary Radioactive Air Emission Unit (PTRAEU) NOC (DOE/RL-96-75).

A portable 1,000 cfm exhauster shall be installed to ventilate the 244-CR Facility vaults and tanks during waste transfer activities. This exhauster shall operate intermittently to support waste transfer and support activities and shall monitor air emissions. The exhauster shall be piped into the existing 244-CR facility ventilation system upstream of the existing (non-operating) exhauster, 296-C-05 and HEPA filters. The existing 244-CR Facility exhaust system shall be isolated and not used. Tie in of the 1,000 cfm exhauster to the existing exhaust system shall be in accordance with ALARACT 16, Tank Farm ALARACT Demonstration for Work on Potentially Contaminated Ventilation System Components. After the waste transfer is completed, the exhauster shall be removed in accordance to the requirements of ALARACT 16.

A foam covering has been placed over the 244-CR Vault area to prevent intrusion of precipitation and snowmelt. In order to gain access to the pit cover (metal) plates or concrete cover blocks, sections of the foam shall be removed, packaged, transported and disposed of. ALARACT 4, Tank Farm ALARACT Demonstration for Packaging and Transportation of Waste shall be used to properly disposition the removed foamed covering. Radiation control technicians (RCT) shall monitor the affected work area while the foam covering is being removed. The foam covering shall be replaced after work is complete, as part of intrusion prevention measures completed by the project following waste transfer activities.

Operation of PTRAEU for Bullpen Ventilation.

Ventilation of the bullpens during pre waste transfer tank activities and prior to the installation of the 1,000 cfm portable exhauster shall be accomplished with the use of PTRAEU(s). The PTRAEU(s) shall be operated in accordance with the latest WDOH approval, AIR 99-1102, for the Portable/Temporary Radioactive Air Emission Unit (PTRAEU) NOC (DOE/RL-96-75).

Concrete cover key blocks are removed first, and only blocks necessary to perform intended work are removed. Consideration is given to sliding blocks to minimize the number of blocks to be removed. As discussed in the following, pit covers are decontaminated and/or covered with fixative before removal. Pit Covers are raised a minimum distance to safely allow a radiation protection technician to perform a dose rate and contamination survey. Pit covers are wrapped in plastic and set down in a specially prepared lay-down area. On completion of activities, the plastic wrap is removed from the pit covers and the pit covers are re-installed in their original position and orientation. Post-job surveys are performed.

Inspections, such as visual, video, or nondestructive inspections, shall be performed with pit covers in place (for pit with access ports) or removed. The pit cover design, historical inspection information, and ALARA information shall be used to determine whether the inspection shall be performed manually (with pit cover removed) or remotely with a camera and the pit covers in place.

Excess equipment and debris currently located in the 244-CR vault pits, and in-tank equipment shall be removed to accommodate new waste transfer equipment and piping. Excess equipment shall be replaced with replacement in kind equipment, as necessary.

To facilitate the removal and disposition of these items, size reduction and decontamination activities shall be utilized. Size reduction activities shall include cutting up unusable equipment (usually jumpers/blanks) remotely, using hydraulic shears or low revolutions per minute portable band saws. All size reduction activities shall be performed in accordance with ALARACT Demonstration 15, TWRS ALARACT Demonstration for Size Reduction of Waste Equipment for Disposal.

Disposition of excess equipment and waste shall be performed in accordance with ALARACT Demonstration 4, TWRS ALARACT Demonstration for packaging and transportation of waste.

Removable contamination in the accessible portions of the pit is reduced to less than 100,000 disintegrations per minute/100 square centimeters beta/gamma and 2,000 disintegrations per minute/100 square centimeters alpha by washing, or an approved fixative is applied to pit surfaces. Initial washing with a low pressure (125 pounds per square inch gauge), or high pressure (3,000 pounds per square inch gauge) 'whirly' is accomplished through a port in the pit cover blocks. Additional decontamination activities (with the cover block off) include the use of chemicals, peel and strip paints, water, or manual scrub brushes.

After a section of equipment has been washed it shall be pulled into plastic sleeving and sealed by horse tailing and taping.

Liquid and sludge levels are determined using zip cords or other appropriate means that shall not disturb the waste more than zip cords.

Sampling activities shall be performed in the tank and sump area of 244-CR Vault by way of risers in the riser pit in accordance with ALARACT 7, "Tank Farm ALARACT Demonstration For Tank Waste Grab Sampling." Radiological controls for riser preparation/opening listed in ALARACT 1, "Tank Farm ALARACT Demonstration for Riser Preparation/opening," shall be followed.

The waste transfer processes shall transfer waste from tanks CR-011, CR-001, CR-002 and CR-003 and sumps within 244-CR Vault Facility to a staging tank within the 244-CR Facility. The transfer system to consolidate the waste from individual tanks consists of above ground piping of a hose in hose with leak detection at each tank's pit being utilized to support the transfer line. Mixing and dilution of the waste may take place at the receiving tank or within the transfer lines directly. The transfer system may include equipment pump skids and shall include appropriate connections to the transfer lines to accommodate chemical and water addition to the 244-CR Facility tanks and mixing prior to transfer to the designated Double Shell Tank (DST).

Before entry into a pit, an evaluation is made by engineering and/or operations personnel to determine the transfer routing configuration after pit work is complete. On removal of cover blocks, a visual inspection of pit contents is made to verify present configuration.

Tools such as impact wrenches, T-bars, and pike poles are used to repair or replace pit equipment. All equipment coming out of the pit is wrapped in plastic or otherwise contained or decontaminated for reuse or disposal. Removable contamination on the outer-most container shall not exceed 1,000 disintegrations per minute/100 square centimeters beta/gamma and 20 disintegrations per minute/100 square centimeters alpha before removal from the bullpen. Disposition of non reusable equipment waste shall be performed in accordance with ALARACT Demonstration 4, TWRS ALARACT Demonstration for packaging and transportation of waste.

Jumper work shall be preceded by flushing the appropriate transfer lines with water. Jumper work is accomplished remotely, using a crane to maneuver heavy equipment and parts. Installation, disconnection, and/or changing jumpers/blanks are accomplished by slowly loosening the jumper/blank at the connector head. The required jumper/blank is positioned and tightened to the new connector heads. If the process line or equipment being worked on is connected physically to other unnecessary transfer lines, or if the line is to be left unused, a cap, blank, or equivalent is installed on all open nozzles not connected to jumpers.

Leak testing of newly installed jumpers/blanks shall be performed with pressurized water before initiating waste transfers. Occasionally, a jumper leak test is performed during the initial stages of the transfer. In either case, cover blocks shall be in place before leak testing is performed.

Cutting up unusable pit equipment (usually jumpers/blanks) is accomplished remotely using hydraulic shears or low revolutions per minute portable band saws. Cutting activities shall be performed in the bullpen or in glovebags. The goal shall be to maintain a contamination level equal to or less than 1,000 dpm/100 cm2 beta gamma and 20 dpm/100 cm2 alpha, during cutting activities, but may not always be attainable. RCT coverage shall be provided. Should contamination levels exceed 1,000-dpm/100 cm2 additional sleeving, or use of a glove bag shall be used and/or decontamination activities performed to lower the levels in accordance with ALARA. Welding (if required) shall commence once removable contamination levels in the cut and weld area are reduced to ALARA. Size reduction (cutting) activities shall be performed in accordance with ALARACT Demonstration 15, TWRS ALARACT Demonstration for Size Reduction of Waste Equipment for Disposal. To ensure that water intrusions or potential residual waste in piping are eliminated from the facility, existing piping and transfer lines to and from the 244-CR Vault facility shall be blanked, grouted, or sealed. The isolation includes activities such as installing plugs, caps, blind flanges, or grouting. Isolations may occur at the 244-CR riser pit area or at the other end of the pipe in a diversion or valve box, at the ER153 or the 244A Lift Station.

Modifications to existing in-route pits, vaults and piping shall be required to establish the waste transfer route or to ensure the integrity of the system prior to waste transfer. These modifications can include but are not limited to, removal of existing parts and replacement with like parts, installation of new jumpers, or blanking off of equipment. When possible existing blanks shall be utilized. Pipe cutting shall be minimized in compliance with ALARA. If it is determined that the installation of a new above ground transfer line would be the best engineering method to establish a waste transfer route, a temporary transfer route shall be established following existing design and installation procedures. This temporary route will be either above ground or in a shallow trench. If a trench is required excavation shall be performed as described under that activity in this NOC.

Pit drains are checked using water from a tanker truck or another source. Water at a flow rate of approximately 20 gallons per minute is added to a pit drain line and subsequently monitored to verify the pit drains are free of restrictions. At times it might be necessary to pump the DCRT that receives the water after the water passes through the pit drain if the volume of test water approaches the capacity of the DCRT.

Either flushing with water and/or using a retrieval tool to remove debris from the drain are used to clear plugged drains. Water supply valves are opened slowly to minimize splashing. Pressures above 50 pounds per square inch gauge require approval from the engineering organization. Cover blocks shall remain in place and work is accomplished through a penetration in the cover block.

The waste transfer operations involve the pumping of liquid waste that contains dissolved solids. These solids can precipitate out of solution anywhere in the transfer path and cause blockage. If blockage is detected in the system, flushing the lines with hot water is necessary. The hot water is introduced to the system to be flushed through a

pressure manifold by piping connected directly to a jumper or nozzle. These operations shall be performed with the pit covers on.

To ensure that water intrusions are eliminated from the facility, a foam covering will be placed over the 244-CR Vault area after completion of isolation activities.

Other techniques to free blockages could include pressurization, temporary jumpers, and hydraulic scouring. All piping connections are designed to be leak tight and the pit cover block shall be installed before pressurization. If pressurization beyond that obtained from the tank farms water system or supply truck (i.e., approximately 150 pounds per square inch gauge) is necessary to remove blockage, an engineering evaluation shall be performed to determine the maximum allowable pressure for operation.

Excavation:

Excavation may be required to support installation of ventilation, electrical support and waste transfer equipment. Modifications to existing in route pits, vaults and piping and/or to support installation of new waste transfer lines from the 244-CR Facility to the identified DST may require excavation. Soil excavation activities will be performed in accordance with ALARACT Demonstration 5, TWRS ALARACT Demonstration for Soil Excavation (Using Hand Tools), and will follow the radiological controls specified in that ALARACT.

Any Filter Vacuume Truck excavations in contamination areas will be performed in accordance with the most current version of sitewide DOE Notice of construction application, Guzzler Excavation and Backfilling Activities in Support of the 200 East and West Area Tank Farm Complex (See DOE Letter 09-ESQ-542 Dated November 30, 2009) or the latest WDOH approved Site Wide Guzzler DOE application (See Doe Letter 99-SID-02, Dated February 1, 1999).

Soil excavation outside the tank farm fence also may be performed with heavy equipment.

Soil will be excavated around the 244-CR vault facility to install new piping, equipment slabs, and new waste transfer system support equipment. It is expected that about 1,000 cubic yards may be excavated, with about 600 cubic yards from inside the tank farm. Backfill shall be from the original removed soil or non-contaminated controlled density fill (sand, water and a small amount of cement).

Current power within the 244-CR Vault Facility is limited. To provide power for new equipment installed under the project, the existing power distribution system shall be upgraded. Upgrades shall involve modification to the existing Motor Control Center (MCC), installation of equipment control panels, and installation of new conduits.

A compliant passive breather filter shall be installed to ventilate the 244-CR Facility vaults and tanks once waste transfer activities are completed. The passive breather filters shall be installed at two locations in the 244-CR facility. A 1,000 cfm HEPA filter shall be installed at the air inlet assembly (previously attached to the evaporative cooler) and a 200 cfm HEPA filter shall be installed upstream of the existing HEPA filter pit. Butterfly valves in the ventilation system just downstream of where the filters shall be installed can be shut to prevent any emission from the facility during filter installation. Installation of the filters shall be performed in accordance with ALARACT Demonstration 16, TWRS ALARACT Demonstration for Work on Potentially Contaminated Ventilation System Components.

During waste transfer and support activities the tank and vault air space shall be actively ventilated by a temporary ventilation system. The temporary ventilation system shall consist of a portable exhauster that shall be equipped with compliant monitoring and sampling equipment. The purpose of the exhauster is to ensure potential airborne contamination from the pits, cells, or process tanks, is not being released to the environment. Operation of the 1,000 cfm portable exhauster is considered an emissions control.

New waste transfer system, waste staging/consolidation.

The planned transfer system can utilize some existing equipment along with installation of new piping and equipment at 244-CR, ER-153 and/or 244-A Lift Station. Maintenance of the transfer system may be required during the waste staging/consolidation. Equipment, which may require on going maintenance includes but is not

limited to leak detection and pump system equipment. The waste can be staged/consolidated in one or two of the 244-CR Facility tanks (CR-001, CR-002, CR-003 and CR-011) prior to transfer to a DST.

The following controls are used for the pit activities:

General Controls:

1. Pre-job and post-job radiation surveys are performed by radiation protection technicians. Radiation work permits specify permissible occupational radiological limits during activities. Radiation control technicians' survey and release equipment, inspect and approve required containment, and provide radiological surveys to verify compliance to radiation work permit limits.

2. Pit work is shut down (or not initiated) when sustained wind speeds exceed 25 miles per hour as measured in the field and/or reported by the Hanford Meteorological Station.

3. Fixatives shall be applied inside the pit (with cover blocks on or off) or accessible portions of the pit decontaminated to less than 100,000 disintegrations per minute/100 square centimeters beta-gamma and 2,000 disintegrations per minute/100 square centimeters alpha.

4. When cover blocks are removed, a fall protection handrail is installed. This handrail is draped in plastic forming a contamination barrier. The plastic extends to the top of the pit and is taped or sealed at the top of the pit. Decontamination of the containment barrier is conducted as required by the job specific radiation work permit.

5. Radiation control technicians monitor the affected work area when the vault foam covering is removed, when jumpers and equipment are being removed from risers and nozzles, and when risers are entered for sampling of tanks and sumps. Jumpers removed from the pit are drained of free liquid and decontaminated or contained before removal. The outer-most container shall not exceed 1,000 disintegrations per minute/100 square centimeters beta/gamma and 20 disintegrations per minute/100 square centimeters alpha. If these limits are exceeded, surfaces shall be decontaminated. Disposition of non reusable equipment waste shall be performed in accordance with ALARACT Demonstration 4, TWRS ALARACT Demonstration for packaging and transportation of waste.

6. A bullpen designed to minimize the top opening shall be used. Pit covers or cover blocks will be removed as necessary. If the bullpen is to be left unattended at any time, a temporary cover is placed over the pit or the pit covers or cover blocks are reinstalled. Two tents shall be erected over two pits. Upon completion of the work in the first two 244-CR Facility instrumentation pits, the tents will be relocated to the other 244-CR facility instrumentation pits.

7. PTRAEU(s) shall actively ventilate the bullpens during activities that require work in the pits (after removal of the cover blocks) to control radiological releases. The PTRAEU(s) shall operate intermittently and shall be operated in accordance with the latest revision to the WDOH approved. Portable/Temporary Radioactive Air Emission Unit (PTRAEU) NOC (DOE/RL-96-75).

8. A compliant exhauster skid shall ventilate the process cells and tanks during waste transfer activities. The exhauster shall maintain a negative pressure under the cover blocks and prevent contaminants from reaching the environment. The exhauster skid shall be connected to the existing exhaust ductwork with rigid or flexible ductwork.

9. The 1,000 cfm exhauster shall be equipped with a two-stage HEPA filter, which meets the requirements of ASME AG-1, Section FC and shall be tested annually to requirements of ASME AG-1. The HEPA filters shall have an efficiency of 99.95 percent for 0.3-micron median diameter. Each filter housing shall meet the applicable sections of ASME N509 and the test requirement of ASME N510. The exhaust stack houses a Generic Effluent Monitoring System (GEMS) that contains an air velocity probe and the air sampling probe.

10. The breather filter shall consist of a housing that contains a HEPA filter, an outlet screen, and a small seal loop. Air flowing to and from the 244-CR Facility shall pass horizontally through the filter and vertically through the downward-facing exit weather hood. Seal loops, installed in the exhaust lines, are designed as a safety feature to prevent unlikely accident in which an over pressurization occurs when the HEPA filter is isolated for occasional

(infrequent) maintenance.

Specific Controls include:

-Installation of portable 1,000 cfm exhauster shall use ALARACT 16.

-Removal and/or installation of vault foam covering - ALARACT 4.

-Application of fixative at pit interior - see General Controls.

-Temporary power installation - ALARA.

-Operation of PTRAEU for bullpen ventilation - Latest WDOH approval, AIR 99-1102, for the Portable/Temporary Radioactive Air Emission Unit (PTRAEU) NOC (DOE/RL-96-75).

-Removal and/or installation of pit covers - General Controls.

-Inspection of pits, vaults, and tanks - General Controls.

-Removal and disposition of excess equipment and waste in pits, risers, and tanks - ALARACT 15, and ALARACT 4.

-Decontamination activities - General Controls.

-Measurement of liquid level and sludge levels in tanks and sumps - General Controls.

-Sampling activities in pits, vaults, and tanks including chemical addition and/or waste sampling to determine Double Shell Tank waste acceptance - ALARACT 7 and ALARACT 1.

-Facility Equipment Activities: installation, disconnection, repair, replacement, and/or leak testing, of new and existing facility equipment (valves, jumpers, pumps, leak detectors, or other instrumentation/equipment) - ALARACT 4, and ALARACT 15.

-Modifications, maintenance, and/or isolation and sealing of existing in route pits, vaults and piping (drain and transfer lines) to support and/or installation of new transfer lines - General Controls.

-Excavation - ALARACT 5, and/or WDOH approved Site Wide Guzzler NOC (Air 98-1215), or the most current NOC approved for Guzzler use.

-Installation of permanent power to 244-CR Vault Facility - ALARA.

-Installation of passive breather filter assembly - ALARACT 16.

-Operation of a portable exhauster at 244-CR vault for ventilation - ALARA.

-New waste transfer system, waste staging/consolidation - General Controls.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Alpha - 0	2.40E+00	Beta - 0	3.00E+01
Based on Am241		Based on Sr90+D	

4) The annual possession quantity is limited to the limits of the most current Filtered Vaccume Truck (FVT) NOC used- either Notice of Construction for Guzzler Excavation and Backfilling Activities in Support of the 200 East and West Area Tank Farm Complex (See DOE Letter 09-ESQ 542 Dated November 30, 2009) or the latest WDOH approved Site Wide Guzzler (See Doe Letter 99-SID-021 Dated February 1, 1999).

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.00E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The utilization of the Guzzler™ Vacuum Excavation System (Guzzler™) for potholing to support utility locations, soil removal/general excavations, and radiologically limited activities involving roof or pit cleaning (note, radiologically limited activities means work locations where soil radiological contamination levels are not expected to exceed 50,000 dpm/probe size beta-gamma and/or 140 dpm/probe size alpha). For purposes of this license, "soil" will be defined as sand, dirt, gravel, gravel and tar mixtures and rock, or any combination of these items. Note, beta-gamma probe size is ~16.7 cm^2 and alpha probe size is ~50 cm^2. Note, the terms, “Guzzler™,” and “Filtered Vacuum Truck (FVT),” may be used interchangeably.

In most cases, for excavations, the excavated soil will be used for backfilling of the excavated areas. The backfilling activities will be completed manually, using shovels, or using backhoes, loaders, or packers. For cleaning activities and some excavations, the soil will either be containerized for disposal or transported to an appropriate disposal facility (e.g., LLBGs, ERDF, etc.) within the FVT collection tank for noncontainerized disposal. In some cases, soil may be unloaded from the FVT and packaged at the disposal facility for containerized disposal.

Only radiologically contaminated or potentially contaminated soil will be removed or excavated using the regulated FVT system. All soil removed from the system will be handled as potentially contaminated, unless otherwise surveyed or analyzed.

The regulated FVT will not be used for the decontamination of valve pits within the tank farms. The regulated FVT is also excluded from areas containing radiological contamination above 50,000 dpm/probe size beta-gamma and/or 140 dpm/probe size alpha.

Soil can be slowly dumped from the collection tank by controlling the raising and lowering speed of the tank.

Soil from contaminated areas enters the unit through a hose. An air lance attachment may be used to aid in the loosening of soil.

The various cleaning and excavation activities will be completed using the FVT along with shovels, picks and/or the air lance attachment to loosen the soil, and backfilling activities will be completed using backhoes, loaders, compactors with plates, and picks and shovels, as appropriate. In some cases, however, an area may be physically inaccessible for the regulated FVT. In those instances, the cleaning or excavation, as well as any backfilling activities will be completed using backhoes, loaders, compactors with plates, and/or picks and shovels, as appropriate

Areas of the vacuum truck where condensate may accumulate such as the HEPA filter housing, silencer, and micro-strainer will be drained on an as needed basis to remove condensate buildup. The drained water will be containerized and properly dispositioned. If radiological contamination is present, the liquid may be solidified with absorbent materials, and the resulting matrix may be packaged and disposed of at a radioactive landfill (e.g., LLBG, ERDF, etc.). Alternatively, the liquids may be transferred to an approved container or tanker truck (see Emission Unit ID 888) for transport to the Effluent Treatment Facility (Emission Unit ID 301) or other facility licensed to receive radioactively contaminated liquids.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 5.00E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	1.79E-03	Gas	WAC 246-247-030(21)(a)
200 Area *gaseous physical state assumed for purposes of conservatism relative to assigned release fraction. Am-241 used as conservative alpha emitter.			
Alpha - 0	1.30E-04	Gas	WAC 246-247-030(21)(a)
300 Area *gaseous physical state assumed for purposes of conservatism relative to assigned release fraction. U-234 used as conservative alpha emitter.			
Alpha - 0	7.26E-04	Gas	WAC 246-247-030(21)(a)
400 Area *gaseous physical state assumed for purposes of conservatism relative to assigned release fraction. Pu-239 used as conservative alpha emitter.			
Alpha - 0	1.79E-03	Gas	WAC 246-247-030(21)(a)
100 Area *gaseous physical state assumed for purposes of conservatism relative to assigned release fraction. Am-241 used as conservative alpha emitter.			
B/G - 0	4.48E-02	Gas	WAC 246-247-030(21)(a)
200 Area *gaseous physical state assumed for purposes of conservatism relative to assigned release fraction. Sr-90 used as conservative beta emitter.			
B/G - 0	4.48E-02	Gas	WAC 246-247-030(21)(a)
300 Area *gaseous physical state assumed for purposes of conservatism relative to assigned release fraction. Sr-90 used as conservative beta emitter.			
B/G - 0	1.46E-02	Gas	WAC 246-247-030(21)(a)
400 Area *gaseous physical state assumed for purposes of conservatism relative to assigned release fraction. Sr-90 used as conservative beta emitter.			
B/G - 0	4.48E-02	Gas	WAC 246-247-030(21)(a)
100 Area *gaseous physical state assumed for purposes of conservatism relative to assigned release fraction. Sr-90 used as conservative B/G emitter.			

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	Co - 60	Cs - 134	Cs - 137	Eu - 152
Eu - 154	Eu - 155	Pu - 238	Pu - 239	Pu - 240
Pu - 241	Ru - 106	Sb - 125	Sn - 113	Sr - 90
Th - 232	U - 234	U - 235	U - 238	

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) All soil excavation activities operating under this NOC must cease operations when sustained wind conditions reach or exceed 20 miles per hour.

5) The facility must maintain a log in an approved format for this activity or emission unit. (WAC 246-247-080(7)

6) The following are the allowable radionuclides: Co-60, Sr-90, Cs-137, Cs-134, Th-232, U-234, U-235, U-238, Eu-152, Eu-154, Eu-155, Ru-106, Sn-113, Sb-125, Am-241, Pu-238, Pu-239, Pu-240, and Pu-241. If any other radionuclides are suspected or verified through soil analysis the department must be notified.

7) The following are the annual emission limits for the NOC:

100 AREA:
For FVT Cleaning/Excavation: 2.88E-3 mrem Sr-90, 3.4E-2 mrem Am-241
For Backfilling: 2.88E-6 mrem Sr-90, 3.45E-5 mrem Am-241

200 AREA :
For FVT Cleaning/Excavation: 1.96E-3 mrem Sr-90, 2.34E-2 mrem Am-241

For Backfilling: 1.96E-6 mrem Sr-90, 2.34E-5 mrem Am-241

300 AREA:
For FVT Cleaning/Excavation: 3.9E-2 mrem Sr-90 8.3E-3 mrem U-234
For Backfilling: 3.9E-5 mrem Sr-90, 8.3E-6 mrem U-234

400 AREA:
For FVT Cleaning/Excavation: 8.5E-4 mrem Sr-90, 8.34E-3 mrem Pu-239
For Backfilling: 8.5E-7 mrem Sr-90, 8.34E-6 mrem Pu-239.

8) U.S. DOE shall monitor this project or emission unit as follows: In addition to the surveys described in this NOC periodic confirmatory measurements are required. This may include but is not limited to NDA testing of the HEPA filters when the HEPA filters are replaced and annually screening the HEPA filtration system using gamma spectroscopy. (WAC 246-247-075(8)

Emission Unit ID: 486

200 Area Diffuse/Fugitive

200 Area Diffuse/Fugitive

This is a MAJOR, FUGITIVE, non-point source emission unit.

200 diffuse/fugitive emissions

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075[2]	40 CFR 61, Appendix B, Method 114	Each radionuclide that could contribute greater than 10 percent of the potential-to-emit TEDE	Per the sitewide ambient monitoring program

Sampling Requirements Per the sitewide ambient monitoring program samples will be collected from the existing near-facility monitoring stations

Additional Requirements

See Section 5 of the general conditions in this license for additional information.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Associated with emissions from operations, deactivation, surveillance and maintenance, and inactive sites in the 200 Area from sources not actively ventilated.

This Emission Unit has 30 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operation of the Transuranic Waste Retrieval Project (Replaces NOC 719)	AIR 11-1006	10/19/2011	804

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.00E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Transuranic waste retrieval involves the processes for removing and dispositioning buried suspect transuranic mixed low-level radioactive waste (hereafter called TRU waste) from Hanford Site burial trenches for storage or disposal at other approved locations. Dispositioning is the orderly administration and handling of waste (including contaminated soil) from the low level burial grounds to place it in approved storage or disposal status. The handling includes such actions as: packaging, labeling and tracking waste; venting, assaying, and staging waste; inspecting waste and waste staging areas; sampling/characterizing/designating waste; making arrangements for the transfer of waste; completing necessary paperwork; and performing radiological and/or industrial hygiene surveys. Two containment systems are associated with this approval. One is Emission Unit 1327, Next Generation Retrieval (NGR) and, the other system will be used for the retrieval of large containers and is referred to as Emission Unit 1322, Portable Enclosure System (PES). These emission units will be used when retrieval activities exceed EU 486: 200 Area diffuse and fugitive contamination limits. In addition there are 3 types of drum venting systems and HEPA-filtered Vacuum Units (HVU) used with these venting systems and also during excavation and retrieval.
See the following emission units for a detailed description of additional controls/conditions and limits under this approval:
EU 455 HEPA Vacuums
EU 486 200 Area Diffuse/ Fugitive; Operation of the Transuranic Waste Retrieval Project

EU 755 Mobile Drum Venting System (Active Ventilation) (MDVS)
EU 756 Mobile Drum Venting System (Passive Ventilation) (MDVS)
EU 1181 Categorical Drum Venting System 2 (DVS2)
EU 1322 Portable Enclosure System #1 (PES)
EU 1326 Vapor Extraction System (VES)
EU 1327 Next Generation Retrieval (NGR)

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 3.92E+01 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	3.80E-05	Solid	WAC 246-247-030(21)(e)

Release rate based on Am-241 + Progeny. It is recognized that other radionuclides may be present in very limited quantities. Release rate for staging/handling vented containers. See Condition Release rates: Staging of Vented Containers..

Alpha - 0	3.00E-07	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Alpha release rate based on Am-241 + Progeny. It is recognized that other radionuclides may be present in very limited quantities. Release rate for installation of Nucfil filters using the Dart System. See condition Release Rates: Dart and Other Venting Systems

Alpha - 0	9.60E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Alpha release rate based on Am-241 + Progeny. It is recognized that other radionuclides may be present in very limited quantities. Release rate for excavation of soil (contamination detected). See condition: Release Rates: Excavation and Retrieval of Containers.

Alpha - 0	2.00E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Alpha release rate based on Am-241. It is recognized that other radionuclides may be present in very limited quantities. Release rate for excavation of soil (Higher contamination level, controls required). See condition: Release Rates: Excavation and Retrieval of Containers.

Alpha - 0	2.70E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Alpha release rate based on Am-241 + Progeny. It is recognized that other radionuclides may be present in very limited quantities. Release rate for excavation of soil (notification level). See condition: Release Rates: Excavation and Retrieval of Containers.

B/G - 0	4.50E-06	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Beta/Gamma release rate based on Cs-137 + Progeny. It is recognized that other radionuclides may be present in very limited quantities. Release rate for installation of Nucfil filters using the Dart System. See condition Release Rates: Dart and Other Venting Systems

B/G - 0	5.70E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Release rate based on Cs-137 + Progeny . It is recognized that other radionuclides may be present in very limited quantities. Release rate for staging/handling vented containers. See Condition Release rates: Staging of Vented Containers..

B/G - 0	6.60E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Beta/Gamma release rate based on Cs-137 + Progeny. It is recognized that other radionuclides may be present in very limited quantities. Release rate for excavation of soil (contamination detected). See condition: Release Rates: Excavation and Retrieval of Containers.

B/G - 0	1.30E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Beta/Gamma release rate based on Cs-137 + Progeny. It is recognized that other radionuclides may be present in very limited quantities. Release rate for excavation of soil (Higher contamination level, controls required). See condition: Release Rates: Excavation and Retrieval of Containers.

B/G - 0	6.60E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Beta/Gamma release rate based on Cs-137 + Progeny. It is recognized that other radionuclides may be present in very limited quantities. Release rate for excavation of soil (notification level). See condition: Release Rates: Excavation and Retrieval of Containers.

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	Am - 243	Cf - 252	Cm - 244	Cs - 134
Cs - 137	Eu - 152	Eu - 154	Pu - 238	Pu - 239/240
Pu - 241	Sr - 90	U - 234	U - 235	U - 236
U - 238				

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) PROCESS DESCRIPTION: EXCAVATION AND RETRIEVAL OF CONTAINERS

This approval applies to these additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Work will be performed in accordance with as low as reasonably achievable (ALARA) requirements as determined by the Radiological Control organization.

One type of configuration is a V notched trench, containers in some trenches may not have been stacked or placed in any orderly manner for burial. The specific steps or approach to uncovering the containers will vary according to the configuration of the trench to be uncovered, the type of containers to be retrieved, the proximity of nearby trenches or fences, the designated location of the spoils pile, the planned extent of the soil removal, and other considerations.

Work to be performed within some trenches may be performed within a weather resistant structure(s) that will be re-locatable along the trench. Weather enclosures are effectively used for similar remediation activities at other U.S. Department of Energy (DOE) sites and in general industrial use. Experience during retrieval activities has shown that operational efficiencies can be improved if the operations are protected from impacts due to weather such as wind, rain, snow, and temperature extremes. The use of a weather resistant enclosure could allow a more effective recovery from events involving degraded containers and potential contamination spreads.

Prior to and during overburden removal, subsurface surveys such as ground penetrating radar, electromagnetic inductance, and magnetometer are performed. These surveys provide information regarding container depth, configuration, type, and condition. They may also identify and locate underground obstructions.

The overburden soil will be removed to expose the waste containers. Excavation equipment will be chosen to effectively remove soil and retrieve the waste containers while minimizing damage to the containers. Excavation activities will be monitored to identify contamination that might be present and to implement controls to minimize emissions.

The most efficient methodology for removing the uncontaminated overburden from the containers will include the maximum use of conventional methods such as excavators, backhoes, front end loaders, brooms (boom mounted), or manual digging with shovels and similar hand tools. To excavate contaminated soil, hand tools predominantly will be used. Remotely-operated vehicles may be used to minimize personnel exposure in areas where high radiological and/or chemical hazards are discovered or anticipated. High efficiency particulate air (HEPA) filtered vacuums may be used for soil excavation for this application. Spot contamination removal will be done in accordance with the HEPA filtered vacuum unit (HVU) NOC (DOE/RL 97 50, Radioactive Air Emissions Notice of Construction for HEPA Filtered Vacuum Radioactive Air Emission Units, as amended). Within the V Notched trenches, it is more likely that the use of a HEPA-filtered vacuum to remove larger quantities of soil from the top surface of buried containers and soil materials in the interstices surrounding containers will be employed. Any use of the sitewide HVU will be performed under the NOC applicable to the unit.

An estimated 300 cubic meters of soil at contamination detection levels occupies the void spaces between the containers buried in the trenches.

Excavation activities will be controlled closely. Heavy equipment, hand tools, light equipment, or HVUs will be used to complete the soil removal operations and to access and remove the plastic and plywood materials covering the containers.

All containers will be inspected to verify integrity. The container inspection will consist of a visual examination to determine if there are significant indications of corrosion, holes, dents or other visual deformities. All containers could be moved, turned, or otherwise relocated (manually or with powered equipment, slings, clamps, or appropriate rigging) to facilitate an adequate visual inspection.

The exposed containers will also be visually inspected and surveyed for contamination. Externally contaminated containers will have fixative applied or will be decontaminated. Containers may also be bagged or overpacked as

needed. Overpacking means placing containers within a larger closed container. Bulging or potentially pressurized containers will be vented as described in PROCESS DESCRIPTION: VENTING OF CONTAINERS.
Severely degraded containers will be repackaged or in-situ grouted. Repackaging means transferring the contents of a degraded container into a new container or containers. The entire contents of the container will not be sorted but will be placed into the new container or containers through the use of slings, clamshell excavators, manual labor, or the best available method that minimizes potential emissions.
Repackaging may include size reduction. Size reducing, cutting or disassembling material and equipment may be required to ensure personnel safety and/or more economical waste packaging. The process will include mechanical cutting techniques such as low speed sawing, drilling, snipping, and shearing. The process will also include bending and crimping to preclude the need for cutting operations where possible.
Containers may include but are not limited to drums, metal boxes, concrete boxes, fiberglass reinforced boxes, culverts, and sealed gloveboxes.
In-situ grouting will involve grouting around and/or throughout the waste, such that the entire waste container can be removed as a monolith. Retrieval activities will include appropriate disposition of small amounts of incidental contaminated soil (e.g., containerized or fixed in place). Larger areas of contamination could be fixed and the area posted as required by the Radiological Control organization for later disposition. Bulk transfer of contaminated soils for disposal also could occur.
Some containers will be assayed and, if they assay as TRU waste, they may be further examined to determine whether they contain items prohibited from disposal at the Waste Isolation Pilot Plant (WIPP). Any prohibited items will be removed at a later date. Unvented TRU waste containers may be staged for venting in the burial grounds or may be moved to the Central Waste Complex (CWC) or another treatment, storage or disposal (TSD) site for venting.
A number of retrieved containers are in good condition but are not vented. Although not technically meeting the definition of 'sealed' containers, Washington State Department of Health (WDOH) has recognized these as closed containers such that potential emissions from these non vented containers need not be included so far as potential emissions specific to waste during removal from the trenches. Once vented, the containers are included for calculating release rates in NOC 486, PROCESS DESCRIPTION: STAGING OF RETRIEVED CONTAINERS for staging and handling operations. An estimated annual maximum of 15,200 vented containers of waste will be managed during the peak years of this project.
Containers may be staged in the burial grounds pending further processing or transfer. Waste containers are considered retrieved once transferred to an approved TSD facility. (WAC 246-247-040(5) and WAC 246-247-060(5))

5) PROCESS DESCRIPTION: VENTING OF CONTAINERS
This approval applies to these additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

All work will be performed to meet ALARA practices and will be conducted according to applicable operating procedures, radiological control procedures, and radiological work permit (RWP's).
Vent filters will continue to be installed in designated containers via one of the drum venting systems described in this process description. These systems will ensure personnel and environmental protection. The methodology will require penetrating the container and inserting a vent. Penetration of the lid will be accomplished by either drilling through the lid or puncturing the lid with a filter dart (using Dart System). Container venting systems are described in the following text. Designated drums slated for venting will be vented with the Mobile Drum Venting System (MDVS), Drum Venting System 2 (DVS2), or other venting methods. (WAC 246-247-040(5) and WAC 246-247-060(5))

6) ABATEMENT TECHNOLOGY: EXCAVATION AND RETRIEVAL OF CONTAINERS
The administrative control points set in this emission unit for contamination, as monitored by standard radiological field instrumentation, will be used to bound emissions based on current efficiencies of typical RadCon field contamination instruments.

The controls listed within this approval apply to TRU Waste Retrieval Project open air excavation and retrieval activities. (WAC 246-247-040(5) and WAC 246-247-060(5))

7) RELEASE RATES: STAGING OF VENTED CONTAINERS
A maximum of 15,200 vented containers of waste (including TRU waste containers, containers that are not designated as TRU waste, and those which could be retrieved with vents in place) will be retrieved per year. Once vented, the containers will be staged with the other retrieved containers for further handling, resulting in the

staging/storage of a maximum of 15,200 vented containers per year at the LLBG. Using a release fraction of 2.0 E-09 for fugitive emissions from vented containers (as used in Radioactive Air Emissions Notice of Construction Application for the Waste Receiving and Processing Facility, DOE/RL 2000 34), the predicted release rate from the staging of vented containers without any emissions control equipment is 6.1E-04 Ci/yr, with 3.8E-05 Ci/yr attributed to Am-241+Progeny (representing total alpha) and 5.7E-04 Ci/yr attributed to Cs-137+Progeny (representing total beta/gamma). No credit is taken for abatement; therefore, the predicted abated release rates are assumed to be the same as the predicted unabated release rates. (WAC 246-247-040(5) and WAC 246-247-060(5))

8) RELEASE RATES: EXCAVATION AND RETRIEVAL OF CONTAINERS
To determine the corresponding soil concentration in picocuries per gram of individual radionuclides, conversion factors, as developed in HNF 2418, Soil Contamination Standards for Protection of Personnel were used. The average soil density was assumed to be 98 pounds per cubic foot. The beta gamma contributing radionuclides were assumed to be represented by Cesium 137+Progeny and the alpha contributing radionuclides were assumed to be represented by Am 241+Progeny (predominant alpha contributing radionuclide in the soil is unknown; therefore, assumption of Am 241+Progeny will produce the most conservative dose consequence). The respective volumes of contaminated soil (i.e., 300 m^3, 3 m^3, and 0.3 m^3) at the three contamination levels are considered as released during manual excavation, using a release fraction of 1.0 E-3.
The estimated 300 m3 of soil in contact with the containers is assumed to be contaminated at detectable levels (100 dpm/100 cm2 alpha and 5,000 dpm/100 cm2 beta/gamma direct readings based on past operations and the pilot dig). A smaller percentage (1%) of the contaminated soil (i.e., 3 m3), is assumed to be contaminated at higher levels (2,000 dpm/100 cm2 alpha and 100,000 dpm/100 cm2 beta/gamma). Contamination at notification levels (28,000 dpm/100 cm2 alpha and 500,000 dpm/100 cm2 beta/gamma) is not expected. However, as a contingency planning estimate, 0.1% of the contaminated soil (i.e., 0.3 m3) is assumed to be contaminated at notification levels (WAC 246-247-040(5) and WAC 246-247-060(5))

9) RELEASE RATES: DART AND OTHER VENTING SYSTEMS
A maximum of 4,200 containers per year will have installation of Nucfil® or equivalent filters using the Dart or FRP Systems. A conservative time estimate for pressure release during each installation is 1 hour. Using a release fraction of 1.0 E-3 for particulates and a time factor of 4.8E-01 (60 minutes per container multiplied by 4,200 containers and divided by 526,000 minutes per year), the predicted release rate (unabated) from using the Dart or FRP System for installation of Nucfil or equivalent filters without any emissions control equipment is 9.6E-03 Ci/year. Following installation of the Nucfil or equivalent filter, the emissions are routed through the HEPA-type Nucfil or equivalent filter (certified 99.97% removal efficiency); therefore, the predicted release rate (abated) with emissions control equipment is 4.8E-06 Ci/year. The predicted release rates for the representative radionuclides Am-241+Progeny and Cs-137+Progeny are as follows:

Unabated PTE;	Am-241+Progeny	6.0E-04 Ci/yr	:	Cs-137+Progeny	9.0E-03 Ci/yr
Abated PTE;	Am-241+Progeny	3.0E-07 Ci/y	:	Cs-137+Progeny	4.5E-06 Ci/yr

(WAC 246-247-040(5) and WAC 246-247-060(5))

10) WDOH NOTIFICATION - Implementing PES or NGR containment
During high hazard work activities, removable surface contamination is maintained less than 2,000,000 dpm/100 cm^2 alpha and/or less than 4 rad/hr/100 cm^2 beta-gamma, limited to a 1 ft^2 area. For an allowed increase in contaminated area footprint of 4 ft^2 the limiting condition for removable contamination will be 500,000 dpm/100 cm^2 alpha and or 1rad/hr/100 cm^2 beta-gamma. Exceeding any of these contamination limits will require work to stop, and notification to Operation and RadCon management in accordance with the RWP. Notification to WDOH via email or the established procedures in the Environmental Notification program will be required. For work to continue above any of these limiting radiological conditions, the NGR containment system or the PES and commensurate controls will be implemented. The NGR containment or PES exhaust system will be utilized to minimize the potential for contamination spreads outside of posted radiological areas. (WAC 246-247-040(5) and WAC 246-247-060(5))

11) WDOH NOTIFICATION - Transition to high hazard work package
During medium hazard work activities, removable contamination will be maintained less than 20,000 dpm/100 cm^2 alpha and/or less than 1,000,000 dpm/100cm^2 beta-gamma and the removable contamination area limited to 4 ft^2. Exceeding these limits will require work to stop, and notification to Operation and RadCon management in accordance with RWP. Notification to WDOH via email or the established procedures in the Environmental Notification program will be required. For work to continue above these limiting radiological conditions, the high-hazard work package and associated controls shall be implemented. (WAC 246-247-040(5) and WAC 246-247-060(5))

12) WDOH NOTIFICATION - Drum vent failure
The department shall be notified via email or the established procedures in the Environmental Notification program

within 24 hours of all drum vents that fail to be installed properly and smears show >2,000 dpm/100 cm^2 alpha or >100,000 dpm/100 cm^2 beta/gamma removable contamination (an example of a "failure" is a pressure release that blows past the seat of the boot or a deflagration). (WAC 246-247-040(5) and WAC 246-247-060(5))

13) WDOH NOTIFICATION - Loss of containment
WDOH will be notified per WAC 246-247-080(5) via email or the established procedures in the Environmental Notification program if a loss of containment occurs (dropping, spilling, puncturing a container, or otherwise encountering loss of integrity where contamination escapes containment), which exceeds 100,000 dpm/100 cm^2 beta/gamma or 2,000 dpm/100 cm^2 alpha removable contamination. (WAC 246-247-040(5) and WAC 246-247-060(5))

14) WDOH NOTIFICATION - Transition to high hazard designation
During soil removal activities, if direct contamination readings for the general area is greater than 28,000 dpm/100 cm2 alpha or greater than 500,000 dpm/100 cm2 beta-gamma, work will stop, the environmental compliance officer, RadCon Management and WDOH will be notified via email or the established procedures in the Environmental Notification program, and the controls listed immediately below, implemented. Once notifications have been made and the following controls implemented, work may resume under high hazard designation:
a. Soil will be wetted prior to soil removal; and soil will be maintained damp during soil removal.
b. General area workplace air sampling will be performed.
(WAC 246-247-040(5) and WAC 246-247-060(5))

15) ALTERNATIVE APPROVAL - Unabated emissions
The potential unabated dose rate from manual excavation is 7.5 E-4 mrem/year. No credit is taken for abatement; therefore, the abated emissions are assumed as the unabated emissions. Although fixatives and similar controls will be employed for the higher contamination level and notification level contamination, no credit is being taken for abatement; therefore, the abated dose rate is the unabated dose rate. (WAC 246-247-040(5), WAC 246-247-060(5), WAC 246-247-075(4))

16) ALARACT APROVAL - Container handling
The process for handling of abnormal or severely degraded containers as described in PROCESS DESCRIPTION: EXCAVATION AND RETRIEVAL OF CONTAINERS, for bagging, overpacking, placing degraded outer container contents into replacement containers or in-situ grouting is approved as meeting ALARACT, and these processes and associated records and procedures will be subject to inspection upon request by the department. (WAC 246-247-040(5) and WAC 246-247-060(5))

17) ALTERNATIVE APPROVAL- WDOH NOTIFICATION-Administrative Control on Emissions
WDOH accepts the method proposed for calculating the estimated dose with the limitation that the annual release of the sum of the fractions of the curies released/annual release cannot exceed a value of 1 for alpha/beta plus gamma release. The limit on annual release shall not exceed 2.1 E-2 Ci/year using Am-241+D as a representative for alpha calculations and 1.15 E0 Ci/year using Cs-137+D as a representative for Gamma calculations, collected at a point not to exceed 10 meters from the work area of disturbed material. WDOH will be notified when the sum of the fractions reaches a value of 0.8 representing 0.08 mRem/year to the MEI, and additional controls will be initiated to ensure that the dose to the MEI does not exceed 0.1 mRem/year. Workplace air sampling will be conducted when performing work.

18) CONTAMINATION CONTROL - NGR/PES activities
Activities done under confinement structure of PES and NGR will be considered to be diffuse and fugitive activities unless under active ventilation conditions (WAC 246-247-040(5) and WAC 246-247-060(5))

19) CONTAMINATION CONTROL - Soil excavation near containers
Manual methods or HVU will be used to excavate soil in close proximity to containers. (WAC 246-247-040(5) and WAC 246-247-060(5))

20) CONTAMINATION CONTROL - Transporting waste packages
Radiological contamination and dose rate monitoring will be conducted prior to transporting any waste containers. All waste will be contained as appropriate for transport. Covers such as tarps or plastic will be placed over deteriorated containers at the end of each shift. These practices of monitoring, container integrity inspections, and placement of covers will ensure good contamination control practices are observed during package handling activities, soil removal (excluding overburden removal) and overpacking activities and when placing degraded outer container contents into replacement containers. (WAC 246-247-040(5) and WAC 246-247-060(5))

21) CONTAMINATION CONTROL - Bulk transfer of contaminated soil
The soil surface will be wetted prior to bulk transfers of contaminated soil. (WAC 246-247-040(5) and WAC 246-247-060(5))

22) CONTAMINATION CONTROL - Wind speed

Work performed outside (excavation and/or container retrieval) will stop if average wind speeds exceed 11 mph during the work and Contamination Area or Airborne Radioactivity Area conditions exist. (WAC 246-247-040(5) and WAC 246-247-060(5))

23) CONTAMINATION CONTROL - Limits to trigger further airborne controls
Radiological field survey monitoring will use set points for removable surface contamination levels of >1000 dpm/100 cm^2 beta/gamma and >20 dpm/100 cm^2 alpha to trigger the need to further evaluate airborne controls or evaluate further preparation of materials for release. (WAC 246-247-040(5) and WAC 246-247-060(5))

24) CONTAMINATION CONTROL - Limits to initiate NGR or PES
Adherence to contamination limits in the immediate work location for medium and high-hazard work will help ensure that the work area airborne radioactivity limits (i.e., 1.0E-09 µCi/ml for alpha emitters and 2E-06 µCi/ml for beta-gamma emitters) are not exceeded. (WAC 246-247-040(5) and WAC 246-247-060(5))

25) CONTAMINATION CONTROL - Function check misters and sprayers
Atomized misters and fixative sprayers will be function checked at the work site prior to commencing work activities. (WAC 246-247-040(5) and WAC 246-247-060(5))

26) CONTAMINATION CONTROL- End of shift or high winds
Spoil piles containing radiologically contaminated soil >20 dpm/100cm^2 alpha or > 1000dpm/100cm^2 beta/gamma will be segregated to the extent practicable from the nonradiologically contaminated soil. Containerizing spoils for disposal may be performed. Dust controls such as water, fixatives, or covers will be applied at the end of each shift or when sustained or predicted wind speeds are >20mph. The fixatives or other dust controls will not be required when the contaminated items are frozen, or it is snowing, or other freezing precipitation is falling and predicted wind speeds are <20mph (WAC 246-247-040(5) and WAC 246-247-060(5))

27) CONTAMINATION CONTROL - Soil surveys during TRU retrieval
During excavation activities for retrieval, excluding activities associated with removal of soil overburden, radioactive contamination monitoring for diffuse and fugitive emissions will consist of soil surveys at least hourly for both alpha and beta/gamma contamination during TRU Waste Retrieval operations. (WAC 246-247-040(5) and WAC 246-247-060(5))

28) CONTAMINATION CONTROL - Removable contamination survey
Both Alpha and beta-gamma contamination field surveys shall be performed for all removable contamination surveys, prior to and during soil removal (excluding overburden removal) and overpacking activities and when placing degraded outer container contents into replacement containers. Alpha surveys shall be performed for direct readings of container surfaces. Beta/gamma direct readings may be influenced by container contents, so are not as useful and are not required. (WAC 246-247-040(5) and WAC 246-247-060(5))

29) CONTAMINATION CONTROL - Fixatives
Fixatives or other controls will be employed if removable contamination levels exceed 100,000 dpm/100 cm^2 beta/gamma or exceed 2,000 dpm/100 cm^2 alpha. (WAC 246-247-040(5) and WAC 246-247-060(5))

30) CONTAMINATION CONTROL- Dust suppressants
Dust control or suppressants such as water, fixatives, atomized misting, covers, windscreens, or weather enclosures will be used as necessary to minimize airborne contamination as determined by the Radiological Control organization. (WAC 246-247-040(5) and WAC 246-247-060(5))

31) CONTAMINATION MONITORING - Routine
Boundary surveys would be performed in addition to radiological control air monitoring and field surveys performed during the work and end-of-shift activities. Routine on-going contamination surveys of all contaminated areas would occur weekly. (WAC 246-247-040(5), WAC 246-247-060(5), WAC 246-247-075(8))

32) CONTAMINATION DOCUMENTATION - Exposed packages
During repackaging activities (i.e., when transferring the contents of a degraded container into a new container or containers) an operations log will be kept noting conditions of the transferred contents/packages.. RadCon will generate and retain radiological records documenting air sample results and removable contamination conditions during retrieval of each container. (WAC 246-247-040(5) and WAC 246-247-060(5))

33) CONTAMINATION SAMPLING - ARA
Workplace air sampling at the work site perimeter (on all four sides of the work location) and downwind of the container work location will be conducted when performing work in an Airborne Radiological Area, providing early indication of potential elevation in work site perimeter airborne radioactivity. (WAC 246-247-040(5), WAC 246-247-060(5), WAC 246-247-075(8))

Project Title	Approval #	Date Approved	NOC_ID
241-SY Tank Farm Ventilation System Upgrades Installation and pre operational permit for "Radioactive Air Emissions NOC for 241-SY, 241-AP, and 241 AY/AZ Tank Farm Ventilation System Upgrade"	AIR 11-914	9/26/2011	805

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 2.14E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 2.14E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The upgraded ventilation systems will support future tank farm operation activities and waste feed delivery to Hanford's Waste Treatment and Immobilization Plant (WTP).

The ventilation system exhausters are being upgraded with increased flow rates to accommodate the increased heat from the mixer pumps, which will be added to mix the waste in the waste tanks prior to transfers and feed delivery to the WTP. The upgraded ventilation systems include replacing the existing exhauster trains with two new identical parallel exhauster trains. The ventilation systems will be installed on new concrete pads.

Existing 241-SY tank farm exhausters shall be de-energized and isolated. HEPA filters shall be removed from the filter housings. Removal of the exhausters and exhaust filter housings will be performed under separate WDOH approval. Monitoring of the obsolete exhausters shall be in accordance with As Low As Reasonably Achievable (ALARA) principles.

The emissions to the ambient air resulting from the proposed actions covered by this NOC application, in conjunction with other operations on the Hanford Site, shall not exceed the National Emission Standard of 10 millirem (mrem) per year (40 CFR 61, Subpart H).

The following proposed actions for the 241-SY pre-operational phase ventilation upgrades will include:
•Install ventilation system exhauster pads for each system.
•Installation of upgraded exhausters with "A" and "B" exhaust trains, monitoring and sampling equipment, and exhaust stack.
•De-energizing and isolation of old exhausters and filter trains (removal will be performed under separate WDOH approval).
•Removal of HEPA filters from filter housing.
•Construction testing of system to the point of transfer for system operation under the operating permit.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Am - 241	1.43E-01	Sr - 90	8.83E+00

4) ABATEMENT TECHNOLOGY- Guzzler usage
If the regulated guzzler is needed or chosen for use during soil excavation, the operation of the Guzzler shall meet all license conditions and limitations of the latest WDOH approved Site-Wide Guzzler application (See DOE Letter 99-SID-021 Dated February 1, 1999). Or "Operation of the Guzzler in Tank Farm Facilities (NOC ID 714, EU 476) As approved on AIR 10-506, May 26, 2010.The Site-Wide and Tank Farm Guzzler approvals have their own APQ limits and therefore, the Guzzler APQ limits are separate from the APQ limits specified in this permit. (WAC 246-247-040(5)) and (WAC 246-247-060(5)).

5) EFFLUENT MONITORING- confirmatory measurements
Periodic confirmatory measurements of fugitive emissions during the construction phase shall be in accordance with Hanford's Near-facility Environmental Monitoring Program. (WAC 246-247-040(5)) and (WAC 246-247-060(5)).

6) EFFLUENT MONITORING - ALARACT monitoring
Monitoring during installation of the ventilation system equipment and deactivation/isolation of old ventilation system equipment shall be in accordance with the following ALARACT Demonstrations and the WRPS Radiological Control Manual:

ALARACT 4 -Tank Farm ALARACT Demonstration For Packaging And Transportation Of Waste
ALARACT 15 - Tank Farm ALARACT Demonstration For Size Reduction of Waste Equipment For Disposal
ALARACT 16 - Tank Farm ALARACT Demonstration of Work on Potentially Contaminated System Components
HNF 5183, Tank Farms Radiological Control Manual.
(WAC 246-247-040(5)) and (WAC 246-247-060(5)).

7) TESTING NOTIFICATION
The facility shall notify the department at least seven calendar days prior to any planned preoperational tests of new or modified emission units that involve emissions control, monitoring, or containment systems of the emission unit(s). The department reserves the right to witness or require preoperational tests involving the emissions control, monitoring, or containment systems of the emissions unit(s). (WAC 246-247-060(4)).

8) DOCUMENT AVAILABITY
The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).

9) ABATEMENT TECHNOLOGY STANDARDS
The required abatement technology standards supporting exhauster testing are: ASME AG-1 (2009) Code on Nuclear Air and Gas Treatment, ASME N509 (2002) Nuclear Power Plant Air Cleaning Units and Components, and ASME N510 (2007), Testing of Nuclear Air Treatment Systems. Methods and Standards called out for sampling system design are as follows: ANSI N13.1-1969, Guide to Sampling Airborne Radioactive Materials in Nuclear Facilities, ANSI/HPS N13.1-1999, Sampling and Monitoring Releases of Airborne Radioactive Substances from Stacks and Ducts of Nuclear Facilities. (WAC 246-247-075 (6)).

10) EXHAUSTER STARTUP REQUIREMENT- Compliance matrix certification
Prior to operational startup of the SY tank farm exhauster, the effluent monitoring and sampling system shall meet the requirements of ANSI N13.1-1999. A written technical basis document required by Section 4 of ANSI N13.1-1999 shall be provided to WDOH for review. (WAC 246-247-075(2) and WAC 246-247-060(5)).

11) SYSTEM TIE-IN
The existing 241-SY tank farm exhauster will continue routine operation until the new ventilation is turned over for routine operation. WDOH will be notified of the planned tie-in to the new ventilation system. During the tie-in of the new ventilation system, passive ventilation will be used. During this passive ventilation period, not to exceed 30 days, there shall be no tank farm transfers, mixing operations, or other tank farm in-tank or in-piping activities that might elevate tank vapor space radionuclide concentrations for the area affected. Until approval of 241-SY tank farm operational permit, the new ventilation system shall not be relied upon for active ventilation of the affected tank farm The existing tank farm exhauster will maintain the ability to be valved back into routine operation until the new exhauster is verified operational post tie-in.(WAC 246-247-040(5)) and (WAC 246-247-060(5)).

12) STARTUP REQUIREMENTS
Prior to operation of the ventilation system a leak test of the newly installed ductwork from interface point of tie-in to the entrance to the stack shall be performed meeting the requirements called out in ASME AG-1 design code of record. (WAC 246-247-040(5) and WAC 246-247-060(5)).

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.42E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) The mission of the WRAP includes examining, assaying, characterizing, treating, verifying, and repackaging solid radioactive waste material and mixed radioactive waste to enable treatment, storage, or disposal. The WRAP manages many categories of radioactive materials such as low-level waste (LLW), transuranic (TRU) waste, TRU mixed waste, and low-level mixed waste (LLMW) in contact-handled (CH) containers where the external surface dose rate does not exceed 200 mrem/hr. CH containers are defined as packages having surface dose rates of less than 200 mrem/hr. Remote–handled (RH) containers (i.e., containers where the external surface dose rate is equal to or greater than 200 mrem/hr) also are processed and stored at WRAP in accordance with the approved safety analysis.
Building 2336-W at the WRAP consists of the following areas
- Shipping and receiving area
- Nondestructive examination/nondestructive assay (NDE/NDA) area
- Process area
- Ancillary support areas, including the heating, ventilation, and air conditioning (HVAC), electrical room, mechanical room, and administration areas

See the following emission units for a detailed description of additional controls/conditions and limits under this approval.
EU 193 296-W-4; Waste Receiving and Processing Facility
EU 486 200 Area Diffuse/Fugitive; Waste Receiving and Processing Facility
Eu 1183 HSGS Analysis Facility

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 1.02E+02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

DE - 0	2.73E+05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

DE-Ci is a method of normalizing the exposure risk of the Various isotopes, where the DE-Ci are represented as PU-239.

4) PROCESS DESCRIPTION - General Overview of WRAP Operations
This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Numerous activities within the WRAP complex, which includes now includes the 2404-WA, 2404-WB, and 2404 WC buildings, have been and will be conducted as routine activities. TRU and mixed wastes are received and processed at WRAP. The 2404-WA and 2404-WB buildings are used for waste container storage activities. The 2404-WC buildings is used for storage as well as for conducting some head space gas sampling (HSGS) utilizing a darting process.
WRAP also has support buildings to perform NDE and NDA of larger waste containers. These units include:
• MO-610 - MOBILE BOX ASSAY UNIT(SuperHENC)
MO-610 is a mobile box assay unit used to determine the AEA-regulated material content of a waste container. The mobile trailer is approximately 3.0 m (10 ft) by 12.2 m (40 ft) and is used to assay containers smaller than 2 m3 in volume.
2406-W Facility - HIGH ENERGY REAL-TIME RADIOGRAPHY (HERTR)
The HERTR unit is a mobile unit used to perform NDE of containers smaller than 2 m3 (71 ft3). The HERTR unit consists of two components: (1) a shielded vault where containers are examined, and (2) an operator control area. The vault is a shielded enclosure of modular concrete construction. The operator control area is a mobile trailer that is located in close proximity to the unit. The NDE is used to examine dense waste items to indicate the physical appearance of the waste, identify if liquids are present, and/or other identified suspect nonconformance waste forms are present to support waste characterization and processing, confirmation, treatment, and/or certification.
THE FOLLOWING SECTIONS BRIEFLY DISCUSS THE GENERAL OPERATIONAL ACTIVITIES CONDUCTED AT WRAP:
PACKAGING AND REPACKAGING WASTE
Packaging and repackaging activities are performed for waste generated at WRAP as well as for onsite and offsite generators. The repackaging of waste supports waste acceptance criteria for other TSD facilities. For example:

prohibited items from waste packages (i.e., waste items that do not meet acceptance criteria) are removed and either staged for later handling or repackaging using remote or manual methods, and must have a void space of less than 10%. To meet the less than 10% requirement, void filler can be added. Packaging and repackaging activities can include the following:

• Adding absorbent
• Aerosol can/drum puncturing
• Compositing/aggregating solids or liquids
• Over packing
• Pressure relief/release (e.g., aerosol cans, gas cylinders, drums, or other similar containers)
• Removing prohibited items
• Segregation
• Size reduction [e.g., cutting (jaws, saws)], bending, folding, crushing (e.g., drum crusher), shredding, compacting, or similar methods that do not have a higher extent of disruption]
• Sorting
• Void filling

Some packaging of waste (e.g., personal protective equipment, maintenance waste, types of innocuous waste), as a result of surveillances/inspections and maintenance that does have a potential to create minimal airborne contamination, can occur within the 2336-W Building when the 296-W-4 exhaust stack emission system is shutdown.

VERIFICATION ACTIVITIES

Verification support activities are provided for waste and other materials that are generated on or off the Hanford Site. Verification activities can consist of the following:

• Chemical field screening
• Chemical sampling
• NDE
• Physical observation

SAMPLING ACTIVITIES

Sampling of waste generated by operations or by other onsite or offsite generators is performed. The purpose of sampling is to confirm process knowledge, characterize waste, support verification, and determine applicable land disposal requirements. Sampling can consist of the following:

• Container sampling (liquid, sludge, salt cake, composites).
• Disposition of sample returns (e.g., placement back into the parent container or another approved container)
• Field screening [e.g., pH paper, oxidizer, volatile organic analyses (VOAs), or similar screening parameters]
• Headspace gas analysis [typically in support of the WIPP Project]
• Obtaining a sample for analysis (e.g., grab, composite, , or other similar sampling techniques)
• Shipping/transferring the samples to an approved laboratory for analysis.

DECONTAMINATION ACTIVITIES

Decontamination activities have been performed since 1997. Materials, equipment, and waste can be decontaminated (e.g., free release, reduce the radiological levels, or other similar criteria) using a variety of methods. Decontamination at WRAP can consist of the following:

• Abrasive tools
• Brushing
• Cutting (e.g., removal by sawing, or other similar methods)
• Electrical repairs
• Immersion
• Rust/paint removal
• Scraping
• Washing (e.g., chemicals/detergents)

In addition, WRAP also performs decontamination of WRAP structures (e.g., building walls, glove boxes, or other similar surfaces) by any of the above methods.

MAINTENANCE ACTIVITIES

Because of the age of WRAP, current mission, future mission, support of the cleanup of the Hanford Site, as well as waste and other materials from offsite generators, a variety of preventative and/or repair maintenance activities are performed at WRAP. Some maintenance activities involve the shutdown of the 296-W-4 exhaust stack. Maintenance activities can consist of the following:

• Calibrations
• Crane maintenance (bridge crane, jib crane, A frame hoist)
• Electronic systems functional checks and repairs [e.g., continuous air monitors (CAMs), personnel contamination

monitors (PCMs), or other similar equipment]
• Painting
• Rollup doors
• Scale systems
• Stack systems (e.g., fan lubes or other similar maintenance activities)
• Transformers
Certain maintenance activities (e.g., wire rope inspections, lubrication, functional tests, calibrations, or similar innocuous activities) that do have a potential to generate minimal airborne contamination can occur within the 2336-W Building when the 296-W-4 exhaust stack emission system is shutdown.
WASTE TREATMENT ACTIVITIES
WRAP is a treatment facility permitted by the Washington State Department of Ecology (Ecology). Treatment activities can consist of the following:
• Amalgamation
• Deactivation
• Solidification or absorption of free liquids
• Microencapsulation
• Macroencapsulation
• Neutralization of corrosives
• Volume Reduction of waste (e.g., compaction)
STORAGE ACTIVITIES
WRAP is permitted for waste storage by Ecology. WRAP also stores other materials (e.g., chemicals, equipment, or similar materials) to support operations. Storage can consist of the following:
• Container storage (e.g., boxes, drums, ten-drum over packs (TDOP), transuranic package transporter containers, standard waste boxes, or similar containers)
• Equipment storage
•NucFil replacement
NucFil replacement will be done by reinstalling a filter. This activity will consist of sealing an unvented glove bag over the damaged filter, replacing the filter and removing the glove bag. Negligible emissions are assumed for this activity such that they are encompassed within the overall estimate of emissions for storage activities.
EQUIPMENT, MATERIALS, AND WASTE MOVEMENT ACTIVITIES
The movement of materials, equipment, waste, chemicals, or similar items involves the receipt and/or packaging/repackaging, transferring/shipping, and the movement and/or relocation within the WRAP TSD unit boundary. The movement of these items is necessary to support operations, maintenance, or similar activities. Movement activities (e.g., using a forklift, crane, truck, dolly, personnel, or similar equipment) can consist of, but are not limited to, the following:
• Placing and storing chemical products in flammable cabinets, over packing or other approved storage locations
• Receiving waste (e.g., liquid, solid, semi solid) for storage and/or treatment
• Waste container transfers (among outdoor storage pads, within buildings, glove boxes, or other approved locations)
HOUSEKEEPING ACTIVITIES
Housekeeping activities involve maintaining WRAP in a clean and orderly condition. Housekeeping activities include the following:
• Dusting
• Mopping (e.g., squeegees or other similar techniques)
• Picking up debris
• Removal of trash.
• Sweeping (e.g., brooms)
• Vacuuming
• Wiping (e.g., sponges, towels, or other similar methods)
SURVEILLANCE ACTIVITIES
Surveillance activities involve walking down and inspecting various areas, systems, and components. Surveillances typically consist of daily, weekly, and monthly inspections of waste containers, buildings, or similar locations. Surveillances are subject to change (adding, deleting and/or modifying) as operations, maintenance, engineering, and radiological control dictates. The following are examples of surveillances currently performed at WRAP:
• Cold weather surveillances (typically done between October 1 and March 31)
• Container storage areas (buildings, pads, conex boxes, or other similar locations)
• General condition of building structures
• Inspection/testing of equipment (e.g., 296-W-4 exhaust system sampling and components, differential pressure

gauges, or similar equipment)
• Inspection/testing of HEPA-filtered vacuums
• Radiological surveys
• Safety equipment (e.g., decontamination showers, eye wash stations, first aid kits, fire extinguishers, fire suppression systems, communication equipment, spill kits, emergency lighting, Scott Air Pak or other similar units, personnel contamination monitors, masks)
• Treatment and storage locations and ancillary equipment
Surveillances, inspections, and maintenance activities that have the potential to create minimal airborne contamination can occur within the 2336-W Building when the 296-W-4 exhaust stack emission system is shutdown.

5) PROCESS DESCRIPTION - Nondestructive Examination/Nondestructive Assay Systems
This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
The NDE/NDA area is used to examine and to certify LLW, MLLW, TRU, and TRU mixed waste container contents without opening the containers.
The primary function of NDE is to examine the physical contents of containers entering and leaving the WRAP to determine whether there are any noncompliant items or unacceptable conditions in the containers. This examination of the containers is accomplished by the use of the real-time radiography (RTR) systems. The RTR systems consists of an x-ray imaging systems used to identify noncompliant items, such as free or containerized liquids, compressed gas containers including aerosol cans, and other suspected dangerous waste/materials. Data from the x-ray examinations are entered into the data management system for each container.
The primary function of NDA is to determine the activity levels of radionuclides in the radioactive material entering and leaving the WRAP. This information is used to categorize the radioactive material, provide inventory control information, determine appropriate handling of individual containers, and to determine if the material meets applicable transportation and disposal criteria. The NDA equipment includes passive-active neutron assay systems and/or gamma energy analysis systems. Data from the analysis of each container are entered into the data management system.

6) PROCESS DESCRIPTION - Storage Activities
This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
WRAP is permitted for waste storage by Ecology. WRAP also stores other materials (e.g., chemicals, equipment, or similar materials) to support operations. Storage can consist of the following:
• Container storage (e.g., boxes, drums, ten-drum overpacks (TDOP), transuranic package transporter containers, standard waste boxes, or similar containers)
• Equipment storage
• NucFil replacement
NucFil replacement will be done by reinstalling a filter. This activity will consist of sealing an unvented glovebag over the damaged filter, replacing the filter and removing the glovebag. Negligible emissions are assumed for this activity such that they are encompassed within the overall estimate of emissions for storage activities

7) PROCESS DESCRIPTION - Housekeeping Activities
This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Housekeeping activities involve maintaining WRAP in a clean and orderly condition. Housekeeping activities include the following:
• Dusting
• Mopping (e.g., squeegees or other similar techniques)
• Picking up debris
• Removal of trash.
• Sweeping (e.g., brooms)
• Vacuuming
• Wiping (e.g., sponges, towels, or other similar methods)

8) PROCESS DESCRIPTION - Surveillance Activities
This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may

be conducted.
Surveillance activities involve walking down and inspecting various areas, systems, and components. Surveillances typically consist of daily, weekly, and monthly inspections of waste containers, buildings, or similar locations. Surveillances are subject to change (adding, deleting and/or modifying) as operations, maintenance, engineering, and radiological control dictates. The following are examples of surveillances currently performed at WRAP:
• Cold weather surveillances (typically done between October 1 and March 31)
• Container storage areas (buildings, pads, conex boxes, or other similar locations)
• General condition of building structures
• Inspection/testing of equipment (e.g., 296-W-4 exhaust system sampling and components, differential pressure gauges, or similar equipment)
• Inspection/testing of HEPA-filtered vacuums
• Radiological surveys
• Safety equipment (e.g., decontamination showers, eye wash stations, first aid kits, fire extinguishers, fire suppression systems, communication equipment, spill kits, emergency lighting, Scott Air Pak or other similar units, personnel contamination monitors, masks)
• Treatment and storage locations and ancillary equipment
Surveillances, inspections, and maintenance activities that have the potential to create minimal airborne contamination can occur within the 2336-W Building when the 296-W-4 exhaust stack emission system is shutdown.

9) PROCESS DESCRIPTION - Shipping and Receiving
This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
Containers are delivered to and transferred from the shipping and receiving area by truck or forklift. In the shipping and receiving area, incoming boxes and drums are unloaded, visually inspected, labeled, and radiologically surveyed. The resulting information pertaining to each container is entered into the data management system. Following visual inspection, containers are transferred to the lag storage area. From the lag storage area, incoming drums are transferred to a weigh station and on to the NDE/NDA area for further characterization. If there are any noncompliant items or unacceptable conditions discovered in the NDE process, the containers are transferred to the process area for repackaging.
Once characterized, verified, and/or certified, the certified TRU waste is loaded into transuranic package transporter (TRUPACT-2 or equivalent) shipping casks for shipment to the Waste Isolation Pilot Plant (WIPP) in New Mexico or other approved facility.

10) PROCESS DESCRIPTION - Equipment, Materials and Waste Movement Activities.
This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.
The movement of materials, equipment, waste, chemicals, or similar items involves the receipt and/or packaging/repackaging, transferring/shipping, and the movement and/or relocation within the WRAP TSD unit boundary. The movement of these items is necessary to support operations, maintenance, or similar activities. Movement activities (e.g., using a forklift, crane, truck, dolly, personnel, or similar equipment) can consist of, but are not limited to, the following:
- Placing and storing chemical products in flammable cabinets, overpacking or other approved storage locations
- Receiving waste (e.g., liquid, solid, semi solid) for storage and/or treatment
- Waste container transfers (among outdoor storage pads, within buildings, gloveboxes, or other approved locations

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 4.59E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The operation of the Liquid Effluent Retention Facility/200 Area Effluent Treatment Facility (LERF/ETF), which includes the load-in station and load-in station filter skid.

Incoming wastewater can be added directly to the ETF process or received at the LERF or the load-in station. The LERF is allowed to receive wastewaters via underground pipelines from generator facilities, via pipeline from the load-in station, or directly through a series of access ports located at each basin. The load-in station accommodates wastewater receipt via container (e.g., drums, carboys, tankers, etc.).

The ETF wastewater treatment process shall be comprised of a main treatment train and a secondary treatment train. The main treatment train shall provide for the removal or destruction of dangerous and radioactive contaminants from incoming wastewater. After treatment, the effluent shall be transferred to the verification tanks where it is sampled then discharged. Treated effluent is comparable to deionized water and contains tritium, which cannot be economically removed. Contaminants removed in the main treatment train are concentrated in the secondary treatment train. The contaminants shall be heated and dried to a powder form or removed as sludge and dried by the addition of absorbents. These residues shall be containerized and disposed onsite as radioactive waste.

Additional approval of the process for this activity is contained in the following Conditions/Limitations.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 8.48E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	4.45E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Alpha release rate is assumed to be Pu-239/240. The release rate is based on the maximum PTE for the load-in station. (diffuse/fugitive) is based on ETF operating capacity (54.3 million gallons/yr). In addition to the isotopes specifically listed as approved under this NOC, other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta-gamma constituents.

Am - 241		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Beta - 0	2.95E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Beta release rate is assumed to be Sr-90/Cs-137. The release rate is based on the maximum PTE for the load-in station. (diffuse/fugitive) is based on ETF operating capacity (54.3 million gallons/yr). In addition to the isotopes specifically listed as approved under this NOC, other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta-gamma constituents.

C - 14		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cm - 244		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Co - 60		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 134		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 154		Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 155	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
H - 3	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 129	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
K - 40	Liquid/Particulate Solid	WAC 246-247-030(21)(b)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Mn - 54	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Na - 22	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Nb - 94	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Np - 237	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Pu - 238	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Pu - 241	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ra - 226	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ru - 106	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sb - 125	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Se - 79	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Tc - 99	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 233	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 234	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 235	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 236	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 238	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

Zn - 65	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Zr - 95	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	C - 14	Ce - 144	Cm - 244	Co - 60
Cs - 134	Cs - 137	Eu - 154	Eu - 155	H - 3
I - 129	K - 40	Mn - 54	Na - 22	Nb - 94
Np - 237	Pu - 238	Pu - 239/240	Pu - 241	Ra - 226
Ru - 106	Sb - 125	Se - 79	Sr - 90	Tc - 99
U - 233	U - 234	U - 235	U - 236	U - 238
Zn - 65	Zr - 95			

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) The 200 Area Diffuse/Fugitive Emission Unit at LERF/ETF is limited to the following:

-- LERF wastewater receipt via pipeline and LERF access ports.
-- Minor leaks during transfers when using vented pipelines.
-- LERF operations and maintenance.
-- LERF leachate collection system sampling and sump pumping.
-- Load-in station wastewater receipts via container.
-- Load-in station filter skid operation and maintenance.
-- Load-in station tank operation, maintenance, and repair.
-- Wastewater tanker inspection, pressure testing, and repair.
-- Minor leaks and spills to secondary containment systems.
- Storage and transfer of treated effluent containing tritium.
-- Effluent sampling.
- Purgewater open-top settling tank operation.

5) The emissions for this activity from the all LERF basins and diffuse/fugitive emissions are limited to 4.59E-02 mrem/year unabated and abated.

6) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The load-in station consists of two load-in tanks, a sump, transfer pumps, a skid-mounted filtration system, level instrumentation for tanker trucks, underground transfer lines that allow transfers to either the LERF or the ETF, and leak detection capabilities for the containment basin and transfer lines. Containerized wastewaters received at the load-in station are typically routed through the filter skid. When solids buildup causes differential pressure across a filter housing to become excessive, the filter elements are replaced. The filtration system is shut down, the system is vented to atmosphere by opening a quick release vent cap on top of each filter housing, and solution in the housing is drained to the load-in station sump. The housing is then opened and the spent filter elements are placed in a disposal container. After filter change-out, the sump is emptied to the load-in station, the LERF, or the ETF. The capability to filter sump discharges is also provided at the load-in station. Small shipments that cannot be

pumped directly into the filter skid are first drained into the sump, then pumped through the filter skid using the sump pump.

Wastewater tanker inspection, pressure testing, and repair are also conducted at the load-in station as needed to meet annual U.S. Department of Transportation certification requirements. Tankers, which may contain a wastewater heel, are pressurized with compressed air, leak checked at 80 percent of service pressure, and integrity tested at 150 percent of service pressure. After the test is complete, the compressed air is gradually vented from the tanker to the atmosphere. Minor repairs (e.g., seal replacement) are performed as needed to successfully complete the certification test.
Hydrostatic testing is inherently safer and is preferred over pneumatic testing because it minimizes the volume of pressurized vapor space. When hydrostatic testing is performed, the tanker is filled with verification water or other clean water before pressurizing the tanker. At the conclusion of the test, the used water is treated as a new wastewater.

Project Title	Approval #	Date Approved	NOC_ID
241-AP Tank Farm Ventilation System Upgrades Installation and pre operational permit for "Radioactive Air Emissions NOC for 241-SY, 241-AP, and 241 AY/AZ Tank Farm Ventilation System Upgrade"	AIR 11-918	9/26/2011	823

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 2.14E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 2.14E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The upgraded ventilation systems will support future tank farm operation activities and waste feed delivery to Hanford's Waste Treatment and Immobilization Plant (WTP).

The ventilation system exhausters are being upgraded with increased flow rates to accommodate the increased heat from the mixer pumps, which will be added to mix the waste in the waste tanks prior to transfers and feed delivery to the WTP. The upgraded ventilation systems include replacing the existing exhauster trains with two new identical parallel exhauster trains. The ventilation systems will be installed on new concrete pads.

Existing 241-AP tank farm exhausters shall be de-energized and isolated. HEPA filters shall be removed from the filter housings. Removal of the exhausters and exhaust filter housings will be performed under separate WDOH approval. Monitoring of the obsolete exhausters shall be in accordance with As Low As Reasonably Achievable (ALARA) principles.

The emissions to the ambient air resulting from the proposed actions covered by this NOC application, in conjunction with other operations on the Hanford Site, shall not exceed the National Emission Standard of 10 millirem (mrem) per year (40 CFR 61, Subpart H).

The following proposed actions for the 241-AP pre-operational phase ventilation upgrades will include:
•Install ventilation system exhauster pads for each system.
•Installation of upgraded exhausters with "A" and "B" exhaust trains, monitoring and sampling equipment, and exhaust stack.
•De-energizing and isolation of old exhausters and filter trains (removal will be performed under separate WDOH approval).
•Removal of HEPA filters from filter housing.
•Construction testing of system to the point of transfer for system operation under the operating permit.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Am - 241	1.43E-01	Sr - 90	8.83E+00

4) ABATEMENT TECHNOLOGY- Guzzler usage
If the regulated guzzler is needed or chosen for use during soil excavation, the operation of the Guzzler shall meet all license conditions and limitations of the latest WDOH approved Site-Wide Guzzler application (See DOE Letter 99-SID-021 Dated February 1, 1999). Or "Operation of the Guzzler in Tank Farm Facilities (NOC ID 714, EU 476) As approved on AIR 10-506, May 26, 2010.The Site-Wide and Tank Farm Guzzler approvals have their own APQ limits and therefore, the Guzzler APQ limits are separate from the APQ limits specified in this permit. (WAC 246-247-040(5)) and (WAC 246-247-060(5)).

5) EFFLUENT MONITORING- confirmatory measurements
Periodic confirmatory measurements of fugitive emissions during the construction phase shall be in accordance with Hanford's Near-facility Environmental Monitoring Program. (WAC 246-247-040(5)) and (WAC 246-247-060(5)).

6) EFFLUENT MONITORING - ALARACT monitoring
Monitoring during installation of the ventilation system equipment and deactivation/isolation of old ventilation system equipment shall be in accordance with the following ALARACT Demonstrations and the WRPS Radiological Control Manual:

ALARACT 4 -Tank Farm ALARACT Demonstration For Packaging And Transportation Of Waste
ALARACT 15 - Tank Farm ALARACT Demonstration For Size Reduction of Waste Equipment For Disposal
ALARACT 16 - Tank Farm ALARACT Demonstration of Work on Potentially Contaminated System Components
HNF 5183, Tank Farms Radiological Control Manual.
(WAC 246-247-040(5)) and (WAC 246-247-060(5)).

7) ABATEMENT TECHNOLOGY STANDARDS
The required abatement technology standards supporting exhauster testing are: ASME AG-1 (2009) Code on Nuclear Air and Gas Treatment, ASME N509 (2002) Nuclear Power Plant Air Cleaning Units and Components, and ASME N510 (2007), Testing of Nuclear Air Treatment Systems. Methods and Standards called out for sampling system design are as follows: ANSI N13.1-1969, Guide to Sampling Airborne Radioactive Materials in Nuclear Facilities, ANSI/HPS N13.1-1999, Sampling and Monitoring Releases of Airborne Radioactive Substances from Stacks and Ducts of Nuclear Facilities. (WAC 246-247-075 (6)).

8) TESTING NOTIFICATION
The facility shall notify the department at least seven calendar days prior to any planned preoperational tests of new or modified emission units that involve emissions control, monitoring, or containment systems of the emission unit(s). The department reserves the right to witness or require preoperational tests involving the emissions control, monitoring, or containment systems of the emissions unit(s). (WAC 246-247-060(4)).

9) EXHAUSTER STARTUP REQUIREMENT- Compliance matrix certification
Prior to operational startup of the AP tank farm exhauster, the effluent monitoring and sampling system shall meet the requirements of ANSI N13.1-1999. A written technical basis document required by Section 4 of ANSI N13.1-1999 shall be provided to WDOH for review. (WAC 246-247-075(2) and WAC 246-247-060(5)).

10) SYSTEM TIE-IN
The existing 241-AP tank farm exhauster will continue routine operation until the new ventilation is turned over for routine operation. WDOH will be notified of the planned tie-in to the new ventilation system. During the tie-in of the new ventilation system, passive ventilation will be used. During this passive ventilation period, not to exceed 30 days, there shall be no tank farm transfers, mixing operations, or other tank farm in-tank or in-piping activities that might elevate tank vapor space radionuclide concentrations for the area affected. Until approval of 241-AP tank farm operational permit, the new ventilation system shall not be relied upon for active ventilation of the affected tank farm The existing tank farm exhauster will maintain the ability to be valved back into routine operation until the new exhauster is verified operational post tie-in. (WAC 246-247-040(5)) and (WAC 246-247-060(5)).

11) DOCUMENT AVAILABITY
The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).

12) STARTUP REQUIREMENTS
Prior to operation of the ventilation system a leak test of the newly installed ductwork from interface point of tie-in to the entrance to the stack shall be performed meeting the requirements called out in ASME AG-1design code of record. (WAC 246-247-040(5) and WAC 246-247-060(5)).

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.31E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.61E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted.

The operation of the waste retrieval system(s) for the removal of radioactive wastes from all 149 Single Shell Tanks (SST) at the Hanford Site.

SALTCAKE DISSOLUTION WASTE RETRIEVAL SYSTEM

The saltcake dissolution waste retrieval system may be used to retrieve soluble saltcake waste. This method retrieves the soluble portion of the waste only, resulting in very few of the solids being pumped from the tank. The saltcake dissolution waste retrieval system deployed in the SSTs is for water, chemical agent, or catalyst liquid to be added to the tank using a variety of spray nozzles or "sprinklers". The approach is to sprinkle the waste surface with water, chemical agent, or catalyst liquid. The added water, chemical agent, or catalyst liquid must stay in contact with the saltcake for a long enough period of time for the brine to become saturated. Once the brine is saturated, it is pumped from the SST to a receiver tank, staging tank, storage DST or other staging/storage vessel associated with the supplemental treatment, packaging or disposal. Salt solution will be removed using the existing saltwell pump or other pump placed into the tank.

A tank not equipped with a saltwell pump, a transfer pump (progressive cavity, vertical turbine) can be installed and operated.

Remotely directable water distribution devices will be located in risers spaced as far apart as practical. A combination of spraying waster, chemical agent, or catalyst liquid to dissolve the saltcake can be used in conjunction with directing a flow of water or recirculating water at the waste to move it to the pump suction to allow the pumping of waste from the tank. Recirculated waste from the pump may be sent back to the tank as an alternative to using water to direct dissolution waste to the pump suction.

MODIFIED SLUCING WASTE RETRIEVAL SYSTEM

Modified sluicing can be used for some SST waste retrieval. Modified sluicing is the introduction of liquid at low to moderate pressures and volumes into the waste. The liquid dissolves and breaks apart solid materials and suspends them in the waste slurry. A transfer pump installed in the tank provides the motive force to transfer the liquid slurry to a receiver tank.

Modified sluicing introduces sluice liquid in a controlled fashion using multiple sluicing nozzles at varying pressures and flows, then pumps out the resultant waste slurry. This maintains minimal liquid inventories within the tank at all times. The liquids that could be used in modified sluicing include water, recirculated supernatant/water from the receiving Double Shell Tank, recirculated supernatant/water, chemical agent or catalyst liquid.

VACUUM WASTE RETRIEVAL SYSTEM

A vacuum waste retrieval system can be used for waste retrieval activities in the (SSTs). The vacuum waste retrieval system is introduced into the SSTs by means of an articulating mast system (AMS). The AMS has a horizontal reach and rotational capabilities of 360 degrees. The AMS has a retracted position and can be extended vertically. Air is mixed at the suction end of the AMS enabling the required vertical lift for the waste to a topside receiver tank, batch vessel or a staging SST, storage DST, or other staging/storage vessels associated with supplemental treatment, packaging or disposal.

The AMS will be deployed through and attached to standard riser flanges that are available on the SSTs. Cameras can also be installed in other risers for in-tank viewing and control of the AMS.

For the 200-series tanks in the 241-C, 241-U, 241-B and 241-T Tank Farms a vacuum retrieval process tank, staging tank, staging SST, storage DST or other staging/storage vessel will be deployed. The receiver tank will receive waste in batches from whichever tank is connected into the vacuum retrieval system. The vacuum pressure used to draw up the waste from the tank to the receiver tank is relieved back into the SST being retrieved.

MOBILE RETRIEVAL SYSTEM

A Mobile Retrieval System (MRS) can be used to retrieve waste from some SSTs. The MRS consists of two in-tank systems. The first is a robotic crawler inserted through one riser the second is an AMS inserted through a second riser. The AMS retrieves the sludge from the tank using a vacuum with assisting pneumatic conveyance. The AMS vacuum tube has a horizontal reach and can be extended to the bottom of the tank. The arm rotates 360 degrees. The vacuum will be directed through the AMS in the tank to the end effector, which is in contact with the waste. The pneumatic conveyance-assisted vacuum retrieval system will draw the waste up through the vacuum to the waste vessel in the vessel skid in batches. The AMS is then valved out while the waste vessel is emptied and pumped out through the over ground transfer lines to a DST, a staging SST or other treatment/disposal options. When the waste vessel is nearly empty, the transfer line will be valved out and the AMS will be valved back in and another batch of waste will be removed from the tank. This process will be repeated until waste near the center of the tank is removed. The robotic crawler will be remotely controlled to move and/or wash waste toward the center of the tank.

The robotic crawler is equipped with a plow blade at the front for pushing/pulling wastes, a screw pump to jet wastes through a small nozzle towards the center of the tank, the ability to direct hot or cold water through the same nozzle to wash wastes off of in-tank equipment, dissolve waste agglomerations in the tank, and wash waste toward the center of the tank for removal.
Any new retrieval methods or changes to processes will need to be provided to WDOH in a revised NOC prior to implementation.

MOBILE ARM RETRIEVAL SYSTEM

The Mobile Arm Retrieval System (MARS) is a waste retrieval system used to retrieve waste from single-shell tanks (SSTs) and move the waste to the double-shell tanks (DSTs). The MARS employs two design options similar to currently permitted systems: 1) a sluicing retrieval option which is intended for retrieval of non1eaker tanks and 2) a vacuum retrieval option is intended for retrieval of assumed 1eaker tanks. Both options use an arm and sluicing jets and/or a high pressure water scarifier to break up the waste. The sluicer uses waste supernatant recycled from the DST to form a liquid jet using a nozzle. The scarifier uses filtered, pressurized water that comes from a high pressure water skid.

The equipment portion of the MARS includes a vertical, carbon steel mast (square cross section) as the main structural member. Attached to the vertical mast is a carbon fiber robotic arm. The arm is attached to a traveler that raises and lowers the arm relative to the vertical mast. The arm rotates 360 degrees - 380 degrees on a turntable located in the pit box. The arm also pivots up and down from an elbow at the traveler (hydraulic system) and extends and retracts (hydraulic system). The end of the arm articulates. The arm thus provides for a large range of motion such that the sluicing devices (recycle sluicer, water scarifier) located at the end of the arm can aim at most portions of the tank and from varying (e.g., short) distances.

The containment box which encloses the MARS will be ventilated by two parallel installed radial filters. The purpose of these filters is to minimize contamination from migrating up from the tank into the containment box via the open space on the large riser during retrieval operations. Minimization of contamination inside the containment box is desired should entry into the box ever be required for repairs. Inflow through these filters during retrieval is estimated to reach up to 60 cubic feet per minute (cfm). A valve will be installed between the filters and the containment box so filters can be isolated from the box. However, because the location of the valve will be approximately 12 feet above ground and difficult to reach without properly installed and inspected scaffolding, the valve will be left open at all times until retrieval of the tank is complete. Once retrieval is complete the valve will be closed.

REMOTE WATER LANCE

The completion of tank retrieval may also be aided by a Remote Water Lance (RWL) that is a high pressure water device, or hydro laser. Alternatively, a High Pressure Mixer (HPM) may be used in the same capacity. The systems will consist of both ex-tank and in-tank components. The ex-tank components will be comprised of; high pressure systems, operating controls, cables, and hoses. The in-tank components will be comprised of; umbilical, in-tank vehicle, high pressure nozzle(s), or the high pressure mixer.

The high pressure water systems will provide the water at the desired pressure, not to exceed 37,000 psig. A conditioning system will be used to filter the raw water entering the skid to ensure that no abrasive materials are entrained in the water. The water volumetric flow rate will be on the order of 4 to 18 gpm for the HPM and from 6 to 15 gpm for the RWL. The operating controls will be located in a control trailer outside of the farm fence. The cables and hoses will connect hydraulically powered in-tank vehicle with the ex-tank controls and water skid via the umbilical. The HPM consists of an adjustable height pipe with two pairs of opposed, high pressure, low volume water orifices located on the bottom of the pipe. The mixer is capable of being rotated 360 degrees and has an adjustable height range of approximately 7 feet. The positioning of the mixer is performed remotely using a hydraulic system. Additionally, the mixer has a single orifice on the bottom of the unit that can be used as an operational or installation aid. The in-tank vehicle will house one to four high pressure water nozzles. The RWL will be operated with the nozzle submerged to avoid aerosols in the tank. A rupture disc will be used to prevent reaching pressures above 37,000 psig.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	5.99E+00	Am - 241	8.68E+03	Am - 243	3.39E-01
Ba - 137 m	4.62E+07	C - 14	6.25E+02	Cd - 113 m	4.95E+03
Cm - 242	1.97E+01	Cm - 243	1.80E+00	Cm - 244	1.90E+01
Co - 60	2.52E+03	Cs - 134	3.44E+04	Cs - 137	4.89E+07
Eu - 152	8.49E+02	Eu - 154	1.45E+04	Eu - 155	9.54E+03
H - 3	5.95E+03	I - 129	2.95E+01	Nb - 93 m	1.01E+03
Ni - 59	1.05E+02	Ni - 63	9.30E+03	Np - 237	9.50E+01
Pa - 231	1.25E+01	Pu - 238	1.65E+02	Pu - 239	3.17E+03
Pu - 240	5.36E+02	Pu - 241	4.80E+03	Pu - 242	3.34E-02
Ra - 226	1.27E-02	Ra - 228	1.15E+01	Ru - 106	1.22E-02
Sb - 125	1.73E+04	Se - 79	6.36E+01	Sm - 151	8.93E+05
Sn - 126	2.59E+02	Sr - 90	2.91E+06	Tc - 99	2.24E+04
Th - 229	4.20E-01	Th - 232	1.26E+00	U - 232	3.66E+00
U - 233	3.02E+01	U - 234	1.07E+01	U - 235	4.44E-01
U - 236	2.73E-01	U - 238	9.86E+00	Y - 90	2.91E+06
Zr - 93	1.25E+03				

4) ALTERNATIVE APPROVAL- Annual Filter replacement
Controls for retrieval activities in the 241-A, AX, B, BX, BY, C, S, SX, T, TX, TY, U single shell tank farms shall consist of at least a single breather filter. The breather filter shall be of an "Open Face" style housing, a "G-1" style housing, or a radial filter. Each "Open Face" or "G-1" style HEPA filter shall be tested in placed at least annually following the guidance of ASME AG-1 Section TA, and shall have a minimum efficiency of 99.95%. Radial filters are not tested in the field, rather they are tested at the manufacturer to 99.97% efficiency and are disposed of within a year of placement and replaced with a new a new radial filter.

5) WDOH NOTIFICATION- retrieval under passive ventilation contitions
Retrieval activities shall occur under passive ventilation only when an exhauster can no longer be operated on a single shell tank due to structural concerns. The justification for structural concerns with the single shell tank shall be documented and provided to WDOH upon request. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

6) WDOH NOTIFICATIONS - high reading on weekly smear surveys
Monitoring of breather filters during retrieval activities shall consist of weekly smear surveys on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent. Levels above 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha shall be reported to WDOH. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

7) CONTAMINATION CONTROL- Max operating pressure
During waste retrieval operations the maximum pressure for any waste retrieval method shall not exceed 37,000 psig. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

8) CONTAMINATION CONTROL- ALARACT use
The following ALARACTs shall be followed during retrieval activities, ALARACT 1 "Demonstration for riser preparation/opening", ALARACT 4 "Demonstration for packaging and transportation of waste", ALARACT 6 "Demonstration for Pit Access", ALARACT 11 "Demonstration for Waste Transfers", ALARACT 12 "Demonstration for Packaging and Transportation of Equipment and Vehicles", ALARACT 13 "Demonstration for installation, operation, and removal of tank equipment", ALARACT 14 "Tank Farm ALARACT Demonstration for Pit Work", ALARACT 15 "Demonstration for size reduction of waste equipment for disposal", ALARACT 16 "Demonstration for work on potentially contaminated ventilation system components", ALARACT 5 "Demonstration for Soil Excavation", ALARACT 7 "Demonstration for Tank Waste Grab Sampling", and ALARACT 10 "Demonstration for Water Lancing". (WAC 246-247-040(5)) and (WAC 246-247-060(5))

9) CONTAMINATION CONTROL- Monthly Radiological Survey
While the exhauster is operating, and/or tank waste retrieval is underway, all ductwork connections shall have a radiological survey performed monthly to ensure ductwork connections are not degrading. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

10) CONTAMINATION CONTROL exhauster alternate usages
The exhauster will be operated occasionally during periods of non-retrieval in support of tank waste retrieval preparation activities and to aid in evaporation of residual flush water or sluicing liquid that remains in the tank. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 7.50E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted. The approved activities are limited to:

A1) Packaging and Repackaging Waste - Packaging and repackaging activities are performed for waste generated at 2706-T as well as for onsite and offsite generators. The repackaging of waste supports waste acceptance criteria for other TSD facilities. For example, prohibited items from waste packages are removed and either staged for later handling or repackaging using remote or manual methods.

Packaging and repackaging activities are:

A1a) Sorting.
A1b) Segregation.
A1c) Removing prohibited items.
A1d) Compositing/aggregating solids or liquids.
A1e) Adding absorbent.
A1f) Size reduction [e.g., cutting (jaws, saws, torches)], bending, folding, crushing (e.g., drum crusher), shredding, compacting, or similar methods that do not have a higher extent of disruption].
A1g) Void filling.
A1h) Pressure relief/release (e.g., aerosol cans, gas cylinders, drums, or other similar containers).

A2) Verification Activities - Verification support activities are provided for waste and other materials that are generated on or off the Hanford Site.

Verification activities are:

A2a) Physical observation.
A2b) Nondestructive examination (NDE).
A2c) Nondestructive assay (NDA).
A2d) Chemical field screening.
A2e) Radiological surveys.
A2f) Radiological samples.
A2g) Headspace gas sampling.
A2h) Chemical sampling.

A3) Sampling Activities - Sampling of waste generated by operations or by other onsite or offsite generators is performed. The purpose of sampling is to confirm process knowledge, characterize waste, support verification, and determine land disposal requirements as applicable.

Sampling activities are:

A3a) Field screening [e.g., pH paper, oxidizer, volatile organic analyses (VOAs), polychlorinated biphenyls (PCBs), or similar screening parameters].
A3b) Obtaining a sample for analysis [e.g., grab, composite, composite liquid waste sampler (COLIWASA), or other similar sampling techniques].
A3c) Shipping/transferring the samples to an approved laboratory for analysis.
A3d) Disposition of sample returns (e.g., placement back into the parent container or another approved container/tank).
A3e) Headspace gas analysis [typically in support of the Waste Isolation Pilot Plant (WIPP) Project].

A4) Decontamination/Refurbishment Activities - Materials, equipment, and waste can be decontaminated

(e.g., free release, reduce the radiological levels, or other similar criteria) using a variety of methods. Equipment can also be repaired and refurbished within the 2706-T facility. Within 2706-T, decontamination of 2706-T structural components may be performed.

Decontamination and refurbishment activities at 2706-T are:

A4a) Water (fog, high or low-pressure spraying).
A4b) Steam.
A4c) Ice blasting.
A4d) Vacuum blasting.
A4e) Brushing.
A4f) Abrasive tools.
A4g) Scraping.
A4h) Washing (e.g., chemicals/detergents).
A4i) Immersion.
A4j) Electro-polishing.
A4k) Cutting (e.g., removal by sawing, torch cutting more highly radioactive components or other similar methods).
A4l) Rust/paint removal.
A4m) Sand blasting.
A4n) Vacuuming.

A5) Maintenance Activities - A variety of preventative and/or repair maintenance activities are performed at 2706-T. Some maintenance activities involve the temporary shut down of the 296-T-7 exhaust stack.

Maintenance activities are:

A5a) Painting.
A5b) Crane maintenance.
A5c) Electronic systems functional checks and repairs [CAMs, personnel contamination monitors (PCMs)].
A5d) Calibrations.
A5e) Mechanical overhaul and rebuild.
A5f) Bearing replacement.
A5g) Pump and motor alignment.
Maintenance may be performed on:
A5h) Rollup doors.
A5i) Heat pumps.
A5j) Exhaust fans.
A5k) Transformers.
A5l) Scale systems.
A5m) Wire rope.
A5n) Stack systems.
A5o) Forklifts.

A6) Waste Treatment Activities - 2706-T is a RCRA treatment and Storage facility permitted by the Washington State Department of Ecology (Ecology).

Treatment activities are:

A6a) Macroencapsulation.
A6b) Absorption.
A6c) Neutralization.
A6d) Immobilization.
A6e) Encapsulation.
A6f) Stabilization (solidification, cementation, grouting).
A6g) Compaction.
A6h) Amalgamation.
A6i) Segregation.

A6j) Shredding.
A6k) Venting and drilling.
A6l) Size Reduction.

A7) Recycling Activities - Materials are recycled whenever possible. Recycled materials are: ferrous and non-ferrous metal, light bulbs, aerosol cans, oils, and batteries.

A8) Storage Activities – 2706-T stores materials (chemicals, or equipment, or similar materials) to support operations. Radioactive wastes may be stored uncontainerized or in:
A8a) Containers (boxes, drums, tanker trucks/railcars, or large diameter containers).
A8b) Tanks.
A8c) Sumps and pipes.

A9) Equipment, Materials, and Waste Movement Activities - The movement of materials, equipment and waste is necessary to support operations and maintenance. Movement activities (using a forklift, crane, truck, dolly, personnel) are:
A9a) Receiving waste (liquid, solid, semi-solid) for storage and/or treatment.
A9b) Movement of waste (liquid, solid, semi-solid) and equipment.
A9c) Movement of liquids, sludges, or other waste from containers and/or tanks via transfer lines.
A9d) Waste container transfers.
A9e) Placing and storing chemical products in flammable cabinets or other approved storage locations.
A9f) Movement of contaminated material.

A10) Housekeeping Activities - Housekeeping activities involve maintaining 2706-T in a clean and orderly condition.

Housekeeping activities are:

A10a) Sweeping (brooms).
A10b) Mopping (squeegees or mops).
A10c) Vacuuming.
A10d) Dusting.
A10e) Wiping (sponges, towels).
A10f) Picking up debris.
A10g) Removal of trash.

A11) Surveillance Activities - Surveillance activities involve walking down and inspecting various areas, systems, and components. Surveillances typically consist of daily, weekly, and monthly inspections of waste containers, tanks, buildings, or similar locations. Surveillances are subject to change (adding, deleting and/or modifying) as operations, maintenance, engineering, and radiological control dictates. Surveillances, inspections, and maintenance activities that do not have the potential to create airborne contamination can occur within the 2706-T Building when the 296-T-7 exhaust stack emission system is shutdown.

The following surveillances are performed at 2706-T:

A11a) Container storage areas treatment and storage tanks and ancillary equipment.
A11b) General condition of building structures.
A11c) Cold weather surveillances (typically, between October 1 and March 31).
A11d) Inspection of equipment.
A11e) Inspection of HEPA filtered vacuums.
A11f) Radiological surveys.

2706-T: The 2706-T facility includes the 2706-T building and the 2706-TA Building. The 2706-T Building and the 2706-TA Building make up a single structure and are described briefly here. The 2706-T facility handles low-level waste, mixed low level waste, and transuranic (TRU) waste.

The 2706-T Building was built in 1959 as a low-level radiological decontamination building. The original building was 66 feet long and 50 ft wide. The 2706-TA Building was added in 1994/1995 over the concrete

pad on the west side of the 2706-T. One rollup-door and one man-door provide access between 2706-T and 2706-TA Building. Three heat pumps provide heating, ventilation, and air conditioning for the 2706-T Building operations area. Waste handling and decontamination operational areas of the 2706-T Building are open and unobstructed. The 2706-T building is a pre-engineered metal building. The foundation is concrete slab on grade throughout. The 2706-T Building includes two pits, one for decontamination and treatment of motor vehicles and other large equipment, and one for rail car decontamination and treatment. These pits can also be used to support collection of liquids from waste handling activities.

Current operations in 2706-T Building include waste sampling, packaging and repackaging, head-gas sampling, managing waste containers, decontamination/refurbishment, maintenance, recycling, storage, housekeeping, surveillance, and movement activities. One egress door leads directly to the exterior of 2706-T Building. Other doors lead directly to the non-ventilated lean-to on the north side, and an air lock provides access to the 2706-TA Building operations area. The railway and auto pits have metal grating and some wooden covers to prevent falls into the pits. An epoxy floor sealant had been applied to all operational area floors. To support these operations, greenhouses are used as necessary in 2706-T. Greenhouses are temporary or semi-permanent radioactive material confinement structures, and can be used for contamination control. If used, greenhouses shall exhaust to the areas ventilated by the 296-T-7 ventilation system.

The atmosphere clean-up train (ACT-1) system, sprinkler system riser room, and electrical room are located in the south lean-to (non-ventilated).

2706-TA: The 2706-TA Building is an addition to the 2706-T Building installed in the 1990s as an add-on over the concrete storage pad located west of the building. The 2706-TA Building is approximately 54 feet long, 45 ft wide, and 23 feet high. There are two rollup doors located at the west end of the building. The 2706-TA Building has steel primary and secondary structural elements and corrugated sheet metal exterior siding and roofing panels. Three heat pumps provide heating, ventilation, and air conditioning for the 2706-TA Building operations area. The floor is concrete slab on grade. An epoxy floor sealant had been applied to all operational area floors. Waste handling and decontamination operational areas of the 2706-TA Building are open and unobstructed.

Current operations in 2706-TA Building include waste sampling, packaging and repackaging, head-gas sampling, managing waste containers, decontamination/refurbishment, maintenance, recycling, storage, housekeeping, surveillance, and movement activities. To support waste activities, greenhouses are used if necessary. Greenhouses are temporary or semi-permanent radioactive material confinement structures, and can be used for contamination control. When used, greenhouses shall exhaust to the areas ventilated by the 296-T-7 ventilation system.

Attached to the south side of 2706-TA Building is a lean-to made up of two rooms. The larger room houses the new ACT-2 HEPA filter system, which serves the operational areas. The ACT-1 and ACT-2 systems exhaust through the 296-T-7 stack. The second room houses electronic controllers and electrical switchgear supporting operations.

Emissions from these activities are exhausted through 296-T-7, except for emissions resulting from vented TRU containers stored within the facility, which may be released to the 200 Area diffuse and fugitive emission unit when the ventilation system is not in operation.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 7.50E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	2.20E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
conservatively assumed to be 241-Am in dose calculations			
B/G - 0	1.10E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
conservatively assumed to be 137-Cs in dose calculations			

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) All activities involving potentially airborne radioactive materials in 2706-T shall be conducted in accordance with the ALARA principle (WAC 246-247-040(5)).

5) Accidental releases with a probability of occurrence during the expected life of the emission unit of greater than 1% must be addressed. All such probable anticipated accidental releases shall be documented, and that documentation supplied to the department upon request (WAC 246-247-075(11)).

6) The PTE and abated emissions to the 200 Area diffuse and fugitive emission unit are limited to 7.5 E-03 mrem/year. The ventilation system shall be in operation when activities involving radioactive or contaminated materials are performed within the ventilated space. The ventilation system shall be in operation if any part of the 2706-T Facility is posted as a high contamination area or higher. Storage/movement of ventilated (NucFil or vent clip) TRU containers is permitted when the ventilation system is not operating. No specific compliance demonstration is necessary beyond the compliance with posting requirements (WAC 246-247-040(5)).

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.60E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

This consolidated T-Plant license supersedes all radioactive air licenses for 291-T-1.

a. This approval subsumes those activities approved in three previous license approvals, retains/revises the specific conditions and limitations of those approvals, and replaces them as the radioactive air license for T-Plant:

i. AIR 03-1208 (NOC ID # 445, "Storage in T-Plant Complex of Sludge from K-Basins")
ii. AIR 01-1010 (NOC ID # 499, "T-Plant Complex Fuel Removal Project")
iii. AIR 02-704 (NOC ID # 500, "Entering and Characterizing of the 224-T Facility Process Cells")

b. With additional conditions and limitations provided herein, this approval also extends to new activities discussed in the NOC application "Radioactive Air Emissions Notice of Construction for Consolidated T Plant Operations", DOE/RL-2004-50, Rev. 0, September, 2004, described briefly:
i. Receipt, Storage, Treatment, and Load out of Contact-Handled and Remote-Handled Transuranic (TRU) and Transuranic Mixed Waste (M-91Initiative)
ii. Treatment (in addition to storage) of K-Basin Sludge from the North Load out Pit (NLOP)
iii. Such activities considered routine at T Plant as are described in succeeding conditions.

Activities a)i through a)iii may emit radioactive air through 291-T-1. Additionally, activity a)iii may emit to the 200 Areas Diffuse & Fugitive emission unit and to Portable Temporary Radioactive Air Emission Units.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 1.20E+02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	1.78E-04
Beta - 0	5.49E-05

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) A. Entry/Characterization of 224-T Process Cells:
A1) (Deleted)

A2) All work covered by this NOC must be completed by December 31, 2005.
A3) (Deleted)
A4) (Deleted)
A5) HPT coverage shall be provided during all cell entries and excavation activities.
A6) (Deleted)
A7) When a HEPA Filtered Vacuum Radioactive Air Emission Unit (HEPA VAC) is used, the conditions, controls, monitoring requirements and limitations of the latest approved revision of the HEPA VAC Notice of Construction shall be required.
A8) (Deleted)
A9) Approved activities for the Entry/Characterization of 224-T Process Cells are:
A9a) Approval extends to entry of the 224-T Facility to determine the condition and contents of the facility's cells, tanks, and vessels, as described below: A containment tent shall be erected outside each access door. The containment tent shall consist of two or more chambers, where the inner chamber shall surround the cell door and the outer chamber shall function as an airlock. Alpha and beta continuous air monitors (CAM) shall monitor each chamber and shall run continuously whenever the cell door is open. The inner chamber shall be fitted with a Type I portable temporary radioactive air emissions unit (PTRAEU) exhauster to provide air flow and contamination control in the containment tent. The exhauster shall be run intermittently to control radiological conditions, at the direction of the field work supervisor in collaboration with the health physics technician (HPT). The containment tent shall be isolated from the cell (door closed or otherwise blocked) before operating the exhauster. The Type I PTRAEU shall be used in accordance with the conditions, controls, monitoring requirements and limitations of the latest approved revision of the PTRAEU NOC (DOE/RL-96-75).
A9b) The following characterization activities are allowed in the cells and/or containment tent:
A9b1) Establishing radiological conditions/map (i.e., dose rates, smearable and fixed contamination, and airborne concentrations).
A9b2) Nondestructive data analyses (NDA) measurements of equipment.
A9b3) Collection of liquid and solid samples from open vessels, trenches, or sumps.
A9b4) Collection of ultrasonic data on vessels and piping.
A9b5) Taking photographs.
A9b6) Performing visual inspections.
A9b7) Removing flanges to collect samples from inside equipment or piping.
A9b8) Cutting or drilling into piping to collect samples with appropriate equipment such as a reciprocating saw, a circular saw, a hacksaw, a tri-tool, or an abrasive wheel.
A9b9) Minor decontamination activities such as wiping down, applying fixatives or sealants, etc., performed in the cell or in the containment tent.
A9b10) Decontamination to reduce dose rates or remove contamination for personnel safety, to remove characterization equipment brought in, or to remove incidental loose equipment or waste found in the cell.
A9b11) Size reduction and packaging and containerizing of incidental, loose equipment or waste found in the cell for removal and/or disposal.
A9b12) Removal of infiltrated water from the pit and the submerged tanks in C-Cell by pumping into tanker trucks for subsequent disposal.
A9b13) Characterization of the removed water prior to disposal.
A9b14) Investigation of the source of water infiltrated into C-Cell.
A9b15) Sealing and grouting of leaks causing water infiltration.
A9b16) A small amount of excavation is allowed to take place around the cell access doors to support installation of the containment tents. Manual digging methods with shovels, picks and rakes shall be used. Up to two cubic meters of contaminated soil may be disturbed.
A9b17) Within the containment tent, the weather barrier cover over the cell access door shall be removed. The integrity and functionality of the cell door shall be determined and as a result the door may be removed and replaced with another door. Any other physical barrier that limits access to the cell also shall be removed.
A9b18) (Deleted) (WAC 246-247-040(5))

5) Actions to assure quality of periodic confirmatory measurement shall be as follows:
(1) Implementation of quality checks supporting the periodic confirmatory measurements. These checks shall assure that the emissions measurements are sufficient to verify low emissions.
(2) (Deleted)
(3) An annual calibration will be performed on the existing sample flow meter or an annual function check will be performed if the flow meter is replaced by either a rotameter or a magnahelic gauge.

(4) The effluent samples will be collected on standard (very high efficiency particulate air) sample filters.
(5) The laboratory sample analysis will meet the requirements of Appendix B, Method 114(3); and
(6) The following items shall be documented in a NESHAP Quality Assurance Project Plan or other documents.
(i) The sample collection and analysis procedures used.
(ii) The quality control program for evaluating and tracking the quality of the periodic confirmatory measurement data against preset criteria. The quality control program should include, where applicable, a system of replicates, spiked samples, split samples, blanks and control charts. The number and frequency of such quality control checks shall be identified; and
(iii) The sample tracking system to provide positive identification of samples and data through all phases of the sample collection, analysis, and reporting system. Sample handling and preservation procedures to maintain the integrity of the samples during collection, storage, and analysis. (WAC 246-247-040(5))(WAC 246-247-075(3))(WAC 246-247-075(6))(WAC 246-247-075(13)).

6) After backfilling, the soil surface radiological contamination levels shall be verified to be less than 5,000 dpm/100 cm^2 beta/gamma and less than 100 dpm/100 cm^2 alpha. If contamination is present above these levels, the contaminated soil shall be removed and containerized for disposal or covered or fixed to provide containment of the contamination. (WAC 246-247-040(5))

7) All activities involving radioactive materials shall be conducted in accordance with radiation control procedures approved in accord with applicable QA program. (WAC 246-247-040(5))

8) Appropriate excavation controls such as water, fixatives, covers, or windscreens shall be applied, if needed, as determined by the contractor's Health Physics organization. Spoil piles containing contaminated soil shall be segregated from the clean soil. Containerizing soil for disposal may also be performed. (WAC 246-247-040(5)) (WAC 246-247-060(5))

9) If a Portable/Temporary Radioactive Air Emission Unit (PTRAEU) is used, the conditions, controls, monitoring requirements and limitations of the latest approved version of the PTRAEU Notice of Construction shall be required. (WAC 246-247-060(5)) (WAC 246-247-080(7))

10) Periodic confirmatory measurements (PCM) for the diffuse and fugitive emissions shall be performed and shall consist of the radiological surveys from the soil excavation activities. Compliance shall be demonstrated by showing that actual emissions are inherently less than the estimated emissions, which are based and calculated from the same contamination levels.

    If a PTRAEU or a HEPA filtered vacuum radioactive air emission unit is used, PCM for emissions from those units shall be performed as required by the respective NOCs. (WAC 246-247-040(5)) (WAC 246-247-080(7))

11) The dose to the maximally exposed member of the public from unabated diffuse and fugitive emissions associated with excavation activities under this NOC shall not exceed 3.05E-03 mrem/year. For the purposes of dose estimation, gross beta air concentrations shall be conservatively assumed to consist entirely of Sr-90. Also for the purposes of dose estimation, gross alpha air concentrations associated with excavation under this NOC shall be conservatively assumed to consist entirely of Am-241. (WAC 246-247-040(5))

12) Total volume of contaminated soil disturbed in excavation for installation of containment tents shall not exceed two cubic meters. (WAC 246-247-040(5))

Project Title	Approval #	Date Approved	NOC_ID
241-AY/AZ Tank Farm Ventilation System Upgrades Installation and pre operational permit for "Radioactive Air Emissions NOC for 241-SY, 241-AP, and 241 AY/AZ Tank Farm Ventilation System Upgrade"	AIR 11-919	9/26/2011	832

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 2.14E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 2.14E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The upgraded ventilation systems will support future tank farm operation activities and waste feed delivery to Hanford's Waste Treatment and Immobilization Plant (WTP).

The ventilation system exhausters are being upgraded with increased flow rates to accommodate the increased heat from the mixer pumps, which will be added to mix the waste in the waste tanks prior to transfers and feed delivery to the WTP. The upgraded ventilation systems include replacing the existing exhauster trains with two new identical parallel exhauster trains. The ventilation systems will be installed on new concrete pads.

Existing 241-AY/AZ tank farm exhausters shall be de-energized and isolated. HEPA filters shall be removed from the filter housings. Removal of the exhausters and exhaust filter housings will be performed under separate WDOH approval. Monitoring of the obsolete exhausters shall be in accordance with As Low As Reasonably Achievable (ALARA) principles.

The emissions to the ambient air resulting from the proposed actions covered by this NOC application, in conjunction with other operations on the Hanford Site, shall not exceed the National Emission Standard of 10 millirem (mrem) per year (40 CFR 61, Subpart H).

The following proposed actions for the 241-AY/AZ pre-operational phase ventilation upgrades will include:
•Install ventilation system exhauster pads for each system.
•Installation of upgraded exhausters with "A" and "B" exhaust trains, monitoring and sampling equipment, and exhaust stack.
•De-energizing and isolation of old exhausters and filter trains (removal will be performed under separate WDOH approval).
•Removal of HEPA filters from filter housing.
•Construction testing of system to the point of transfer for system operation under the operating permit.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Am - 241	1.43E-01	Sr - 90	8.83E+00

4) ABATEMENT TECHNOLOGY- Guzzler usage
If the regulated guzzler is needed or chosen for use during soil excavation, the operation of the Guzzler shall meet all license conditions and limitations of the latest WDOH approved Site-Wide Guzzler application (See DOE Letter 99-SID-021 Dated February 1, 1999). Or "Operation of the Guzzler in Tank Farm Facilities (NOC ID 714, EU 476) As approved on AIR 10-506, May 26, 2010.The Site-Wide and Tank Farm Guzzler approvals have their own APQ limits and therefore, the Guzzler APQ limits are separate from the APQ limits specified in this permit. (WAC 246-247-040(5)) and (WAC 246-247-060(5)).

5) EFFLUENT MONITORING- confirmatory measurements
Periodic confirmatory measurements of fugitive emissions during the construction phase shall be in accordance with Hanford's Near-facility Environmental Monitoring Program. (WAC 246-247-040(5)) and (WAC 246-247-060(5)).

6) EFFLUENT MONITORING - ALARACT monitoring
Monitoring during installation of the ventilation system equipment and deactivation/isolation of old ventilation system equipment shall be in accordance with the following ALARACT Demonstrations and the WRPS Radiological Control Manual:

ALARACT 4 -Tank Farm ALARACT Demonstration For Packaging And Transportation Of Waste
ALARACT 15 - Tank Farm ALARACT Demonstration For Size Reduction of Waste Equipment For Disposal
ALARACT 16 - Tank Farm ALARACT Demonstration of Work on Potentially Contaminated System Components
HNF 5183, Tank Farms Radiological Control Manual.
(WAC 246-247-040(5)) and (WAC 246-247-060(5)).

7) ABATEMENT TECHNOLOGY STANDARDS
The required abatement technology standards supporting exhauster testing are: ASME AG-1 (2009) Code on Nuclear Air and Gas Treatment, ASME N509 (2002) Nuclear Power Plant Air Cleaning Units and Components, and ASME N510 (2007), Testing of Nuclear Air Treatment Systems. Methods and Standards called out for sampling system design are as follows: ANSI N13.1-1969, Guide to Sampling Airborne Radioactive Materials in Nuclear Facilities, ANSI/HPS N13.1-1999, Sampling and Monitoring Releases of Airborne Radioactive Substances from Stacks and Ducts of Nuclear Facilities. (WAC 246-247-075 (6)).

8) TESTING NOTIFICATION
The facility shall notify the department at least seven calendar days prior to any planned preoperational tests of new or modified emission units that involve emissions control, monitoring, or containment systems of the emission unit(s). The department reserves the right to witness or require preoperational tests involving the emissions control, monitoring, or containment systems of the emissions unit(s). (WAC 246-247-060(4)).

9) EXHAUSTER STARTUP REQUIREMENT- Compliance matrix certification
Prior to operational startup of the 241-AY/AZ tank farm exhauster, the effluent monitoring and sampling system shall meet the requirements of ANSI N13.1-1999. A written technical basis document required by Section 4 of ANSI N13.1-1999 shall be provided to WDOH for review. (WAC 246-247-075(2) and WAC 246-247-060(5)).

10) SYSTEM TIE-IN
The existing 241-AY/AZ tank farm exhauster will continue routine operation until the new ventilation is turned over for routine operation. WDOH will be notified of the planned tie-in to the new ventilation system. During the tie-in of the new ventilation system, passive ventilation will be used. During this passive ventilation period, not to exceed 30 days, there shall be no tank farm transfers, mixing operations, or other tank farm in-tank or in-piping activities that might elevate tank vapor space radionuclide concentrations for the area affected. Until approval of 241-AY/AZ tank farm operational permit, the new ventilation system shall not be relied upon for active ventilation of the affected tank farm The existing tank farm exhauster will maintain the ability to be valved back into routine operation until the new exhauster is verified operational post-tie in. (WAC 246-247-040(5)) and (WAC 246-247-060(5)).

11) DOCUMENT AVAILABITY
The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know. (WAC 246-247-080(10)).

12) STARTUP REQUIREMENTS
Prior to operation of the ventilation system a leak test of the newly installed ductwork from interface point of tie-in to the entrance to the stack shall be performed meeting the requirements called out in ASME AG-1design code of record. (WAC 246-247-040(5) and WAC 246-247-060(5)).

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 9.80E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Management of radioactive contamination during roof replacement activities.

All work shall be performed in accordance with written contractor radiological control requirements (associated with posting and downposting requirements for doing work in outdoor contamination areas and fixed contamination areas) and the as low as reasonably achievable (ALARA) program requirements. These requirements are to be carried out through activity work packages/procedures and associated radiological work permits.

Types of facilities allowed to use this NOC are active and operational, currently in surveillance and maintenance (S&M) mode, or in transition to S&M mode.

Activities are non-routine activities that have a potential to create a new temporary emission source and/or a modification of a source(s) of diffuse and fugitive emissions at facilities on the Central Plateau.

Screening Surveys

Roof replacement activities include radiological surveys to determine if radioactive contamination is present and the extent of such contamination. Spot contamination (e.g., bird droppings) managed before commencement of roof replacement work is handled per existing methods and is considered a routine housekeeping activity (similar to spot contamination found at ground levels).

Managing Radioactive Contamination

Contaminated roofing materials may be removed by manual or powered methods, including saws or other cutting devices, shovels, wheelbarrows, conveyors, chutes, or other similar equipment (conveyors or chutes may be used only for packaged radioactive waste or for non-contaminated roofing material). Radioactive waste shall be managed in accordance with existing onsite requirements and waste acceptance criteria. Radioactive waste either shall be containerized in drums, skiffs, boxes, or other containers, or handled as bulk waste (e.g., dump truck) and transferred to the appropriate disposal facility. Management of radioactive contamination is allowed to include removal and subsequent size reduction of contaminated equipment from a roof as well as isolation and blanking of utilities, vents, and ductwork.

Accumulated rainwater that has contacted contamination areas shall be allowed to evaporate in place or is characterized, collected, and managed in accordance with stormwater discharge requirements or transferred to an appropriate disposal facility.

A graded approach is allowed to be used to match controls with expected contamination levels per radiological control manuals and methods. Radiological contamination that is encountered will either be managed as a fixed contamination area (i.e., less than 20 dpm/100 cm2 smearable alpha and less than 1,000 dpm/100 cm2 smearable beta) or will be managed as a contamination area (radiological contamination levels are between 20 and 2,000 dpm/100 cm2 alpha or between 1,000 and 100,000 dpm/100 cm2 beta) using appropriate controls to minimize worker exposure. These controls include water for dust suppression, fixatives, covers, windscreens, or greenhouses (with PTRAEU exhausters) that will be applied, if needed, as determined by the Health Physics organization, and consist of ALARA techniques.

Process descriptions and abatement controls, as described in the latest approved revisions of the Guzzler NOC

(99-SID-021), the PTRAEU NOC (DOE/RL-96-75), or the HEPA Vacuum NOC (DOE/RL-97-50) shall be used; however, the activity-specific operational controls and tracking requirements shall follow these approval conditions. The Guzzler, PTRAEU, and HEPA vacuum units shall have a removal efficiency of 99.95% for radioactive airborne particles.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 4.80E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	3.00E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

License PTE limit bounds 3.0E-04 Ci/yr 241Am and release fraction of 0.001. Any radionuclide on the chart of the nuclides could be encountered during roof replacement activities. The radionuclides specifically listed in the NOC application were chosen to conservatively represent all radionuclide emissions that may occur in particulate form. A small contribution from the gaseous radionuclides may be encountered. Although any radionuclide could be present, for conservatism all alpha is assumed to be 241Am and all beta/gamma is assumed to be 137Cs for dose calculation estimates. Other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta/gamma constituents.

B/G - 0	1.50E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

License PTE limit bounds 1.5E-02 Ci/yr 137Cs and release fraction of 0.001. Any radionuclide on the chart of the nuclides could be encountered during roof replacement activities. The radionuclides specifically listed in the NOC application were chosen to conservatively represent all radionuclide emissions that may occur in particulate form. A small contribution from the gaseous radionuclides may be encountered. Although any radionuclide could be present, for conservatism all alpha is assumed to be 241Am and all beta/gamma is assumed to be 137Cs for dose calculation estimates. Other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta/gamma constituents.

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) For dose modeling, the radionuclides of concern shall use cesium-137 (representing beta/gamma emitters) and americium-241 (representing alpha emitters).

5) The total radionuclide content of the material removed shall be tracked on a WDOH approved log.

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 4.90E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 4.90E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Categorical approval for facility entry and surveillance. The facilities covered under this NOC will be entered through a door or other existing access location to perform the activities as described below:

Accessing Facilities:
Accessing facilities shall be performed in accordance using the controls determined by the containment matrix from RPP Administration, HNF-IP-0842, Volume VII, Section 3.1, "Radiological Control".

Inspection/Surveillance:

-Visual inspections will be conducted to evaluate facilities integrity for future decommissioning work, to assure that utilities have been shut off, and/or identification of any environmental, radiological, or safety concerns.

Photographing/Videotaping:

-Photographing and videotaping are performed to assist personnel in recording a facility contents and to obtain knowledge of a facility and its contents. Photography/videotaping also assists personnel in planning future decommissioning work.

Sampling/Surveys:

-Swipes, smears, air sampling, and other surveys may be performed to characterize contamination levels present in a facility. These activities may be performed on containers, other equipment and interior surfaces associated with a facility.

-Removal of access port shield plugs may be performed to allow installation of video equipment and/or to perform radiological surveys.

-Electrical equipment inspections may be performed to assure that power has been shut off from facilities or to assure that equipment is in safe operation.

Housekeeping:

-Housekeeping will be performed to assure that a facility is in a safe condition that would not threaten workers safety or the environment. Housekeeping may include collecting containers, or miscellaneous debris for proper disposal.

Fixative Application

-Application of fixative materials serves to reduce the spread of contamination. The process of applying fixative materials varies depending on the type of material being applied. Fixative application may include using a glycerin-based substance followed by a permanent polymer urea based material or the glycerin-based substance alone, or other such process, which do not cause resuspension of smearable contamination.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Alpha - 0	2.80E-04	Beta - 0	4.00E-01	Gamma - 0	4.50E-02

4) Activities to this NOC are limited to no more than 2,160 hours/calendar year. This shall be documented on an approved log.

5) During facility entries when diffuse/fugitive emissions may occur, surveys/smears and air samples must be conducted and recorded on log sheets or survey reports. These reports and/or survey records must be readily retrievable.

6) If sample results after entry show that the APQ have been exceeded, WDOH is to be notified within 24 hours of receipt of the sample results.

7) The annual possession quantity must be tracked for each entry.

8) The facility will maintain a log of all work packages which are used for building access under this NOC (AIR 00-604).

9) The following radionuclides are allowed under this NOC: 3H, 14C, 59Ni, 60Co, 63Ni, 79Sc, 90Sr, 90Y, 93Zr, 93mNb, 99Tc, 106Ru, 113mCd, 125Sb, 126Sn, 129I, 134Cs, 137Cs, 137mBa, 151Sm, 152Eu, 154Eu, 155Eu, 227Ac, 228Ra, 229Th, 231Pa, 232Th, 232U, 233U, 234U, 235U, 236U, 237Np, 238Pu, 238U, 239Pu, 240Pu, 241Am, 241Pu, 242Cm, 243Cm, and 244Cm.

10) The radiological control technology for all entries conducted under this NOC must follow the containment matrix HNF-IP-0842, Volume VII, Radiological Control.

11) This NOC does not allow any decontaminating and decommissioning work to commence.

12) This NOC is only applicable to tank farm facilities.

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.28E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.75E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The 241-AY-101, 241-AY-102, 241-AZ-101, and 241-AZ-102 tanks are double shell tanks. The inner shell is constructed from heat treated, stress-relieved steel. The outer shell is constructed of non stress relieved steel. The two shells are separated by a 2.5 ft annulus and contained inside a concrete shell. The tanks have a usable waste volume of approximately 1,001,000 gal.

The 241 AY and 241 AZ tanks are part of a Resource Conservation and Recovery Act treatment, storage, and/or disposal unit. The tanks contain mixed waste in the form of liquids or contained solids (suspended or settled). The contents in each of the four tanks may be mixed periodically to control gas entrapment in the settled solids, to control temperature, for chemical treatment to control corrosion, or for waste retrieval. Contained solids will be mobilized, as required, as part of this process by hydraulic action of the mixer pumps or by use of air-lift circulators in each of the tanks. During such activities, as well as during storage, the ventilation system maintains the vapor space in each tank below atmospheric pressure.

Airflow is from the tank to a glycol-cooled recirculation system and to a common header. The common header is the point in the overall system at which ventilation flow is provided to the emissions control system. Also, a portion of each tank's exhaust can be recirculated to assist in maintaining temperature.

The recirculation system cools, condenses, removes vapor and some entrained particulates, further removes moisture via a separator, and returns a portion of the cooled vapor to the tank. This provides cooling for the tank while reducing air emissions. Nominal flow rates in the recirculation system vary from zero m3/sec (bypassed) to 0.25 m3/sec per tank, at standard temperature and pressure conditions. At the higher flow rate, approximately 0.05 m3/sec is provided to the emission control system with the remainder to the tank. Similar airflow from the other three tanks is combined in the common ventilation header connecting the discharges of the other recirculation coolant systems. The combined flow is discharged to the emissions control system. The recirculation system is considered part of the process because the collected material is returned to the tank.

When mixer pumps are operating in a tank, the 0.25 m^3/sec drawn from this tank may not be recirculated but may be combined with the flow from the other tanks for a total discharge to the emissions control system flow range of 0.4 to 0.5 m^3/sec. Numerous other combinations of discharge flow rates are possible but the combined annual average discharge flow rate to the emissions control system will not be greater than 0.5 m^3/sec. During system upset conditions, such as an automatic shutdown of one exhaust train and start of the opposite train, discharge flow rates could reach 0.6 m^3/sec for several seconds.

The portion of the stream discharged to atmosphere will flow through a condenser, high-efficiency mist eliminator, heater, and two high-efficiency particulate air (HEPA) filters in series. For purposes of calculating abated emissions, only the HEPA filter control efficiencies are used.

The central pump pits on the 241-AY and 241-AZ Tank Farm tanks are approximately 14 ft long x 10 ft wide x 10 ft depth (outside dimensions). Sluice pits and annulus pump pits are somewhat smaller with outside dimensions of 7 ft x 7 ft x 10 ft deep and 5 ft x 5 ft x 10 ft deep.

With the previous NOC revision, modifications to all four tanks and associated equipment were permitted to allow for installation of waste retrieval systems and equipment, through issuance of letter AIR-05-708, including the following major components.

New In Tank Equipment
•Two mixer pumps each in tanks 241-AZ-102, 241-AY-101, and 241-AY-102 for mobilizing the settled solids. Two mixer pumps were installed in tank 241-AZ-101 and permitted previously by WDOH through issuance of AIR-98-708. All of the pumps will be capable of pumping waste through each of two horizontally opposed discharge nozzles.

•A riser extension/spray wash system on top of each of the risers used for mixer pumps. The spray wash system will be used for future decontamination of the mixer pumps if they are removed from the tank.

•One transfer pump in each tank for the transfer of waste.

•New temperature probes for each tank.

•New decant pumps in the AY tanks and associated transfer piping; to include a one-time use hose-in-hose transfer line approximately 40 ft in length.

Ancillary Equipment and Buildings
•Electrical power and instrument cables and other utility tie ins and/or upgrades (e.g., sanitary and raw water, and telecommunications).
•Tie-in to the existing dilution and caustic supply system to bring waste properties into compliance with the feed specifications and to flush and preheat transfer lines. The dilution system will have the capacity of providing approximately 140 gal/minute of pH adjusted water.
•Pit cover blocks.
•Water/diluent piping to and from the process pits.
•Process jumpers.
•Miscellaneous concrete pads for electrical and mechanical equipment.
•Chain link fencing and gates.

Removal, Repair, Decontamination, and Demolition of Existing Equipment
•Removal/repair of transfer and/or mixer pumps, as necessary, during the life of the facility.
•Removal and disposal of several thermocouple probes/instrument trees.
•Removal and disposal of several existing pumps and other miscellaneous equipment (e.g., slurry distributers and process jumpers).
•Additionally, this revision includes removal of HEGA filters.

CONSTRUCTION ACTIVITIES
Construction activities with the PTE could include soil excavation, work in pump pits, pipe cutting, and removal and installation of in tank equipment. Some of these activities are described in, and will be done in accordance with, an applicable tank farm as low as reasonably achievable control technology (ALARACT) demonstration (HNF 4327, Control of Airborne Radioactive Emissions for Frequently Performed TWRS Work Activities (ALARACT Demonstrations). The specific activities and corresponding ALARACT demonstration are called out as applicable in the following sections.

If needed or chosen for use during these activities, the regulated guzzler, a portable/temporary radioactive air emission unit, and a HEPA filtered vacuum radioactive air emission unit may be used in accordance with the most current version of Guzzler DOE application,(See DOE Letter 09-ESQ-542 Dated November 30, 2009), Notice of Construction for Guzzler Evacuation and Backfill Activities in Support of the 200 East and West Tank Farm Complex or the latest WDOH approved Site wide Guzzler (See DOE Letter 99-SID-021 Dated February 1,1999) , “Radioactive Air Emissions Notice of Construction Portable/Temporary Radioactive Air Emission Units”; and DOE/RL-97-50, “Radioactive Air Emissions Notice of Construction for HEPA Filtered Vacuum Radioactive Air Emission Units,” respectively].

Because of the possibility of encountering previously undetected subsurface contamination, all work will be performed in accordance with appropriate radiological controls and the River Protection Project (RPP) as low as reasonably achievable (ALARA) program. These requirements are carried out through work packages and associated Radiological Work Permits (RWP).

Soil Excavation

Soil will be excavated inside and outside the 241-AZ and 241-AY Tank Farms for the dilution piping that will tie-in to the existing AN Tank Farm caustic supply system and to remove soil in preparation for mixer pump foundations and miscellaneous equipment support structures, to remove soil around pits in preparation of core drilling, and for placement of control building foundations (as required). A total of approximately 6000 yd^3 per farm could be excavated. Backfill will be made with the original removed soil or noncontaminated controlled density fill (sand, water, and a small amount of cement).

Soil excavation activities inside the tank farm fence will be performed in accordance with ALARACT Demonstration 5, TWRS ALARACT Demonstration for Soil Excavation (Using Hand Tools). If contamination is discovered outside the tank farm fence, ALARACT 5 will be followed. Clean soil piles could be moved from one place to another within the tank farm with heavy equipment (backhoe, front-end loader, etc.). Soil excavation outside the tank farm fence in noncontaminated soil also could be performed with heavy equipment. The regulated guzzler also could be used as described in the NOC for use in the 241-A Tank Farm Complex (EPA 1998 letter).

Pipe Cutting and Welding

Any required cuts of contaminated piping will be made inside a glove bag using appropriate equipment such as a sawzall or tri tool. To perform a cut without a glove bag, the piping will be surveyed/smeared to verify removable contamination levels are equal to or less than 10,000 disintegrations per minute (dpm) per 100 cm^2 beta gamma and 200 dpm/100 cm^2 alpha.

Welding may be necessary to join various pieces of equipment. If this is necessary, welding will commence once removable contamination levels in the weld area are reduced to ALARA. The goal will be to achieve 1000 dpm/100 cm2 beta gamma and 20 dpm/100 cm^2 alpha or less, but might not always be attainable.

If needed or chosen for use during these activities, a portable/temporary radioactive air emission unit and a HEPA filtered vacuum radioactive air emission unit could be used in accordance with the latest revisions of the NOCs (DOE/RL-96-75 and DOE/RL-97-50, respectively).

Pit Work

Work to be performed in pits may include replacing existing sets of cover blocks with newly designed cover blocks, core drilling (equivalent of one hundred 14-in. diameter holes for AZ Farm and ten 14 in. diameter holes for AY Farm), installing new nozzles, and removing existing jumpers.

Pit access and work will be performed in accordance with ALARACT Demonstrations 6 and 14, TWRS ALARACT Demonstration for Pit Access, and TWRS ALARACT Demonstration for Pit Work. Activities not covered in these ALARACTs are described in the following.

If needed or chosen for use during these activities, a portable/temporary radioactive air emission unit and HEPA filtered vacuum radioactive air emission unit could be used in accordance with the latest revisions of their NOCs (DOE/RL-96-75 and DOE/RL-97-50, respectively).

At the start of the pit work, the cover blocks will be lifted off and radiologically surveyed to determine an appropriate disposal method. New cover blocks will be installed when all work in the pits is completed.

Core drilling may be performed and will occur below grade level on the outside of the pit. The hole will be drilled from the outside to the inside, with the temporary pit cover in place. Nozzle installation generally will proceed immediately after the hole is completed. If immediate nozzle installation is not possible, the hole will be temporarily sealed with a plug, tape, or equivalent device until the nozzle can be installed.

Installation of new nozzles in existing pits will take place in an open pit. All parts of the nozzle will be assembled ahead of time and will be lowered into position as a single unit. The piping in the back of the nozzle will be threaded through the hole (from the inside of the pit to the outside) and pulled tight into place from the outside of the pit. Grout will be used to secure and seal the nozzle into place. The front opening of the nozzle, inside the pit, will be fitted with a temporary cap/seal until a jumper is connected to the nozzle. Once the nozzle(s) is/are installed, the temporary pit cover will be replaced until other work inside the pit requires pit cover removal.

Removal of In Tank Equipment

Various in-tank equipment will be removed from the tanks to make room for the waste retrieval equipment, or to be replaced with equivalent equipment built to withstand the mixer pump jet forces. Removed long-length equipment will either be packaged in long-length contaminated equipment disposal containers or size reduced for disposal in accordance with ALARACT Demonstration 15, Tank Farm ALARACT Demonstration for Size Reduction of Waste Equipment for Disposal. Equipment removal will be performed in accordance with ALARACT Demonstration 13, TWRS ALARACT Demonstration for Installation, Operation, and Removal of Tank Equipment. Activities not covered in this ALARACT are described in the following.

If needed or chosen for use during these activities, a portable/temporary radioactive air emission unit, and a HEPA filtered vacuum radioactive air emission unit may be used in accordance with the latest revisions of their NOCs (DOE/RL-96-75 and DOE/RL-97-50, respectively).

Decontamination of removed equipment is not anticipated. The fewer decontamination activities undertaken, the less exposure possibilities there are to the worker and the environment. Contingency decontamination plans, however, are in place if needed. The most likely equipment to be decontaminated would be sections of the flexible receiver. Equipment removal will be performed in accordance with TWRS ALARACT Demonstration 13, Installation, Operation, and Removal of Tank Equipment.

In Tank Equipment Installation
Equipment installation will be performed in accordance with TWRS ALARACT Demonstration 13, Installation, Operation, and Removal of Tank Equipment.

WASTE STAGING AND RETRIEVAL PROCESS OVERVIEW
Mixer pumps will be operated to maintain waste uniformity during staging and to mix the waste for a period before and during transfer. As required by operational directives, mixer pumps will be operated until waste samples verify that adequate mixing has been achieved. Waste samples will be collected in accordance with TWRS ALARACT Demonstration 7, Tank Waste Grab Sampling. If dilution/conditioning is needed, the pH and temperature of the diluents will be adjusted by means of a caustic supply system. Once the waste is verified acceptable, the transfer lines will be preheated/flushed with water, and the waste transfer to the treatment facility will follow. After the transfer, the lines will be flushed again with water.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	1.32E-06	Alpha - 0	2.05E+00	Alpha - 0	8.28E-04
Pipe cutting and equipment removal in AY/AZ Tank Farm.		Hand digging during soil excavations in AY/AZ Tank Farm. Assuming Am-241 as the conservative isotope.		Pit entry in AY/AZ Tank Farm. Assuming Am-241 as the conservative isotope.	
Am - 241	5.16E+00	Am - 243	2.70E-03	B/G - 0	2.56E+01
Pipe cutting and equipment removal in AY/AZ Tank Farm.		Pipe cutting and equipment removal in AY/AZ Tank Farm.		Hand digging during soil excavations in AY/AZ Tank Farm. Assuming Sr-90 as the conservative isotope.	
B/G - 0	9.45E-04	Ba - 137 m	5.78E+02	C - 14	1.56E-03
Pit entry in AY/AZ Tank Farm. Assuming Sr-90 as the conservative isotope.		Pipe cutting and equipment removal in AY/AZ Tank Farm.		Pipe cutting and equipment removal in AY/AZ Tank Farm.	
Cd - 113 m	5.98E-02	Cm - 242	4.81E-03	Cm - 243	6.35E-04
Pipe cutting and equipment removal in AY/AZ Tank Farm.		Pipe cutting and equipment removal in AY/AZ Tank Farm.		Pipe cutting and equipment removal in AY/AZ Tank Farm.	
Cm - 244	1.48E-02	Co - 60	1.52E-01	Cs - 134	1.56E-01
Pipe cutting and equipment removal in AY/AZ Tank Farm.		Pipe cutting and equipment removal in AY/AZ Tank Farm.		Pipe cutting and equipment removal in AY/AZ Tank Farm.	
Cs - 137	6.13E+02	Eu - 152	6.25E-02	Eu - 154	2.40E+00
Pipe cutting and equipment removal in AY/AZ Tank Farm.		Pipe cutting and equipment removal in AY/AZ Tank Farm.		Pipe cutting and equipment removal in AY/AZ Tank Farm.	
Eu - 155	1.99E+00	H - 3	1.28E-02	Nb - 93 m	2.98E-02
Pipe cutting and equipment removal in AY/AZ Tank Farm.		Pipe cutting and equipment removal in AY/AZ Tank Farm.		Pipe cutting and equipment removal in AY/AZ Tank Farm.	
Ni - 59	7.90E-03	Ni - 63	7.35E-01	Np - 237	2.67E-03
Pipe cutting and equipment removal in AY/AZ Tank Farm.		Pipe cutting and equipment removal in AY/AZ Tank Farm.		Pipe cutting and equipment removal in AY/AZ Tank Farm.	

Pa - 231	1.18E-05	Pu - 238	3.07E-02	Pu - 239	3.73E-01
Pipe cutting and equipment removal in AY/AZ Tank Farm.		Pipe cutting and equipment removal in AY/AZ Tank Farm.		Pipe cutting and equipment removal in AY/AZ Tank Farm.	
Pu - 240	9.83E-02	Pu - 241	1.51E+00	Pu - 242	1.05E-05
Pipe cutting and equipment removal in AY/AZ Tank Farm.		Pipe cutting and equipment removal in AY/AZ Tank Farm.		Pipe cutting and equipment removal in AY/AZ Tank Farm.	
Ra - 226	4.58E-08	Ra - 228	1.34E-05	Ru - 106	1.03E-02
Pipe cutting and equipment removal in AY/AZ Tank Farm.		Pipe cutting and equipment removal in AY/AZ Tank Farm.		Pipe cutting and equipment removal in AY/AZ Tank Farm.	
Sb - 125	5.76E-01	Se - 79	4.84E-05	Sm - 151	5.61E+01
Pipe cutting and equipment removal in AY/AZ Tank Farm.		Pipe cutting and equipment removal in AY/AZ Tank Farm.		Pipe cutting and equipment removal in AY/AZ Tank Farm.	
Sn - 126	2.53E-03	Sr - 90	1.21E+03	Tc - 99	1.37E-01
Pipe cutting and equipment removal in AY/AZ Tank Farm.		Pipe cutting and equipment removal in AY/AZ Tank Farm.		Pipe cutting and equipment removal in AY/AZ Tank Farm.	
Th - 229	5.87E-08	Th - 232	1.30E-05	U - 232	1.22E-06
Pipe cutting and equipment removal in AY/AZ Tank Farm.		Pipe cutting and equipment removal in AY/AZ Tank Farm.		Pipe cutting and equipment removal in AY/AZ Tank Farm.	
U - 233	6.13E-05	U - 234	3.25E-04	U - 235	1.31E-05
Pipe cutting and equipment removal in AY/AZ Tank Farm.		Pipe cutting and equipment removal in AY/AZ Tank Farm.		Pipe cutting and equipment removal in AY/AZ Tank Farm.	
U - 236	2.28E-05	U - 238	2.57E-04	Y - 90	1.21E+03
Pipe cutting and equipment removal in AY/AZ Tank Farm.		Pipe cutting and equipment removal in AY/AZ Tank Farm.		Pipe cutting and equipment removal in AY/AZ Tank Farm.	
Zr - 93	4.93E-02				
Pipe cutting and equipment removal in AY/AZ Tank Farm.					

4) SOIL EXCAVATION

Soil excavation activities will be performed in accordance with ALARACT Demonstration 5, TWRS ALARACT Demonstration for Soil Excavation (Using Hand Tools), and will follow the radiological controls specified in that ALARACT.

5) PIT WORK

Pit access and work will be performed in accordance with ALARACT Demonstrations 6 and 14, TWRS ALARACT Demonstration for Pit Access and TWRS ALARACT Demonstration for Pit Work, and will follow the radiological controls specified in those ALARACTs. Controls not covered in these ALARACTs are described in the following.

All pit work will be performed in an appropriately configured confinement structure, as required by the applicable work package and its associated RWP, to maximize ALARA for contamination migration while allowing entry to perform the work. Health physics technician coverage will be provided during all pit work.Removal and Installation of In Tank Equipment

Equipment removal and installation activities will be performed in accordance with ALARACT Demonstration 13, TWRS ALARACT Demonstration for Installation, Operation, and Removal of Tank Equipment, and will follow the radiological controls specified in that ALARACT.

Removed long-length equipment will either be packaged in long-length contaminated equipment disposal containers or size reduced for disposal in accordance with ALARACT Demonstration 15, Tank Farm ALARACT Demonstration for Size Reduction of Waste Equipment for Disposal.

6) REMOVAL AND INSTALLATION OF IN TANK EQUIPMENT

Equipment removal and installation activities will be performed in accordance with ALARACT Demonstration 13, TWRS ALARACT Demonstration for Installation, Operation, and Removal of Tank Equipment, and will follow the radiological controls specified in that ALARACT.

Removed long-length equipment will either be packaged in long-length contaminated equipment disposal containers or size reduced for disposal in accordance with ALARACT Demonstration 15, Tank Farm ALARACT Demonstration for Size Reduction of Waste Equipment for Disposal.

7) PIPE CUTTING AND WELDING

Pipe cutting will be performed in a glove bag if the levels of removable contamination in the cut and weld area are greater than 10,000 dpm/100 cm^2 beta gamma and 200 dpm/100 cm^2 alpha. Health physics technician coverage will be provided. Although the key measure relied on to control air emissions during cutting will be the glove bag, measures such as expandable foam or fixatives might be applied on or around a pipe cut as an additional measure to help fix contamination. The decision to use expandable foam or fixatives will be made on a case-by-case basis after excavation exposes the pipe to be cut. When used, the expandable foam will help fix any contamination to the pipe wall in the area of the cut and will help prevent migration of contamination present in the pipe upstream or downstream of the cut.

If any welding is necessary to join pieces of equipment, welding will commence once removable contamination levels in the cut and weld area are reduced to ALARA. The goal will be to achieve 1000 dpm/100 cm^2 beta gamma and 20 dpm/100 cm^2 alpha or less..

Work in glove bags will not be performed if sustained wind speeds are greater than 30 miles per hour.

8) MONITORING DURING CONSTRUCTION ACTIVITIES

During soil excavation activities, periodic confirmatory monitoring (PCM) as described in ALARACT 5, will verify low emissions. If the regulated guzzler is used, PCM will be performed as required by the guzzler NOC.

During pipe cutting activities surface contamination surveys will constitute the PCM to verify low emissions. If a portable/temporary radioactive air emission unit or a HEPA filtered vacuum radioactive air emission unit is used, PCM will be performed as required by these NOCs.

During pit work activities, PCM as described in ALARACT 14 will verify low emissions.

During in tank equipment removal and installation activities surface contamination surveys, as described in ALARACT Demonstration 13, TWRS ALARACT Demonstration for Installation, Operation and Removal of Tank Equipment (HNF-4327) will constitute the PCM to verify low emissions.

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.38E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.38E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Work shall be performed outside of some tank farm fence boundaries such as the 241-AN, 241-AP, 241-AW, 241-AZ, and 241-SY tank farms; between the 241-AP tank farm and the 244-A double contained receiver tank as well as between the 244-S double-contained receiver tank and the 241-SY tank farm; the 219-S Waste Handling Facility located at the 222-S Laboratory; and near the 241-A-A valve pit (241-A Single-Shell Tank Farm).

EXCAVATION

Excavation within a tank farm, or in a known radioactive contamination area outside of a tank farm, shall be performed in accordance with As Low As Reasonably Achievable Control Technology (ALARACT) Demonstration 5, TWRS ALARACT Demonstration for Soil Excavation (Using Hand Tools), or non-mechanical methods such as vacuum excavation (Guzzler) in accordance with the latest WDOH approved Notice of construction Application for Guzzler Excavation and Backfilling activities in Support of the 200 East and West Area Tank Farm Complex (See DOE Letter 09-ESQ-542 Dated November 30, 2009) or the latest WDOH approved Site Wide Guzzler application(See DOE Letter 99-SID-021 Dated February 1,1999). Outside of a tank farm, in non-contaminated areas, excavation (or berm construction) may be performed using mechanical methods such as: trenchers, backhoes, and scrapers, in addition to hand tools or non-mechanical methods. Areas may be encountered during excavation where components are covered by very hard soil or controlled density fill (low-strength concrete). Mechanical impact tools, such as jackhammer/rototool, would be used to break up such areas before excavation. Removal of excavated material is normally done by mechanical methods such as a crane with skip bucket, powered skip, or front-end loader. Excavated material is placed in spoil piles. (NOTE: Industrial safety requirements may require use of intermediate transfer piles.) Contaminated soil (>100,000 dpm/100 cm2 beta/gamma) is segregated from other soil. Excavated areas shall be backfilled with the excavated soil or soil containing less contamination than the soil that was excavated. Backfilling of excavated areas is accomplished by first placing controlled density fill material when used, then soil in layers, into the excavated area. The distance from the skip bucket, powered skip, and front-end loader to the top of the excavation area is minimized. Contaminated soil is the first soil placed in the excavated areas, then covered with other excavated soil. To meet density requirements, soil compaction is done using hand-guided mechanical compaction equipment. Outside of a tank farm, in a non-contamination area, vibratory roller compactors may be used.

Excavation shall also be conducted to allow for the pouring of concrete pads for future placement of equipment within the tank farms.

PIT WORK

Frequently performed activities shall be done in accordance with activity descriptions found in ALARACT Demonstrations (HNF-4327):

- ALARACT 4 "Packaging and Transportation of Waste"
- ALARACT 6 "Pit Access"
- ALARACT 12 "Packaging and Transportation of Equipment & Vehicles"
- ALARACT 13 "Installation, Operation, and Removal of Tank Equipment"
- ALARACT 14 "Pit Work" and, if required,
- ALARACT 15 "Size Reduction of Waste Equipment for Disposal."

The process is establishment of controls to prevent the spread of radioactive contamination, removal of pit cover blocks by heavy rigging methods, decontamination of pit by water washing (pressure and non-pressure methods),

application of fixative material on contamination, disconnection of equipment, equipment removal by manual or mechanical methods, package equipment for disposal (size reduction if necessary), pit surface preparation by manual abrasion (scrapping, sanding, chipping; on a surface that is damp or has fixative) of existing pit coating, application of pit coating material by manual methods or pressure spray methods, installation of new or replacement equipment, installation of pit cover blocks by heavy rigging, packaging of waste, and transportation of waste and removed equipment.

Project pit activities will include preparation of pit surfaces and coring of walls or cover blocks. Project pit surface preparation is accomplished by mechanical abrasion of the existing pit coating, concrete substrate, and steel surfaces as needed. Needle guns, sanders, wet blasting, and grinders are typical tools used. In addition, surface preparation also may include repair of cracked concrete/concrete coatings. Repair will require removal of cracked material to allow application of grouting material. Removal of cracked material may be performed using manual and power tools, and may also include using a HEPA vacuum to assist in the removal of loose debris. Coring of pit walls and/or cover blocks for new nozzles or equipment installation comprised of replacing wall nozzles, leak detectors, cover blocks, pipe snub-outs, and jumpers will also be performed. A new AZ valve pit will be constructed and connected to the AZ tanks.

PIPE CUTS

The cutting of waste transfer lines, tank risers, or contaminated piping shall be made using a low or high speed reciprocating or cut-off saw (sawzall, bandsaw) or other mechanical methods, such as a tri-tool. Surveys of the exterior and/or interior of the pipe/riser shall be used to determine containment selection in accordance with Radiological Containment Selection, Design, & Specification Guide RPP-7933. Continuous health physic technician coverage shall be present during all pipe work activities. Abrasive methods, such as grinders or sanders, may be used to prepare the cut area for connection to the new section of transfer line. Mating of the new piping to the existing transfer lines or tank riser, and other similar connections if necessary, will be performed using mechanical connection methods or welded flange connections.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Am - 241	1.59E-01	Co - 60	1.06E-03	Cs - 137	7.11E+00
Eu - 152	1.95E-02	Eu - 154	3.32E-02	Pu - 238	6.98E-04
Pu - 239	6.39E-03	Pu - 240	2.31E-03	Pu - 241	5.08E-02
Pu - 242	6.90E-08	Sr - 90	4.75E+01	U - 233	1.46E+00
Y - 90	3.96E+01				

4) The Annual Possession Quantity and the Potential-to-Emit to the MEI shall be tracked on a WDOH approved log.
5) The Radiological Containment Selection, Design & Specifications Guide, RPP-7933, Revision 0 shall be used. Changes made to RPP-7933, Revision 0 shall be provided to WDOH. The Department retains the right to change or add approval conditions and limitations based on the changes to RPP-7933.
6) To determine the Potential-to-Emit and calculate the annual dose to the Maximally Exposed Individual all gross alpha contamination shall be assumed to be Am-241 and all gross beta contamination shall be assumed to be Sr-90.
7) When HEPA vacuums are used they shall follow all the requirements of the latest revision of the Radioactive Air Emissions Notice of Construction for HEPA Vacuums.

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.10E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.10E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Performing vapor sampling of miscellaneous underground units with no known path of ventilation. Miscellaneous underground units may include active and inactive underground tanks, wells, and other units with no known path of ventilation.

In addition to vapor sampling activities, this approval allows the possibility of installing temporary or permanent passive HEPA type filtration on any unit if vapor sampling results show combustible gas levels exceeding 25 percent of the lower Flammability Limit (LFL).

Active and Inactive Tanks

Tanks were designed to collect leaks, spills, condensation, and drainage that occurred during operation of tank farm diversion boxes, valve pits, and pipeline encasements. Tanks were also used for settling solids before disposal, neutralizing process wastes, receiving and processing of tank waste, and waste handling and process experimentation. Volumes of waste and constituent concentrations in each tank vary depending on the location in respect to surrounding single and double shell tank farm operations. Most of the tanks are expected to contain low levels of radioactivity.

The tanks are constructed of various materials, which include stainless steel, carbon steel, concrete, and concrete vaults with carbon steel liners. The tank volumes vary in maximum capacity between 50 gallons to 50,000 gallons.

Wells

Wells include structures that were used for the subsurface disposal of waste fluids. Wells that are connected to valve pits or floor drains in contaminated facilities may have received contaminated liquids. Volumes of liquid discharged to these structures and constituent concentrations are unknown.

Combustible gas concentrations in the headspace of miscellaneous units will be field-measured to determine if there are safety concerns associated with combustible gas concentrations. The radiological controls, monitoring, and documentation identified in Sections 2, 3, and 4 of ALARACT 1shall be implemented for access to each unit. Vapor sampling shall be performed in accordance with ALARACT 8, with the exception of bulleted item 5 in Section 2 of the ALARACT. Bulleted item 5 will not be performed because the units are assumed to not be ventilated.

If vapor-sampling results show a combustible gas level measurement exceeding 25 percent of the LFL, a temporary passive HEPA type breather filter may be installed. One of two types of temporary HEPA type filters shall be used. This first type of filter would be mounted onto a plastic bag that could be secured to an access port or riser using tape or some other technique such as banding. The second type of filter would be connected directly to an access port or, in cases where access is through a riser, mounted on a flange that could be bolted onto the riser. These methods allow flammable gases to escape to the atmosphere only through the filter.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	1.06E-02	Am - 241	6.92E+02	Am - 243	3.46E-02
Ba - 137 m	1.61E+05	C - 14	1.04E+01	Cd - 113 m	1.55E+02

Cm - 242	6.08E-01	Cm - 243	5.28E-02	Cm - 244	1.98E+00
Co - 60	8.66E+02	Cs - 134	3.08E+01	Cs - 137	1.70E+05
Eu - 152	1.69E+01	Eu - 154	7.23E+03	Eu - 155	1.04E+03
H - 3	6.46E+01	I - 129	5.16E-01	Nb - 93 m	6.32E+01
Ni - 59	3.06E+01	Ni - 63	3.01E+03	Np - 237	1.62E+00
Pa - 231	1.61E-02	Pu - 238	2.43E+01	Pu - 239	1.29E+03
Pu - 240	2.04E+02	Pu - 241	1.78E+03	Pu - 242	9.94E-03
Ra - 226	2.04E-03	Ra - 228	9.82E-02	Ru - 106	1.17E-01
Sb - 125	8.63E+02	Se - 79	1.70E+01	Sm - 151	6.36E+04
Sn - 126	2.73E+01	Sr - 90	5.23E+06	Tc - 99	5.20E+01
Th - 229	2.27E-03	Th - 232	1.11E-02	U - 232	4.38E+00
U - 233	1.68E+01	U - 234	2.67E+00	U - 235	1.06E-01
U - 236	8.66E-02	U - 238	2.38E+00	Y - 90	5.23E+06
Zr - 93	7.36E+01				

4) Approved activities included in the process are the following: Sampling of miscellaneous underground units with no known path of ventilation. Miscellaneous underground units may include active and inactive underground tanks, wells, and other units with no known path of ventilation. Installation of temporary or permanent passive HEPA type filtration on any unit if vapor sampling results show combustible gas levels exceeding 25 percent of the lower flammability limit is approved.

5) The following controls must be adhered to:
   * ALARACT 8 with the exception of bulleted Items 5 of Section 2

6) The total unabated dose TEDE to the hypothetical MEI cannot exceed 1.04 E-05 mrem/year per tank.

7) The total unabated emissions are limited to 2.02E-02 mrem/year per tank.

8) Vapor space sampling will follow the controls identified in ALARACT 8, with the exception of bulleted items 4 and 5 in Section 2 of the ALARACT. Bulleted item 4 will not be performed unless field evaluation determines that a riser adapter is necessary to minimize potential exposure to the environment. Installation of an adapter is normally not necessary due to the riser configuration and the short duration required for vapor sampling miscellaneous units. Bulleted item 5 will not be performed because the miscellaneous units are not ventilated.

Project Title	Approval #	Date Approved	NOC_ID
200/600 Areas Facilities Support Decontamination Trailer (Intermittent powered exhaust)(Replaced NOC 678)	AIR 12-323	2/23/2012	844

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.73E-04 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) The decontamination trailer will be comprised of two rooms; one for decontamination activities, and one for support equipment. The decontamination room will have overhead showers (one low flow and one higher flow) and washing and decontamination fixtures. A support equipment room will be adjacent to the decontamination room and contain support systems, e.g. generator, water storage, pumps. The decontamination trailer will be self contained to include a generator, heating, ventilation, air conditioning (HVAC), clean water storage and waste water collection systems. The decontamination trailer will be moved from job to job, within the 200 Area and the adjacent 600 Area(i.e., the area up to 70 meters south of the 200 E Area, as far west as B-pond, as far north as the 212-N, P, and R buildings, the area between the 200E and 200W Areas and as far south as the S-pond.)
Waste water from the collection system will be transferred to other licensed container(s).

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 3.73E-04 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	2.00E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Alpha release rates based on Am-241. While the potential release rates for all emissions are conservatively represented by Am-241 (alpha) and Cs-137 + D (beta-gamma), essentially any radionuclide may be present.			
B/G - 0	1.00E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Beta/Gamma release rates based on Cs-137 +D. While the potential release rates for all emissions are conservatively represented by Am-241 (alpha) and Cs-137 + D (beta-gamma), essentially any radionuclide may be present.			

4) Periodic Confirmatory Measurements (PCM) for the vented and diffuse and fugitive emissions will be provided by the established near facility monitoring and augmented by radiological surveys during personnel decontamination operations (e.g., smears and hand-held radiation monitoring measurements of the interior/exterior of the decontamination trailer). These methods are intended to demonstrate compliance by showing that while remaining under the contamination levels by which work is controlled, the actual emissions inherently will be below the emission estimates.

5) Emissions will be included in the overall fugitive and diffuse emission estimate for reporting purposes as part of the approved ambient air monitoring conducted at the Hanford Site perimeter.

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 7.00E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 7.00E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Phase One activities described below.

At applicant request per WAC 246-247060 (1d), a phased approval process is implemented for this NOC, and this NOC is treated in review as a limited application. There are two phases. Phase One is installation of the new ventilation system. Conditional approval to construct is granted for the Phase One activities:

1. Placement of the new exhauster (previously granted by email permission)
2. Connection of the new exhauster, to include ductwork, electrical, and instrumentation connections necessary to place the new exhauster in an operable state
3. Cold testing of the new exhauster
4. Hot testing of the new exhauster and associated ductwork and systems.

These activities shall not preclude modification, construction or installation of any control or monitoring equipment required after review of the completed application. By accepting the conditional approval of the Phase One activities, the applicant agrees to make in a timely manner such modification, construction, or installation as is deemed necessary during review of Phase Two activities to ensure compliance with 40 CFR 61 Subpart H and WAC 246-247.

Phase Two is removal of the old ventilation system and operation of the new ventilation system.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	1.85E-02	Am - 241	4.79E+03	Am - 243	1.95E-01
Ba - 137 m	8.01E+06	C - 14	1.96E+02	Cd - 113 m	8.93E+02
Cm - 242	1.22E+01	Cm - 243	1.04E+00	Cm - 244	7.92E+00
Co - 60	9.88E+02	Cs - 134	7.27E+00	Cs - 137	8.48E+06
Eu - 152	4.64E+01	Eu - 154	6.96E+03	Eu - 155	4.39E+03
H - 3	1.38E+02	I - 129	4.15E+00	Nb - 93 m	1.80E+02
Ni - 59	2.00E+01	Ni - 63	1.90E+03	Np - 237	6.74E+00
Pa - 231	5.05E-02	Pu - 238	2.36E+01	Pu - 239	4.10E+02
Pu - 240	7.20E+01	Pu - 241	6.91E+02	Pu - 242	5.25E-03
Ra - 226	1.83E-03	Ra - 228	2.10E+00	Ru - 106	9.78E-04
Sb - 125	4.95E+02	Se - 79	1.11E+01	Sm - 151	1.52E+05
Sn - 126	7.54E+01				

		Sr - 90	1.05E+06	Tc - 99	3.70E+03
Th - 229	9.24E-02	Th - 232	3.41E-01	U - 232	1.32E+00
U - 233	5.42E+00	U - 234	1.64E+00	U - 235	6.64E-02
U - 236	5.32E-02	U - 238	1.50E+00	Y - 90	1.05E+06
Zr - 93	2.25E+02				

4) ALARACTs 4, 12, and 16 shall be applied as appropriate during the course of the installation (WAC 246-247-040(5)).
5) Before the new ventilation system is connected to the existing farm ductwork, a cold test shall be performed on the system. A test plan shall be provided to WDOH. Test results shall be reported to WDOH (WAC 246-247-040(5)).
6) Once the new ventilation system is connected to the existing farm ductwork, an operability/acceptance test shall be performed on the system. A test plan shall be provided to WDOH. Test results shall be reported to WDOH (WAC 246-247-040(5)).
7) The blind portable exhauster connection flange shall be removed in accord with ALARA principles (WAC 246-247-040(1)).
8) The existing AN farm exhauster will continue in operation until the approval of Phase Two, except for a passive ventilation period not to exceed 24 hours during which the existing AN farm exhauster shall remain in an operable state. During this passive ventilation period, there shall be no AN farm transfers, mixing operations, or other AN farm in-tank or in-piping activities that might elevate tank vapor space radionuclide concentrations. Until approval of Phase Two, the new ventilation system shall not be relied upon for active ventilation of the AN farm (WAC 246-247-040(5)).
9) The new ventilation system shall tie into the existing ductwork at the portable exhauster connection flange, where a valve and blind flange are located above ground (WAC 246-247-040(5)).

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 7.00E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 7.00E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Phase One activities described below.

At applicant request per WAC 246-247-060(1d), a phased approval process is implemented for this NOC, and this NOC is treated in review as a limited application. There are two phases. Phase One is installation of the new ventilation system. Conditional approval to construct is granted for the Phase One activities:

* Placement of the new exhauster;
* Connection of the new exhauster, to include ductwork, electrical, and instrumentation connections necessary to place the new exhauster in an operable state;
* Cold testing of the new exhauster;
* Hot testing of the new exhauster and associated ductwork and systems.

These activities shall not preclude modification, construction or installation of any control or monitoring equipment required after review of the completed application. By accepting the conditional approval of the Phase One activities, the applicant agrees to make in a timely manner such modification, construction, or installation as is deemed necessary during review of Phase Two activities to ensure compliance with 40 CFR 61 Subpart H and WAC 246-247.

Phase Two is removal of the old ventilation system and operation of the new ventilation system.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	1.09E+02	Am - 241	2.55E+04	Am - 243	5.61E+00
Ba - 137 m	5.67E+06	C - 14	8.34E+01	Cd - 113 m	2.26E+03
Cm - 242	2.30E+01	Cm - 243	3.36E+00	Cm - 244	7.53E+01
Co - 60	1.15E+03	Cs - 134	1.48E+04	Cs - 137	5.99E+06
Eu - 152	3.96E+02	Eu - 154	1.37E+04	Eu - 155	1.77E+04
H - 3	8.14E+02	I - 129	1.78E+00	Nb - 93 m	6.98E+02
Ni - 59	3.22E+02	Ni - 63	3.01E+04	Np - 237	1.81E+01
Pa - 231	2.39E+02	Pu - 238	1.81E+03	Pu - 239	9.36E+03
Pu - 240	1.52E+03	Pu - 241	1.48E+04	Pu - 242	2.05E-01
Ra - 226	2.16E-02	Ra - 228	2.26E+01	Ru - 106	6.21E+02
Sb - 125	1.02E+04	Se - 79	1.79E+01	Sm - 151	6.36E+05
Sn - 126	6.37E+01				

		Sr - 90	5.01E+06	Tc - 99	1.25E+03
Th - 229	9.41E-01	Th - 232	5.58E+00	U - 232	1.93E+01
U - 233	4.13E+02	U - 234	2.08E+01	U - 235	6.03E-01
U - 236	6.84E-01	U - 238	1.25E+01	Y - 90	5.01E+06
Zr - 93	7.75E+02				

4) ALARACTs 4, 12, and 16 shall be applied as appropriate during the course of the installation (WAC 246-247-040(5)).
5) Before the new ventilation system is connected to the existing farm ductwork, a cold test shall be performed on the system. A test plan shall be provided to WDOH. Test results shall be reported to WDOH (WAC 246-247-040(5)).
6) Once the new ventilation system is connected to the existing farm ductwork, an operability/acceptance test shall be performed on the system. A test plan shall be provided to WDOH. Test results shall be reported to WDOH (WAC 246-247-040(5)).
7) The blind portable exhauster connection flange shall be removed in accord with ALARA principles (WAC 246-247-040(1)).
8) The existing AW farm exhauster will continue in operation until the approval of Phase Two, except for a passive ventilation period not to exceed 24 hours during which the existing AW farm exhauster shall remain in an operable state. During this passive ventilation period, there shall be no AW farm transfers, mixing operations, or other AW farm in-tank or in-piping activities that might elevate tank vapor space radionuclide concentrations. Until approval of Phase Two, the new ventilation system shall not be relied upon for active ventilation of the AW farm (WAC 246-247-040(5)).
9) The new ventilation system shall tie into the existing ductwork at the portable exhauster connection flange, where a valve and blind flange are located above ground (WAC 246-247-040(5)).

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.00E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted. The approved activities are limited to:

   The characterization and stabilization (as defined in other conditions) of emission units within 200 West and 200 East areas, and 212 N, 212 P, and 212 R. (WAC 246-247-040(5))

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 5.00E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	3.50E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

License PTE limit bounds 3.5 Ci/yr 241Am and release fraction of 0.001. Any radionuclide on the chart of the nuclides could be encountered during characterization and stabilization operations. The radionuclides specifically listed in the NOC application were chosen to conservatively represent all radionuclide emissions that may occur in particulate form. A small contribution from the gaseous radionuclides may be encountered. Although any radionuclide could be present, for conservatism all beta/gamma is assumed to be Cs-137 and all alpha is assumed to be Am-241 for dose calculation estimates. Other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta-gamma constituents.

B/G - 0	1.40E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

License PTE limit bounds 14.0 Ci/yr 137Cs and release fraction of 0.001. Any radionuclide on the chart of the nuclides could be encountered during characterization and stabilization operations. The radionuclides specifically listed in the NOC application were chosen to conservatively represent all radionuclide emissions that may occur in particulate form. A small contribution from the gaseous radionuclides may be encountered. Although any radionuclide could be present, for conservatism all beta/gamma is assumed to be Cs-137 and all alpha is assumed to be Am-241 for dose calculation estimates. Other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta-gamma constituents.

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) The basis for selection of radioactive air controls/abatements for each emission unit shall be documented in sufficient detail to demonstrate compliance. DOH may audit the controls and determination of containment risk under this NOC, and independently judge the adequacy of controls, assigned risk and risk components for any activity. (WAC 246-247-040(5)) and WAC 246-247-080 (1, 8, 10))

5) Soil Excavation Associated with Characterization/Stabilization: Soil may be excavated to support characterization/stabilization of central plateau emission units. An initial survey shall be performed of the area to be excavated. Surveys shall be performed throughout the excavation to assure that environmental protection is maintained. Once the excavation begins, water or other fixative of equal or better effectiveness shall be used, as necessary, to prevent the spread of dust. To the extent practicable using hand held instrument field survey techniques, the clean soil shall be separated from the soil identified as contaminated. The contaminated soil shall have a fixative applied or shall be covered by plastic at the end of the shift, and as necessary, to stabilize the contaminated soil.

   Radiological Controls for Soil Excavation:

A. Health Physics coverage shall be provided as specified in the radiological work permit. DOH does not approve work permits. DOH may independently judge the adequacy of the Health Physics coverage. Licensee shall maintain records of Health Physics coverage and survey results.
B. Beta-gamma surveys of the ground surface are required prior to excavation in Contamination Areas (CA's), High Contamination Areas (HCA's), Soil Contamination Areas (SCA's), and Underground Radioactive Material Areas (URMA's). If in an area of known or suspected alpha contamination, or if beta/gamma contamination is detected, alpha surveys shall be performed as well.
C. Suppressants such as water, fixatives, covers, or windscreens shall be used as necessary, including at the end of each shift or when sustained or predicted winds are >20 mph.
D. Excavation of radioactive material shall not commence if sustained winds are predicted to exceed 20 mph during the work shift.
E. Excavation of radioactive material shall cease if sustained winds exceed 20 mph. A local wind-speed measurement device may be utilized in lieu of Hanford Meteorological Station readings, provided the reading is taken in an unobstructed location that is representative of the work area. Use of a local device and the measured wind-speed readings taken from it must be documented, and the documentation retained.
F. If the contamination for the general area is greater than 2000 dpm/100 sq.cm. alpha or greater than 100,000 dpm/100 cm.sq. beta-gamma, place in a safe and stable condition and stop work, notify DOH, and implement the controls listed below. Once notifications have been made and the following controls implemented, excavation may continue:

a. Soil shall be wetted prior to excavation if not already damp.
b. General area workplace air monitoring shall be performed during excavation activities.
c. Excavation and contaminated soil piles shall be covered with plastic, or fixative shall be applied, at the end of each shift or as necessary to prevent the spread of airborne contamination.

G. Contaminated soil containing >100,000 dpm/100 sq.cm. beta-gamma or >2000 dpm/100 sq.cm. alpha shall be containerized or covered with clean fill if it is to be left for greater than 48 hours.
H. If soil contamination exceeds 20 mrad/hour (open window reading), work shall be stopped and placed in a safe and stable condition, and adequacy of controls will be reassessed. DOH shall be notified (e-mail notification is required). Work may continue when approved by DOH (e-mail concurrence is required).
I. If hot specks are detected during the radiological surveys, the specks shall be removed and contained before the activity is allowed to continue unless located in the bottom of the trench after excavation has been completed. Specks found in the bottom of the completed trench may be covered with clean fill. A hot speck is defined as a very small amount (i.e. less than or equal to 100 square centimeters) of contamination.

Monitoring for Soil Excavation:

J. At a minimum, pre-job and post-job surveys shall be made.
K. Radiological monitoring shall be in accordance with approved governing procedures. DOH may independently judge the adequacy of the monitoring.

Records for Soil Excavation:

L. Work instructions (written).
M. Radiological work permit.
N. Radiological survey report(s).
(WAC 246-247-040(5))

6) DOH reserves the right to require additional monitoring on a case-by-case basis (WAC 246-247-040(5)).

7) Monitoring: In addition to the monitoring required on page one of this license, total alpha, total beta/gamma shall be monitored periodically, the period to be consistent with the duration of the activity. The bases for the monitoring method and the period shall be documented. Monitoring records shall explicitly demonstrate compliance to the limit on TEDE to the MEI set down in this license. Monitoring may include air monitoring, or CAM records.

For soil excavation, compliance may be demonstrated via calculation based on a release fraction of 0.001, appropriate Hanford dose conversion factors, soil survey records, excavated volume, and estimated Ci content per

unit soil volume. Unless excavation is conducted in accord with the DOH approved PTREAU or HEPA Vacuum Truck (Guzzler) license, credit for abatement or limited disturbance shall not be taken without prior written approval by DOH.

The near-field monitoring system is not sufficient in itself to demonstrate compliance to the emission limits of the license (WAC 246-247-040 (1, 5, 6)).

8) The characterization and stabilization activities licensed are limited to emission units managed by DOE/RL within the 200 West and 200 East areas, and 212 N, 212 P, and 212 R. DOH shall be informed, and written DOH concurrence obtained, prior to initiation of stabilization activities at 212 N, 212 P, or 212 R (WAC 246-247-040(5)).

9) The characterization and stabilization activities licensed are limited to emission units listed in a compliance log maintained by a DOE central coordinator. The compliance log shall initially categorize each emission unit as low or high PTE on the basis of best available information. Low PTE is defined as 1.0 E-3 mrem/year or less, and high PTE is defined as greater than 1.0 E-3 mrem/year.

   Stabilization activities shall not be initiated for high PTE emission units without written DOH approval. Stabilization of emission units having PTE greater than 0.1 mrem/year shall require the submittal of a separate notice of construction application.

   Disturbance factors shall not be used in the determination of PTE except as by permission of DOH on a case-by-case basis. The WAC 246-247-030(21)(a) release fractions shall be assumed, except as may be approved otherwise on a case-by-case basis.

   In the case of emission units in which the work activity may be effectively isolated from a significant fraction of the source material comprising the PTE, DOH will, on a case-by-case basis, consider a suitably defined and calculated PTE less than that for the whole emission unit. "Effectively isolated" may but does not necessarily imply physical barriers. E-mail approval of such cases is required prior to use.

   Emission units may be added to the compliance log, provided DOH is given the new compliance log entry in writing (e-mail is sufficient). (WAC 246-247-040(5))

10) The compliance log shall list estimated or measured actual calendar year emissions for each emission unit on which stabilization activities have commenced. Additionally, the compliance log shall provide a total project actual emission for the calendar year (WAC 246-247-040(5)).

11) An initial copy of the compliance log shall be formally transmitted to DOH by June 30 or prior to initiating any activities under the license, whichever comes first. This initial transmittal shall provide all log information available by the time of submittal, and shall also include a projected list of emission units to be addressed under the license during the next 12 months. Following the date of the first transmittal, and by June 30 of each year, a copy of the previous calendar year compliance log shall be formally transmitted to DOH, along with a projected list of emission units to be addressed under the license during the next 12 months. The log shall be available for DOH inspection (WAC 246-247-040(5)).

12) Characterization means entry and radiological/industrial/chemical characterization activities, not to include activities defined as stabilization below. The license allows characterization of low and high PTE emission units. Characterization is expected to improve the accuracy with which the PTE is estimated for a particular emission unit. Characterization data shall be documented to confirm the initial categorization:
    a. Characterization data may require the upgrading of a particular emission unit from low to high PTE. DOH shall then be informed, and written DOH concurrence to proceed to stabilization shall be required (email is adequate).
    b. Characterization data may allow the downgrading of a particular emission unit from high to low PTE. DOH shall then be informed (e-mail). The basis for the downgrading shall be provided to DOH as part of this information.
    c. Characterization activities shall be conducted in accord with the ALARA principle. (WAC 246-247-040(5))

13) Stabilization means the size reduction, packaging/removal or fixing of whatever contamination or radioactive material may be removed or fixed without altering the existing emission unit structure or environmental containment function. Stabilization is not to proceed without first obtaining characterization data as above.

    a. Stabilization activities shall be conducted in accord with the ALARA principle.
    b. Monitoring and documentation sufficient to demonstrate compliance shall be maintained.
    c. Disposition and transportation of removed material shall be in accord with applicable regulations.

(WAC 246-247-040(5))

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 4.85E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 4.85E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted.

The IDF will provide for disposal of two types of waste: LLW and MLLW. MLLW includes ILAW (WTP ILAW and Demonstration Bulk Vitrification System ILAW) and newly generated IDF operations waste.

MLLW and LLW cells in the IDF have equally sized ultimate capacities of 450,000 m3 (1.50x10+7 ft3) each, for the full IDF build out capacity of 900,000 m3 (3.18x10+7 ft3) (RPP 21633, “Preliminary Closure Plan for the Integrated Disposal Facility”). The IDF is expandable up to the full build out capacity. Expansion is dependant upon waste generation and waste generation forecasts. Leachate generation and associated management of the leachate are minimized by the expansion approach.

The forecasted volumes of MLLW from WTP ILAW and Demonstration Bulk Vitrification System vitrified ILAW waste processes were derived from ORP 11242, “River Protection Project System Plan” as follows:

•352,000 m3 (1.24x10+6 ft3) of ILAW packages

The remaining capacity will be used for the newly generated IDF operations waste and will act as a buffer for the two cells’ overall capacity, should it be required. The estimate for the MLLW generated from operation of the IDF is unknown; however, based on engineering judgment, the yearly amount would not be significant. The 450,000 m3 (1.59x10+7 ft3) capacity of Cell 1 and associated ILAW volumes are listed as information only. This value is used as a bounding volume for calculating the ILAW radiological air emissions.

Low-level radioactive waste is not spent nuclear fuel, transuranic (TRU) waste, high-level radioactive waste, byproduct material (as defined in Section 11e (2) of the Atomic Energy Act of 1954), or naturally occurring radioactive material (DOE 435.1, Radioactive Waste Management). Both contact handle and remote-handle LLW will be disposed at the IDF.

LLW Category I: This waste contains radioactivity not classified as spent nuclear fuel, TRU waste, or high-level waste. LLW Category I waste also meets the radionuclide limits for Category I waste defined in HNF-EP-0063 Hanford Site Solid Waste Acceptance Criteria. This waste may be comprised of either contact-handle or remote-handle waste considered low-activity waste with very low concentrations of long-lived radionuclides.

LLW Category III: This waste also contains radioactivity not classified as spent nuclear fuel, TRU waste, or high-level waste. In addition, it exceeds the radionuclide limits for Category I waste and meets the Category III limits defined in HNF-EP-0063. This waste may be comprised of either contact-handle or remote-handle waste considered moderate-activity to high-activity waste with low to moderate concentrations of long-lived radionuclides, in stabilized form that minimizes subsistence for a period of 1,000 yrs.

MLLW is a dangerous, extremely hazardous, or acutely hazardous waste that contains LLW. Contact-handle MLLW has a dose rate equal to or less than 200 mrem/h and contains radioactivity not classified as spent nuclear fuel or TRU waste. Remote-handle MLLW has a dose rate greater than 200 mrem/h and contains radioactivity not classified as spent nuclear fuel, TRU waste, or high-level waste.

Newly generated IDF operations waste is potentially dangerous, mixed, or LLW generated from the operations of the IDF that could include, personal protective equipment, rags, waste material from the maintenance of equipment or vehicles, and waste generated at the leachate waste treatment facility that is returned to the IDF for

disposal.

The packages for waste shall meet applicable federal transportation regulations under Title 49, Code of Federal Regulations (49 CFR) container requirements for the hazard class/division of the waste, except that packaging for onsite transfers under an approved package-specific safety document might be allowed where cost or technical constraints make the use of a U.S. Department of Transportation (DOT) compliant package unfeasible. Outer containers shall be in good condition, with no visible cracks, holes, dents, bulges, pit or scale corrosion, or other damage that could compromise container integrity, in compliance with WAC 173-303, "Dangerous Waste Regulations." Minor external surface rust that can be sanded or brushed off will be acceptable. Containers having some pit or scale corrosion could be acceptable for storage provided the integrity of the container is confirmed.

MLLW generated from IDF operations will consist of 208 liter drums, medium boxes, small boxes, long equipment containers, and other containers. MLLW is defined as dangerous or hazardous waste in WAC 173-303, and therefore should be disposed in Cell 1.

LLW will be shipped primarily in 208 liter drums, 322 liter drums, other drums, MB-V boxes, medium boxes, small boxes, and other containers. LLW is not a dangerous or hazardous waste as defined in WAC 173-303, and therefore should be disposed in Cell 2. However, because the volume of remote-handle LLW is expected to be small, remote-handle LLW may be disposed in Cell 1 along with remote-handle MLLW. This would avoid the need to set up remote handling operations in both Cell 1 and Cell 2, and will provide greater flexibility for LLW disposal operations in Cell 2.

WTP – ILAW: MLLW includes the low-activity waste fraction of the Hanford Site tank waste that is immobilized in a glass matrix at the WTP.

Other ILAW Streams – Demonstration Bulk Vitrification System: MLLW that contains the low-activity fraction of the Hanford Site tank waste immobilized in a glass matrix is produced by the Demonstration Bulk Vitrification System.

ILAW Containers and Packaging: The ILAW package shall be compatible with crane lifting and movement. The package shall be equipped with lifting and other handling apparatus designed to allow safe lifting, movement, and stacking of the packages when fully loaded. The package shall maintain its integrity during handling, transportation, and lifting during disposal at the IDF.

The WTP ILAW packages are stainless steel cylinders that have been filled with vitrified low-activity waste, which is physically similar to molten glass, then sealed and cooled. These packages will be remote-handled. The Demonstration Bulk Vitrification System containers, also known as vitrification boxes, are filled with material similar to the material in the ILAW packages. The ILAW and Demonstration Bulk Vitrification System packages will be disposed in Cell 1.

The IDF consists of an expandable, lined landfill in a series of near-surface disposal cells that will be developed in phases located in the 200 East Area on the Hanford Site. The landfill will be divided lengthwise into two distinct cells, Cell 1 for disposal of MLLW and Cell 2 for disposal of LLW. The IDF is designed to provide an approved disposal facility for the permanent, environmentally safe disposition of ILAW, newly generated IDF operations waste and LLW that meets the environmental requirements and is approved by the DOE and the State of Washington, Department of Ecology (Ecology).

The IDF is designed for ILAW package transportation, receipt, unloading, emplacement in a disposal cell, and periodic backfill of the disposal cell. Also included are receipt, unloading, emplacement, and periodic backfill of Demonstration Bulk Vitrification System containers, newly generated IDF operations waste, and LLW from Hanford Site sources. In the initial phase of the IDF, the volume of remote-handle LLW is projected to be very small. Rather than set up a separate remote-handle operation for this small volume of LLW, remote-handle LLW may be placed in the cell with remote-handle MLLW.

Disposal cells are installed in a sequential manner and are aligned within the disposal site in a north-south orientation to minimize impact to the aquifer beneath the site. The cells have separate leachate collection, handling, and storage systems to maintain waste separation.

Two cells will be constructed in the first phase of the IDF, Cell 1 (west half) and Cell 2 (east half). Each cell is approximately 3.2 hectares (8 ac) in size, and when fully developed, the completed IDF will occupy approximately 25 hectares (62 ac) Subsequent phase development of the IDF will connect to the southern edge of Cells 1 and 2 such that the bottom grades are continuous between cells.

Support facilities, such as changing rooms, a lunchroom, and offices, will be provided for IDF personnel. Changing facilities for male and female personnel will be furnished with lockers, showers, restroom facilities, benches, and both clean and dirty laundry storage. The building also will contain office space and a control room, and is planned to be a radiologically clean facility.

ILAW: The ILAW packages will be transported from the WTP and Demonstration Bulk Vitrification System to the IDF by the onsite, DOT compliant transportation system. The recommended mode of transport is a commercially available tractor/trailer combination capable of hauling ILAW packages in a DOT compliant, shielded overpack. The configuration required will depend on the total weight and weight distribution relative to the axles to insure the axle load limitations for roadway use are not exceeded.

LLW and MLLW: Various transport vehicles will be used to transport other wastes to the IDF. Commercially available tractor/trailer combinations typically will be used for LLW. LLW will be transported from various locations within the Hanford Site. Container sizes and shapes will vary but are expected to be mostly rectangular or drums of standard sizes. The timing and frequency of delivery to the IDF will vary, depending on operations and waste generation rates from the facilities where these wastes are generated. Transport to the IDF site for disposal will be coordinated with IDF transport operations to avoid conflicts or disruptions to IDF transport schedules, which will take precedence.

Upon arrival at the IDF, the loaded transporter will proceed through the disposal site gate and stop at the receiving station. The receiving station will be provided by the operations contractor.

At the receiving station, the shipping documents will be verified and the packages will be inspected. The operation concepts for the arrival activity will include:

The truck driver will present shipping documents to facility operations personnel at the receiving station. A shift supervisor or quality control inspector will verify that the shipping documents are acceptable.

After shipping documents are verified and the transporter passes inspection, the loaded transporter will be released to travel to the full trailer staging area for cooling, as needed.

Cool-Down Staging Area – ILAW: When the ILAW packages are received for transportation, they may still be at elevated temperatures. Because of possible elevated temperature, operations restrictions will be in place during transportation and prior to disposal in the IDF. Once the ILAW package is received at the IDF, the full trailer will be staged in a designated area within Cell 1 over the bottom liner in a place where trailer storage will not interfere with other IDF operations. This area will be moved from time to time, to avoid interference with the waste disposal operations.

ILAW: After the ILAW package has cooled sufficiently, the trailer will be moved to an appropriate unloading position in Cell 1. Once in position, a crawler crane will be used to move the ILAW package from the transportation container into the designated disposal location within the disposal cell.

Periodically, after emplacement of approximately 81 ILAW package, the crawler crane must move to a new unloading station. Void-fill operations will be performed by a mobile crane after the crawler crane moves to a new unloading position.

LLW and MLLW: Unloading and placement of remote-handle MLLW and LLW will be done using a crane. Unloading and placement of contact-handle MLLW and LLW will be done using a crane or other appropriate equipment.

General Waste Placement and Layer Construction Procedures: The IDF configuration is based on four layers with a uniform height of 3.3 m (10.8 ft) (2.3 m [7.5 ft] ILAW package plus 1 m [3.3 ft] operations layer). Waste containers other than the ILAW packages will be variable height and will be placed in the 3.3 m (10.8 ft) high layers to achieve best use of space. Containers may be stacked on top on each other within each layer if adequate soil cover is provided over the containers. Additional waste container stability analyses will have to be done by the operations contractor to verify waste placement and backfill stability for stacked containers. Containers that have a height greater than the 3.3 m (10.8 ft) layer height will be allowed to project out of the top of the layer. In such cases, it may be necessary to mound cover soil around the individual projecting containers to provide sufficient cover for shielding until they are completely covered by subsequent layers.

Because of the large area available for waste disposal in each cell, flexibility to relocate filling operations to another area within each cell will exist if an event occurs that causes operations to temporarily halt placement of ILAW packages or other waste containers at the current working position. This will allow waste container placement to continue while the situation that caused the operations to cease is resolved.

ILAW: Two basic configurations were developed. Both make use of ecology block shield walls to shield the crane operator from exposure to the ILAW packages, with one using a temporary shield wall and the other using a permanent shield wall. Both of the basic ILAW package configurations include two variations. One variation is a grid pack arrangement of the ILAW packages and the other variation is a tight pack arrangement.

Temporary Shield Wall Configuration: The ILAW package configurations that use a temporary shield wall will require that cover soil be placed over and around the ILAW packages prior to removing the shield wall. This soil cover will have to include the side of the ILAW packages facing the temporary shield wall so that after the wall is removed, the soil will provide the shielding for equipment operators and other operations personnel.

Permanent Shield Wall Configuration: By leaving the ecology block shield wall in place, the wide area between the ILAW packages and the shield wall for the cover soil to slope to the ground can be eliminated. The ILAW package configurations that use a permanent shield wall will allow ILAW packages to be placed up close to the wall, thereby making better use of the available space in the landfill.

Grid Pack and Tight Pack Arrangements: With the grid pack array, the ILAW packages will be placed in a close packed square arrangement. The grid pack array consists of four packages in the array, which is square in shape with a base dimension of slightly over 0.6 m (2 ft). With the tight pack array, the ILAW packages will be placed in a close packed triangular arrangement. The tight pack array consists of three packages in the array, which is triangular in shape with an altitude dimension of approximately 0.5 m (1.5 ft).

LLW and MLLW: Packaging emplacement configurations will depend on opening size and volume of interstitial spaces between LLW and any MLLW containers from IDF operations, and on configuration of the containers and the placement of the containers relative to one another. The placement of the containers will be carefully planned to efficiently pack the containers into the smallest volume possible, and to avoid large interstitial spaces.

The general approach to calculating backfill quantities uses a volume of fill to waste ratio of 1.5 to 1.

Radiation exposure assessment evaluations have determined that 0.5 m (1.5 ft) of soil cover placed over the ILAW packages with a crane prior to operation of equipment on the cover soil will provide adequate radiation shielding to equipment operators. The surface of the initial 0.5 m (1.5 ft) layer will be smoothed and leveled with a bulldozer to facilitate subsequent compaction and placement of the final lift.

After completion of the partial placement of the operations layer with the mobile crane, placement of the operations layer to the full 1 m (3.3 ft) depth will be completed using a loader, dump truck, bulldozer, and compactor. The specific movements and activities of earthmoving equipment will be based on disposal cell configuration plans and elevation monuments established prior to initiating a new layer.

Compaction of the initial 0.5 m (1.5 ft) of the operations layer and placement of the remainder of the operations layer will not take place in the active array in which packages are being placed. Rather, the remainder of operations layer placement will take place in the previous array of ILAW packages so that there will be a placed

and partially covered array of ILAW packages in place to stabilize and support the bulldozer. In addition, compaction of the initial 0.5 m (1.5 ft) of operations layer should not take place until all the voids between the permanent shield wall and the ILAW packages have been filled, and the initial 0.5 m (1.5 ft) of the operations layer has been placed in the active array of ILAW packages to provide shielding from the ILAW packages for the bulldozer operator. Compaction of the first 0.5 m (1.5 ft) layer of cover soil placed by the mobile crane and smoothed by the dozer should be accomplished with a vibratory roller. The vibrations of the compactor will help to fill voids that may have occurred during interstitial space filling by promoting cover soil to flow into the voids. As cover soil is moved into the voids below, additional soil placement will be required to replace the migrating material. This material should be the same low moisture content, low fines content sand from the onsite soil source as that used for interstitial fill. The remaining thickness of cover fill, up to the full 1 m (3.3 ft) thickness, will be placed by a bulldozer operating on top of the layer and compacted with a vibratory roller. The soil for this upper layer should include a higher fines content of up to 25 percent, and should be placed and compacted at or slightly below optimum moisture content.

In general, the loader, which will be stationed at the soil stockpile, will fill a dump truck. The dump truck will deliver cover soil to a location near the package array to be covered. The bulldozer then will spread the soil over the package array to the full 1 m (3.3 ft) depth.

A water truck will be provided for compaction and dust control. The truck will be operated as needed to spray water for compaction and to suppress dust by driving to a location safe for the operator to spray water over the cover material being compacted. In addition to dust control and compaction within the trench, an operations dust control plan will be developed to cover other areas within the boundary of the IDF.

A temporary rain curtain may be used to control the amount of clean stormwater run-off that enters the leachate collection system. The rain curtain can be used in areas where no ILAW packages have been placed or in the areas where ILAW packages and the full 1 m (3.3 ft) operations layer have been placed. The rain curtain would be removed prior to placing additional waste in the area that it covered.

The Leachate Handling Systems shall be designed to segregate MLLW leachate generated in Cell 1 from the LLW leachate generated in Cell 2. The Leachate Handling System shall be designed to manage the leachate generated from a 25 year, 24 hour storm event collected over the entire footprint of the landfill.

The leachate handling system design shall also comply with the following technical requirements:

The landfill shall control water that contacts waste through physical barriers and collection through the leachate collection system. This system shall collect, pump, and store any water that migrated through the landfill and shall provide systems for loading leachate into transport trucks. Leachate meeting the treatment facility waste acceptance criteria shall be transported by truck for storage at the treatment facility. The leachate will then be transferred for treatment. Any leachate not meeting treatment facility waste acceptance criteria will be handled on a case-by-case basis and will be handled, stored, and disposed in accordance with federal and state regulations.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	1.50E+00	Am - 241	7.61E+05	Am - 243	1.39E+02
C - 14	2.08E+02	Cd - 113 m	9.64E+04	Cm - 242	5.22E+03
Cm - 243	2.33E+02	Cm - 244	3.05E+03	Co - 60	4.20E+05
Cs - 134	6.08E+06	Cs - 137	4.07E+06	Eu - 152	1.90E+04
Eu - 154	2.76E+06	Eu - 155	3.31E+06	H - 3	6.03E+05
I - 129	8.23E+02	Nb - 93 m	2.01E+04	Ni - 59	1.81E+03
Ni - 63	1.77E+05				

		Np - 237	8.16E+02	Pa - 231	5.98E+00
Pu - 238	1.23E+03	Pu - 239	4.34E+04	Pu - 240	6.12E+03
Pu - 241	2.40E+05	Pu - 242	7.69E-01	Ra - 226	1.52E+01
Ra - 228	4.77E+02	Ru - 106	1.18E+05	Sb - 125	2.93E+06
Se - 79	2.46E+03	Sm - 151	1.09E+07	Sn - 126	1.88E+03
Sr - 90	2.49E+07	Tc - 99	2.27E+05	Th - 229	5.14E+00
Th - 232	2.69E+01	U - 232	7.39E+02	U - 233	2.80E+03
U - 234	1.58E+03	U - 235	6.84E+01	U - 236	1.67E+01
U - 238	1.60E+03	Zr - 93	1.52E+04		

4) The following isotopes could be found in the Integrated Disposal Facility but will contribute less than 0.1 mrem/yr to the MEI, and represent less than 10% of the unabated PTE and less than 25% of the abated dose:

   Ag-108m, Ag-110m, Am-242m, Ar-37, Ar-39, Ar-42
   Au-195, Ba-133, Ba-140, Be-10, Be-7, Bi-207
   Bk-247, Ca-41, Ca-45, Cd-109, Ce-141, Ce-144
   Cf-249, Cf-250, Cf-251, Cf-252, Cl-36, Cm-245
   Cm-246, Cm-247, Cm-248, Cm-250, Co-56, Co-57
   Co-58, Cr-51, Cs-135, Cs-136, Es-254, Eu-150
   Fe-55, Fe-59, Fe-60, Gd-152, Gd-153, Ge-68
   Hf-175, Hf-181, Hg-203, I-125, K-40, Kr-85
   Mn-54, Mo-93, Na-22, Nb-91, Nb-94, Nb-95
   Nd-147, P-32, P-33, Pb-210, Pd-107, Pm-147
   Po-210, Pu-236, Pu-244, Rb-83, Rb-84, Rb-86
   Re-187, Ru-103, S-35, Sb-124, Sb-126, Sc-46
   Se-75, Si-32, Sm-147, Sn-113, Sn-119m, Sn-121m
   Sr-82, Sr-85, Sr-89, Ta-182, Te-121, Te-123
   Te-125m, Te-127m, Te-129m, Th-228, Th-230, Th-234
   Ti-44, Tl-204, Tm-170, V-49, W-185, Xe-131m
   Y-88, Zn-65, Zr-95

5) All waste shall be containerized and disposed of in closed containers, if a vent is required it shall contain a filter with a minimum efficiency of 99.97% when tested with 0.3 micron particles.
6) The Annual Possession Quantity shall be tracked on a WDOH approved log.
7) Monthly radiological contamination surveys shall be conducted of the soil cover and perimeter of the pit to detect any spread of contamination. Any soil contamination detected shall be reported to WDOH.
8) Water shall be used for dust suppression during the use of mobile cranes, dozers, and vibratory rollers, during placement and compaction of the cover soil.
9) Fixatives shall be supplied to contaminated soils and debris that will be left inactive less than 24 hours at the end of the work operations if the sustained wind speed is predicted during the next work shift is predicted to be equal to or greater than 20 mph.
10) Fixatives shall be applied to any contaiminated soil and debris that will be inactive for more than 24 hours.
11) Prior to receipt of radioactive material in the IDF facility a list and location of the near-facility monitors shall be provided to WDOH for review and approval. Power for a co-located ambient air sampler shall be provided for WDOH use at a monitoring station of WDOH choice.

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.40E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

cleaning Radiologically Contaminated Vehicles (RCVs) and/or radiologically contaminated components (e.g., radiator) of an RCV. A portable, commercially available, high-pressure, water/steam cleaning unit could be deployed to the location of the RCV/component, or the RCV/component (after appropriate precautions to isolate and contain smearable contamination) could be moved to some other location in the 200 Areas plateau before cleaning. Cleaning may also involve brushing, scrubbing, or other manual methods conducted in a manner to minimize airborne dust.

A RCV/component could be isolated with an engineered shelter over a basin. The basin could be a collapsible liner for collection of waste water. The shelter could be a galvanized steel tube framework with arched trusses and covered with polyester sheeting. Alternatively, the activity could be conducted without a shelter over the basin (i.e., open air) with reasonable operational controls (e.g., directing water/steam cleaning stream downward, concentrating stream on RCVs or components, using lowest possible pressure settings) being implemented.

A portable high-pressure, commercially available, water/steam washing unit could be used to clean the RCV/component. Personnel would direct the cleaning stream to areas of localized areas of contamination on the RCV/component. The RCV/component would be surveyed intermittently (e.g., hand-held field instruments, swipes, or dried sample analysis [for alpha] as necessary) to determine level of remaining contamination. This process would be repeated until sufficient decontamination is achieved, as determined by Radiation Protection personnel, to allow the RCV/component to be returned to service (i.e., no smearable contamination remains, and a fixed contamination level of no greater than 0.5 millirem/hour dose rate).

After decontamination to appropriate levels, the RCV/component would be removed from the shelter, if used, and basin. The RCV/component could be returned to service, or if necessary, appropriately packaged and disposed. Contaminated waste materials resulting from the cleaning processes, including waste water, will be packaged appropriately using standard procedures and dispositioned to approved storage or disposal. Activities could include solidification of liquid waste (such as absorbing liquids in tanks, containers; low-temperature [i.e., less than 100 degrees Celsius] evaporation) and subsequent transfer to appropriate on- or off site treatment/disposal facilities.

The shelter (if used) and basin would be surveyed at the end of the cleaning process to ensure appropriate radiological controls are in place. The shelter/basin would be decontaminated appropriately and maintained for future cleaning activities. If necessary, the shelter/basin could be packaged and disposed.

High-efficiency particulate air (HEPA) -filtered vacuums or portable/temporary radionuclide air emission units (PTRAEUs) may be used to support the cleaning activities.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 3.40E-05 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	1.50E-06	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Alpha release rate based on Am-241. Any radionuclide might be present in the RCV cleaning activities. Am-241 is representative of the alpha-emitting radionuclides present in/on the RCV/component and would be typical in the wastestream created.			
B/G - 0	2.90E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Beta/Gamma release based on Cs-137. Any radionuclide might be present in the RCV cleaning activities. Cs-137 is representative of the beta-gamma radionuclides present in/on the RCV/component and would be typical in the wastestream created.			

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) If a portable/temporary radioactive air emission unit (PTRAEU) or HEPA filtered vacuum is used, controls as described in the sitewide NOC, i.e., DOE/RL-96-75 or DOE/RL-97-50, and in the associated license would be followed.

5) The cleaning operations shall be performed in accordance with the controls specified in a radiation work permit (RWP) and/or operating procedures.

6) All activities shall be conducted under the auspices of radiological control technicians. Routine field surveys, including swipes/smears, shall be conducted. Fixatives, covers, or other standard measures shall be used to contain contamination.

7) Appropriate spill prevention procedures shall be in place to minimize the probability of a release of radioactive liquid waste to the environment, and to provide immediate cleanup of any liquid spills.

8) Low risk radiological activities (i.e., less than or equal to 100,000 dpm/100 cm^2 beta-gamma and less than or equal to 2,000 dpm/100 cm^2 alpha) will be completed under this NOC implementing the following controls:

-- Pre and post-job surveys will be performed and maintained as records of low emissions.
-- A basin will be erected to contain radioactive contamination.
-- Splashguards will be installed to contain spray water, and ensure waste water is directed toward and collected in the basin.
-- All radioactive contamination removed during the decontamination process shall be contained, packaged, or disposed of within the same day.
-- The basin surfaces shall be maintained to less than 1,000 dpm/100 cm^2 beta-gamma and 20 dpm/100cm^2 alpha when not in use.

For those activities considered medium risk radiological activities (i.e., greater than 100,000 dpm/100 cm2 to less than or equal to 1,000,000 dpm/cm2 beta-gamma and greater than 2,000 dpm/100 cm2 to less than or equal to 20,000 dpm/cm2 alpha), DOE will contact WDOH to discuss the additional controls that will be implemented for limiting radiological air emissions.

This NOC will not be used for high risk radiological activities.

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.47E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.47E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The action will include the operation of a 500 cfm portable exhauster connected to a riser in conjunction with a inlet HEPA filter to remove evaporate liquid in the 241-ER-311 Catch Tank. A small volume of the liquid may be pumped out during this activity. There may also be an insertion of a sleeve inside the existing risers to direct air flow closer to the liquid surface.

During riser preparation controls will be established using as low as reasonably achievable control technology (ALARACT 1) "Demonstration for riser preparation/opening", ALARACT 4 "Demonstration for packaging and transportation of waste", ALARACT 6 "Demonstration for pit access", ALARACT 13 "Demonstration for installation, operation, and removal of tank equipment", ALARACT 14 "Demonstration for pit work", ALARACT 15 "Demonstration for size reduction of waste equipment for disposal", and ALARACT 16 "Demonstration for work on potentially contaminated ventilation system components".

A portable, 500 cfm ventilation system will be installed on a riser on the 241-ER-311 Catch Tank. The portable exhauster consists of a skid mounted air clean-up train, which includes a heater, a pre-filter, two HEPA filters in series, and a fan, prior to the stack. During exhauster operation air from the tank will be heated before passing through the pre-filter and two HEPA filters to ensure that condensation of air stream moisture is minimized through this section. Drains in each of the filter and heater housings allow entry condensed liquid to flow away from the components and to be collected in a seal pot for removal.

Ductwork will be used to connect the exhauster inlet to the tank riser. Ductwork will essentially be fabricated in conformance with ASME B31.3 Process Piping, and it will meet the requirements of ASME AG-1, Section SA, with the exceptions noted in RPP-1923, "General WAC 246-247 Technology Standards Exemption Justification for Waste Tank Ventilation Systems".

A 500 cfm inlet HEPA filter in an ASME AG-1 compliant housing will be installed on a second riser on the 241-ER-311 to accommodate the inlet air stream created by the use of the portable exhauster. When the exhauster is not running, the inlet HEPA filter will serve as a tank barometric breather filter to provide abatement of particulate emissions from the tank.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Am - 241	4.79E-04	Cs - 137	9.36E+00	Pu - 239/240	3.36E-04
Sr - 89/90	2.88E+00				

4) The following ALARACTs shall be followed during retrieval activities, ALARACT 1 "Demonstration for riser preparation/opening", ALARACT 4 "Demonstration for packaging and transportation of waste", ALARACT 6 "Demonstration for Pit Access", ALARACT 13 "Demonstration for installation, operation, and removal of tank equipment", ALARACT 14 "Tank Farm ALARACT Demonstration for Pit Work", ALARACT 15 "Demonstration for size reduction of waste equipment for disposal", ALARACT 16 "Demonstration for work on potentially contaminated ventilation system components".

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.55E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

All work will be performed in accordance with approved radiological control methods and as low as reasonably achievable (ALARA) program requirements. These requirements will be carried out through radiological control procedures.

The general physical processes associated with decontamination activities in the decontamination trailer will consist of the following:

On identification of the need for additional decontamination of personnel, affected individuals will be escorted to the decontamination trailer.

As appropriate, contaminated clothing, coverings, and/or articles will be removed, packaged, and dispositioned in accordance with applicable facility waste handling procedures.

Personnel decontamination processes might include various methods or a combination of cleaning agents (e.g., soap and water, pre-moistened towelettes, shaving cream-type foam decontamination agents for facial areas; removal of hair; and abrasive soaps for toughened skin surfaces [e.g., hands and feet]).

Spent decontamination solutions will be transferred from the holding tanks directly to a mobile disposal unit or containerized (e.g., packaged in absorbents in drums or placed in drums or carboys) and transported to existing facilities on the Hanford Site for disposal.

Periodic maintenance inspections of the decontamination trailer will be performed without use of containment or portable exhausters.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 1.55E-05 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Am - 241	8.37E-04	Solid	WAC 246-247-030(21)(a)
Alpha release rate based on Am-241. Any radionuclide might be present Am-241 is representative of the alpha-emitting radionuclides present.			
Cs - 137	4.19E-03	Solid	WAC 246-247-030(21)(a)
Beta/Gamma release rate based on Cs-137. CS-137 is representative of the Beta/gamma-emitting radionuclides present..			

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241 Cs - 137

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) Periodic Confirmatory Measurements (PCM) for the diffuse and fugitive emissions shall be provided by the established near facility monitoring and augmented by radiological surveys during personnel decontamination operations (e.g., smears and hand-held radiation monitoring measurements of the interior/exterior of the decontamination trailer). These methods are intended to demonstrate compliance by showing that while remaining under the contamination levels by which work is controlled, the actual emissions inherently will be below the emission estimates.

5) Emissions will be included in the overall fugitive and diffuse emission estimate for reporting purposes as part of the approved ambient air monitoring conducted at the Hanford Site perimeter.

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.32E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 3.32E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Site preparation for the retrieval of the waste from single-shell tanks covers the following activities described below.

Installation of the following in-tank equipment

- Waste distribution devices
- Transfer pumps
- Enraf-Nonius Series 854 (ENRAF) stilling wells
- Video cameras
- Instrument manifolds
- Central fury device
- Drain lines back to tank
- AMS (Articulated Mast System)
- Sluicing nozzles
- Ventilation inlet filter assemblies
- Connection of hose-in-hose transfer lines (HIHTL)
- New pit cover-plates
- Electrical power and instrument cables and other utility tie-ins and/or upgrades
- New above ground pits
- Jumpers
- Off riser sampling system
- Mobile Arm Retrieval System (MARS)

Removal, Decontamination and Disposal of Existing Equipment

- Remove/Replacement of Breather filters
- Removal of Sludge weights
- Removal of Liquid observation wells (LOW)
- Removal of Standard Hydrogen Monitoring System (SHMS) probe
- Removal of Thermocouple probes
- Removal of Sluicing nozzles
- Removal of Video cameras
- Removal of Liquid level reel
- Removal of Jumpers from pits
- Removal of Saltwell pumps
- Removal of Sluice pumps
- Removal of Corrosion probes
- Removal of Shield plugs
- Removal of Slurry distributors
- Removal of Air lift circulators
- Removal of Riser adapter cover plates
- Removal of Saltwell screens
- Removal of Dip tubes
- Removal of Protective foam coating on pits

Other similar equipment may be installed or removed provided all conditions and limitations outlined in this approval are met.

Pit Work

Pits will be accessed for installation of instrument manifolds, transfer pump installation, jumper removal, replacement of existing HIHTLs with new HIHTLs, connection of high efficiency particulate air (HEPA) filters, exhauster trunk for the portable exhausters, and removal of various jumpers, isolation of transfer lines, water lines, and drain lines.

Removal of In-Tank Equipment

Various in-tank equipment, listed above, will be removed from the tanks to make room for the waste retrieval equipment, or to be replaced with equivalent equipment built to withstand the forces of waste retrieval.

In-Tank Equipment Installation

Motor controlled spray devices and sluicers will be inserted into risers on some tanks near the outside perimeter of the tank and an automatic indexing spray device also will be installed on a centrally located riser. In-tank closed circuit television cameras will be installed into risers and connected to a master camera control system skid. This equipment will be in the riser for the duration of the project and will not contact the waste. Each spray assembly is equipped with a spray washer to provide a decontamination rinse during removal. The spray devices and cameras will be sleeved out of the risers at completion of the project.

An AMS will be installed through risers of some tanks for use during retrieval. The AMS may be removed and reused. Pumps and In Tank Vehicles (ITVs) will be waste contacting and may be abandoned in place following the conclusion of retrieval operations.

Ventilation inlet filter assemblies (breather filters) will be installed on those tanks whose breather filters have been removed to accommodate portable exhausters and other retrieval equipment.

Installation of the Off-Riser Sample Collection System (ORSS). The ORSS consists of a sample collector sub-system and its deployment sub-system. The sample collector is capable of sampling the various types of waste expected in a post-retrieval single shell tank environment. The waste may be liquid in an extreme range of viscosities, or solids in various states of friability. The sample collector crawler will return the sample to sample containers staged below the riser, where it will be retrieved into the glove bag mounted on the sampling riser. Monitoring of the sample collector will be accomplished visually using the in-tank camera. All activities associated with the ORSS will be accomplished thru a sealed glove bag. The riser used for sampling will be open to the atmosphere for a very short period of time (typically less than one minute) while installing and removing the glove bag.

Installation of new risers. In some cases it will be necessary to install new risers on some tanks, which may involve the removal of some pits that the riser is routed through. Nominal riser diameters range from four to 42 inches. Riser will be installed by first removing soil down to the concrete tank dome surface using hand digging, backhoe, and/or using the Filter Vacuum Truck (FVT). A steel caisson will be inserted into the hole for wall support. A small layer of grout will be added to the bottom of the hole to provide a level surface. A hole will be partially drilled into the concrete. After a cable is attached to the core, the drilling will be completed through the dome into the tank headspace. The new prefabricated riser will be lowered into the caisson until support brackets on the side are seated on the grout top.

For new riser installations where pits will also need to be removed the pits will be removed in one piece, if possible. If the riser does not come free then the pit will be broken into smaller pieces for removal. Prior to removal of the pits, however, the pits will be decontaminated as much as possible by washing them down or by application of fixative. Any liquid used for decontamination purposed will drain to the tank

The MARS will be installed through risers for use during retrieval. The MARS may be removed and reused after use.

Tank Preparation for Closure

Tank preparation for closure will include installation of equipment for introducing fill material, fill placement monitoring, and ventilation. In general, equipment residing in risers (e.g., pump, thermocouple tree, vacuum retrieval mast, etc.) will not be removed from the tank unless it obstructs a riser that is required to gain access for placing the fill material. Equipment obstructing a riser needed for access will be either removed, or cut and lowered into the tank. Equipment lowered into the tank during tank preparation will be completely covered when the fill material is added to the tank.

Soil Excavation

Soil will be excavated inside and outside the farms for various reasons such as tie in of instrumentation and power systems for monitoring transfer progress. Intermittent trenches will be excavated for this purpose.

The volume of soil removed during excavation activities are volumes of disturbed soil that will not leave the respective farms. Soil may be excavated by hand, using the FVT, and/or use of a backhoe. Soil piles may be moved from one place to another within the tank farm with heavy equipment (i.e. backhoe, front loader, etc.). The soil will be used to fill the trenches after the hose and the conduits are installed.

An initial survey is required of the area to be excavated. Surveys are performed throughout the excavation to assure that worker safety and environmental protection is maintained. Once the excavation begins, water is used, as necessary, to prevent the spread of dust. To the extent practicable using hand held instrument field survey techniques, the clean soil is separated from the soil identified as contaminated. The contaminated soil has a fixative applied or is covered by plastic at the end of the shift, and as necessary, to stabilize the contaminated soil.

A beta-gamma survey of the ground surface is required prior to excavation in Contamination Areas (CA's), High Contamination Areas (HCA's), Soil Contamination Areas (SCA's), and Underground Radioactive Material Areas (URMA's). An alpha survey may be required prior to excavation per the TWR-4675, TFC Radiological Source Term Report Including Technical Basis for Dual Survey Exemption, Revision 4.

For excavation in CA's, HCA's, SCA's, and URMA's, if beta-gamma activity greater than 1000 dpm/probe area (5000 dpm/100cm 2) is identified, alpha surveys will also be performed.

Suppressants such as water, fixatives, covers, or windscreens will be used as necessary, including at the end of each shift or when sustained or predicted winds are >20mph. Excavation of radioactive material shall not commence if sustained winds are predicted to exceed 20 mph during the work shift. Excavation of radioactive material shall cease if sustained winds exceed 20 mph.

A local wind-speed measurement device may be utilized in lieu of Hanford Meteorological Station readings, provided the reading is taken in an unobstructed location that is representative of the work area. Use of a local device and the measured wind-speed readings taken from it must be documented in the Work Record.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	2.15E-02	Am - 241	6.96E+00	Am - 243	2.13E-04
Ba - 137 m	3.69E+02	C - 14	1.55E-02	Cd - 113 m	1.03E+00
Cm - 242	6.88E-03	Cm - 243	4.11E-04	Cm - 244	1.15E-02
Co - 60	9.80E-01	Cs - 134	5.25E-02	Cs - 137	3.90E+02
Eu - 152	8.00E-02	Eu - 154	8.19E+00	Eu - 155	5.80E+00
H - 3	5.63E-02	I - 129	3.40E-04	Nb - 93 m	2.76E-01
Ni - 59	7.68E-02	Ni - 63	7.31E+00	Np - 237	8.68E-04

Pa - 231	4.72E-02	Pu - 238	3.62E-01	Pu - 239	7.53E+00
Pu - 240	1.15E+00	Pu - 241	6.14E+00	Pu - 242	3.28E-05
Ra - 226	7.62E-01	Ra - 228	4.47E-03	Ru - 106	2.59E-05
Sb - 125	1.40E+00	Se - 79	3.70E-03	Sm - 151	2.57E+02
Sn - 126	4.55E-02	Sr - 90	1.62E+04	Tc - 99	6.85E-01
Th - 229	7.52E-02	Th - 232	1.10E-03	U - 232	3.81E-03
U - 233	8.16E-02	U - 234	1.17E-02	U - 235	5.01E-04
U - 236	2.03E-04	U - 238	1.20E-02	Y - 90	1.62E+04
Zr - 93	3.34E-01				

4) The Department shall be notified, within 7 days, of when an existing breather filter is replaced by a Flanders 40 cfm radial filter.

5) During penetration of the tank dome, core drilling activities will take place within plastic sleeving or tenting. When the cylinder core is removed it shall remain contained within the plastic sleeving, and plastic sleeving or tenting shall remain over the existing hole in the tank dome until the new riser is installed. Active ventilation using a registered emission unit will be used to maintain a negative pressure on the tank dome during the penetration of the tank dome until the new riser is installed.

6) Riser installation activities shall cease when sustained winds exceed 25 miles per hour. A local wind speed measurement device may be utilized in lieu of Hanford Meteorological Station readings, provided the reading is taken in an unobstructed location that is representative of the work area. Use of a local device and the measured wind speed reading taken from it must be documented in the JCS Work Records.

7) Soil excavation activities shall be performed in accordance with the requirements of TWRS ALARACT Demonstration 5 "Demonstration for soil excavation (using hand tools)".

8) The Annual Possession Quantity for pit entries, equipment removal activities, soil excavation, Filter Vacuum Truck (FVT) operation, and backhoe excavation activities shall be tracked on a WDOH approved log.

9) Work involved with pits and in-tank equipment installation and removal shall follow the requirements of TWRS ALARACT Demonstrations 1, 3, 4, 6, 7, 10, 11, 12, 13, 14, 15, and 16.

10) Pit removal will be limited to not more than 3 pits per calender year at at total inner surface area per pit of not more than 500 square foot.

11) The use of the of the backhoe for pit removal shall be limited to not more than 500 cubic yards per year at a contamination level of not more than 10,000 CPM Beta per 15 square centimeter probe area and 20 CPM Alpha per 50 square centimeter probe area.

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.10E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.82E+01 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Sump Intrusion Mitigation:

Sump intrusion mitigation is limited to cells 001, 002, 003, and 011 only. From time to time if intrusion of precipitation and snow melt gets into the sumps, the sumps will need to be pumped. In order to accommodate this, submersible pump assemblies will be installed in each of the four CR Vault Cells. The pump assemblies will be installed on top of existing 6 inch riser extensions on cells 001, 002, 003, and 011. Riser extensions may be installed, or replaced if necessary. These extensions will be installed and/or removed as follows:

- the pit covers will be removed,

- above grade piping will be cut and capped,

- leak detectors and two zip cords will be removed,

- the riser extensions will be installed and/or removed remotely from a platform over the pit, and

- a new pit cover will be installed.

The sumps will be pumped by connecting a transfer line to a ventilated tank or to the Tanker Truck permitted under AOP Emission Unit Number 888 and licensed under WDOH NOC ID Number 696. The transfer line will be a hose-in sleeve line. The other end of the transfer line will be attached to the pump assembly on the first CR Vault cell to be pumped. After the first cell is pumped, flush water will be added and pumped to flush the system. Then the hose will be relocated to the next cell's pump assembly. The process will be repeated until all the cells are pumped. The CR Vault breather filter will not be modified and will be open during pumping. After the pumping is complete, the transfer line and pumps will be removed and disposed of as mixed waste. The pit foam covering will also be replaced to prevent, or at best minimize intrusion of precipitation and snow melt.

A fixative shall be applied with the pit covers on. The fixatives shall be applied to pit surfaces through a port in the pit cover using a 'whirly' or by fogging. A hand held sprayer is used to apply fixatives within the pit when the pit cover is off.

Temporary power installation will be limited to meet the needs to support the work described in this NOC. Temporary installations can be removed when no longer needed.

General Controls for Sump Intrusion Mitigation:

The general controls for sump intrusion mitigation is limited to cells 001, 002, 003, and 011 only. The required controls for each of the following actions are delineated by the specified ALARACT:

- ALARACT 1—Tank Farm ALARACT Demonstration for Riser Preparation/Opening.

- ALARACT 4—Tank Farm ALARACT Demonstration for Packaging and Transportation of Waste.

- ALARACT 5—Tank Farm ALARACT Demonstration for Soil Excavation (using hand tools).

- ALARACT 6—Tank Farm ALARACT Demonstration for Pit Access.

- ALARACT 7—Tank Farm ALARACT Demonstration for Tank Waste Grab Sampling.

- ALARACT 11—Tank Farm ALARACT Demonstration for Waste Transfers.

- ALARACT 12—Tank Farm ALARACT Demonstration for Packaging and Transportation of Equipment and Vehicles.

- ALARACT 13—Tank Farm ALARACT Demonstration for Installation, Operation, and Removal of Tank Equipment.

- ALARACT 14—Tank Farm ALARACT Demonstration for Pit Work.

- ALARACT 15—Tank Farm ALARACT Demonstration for Size Reduction of Waste Equipment for Disposal.

The activities performed at the 244-CR Vault Facility, ER-153 and/or 244-A Lift Station include:

Work Area Preparation:

- Miscellaneous work including equipment delivery, movement, set up and maintenance in the general work area around the 244-CR Vault Facility.

- Construction and take down of open top containment tents (bullpens) over the facility vault area.

- Installation of Portable/Temporary Radioactive Air Emission Unit(s) (PTRAEUs).

- Installation of portable 1,000 cubic feet per minute (cfm) exhauster.

- Removal and/or installation of vault foam covering.

- Application of fixative at pit interior.

- Temporary power installation.

Facility/Interim Stabilization Work:

- Operation of PTRAEU for bullpen ventilation.

- Removal and/or installation of pit covers.

- Inspection of pits, vaults, and tanks.

- Removal and disposition of excess equipment and waste in pits, risers, and tanks.

- Decontamination activities.

- Measurement of liquid level and sludge levels in tanks and sumps.

- Sampling activities in pits, vaults, and tanks including chemical addition and/or waste sampling to determine Double Shell Tank waste acceptance.

Facility Equipment Activities:

- Installation, disconnection, repair, replacement, and/or leak testing, of new and existing facility equipment (valves, jumpers, pumps, leak detectors, or other instrumentation/equipment).

- Modifications, maintenance, and/or isolation and sealing of existing risers, pits, vaults and incoming and/or outgoing piping (drain and transfer lines) from 244-CR Vault or connected facility.

Excavation:

- Installation of permanent power to 244-CR Vault Facility.

- Installation/Operation of Passive Breather Filter Assembly.

Waste Transfer and Support Activities:

- Operation of 1,000 cfm portable exhauster at 244-CR Vault.

- New waste transfer system, waste staging/consolidation.

Miscellaneous activities shall include:

- Construction and take down of open top contaminant tents over the facility vault area.

- Open top containment tents (bullpens) shall be constructed over the facility pit area to prevent potential airborne contamination from the effected work area to the environment. Two bullpens shall be erected around two instrumentation pits at the 244-CR Vault. Upon completion of the first pit's work, the bullpens shall be relocated to the other two pits and their work will be completed.

- Installation of Portable/Temporary Radioactive Air Emission Unit(s) (PTRAEUs)

- A Portable/Temporary Radioactive Air Emission Unit (2,000 cfm) or units (1,000 cfm each) shall be installed to ventilate the bullpens during activities that require work in the pits, cells and tank vault area prior to performing waste transfer activities. One thousand cfm PTRAEUs, if used, shall be directly connected to individual bullpens, while a 2,000 PTRAEU if used, shall be connected to two bullpens. Movement and installation of the PTRAEU can be performed to facilitate ventilation for the four vaults of the 244-CR Vault Facility. The PTRAEU shall operate intermittently (during work activities) and will be operated in accordance with the latest WDOH approval, AIR 99-1102, for the Portable/Temporary Radioactive Air Emission Unit (PTRAEU) NOC (DOE/RL-96-75).

A portable 1,000 cfm exhauster shall be installed to ventilate the 244-CR Facility vaults and tanks during waste transfer activities. This exhauster shall operate intermittently to support waste transfer and support activities and shall monitor air emissions. The exhauster shall be piped into the existing 244-CR facility ventilation system upstream of the existing (non-operating) exhauster, 296-C-05 and HEPA filters. The existing 244-CR Facility exhaust system shall be isolated and not used. Tie in of the 1,000 cfm exhauster to the existing exhaust system shall be in accordance with ALARACT 16, Tank Farm ALARACT Demonstration for Work on Potentially Contaminated Ventilation System Components. After the waste transfer is completed, the exhauster shall be removed in accordance to the requirements of ALARACT 16.

A foam covering has been placed over the 244-CR Vault area to prevent intrusion of precipitation and snowmelt. In order to gain access to the pit cover (metal) plates or concrete cover blocks, sections of the foam shall be removed, packaged, transported and disposed of. ALARACT 4, Tank Farm ALARACT Demonstration for Packaging and Transportation of Waste shall be used to properly disposition the removed foamed covering. Radiation control technicians (RCT) shall monitor the affected work area while the foam covering is being removed. The foam covering shall be replaced after work is complete, as part of intrusion prevention measures completed by the project following waste transfer activities.

Operation of PTRAEU for Bullpen Ventilation.

Ventilation of the bullpens during pre waste transfer tank activities and prior to the installation of the 1,000 cfm portable exhauster shall be accomplished with the use of PTRAEU(s). The PTRAEU(s) shall be operated in accordance with the latest WDOH approval, AIR 99-1102, for the Portable/Temporary Radioactive Air Emission Unit (PTRAEU) NOC (DOE/RL-96-75).

Concrete cover key blocks are removed first, and only blocks necessary to perform intended work are removed. Consideration is given to sliding blocks to minimize the number of blocks to be removed. As discussed in the following, pit covers are decontaminated and/or covered with fixative before removal. Pit Covers are raised a minimum distance to safely allow a radiation protection technician to perform a dose rate and contamination survey. Pit covers are wrapped in plastic and set down in a specially prepared lay-down area. On completion of activities, the plastic wrap is removed from the pit covers and the pit covers are re-installed in their original position and orientation. Post-job surveys are performed.

Inspections, such as visual, video, or nondestructive inspections, shall be performed with pit covers in place (for pit with access ports) or removed. The pit cover design, historical inspection information, and ALARA information shall be used to determine whether the inspection shall be performed manually (with pit cover removed) or remotely with a camera and the pit covers in place.

Excess equipment and debris currently located in the 244-CR vault pits, and in-tank equipment shall be removed to accommodate new waste transfer equipment and piping. Excess equipment shall be replaced with replacement in kind equipment, as necessary.

To facilitate the removal and disposition of these items, size reduction and decontamination activities shall be utilized. Size reduction activities shall include cutting up unusable equipment (usually jumpers/blanks) remotely, using hydraulic shears or low revolutions per minute portable band saws. All size reduction activities shall be performed in accordance with ALARACT Demonstration 15, TWRS ALARACT Demonstration for Size Reduction of Waste Equipment for Disposal.

Disposition of excess equipment and waste shall be performed in accordance with ALARACT Demonstration 4, TWRS ALARACT Demonstration for packaging and transportation of waste.

Removable contamination in the accessible portions of the pit is reduced to less than 100,000 disintegrations per minute/100 square centimeters beta/gamma and 2,000 disintegrations per minute/100 square centimeters alpha by washing, or an approved fixative is applied to pit surfaces. Initial washing with a low pressure (125 pounds per square inch gauge), or high pressure (3,000 pounds per square inch gauge) 'whirly' is accomplished through a port in the pit cover blocks. Additional decontamination activities (with the cover block off) include the use of chemicals, peel and strip paints, water, or manual scrub brushes.

After a section of equipment has been washed it shall be pulled into plastic sleeving and sealed by horse tailing and taping.

Liquid and sludge levels are determined using zip cords or other appropriate means that shall not disturb the waste more than zip cords.

Sampling activities shall be performed in the tank and sump area of 244-CR Vault by way of risers in the riser pit in accordance with ALARACT 7, "Tank Farm ALARACT Demonstration For Tank Waste Grab Sampling." Radiological controls for riser preparation/opening listed in ALARACT 1, "Tank Farm ALARACT Demonstration for Riser Preparation/opening," shall be followed.

The waste transfer processes shall transfer waste from tanks CR-011, CR-001, CR-002 and CR-003 and sumps within 244-CR Vault Facility to a staging tank within the 244-CR Facility. The transfer system to consolidate the waste from individual tanks consists of above ground piping of a hose in hose with leak detection at each tank's pit being utilized to support the transfer line. Mixing and dilution of the waste may take place at the receiving tank or within the transfer lines directly. The transfer system may include equipment pump skids and shall include appropriate connections to the transfer lines to accommodate chemical and water addition to the 244-CR Facility tanks and mixing prior to transfer to the designated Double Shell Tank (DST).

Before entry into a pit, an evaluation is made by engineering and/or operations personnel to determine the transfer routing configuration after pit work is complete. On removal of cover blocks, a visual inspection of pit contents is made to verify present configuration.

Tools such as impact wrenches, T-bars, and pike poles are used to repair or replace pit equipment. All equipment coming out of the pit is wrapped in plastic or otherwise contained or decontaminated for reuse or disposal. Removable contamination on the outer-most container shall not exceed 1,000 disintegrations per minute/100 square centimeters beta/gamma and 20 disintegrations per minute/100 square centimeters alpha before removal from the bullpen. Disposition of non reusable equipment waste shall be performed in accordance with ALARACT Demonstration 4, TWRS ALARACT Demonstration for packaging and transportation of waste.

Jumper work shall be preceded by flushing the appropriate transfer lines with water. Jumper work is accomplished remotely, using a crane to maneuver heavy equipment and parts. Installation, disconnection, and/or changing jumpers/blanks are accomplished by slowly loosening the jumper/blank at the connector head. The required jumper/blank is positioned and tightened to the new connector heads. If the process line or equipment being worked on is connected physically to other unnecessary transfer lines, or if the line is to be left unused, a cap, blank, or equivalent is installed on all open nozzles not connected to jumpers.

Leak testing of newly installed jumpers/blanks shall be performed with pressurized water before initiating waste transfers. Occasionally, a jumper leak test is performed during the initial stages of the transfer. In either case, cover blocks shall be in place before leak testing is performed.

Cutting up unusable pit equipment (usually jumpers/blanks) is accomplished remotely using hydraulic shears or low revolutions per minute portable band saws. Cutting activities shall be performed in the bullpen or in glovebags. The goal shall be to maintain a contamination level equal to or less than 1,000 dpm/100 cm2 beta gamma and 20 dpm/100 cm2 alpha, during cutting activities, but may not always be attainable. RCT coverage shall be provided. Should contamination levels exceed 1,000-dpm/100 cm2 additional sleeving, or use of a glove bag shall be used and/or decontamination activities performed to lower the levels in accordance with ALARA. Welding (if required) shall commence once removable contamination levels in the cut and weld area are reduced to ALARA. Size reduction (cutting) activities shall be performed in accordance with ALARACT Demonstration 15, TWRS ALARACT Demonstration for Size Reduction of Waste Equipment for Disposal. To ensure that water intrusions or potential residual waste in piping are eliminated from the facility, existing piping and transfer lines to and from the 244-CR Vault facility shall be blanked, grouted, or sealed. The isolation includes activities such as installing plugs, caps, blind flanges, or grouting. Isolations may occur at the 244-CR riser pit area or at the other end of the pipe in a diversion or valve box, at the ER153 or the 244A Lift Station.

Modifications to existing in-route pits, vaults and piping shall be required to establish the waste transfer route or to ensure the integrity of the system prior to waste transfer. These modifications can include but are not limited to, removal of existing parts and replacement with like parts, installation of new jumpers, or blanking off of equipment. When possible existing blanks shall be utilized. Pipe cutting shall be minimized in compliance with ALARA. If it is determined that the installation of a new above ground transfer line would be the best engineering method to establish a waste transfer route, a temporary transfer route shall be established following existing design and installation procedures. This temporary route will be either above ground or in a shallow trench. If a trench is required excavation shall be performed as described under that activity in this NOC.

Pit drains are checked using water from a tanker truck or another source. Water at a flow rate of approximately 20 gallons per minute is added to a pit drain line and subsequently monitored to verify the pit drains are free of restrictions. At times it might be necessary to pump the DCRT that receives the water after the water passes through the pit drain if the volume of test water approaches the capacity of the DCRT.

Either flushing with water and/or using a retrieval tool to remove debris from the drain are used to clear plugged drains. Water supply valves are opened slowly to minimize splashing. Pressures above 50 pounds per square inch gauge require approval from the engineering organization. Cover blocks shall remain in place and work is accomplished through a penetration in the cover block.

The waste transfer operations involve the pumping of liquid waste that contains dissolved solids. These solids can precipitate out of solution anywhere in the transfer path and cause blockage. If blockage is detected in the system, flushing the lines with hot water is necessary. The hot water is introduced to the system to be flushed through a

pressure manifold by piping connected directly to a jumper or nozzle. These operations shall be performed with the pit covers on.

To ensure that water intrusions are eliminated from the facility, a foam covering will be placed over the 244-CR Vault area after completion of isolation activities.

Other techniques to free blockages could include pressurization, temporary jumpers, and hydraulic scouring. All piping connections are designed to be leak tight and the pit cover block shall be installed before pressurization. If pressurization beyond that obtained from the tank farms water system or supply truck (i.e., approximately 150 pounds per square inch gauge) is necessary to remove blockage, an engineering evaluation shall be performed to determine the maximum allowable pressure for operation.

Excavation:

Excavation may be required to support installation of ventilation, electrical support and waste transfer equipment. Modifications to existing in route pits, vaults and piping and/or to support installation of new waste transfer lines from the 244-CR Facility to the identified DST may require excavation. Soil excavation activities will be performed in accordance with ALARACT Demonstration 5, TWRS ALARACT Demonstration for Soil Excavation (Using Hand Tools), and will follow the radiological controls specified in that ALARACT.

Any Filter Vacuume Truck excavations in contamination areas will be performed in accordance with the most current version of sitewide DOE Notice of construction application, Guzzler Excavation and Backfilling Activities in Support of the 200 East and West Area Tank Farm Complex (See DOE Letter 09-ESQ-542 Dated November 30, 2009) or the latest WDOH approved Site Wide Guzzler DOE application (See Doe Letter 99-SID-02, Dated February 1, 1999).

Soil excavation outside the tank farm fence also may be performed with heavy equipment.

Soil will be excavated around the 244-CR vault facility to install new piping, equipment slabs, and new waste transfer system support equipment. It is expected that about 1,000 cubic yards may be excavated, with about 600 cubic yards from inside the tank farm. Backfill shall be from the original removed soil or non-contaminated controlled density fill (sand, water and a small amount of cement).

Current power within the 244-CR Vault Facility is limited. To provide power for new equipment installed under the project, the existing power distribution system shall be upgraded. Upgrades shall involve modification to the existing Motor Control Center (MCC), installation of equipment control panels, and installation of new conduits.

A compliant passive breather filter shall be installed to ventilate the 244-CR Facility vaults and tanks once waste transfer activities are completed. The passive breather filters shall be installed at two locations in the 244-CR facility. A 1,000 cfm HEPA filter shall be installed at the air inlet assembly (previously attached to the evaporative cooler) and a 200 cfm HEPA filter shall be installed upstream of the existing HEPA filter pit. Butterfly valves in the ventilation system just downstream of where the filters shall be installed can be shut to prevent any emission from the facility during filter installation. Installation of the filters shall be performed in accordance with ALARACT Demonstration 16, TWRS ALARACT Demonstration for Work on Potentially Contaminated Ventilation System Components.

During waste transfer and support activities the tank and vault air space shall be actively ventilated by a temporary ventilation system. The temporary ventilation system shall consist of a portable exhauster that shall be equipped with compliant monitoring and sampling equipment. The purpose of the exhauster is to ensure potential airborne contamination from the pits, cells, or process tanks, is not being released to the environment. Operation of the 1,000 cfm portable exhauster is considered an emissions control.

New waste transfer system, waste staging/consolidation.

The planned transfer system can utilize some existing equipment along with installation of new piping and equipment at 244-CR, ER-153 and/or 244-A Lift Station. Maintenance of the transfer system may be required during the waste staging/consolidation. Equipment, which may require on going maintenance includes but is not

limited to leak detection and pump system equipment. The waste can be staged/consolidated in one or two of the 244-CR Facility tanks (CR-001, CR-002, CR-003 and CR-011) prior to transfer to a DST.

The following controls are used for the pit activities:

General Controls:

1. Pre-job and post-job radiation surveys are performed by radiation protection technicians. Radiation work permits specify permissible occupational radiological limits during activities. Radiation control technicians' survey and release equipment, inspect and approve required containment, and provide radiological surveys to verify compliance to radiation work permit limits.

2. Pit work is shut down (or not initiated) when sustained wind speeds exceed 25 miles per hour as measured in the field and/or reported by the Hanford Meteorological Station.

3. Fixatives shall be applied inside the pit (with cover blocks on or off) or accessible portions of the pit decontaminated to less than 100,000 disintegrations per minute/100 square centimeters beta-gamma and 2,000 disintegrations per minute/100 square centimeters alpha.

4. When cover blocks are removed, a fall protection handrail is installed. This handrail is draped in plastic forming a contamination barrier. The plastic extends to the top of the pit and is taped or sealed at the top of the pit. Decontamination of the containment barrier is conducted as required by the job specific radiation work permit.

5. Radiation control technicians monitor the affected work area when the vault foam covering is removed, when jumpers and equipment are being removed from risers and nozzles, and when risers are entered for sampling of tanks and sumps. Jumpers removed from the pit are drained of free liquid and decontaminated or contained before removal. The outer-most container shall not exceed 1,000 disintegrations per minute/100 square centimeters beta/gamma and 20 disintegrations per minute/100 square centimeters alpha. If these limits are exceeded, surfaces shall be decontaminated. Disposition of non reusable equipment waste shall be performed in accordance with ALARACT Demonstration 4, TWRS ALARACT Demonstration for packaging and transportation of waste.

6. A bullpen designed to minimize the top opening shall be used. Pit covers or cover blocks will be removed as necessary. If the bullpen is to be left unattended at any time, a temporary cover is placed over the pit or the pit covers or cover blocks are reinstalled. Two tents shall be erected over two pits. Upon completion of the work in the first two 244-CR Facility instrumentation pits, the tents will be relocated to the other 244-CR facility instrumentation pits.

7. PTRAEU(s) shall actively ventilate the bullpens during activities that require work in the pits (after removal of the cover blocks) to control radiological releases. The PTRAEU(s) shall operate intermittently and shall be operated in accordance with the latest revision to the WDOH approved. Portable/Temporary Radioactive Air Emission Unit (PTRAEU) NOC (DOE/RL-96-75).

8. A compliant exhauster skid shall ventilate the process cells and tanks during waste transfer activities. The exhauster shall maintain a negative pressure under the cover blocks and prevent contaminants from reaching the environment. The exhauster skid shall be connected to the existing exhaust ductwork with rigid or flexible ductwork.

9. The 1,000 cfm exhauster shall be equipped with a two-stage HEPA filter, which meets the requirements of ASME AG-1, Section FC and shall be tested annually to requirements of ASME AG-1. The HEPA filters shall have an efficiency of 99.95 percent for 0.3-micron median diameter. Each filter housing shall meet the applicable sections of ASME N509 and the test requirement of ASME N510. The exhaust stack houses a Generic Effluent Monitoring System (GEMS) that contains an air velocity probe and the air sampling probe.

10. The breather filter shall consist of a housing that contains a HEPA filter, an outlet screen, and a small seal loop. Air flowing to and from the 244-CR Facility shall pass horizontally through the filter and vertically through the downward-facing exit weather hood. Seal loops, installed in the exhaust lines, are designed as a safety feature to prevent unlikely accident in which an over pressurization occurs when the HEPA filter is isolated for occasional

(infrequent) maintenance.

Specific Controls include:

-Installation of portable 1,000 cfm exhauster shall use ALARACT 16.

-Removal and/or installation of vault foam covering - ALARACT 4.

-Application of fixative at pit interior - see General Controls.

-Temporary power installation - ALARA.

-Operation of PTRAEU for bullpen ventilation - Latest WDOH approval, AIR 99-1102, for the Portable/Temporary Radioactive Air Emission Unit (PTRAEU) NOC (DOE/RL-96-75).

-Removal and/or installation of pit covers - General Controls.

-Inspection of pits, vaults, and tanks - General Controls.

-Removal and disposition of excess equipment and waste in pits, risers, and tanks - ALARACT 15, and ALARACT 4.

-Decontamination activities - General Controls.

-Measurement of liquid level and sludge levels in tanks and sumps - General Controls.

-Sampling activities in pits, vaults, and tanks including chemical addition and/or waste sampling to determine Double Shell Tank waste acceptance - ALARACT 7 and ALARACT 1.

-Facility Equipment Activities: installation, disconnection, repair, replacement, and/or leak testing, of new and existing facility equipment (valves, jumpers, pumps, leak detectors, or other instrumentation/equipment) - ALARACT 4, and ALARACT 15.

-Modifications, maintenance, and/or isolation and sealing of existing in route pits, vaults and piping (drain and transfer lines) to support and/or installation of new transfer lines - General Controls.

-Excavation - ALARACT 5, and/or WDOH approved Site Wide Guzzler NOC (Air 98-1215), or the most current NOC approved for Guzzler use.

-Installation of permanent power to 244-CR Vault Facility - ALARA.

-Installation of passive breather filter assembly - ALARACT 16.

-Operation of a portable exhauster at 244-CR vault for ventilation - ALARA.

-New waste transfer system, waste staging/consolidation - General Controls.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	1.60E-05	Am - 241	8.39E-04	Am - 243	1.26E-07
Ba - 137 m	4.81E-01	C - 14	2.76E-05	Cd - 113 m	1.90E-04
Cm - 242	1.56E-05	Cm - 243	1.85E-06	Cm - 244	4.24E-05
Co - 60	1.33E-03				

		Cs - 134	1.71E-06	Cs - 137	5.08E+01
Eu - 152	4.40E-05	Eu - 154	5.74E-03	Eu - 155	5.19E-03
H - 3	3.54E-05	I - 129	7.59E-08	Nb - 93 m	1.11E-04
Ni - 59	7.11E-05	Ni - 63	6.99E-03	Np - 237	1.82E-04
Pa - 231	1.24E-05	Pu - 238	8.11E-05	Pu - 239	7.99E-03
Pu - 240	1.44E-03	Pu - 241	1.01E-02	Pu - 242	1.26E-02
Ra - 226	5.50E-09	Ra - 228	2.99E-05	Ru - 106	2.54E-07
Sb - 125	7.12E-04	Se - 79	2.65E-05	Sm - 151	9.77E-02
Sn - 126	4.18E-05	Sr - 90	4.93E+00	Tc - 99	3.25E-04
Th - 229	2.63E-07	Th - 232	4.99E-05	U - 232	6.40E-06
U - 233	2.45E-05	U - 234	1.61E-05	U - 235	6.78E-07
U - 236	4.08E-07	U - 238	5.77E-06	Y - 90	4.91E+00
Zr - 93	9.68E-05				

4) All above ground transfer lines shall be double contained and leak tested.
5) All above ground transfers shall be double contained and the hose in hose connections leak tested.
6) Excavation of contaminated soils using heavy equipment shall follow the requirements of the Site Wide Guzzler NOC.
7) If pressures above 50 psi are used. WDOH shall be notified with the controls to be used.
8) When a Portable/Temporary Radioactive Air Emission Unit (PTRAEU) is used to ventilate the bullpens, the conditions, controls, monitoring requirements and limitations of the PTRAEU NOC, latest approved version, shall be required.

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 7.03E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 7.03E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The following methods of sampling and drilling techniques, including air rotary drilling, sonic drilling, closed-end probe, cable tool drilling, cone penetrometer, air rotary split spoon, and others. This approval applies only to the following tank farms: 241-A, 241-AX, 241-B, 241-BX, 241-BY, 241-C, 241-S, 241-SX, 241-T, 241-TX, 241-TY and 241-U.

Up to ten equivalent boreholes may be drilled or re-entered per year (consecutive 12-month period) by the methods described. An equivalent borehole shall have a nominal top diameter of no larger than ten inches for the first 50 feet, and a nominal bottom diameter of no larger than eight inches for the remaining 200 feet of pipe (average depth is 250 feet). Additionally, an equivalent borehole shall contain a contaminated layer no more than 20 feet long in the ten inch portion of the equivalent borehole. Individual methods shall be selected based on the likely level (concentration) of contaminants to be encountered. The most conservative drilling approach (lowest potential-to-emit) shall be applied first. Borehole logging shall be used to determine when it is appropriate to apply drilling techniques that may have a higher potential-to-emit. Zones not sampled during advancement of the borehole due to having a high potential to exceed exposure guidelines may be sampled by side-wall sampling techniques as the boreholes are decommissioned.

Samples from air rotary type drilling shall be obtained from the sampling sock located on the side of the cyclone and/or from the drums underneath the cyclone and torit. The material in the drums will be sampled by pulling a mini-core from the drum. Sampling and change-out of the drums shall be performed inside the containment structure with continuous health physics technician (HPT) coverage.

Borehole drilling techniques that may be used are limited to those described below:

Sonic drilling
Closed-end probe
Traditional cable tool drilling from top to bottom
Cone Penetrometer
Geo Probe
Auger drilling

Soil sampling techniques will include one or a combination of the following techniques:

Air Rotary Split Spoon
Cable Tool
Cable Tool and Auger with a Split Spoon Core Barrel
Sonic Core Barrel and Split Spoon
Rotary Coring
Sidewall Sampling
Drive Split-Spoon Sampler

Sidewall samples being brought to the surface will be bagged or sleeved into plastic or other suitable container (e.g. shielded container) after retrieval if decontamination or application of fixatives cannot reduce smearable contamination to less than 100,000 disintegrations per minute (dpm) per 100 cm^2 for beta/gamma or 2,000 dpm/100 cm^2 for alpha. The sampler will then be packaged in a container suitable for shipment to the laboratory for analysis. Other sidewall sampling techniques may involve a lever-action sampler (the sampler is driven into

the formation through a cantilever action) or a rotating formation “shaving” device with the sample captured in an under-slung basket.

The brush, used to clean casings, shall be placed in plastic sleeving if decontamination or application of fixatives cannot reduce smearable contamination to less than 100,000 dpm/100 cm^2 for beta/gamma or 2,000 dpm/100 cm^2 for alpha when it is removed from the borehole. Pull the casing into plastic sleeving during removal if decontamination or application of fixatives cannot reduce smearable contamination to less than 100,000 dpm/100 cm^2 for beta/gamma or 2,000 dpm/100 cm^2 for alpha. Unthread the casing if possible, or cut using a wheel cutter, or disconnected from other segments into a nominal length of ten feet. A high-speed blade wheel cutter is not allowed. When necessary, either to accomplish casing removal for borehole decommissioning or to enable pull-back for sidewall sampling, the casing will be cut at depth using a Bowen casing cutter (or equivalent). If decontamination or application of fixatives cannot reduce smearable contamination to less than 100,000 dpm/100 cm^2 for beta/gamma or 2,000 dpm/100 cm^2 for alpha and the casing is sleeved in plastic, no more than one feet of casing shall be exposed to air during the cutting process. Capture cuttings in draped plastic. If decontamination or application of fixatives cannot reduce smearable contamination to less than 100,000 dpm/100 cm^2 for beta/gamma or 2,000 dpm/100 cm^2 for alpha, cap the pieces, cut with plastic or horsetail the sleeving and place sections in a burial box. The hole will be backfilled with clean (nonradioactive) materials (e.g., granular bentonite and/or grout). Casing removal activities are allowed to be performed outside of the containment structure. The closure of the equivalent boreholes may also be performed by backfilling the borehole using a tremie without pulling the casing.

Collect any perched water in the drum at the bottom of the cyclone. Approximately 1,000 gallons of purgewater is allowed to be removed from each equivalent borehole prior to inserting a screen below the water table. After installation of the screen, groundwater samples will be taken. An average of 2,000 gallons of water (which includes perched water, purgewater and groundwater sampling) is allowed to be removed from each equivalent borehole. Perched water and purgewater will be collected in passively ventilated open-top containers. Water shall be transferred from the passively ventilated containers into a tanker truck for treatment at the 200 Area Effluent Treatment Facility or other permitted storage/treatment facility. Water may be transferred directly from the borehole to the tanker truck, bypassing the intermediate containers.

Approximately 3,500 ft^3 of soil may be excavated per year. Perform excavation using manual methods, backhoe, and/or the Guzzler.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	4.55E-04	Am - 241	3.48E+01	Am - 243	7.75E-04
C - 14	2.13E-01	Cm - 242	2.72E-01	Cm - 243	9.47E-03
Cm - 244	8.83E-02	Co - 60	9.66E-01	Cs - 134	1.48E-02
Cs - 137	1.85E+03	Eu - 152	4.13E-01	Eu - 154	8.67E+00
Eu - 155	2.61E+01	H - 3	7.68E-01	I - 129	1.72E-02
Ni - 59	5.13E-01	Ni - 63	4.99E+01	Np - 237	3.55E-03
Pa - 231	4.72E-04	Pu - 238	2.20E+00	Pu - 239	2.00E+02
Pu - 240	2.11E+01	Pu - 241	1.25E+02	Pu - 242	5.98E-04
Ra - 226	3.69E-05	Ra - 228	1.92E-03	Ru - 106	1.71E-03
Sb - 125	7.25E-01	Sm - 151	1.86E+02	Sn - 126	7.97E-02
Sr - 90	2.07E+04	Tc - 99	3.55E+00	Th - 229	7.76E-05

Th - 232	7.60E-05	U - 232	5.87E-03	U - 233	2.25E-02
U - 234	4.45E-01	U - 235	1.97E-02	U - 236	4.55E-03
U - 238	4.48E-01	Y - 90	2.07E+04	Zr - 93	2.41E-01

4) Approval is given as an alternative to transfer the perched water directly from borehole to the tanker.
5) Casing size reduction may also be by unthreading.
6) Drive Split Spoon Sampler will be included as a soil sampling technique.
7) Emission controls to be used during sonic drilling, cable tool drilling, during use of the cone penetrometer, use of the closed-end probe, and casing removal will be decontamination by nonaggressive manual methods such as wiping, sleeving into plastic or having fixatives applied to prevent the spread of contamination if the smearable contamination levels are greater than 100,000 dpm/100 cm2 for beta/gamma or 2,000 dpm/100 cm2 for alpha.

   As the core barrel is removed from the ground during cable tool drilling, a smear survey will be taken of the core barrel. Decontamination activities will be performed as needed to reduce smearable contamination.

   a. At selected depths, samples will be taken and these samples will be removed from the core barrel prior to striking the exterior of the core barrel with a hammer or hard object to dislodge soil into a plastic lined drum. There will be minimal potential for emissions from striking the core barrel to dislodge the soil into the drum.

   b. When the smearable contamination level is greater than 100,000 dpm/100 cm2 for beta/gamma or 2,000 dpm/100 cm2 for alpha, the core barrel will be sleeved in plastic. The core barrel will be removed from the drill string and placed in a suitable closed container for shipment to the laboratory or placed in a plastic-lined drum. Additionally, other sample containers may be wrapped in plastic after retrieval and the casing may be sleeved into plastic during the removal process to prevent the spread of contamination.
8) Emissions for these activities shall be tracked via a log approved by the department. This log shall track the hours of operation and location of use for each type of equipment, estimated and calculated curies encountered, and calculated emissions. Air samples used for periodic confirmatory measurement shall be collected no closer than three feet above ground level. These samples shall be composited for each three individual sites (total of three samples) and analyzed at the completion of the borehole or re-entry activity and casing removal. All periodic confirmatory samples will be collected and analyzed following EPA Method 114.
9) Excavations using the Guzzler shall follow the Conditions and Limitations for approval for the Categorical NOC for use of the Guzzler on the Hanford Site. All source term work performed under this activity shall be tracked against this APQ.
10) For various characterization options covered under this NOC, the maximum TEDE to the hypothetical off site MEI shall not exceed 7.03 E-02 mrem/year. The maximum TEDE to the MEI shall not exceed 5.7 E-02 mrem/year at the Energy Northwest location as determined by CAP88PC, Version 2 supplied as supporting documentation.
11) No more than 3,500 cubic feet of soil may be excavated per year using manual methods, backhoe, and/or the guzzler. This shall be documented on an approved log.
12) No more than an average of 2,000 gallons of water (includes perched water, purge water and groundwater sampling) will be removed from each equivalent bore hole. Not to exceed 20,000 gal/year of water. Perched water and purge water will be collected in passively ventilated open top containers. When a sufficient volume of water has been collected or at the end of groundwater sampling activities, the water shall be transferred from the passively ventilated containers into a tanker truck for treatment at the 200 Area ETF or other permitted storage/treatment facility.
13) The APQ associated with perch water, purgewater and groundwater sampling shall not exceed 7.57 E-03 curies. The APQ associated with excavation shall not exceed 74.9 curies. These shall be tracked and documented on an approved log.
14) The facility must maintain a log in an approved format for this activity or emission unit (WAC 246-247-080(7)).
15) The following additional drilling techniques are approved for use: geoprobe and auger drilling. For casing removal or to enable pull back for sidewall sampling, the casing may be cut at depth using a Bowen Casing Cutter (or equivalent with prior DOH approval).
16) The following controls shall be mandatory when handling perched water, ground water and ground water sampling.

All contaminated liquids shall be contained; all exterior surfaces of liquid holding devices shall be maintained at the current radiological free release limit; vented drums shall be maintained non-smearable; storage and handling of the vented drums shall be as described in the Site Wide Vented Drum Notice of Construction.

17) U.S. DOE shall monitor this project or emission unit as follows: fugitive emissions result from cable tool and sonic drilling, the plastic containment structure during air rotary drilling, and during dismantlement/assembly or relocating the ventilation equipment, plastic containment structure, or process equipment. To confirm low emissions, periodic confirmatory monitoring will be accomplished by operating three fixed head samplers around the location of where the drilling and sampling operations are occurring. The fixed head samplers will be located within 100 feet of where the drilling and sampling work activities are occurring and will be operated whenever the work activities have the potential-to-emit radionuclides. These samples shall be composited for each three individual sites (total of three samples) and analyzed at the end of each borehole. Geophysical logging of small diameter holes advanced by closed endprobe or cone penetrometer shall be used, at each drill location, to assure that contamination potentially brought to the surface during decommissioning is appropriately identified in advance of that equipment being brought to the the surface. In addition, casing is to be surveyed (swipes for removable contamination) as it is removed from the ground. Packaging of equipment and samples for shipment, shall have surveys (swipes for removable contamination) performed in accordance with TWRS as low as reasonably achievable control technology (ALARACT) demonstration number 12 and subsequent revisions, TWRS ALARACT Demonstration for Packaging and Transportation of Equipment & Vehicles.
Fugitive emissions may also result from removing casing from the ground. To confirm low emissions, periodic confirmatory monitoring will be accomplished by operating three fixed head samplers around the location of the work activities. The fixed head samplers shall also be located within 100 feet of where the casing removal activities are occurring and shall be operated when the work activities have the potential-to-emit radionuclides. These samples shall be composited for each three individual sites (total of three samples) and analyzed at the end of each casing removal (WAC 246-247-075(8)).

18) U.S. DOE shall provide additional monitoring as follows: Fugitive emissions result from excavations using hand tools shall be described as described in TWRS ALARCT 5. Fugitive emissions that result from excavations using backhoe shall consist of the following:
a) HPT coverage will be performed as specified in the radiological permit.
b) A beta-gamma survey of the ground surface is required prior to excavation in Contamination Areas (CA's), High Contamination Areas (HCA's), Soil Contamination Areas (SCA's), and Underground Radioactive Materials Areas (URMA's). An alpha survey may be required prior to excavation per the "Justification for Dual Survey Exemption in Tank Farm Facilities" HNF-3391.
c) For excavations in CA's, HCA's, SCA's, and URMA's, if beta-gamma activity greater than 1000 dpm/probe area (5000 dpm/100 cm^2) is identified, alpha surveys will also be performed.
d) Suppressants such as water, fixatives, covers, or windscreens will be used as necessary, including at the end of each shift or when sustained or predicted winds are >20 mph. Excavations are not allowed when sustained or predicted winds will be >20mph.
e) If the net alpha for the general area is greater than 140 dpm/probe area, OR if the net beta-gamma activity for the general area is greater than 500,000 dpm/probe area, work will be suspended and worker safety evaluated by radiological control. Direct contact will also be made to WDOH. After it is determined that there is no threat to worker safety, WDOH has been contacted, and the proper controls (e.g., water fixatives, covers, windscreens) have been put in place, excavation may continue. A contact of WDOH will not be needed if the contamination consists of a hot speck. If hot specks are detected during the radiological surveys, the speck will be removed and contained before the activity is allowed to continue unless located in the bottom of the trench after excavation has been completed. Specks found in the bottom of the completed trench may be covered with clean fill. A hot speck will be defined as a very small amount (i.e., less than or equal to 100 cm^2) of contamination reading greater than or equal to 1,000,000 dpm/probe size beta-gamma and/or greater than or equal to 490 dpm/probe size alpha.

19) In order to to confirm low emissions for closed-end probe and cone penetrometer techniques
a)During the advancement of drill tubing by closed-end and cone penetrometer techniques, fixed head air sampling is not required.
b)Samples or casing brought to the surface will be bagged or sleeved into plastic or other suitable container (e.g. shielded container) after retrieval, whenever the casings or general work area removable contamination levels are greater than 1000 dpm/100 cm2 beta-gamma or greater than 20 dpm/100cm2 alpha
c)hen the samples or casing brought to the surface is less than 400,000 dpm/100cm2 beta-gamma and less than 420 dpm/100cm2 alpha no fixed head sampling is required, removable contanination survey will suffice to confirm low emissions
d)when the casings or general work area removable contamination levels are are greater than or equal to 400,000

dpm/100cm2 beta-gamma or greater than or equal to 420 dpm/100cm2 alpha, periodic confirmatory monitoring will be accomplished by operating three fixed had samplers around the location of where the drilling and sampling operations are occurring.

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.70E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 3.70E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activies that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16)), may be conducted.
241-AZ-151 CATCH TANK BYPASS
The modification description for the 241-AZ-151 catch tank bypass modification includes the installation of a new RCRA-compliant condensate distribution system for condensate generated from the existing 241-AZ-702 ventilation system. This will involve tapping into existing ventilation headers. This work will be done according to ALARACT 16 requirements. This new system will consist of a 1200 gallon capacity catch tank (241-AZ-301), secondary containment, piping, pumps, and controls. The system is designed to collect condensate at rate of 0.29 gallons per minute (154,424 gallons per year). The tank will be emptied every 2 to 3 days. At that time, the condensate will be pumped back to one of the 241-AY or 241-AZ tanks at a rate of 4 to 5 gallons per minute. Condensate accumulation is currently estimated at between 6000 to 8000 gallons per month- 72,000 to 96,000 gallons per year.

The new 241-AZ-301 tank and system will be located outside the northeast corner of building 241-AZ-702. Most of the secondary containment structure will be located below grade (except for the cover that will be located above grade) to provide operator access and remote valve operation. A HEPA filter will also be installed above grade. This filter will be connected to 241-AZ-301 tank and will be used as the vent for the 241-AZ-301 tank.

The lower level of the fabricated tank system will contain the receiver tank for the condensate coming from the AZ-PC-SP-1 seal pot via line AZ-503. Other components housed in the lower level will include the sump, sump suction line, tank suction piping, tank return piping, tank vent lines, instrument access risers, leak detection, and freeze protection, as required.

The upper level of the fabricated tank system will contain the distribution pumps, valves, instrumentation, and controls. Operator access will be provided as required (e.g., access ladder, door in system cover, mid-level grating to support operator). Distribution valves will be located to provide the ability to use remote valve actuators. Freeze protection for the piping, pumps, and valves will be used as required.

The AZ-PC-SP-1 seal pot is located in the 241-AZ-702 building and this seal pot serves as a collection point for condensate originating from the 241-AZ-702 ventilation system. The 241-AZ-702 ventilation system provides primary tank ventilation for the 241-AY and 241-AZ DSTs. The existing 241-AZ-151 catch tank would be isolated in a separate effort to support other commitments.

Currently there are two drain paths into the 241-AZ-151 catch tank that will remain active after June 30, 2005. Those two drain paths are the condensate from the 241-AZ-702 facility and the 241-AZ-801A floor drain. The 241-AZ-702 condensate drain line will be rerouted to the 241-AY tanks and also to the 241-AZ tanks. In addition, the
241-AZ-801A floor drain will be isolated. In addition to the installation of a drain line to AZ-102, a new jumper will be installed in the 241-AZ-02A pit. This work will be accomplished under ALARACT 4,6,14 and 15.

241-AN & 241-AW CLEAN OUT BOX TRANSFER LINE MODIFICATIONS
Some of the transfer lines associated with 241-AN tank farm, 241-AW tank farm, and the 242-A-Evaporator facilities were constructed with clean out boxes (COBs). A COB provides access to transfer lines in case of line plugging. Sixteen COBs have been identified on transfer lines that will remain operational after June 30, 2005.

These COBs will have the upper portion of the structure cut off, caps welded on the primary pipes and encasements, and the upper structure of the COB will be isolated and disposed. That modification will entail approximately 100 one-inch pipe cuts,

and approximately 230- three- inch pipe cuts for SY transfer lines bounding any possible two-inch pipe cuts. The primary transfer lines and encasement pipes will be capped on the branch section and welded to the COB structure. The COBs are not currently compliant for several reasons, including:

The COBs do not have an operational drain and do not have adequate minimum volume to act as secondary containment for the primary pipe
The COBs are not pressure tight and cannot meet the 60 psig pressure rating of the encasement piping system.

Therefore, because the transfer lines associated with COBs will remain operational, the COBs must either be modified to be regulatory compliant or deactivated/isolated and removed.

The AN and AW Farms COB design consists of a 24-inch diameter steel cylinder formed from 1/4-inch thick rolled steel plate and mounted on a 12-inch vertical encasement pipe. The vertical encasement extends about four feet below grade to the slurry transfer line. A concrete anchor block supports the COB, encasement, and transfer pipe.

The 16 COBs to be deactivated and/or isolated by the E-525 Project are:

AN FARM

COB-AN-7, COB-AN-8, COB-AN-9

AW FARM

COB-AW-1, COB-AW-2, COB-AW-3, COB-AW-4, COB-AW-5, COB-AW-6, COB-AW-7, COB-AW-8, COB-AW -9, COB-AW-10, COB-AW-11, COB-AW-12

242-A Evaporator

COB-A-30

In addition to the COB modifications and the 241-AN and 241-AW transfer line modifications, entry into tank farm pits will be necessary to complete this package. The pit work will involve removal of jumpers, post modification testing, and administrative isolation (e.g. lock and tag). Not all activities will be performed in each pit. The pits involved are those listed below:

Table 1. Clean Out Box Transfer Line Modification
(Pit Number / Number of Entries / Reason for Entries)

241-AN-A / 6 / Post modification pressure tests and removal of jumpers.

241-AN-B / 3 / Post modification pressure testing, jumper removal, and lock and tag isolation.

241-AN-01A / 3 / Post modification pressure testing and jumper removal.

241-AN-04A / 3 / Post modification pressure testing and jumper removal.

241-AN-07A / 3 / Post modification pressure testing and jumper removal.

241-AW-02E / 6 / Post modification pressure testing and jumper removal.

241-AW-02D / 1 / Post modification pressure testing of encasements.

241-AW-05A / 3 / Post modification pressure testing and jumper removal.

241-AW-06A / 3 / Post modification pressure test and jumper removal.

241-AW-A / 6 / Post modification pressure testing and jumper removal.

241-AW-B / 6 / Post modification pressure testing and jumper removal.

242-A Evaporator / 2 / Post Modification.

SY TRANSFER LINE MODIFICATIONS
Work under this package will involve excavating and removing the lines identified in Table 2. Each line to be removed, cut into sections, and disposed of in accordance with the tank farm solid waste disposal procedures. Pit walls will be core drilled as needed to accommodate the new pipe-in-pipe RCRA compliant configuration.

Excavation for the 241-SY tank farm line modification work will be between the pits listed in Table 2. Pipe trenches will be excavated to remove and install the new transfer lines. Approximately 230 – 2 and 3 inch pipe cuts will be involved when removing the old transfer lines. Excavation will be accomplished with the guzzler and hand digging.

Table 2. 241-SY Tank Farm Transfer Lines and Pit/Nozzle End Points.
(Line Number / SIZE/ End Point 1 / End Point 2)

SL-177 / 2" / 102-SY-Pump Pit / SY-A-Valve Pit

SN-277 / 3" / 102-SY-Pump / SY-A-Valve Pit

SN-285 / 3" / 102-SY-Pump Pit / SY-A-Valve Pit.

SL-180 / 2" / SY- A-Valve Pit / SY-B-Valve Pit.

SN-280 / 3" / SY-A-Valve Pit / SY-B-Valve Pit.

SN-286 / 3" / 102-SY-Pump Pit / SY-B-Valve Pit.

SN-278 / 3" / 101-SY-Pump Pit / SY-B-Valve Pit.

SN-279 / 3" / 103-SY-Pump Pit / SY-B-Valve Pit.

In addition to the transfer line modification work within this package, entry into tank farm pump and valve pits will be necessary. The pit work will involve such activities as removal of jumpers. Not all activities will be performed in each pit. The pits involved are listed in Table 3 and 4.

Table 3. SY Transfer Line Modification
(Pit / Number of Entries / Reason for Entries)

241-SY-02A / 4 / Core drilling, installation for new nozzles and post modification pressure testing.

241-SY-A / 6 / Core drilling for new nozzles and post modification pressure testing.

241-SY-B / 5 / Core drilling for new nozzles and post modification pressure testing.

241-SY-01A / 2 / Core drilling for new nozzles and post modification pressure testing.

241-SY-03A / 2 / Core drilling for new nozzles and post modification pressure testing.

Table 4: AZ Jumper Replacement
(Pit / Number Of entries / Reason for Entries)

AZ-02A / 2 / Remove cover block to remove and install jumper.

204-AR TRANSFER LINE MODIFICATION

The 204-AR Waste Unloading Facility will continue to be in operation after June 30, 2005. Waste transfer line LIQW-702 will be modified to extend the transfer line encasement through the pit wall. This pipe is buried approximately three and a half feet below grade, so the excavated area will be approximately 10’ x 10’ x 6’. A portion of the slab under an old laundry facility and a section of the asphalt surface adjacent to the doorstep of the facility will require demolition for access.

The new encasement section will be open-ended, upstream of the exterior wall seal plate. The obsolete air purge connection to the existing encasement pipe will be removed.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	4.70E-03	Am - 241	7.76E+02	Am - 243	4.32E-02
Ba - 137 m	1.41E+06	C - 14	5.77E+00	Cd - 113 m	1.76E+02
Cm - 242	6.36E+01	Cm - 243	1.93E-01	Cm - 244	2.63E+00
Co - 60	1.08E+02	Cs - 134	3.32E+00	Cs - 137	1.49E+06
Eu - 152	8.21E+00	Eu - 154	6.09E+02	Eu - 155	7.03E+02
H - 3	8.16E+02	I - 129	1.13E+00	Nb - 93 m	2.04E+01
Ni - 59	1.82E+00	Ni - 63	1.74E+02	Np - 237	1.88E+01
Pa - 231	1.19E-02	Pu - 238	6.19E+00	Pu - 239	1.07E+02
Pu - 240	2.27E+01	Pu - 241	3.89E+02	Pu - 242	2.37E-03
Ra - 226	4.36E-04	Ra - 228	2.03E-01	Ru - 106	1.49E-04
Sb - 125	8.23E+01	Se - 79	2.86E+00	Sm - 151	3.25E+04
Sn - 126	5.86E+00	Sr - 90	1.68E+05	Tc - 99	1.34E+03
Th - 229	7.22E-03	Th - 232	3.26E-02	U - 232	4.66E-01
U - 233	1.91E+00	U - 234	1.53E+00	U - 235	5.90E-02
U - 236	1.05E-01	U - 238	1.14E+00	Y - 90	1.68E+05
Zr - 93	2.16E+01				

4) All pit work shall be performed in accordance with ALARACT 6 "TWRS ALARACT Demonstration for Pit Access", ALARACT 13 "TWRS ALARACT Demonstration for Installation, Operation, and Removal of Tank Equipment", and ALARACT 14 "TWRS ALARACT Demonstration for Pit Work".

5) All soil excavation, not using the Guzzler, shall be conducted in accordance with ALARACT 5 "TWRS ALARACT Demonstration for Soil Excavation (Using Hand Tools)".

6) For Guzzler excavation, monitoring will be performed as discussed in the latest WDOH approved NOC, " Operation of the Guxxler in the Tank Farm Facilities." A guzzler tracking log will be used to track emissions. Periodic confirmatory measurements will be performed in accordance with the WDOH approved NOC.

7) Required cuts of contaminated piping shall be made inside a glove bag for the initial cuts which separate the pipe from the system. Subsequent cuts for size reduction and waste disposal may be made under the conditions of ALARACT 15.

8) For Guzzler excavation,the Annual Possession Quantity shall be tracked on a WDOH approved excavation log.

9) When performing work inside a glove bag and using a PTRAEU or HEPA filtered vacuum all conditions and limitations of site wide approvals for operation of the PTRAEU and HEPA filtered vacuums shall be followed.

10) The total contaminated soil to be excavated for all NOC described activities shall not exceed 50,000 cubic feet.

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.70E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.70E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   a. Upon identification of the need of additional decontamination activities in the 200 area, individuals would be escorted to the nearest decontamination trailer.

   b. As appropriate, contaminated clothing, coverings, and/or articles will be removed and packaged for laboratory analysis and/or disposition, in accordance with As Low As Reasonably Achievable Control Technology (ALARACT) 4 and 12, Tank Farm ALARACT Demonstration for Packaging and Transportation of Waste and Tank Farm ALARACT Demonstration for Packaging and Transportation of Equipment and Vehicles, RPP HNF-4327.

   c. Personnel decontamination processes might include various methods or a combination of cleaning agents and /or chemicals. For example: soap and water, pre-moistened towelettes, removal of hair, abrasive soaps for toughened skin surfaces (e.g., hands and feet), and chelating agents.

   d. Spent decontamination solutions will be transferred from the holding tanks and/or bladder and containerized (e.g., packaged in absorbents in drums or placed in drums or carboys) and transported to existing facilities on the Hanford Site for disposal.

   e. Periodic maintenance inspection of the decontamination trailers will be performed without the use of containment or portable exhausters.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Pu - 239	1.40E-01	Sr - 90	1.40E-01
Alpha rates are based on PU-239+D. While the potential release rates for all emissions are conservatively represented by Pu-239+D (Alpha) and Sr-90+D (Beta/gamma), essentially any radionuclide may be present.		Beta/Gamma release rates are based on Sr-90+D. While the potential release rates for all emissions are conservatively represented by Pu-239+D (Alpha) and Sr-90+D (Beta/gamma), essentially any radionuclide may be present.	

4) The proposed periodic confirmatory monitoring (PCM) for the diffuse and fugitive emissions shall consist of the radiological surveys during and at the completion of personnel decontamination operations (e.g., smears and direct readings on the interior of the decontamination trailers). The methods of PCM are not a direct measurement of effluent emissions. The methods are intended to demonstrate compliance by showing that the levels on the interior of the trailers, during a personnel decontamination operation, are controlled; and the levels on the interior of the trailers after a decontamination operation shall keep the trailers from being posted a radiological buffer area (RBA) for contamination control and/or a contamination area (CA). This shall make the actual emissions below the estimated emissions, which shall be based and calculated from the same contamination levels.

5) When Portable Temporary Radioactive Air Emission Units are used they shall follow all the requirements of the latest revision of the Radioactive Air Emissions Notice of Construction for Portable Temporary Radioactive Air Emission Units (DOE/RL-96-75).

6) When Tank Farm Decontamination Trailer East is activated under this approval, and ventilation is not used, a log shall be maintained to document emissions. The log shall contain records of important operations parameters including the date, location, and duration of the release, measured or calculated radionuclide concentrations, the type of emissions (liquid, gaseous, solid), and the type of emission control and monitoring equipment.

The emissions may be calculated from the best estimate of radiological material from surveys performed during personnel decontamination operations (WAC 246-247-040(5) and WAC 246-247-060(5))

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.70E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.70E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   a. Upon identification of the need of additional decontamination activities in the 200 area, individuals would be escorted to the nearest decontamination trailer.

   b. As appropriate, contaminated clothing, coverings, and/or articles will be removed and packaged for laboratory analysis and/or disposition, in accordance with As Low As Reasonably Achievable Control Technology (ALARACT) 4 and 12, Tank Farm ALARACT Demonstration for Packaging and Transportation of Waste and Tank Farm ALARACT Demonstration for Packaging and Transportation of Equipment and Vehicles, RPP HNF-4327.

   c. Personnel decontamination processes might include various methods or a combination of cleaning agents and /or chemicals. For example: soap and water, pre-moistened towelettes, removal of hair, abrasive soaps for toughened skin surfaces (e.g., hands and feet), and chelating agents.

   d. Spent decontamination solutions will be transferred from the holding tanks and/or bladder and containerized (e.g., packaged in absorbents in drums or placed in drums or carboys) and transported to existing facilities on the Hanford Site for disposal.

   e. Periodic maintenance inspection of the decontamination trailers will be performed without the use of containment or portable exhausters.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Pu - 239	1.40E-01	Sr - 90	1.40E-01
Alpha rates are based on PU-239+D. While the potential release rates for all emissions are conservatively represented by Pu-239+D (Alpha) and Sr-90+D (Beta/gamma), essentially any radionuclide may be present.		Beta/Gamma release rates are based on Sr-90+D. While the potential release rates for all emissions are conservatively represented by Pu-239+D (Alpha) and Sr-90+D (Beta/gamma), essentially any radionuclide may be present.	

4) The proposed periodic confirmatory monitoring (PCM) for the diffuse and fugitive emissions shall consist of the radiological surveys during and at the completion of personnel decontamination operations (e.g., smears and direct readings on the interior of the decontamination trailers). The methods of PCM are not a direct measurement of effluent emissions. The methods are intended to demonstrate compliance by showing that the levels on the interior of the trailers, during a personnel decontamination operation, are controlled; and the levels on the interior of the trailers after a decontamination operation shall keep the trailers from being posted a radiological buffer area (RBA) for contamination control and/or a contamination area (CA). This shall make the actual emissions below the estimated emissions, which shall be based and calculated from the same contamination levels.

5) When Portable Temporary Radioactive Air Emission Units are used they shall follow all the requirements of the latest revision of the Radioactive Air Emissions Notice of Construction for Portable Temporary Radioactive Air Emission Units (DOE/RL-96-75).

6) When Tank Farm Decontamination Trailer West is activated under this approval, and ventilation is not used, a log shall be maintained to document emissions. The log shall contain records of important operations parameters including the date, location, and duration of the release, measured or calculated radionuclide concentrations, the type of emissions (liquid, gaseous, solid), and the type of emission control and monitoring equipment.

The emissions may be calculated from the best estimate of radiological material from surveys performed during personnel decontamination operations (WAC 246-247-040(5) and WAC 246-247-060(5))

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.80E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted. The approved activities are limited to:

Descriptions of the 209-E Building and associated deactivation activities are provided in the following sections:

1. Facility Description
The 209-E Building, constructed in 1960, is an L-shaped reinforced-concrete structure that includes offices, control room, shops, equipment room, change room, the mix room, and the critical assembly room (CAR). The facility was designed to provide a heavily-shielded reactor room, the CAR, where quantities of plutonium or uranium could be brought into critical configurations under carefully controlled and monitored conditions. The rooms that contains contaminated equipment and material include the CAR, mix room, and a portion of the change room.

In the late 1980's the Pacific Northwest laboratory (as the responsible contractor) was directed by the U.S. Department of Energy (DOE) to prepare the facility for an unoccupied status. At the time, the facility underwent stabilization and deactivation activities that included removing bulk fissile material, flushing tanks, stabilizing contamination within glove boxes and hoods, and packaging and removing waste.

The radiological side of the 209-E Building is non-operational, stabilized with selected systems deactivated, and undergoing long-term surveillance and maintenance (S&M) until deactivation commences. The 209-E Building currently contains residual plutonium and uranium, primarily within inactive process tanks and equipment inside glove boxes and/or hoods in the mixed room and CAR.

2. Deactivation Activities

The proposed action is to deactivate the 209-E Building up to a point of dismantlement. Dismantlement is beyond the scope of this NOC, and would be conducted under the Comprehensive Environmental Response, Compensations and Liability Act of 1980 (CERCLA).

The proposed deactivation activities include the following:

Characterize and remove residual radiological materials from glove boxes, filter boxes, equipment, piping, above-grade vessels, ductwork, and the building surfaces and package for disposition to onsite or offsite disposal facilities.

Characterize and remove/isolate radiological material from below-grade vessels.

Remove internal equipment from glove boxes and building equipment/systems components and package for disposition to onsite or offsite disposal facilities.

Decontaminate glove boxes, filter boxes, ductwork, and equipment to less than transuarnic levels (i.e., less than 100nCi/g) if possible.

Remove glove boxes, filter boxes, ductwork, and equipment, including above-grade vessels and piping, and package for disposition to onsite disposal facilities.

Decontaminate or fix contamination on building interior and exterior surfaces,

Disconnect utilities and services.

Perform radiological and chemical characterization in preparation for dismantlement.

In preparation for and as part of the proposed deactivation activities, housekeeping, radiological assays, preventive maintenance, minor decontamination, and reactivation of gloves would occur.

Maintain/repair equipment and the facility structure.

Install temporary systems to support activities such as lighting, air recirculation systems, closed loop air conditioning systems, environmental monitoring or surveillance equipment , safety systems, etc.

The proposed methods for characterizing and removing residual contamination from equipment/systems, and for removing equipment, would be similar to methods in use today throughout the industry and the DOE Complex. Both direct contact and remote technologies/techniques could be used. These would include laboratory analyses and nondestructive assay; chemical cleaning, brushing, washing, scrubbing, high-efficiency particulate air (HEPA) filtered vacuum cleaning, and abrasive jetting; using nibblers, shears, circular saws; and potentially a remote-operated laser.

More specifically, the activities include the following:

Size reduction of equipment will be by mechanical means and may be accompanied by disassembly through the use of wrenches, nibblers, shears, cutters, grinders, and saws. This equipment may be manually, hydraulically, pneumatically or electrically powered.

Decontamination methods include: Scraping, sweeping, chemical cleaning, brushing, washing, scrubbing, scabbling, grinding, vacuum cleaning, use of strippable coatings, washing using wet rags, spraying, abrasive jetting, low pressure and high pressure wash using water and/or chemical cleaners, use of fixatives and/or physical removal of contamination by use of mechanical means such ad chipping or cutting. The application of fixatives for contamination control would be accomplished via aerosol fogging, paint brush/roller, hand-held spray bottle, or an electric or pneumatic powered sprayer.

Containment of waste may be accomplished by coating the material with fixative or placing the material in containers, bags and/or wrapping in plastic sheeting, utilizing adhesive tape, heat sealing or mechanical closure to prevent airborne emissions.

Miscellaneous mechanical processes that could be used to support the proposed activity could include threading of piping, use of piping, use of hot taps on piping, capping and plugging piping using treaded pipe components and use of expanding/compressive plugs or caps, drilling of holes in metal and concrete, core drilling concrete surfaces, installation of anchor bolts, installation and removal of bolts, installations of hose and tubing connectors and compression fittings, and installation and removal of pumps, agitators and filters.

Minor amounts of outdoor excavation might take place in the vicinity of the 209-E Building to support site stabilization and isolating/blanking utilities. Access to underground piping and cable would be gained by use of a bucket-type excavator. Manual digging methods with shovels picks, and rakes also could be used. Up to approximately 100 cubic meters of contaminated soil could be disturbed. Contaminated soil removed during excavation activities would be covered or treated with surface fixatives until either placed as fill into the excavation or otherwise dispositioned (backfill would consist of the original material removed or ‘clean’ soil).

If needed or chosen for use during these activities, the site wide Guzzler™ , a portable temporary radioactive air emission unit (PTRAEU) exhauster, or HEPA filtered vacuum radioactive air emission unit could be used in accordance with the latest revisions of their notices of construction (NOCs) (“Categorical Notice of Construction for use of the Guzzler™ Vacuum Excavation System for Radiological Limited Activities on the Hanford Site” [approved by State of Washington Department of Health {WDOH} on December 18, 1998] or ‘Guzzler™ NOC’; DOE/RL-96-75 or DOE/RL-97-50, respectively).

Wastes generated during deactivation would be packaged appropriately and transported in closed containers which meet established waste acceptance criteria for transport to approved locations/facilities pending final disposition.

3. De-energization of Ventilation System

After deactivation activities inside the building addressed in Section 2. have been completed, the ventilation system would be de-energized.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 3.90E+00 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Am - 241	1.00E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Any radionuclide may be present but is represented by Am-241.

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) Radiological control technician (RCT) coverage will be provided, as necessary, during all deactivation and excavation activities.

5) For soil disturbing activities, appropriate controls such as water, fixatives, covers, containment tents, or windscreens would be applied, if needed, as determined by the Radiological Control organization. Soil removed during excavation activities would be covered until placed as backfill into the excavation or otherwise dispositioned.

6) After leveling, the soil surface radiological contamination levels would be verified to be acceptable per the Radiological Control organization. If contamination is present above identified levels, the soil will be removed and containerized for disposal or covered or fixed to provider containment of the contamination, consistent wit radiological work procedures in effect at the time,

7) If a Guzzler™ , PTRAEU, or HEPA-filtered vacuum radioactive air emission unit is used, controls as described in the Guzzler™ NOC, DOE/RL-96-75 or DOERL-97-50 will be followed.

8) If a field surveys during outdoor excavation identify localized areas of radiological contamination greater than 0.01 curies of Am-241, additional surveys will be conducted on the perimeter of the identified area to verify the localized nature, ensuring that the overall assumed contaminant level was not exceeded.

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.20E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.20E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

244-S DCRT (296-S-22 STACK)

Passive Ventilation Breather Filter System Installation:

A passive ventilation breather filter system will be installed on an existing above-grade riser on the primary receiver tank in accordance with ALARACT Demonstration 1 and 16. The primary tank breather filter will serve as the static vent for the instrument air injected (at a maximum of 9 cubic feet per hour) into the receiver tank through a set of three weight-factor dip tubes, which mixes with, and dilutes, any flammable gases. The primary tank breather filter will allow flammable gases to escape while collecting any airborne radioactive particulates.

A passive ventilation breather filter system will be installed above-grade on an existing riser or the existing annulus inlet filter riser in accordance with ALARACT 1 and 16. The annulus breather filter will provide for the exchange of ambient air with the annulus tank during atmospheric pressure fluctuations and will allow vapors to escape.

The breather filter system will, at a minimum, consist of an isolation valve (normally open during operation), filter housing, HEPA filter, and loop seal assembly. The isolation valve will isolate the HEPA filter from the tank to facilitate testing of the filter, and to isolate the system until the filter or housing can be replaced.

HEPA Filter Bank Isolation and Removal:

The isolation and removal of the HEPA filter bank located in the 244-S DCRT filter pit will require the deactivation of the HEPA filter bank instrumentation and alarms, the removal and disposal of the HEPA filter bank, and the installation of the filter pit duct jumper assembly, in accordance with ALARACT Demonstrations 6, 14, and 16. The 296-S-22 exhauster is equipped with a HEPA filter bank inside the filter pit. The HEPA filter bank is attached to three nozzles in the filter pit: one nozzle to the catch tank, one nozzle to the annulus, and one nozzle to the ventilation exhaust ductwork. The HEPA filter bank will be disconnected from the nozzles and removed for disposal. A filter pit duct jumper assembly (4" schedule 40 pipe) will be connected to the catch tank nozzle and ventilation exhaust ductwork nozzle to provide the ventilation path to the newly installed passive breather filters. The third nozzle to the annulus will be closed in the filter pit. The filter pit duct jumper assembly will be fabricated in accordance with ASME B31.3 and tested in accordance with ASME AG-1.

Electrical Equipment and Instrumentation Isolation:

The isolation of electrical equipment and instrumentation on the 244-S DCRT will require the disconnection of various power supplies (e.g., exhaust fan, motor operated valves, heat trace, sampler pumps, continuous air monitor, and alarms) and isolation of instrumentation (e.g., HEPA filter bank pressure indicators) that support operation and monitoring of the stack ventilation system in accordance with ALARACT 16. Disconnection is the physical disconnection and removal of wires from the power source. Pit entries are not required to disconnect power or isolate instrumentation.

296-S-22 Stack Isolation:

The 296-S-22 stack will be isolated via mechanical isolations. Blank flanges will be installed on the duct end and on the suction side of the exhaust fan. A closure cap will be installed on top of the exhaust stack. The exhaust

stack drain line will be cut and capped above grade. This work will be done in accordance with ALARACT Demonstration 16.

244-TX DCRT (296-T-18 STACK)

Passive Ventilation Breather Filter Installation:

A passive ventilation breather filter system will be installed on an existing above-grade riser on the primary receiver tank in accordance with ALARACT Demonstration 1 and 16. The primary tank breather filter will serve as the static vent for the instrument air injected (at a maximum of 9 cubic feet per hour) into the receiver tank through a set of three weight-factor dip tubes, which mixes with, and dilutes, any flammable gases. The primary tank breather filter will allow flammable gases to escape while collecting any airborne radioactive particulates.

A passive ventilation breather filter system will be installed above-grade on an existing riser or the existing annulus inlet filter riser in accordance with ALARACT 1 and 16. The annulus breather filter will provide for the exchange of ambient air with the annulus tank during atmospheric pressure fluctuations and will collect potential airborne radioactive particulates from the annulus space while allowing vapors to escape.

The breather filter system will, at a minimum, consist of an isolation valve (normally open during operation), filter housing, HEPA filter, and loop seal assembly. The isolation valve will isolate the HEPA filter from the tank to facilitate testing of the filter, and to isolate the system until the filter or housing can be replaced.

HEPA Filter Bank Isolation and Removal:

Removal of the HEPA filter bank in the 244-TX DCRT filter pit is not required. The HEPA filter bank will be isolated via closure of manual valves and the deactivation of motor-controlled valves. Above-grade duct/pipe will be capped. The associated HEPA filter bank instrumentation and alarms will be deactivated. This work will be done in accordance with ALARACT 16.

Electrical Equipment and Instrumentation Isolation:

The isolation of electrical equipment and instrumentation on the 244-TX DCRT will require the disconnection of various power supplies (e.g., exhaust fan, motor operated valves, heat trace, sampler pumps, continuous air monitor, and alarms) and isolation of instrumentation (e.g., HEPA filter bank pressure indicators) that support operation and monitoring of the stack ventilation system. Disconnection is the physical disconnection and removal of wires from the power source in accordance with ALARACT Demonstration 16. Pit entries are not required to disconnect power or isolate instrumentation.

296-T-18 Stack Isolation:

The 296-T-18 stack will be isolated via mechanical isolations. A blank flange will be installed at the suction side of the exhaust fan or at another suitable location near the filter pit outlet to the exhaust stack. A closure cap will be installed on top of the exhaust stack. The exhaust stack drain line will be cut and capped above grade. This work will be done in accordance with ALARACT Demonstration 16.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Alpha - 0	1.80E-06	Beta - 0	8.80E-02

4) The Annual Possession Quantity shall be tracked on a WDOH approved log.

5) The emission limit for all diffuse and fugitive emissions shall not exceed 1.0E-06 mrem/year.

Emission Unit ID: 498

200 W-296P047-001

296-P-47

This is a MAJOR, ACTIVELY ventilated emission unit.

Tank Farms

Emission Unit Information

Stack Height: 40.00 ft. 12.19 m. Stack Diameter 0.50 ft. 0.15 m.

Average Stack Effluent Temperature: 90 degrees Fahrenheit. 32 degrees Celsius.

Average Stack ExhaustVelocity: 80.68 ft/second. 24.59 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Heater	1	
	Demister	1	
	Prefilter	1	
	HEPA	2	2 HEPA filters in series
	Fan	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114.	Cs-137, Sr-90	Continuous

Sampling Requirements Record sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a skid/mobile type portable exhauster used to support tank farm operations, such as but not limited to, waste characterization, waste retrieval, decommissioning, deactivation, maintenance, and construction and operation support activities. The emission unit is a portable exhauster that operates intermittently.

This Emission Unit has 2 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Categorical Tank Farm Facility Waste Retrieval and Closure: Phase II Waste Retrieval Operations (Replaced NOC ID 816)	AIR 12-307	2/23/2012	825

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.31E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.61E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted.

The operation of the waste retrieval system(s) for the removal of radioactive wastes from all 149 Single Shell Tanks (SST) at the Hanford Site.

SALTCAKE DISSOLUTION WASTE RETRIEVAL SYSTEM

The saltcake dissolution waste retrieval system may be used to retrieve soluble saltcake waste. This method retrieves the soluble portion of the waste only, resulting in very few of the solids being pumped from the tank. The

saltcake dissolution waste retrieval system deployed in the SSTs is for water, chemical agent, or catalyst liquid to be added to the tank using a variety of spray nozzles or "sprinklers". The approach is to sprinkle the waste surface with water, chemical agent, or catalyst liquid. The added water, chemical agent, or catalyst liquid must stay in contact with the saltcake for a long enough period of time for the brine to become saturated. Once the brine is saturated, it is pumped from the SST to a receiver tank, staging tank, storage DST or other staging/storage vessel associated with the supplemental treatment, packaging or disposal. Salt solution will be removed using the existing saltwell pump or other pump placed into the tank.

A tank not equipped with a saltwell pump, a transfer pump (progressive cavity, vertical turbine) can be installed and operated.

Remotely directable water distribution devices will be located in risers spaced as far apart as practical. A combination of spraying waster, chemical agent, or catalyst liquid to dissolve the saltcake can be used in conjunction with directing a flow of water or recirculating water at the waste to move it to the pump suction to allow the pumping of waste from the tank. Recirculated waste from the pump may be sent back to the tank as an alternative to using water to direct dissolution waste to the pump suction.

MODIFIED SLUCING WASTE RETRIEVAL SYSTEM

Modified sluicing can be used for some SST waste retrieval. Modified sluicing is the introduction of liquid at low to moderate pressures and volumes into the waste. The liquid dissolves and breaks apart solid materials and suspends them in the waste slurry. A transfer pump installed in the tank provides the motive force to transfer the liquid slurry to a receiver tank.

Modified sluicing introduces sluice liquid in a controlled fashion using multiple sluicing nozzles at varying pressures and flows, then pumps out the resultant waste slurry. This maintains minimal liquid inventories within the tank at all times. The liquids that could be used in modified sluicing include water, recirculated supernatant/water from the receiving Double Shell Tank, recirculated supernatant/water, chemical agent or catalyst liquid.

VACUUM WASTE RETRIEVAL SYSTEM

A vacuum waste retrieval system can be used for waste retrieval activities in the (SSTs). The vacuum waste retrieval system is introduced into the SSTs by means of an articulating mast system (AMS). The AMS has a horizontal reach and rotational capabilities of 360 degrees. The AMS has a retracted position and can be extended vertically. Air is mixed at the suction end of the AMS enabling the required vertical lift for the waste to a topside receiver tank, batch vessel or a staging SST, storage DST, or other staging/storage vessels associated with supplemental treatment, packaging or disposal.

The AMS will be deployed through and attached to standard riser flanges that are available on the SSTs. Cameras can also be installed in other risers for in-tank viewing and control of the AMS.

For the 200-series tanks in the 241-C, 241-U, 241-B and 241-T Tank Farms a vacuum retrieval process tank, staging tank, staging SST, storage DST or other staging/storage vessel will be deployed. The receiver tank will receive waste in batches from whichever tank is connected into the vacuum retrieval system. The vacuum pressure used to draw up the waste from the tank to the receiver tank is relieved back into the SST being retrieved.

MOBILE RETRIEVAL SYSTEM

A Mobile Retrieval System (MRS) can be used to retrieve waste from some SSTs. The MRS consists of two in-tank systems. The first is a robotic crawler inserted through one riser the second is an AMS inserted through a second riser. The AMS retrieves the sludge from the tank using a vacuum with assisting pneumatic conveyance. The AMS vacuum tube has a horizontal reach and can be extended to the bottom of the tank. The arm rotates 360 degrees. The vacuum will be directed through the AMS in the tank to the end effector, which is in contact with the waste. The pneumatic conveyance-assisted vacuum retrieval system will draw the waste up through the vacuum to the waste vessel in the vessel skid in batches. The AMS is then valved out while the waste vessel is emptied and pumped out through the over ground transfer lines to a DST, a staging SST or other treatment/disposal options. When the waste vessel is nearly empty, the transfer line will be valved out and the

AMS will be valved back in and another batch of waste will be removed from the tank. This process will be repeated until waste near the center of the tank is removed. The robotic crawler will be remotely controlled to move and/or wash waste toward the center of the tank.

The robotic crawler is equipped with a plow blade at the front for pushing/pulling wastes, a screw pump to jet wastes through a small nozzle towards the center of the tank, the ability to direct hot or cold water through the same nozzle to wash wastes off of in-tank equipment, dissolve waste agglomerations in the tank, and wash waste toward the center of the tank for removal.
Any new retrieval methods or changes to processes will need to be provided to WDOH in a revised NOC prior to implementation.

MOBILE ARM RETRIEVAL SYSTEM

The Mobile Arm Retrieval System (MARS) is a waste retrieval system used to retrieve waste from single-shell tanks (SSTs) and move the waste to the double-shell tanks (DSTs). The MARS employs two design options similar to currently permitted systems: 1) a sluicing retrieval option which is intended for retrieval of non1eaker tanks and 2) a vacuum retrieval option is intended for retrieval of assumed 1eaker tanks. Both options use an arm and sluicing jets and/or a high pressure water scarifier to break up the waste. The sluicer uses waste supernatant recycled from the DST to form a liquid jet using a nozzle. The scarifier uses filtered, pressurized water that comes from a high pressure water skid.

The equipment portion of the MARS includes a vertical, carbon steel mast (square cross section) as the main structural member. Attached to the vertical mast is a carbon fiber robotic arm. The arm is attached to a traveler that raises and lowers the arm relative to the vertical mast. The arm rotates 360 degrees - 380 degrees on a turntable located in the pit box. The arm also pivots up and down from an elbow at the traveler (hydraulic system) and extends and retracts (hydraulic system). The end of the arm articulates. The arm thus provides for a large range of motion such that the sluicing devices (recycle sluicer, water scarifier) located at the end of the arm can aim at most portions of the tank and from varying (e.g., short) distances.

The containment box which encloses the MARS will be ventilated by two parallel installed radial filters. The purpose of these filters is to minimize contamination from migrating up from the tank into the containment box via the open space on the large riser during retrieval operations. Minimization of contamination inside the containment box is desired should entry into the box ever be required for repairs. Inflow through these filters during retrieval is estimated to reach up to 60 cubic feet per minute (cfm). A valve will be installed between the filters and the containment box so filters can be isolated from the box. However, because the location of the valve will be approximately 12 feet above ground and difficult to reach without properly installed and inspected scaffolding, the valve will be left open at all times until retrieval of the tank is complete. Once retrieval is complete the valve will be closed.

REMOTE WATER LANCE

The completion of tank retrieval may also be aided by a Remote Water Lance (RWL) that is a high pressure water device, or hydro laser. Alternatively, a High Pressure Mixer (HPM) may be used in the same capacity. The systems will consist of both ex-tank and in-tank components. The ex-tank components will be comprised of; high pressure systems, operating controls, cables, and hoses. The in-tank components will be comprised of; umbilical, in-tank vehicle, high pressure nozzle(s), or the high pressure mixer.

The high pressure water systems will provide the water at the desired pressure, not to exceed 37,000 psig. A conditioning system will be used to filter the raw water entering the skid to ensure that no abrasive materials are entrained in the water. The water volumetric flow rate will be on the order of 4 to 18 gpm for the HPM and from 6 to 15 gpm for the RWL. The operating controls will be located in a control trailer outside of the farm fence. The cables and hoses will connect hydraulically powered in-tank vehicle with the ex-tank controls and water skid via the umbilical. The HPM consists of an adjustable height pipe with two pairs of opposed, high pressure, low volume water orifices located on the bottom of the pipe. The mixer is capable of being rotated 360 degrees and has an adjustable height range of approximately 7 feet. The positioning of the mixer is performed remotely using a hydraulic system. Additionally, the mixer has a single orifice on the bottom of the unit that can be used as an operational or installation aid. The in-tank vehicle will house one to four high pressure water nozzles. The RWL

will be operated with the nozzle submerged to avoid aerosols in the tank. A rupture disc will be used to prevent reaching pressures above 37,000 psig.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	5.99E+00	Am - 241	8.68E+03	Am - 243	3.39E-01
Ba - 137 m	4.26E+07	C - 14	6.25E+02	Cd - 113 m	4.95E+03
Cm - 242	1.97E+01	Cm - 243	1.80E+00	Cm - 244	1.90E+01
Co - 60	2.52E+03	Cs - 134	3.44E+04	Cs - 137	4.89E+07
Eu - 152	8.49E+02	Eu - 154	1.45E+04	Eu - 155	9.54E+03
H - 3	5.95E+03	I - 129	2.95E+01	Nb - 93 m	1.01E+03
Ni - 59	1.05E+02	Ni - 63	9.30E+03	Np - 237	9.50E+01
Pa - 231	1.25E+01	Pu - 238	1.65E+02	Pu - 239	3.17E+03
Pu - 240	5.36E+02	Pu - 241	4.80E+03	Pu - 242	3.34E-02
Ra - 226	1.27E-02	Ra - 228	1.15E+01	Ru - 106	1.22E-02
Sb - 125	1.73E+04	Se - 79	6.36E+01	Sm - 151	8.93E+05
Sn - 126	2.59E+02	Sr - 90	2.91E+06	Tc - 99	2.24E+04
Th - 229	4.20E-01	Th - 232	1.26E+00	U - 232	3.66E+00
U - 233	3.02E+01	U - 234	1.07E+01	U - 235	4.44E-01
U - 236	2.73E-01	U - 238	9.86E+00	Y - 90	2.91E+06
Zr - 93	1.25E+03				

4) ABATEMENT TECHNOLOGY- Ductwork insulation
All ventilation ductwork from the exit of the tank to the inlet of the exhauster filter housing shall be insulated. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

5) ABATEMENT TECHNOLOGY- Annual testing
Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1 Section TA. HEPA filters shall have a minimum efficiency of 99.95%. (WAC 246-247-040(5)), (WAC 246-247-060(5)) and (WAC 246-247-075(2))

6) ABATEMENT TECHNOLOGY- Filter protection
Relative humidity shall be monitored, at least once a month, downstream of the heater and prior to the HEPA filters to ensure the air stream does not exceed 70% relative humidity. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

7) RELEASE RATES - WDOH Log
The annual possession quantity shall be tracked on a WDOH approved log. (WAC 246-247-080(7))

8) WDOH ALTERNATE APPROVAL- Standards
General WAC 246-247 technology standard exemptions justified and documented in RPP-19233, WAC 246-247 technology standard exemption justification for waste tank ventilation systems, may be applied to Phase II NOC retrieval exhauster operations. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

9) ALTERNATE APPROVAL - NDA Method

A pre-operational NDA of the exhauster(s) HEPA filters and a post-operational NDA will be performed the first time each of the four waste retrieval methods (mobile retrieval system, vacuum retrieval, supernatant sluicing, and saltcake dissolution with supernatant) when placed into service. The post-operational NDA should occur after one cycle or phase of waste retrieval operation is completed, a method replaces another method during a cycle/phase or six months from the in-service date, whichever occurs first. The facility may opt to replace the exhauster's HEPA filters prior to placing a new waste retrieval method in service and eliminate the pre-operational NDA. (WAC 246-247-040(5)), (WAC 246-247-060(5)) and (WAC 246-247-075(4))

10) WDOH NOTIFICATIONS - Differential pressure out of range
The differential pressure readings for the pre-filters and both stages of HEPA filters shall be monitored, recorded and trended daily. The exhaust system will be configured to automatically shut down at 5.9 inches of water (or less) pressure differential across the HEPA filter(s) for the first filter in series or multiple filters in series as indicated by the local readout. If the final HEPA filter in the system exceeds 5.9 inches of water pressure differential across the filter, the cause will be determined and WDOH will be notified through normal established channels. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

11) STANDARDS - stack monitoring systems
The emission unit stack monitoring system shall meet the requirements of ANSI/HPS N13.1-1999 including the stack monitoring system inspection requirements. (WAC 246-247-040(5)), (WAC 246-247-060(5)) and (WAC 246-247-075(2))

12) STANDARDS - Startup leak testing
New or altered sections of ductwork shall be leak tested in accordance with the requirements of ASME AG-1 Section SA prior to use. Normal maintenance of the system (e.g. replacing gaskets, replacement of in kind components, flow profile analysis in the ductwork, air sampling from test ports in the duct and demister flushing) are not considered to be alteration. (WAC 246-247-040(5)), (WAC 246-247-060(5)) and (WAC 246-247-075(2))

13) CONTAMINATION CONTROL- Max operating pressure
During waste retrieval operations the maximum pressure for any waste retrieval method shall not exceed 37,000 psig. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

14) CONTAMINATION CONTROL- Monthly Radiological Survey
While the exhauster is operating, and/or tank waste retrieval is underway, all ductwork connections shall have a radiological survey performed monthly to ensure ductwork connections are not degrading. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

15) CONTAMINATION CONTROL exhauster alternate usages
The exhauster will be operated occasionally during periods of non-retrieval in support of tank waste retrieval preparation activities and to aid in evaporation of residual flush water or sluicing liquid that remains in the tank. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

16) CONTAMINATION CONTROL- Active ventilation
All receiver tanks (including waste retrieval process tanks for tank TRU retrieval (staging) SSTs, storage DSTs, or other staging/storage vessels, but not including batch vessel supporting vacuum retrieval) shall have active ventilation during waste receipt, unless alternative controls are documented and approved by WDOH. If the exhauster goes down due to off-normal conditions while retrieval is occurring, the system should be placed into a safe configuration, minimizing dose to personnel and the environment. These steps may include: flushing the lines, pumps, and the waste transfer system of slurry solution using DST supernatant or water; pumping down the tank liquid to minimize remaining liquids; and halting waste retrieval. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.10E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.82E+01 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Sump Intrusion Mitigation:

Sump intrusion mitigation is limited to cells 001, 002, 003, and 011 only. From time to time if intrusion of precipitation and snow melt gets into the sumps, the sumps will need to be pumped. In order to accommodate this, submersible pump assemblies will be installed in each of the four CR Vault Cells. The pump assemblies will be installed on top of existing 6 inch riser extensions on cells 001, 002, 003, and 011. Riser extensions may be installed, or replaced if necessary. These extensions will be installed and/or removed as follows:

- the pit covers will be removed,

- above grade piping will be cut and capped,

- leak detectors and two zip cords will be removed,

- the riser extensions will be installed and/or removed remotely from a platform over the pit, and

- a new pit cover will be installed.

The sumps will be pumped by connecting a transfer line to a ventilated tank or to the Tanker Truck permitted under AOP Emission Unit Number 888 and licensed under WDOH NOC ID Number 696. The transfer line will be a hose-in sleeve line. The other end of the transfer line will be attached to the pump assembly on the first CR Vault cell to be pumped. After the first cell is pumped, flush water will be added and pumped to flush the system. Then the hose will be relocated to the next cell's pump assembly. The process will be repeated until all the cells are pumped. The CR Vault breather filter will not be modified and will be open during pumping. After the pumping is complete, the transfer line and pumps will be removed and disposed of as mixed waste. The pit foam covering will also be replaced to prevent, or at best minimize intrusion of precipitation and snow melt.

A fixative shall be applied with the pit covers on. The fixatives shall be applied to pit surfaces through a port in the pit cover using a 'whirly' or by fogging. A hand held sprayer is used to apply fixatives within the pit when the pit cover is off.

Temporary power installation will be limited to meet the needs to support the work described in this NOC. Temporary installations can be removed when no longer needed.

General Controls for Sump Intrusion Mitigation:

The general controls for sump intrusion mitigation is limited to cells 001, 002, 003, and 011 only. The required controls for each of the following actions are delineated by the specified ALARACT:

- ALARACT 1—Tank Farm ALARACT Demonstration for Riser Preparation/Opening.

- ALARACT 4—Tank Farm ALARACT Demonstration for Packaging and Transportation of Waste.

- ALARACT 5—Tank Farm ALARACT Demonstration for Soil Excavation (using hand tools).

- ALARACT 6—Tank Farm ALARACT Demonstration for Pit Access.

- ALARACT 7—Tank Farm ALARACT Demonstration for Tank Waste Grab Sampling.

- ALARACT 11—Tank Farm ALARACT Demonstration for Waste Transfers.

- ALARACT 12—Tank Farm ALARACT Demonstration for Packaging and Transportation of Equipment and Vehicles.

- ALARACT 13—Tank Farm ALARACT Demonstration for Installation, Operation, and Removal of Tank Equipment.

- ALARACT 14—Tank Farm ALARACT Demonstration for Pit Work.

- ALARACT 15—Tank Farm ALARACT Demonstration for Size Reduction of Waste Equipment for Disposal.

The activities performed at the 244-CR Vault Facility, ER-153 and/or 244-A Lift Station include:

Work Area Preparation:

- Miscellaneous work including equipment delivery, movement, set up and maintenance in the general work area around the 244-CR Vault Facility.

- Construction and take down of open top containment tents (bullpens) over the facility vault area.

- Installation of Portable/Temporary Radioactive Air Emission Unit(s) (PTRAEUs).

- Installation of portable 1,000 cubic feet per minute (cfm) exhauster.

- Removal and/or installation of vault foam covering.

- Application of fixative at pit interior.

- Temporary power installation.

Facility/Interim Stabilization Work:

- Operation of PTRAEU for bullpen ventilation.

- Removal and/or installation of pit covers.

- Inspection of pits, vaults, and tanks.

- Removal and disposition of excess equipment and waste in pits, risers, and tanks.

- Decontamination activities.

- Measurement of liquid level and sludge levels in tanks and sumps.

- Sampling activities in pits, vaults, and tanks including chemical addition and/or waste sampling to determine Double Shell Tank waste acceptance.

Facility Equipment Activities:

- Installation, disconnection, repair, replacement, and/or leak testing, of new and existing facility equipment (valves, jumpers, pumps, leak detectors, or other instrumentation/equipment).

- Modifications, maintenance, and/or isolation and sealing of existing risers, pits, vaults and incoming and/or outgoing piping (drain and transfer lines) from 244-CR Vault or connected facility.

Excavation:

- Installation of permanent power to 244-CR Vault Facility.

- Installation/Operation of Passive Breather Filter Assembly.

Waste Transfer and Support Activities:

- Operation of 1,000 cfm portable exhauster at 244-CR Vault.

- New waste transfer system, waste staging/consolidation.

Miscellaneous activities shall include:

- Construction and take down of open top contaminant tents over the facility vault area.

- Open top containment tents (bullpens) shall be constructed over the facility pit area to prevent potential airborne contamination from the effected work area to the environment. Two bullpens shall be erected around two instrumentation pits at the 244-CR Vault. Upon completion of the first pit's work, the bullpens shall be relocated to the other two pits and their work will be completed.

- Installation of Portable/Temporary Radioactive Air Emission Unit(s) (PTRAEUs)

- A Portable/Temporary Radioactive Air Emission Unit (2,000 cfm) or units (1,000 cfm each) shall be installed to ventilate the bullpens during activities that require work in the pits, cells and tank vault area prior to performing waste transfer activities. One thousand cfm PTRAEUs, if used, shall be directly connected to individual bullpens, while a 2,000 PTRAEU if used, shall be connected to two bullpens. Movement and installation of the PTRAEU can be performed to facilitate ventilation for the four vaults of the 244-CR Vault Facility. The PTRAEU shall operate intermittently (during work activities) and will be operated in accordance with the latest WDOH approval, AIR 99-1102, for the Portable/Temporary Radioactive Air Emission Unit (PTRAEU) NOC (DOE/RL-96-75).

A portable 1,000 cfm exhauster shall be installed to ventilate the 244-CR Facility vaults and tanks during waste transfer activities. This exhauster shall operate intermittently to support waste transfer and support activities and shall monitor air emissions. The exhauster shall be piped into the existing 244-CR facility ventilation system upstream of the existing (non-operating) exhauster, 296-C-05 and HEPA filters. The existing 244-CR Facility exhaust system shall be isolated and not used. Tie in of the 1,000 cfm exhauster to the existing exhaust system shall be in accordance with ALARACT 16, Tank Farm ALARACT Demonstration for Work on Potentially Contaminated Ventilation System Components. After the waste transfer is completed, the exhauster shall be removed in accordance to the requirements of ALARACT 16.

A foam covering has been placed over the 244-CR Vault area to prevent intrusion of precipitation and snowmelt. In order to gain access to the pit cover (metal) plates or concrete cover blocks, sections of the foam shall be removed, packaged, transported and disposed of. ALARACT 4, Tank Farm ALARACT Demonstration for Packaging and Transportation of Waste shall be used to properly disposition the removed foamed covering. Radiation control technicians (RCT) shall monitor the affected work area while the foam covering is being removed. The foam covering shall be replaced after work is complete, as part of intrusion prevention measures completed by the project following waste transfer activities.

Operation of PTRAEU for Bullpen Ventilation.

Ventilation of the bullpens during pre waste transfer tank activities and prior to the installation of the 1,000 cfm portable exhauster shall be accomplished with the use of PTRAEU(s). The PTRAEU(s) shall be operated in accordance with the latest WDOH approval, AIR 99-1102, for the Portable/Temporary Radioactive Air Emission Unit (PTRAEU) NOC (DOE/RL-96-75).

Concrete cover key blocks are removed first, and only blocks necessary to perform intended work are removed. Consideration is given to sliding blocks to minimize the number of blocks to be removed. As discussed in the following, pit covers are decontaminated and/or covered with fixative before removal. Pit Covers are raised a minimum distance to safely allow a radiation protection technician to perform a dose rate and contamination survey. Pit covers are wrapped in plastic and set down in a specially prepared lay-down area. On completion of activities, the plastic wrap is removed from the pit covers and the pit covers are re-installed in their original position and orientation. Post-job surveys are performed.

Inspections, such as visual, video, or nondestructive inspections, shall be performed with pit covers in place (for pit with access ports) or removed. The pit cover design, historical inspection information, and ALARA information shall be used to determine whether the inspection shall be performed manually (with pit cover removed) or remotely with a camera and the pit covers in place.

Excess equipment and debris currently located in the 244-CR vault pits, and in-tank equipment shall be removed to accommodate new waste transfer equipment and piping. Excess equipment shall be replaced with replacement in kind equipment, as necessary.

To facilitate the removal and disposition of these items, size reduction and decontamination activities shall be utilized. Size reduction activities shall include cutting up unusable equipment (usually jumpers/blanks) remotely, using hydraulic shears or low revolutions per minute portable band saws. All size reduction activities shall be performed in accordance with ALARACT Demonstration 15, TWRS ALARACT Demonstration for Size Reduction of Waste Equipment for Disposal.

Disposition of excess equipment and waste shall be performed in accordance with ALARACT Demonstration 4, TWRS ALARACT Demonstration for packaging and transportation of waste.

Removable contamination in the accessible portions of the pit is reduced to less than 100,000 disintegrations per minute/100 square centimeters beta/gamma and 2,000 disintegrations per minute/100 square centimeters alpha by washing, or an approved fixative is applied to pit surfaces. Initial washing with a low pressure (125 pounds per square inch gauge), or high pressure (3,000 pounds per square inch gauge) 'whirly' is accomplished through a port in the pit cover blocks. Additional decontamination activities (with the cover block off) include the use of chemicals, peel and strip paints, water, or manual scrub brushes.

After a section of equipment has been washed it shall be pulled into plastic sleeving and sealed by horse tailing and taping.

Liquid and sludge levels are determined using zip cords or other appropriate means that shall not disturb the waste more than zip cords.

Sampling activities shall be performed in the tank and sump area of 244-CR Vault by way of risers in the riser pit in accordance with ALARACT 7, "Tank Farm ALARACT Demonstration For Tank Waste Grab Sampling." Radiological controls for riser preparation/opening listed in ALARACT 1, "Tank Farm ALARACT Demonstration for Riser Preparation/opening," shall be followed.

The waste transfer processes shall transfer waste from tanks CR-011, CR-001, CR-002 and CR-003 and sumps within 244-CR Vault Facility to a staging tank within the 244-CR Facility. The transfer system to consolidate the waste from individual tanks consists of above ground piping of a hose in hose with leak detection at each tank's pit being utilized to support the transfer line. Mixing and dilution of the waste may take place at the receiving tank or within the transfer lines directly. The transfer system may include equipment pump skids and shall include appropriate connections to the transfer lines to accommodate chemical and water addition to the 244-CR Facility tanks and mixing prior to transfer to the designated Double Shell Tank (DST).

Before entry into a pit, an evaluation is made by engineering and/or operations personnel to determine the transfer routing configuration after pit work is complete. On removal of cover blocks, a visual inspection of pit contents is made to verify present configuration.

Tools such as impact wrenches, T-bars, and pike poles are used to repair or replace pit equipment. All equipment coming out of the pit is wrapped in plastic or otherwise contained or decontaminated for reuse or disposal. Removable contamination on the outer-most container shall not exceed 1,000 disintegrations per minute/100 square centimeters beta/gamma and 20 disintegrations per minute/100 square centimeters alpha before removal from the bullpen. Disposition of non reusable equipment waste shall be performed in accordance with ALARACT Demonstration 4, TWRS ALARACT Demonstration for packaging and transportation of waste.

Jumper work shall be preceded by flushing the appropriate transfer lines with water. Jumper work is accomplished remotely, using a crane to maneuver heavy equipment and parts. Installation, disconnection, and/or changing jumpers/blanks are accomplished by slowly loosening the jumper/blank at the connector head. The required jumper/blank is positioned and tightened to the new connector heads. If the process line or equipment being worked on is connected physically to other unnecessary transfer lines, or if the line is to be left unused, a cap, blank, or equivalent is installed on all open nozzles not connected to jumpers.

Leak testing of newly installed jumpers/blanks shall be performed with pressurized water before initiating waste transfers. Occasionally, a jumper leak test is performed during the initial stages of the transfer. In either case, cover blocks shall be in place before leak testing is performed.

Cutting up unusable pit equipment (usually jumpers/blanks) is accomplished remotely using hydraulic shears or low revolutions per minute portable band saws. Cutting activities shall be performed in the bullpen or in glovebags. The goal shall be to maintain a contamination level equal to or less than 1,000 dpm/100 cm2 beta gamma and 20 dpm/100 cm2 alpha, during cutting activities, but may not always be attainable. RCT coverage shall be provided. Should contamination levels exceed 1,000-dpm/100 cm2 additional sleeving, or use of a glove bag shall be used and/or decontamination activities performed to lower the levels in accordance with ALARA. Welding (if required) shall commence once removable contamination levels in the cut and weld area are reduced to ALARA. Size reduction (cutting) activities shall be performed in accordance with ALARACT Demonstration 15, TWRS ALARACT Demonstration for Size Reduction of Waste Equipment for Disposal. To ensure that water intrusions or potential residual waste in piping are eliminated from the facility, existing piping and transfer lines to and from the 244-CR Vault facility shall be blanked, grouted, or sealed. The isolation includes activities such as installing plugs, caps, blind flanges, or grouting. Isolations may occur at the 244-CR riser pit area or at the other end of the pipe in a diversion or valve box, at the ER153 or the 244A Lift Station.

Modifications to existing in-route pits, vaults and piping shall be required to establish the waste transfer route or to ensure the integrity of the system prior to waste transfer. These modifications can include but are not limited to, removal of existing parts and replacement with like parts, installation of new jumpers, or blanking off of equipment. When possible existing blanks shall be utilized. Pipe cutting shall be minimized in compliance with ALARA. If it is determined that the installation of a new above ground transfer line would be the best engineering method to establish a waste transfer route, a temporary transfer route shall be established following existing design and installation procedures. This temporary route will be either above ground or in a shallow trench. If a trench is required excavation shall be performed as described under that activity in this NOC.

Pit drains are checked using water from a tanker truck or another source. Water at a flow rate of approximately 20 gallons per minute is added to a pit drain line and subsequently monitored to verify the pit drains are free of restrictions. At times it might be necessary to pump the DCRT that receives the water after the water passes through the pit drain if the volume of test water approaches the capacity of the DCRT.

Either flushing with water and/or using a retrieval tool to remove debris from the drain are used to clear plugged drains. Water supply valves are opened slowly to minimize splashing. Pressures above 50 pounds per square inch gauge require approval from the engineering organization. Cover blocks shall remain in place and work is accomplished through a penetration in the cover block.

The waste transfer operations involve the pumping of liquid waste that contains dissolved solids. These solids can precipitate out of solution anywhere in the transfer path and cause blockage. If blockage is detected in the system, flushing the lines with hot water is necessary. The hot water is introduced to the system to be flushed through a

pressure manifold by piping connected directly to a jumper or nozzle. These operations shall be performed with the pit covers on.

To ensure that water intrusions are eliminated from the facility, a foam covering will be placed over the 244-CR Vault area after completion of isolation activities.

Other techniques to free blockages could include pressurization, temporary jumpers, and hydraulic scouring. All piping connections are designed to be leak tight and the pit cover block shall be installed before pressurization. If pressurization beyond that obtained from the tank farms water system or supply truck (i.e., approximately 150 pounds per square inch gauge) is necessary to remove blockage, an engineering evaluation shall be performed to determine the maximum allowable pressure for operation.

Excavation:

Excavation may be required to support installation of ventilation, electrical support and waste transfer equipment. Modifications to existing in route pits, vaults and piping and/or to support installation of new waste transfer lines from the 244-CR Facility to the identified DST may require excavation. Soil excavation activities will be performed in accordance with ALARACT Demonstration 5, TWRS ALARACT Demonstration for Soil Excavation (Using Hand Tools), and will follow the radiological controls specified in that ALARACT.

Any Filter Vacuume Truck excavations in contamination areas will be performed in accordance with the most current version of sitewide DOE Notice of construction application, Guzzler Excavation and Backfilling Activities in Support of the 200 East and West Area Tank Farm Complex (See DOE Letter 09-ESQ-542 Dated November 30, 2009) or the latest WDOH approved Site Wide Guzzler DOE application (See Doe Letter 99-SID-02, Dated February 1, 1999).

Soil excavation outside the tank farm fence also may be performed with heavy equipment.

Soil will be excavated around the 244-CR vault facility to install new piping, equipment slabs, and new waste transfer system support equipment. It is expected that about 1,000 cubic yards may be excavated, with about 600 cubic yards from inside the tank farm. Backfill shall be from the original removed soil or non-contaminated controlled density fill (sand, water and a small amount of cement).

Current power within the 244-CR Vault Facility is limited. To provide power for new equipment installed under the project, the existing power distribution system shall be upgraded. Upgrades shall involve modification to the existing Motor Control Center (MCC), installation of equipment control panels, and installation of new conduits.

A compliant passive breather filter shall be installed to ventilate the 244-CR Facility vaults and tanks once waste transfer activities are completed. The passive breather filters shall be installed at two locations in the 244-CR facility. A 1,000 cfm HEPA filter shall be installed at the air inlet assembly (previously attached to the evaporative cooler) and a 200 cfm HEPA filter shall be installed upstream of the existing HEPA filter pit. Butterfly valves in the ventilation system just downstream of where the filters shall be installed can be shut to prevent any emission from the facility during filter installation. Installation of the filters shall be performed in accordance with ALARACT Demonstration 16, TWRS ALARACT Demonstration for Work on Potentially Contaminated Ventilation System Components.

During waste transfer and support activities the tank and vault air space shall be actively ventilated by a temporary ventilation system. The temporary ventilation system shall consist of a portable exhauster that shall be equipped with compliant monitoring and sampling equipment. The purpose of the exhauster is to ensure potential airborne contamination from the pits, cells, or process tanks, is not being released to the environment. Operation of the 1,000 cfm portable exhauster is considered an emissions control.

New waste transfer system, waste staging/consolidation.

The planned transfer system can utilize some existing equipment along with installation of new piping and equipment at 244-CR, ER-153 and/or 244-A Lift Station. Maintenance of the transfer system may be required during the waste staging/consolidation. Equipment, which may require on going maintenance includes but is not

limited to leak detection and pump system equipment. The waste can be staged/consolidated in one or two of the 244-CR Facility tanks (CR-001, CR-002, CR-003 and CR-011) prior to transfer to a DST.

The following controls are used for the pit activities:

General Controls:

1. Pre-job and post-job radiation surveys are performed by radiation protection technicians. Radiation work permits specify permissible occupational radiological limits during activities. Radiation control technicians' survey and release equipment, inspect and approve required containment, and provide radiological surveys to verify compliance to radiation work permit limits.

2. Pit work is shut down (or not initiated) when sustained wind speeds exceed 25 miles per hour as measured in the field and/or reported by the Hanford Meteorological Station.

3. Fixatives shall be applied inside the pit (with cover blocks on or off) or accessible portions of the pit decontaminated to less than 100,000 disintegrations per minute/100 square centimeters beta-gamma and 2,000 disintegrations per minute/100 square centimeters alpha.

4. When cover blocks are removed, a fall protection handrail is installed. This handrail is draped in plastic forming a contamination barrier. The plastic extends to the top of the pit and is taped or sealed at the top of the pit. Decontamination of the containment barrier is conducted as required by the job specific radiation work permit.

5. Radiation control technicians monitor the affected work area when the vault foam covering is removed, when jumpers and equipment are being removed from risers and nozzles, and when risers are entered for sampling of tanks and sumps. Jumpers removed from the pit are drained of free liquid and decontaminated or contained before removal. The outer-most container shall not exceed 1,000 disintegrations per minute/100 square centimeters beta/gamma and 20 disintegrations per minute/100 square centimeters alpha. If these limits are exceeded, surfaces shall be decontaminated. Disposition of non reusable equipment waste shall be performed in accordance with ALARACT Demonstration 4, TWRS ALARACT Demonstration for packaging and transportation of waste.

6. A bullpen designed to minimize the top opening shall be used. Pit covers or cover blocks will be removed as necessary. If the bullpen is to be left unattended at any time, a temporary cover is placed over the pit or the pit covers or cover blocks are reinstalled. Two tents shall be erected over two pits. Upon completion of the work in the first two 244-CR Facility instrumentation pits, the tents will be relocated to the other 244-CR facility instrumentation pits.

7. PTRAEU(s) shall actively ventilate the bullpens during activities that require work in the pits (after removal of the cover blocks) to control radiological releases. The PTRAEU(s) shall operate intermittently and shall be operated in accordance with the latest revision to the WDOH approved. Portable/Temporary Radioactive Air Emission Unit (PTRAEU) NOC (DOE/RL-96-75).

8. A compliant exhauster skid shall ventilate the process cells and tanks during waste transfer activities. The exhauster shall maintain a negative pressure under the cover blocks and prevent contaminants from reaching the environment. The exhauster skid shall be connected to the existing exhaust ductwork with rigid or flexible ductwork.

9. The 1,000 cfm exhauster shall be equipped with a two-stage HEPA filter, which meets the requirements of ASME AG-1, Section FC and shall be tested annually to requirements of ASME AG-1. The HEPA filters shall have an efficiency of 99.95 percent for 0.3-micron median diameter. Each filter housing shall meet the applicable sections of ASME N509 and the test requirement of ASME N510. The exhaust stack houses a Generic Effluent Monitoring System (GEMS) that contains an air velocity probe and the air sampling probe.

10. The breather filter shall consist of a housing that contains a HEPA filter, an outlet screen, and a small seal loop. Air flowing to and from the 244-CR Facility shall pass horizontally through the filter and vertically through the downward-facing exit weather hood. Seal loops, installed in the exhaust lines, are designed as a safety feature to prevent unlikely accident in which an over pressurization occurs when the HEPA filter is isolated for occasional

(infrequent) maintenance.

Specific Controls include:

-Installation of portable 1,000 cfm exhauster shall use ALARACT 16.

-Removal and/or installation of vault foam covering - ALARACT 4.

-Application of fixative at pit interior - see General Controls.

-Temporary power installation - ALARA.

-Operation of PTRAEU for bullpen ventilation - Latest WDOH approval, AIR 99-1102, for the Portable/Temporary Radioactive Air Emission Unit (PTRAEU) NOC (DOE/RL-96-75).

-Removal and/or installation of pit covers - General Controls.

-Inspection of pits, vaults, and tanks - General Controls.

-Removal and disposition of excess equipment and waste in pits, risers, and tanks - ALARACT 15, and ALARACT 4.

-Decontamination activities - General Controls.

-Measurement of liquid level and sludge levels in tanks and sumps - General Controls.

-Sampling activities in pits, vaults, and tanks including chemical addition and/or waste sampling to determine Double Shell Tank waste acceptance - ALARACT 7 and ALARACT 1.

-Facility Equipment Activities: installation, disconnection, repair, replacement, and/or leak testing, of new and existing facility equipment (valves, jumpers, pumps, leak detectors, or other instrumentation/equipment) - ALARACT 4, and ALARACT 15.

-Modifications, maintenance, and/or isolation and sealing of existing in route pits, vaults and piping (drain and transfer lines) to support and/or installation of new transfer lines - General Controls.

-Excavation - ALARACT 5, and/or WDOH approved Site Wide Guzzler NOC (Air 98-1215), or the most current NOC approved for Guzzler use.

-Installation of permanent power to 244-CR Vault Facility - ALARA.

-Installation of passive breather filter assembly - ALARACT 16.

-Operation of a portable exhauster at 244-CR vault for ventilation - ALARA.

-New waste transfer system, waste staging/consolidation - General Controls.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	9.90E-01	Am - 241	5.00E+01	Am - 243	7.83E-03
Ba - 137 m	2.98E+04	C - 14	1.71E-01	Cd - 113 m	1.18E+01
Cm - 242	9.68E-01	Cm - 243	1.15E-01	Cm - 244	2.63E+00
Co - 60	8.23E+01				

		Cs - 134	1.06E-01	Cs - 137	3.15E+04
Eu - 152	2.73E+00	Eu - 154	3.56E+02	Eu - 155	3.22E+02
H - 3	2.20E+00	I - 129	4.71E-03	Nb - 93 m	6.88E+00
Ni - 59	4.41E+00	Ni - 63	4.33E+02	Np - 237	1.13E+01
Pa - 231	7.67E-04	Pu - 238	5.03E+00	Pu - 239	4.97E+02
Pu - 240	8.95E+01	Pu - 241	6.26E+02	Pu - 242	7.82E+02
Ra - 226	3.41E-04	Ra - 228	1.85E+00	Ru - 106	1.57E-02
Sb - 125	4.41E+01	Se - 79	1.64E+00	Sm - 151	6.06E+03
Sn - 126	2.59E+00	Sr - 90	3.04E+05	Tc - 99	2.02E+01
Th - 229	1.63E-02	Th - 232	3.10E+00	U - 232	3.97E-01
U - 233	1.52E+00	U - 234	9.99E-01	U - 235	4.20E-02
U - 236	2.53E-02	U - 238	3.58E-01	Y - 90	3.04E+05
Zr - 93	6.00E+00				

Emission Unit ID: 504

600 J NONPOINT SOURCE

600 Area Diffuse/Fugitive

This is a MINOR, FUGITIVE, non-point source emission unit.

600 Area Diffuse Emissions

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114	Each radionuclide that could contribute greater than 10 percent of the potential-to-emit TEDE	Per the sitewide ambient monitoring program

Sampling Requirements Per the sitewide ambient monitoring program samples will be collected from the existing near-facility monitoring stations

Additional Requirements

See Section 5 of the general conditions in this license for additional information.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Associated with emissions from operations, deactivation, surveillance and maintenance, and inactive sites in the 600 Area from sources not actively ventilated.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Use of Portable Tanks and Revised Source Term Description at Waste Sampling and Characterization Facility (WSCF)(Replaced NOC 669)	AIR 12-303	2/23/2012	820

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 2.80E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   * Analytical Laboratory Building (696-W-1) - Solid, liquid, and vapor samples contaminated with low levels of radioactive material are processed, on a bench-scale basis, in fume hoods or other controlled air spaces in the building. Evaporation and wet chemistry also are used to prepare samples for analysis. Low-level waste drums are filled inside the laboratory building and transferred either to the Solid Waste Storage Building (described as follows) or other approved facilities on the Hanford Site, or the low-level waste drums are moved to various locations within WSCF.

   * Radiochemistry Laboratory (696-W-2) - This is a below grade counting room in the Analytical Laboratory Building with a separately controlled airspace within the building.

   * Environmental Data/Computer Center (6270) - This is a non-radiological building and will not be addressed further.

   * Environmental Sample Archive Buildings (6267) - These buildings provide for controlled storage, indexing, categorizing and retrieval of low-level contaminated samples. Building 6267 provides storage for up to 1750 one liter samples requiring refrigerated storage and up to 40,320 one liter samples requiring ambient storage.

Modular storage trailer MO-188 provides storage for up to 7,000 soil samples requiring ambient storage. Additional storage buildings will be installed and operated, as necessary, within the constraints of WSCF's maximum annual throughput curie limit. These buildings also provide for temporary storage of unvented drums or other low-level waste, packaged in accordance with applicable laboratory procedures. Less than 100 low-level waste packages are stored at any one time.

* Mobile Laboratory Storage Facility (6269) - This structure houses up to five mobile laboratories and provides protection from adverse weather conditions for the instrumentation and computers inside the mobile laboratories. This area contains calibration laboratory instrumentation used in the mobile laboratories, and a sample preparation area for adding chemical buffers and preservatives to sample containers. This building provides temporary storage of drums, or other waste packages contained with low-levels of radioactive material. Less than 100 low-level waste packages are stored at any one time.

* Solid Waste Storage Building (6265A) - This open-sided building shall provide for temporary storage of drums or other low-level waste packages. Less than 100 low-level waste packages are stored at any one time and will not be addressed further in this license, as these are unvented drums.

* Contaminated Liquid Waste Retention Vault (6266A) - Consists of two 3,785 liter polyethylene tanks contained in a common concrete vault. The tanks are designed to receive low-level inorganic and radiologically contaminated liquid waste or sample excess from the analytical laboratory. The liquid is transferred to an approved disposal facility on the Hanford Site using the portable tanker described below. This building also provides temporary storage of drums, or other waste packages contaminated with low-levels of radioactive material. Less than 100 low-level waste packages are stored at any one time. [THE TWO 3,785 LITER POLYETHYLENE TANKS THAT ARE CONTAINED IN THE COMMON CONCRETE VAULT MUST BE REGISTERED AS RADIOACTIVE AIR EMISSION UNIT PRIOR TO USE.]

* Sample Equipment Cleaning Facility - This is a non-radiological building and will not be addressed further.

* Portable Tanker(s) used for Wastewater Transport - Wastewater drums containing liquid waste contaminated with low-levels of radioactive material are stored temporarily at various locations within WSCF. In some cases, the contents of these drums are pumped into a portable tanker at the various locations for transport to other facilities. To accomplish the pumping, a small pump has its drop leg inserted into each drum through the bunghole or other opening, and flexible hose transfers the liquid to the tanker.[SEE NOC 696 (Tanker Truck Loading of Radioactively Contaminated Waste Water) or current version of NOC.]

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 1.40E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	1.02E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

License PTE limit bounds 1.02E-03 Ci/yr 239Pu and release fraction of 0.001. Any radionuclide on the chart of the nuclides could be encountered during operation of the WSCF. The radionuclides specifically listed in the NOC application were chosen to conservatively represent all radionuclide emissions that may occur in particulate form. A small contribution from the gaseous radionuclides may be encountered. Although any radionuclide could be present, for conservatism all alpha is assumed to be 239Pu and all beta/gamma is assumed to be 90Sr for dose calculation estimates. Other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta/gamma constituents.

B/G - 0	2.11E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

License PTE limit bounds 2.11E-02 Ci/yr 90Sr and release fraction of 0.001. Any radionuclide on the chart of the nuclides could be encountered during operation of the WSCF. The radionuclides specifically listed in the NOC application were chosen to conservatively represent all radionuclide emissions that may occur in particulate form. A small contribution from the gaseous radionuclides may be encountered. Although any radionuclide could be present, for conservatism all alpha is assumed to be 239Pu and all beta/gamma is assumed to be 90Sr for dose calculation estimates. Other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta/gamma constituents.

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) POTENTIAL RELEASE RATES - Limits
The potential release rates shall not exceed the following limits for the associated buildings:
* Environmental sample archive buildings (6267) release rate is limited to 3.3E-04 Ci/yr total Alpha and 6.8E-03 Ci/yr total Beta/Gamma.
* Mobile Laboratory Storage Facility (6269) release rate is limited to 3.3E-05 Ci/yr total Alpha and 6.8E-04 Ci/yr total Beta/Gamma.
* Contaminated liquid waste retention vault (6266A) release rate is limited to 3.3E-04 Ci/yr total Alpha and 6.8E-03 Ci/yr total Beta/Gamma.
* Portable tanker used for wastewater transport release rate is limited to 3.3E-04 Ci/yr total Alpha and 6.8E-3 Ci/yr total Beta/Gamma.

5) RELEASE RATES - WDOH log
The Potential To Emit (PTE) shall be tracked on a WDOH approved log.

6) CONTROL TECHNOLOGY - Radiological Control
* 6267 will control emissions by the structure themselves, with no containment efficiency provided by the ventilation system. Packaging of the archived samples and monitored storage of closed (unvented) drums and approved low-level waste packages, combined with minimization of any indoor contamination in accordance with established radiation control procedures, provides for effective control of potential fugitive emissions.
* 6269 will control emissions based on the design of the mobile laboratories, combined with minimization of any indoor contamination, in accordance with established radiation control procedures.
* 6265A will control emissions by controlling the waste packages. Minimize the external contamination in accordance with established radiation control procedures.
* 6266A will control emissions by having a passive vent HEPA type high efficiency filter on each tank.
* Portable tanker used for wastewater transport will control emissions by passively venting.

7) CONTAMINATION CONTROL - The U.S. DOE shall monitor this emission units as follows:
Periodic radiological surveys of swipes or surfaces associated with 6265A, 6269, 6267, and 6266A must be conducted to verify compliance.

Emission Unit ID: 689

100K 100 Area Diffuse/Fugitive

100 Area Diffuse/Fugitive Emissions

This is a MINOR, FUGITIVE, non-point source emission unit.

100 K diffuse/fugitive emissions

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
			Abatement controls as required in the following Conditions and Limitations.

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075[3]	40 CFR 61, Appendix B, Method 114	Each radionuclide that could contribute greater than 10 percent of the potential TEDE	Per the sitewide ambient monitoring program

Sampling Requirements Per the sitewide ambient monitoring program samples will be collected from the existing near-facility monitoring stations

Additional Requirements

See Section 5 of the general conditions in this license for additional information.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Associated with emissions from operations, deactivation, surveillance and maintenance, and inactive sites in the 100 K Area, 100 Area from sources not actively ventilated.

Emission Unit ID: 712

200E P-241C106-001

241-C-106

This is a MINOR, PASSIVELY ventilated emission unit.

241-C TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows the SST to vent to the atmosphere under tank farm storage, maintenance, and operations. The tanks store radioactive waste until the waste is retrieved, treated, and properly disposed under the applicable federal and state regulations and/or permits. The tanks are scheduled for waste retrieval, decommissioning, and eventual closure under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operations will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is a passive breather filter ventilation system that operates continuously.

Emission Unit ID: 713

200E P-244CR-002

244-CR Vault Passive Filter A

This is a MINOR, PASSIVELY ventilated emission unit.

244-CR VAULT

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a building/facility passive breather filter that is used to ventilate building and facility operations such as but not limited to process vessels, contaminated rooms, cells, glove boxes, hoods, abandoned facilities awaiting decommissioning, and vaults that support tank farm operations, maintenance, and surveillance activities for tank farms. Entry into the building/facility consists of activities to support current surveillance, maintenance, operations, decommissioning, decontamination, and cleanup activities. Many of the activities other than normal surveillance, maintenance, and operation support will be or are regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is a passive breather filter ventilation system that operates continuously.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
244-CR Vault Isolation and Interim Stabilization (Replaced NOC ID 784)	AIR 12-332	2/23/2012	853

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.10E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.82E+01 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Sump Intrusion Mitigation:

Sump intrusion mitigation is limited to cells 001, 002, 003, and 011 only. From time to time if intrusion of precipitation and snow melt gets into the sumps, the sumps will need to be pumped. In order to accommodate this, submersible pump assemblies will be installed in each of the four CR Vault Cells. The pump assemblies will be

installed on top of existing 6 inch riser extensions on cells 001, 002, 003, and 011. Riser extensions may be installed, or replaced if necessary. These extensions will be installed and/or removed as follows:

- the pit covers will be removed,

- above grade piping will be cut and capped,

- leak detectors and two zip cords will be removed,

- the riser extensions will be installed and/or removed remotely from a platform over the pit, and

- a new pit cover will be installed.

The sumps will be pumped by connecting a transfer line to a ventilated tank or to the Tanker Truck permitted under AOP Emission Unit Number 888 and licensed under WDOH NOC ID Number 696. The transfer line will be a hose-in sleeve line. The other end of the transfer line will be attached to the pump assembly on the first CR Vault cell to be pumped. After the first cell is pumped, flush water will be added and pumped to flush the system. Then the hose will be relocated to the next cell's pump assembly. The process will be repeated until all the cells are pumped. The CR Vault breather filter will not be modified and will be open during pumping. After the pumping is complete, the transfer line and pumps will be removed and disposed of as mixed waste. The pit foam covering will also be replaced to prevent, or at best minimize intrusion of precipitation and snow melt.

A fixative shall be applied with the pit covers on. The fixatives shall be applied to pit surfaces through a port in the pit cover using a 'whirly' or by fogging. A hand held sprayer is used to apply fixatives within the pit when the pit cover is off.

Temporary power installation will be limited to meet the needs to support the work described in this NOC. Temporary installations can be removed when no longer needed.

General Controls for Sump Intrusion Mitigation:

The general controls for sump intrusion mitigation is limited to cells 001, 002, 003, and 011 only. The required controls for each of the following actions are delineated by the specified ALARACT:

- ALARACT 1—Tank Farm ALARACT Demonstration for Riser Preparation/Opening.

- ALARACT 4—Tank Farm ALARACT Demonstration for Packaging and Transportation of Waste.

- ALARACT 5—Tank Farm ALARACT Demonstration for Soil Excavation (using hand tools).

- ALARACT 6—Tank Farm ALARACT Demonstration for Pit Access.

- ALARACT 7—Tank Farm ALARACT Demonstration for Tank Waste Grab Sampling.

- ALARACT 11—Tank Farm ALARACT Demonstration for Waste Transfers.

- ALARACT 12—Tank Farm ALARACT Demonstration for Packaging and Transportation of Equipment and Vehicles.

- ALARACT 13—Tank Farm ALARACT Demonstration for Installation, Operation, and Removal of Tank Equipment.

- ALARACT 14—Tank Farm ALARACT Demonstration for Pit Work.

- ALARACT 15—Tank Farm ALARACT Demonstration for Size Reduction of Waste Equipment for Disposal.

The activities performed at the 244-CR Vault Facility, ER-153 and/or 244-A Lift Station include:

Work Area Preparation:

- Miscellaneous work including equipment delivery, movement, set up and maintenance in the general work area around the 244-CR Vault Facility.

- Construction and take down of open top containment tents (bullpens) over the facility vault area.

- Installation of Portable/Temporary Radioactive Air Emission Unit(s) (PTRAEUs).

- Installation of portable 1,000 cubic feet per minute (cfm) exhauster.

- Removal and/or installation of vault foam covering.

- Application of fixative at pit interior.

- Temporary power installation.

Facility/Interim Stabilization Work:

- Operation of PTRAEU for bullpen ventilation.

- Removal and/or installation of pit covers.

- Inspection of pits, vaults, and tanks.

- Removal and disposition of excess equipment and waste in pits, risers, and tanks.

- Decontamination activities.

- Measurement of liquid level and sludge levels in tanks and sumps.

- Sampling activities in pits, vaults, and tanks including chemical addition and/or waste sampling to determine Double Shell Tank waste acceptance.

Facility Equipment Activities:

- Installation, disconnection, repair, replacement, and/or leak testing, of new and existing facility equipment (valves, jumpers, pumps, leak detectors, or other instrumentation/equipment).

- Modifications, maintenance, and/or isolation and sealing of existing risers, pits, vaults and incoming and/or outgoing piping (drain and transfer lines) from 244-CR Vault or connected facility.

Excavation:

- Installation of permanent power to 244-CR Vault Facility.

- Installation/Operation of Passive Breather Filter Assembly.

Waste Transfer and Support Activities:

- Operation of 1,000 cfm portable exhauster at 244-CR Vault.

- New waste transfer system, waste staging/consolidation.

Miscellaneous activities shall include:

- Construction and take down of open top contaminant tents over the facility vault area.

- Open top containment tents (bullpens) shall be constructed over the facility pit area to prevent potential airborne contamination from the effected work area to the environment. Two bullpens shall be erected around two instrumentation pits at the 244-CR Vault. Upon completion of the first pit's work, the bullpens shall be relocated to the other two pits and their work will be completed.

- Installation of Portable/Temporary Radioactive Air Emission Unit(s) (PTRAEUs)

- A Portable/Temporary Radioactive Air Emission Unit (2,000 cfm) or units (1,000 cfm each) shall be installed to ventilate the bullpens during activities that require work in the pits, cells and tank vault area prior to performing waste transfer activities. One thousand cfm PTRAEUs, if used, shall be directly connected to individual bullpens, while a 2,000 PTRAEU if used, shall be connected to two bullpens. Movement and installation of the PTRAEU can be performed to facilitate ventilation for the four vaults of the 244-CR Vault Facility. The PTRAEU shall operate intermittently (during work activities) and will be operated in accordance with the latest WDOH approval, AIR 99-1102, for the Portable/Temporary Radioactive Air Emission Unit (PTRAEU) NOC (DOE/RL-96-75).

A portable 1,000 cfm exhauster shall be installed to ventilate the 244-CR Facility vaults and tanks during waste transfer activities. This exhauster shall operate intermittently to support waste transfer and support activities and shall monitor air emissions. The exhauster shall be piped into the existing 244-CR facility ventilation system upstream of the existing (non-operating) exhauster, 296-C-05 and HEPA filters. The existing 244-CR Facility exhaust system shall be isolated and not used. Tie in of the 1,000 cfm exhauster to the existing exhaust system shall be in accordance with ALARACT 16, Tank Farm ALARACT Demonstration for Work on Potentially Contaminated Ventilation System Components. After the waste transfer is completed, the exhauster shall be removed in accordance to the requirements of ALARACT 16.

A foam covering has been placed over the 244-CR Vault area to prevent intrusion of precipitation and snowmelt. In order to gain access to the pit cover (metal) plates or concrete cover blocks, sections of the foam shall be removed, packaged, transported and disposed of. ALARACT 4, Tank Farm ALARACT Demonstration for Packaging and Transportation of Waste shall be used to properly disposition the removed foamed covering. Radiation control technicians (RCT) shall monitor the affected work area while the foam covering is being removed. The foam covering shall be replaced after work is complete, as part of intrusion prevention measures completed by the project following waste transfer activities.

Operation of PTRAEU for Bullpen Ventilation.

Ventilation of the bullpens during pre waste transfer tank activities and prior to the installation of the 1,000 cfm portable exhauster shall be accomplished with the use of PTRAEU(s). The PTRAEU(s) shall be operated in accordance with the latest WDOH approval, AIR 99-1102, for the Portable/Temporary Radioactive Air Emission Unit (PTRAEU) NOC (DOE/RL-96-75).

Concrete cover key blocks are removed first, and only blocks necessary to perform intended work are removed. Consideration is given to sliding blocks to minimize the number of blocks to be removed. As discussed in the following, pit covers are decontaminated and/or covered with fixative before removal. Pit Covers are raised a minimum distance to safely allow a radiation protection technician to perform a dose rate and contamination survey. Pit covers are wrapped in plastic and set down in a specially prepared lay-down area. On completion of activities, the plastic wrap is removed from the pit covers and the pit covers are re-installed in their original position and orientation. Post-job surveys are performed.

Inspections, such as visual, video, or nondestructive inspections, shall be performed with pit covers in place (for pit with access ports) or removed. The pit cover design, historical inspection information, and ALARA information shall be used to determine whether the inspection shall be performed manually (with pit cover removed) or remotely with a camera and the pit covers in place.

Excess equipment and debris currently located in the 244-CR vault pits, and in-tank equipment shall be removed to accommodate new waste transfer equipment and piping. Excess equipment shall be replaced with replacement in kind equipment, as necessary.

To facilitate the removal and disposition of these items, size reduction and decontamination activities shall be utilized. Size reduction activities shall include cutting up unusable equipment (usually jumpers/blanks) remotely, using hydraulic shears or low revolutions per minute portable band saws. All size reduction activities shall be performed in accordance with ALARACT Demonstration 15, TWRS ALARACT Demonstration for Size Reduction of Waste Equipment for Disposal.

Disposition of excess equipment and waste shall be performed in accordance with ALARACT Demonstration 4, TWRS ALARACT Demonstration for packaging and transportation of waste.

Removable contamination in the accessible portions of the pit is reduced to less than 100,000 disintegrations per minute/100 square centimeters beta/gamma and 2,000 disintegrations per minute/100 square centimeters alpha by washing, or an approved fixative is applied to pit surfaces. Initial washing with a low pressure (125 pounds per square inch gauge), or high pressure (3,000 pounds per square inch gauge) 'whirly' is accomplished through a port in the pit cover blocks. Additional decontamination activities (with the cover block off) include the use of chemicals, peel and strip paints, water, or manual scrub brushes.

After a section of equipment has been washed it shall be pulled into plastic sleeving and sealed by horse tailing and taping.

Liquid and sludge levels are determined using zip cords or other appropriate means that shall not disturb the waste more than zip cords.

Sampling activities shall be performed in the tank and sump area of 244-CR Vault by way of risers in the riser pit in accordance with ALARACT 7, "Tank Farm ALARACT Demonstration For Tank Waste Grab Sampling." Radiological controls for riser preparation/opening listed in ALARACT 1, "Tank Farm ALARACT Demonstration for Riser Preparation/opening," shall be followed.

The waste transfer processes shall transfer waste from tanks CR-011, CR-001, CR-002 and CR-003 and sumps within 244-CR Vault Facility to a staging tank within the 244-CR Facility. The transfer system to consolidate the waste from individual tanks consists of above ground piping of a hose in hose with leak detection at each tank's pit being utilized to support the transfer line. Mixing and dilution of the waste may take place at the receiving tank or within the transfer lines directly. The transfer system may include equipment pump skids and shall include appropriate connections to the transfer lines to accommodate chemical and water addition to the 244-CR Facility tanks and mixing prior to transfer to the designated Double Shell Tank (DST).

Before entry into a pit, an evaluation is made by engineering and/or operations personnel to determine the transfer routing configuration after pit work is complete. On removal of cover blocks, a visual inspection of pit contents is made to verify present configuration.

Tools such as impact wrenches, T-bars, and pike poles are used to repair or replace pit equipment. All equipment coming out of the pit is wrapped in plastic or otherwise contained or decontaminated for reuse or disposal. Removable contamination on the outer-most container shall not exceed 1,000 disintegrations per minute/100 square centimeters beta/gamma and 20 disintegrations per minute/100 square centimeters alpha before removal from the bullpen. Disposition of non reusable equipment waste shall be performed in accordance with ALARACT Demonstration 4, TWRS ALARACT Demonstration for packaging and transportation of waste.

Jumper work shall be preceded by flushing the appropriate transfer lines with water. Jumper work is accomplished remotely, using a crane to maneuver heavy equipment and parts. Installation, disconnection, and/or changing jumpers/blanks are accomplished by slowly loosening the jumper/blank at the connector head. The required jumper/blank is positioned and tightened to the new connector heads. If the process line or equipment being worked on is connected physically to other unnecessary transfer lines, or if the line is to be left unused, a cap, blank, or equivalent is installed on all open nozzles not connected to jumpers.

Leak testing of newly installed jumpers/blanks shall be performed with pressurized water before initiating waste transfers. Occasionally, a jumper leak test is performed during the initial stages of the transfer. In either case, cover blocks shall be in place before leak testing is performed.

Cutting up unusable pit equipment (usually jumpers/blanks) is accomplished remotely using hydraulic shears or low revolutions per minute portable band saws. Cutting activities shall be performed in the bullpen or in glovebags. The goal shall be to maintain a contamination level equal to or less than 1,000 dpm/100 cm2 beta gamma and 20 dpm/100 cm2 alpha, during cutting activities, but may not always be attainable. RCT coverage shall be provided. Should contamination levels exceed 1,000-dpm/100 cm2 additional sleeving, or use of a glove bag shall be used and/or decontamination activities performed to lower the levels in accordance with ALARA. Welding (if required) shall commence once removable contamination levels in the cut and weld area are reduced to ALARA. Size reduction (cutting) activities shall be performed in accordance with ALARACT Demonstration 15, TWRS ALARACT Demonstration for Size Reduction of Waste Equipment for Disposal. To ensure that water intrusions or potential residual waste in piping are eliminated from the facility, existing piping and transfer lines to and from the 244-CR Vault facility shall be blanked, grouted, or sealed. The isolation includes activities such as installing plugs, caps, blind flanges, or grouting. Isolations may occur at the 244-CR riser pit area or at the other end of the pipe in a diversion or valve box, at the ER153 or the 244A Lift Station.

Modifications to existing in-route pits, vaults and piping shall be required to establish the waste transfer route or to ensure the integrity of the system prior to waste transfer. These modifications can include but are not limited to, removal of existing parts and replacement with like parts, installation of new jumpers, or blanking off of equipment. When possible existing blanks shall be utilized. Pipe cutting shall be minimized in compliance with ALARA. If it is determined that the installation of a new above ground transfer line would be the best engineering method to establish a waste transfer route, a temporary transfer route shall be established following existing design and installation procedures. This temporary route will be either above ground or in a shallow trench. If a trench is required excavation shall be performed as described under that activity in this NOC.

Pit drains are checked using water from a tanker truck or another source. Water at a flow rate of approximately 20 gallons per minute is added to a pit drain line and subsequently monitored to verify the pit drains are free of restrictions. At times it might be necessary to pump the DCRT that receives the water after the water passes through the pit drain if the volume of test water approaches the capacity of the DCRT.

Either flushing with water and/or using a retrieval tool to remove debris from the drain are used to clear plugged drains. Water supply valves are opened slowly to minimize splashing. Pressures above 50 pounds per square inch gauge require approval from the engineering organization. Cover blocks shall remain in place and work is accomplished through a penetration in the cover block.

The waste transfer operations involve the pumping of liquid waste that contains dissolved solids. These solids can precipitate out of solution anywhere in the transfer path and cause blockage. If blockage is detected in the system, flushing the lines with hot water is necessary. The hot water is introduced to the system to be flushed through a pressure manifold by piping connected directly to a jumper or nozzle. These operations shall be performed with the pit covers on.

To ensure that water intrusions are eliminated from the facility, a foam covering will be placed over the 244-CR Vault area after completion of isolation activities.

Other techniques to free blockages could include pressurization, temporary jumpers, and hydraulic scouring. All piping connections are designed to be leak tight and the pit cover block shall be installed before pressurization. If pressurization beyond that obtained from the tank farms water system or supply truck (i.e., approximately 150 pounds per square inch gauge) is necessary to remove blockage, an engineering evaluation shall be performed to determine the maximum allowable pressure for operation.

Excavation:

Excavation may be required to support installation of ventilation, electrical support and waste transfer equipment. Modifications to existing in route pits, vaults and piping and/or to support installation of new waste transfer lines from the 244-CR Facility to the identified DST may require excavation. Soil excavation activities will be

performed in accordance with ALARACT Demonstration 5, TWRS ALARACT Demonstration for Soil Excavation (Using Hand Tools), and will follow the radiological controls specified in that ALARACT.

Any Filter Vacuume Truck excavations in contamination areas will be performed in accordance with the most current version of sitewide DOE Notice of construction application, Guzzler Excavation and Backfilling Activities in Support of the 200 East and West Area Tank Farm Complex (See DOE Letter 09-ESQ-542 Dated November 30, 2009) or the latest WDOH approved Site Wide Guzzler DOE application (See Doe Letter 99-SID-02, Dated February 1, 1999).

Soil excavation outside the tank farm fence also may be performed with heavy equipment.

Soil will be excavated around the 244-CR vault facility to install new piping, equipment slabs, and new waste transfer system support equipment. It is expected that about 1,000 cubic yards may be excavated, with about 600 cubic yards from inside the tank farm. Backfill shall be from the original removed soil or non-contaminated controlled density fill (sand, water and a small amount of cement).

Current power within the 244-CR Vault Facility is limited. To provide power for new equipment installed under the project, the existing power distribution system shall be upgraded. Upgrades shall involve modification to the existing Motor Control Center (MCC), installation of equipment control panels, and installation of new conduits.

A compliant passive breather filter shall be installed to ventilate the 244-CR Facility vaults and tanks once waste transfer activities are completed. The passive breather filters shall be installed at two locations in the 244-CR facility. A 1,000 cfm HEPA filter shall be installed at the air inlet assembly (previously attached to the evaporative cooler) and a 200 cfm HEPA filter shall be installed upstream of the existing HEPA filter pit. Butterfly valves in the ventilation system just downstream of where the filters shall be installed can be shut to prevent any emission from the facility during filter installation. Installation of the filters shall be performed in accordance with ALARACT Demonstration 16, TWRS ALARACT Demonstration for Work on Potentially Contaminated Ventilation System Components.

During waste transfer and support activities the tank and vault air space shall be actively ventilated by a temporary ventilation system. The temporary ventilation system shall consist of a portable exhauster that shall be equipped with compliant monitoring and sampling equipment. The purpose of the exhauster is to ensure potential airborne contamination from the pits, cells, or process tanks, is not being released to the environment. Operation of the 1,000 cfm portable exhauster is considered an emissions control.

New waste transfer system, waste staging/consolidation.

The planned transfer system can utilize some existing equipment along with installation of new piping and equipment at 244-CR, ER-153 and/or 244-A Lift Station. Maintenance of the transfer system may be required during the waste staging/consolidation. Equipment, which may require on going maintenance includes but is not limited to leak detection and pump system equipment. The waste can be staged/consolidated in one or two of the 244-CR Facility tanks (CR-001, CR-002, CR-003 and CR-011) prior to transfer to a DST.

The following controls are used for the pit activities:

General Controls:

1. Pre-job and post-job radiation surveys are performed by radiation protection technicians. Radiation work permits specify permissible occupational radiological limits during activities. Radiation control technicians' survey and release equipment, inspect and approve required containment, and provide radiological surveys to verify compliance to radiation work permit limits.

2. Pit work is shut down (or not initiated) when sustained wind speeds exceed 25 miles per hour as measured in the field and/or reported by the Hanford Meteorological Station.

3. Fixatives shall be applied inside the pit (with cover blocks on or off) or accessible portions of the pit decontaminated to less than 100,000 disintegrations per minute/100 square centimeters beta-gamma and 2,000

disintegrations per minute/100 square centimeters alpha.

4. When cover blocks are removed, a fall protection handrail is installed. This handrail is draped in plastic forming a contamination barrier. The plastic extends to the top of the pit and is taped or sealed at the top of the pit. Decontamination of the containment barrier is conducted as required by the job specific radiation work permit.

5. Radiation control technicians monitor the affected work area when the vault foam covering is removed, when jumpers and equipment are being removed from risers and nozzles, and when risers are entered for sampling of tanks and sumps. Jumpers removed from the pit are drained of free liquid and decontaminated or contained before removal. The outer-most container shall not exceed 1,000 disintegrations per minute/100 square centimeters beta/gamma and 20 disintegrations per minute/100 square centimeters alpha. If these limits are exceeded, surfaces shall be decontaminated. Disposition of non reusable equipment waste shall be performed in accordance with ALARACT Demonstration 4, TWRS ALARACT Demonstration for packaging and transportation of waste.

6. A bullpen designed to minimize the top opening shall be used. Pit covers or cover blocks will be removed as necessary. If the bullpen is to be left unattended at any time, a temporary cover is placed over the pit or the pit covers or cover blocks are reinstalled. Two tents shall be erected over two pits. Upon completion of the work in the first two 244-CR Facility instrumentation pits, the tents will be relocated to the other 244-CR facility instrumentation pits.

7. PTRAEU(s) shall actively ventilate the bullpens during activities that require work in the pits (after removal of the cover blocks) to control radiological releases. The PTRAEU(s) shall operate intermittently and shall be operated in accordance with the latest revision to the WDOH approved. Portable/Temporary Radioactive Air Emission Unit (PTRAEU) NOC (DOE/RL-96-75).

8. A compliant exhauster skid shall ventilate the process cells and tanks during waste transfer activities. The exhauster shall maintain a negative pressure under the cover blocks and prevent contaminants from reaching the environment. The exhauster skid shall be connected to the existing exhaust ductwork with rigid or flexible ductwork.

9. The 1,000 cfm exhauster shall be equipped with a two-stage HEPA filter, which meets the requirements of ASME AG-1, Section FC and shall be tested annually to requirements of ASME AG-1. The HEPA filters shall have an efficiency of 99.95 percent for 0.3-micron median diameter. Each filter housing shall meet the applicable sections of ASME N509 and the test requirement of ASME N510. The exhaust stack houses a Generic Effluent Monitoring System (GEMS) that contains an air velocity probe and the air sampling probe.

10. The breather filter shall consist of a housing that contains a HEPA filter, an outlet screen, and a small seal loop. Air flowing to and from the 244-CR Facility shall pass horizontally through the filter and vertically through the downward-facing exit weather hood. Seal loops, installed in the exhaust lines, are designed as a safety feature to prevent unlikely accident in which an over pressurization occurs when the HEPA filter is isolated for occasional (infrequent) maintenance.

Specific Controls include:

-Installation of portable 1,000 cfm exhauster shall use ALARACT 16.

-Removal and/or installation of vault foam covering - ALARACT 4.

-Application of fixative at pit interior - see General Controls.

-Temporary power installation - ALARA.

-Operation of PTRAEU for bullpen ventilation - Latest WDOH approval, AIR 99-1102, for the Portable/Temporary Radioactive Air Emission Unit (PTRAEU) NOC (DOE/RL-96-75).

-Removal and/or installation of pit covers - General Controls.

-Inspection of pits, vaults, and tanks - General Controls.

-Removal and disposition of excess equipment and waste in pits, risers, and tanks - ALARACT 15, and ALARACT 4.

-Decontamination activities - General Controls.

-Measurement of liquid level and sludge levels in tanks and sumps - General Controls.

-Sampling activities in pits, vaults, and tanks including chemical addition and/or waste sampling to determine Double Shell Tank waste acceptance - ALARACT 7 and ALARACT 1.

-Facility Equipment Activities: installation, disconnection, repair, replacement, and/or leak testing, of new and existing facility equipment (valves, jumpers, pumps, leak detectors, or other instrumentation/equipment) - ALARACT 4, and ALARACT 15.

-Modifications, maintenance, and/or isolation and sealing of existing in route pits, vaults and piping (drain and transfer lines) to support and/or installation of new transfer lines - General Controls.

-Excavation - ALARACT 5, and/or WDOH approved Site Wide Guzzler NOC (Air 98-1215), or the most current NOC approved for Guzzler use.

-Installation of permanent power to 244-CR Vault Facility - ALARA.

-Installation of passive breather filter assembly - ALARACT 16.

-Operation of a portable exhauster at 244-CR vault for ventilation - ALARA.

-New waste transfer system, waste staging/consolidation - General Controls.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	6.85E-06	Am - 241	3.13E-03	Am - 243	3.96E-05
Ba - 137 m	6.41E+03	C - 14	3.62E-02	Cd - 113 m	1.99E-02
Cm - 242	8.48E-05	Cm - 243	5.01E-04	Cm - 244	9.49E-03
Co - 60	1.31E-03	Cs - 134	4.22E-04	Cs - 137	6.78E+03
Eu - 152	5.31E-02	Eu - 154	7.09E+00	Eu - 155	1.22E+01
H - 3	3.57E-01	I - 129	6.95E-05	Nb - 93 m	8.10E-03
Ni - 59	1.88E-01	Ni - 63	1.82E+01	Np - 237	1.75E-01
Pa - 231	3.19E-07	Pu - 238	1.75E-01	Pu - 239	7.01E+00
Pu - 240	1.02E+00	Pu - 241	3.66E+00	Pu - 242	8.89E+00
Ra - 226	5.30E-06	Ra - 228	4.68E-05	Ru - 106	1.29E-06
Sb - 125	1.80E-03	Se - 79	1.88E-02	Sm - 151	6.55E+00
Sn - 126	2.69E-03	Sr - 90	3.02E+04	Tc - 99	1.63E+00

Th - 229	3.11E-06	Th - 232	3.53E-05	U - 232	2.61E-03
U - 233	1.01E-02	U - 234	1.72E-01	U - 235	7.61E-03
U - 236	1.95E-03	U - 238	5.05E-03	Y - 90	3.02E+04
Zr - 93	6.85E-03				

4) Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1. HEPA filters shall have a minimum efficiency of 99.95%.

Emission Unit ID: 716

200E P-241C104-001

241-C-104

This is a MINOR, PASSIVELY ventilated emission unit.

241-C TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows the SST to vent to the atmosphere under tank farm storage, maintenance, and operations. The tanks store radioactive waste until the waste is retrieved, treated, and properly disposed under the applicable federal and state regulations and/or permits. The tanks are scheduled for waste retrieval, decommissioning, and eventual closure under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operations will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is a passive breather filter ventilation system that operates continuously.

Emission Unit ID: 717

200E P-241C105-001

241-C-105

This is a MINOR, PASSIVELY ventilated emission unit.

241-C TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows the SST to vent to the atmosphere under tank farm storage, maintenance, and operations. The tanks store radioactive waste until the waste is retrieved, treated, and properly disposed under the applicable federal and state regulations and/or permits. The tanks are scheduled for waste retrieval, decommissioning, and eventual closure under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operations will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is a passive breather filter ventilation system that operates continuously.

Emission Unit ID: 735

200E P-296A044-001

296-A-44

This is a MAJOR, ACTIVELY ventilated emission unit.

241-AN TANK FARM

Emission Unit Information

Stack Height: 28.13 ft. 8.57 m. Stack Diameter 0.84 ft. 0.26 m.

Average Stack Effluent Temperature: 110 degrees Fahrenheit. 43 degrees Celsius.

Average Stack ExhaustVelocity: 91.31 ft/second. 27.83 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Deentrainer	1	Operational at all times, when the exhauster is in use.
	Heater	1	Operational at all times, when the exhauster is in use.
	Prefilter	1	
	HEPA	2	In series.
	Fan	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B, Method 114	Sr-90, Cs-137, Am-241, Y-90, Cs-134, Pa-231, Pu-238, Pu-239, Pu-240, Pu-241	Continuous

Sampling Requirements Record sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a primary exhauster used to support tank farm operations by ventilating the DSTs in 241 AN Tank Farm during storage, maintenance and normal operations. Any activity other than storage, maintenance, and normal operations will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. This emission unit may be operated independently or concurrently with emission unit 296-A-45. The emission unit operates intermittenlty.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operation of New Ventilation Systems in AN and AW Tank Farms. (Replaced NOC ID 802)	AIR 11-1004	10/10/2011	809

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 2.60E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.33E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The 296-A-44 and 296-A-45 shall ventilate the 241-AN Double Shell Tank (DST) Farm which consists of seven individual DSTs. The 296-A-46 and 296-A-47 shall ventilate the 241-AW Double Shell Tank (DST) Farm which

consists of six individual DSTs. The DSTs are fabricated as two concentric tanks surrounded by a concrete shell. The inner tank containing the waste is 75 feet in diameter and 46.8 feet high at the crown. Each tank stores 1.14E6 gallons. The DSTs are used for storage, treatment, retrieval, and disposal of the waste contained in the tanks, as well as transfers to the Waste Treatment Plant.

The 296-A-44, 296-A-45, 296-A-46 and 296-A-47 ventilation systems serve to remove heat, and serve as containment systems for radioactive particulates present in the tank headspace, they ventilate/remove flammable gases and vapors that evolve from the liquid surface in the DSTs. The ventilation systems do this by drawing air into the tank vapor space. After the air leaves the vapor space the air is conditioned by the ventilation system. It removes entrained moisture, the relative humidity is reduced, and particulates are filtered out. Before discharge of this air to the atmosphere from the stack, the air is monitored and sampled for radionculide particulates.

Occasionally, the exhausters may be shut down for testing and sampling purposes to evaluate waste conditions, meteorological effects, and/or ventilation configuration on individual DST Ventilation rates.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	1.30E+02	Am - 241	1.03E+05	Am - 243	1.37E+01
Ba - 137 m	1.75E+07	C - 14	5.07E+02	Cd - 113 m	7.50E+03
Cm - 242	7.57E+01	Cm - 243	8.35E+00	Cm - 244	2.36E+02
Co - 60	4.46E+03	Cs - 134	1.81E+04	Cs - 137	1.85E+07
Eu - 152	1.06E+03	Eu - 154	4.63E+04	Eu - 155	4.56E+04
H - 3	2.71E+03	I - 129	9.18E+00	Nb - 93 m	1.82E+03
Ni - 59	7.70E+02	Ni - 63	7.26E+04	Np - 237	6.20E+01
Pa - 231	2.70E+02	Pu - 238	3.04E+03	Pu - 239	2.92E+04
Pu - 240	5.25E+03	Pu - 241	6.40E+04	Pu - 242	4.05E-01
Ra - 226	2.38E+02	Ra - 228	3.87E+01	Ru - 106	1.02E+03
Sb - 125	2.06E+04	Se - 79	5.70E+01	Sm - 151	1.53E+06
Sn - 126	2.40E+02	Sr - 90	2.30E+07	Tc - 99	6.89E+03
Th - 229	2.49E+01	Th - 232	6.16E+00	U - 232	2.79E+01
U - 233	4.48E+02	U - 234	6.76E+01	U - 235	2.58E+00
U - 236	2.87E+00	U - 238	5.61E+01	Y - 90	2.30E+07
Zr - 93	1.86E+03				

4) Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1. HEPA filters shall have a minimum efficiency of 99.95%.
5) The Annual Possession Quantity shall be tracked on a WDOH approved log.
6) The ductwork between the de-entrainer and heater, along with the filter housings shall be insulated.
7) The exhauster shall be operational during all waste transfer, waste disturbing, or particulate generating activities.
8) Prior to operation of the ventilation system a leak test of the entire train including the ductwork from the exit of the

tank to the entrance to the stack shall be performed meeting the requirements called out in ASME AG-1.

9) The effluent monitoring and sampling system shall meet the requirements of ANSI N13.1-1999. A written technical basis document required by Section 4 of ANSI N13.1-1999 shall be provided to WDOH for review and approval.

10) Tank waste will be maintained at a ph of 8 or greater to ensure that the radionuclide C-14 is not emitted as a gas. This condition will be met by maintaining tank sampling and tank analysis documents in accordance with the "Waste Chemistry Limits" outlined in the document "Operating Specifications for the Double-Shell Storage Tanks, OSD-T-151-00007".

11) When the tracer gas tests and data collection are conducted on the AN and AW tank farms the tracer gas to be used during the tests is helium.

12) When the tracer gas tests and data collection are conducted on the AN and AW tank farms the tracer gas helium will be injected into the double shell tanks at a rate not to exceed 10 cubic feet per minute.

13) When the tracer gas tests and data collection are conducted on the AN and AW tank farms the passive filtered vents will be in the open position. If a tracer gas test requires the passive filtered vents to be closed notification to the Washington State Department of Health will be made indicating when the vents will be closed and for how long.

14) When the tracer gas tests and data collection are conducted on the AN and AW tank farms no waste disturbing activities will occur.

Emission Unit ID: 736

200E P-296A045-001

296-A-45

This is a MAJOR, ACTIVELY ventilated emission unit.

241-AN TANK FARM

Emission Unit Information

Stack Height: 28.13 ft. 8.57 m. Stack Diameter 0.84 ft. 0.26 m.

Average Stack Effluent Temperature: 110 degrees Fahrenheit. 43 degrees Celsius.

Average Stack ExhaustVelocity: 91.31 ft/second. 27.83 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Deentrainer	1	Operational at all times, when the exhauster is in use.
	Heater	1	Operational at all times, when the exhauster is in use.
	Prefilter	1	
	HEPA	2	In series.
	Fan	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B, Method 114	Sr-90, Cs-137, Am-241, Y-90, Cs-134, Pa-231, Pu-238, Pu-239, Pu-240, Pu-241	Continuous

Sampling Requirements Record sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a primary exhauster used to support tank farm operations by ventilating the DSTs in 241 AN Tank Farm during storage, maintenance, and normal operations. Any activity other than storage, maintenance, and normal operations will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. This emission unit may be operated independently or concurrently with emission unit 296-A-44. The emission unit operates intermittently.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operation of New Ventilation Systems in AN and AW Tank Farms. (Replaced NOC ID 802)	AIR 11-1004	10/10/2011	809

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 2.60E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.33E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The 296-A-44 and 296-A-45 shall ventilate the 241-AN Double Shell Tank (DST) Farm which consists of seven individual DSTs. The 296-A-46 and 296-A-47 shall ventilate the 241-AW Double Shell Tank (DST) Farm which

consists of six individual DSTs. The DSTs are fabricated as two concentric tanks surrounded by a concrete shell. The inner tank containing the waste is 75 feet in diameter and 46.8 feet high at the crown. Each tank stores 1.14E6 gallons. The DSTs are used for storage, treatment, retrieval, and disposal of the waste contained in the tanks, as well as transfers to the Waste Treatment Plant.

The 296-A-44, 296-A-45, 296-A-46 and 296-A-47 ventilation systems serve to remove heat, and serve as containment systems for radioactive particulates present in the tank headspace, they ventilate/remove flammable gases and vapors that evolve from the liquid surface in the DSTs. The ventilation systems do this by drawing air into the tank vapor space. After the air leaves the vapor space the air is conditioned by the ventilation system. It removes entrained moisture, the relative humidity is reduced, and particulates are filtered out. Before discharge of this air to the atmosphere from the stack, the air is monitored and sampled for radionculide particulates.

Occasionally, the exhausters may be shut down for testing and sampling purposes to evaluate waste conditions, meteorological effects, and/or ventilation configuration on individual DST Ventilation rates.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	1.30E+02	Am - 241	1.03E+05	Am - 243	1.37E+01
Ba - 137 m	1.75E+07	C - 14	5.07E+02	Cd - 113 m	7.50E+03
Cm - 242	7.57E+01	Cm - 243	8.35E+00	Cm - 244	2.36E+02
Co - 60	4.46E+03	Cs - 134	1.81E+04	Cs - 137	1.85E+07
Eu - 152	1.06E+03	Eu - 154	4.63E+04	Eu - 155	4.56E+04
H - 3	2.71E+03	I - 129	9.18E+00	Nb - 93 m	1.82E+03
Ni - 59	7.70E+02	Ni - 63	7.26E+04	Np - 237	6.20E+01
Pa - 231	2.70E+02	Pu - 238	3.04E+03	Pu - 239	2.92E+04
Pu - 240	5.25E+03	Pu - 241	6.40E+04	Pu - 242	4.05E-01
Ra - 226	2.38E+02	Ra - 228	3.87E+01	Ru - 106	1.02E+03
Sb - 125	2.06E+04	Se - 79	5.70E+01	Sm - 151	1.53E+06
Sn - 126	2.40E+02	Sr - 90	2.30E+07	Tc - 99	6.89E+03
Th - 229	2.49E+01	Th - 232	6.16E+00	U - 232	2.79E+01
U - 233	4.48E+02	U - 234	6.76E+01	U - 235	2.58E+00
U - 236	2.87E+00	U - 238	5.61E+01	Y - 90	2.30E+07
Zr - 93	1.86E+03				

4) Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1. HEPA filters shall have a minimum efficiency of 99.95%.
5) The Annual Possession Quantity shall be tracked on a WDOH approved log.
6) The ductwork between the de-entrainer and heater, along with the filter housings shall be insulated.
7) The exhauster shall be operational during all waste transfer, waste disturbing, or particulate generating activities.
8) Prior to operation of the ventilation system a leak test of the entire train including the ductwork from the exit of the

tank to the entrance to the stack shall be performed meeting the requirements called out in ASME AG-1.

9) The effluent monitoring and sampling system shall meet the requirements of ANSI N13.1-1999. A written technical basis document required by Section 4 of ANSI N13.1-1999 shall be provided to WDOH for review and approval.

10) Tank waste will be maintained at a ph of 8 or greater to ensure that the radionuclide C-14 is not emitted as a gas. This condition will be met by maintaining tank sampling and tank analysis documents in accordance with the "Waste Chemistry Limits" outlined in the document "Operating Specifications for the Double-Shell Storage Tanks, OSD-T-151-00007".

11) When the tracer gas tests and data collection are conducted on the AN and AW tank farms the tracer gas to be used during the tests is helium.

12) When the tracer gas tests and data collection are conducted on the AN and AW tank farms the tracer gas helium will be injected into the double shell tanks at a rate not to exceed 10 cubic feet per minute.

13) When the tracer gas tests and data collection are conducted on the AN and AW tank farms the passive filtered vents will be in the open position. If a tracer gas test requires the passive filtered vents to be closed notification to the Washington State Department of Health will be made indicating when the vents will be closed and for how long.

14) When the tracer gas tests and data collection are conducted on the AN and AW tank farms no waste disturbing activities will occur.

Emission Unit ID: 737

200E P-241C103-001

241-C-103

This is a MINOR, PASSIVELY ventilated emission unit.

241-C TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 738

200E P-244A-002

244-A Primary HEPA

This is a MINOR, PASSIVELY ventilated emission unit.

244-A DCRT

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a double contained receiver tank (DCRT) passive breather filter ventilation system used to support tank farm operations, such as waste retrieval and operation support activities for the 241-A Tank Farm. The tank stored radioactive waste during transfer operations. Any activity other than temporary storage and normal operation support will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit has a passive breather filter ventilation system that operates continuously.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Isolation and Closure of Exhaust Stacks 296-A-25, 296-B-28, 296-S-22 and 296-T-18 (Replaces NOC 796)	AIR 12-338	2/23/2012	859

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.20E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.20E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

244-S DCRT (296-S-22 STACK)

Passive Ventilation Breather Filter System Installation:

A passive ventilation breather filter system will be installed on an existing above-grade riser on the primary receiver tank in accordance with ALARACT Demonstration 1 and 16. The primary tank breather filter will serve as the static vent for the instrument air injected (at a maximum of 9 cubic feet per hour) into the receiver tank

through a set of three weight-factor dip tubes, which mixes with, and dilutes, any flammable gases. The primary tank breather filter will allow flammable gases to escape while collecting any airborne radioactive particulates.

A passive ventilation breather filter system will be installed above-grade on an existing riser or the existing annulus inlet filter riser in accordance with ALARACT 1 and 16. The annulus breather filter will provide for the exchange of ambient air with the annulus tank during atmospheric pressure fluctuations and will allow vapors to escape.

The breather filter system will, at a minimum, consist of an isolation valve (normally open during operation), filter housing, HEPA filter, and loop seal assembly. The isolation valve will isolate the HEPA filter from the tank to facilitate testing of the filter, and to isolate the system until the filter or housing can be replaced.

HEPA Filter Bank Isolation and Removal:

The isolation and removal of the HEPA filter bank located in the 244-S DCRT filter pit will require the deactivation of the HEPA filter bank instrumentation and alarms, the removal and disposal of the HEPA filter bank, and the installation of the filter pit duct jumper assembly, in accordance with ALARACT Demonstrations 6, 14, and 16. The 296-S-22 exhauster is equipped with a HEPA filter bank inside the filter pit. The HEPA filter bank is attached to three nozzles in the filter pit: one nozzle to the catch tank, one nozzle to the annulus, and one nozzle to the ventilation exhaust ductwork. The HEPA filter bank will be disconnected from the nozzles and removed for disposal. A filter pit duct jumper assembly (4" schedule 40 pipe) will be connected to the catch tank nozzle and ventilation exhaust ductwork nozzle to provide the ventilation path to the newly installed passive breather filters. The third nozzle to the annulus will be closed in the filter pit. The filter pit duct jumper assembly will be fabricated in accordance with ASME B31.3 and tested in accordance with ASME AG-1.

Electrical Equipment and Instrumentation Isolation:

The isolation of electrical equipment and instrumentation on the 244-S DCRT will require the disconnection of various power supplies (e.g., exhaust fan, motor operated valves, heat trace, sampler pumps, continuous air monitor, and alarms) and isolation of instrumentation (e.g., HEPA filter bank pressure indicators) that support operation and monitoring of the stack ventilation system in accordance with ALARACT 16. Disconnection is the physical disconnection and removal of wires from the power source. Pit entries are not required to disconnect power or isolate instrumentation.

296-S-22 Stack Isolation:

The 296-S-22 stack will be isolated via mechanical isolations. Blank flanges will be installed on the duct end and on the suction side of the exhaust fan. A closure cap will be installed on top of the exhaust stack. The exhaust stack drain line will be cut and capped above grade. This work will be done in accordance with ALARACT Demonstration 16.

244-TX DCRT (296-T-18 STACK)

Passive Ventilation Breather Filter Installation:

A passive ventilation breather filter system will be installed on an existing above-grade riser on the primary receiver tank in accordance with ALARACT Demonstration 1 and 16. The primary tank breather filter will serve as the static vent for the instrument air injected (at a maximum of 9 cubic feet per hour) into the receiver tank through a set of three weight-factor dip tubes, which mixes with, and dilutes, any flammable gases. The primary tank breather filter will allow flammable gases to escape while collecting any airborne radioactive particulates.

A passive ventilation breather filter system will be installed above-grade on an existing riser or the existing annulus inlet filter riser in accordance with ALARACT 1 and 16. The annulus breather filter will provide for the exchange of ambient air with the annulus tank during atmospheric pressure fluctuations and will collect potential airborne radioactive particulates from the annulus space while allowing vapors to escape.

The breather filter system will, at a minimum, consist of an isolation valve (normally open during operation), filter housing, HEPA filter, and loop seal assembly. The isolation valve will isolate the HEPA filter from the tank to

facilitate testing of the filter, and to isolate the system until the filter or housing can be replaced.

HEPA Filter Bank Isolation and Removal:

Removal of the HEPA filter bank in the 244-TX DCRT filter pit is not required. The HEPA filter bank will be isolated via closure of manual valves and the deactivation of motor-controlled valves. Above-grade duct/pipe will be capped. The associated HEPA filter bank instrumentation and alarms will be deactivated. This work will be done in accordance with ALARACT 16.

Electrical Equipment and Instrumentation Isolation:

The isolation of electrical equipment and instrumentation on the 244-TX DCRT will require the disconnection of various power supplies (e.g., exhaust fan, motor operated valves, heat trace, sampler pumps, continuous air monitor, and alarms) and isolation of instrumentation (e.g., HEPA filter bank pressure indicators) that support operation and monitoring of the stack ventilation system. Disconnection is the physical disconnection and removal of wires from the power source in accordance with ALARACT Demonstration 16. Pit entries are not required to disconnect power or isolate instrumentation.

296-T-18 Stack Isolation:

The 296-T-18 stack will be isolated via mechanical isolations. A blank flange will be installed at the suction side of the exhaust fan or at another suitable location near the filter pit outlet to the exhaust stack. A closure cap will be installed on top of the exhaust stack. The exhaust stack drain line will be cut and capped above grade. This work will be done in accordance with ALARACT Demonstration 16.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	2.04E-02	Am - 241	1.17E+01	Am - 243	3.58E-04
Ba - 137 m	2.69E+03	C - 14	4.06E-01	Cd - 113 m	1.40E+00
Cm - 242	1.19E-02	Cm - 243	6.91E-04	Cm - 244	1.26E-02
Co - 60	6.18E-01	Cs - 134	6.84E-03	Cs - 137	2.84E+03
Eu - 152	1.18E-01	Eu - 154	9.29E+00	Eu - 155	5.09E+00
H - 3	1.53E+00	I - 129	5.01E-03	Nb - 93 m	4.18E-01
Ni - 59	1.57E-01	Ni - 63	1.46E+01	Np - 237	9.67E-03
Pa - 231	4.25E-02	Pu - 238	4.84E-01	Pu - 239	9.45E+00
Pu - 240	1.57E+00	Pu - 241	1.23E+01	Pu - 242	8.61E-05
Ra - 226	3.73E-02	Ra - 228	8.82E-03	Ru - 106	8.01E-06
Sb - 125	6.95E-01	Se - 79	1.22E-02	Sm - 151	3.74E+02
Sn - 126	6.02E-02	Sr - 90	5.31E+03	Tc - 99	2.76E+00
Th - 229	4.01E-03	Th - 232	1.13E-03	U - 232	6.22E-03
U - 233	7.78E-02	U - 234	3.07E-02	U - 235	1.28E-03
U - 236	6.36E-04	U - 238	2.87E-02	Y - 90 m	5.31E+03

Zr - 93	5.03E-01

4) Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1. HEPA filters shall have a minimum efficiency of 99.95%.
5) The emissions shall be limited to 2.81E-02 mrem/year unabated and 2.81E-04 mrem/yr abated.
6) Under passive ventilation no activities shall be conducted which could generate aerosols within the 244-A DCRT.

Emission Unit ID: 740

200E P-244BX-002

244-BX Primary HEPA

This is a MINOR, PASSIVELY ventilated emission unit.

244-BX-DCRT

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a double container receiver tank (DCRT) passive breather filter ventilation system used to support tank farm operations, such as but not limited to waste retrieval and operation support activities for 241 BX Tank Farm. The tanks stored radioactive waste during transfer operations. Any activity other than temporary storage and normal operation support will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is a passive breather filter ventilation system that operates continuously.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Isolation and Closure of Exhaust Stacks 296-A-25, 296-B-28, 296-S-22 and 296-T-18 (Replaces NOC 796)	AIR 12-338	2/23/2012	859

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.20E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.20E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

244-S DCRT (296-S-22 STACK)

Passive Ventilation Breather Filter System Installation:

A passive ventilation breather filter system will be installed on an existing above-grade riser on the primary receiver tank in accordance with ALARACT Demonstration 1 and 16. The primary tank breather filter will serve as the static vent for the instrument air injected (at a maximum of 9 cubic feet per hour) into the receiver tank

through a set of three weight-factor dip tubes, which mixes with, and dilutes, any flammable gases. The primary tank breather filter will allow flammable gases to escape while collecting any airborne radioactive particulates.

A passive ventilation breather filter system will be installed above-grade on an existing riser or the existing annulus inlet filter riser in accordance with ALARACT 1 and 16. The annulus breather filter will provide for the exchange of ambient air with the annulus tank during atmospheric pressure fluctuations and will allow vapors to escape.

The breather filter system will, at a minimum, consist of an isolation valve (normally open during operation), filter housing, HEPA filter, and loop seal assembly. The isolation valve will isolate the HEPA filter from the tank to facilitate testing of the filter, and to isolate the system until the filter or housing can be replaced.

HEPA Filter Bank Isolation and Removal:

The isolation and removal of the HEPA filter bank located in the 244-S DCRT filter pit will require the deactivation of the HEPA filter bank instrumentation and alarms, the removal and disposal of the HEPA filter bank, and the installation of the filter pit duct jumper assembly, in accordance with ALARACT Demonstrations 6, 14, and 16. The 296-S-22 exhauster is equipped with a HEPA filter bank inside the filter pit. The HEPA filter bank is attached to three nozzles in the filter pit: one nozzle to the catch tank, one nozzle to the annulus, and one nozzle to the ventilation exhaust ductwork. The HEPA filter bank will be disconnected from the nozzles and removed for disposal. A filter pit duct jumper assembly (4" schedule 40 pipe) will be connected to the catch tank nozzle and ventilation exhaust ductwork nozzle to provide the ventilation path to the newly installed passive breather filters. The third nozzle to the annulus will be closed in the filter pit. The filter pit duct jumper assembly will be fabricated in accordance with ASME B31.3 and tested in accordance with ASME AG-1.

Electrical Equipment and Instrumentation Isolation:

The isolation of electrical equipment and instrumentation on the 244-S DCRT will require the disconnection of various power supplies (e.g., exhaust fan, motor operated valves, heat trace, sampler pumps, continuous air monitor, and alarms) and isolation of instrumentation (e.g., HEPA filter bank pressure indicators) that support operation and monitoring of the stack ventilation system in accordance with ALARACT 16. Disconnection is the physical disconnection and removal of wires from the power source. Pit entries are not required to disconnect power or isolate instrumentation.

296-S-22 Stack Isolation:

The 296-S-22 stack will be isolated via mechanical isolations. Blank flanges will be installed on the duct end and on the suction side of the exhaust fan. A closure cap will be installed on top of the exhaust stack. The exhaust stack drain line will be cut and capped above grade. This work will be done in accordance with ALARACT Demonstration 16.

244-TX DCRT (296-T-18 STACK)

Passive Ventilation Breather Filter Installation:

A passive ventilation breather filter system will be installed on an existing above-grade riser on the primary receiver tank in accordance with ALARACT Demonstration 1 and 16. The primary tank breather filter will serve as the static vent for the instrument air injected (at a maximum of 9 cubic feet per hour) into the receiver tank through a set of three weight-factor dip tubes, which mixes with, and dilutes, any flammable gases. The primary tank breather filter will allow flammable gases to escape while collecting any airborne radioactive particulates.

A passive ventilation breather filter system will be installed above-grade on an existing riser or the existing annulus inlet filter riser in accordance with ALARACT 1 and 16. The annulus breather filter will provide for the exchange of ambient air with the annulus tank during atmospheric pressure fluctuations and will collect potential airborne radioactive particulates from the annulus space while allowing vapors to escape.

The breather filter system will, at a minimum, consist of an isolation valve (normally open during operation), filter housing, HEPA filter, and loop seal assembly. The isolation valve will isolate the HEPA filter from the tank to

facilitate testing of the filter, and to isolate the system until the filter or housing can be replaced.

HEPA Filter Bank Isolation and Removal:

Removal of the HEPA filter bank in the 244-TX DCRT filter pit is not required. The HEPA filter bank will be isolated via closure of manual valves and the deactivation of motor-controlled valves. Above-grade duct/pipe will be capped. The associated HEPA filter bank instrumentation and alarms will be deactivated. This work will be done in accordance with ALARACT 16.

Electrical Equipment and Instrumentation Isolation:

The isolation of electrical equipment and instrumentation on the 244-TX DCRT will require the disconnection of various power supplies (e.g., exhaust fan, motor operated valves, heat trace, sampler pumps, continuous air monitor, and alarms) and isolation of instrumentation (e.g., HEPA filter bank pressure indicators) that support operation and monitoring of the stack ventilation system. Disconnection is the physical disconnection and removal of wires from the power source in accordance with ALARACT Demonstration 16. Pit entries are not required to disconnect power or isolate instrumentation.

296-T-18 Stack Isolation:

The 296-T-18 stack will be isolated via mechanical isolations. A blank flange will be installed at the suction side of the exhaust fan or at another suitable location near the filter pit outlet to the exhaust stack. A closure cap will be installed on top of the exhaust stack. The exhaust stack drain line will be cut and capped above grade. This work will be done in accordance with ALARACT Demonstration 16.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	4.12E-02	Am - 241	2.37E+01	Am - 243	7.23E-04
Ba - 137 m	5.43E+03	C - 14	8.19E-01	Cd - 113 m	2.83E+00
Cm - 242	2.40E-02	Cm - 243	1.39E-03	Cm - 244	2.56E-02
Co - 60	1.25E+00	Cs - 134	1.38E-02	Cs - 137	5.74E+03
Eu - 152	2.38E-01	Eu - 154	1.88E+01	Eu - 155	1.03E+01
H - 3	3.09E+00	I - 129	1.03E-02	Nb - 93 m	8.44E-01
Ni - 59	3.18E-01	Ni - 63	2.95E+01	Np - 237	1.95E-02
Pa - 231	8.58E-02	Pu - 238	9.78E-01	Pu - 239	1.91E+01
Pu - 240	3.17E+00	Pu - 241	2.48E+01	Pu - 242	1.74E-04
Ra - 226	7.54E-02	Ra - 228	1.78E-02	Ru - 106	1.62E-05
Sb - 125	1.40E+00	Se - 79	2.46E-02	Sm - 151	7.55E+02
Sn - 126	1.22E-01	Sr - 90	1.07E+04	Tc - 99	5.57E+00
Th - 229	8.09E-03	Th - 232	2.28E-03	U - 232	1.26E-02
U - 233	1.57E-01	U - 234	6.19E-02	U - 235	2.59E-03
U - 236	1.28E-03	U - 238	5.80E-02	Y - 90	1.07E+04

Zr - 93	1.02E+00

4) The emissions shall be limited to 2.81E-02 mrem/yr unabated and 2.81E-04 mrem/yr abated.
5) Under passive ventilation no activities shall be conducted which could generate aerosols within the 244-BX DCRT.
6) Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1. HEPA filters shall have a minimum efficiency of 99.95%.

Emission Unit ID: 742

200W P-244S-002

244-S Primary HEPA

This is a MINOR, PASSIVELY ventilated emission unit.

244 S-DCRT

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a double container receiver tank (DCRT) passive breather filter ventilation system used to support tank farm operations, such as but not limited to waste retrieval and operation support activities for 241 S Tank Farm. The tanks stored radioactive waste during transfer operations. Any activity other than temporary storage and normal operation support will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit has a passive breather filter ventilation system that operates continuously.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Isolation and Closure of Exhaust Stacks 296-A-25, 296-B-28, 296-S-22 and 296-T-18 (Replaces NOC 796)	AIR 12-338	2/23/2012	859

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.20E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.20E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

244-S DCRT (296-S-22 STACK)

Passive Ventilation Breather Filter System Installation:

A passive ventilation breather filter system will be installed on an existing above-grade riser on the primary receiver tank in accordance with ALARACT Demonstration 1 and 16. The primary tank breather filter will serve as the static vent for the instrument air injected (at a maximum of 9 cubic feet per hour) into the receiver tank

through a set of three weight-factor dip tubes, which mixes with, and dilutes, any flammable gases. The primary tank breather filter will allow flammable gases to escape while collecting any airborne radioactive particulates.

A passive ventilation breather filter system will be installed above-grade on an existing riser or the existing annulus inlet filter riser in accordance with ALARACT 1 and 16. The annulus breather filter will provide for the exchange of ambient air with the annulus tank during atmospheric pressure fluctuations and will allow vapors to escape.

The breather filter system will, at a minimum, consist of an isolation valve (normally open during operation), filter housing, HEPA filter, and loop seal assembly. The isolation valve will isolate the HEPA filter from the tank to facilitate testing of the filter, and to isolate the system until the filter or housing can be replaced.

HEPA Filter Bank Isolation and Removal:

The isolation and removal of the HEPA filter bank located in the 244-S DCRT filter pit will require the deactivation of the HEPA filter bank instrumentation and alarms, the removal and disposal of the HEPA filter bank, and the installation of the filter pit duct jumper assembly, in accordance with ALARACT Demonstrations 6, 14, and 16. The 296-S-22 exhauster is equipped with a HEPA filter bank inside the filter pit. The HEPA filter bank is attached to three nozzles in the filter pit: one nozzle to the catch tank, one nozzle to the annulus, and one nozzle to the ventilation exhaust ductwork. The HEPA filter bank will be disconnected from the nozzles and removed for disposal. A filter pit duct jumper assembly (4" schedule 40 pipe) will be connected to the catch tank nozzle and ventilation exhaust ductwork nozzle to provide the ventilation path to the newly installed passive breather filters. The third nozzle to the annulus will be closed in the filter pit. The filter pit duct jumper assembly will be fabricated in accordance with ASME B31.3 and tested in accordance with ASME AG-1.

Electrical Equipment and Instrumentation Isolation:

The isolation of electrical equipment and instrumentation on the 244-S DCRT will require the disconnection of various power supplies (e.g., exhaust fan, motor operated valves, heat trace, sampler pumps, continuous air monitor, and alarms) and isolation of instrumentation (e.g., HEPA filter bank pressure indicators) that support operation and monitoring of the stack ventilation system in accordance with ALARACT 16. Disconnection is the physical disconnection and removal of wires from the power source. Pit entries are not required to disconnect power or isolate instrumentation.

296-S-22 Stack Isolation:

The 296-S-22 stack will be isolated via mechanical isolations. Blank flanges will be installed on the duct end and on the suction side of the exhaust fan. A closure cap will be installed on top of the exhaust stack. The exhaust stack drain line will be cut and capped above grade. This work will be done in accordance with ALARACT Demonstration 16.

244-TX DCRT (296-T-18 STACK)

Passive Ventilation Breather Filter Installation:

A passive ventilation breather filter system will be installed on an existing above-grade riser on the primary receiver tank in accordance with ALARACT Demonstration 1 and 16. The primary tank breather filter will serve as the static vent for the instrument air injected (at a maximum of 9 cubic feet per hour) into the receiver tank through a set of three weight-factor dip tubes, which mixes with, and dilutes, any flammable gases. The primary tank breather filter will allow flammable gases to escape while collecting any airborne radioactive particulates.

A passive ventilation breather filter system will be installed above-grade on an existing riser or the existing annulus inlet filter riser in accordance with ALARACT 1 and 16. The annulus breather filter will provide for the exchange of ambient air with the annulus tank during atmospheric pressure fluctuations and will collect potential airborne radioactive particulates from the annulus space while allowing vapors to escape.

The breather filter system will, at a minimum, consist of an isolation valve (normally open during operation), filter housing, HEPA filter, and loop seal assembly. The isolation valve will isolate the HEPA filter from the tank to

facilitate testing of the filter, and to isolate the system until the filter or housing can be replaced.

HEPA Filter Bank Isolation and Removal:

Removal of the HEPA filter bank in the 244-TX DCRT filter pit is not required. The HEPA filter bank will be isolated via closure of manual valves and the deactivation of motor-controlled valves. Above-grade duct/pipe will be capped. The associated HEPA filter bank instrumentation and alarms will be deactivated. This work will be done in accordance with ALARACT 16.

Electrical Equipment and Instrumentation Isolation:

The isolation of electrical equipment and instrumentation on the 244-TX DCRT will require the disconnection of various power supplies (e.g., exhaust fan, motor operated valves, heat trace, sampler pumps, continuous air monitor, and alarms) and isolation of instrumentation (e.g., HEPA filter bank pressure indicators) that support operation and monitoring of the stack ventilation system. Disconnection is the physical disconnection and removal of wires from the power source in accordance with ALARACT Demonstration 16. Pit entries are not required to disconnect power or isolate instrumentation.

296-T-18 Stack Isolation:

The 296-T-18 stack will be isolated via mechanical isolations. A blank flange will be installed at the suction side of the exhaust fan or at another suitable location near the filter pit outlet to the exhaust stack. A closure cap will be installed on top of the exhaust stack. The exhaust stack drain line will be cut and capped above grade. This work will be done in accordance with ALARACT Demonstration 16.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	2.04E-02	Am - 241	1.17E+01	Am - 243	3.58E-04
Ba - 137 m	2.69E+03	C - 14	4.06E-01	Cd - 113 m	1.40E+00
Cm - 242	1.19E-02	Cm - 243	6.91E-04	Cm - 244	1.26E-02
Co - 60	6.18E-01	Cs - 134	6.84E-03	Cs - 137	2.84E+03
Eu - 152	1.18E-01	Eu - 154	9.29E+00	Eu - 155	5.09E+00
H - 3	1.53E+00	I - 129	5.10E-03	Nb - 93 m	4.18E-01
Ni - 59	1.57E-01	Ni - 63	1.46E+01	Np - 237	9.67E-03
Pa - 231	4.25E-02	Pu - 238	4.84E-01	Pu - 239	9.45E+00
Pu - 240	1.57E+00	Pu - 241	1.23E+01	Pu - 242	8.61E-05
Ra - 226	3.73E-02	Ra - 228	8.82E-03	Ru - 106	8.01E-06
Sb - 125	6.95E-01	Se - 79	1.22E-02	Sm - 151	3.74E+02
Sn - 126	6.02E-02	Sr - 90	5.31E+03	Tc - 99	2.76E+00
Th - 229	4.01E-03	Th - 232	1.13E-03	U - 232	6.22E-03
U - 233	7.78E-02	U - 234	3.07E-02	U - 235	1.28E-03
U - 236	6.36E-04	U - 238	2.87E-02	Y - 90	5.31E+03

Zr - 93	5.03E-01

4) Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1. HEPA filters shall have a minimum efficiency of 99.95%.
5) The emissions shall be limited to 3.19E-02 mrem/yr unabated and 3.19E-04 mrem/yr abated.
6) Under passive ventilation no activities shall be conducted which could generate aerosols within the 244-S DCRT.

Emission Unit ID: 744

200W P-244TX-002

244-TX Primary HEPA

This is a MINOR, PASSIVELY ventilated emission unit.

244-TX DCRT

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a double container receiver tank (DCRT) passive breather filter ventilation system used to support tank farm operations, such as but not limited to waste retrieval and operation support activities for 241 TX Tank Farm. The tanks stored radioactive waste during transfer operations. Any activity other than temporary storage and normal operation support will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is a passive breather filter ventilation system that operates continuously.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Isolation and Closure of Exhaust Stacks 296-A-25, 296-B-28, 296-S-22 and 296-T-18 (Replaces NOC 796)	AIR 12-338	2/23/2012	859

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.20E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.20E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

244-S DCRT (296-S-22 STACK)

Passive Ventilation Breather Filter System Installation:

A passive ventilation breather filter system will be installed on an existing above-grade riser on the primary receiver tank in accordance with ALARACT Demonstration 1 and 16. The primary tank breather filter will serve as the static vent for the instrument air injected (at a maximum of 9 cubic feet per hour) into the receiver tank

through a set of three weight-factor dip tubes, which mixes with, and dilutes, any flammable gases. The primary tank breather filter will allow flammable gases to escape while collecting any airborne radioactive particulates.

A passive ventilation breather filter system will be installed above-grade on an existing riser or the existing annulus inlet filter riser in accordance with ALARACT 1 and 16. The annulus breather filter will provide for the exchange of ambient air with the annulus tank during atmospheric pressure fluctuations and will allow vapors to escape.

The breather filter system will, at a minimum, consist of an isolation valve (normally open during operation), filter housing, HEPA filter, and loop seal assembly. The isolation valve will isolate the HEPA filter from the tank to facilitate testing of the filter, and to isolate the system until the filter or housing can be replaced.

HEPA Filter Bank Isolation and Removal:

The isolation and removal of the HEPA filter bank located in the 244-S DCRT filter pit will require the deactivation of the HEPA filter bank instrumentation and alarms, the removal and disposal of the HEPA filter bank, and the installation of the filter pit duct jumper assembly, in accordance with ALARACT Demonstrations 6, 14, and 16. The 296-S-22 exhauster is equipped with a HEPA filter bank inside the filter pit. The HEPA filter bank is attached to three nozzles in the filter pit: one nozzle to the catch tank, one nozzle to the annulus, and one nozzle to the ventilation exhaust ductwork. The HEPA filter bank will be disconnected from the nozzles and removed for disposal. A filter pit duct jumper assembly (4" schedule 40 pipe) will be connected to the catch tank nozzle and ventilation exhaust ductwork nozzle to provide the ventilation path to the newly installed passive breather filters. The third nozzle to the annulus will be closed in the filter pit. The filter pit duct jumper assembly will be fabricated in accordance with ASME B31.3 and tested in accordance with ASME AG-1.

Electrical Equipment and Instrumentation Isolation:

The isolation of electrical equipment and instrumentation on the 244-S DCRT will require the disconnection of various power supplies (e.g., exhaust fan, motor operated valves, heat trace, sampler pumps, continuous air monitor, and alarms) and isolation of instrumentation (e.g., HEPA filter bank pressure indicators) that support operation and monitoring of the stack ventilation system in accordance with ALARACT 16. Disconnection is the physical disconnection and removal of wires from the power source. Pit entries are not required to disconnect power or isolate instrumentation.

296-S-22 Stack Isolation:

The 296-S-22 stack will be isolated via mechanical isolations. Blank flanges will be installed on the duct end and on the suction side of the exhaust fan. A closure cap will be installed on top of the exhaust stack. The exhaust stack drain line will be cut and capped above grade. This work will be done in accordance with ALARACT Demonstration 16.

244-TX DCRT (296-T-18 STACK)

Passive Ventilation Breather Filter Installation:

A passive ventilation breather filter system will be installed on an existing above-grade riser on the primary receiver tank in accordance with ALARACT Demonstration 1 and 16. The primary tank breather filter will serve as the static vent for the instrument air injected (at a maximum of 9 cubic feet per hour) into the receiver tank through a set of three weight-factor dip tubes, which mixes with, and dilutes, any flammable gases. The primary tank breather filter will allow flammable gases to escape while collecting any airborne radioactive particulates.

A passive ventilation breather filter system will be installed above-grade on an existing riser or the existing annulus inlet filter riser in accordance with ALARACT 1 and 16. The annulus breather filter will provide for the exchange of ambient air with the annulus tank during atmospheric pressure fluctuations and will collect potential airborne radioactive particulates from the annulus space while allowing vapors to escape.

The breather filter system will, at a minimum, consist of an isolation valve (normally open during operation), filter housing, HEPA filter, and loop seal assembly. The isolation valve will isolate the HEPA filter from the tank to

facilitate testing of the filter, and to isolate the system until the filter or housing can be replaced.

HEPA Filter Bank Isolation and Removal:

Removal of the HEPA filter bank in the 244-TX DCRT filter pit is not required. The HEPA filter bank will be isolated via closure of manual valves and the deactivation of motor-controlled valves. Above-grade duct/pipe will be capped. The associated HEPA filter bank instrumentation and alarms will be deactivated. This work will be done in accordance with ALARACT 16.

Electrical Equipment and Instrumentation Isolation:

The isolation of electrical equipment and instrumentation on the 244-TX DCRT will require the disconnection of various power supplies (e.g., exhaust fan, motor operated valves, heat trace, sampler pumps, continuous air monitor, and alarms) and isolation of instrumentation (e.g., HEPA filter bank pressure indicators) that support operation and monitoring of the stack ventilation system. Disconnection is the physical disconnection and removal of wires from the power source in accordance with ALARACT Demonstration 16. Pit entries are not required to disconnect power or isolate instrumentation.

296-T-18 Stack Isolation:

The 296-T-18 stack will be isolated via mechanical isolations. A blank flange will be installed at the suction side of the exhaust fan or at another suitable location near the filter pit outlet to the exhaust stack. A closure cap will be installed on top of the exhaust stack. The exhaust stack drain line will be cut and capped above grade. This work will be done in accordance with ALARACT Demonstration 16.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	4.12E-02	Am - 241	2.37E+01	Am - 243	7.23E-04
Ba - 137 m	5.43E+03	C - 14	8.19E-01	Cd - 113 m	2.83E+00
Cm - 242	2.40E-02	Cm - 243	1.39E-03	Cm - 244	2.56E-02
Co - 60	1.25E+00	Cs - 134	1.38E-02	Cs - 137	5.74E+03
Eu - 152	2.38E-01	Eu - 154	1.88E+01	Eu - 155	1.03E+01
H - 3	3.09E+00	I - 129	1.03E-02	Nb - 93 m	8.44E-01
Ni - 59	3.18E-01	Ni - 63	2.95E+01	Np - 237	1.95E-02
Pa - 231	8.58E-02	Pu - 238	4.50E+02	Pu - 239	3.16E+01
Pu - 240	1.92E+01	Pu - 241	6.28E+04	Pu - 242	1.74E-04
Ra - 226	7.54E-02	Ra - 228	1.78E-02	Ru - 106	1.62E-05
Sb - 125	1.40E+00	Se - 79	2.46E-02	Sm - 151	7.55E+02
Sn - 126	1.22E-01	Sr - 90	1.07E+04	Tc - 99	5.57E+00
Th - 229	8.09E-03	Th - 232	2.28E-03	U - 232	1.26E-02
U - 233	1.57E-01	U - 234	6.19E-02	U - 235	2.59E-03
U - 236	1.28E-03	U - 238	5.80E-02	Y - 90	1.07E+04

Zr - 93	1.02E+00

4) Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1. HEPA filters shall have a minimum efficiency of 99.95%.
5) The emissions shall be limited to 3.19E-02 mrem/yr unabated and 3.19E-04 mrem/yr abated.
6) Under passive ventilation no activities shall be conducted which could generate aerosols within the 244-TX DCRT.

Emission Unit ID: 749

200 W-296P048-001

296-P-48

This is a MAJOR, ACTIVELY ventilated emission unit.

Tank Farms

Emission Unit Information

Stack Height: 40.00 ft. 12.19 m. Stack Diameter 0.50 ft. 0.15 m.

Average Stack Effluent Temperature: 90 degrees Fahrenheit. 32 degrees Celsius.

Average Stack ExhaustVelocity: 38.22 ft/second. 11.65 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Demister	1	
	Heater	1	
	Prefilter	1	
	HEPA	2	2 HEPAs in series.
	Fan	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	Cs-137, Sr-90	Continuous

Sampling Requirements Record sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a skid/mobile type portable exhauster used to support Tank Farm operations, such as, but not limited to waste characterization, waste retrieval, decommissioning, deactivation, maintenance, and construction and construction ansd operational support activities. The emission unit is a portable exhauster that operate intermittently.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Categorical Tank Farm Facility Waste Retrieval and Closure: Phase II Waste Retrieval Operations (Replaced NOC ID 816)	AIR 12-307	2/23/2012	825

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.31E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.61E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted.

The operation of the waste retrieval system(s) for the removal of radioactive wastes from all 149 Single Shell Tanks (SST) at the Hanford Site.

SALTCAKE DISSOLUTION WASTE RETRIEVAL SYSTEM

The saltcake dissolution waste retrieval system may be used to retrieve soluble saltcake waste. This method retrieves the soluble portion of the waste only, resulting in very few of the solids being pumped from the tank. The

saltcake dissolution waste retrieval system deployed in the SSTs is for water, chemical agent, or catalyst liquid to be added to the tank using a variety of spray nozzles or "sprinklers". The approach is to sprinkle the waste surface with water, chemical agent, or catalyst liquid. The added water, chemical agent, or catalyst liquid must stay in contact with the saltcake for a long enough period of time for the brine to become saturated. Once the brine is saturated, it is pumped from the SST to a receiver tank, staging tank, storage DST or other staging/storage vessel associated with the supplemental treatment, packaging or disposal. Salt solution will be removed using the existing saltwell pump or other pump placed into the tank.

A tank not equipped with a saltwell pump, a transfer pump (progressive cavity, vertical turbine) can be installed and operated.

Remotely directable water distribution devices will be located in risers spaced as far apart as practical. A combination of spraying waster, chemical agent, or catalyst liquid to dissolve the saltcake can be used in conjunction with directing a flow of water or recirculating water at the waste to move it to the pump suction to allow the pumping of waste from the tank. Recirculated waste from the pump may be sent back to the tank as an alternative to using water to direct dissolution waste to the pump suction.

MODIFIED SLUCING WASTE RETRIEVAL SYSTEM

Modified sluicing can be used for some SST waste retrieval. Modified sluicing is the introduction of liquid at low to moderate pressures and volumes into the waste. The liquid dissolves and breaks apart solid materials and suspends them in the waste slurry. A transfer pump installed in the tank provides the motive force to transfer the liquid slurry to a receiver tank.

Modified sluicing introduces sluice liquid in a controlled fashion using multiple sluicing nozzles at varying pressures and flows, then pumps out the resultant waste slurry. This maintains minimal liquid inventories within the tank at all times. The liquids that could be used in modified sluicing include water, recirculated supernatant/water from the receiving Double Shell Tank, recirculated supernatant/water, chemical agent or catalyst liquid.

VACUUM WASTE RETRIEVAL SYSTEM

A vacuum waste retrieval system can be used for waste retrieval activities in the (SSTs). The vacuum waste retrieval system is introduced into the SSTs by means of an articulating mast system (AMS). The AMS has a horizontal reach and rotational capabilities of 360 degrees. The AMS has a retracted position and can be extended vertically. Air is mixed at the suction end of the AMS enabling the required vertical lift for the waste to a topside receiver tank, batch vessel or a staging SST, storage DST, or other staging/storage vessels associated with supplemental treatment, packaging or disposal.

The AMS will be deployed through and attached to standard riser flanges that are available on the SSTs. Cameras can also be installed in other risers for in-tank viewing and control of the AMS.

For the 200-series tanks in the 241-C, 241-U, 241-B and 241-T Tank Farms a vacuum retrieval process tank, staging tank, staging SST, storage DST or other staging/storage vessel will be deployed. The receiver tank will receive waste in batches from whichever tank is connected into the vacuum retrieval system. The vacuum pressure used to draw up the waste from the tank to the receiver tank is relieved back into the SST being retrieved.

MOBILE RETRIEVAL SYSTEM

A Mobile Retrieval System (MRS) can be used to retrieve waste from some SSTs. The MRS consists of two in-tank systems. The first is a robotic crawler inserted through one riser the second is an AMS inserted through a second riser. The AMS retrieves the sludge from the tank using a vacuum with assisting pneumatic conveyance. The AMS vacuum tube has a horizontal reach and can be extended to the bottom of the tank. The arm rotates 360 degrees. The vacuum will be directed through the AMS in the tank to the end effector, which is in contact with the waste. The pneumatic conveyance-assisted vacuum retrieval system will draw the waste up through the vacuum to the waste vessel in the vessel skid in batches. The AMS is then valved out while the waste vessel is emptied and pumped out through the over ground transfer lines to a DST, a staging SST or other treatment/disposal options. When the waste vessel is nearly empty, the transfer line will be valved out and the

AMS will be valved back in and another batch of waste will be removed from the tank. This process will be repeated until waste near the center of the tank is removed. The robotic crawler will be remotely controlled to move and/or wash waste toward the center of the tank.

The robotic crawler is equipped with a plow blade at the front for pushing/pulling wastes, a screw pump to jet wastes through a small nozzle towards the center of the tank, the ability to direct hot or cold water through the same nozzle to wash wastes off of in-tank equipment, dissolve waste agglomerations in the tank, and wash waste toward the center of the tank for removal.
Any new retrieval methods or changes to processes will need to be provided to WDOH in a revised NOC prior to implementation.

MOBILE ARM RETRIEVAL SYSTEM

The Mobile Arm Retrieval System (MARS) is a waste retrieval system used to retrieve waste from single-shell tanks (SSTs) and move the waste to the double-shell tanks (DSTs). The MARS employs two design options similar to currently permitted systems: 1) a sluicing retrieval option which is intended for retrieval of non1eaker tanks and 2) a vacuum retrieval option is intended for retrieval of assumed 1eaker tanks. Both options use an arm and sluicing jets and/or a high pressure water scarifier to break up the waste. The sluicer uses waste supernatant recycled from the DST to form a liquid jet using a nozzle. The scarifier uses filtered, pressurized water that comes from a high pressure water skid.

The equipment portion of the MARS includes a vertical, carbon steel mast (square cross section) as the main structural member. Attached to the vertical mast is a carbon fiber robotic arm. The arm is attached to a traveler that raises and lowers the arm relative to the vertical mast. The arm rotates 360 degrees - 380 degrees on a turntable located in the pit box. The arm also pivots up and down from an elbow at the traveler (hydraulic system) and extends and retracts (hydraulic system). The end of the arm articulates. The arm thus provides for a large range of motion such that the sluicing devices (recycle sluicer, water scarifier) located at the end of the arm can aim at most portions of the tank and from varying (e.g., short) distances.

The containment box which encloses the MARS will be ventilated by two parallel installed radial filters. The purpose of these filters is to minimize contamination from migrating up from the tank into the containment box via the open space on the large riser during retrieval operations. Minimization of contamination inside the containment box is desired should entry into the box ever be required for repairs. Inflow through these filters during retrieval is estimated to reach up to 60 cubic feet per minute (cfm). A valve will be installed between the filters and the containment box so filters can be isolated from the box. However, because the location of the valve will be approximately 12 feet above ground and difficult to reach without properly installed and inspected scaffolding, the valve will be left open at all times until retrieval of the tank is complete. Once retrieval is complete the valve will be closed.

REMOTE WATER LANCE

The completion of tank retrieval may also be aided by a Remote Water Lance (RWL) that is a high pressure water device, or hydro laser. Alternatively, a High Pressure Mixer (HPM) may be used in the same capacity. The systems will consist of both ex-tank and in-tank components. The ex-tank components will be comprised of; high pressure systems, operating controls, cables, and hoses. The in-tank components will be comprised of; umbilical, in-tank vehicle, high pressure nozzle(s), or the high pressure mixer.

The high pressure water systems will provide the water at the desired pressure, not to exceed 37,000 psig. A conditioning system will be used to filter the raw water entering the skid to ensure that no abrasive materials are entrained in the water. The water volumetric flow rate will be on the order of 4 to 18 gpm for the HPM and from 6 to 15 gpm for the RWL. The operating controls will be located in a control trailer outside of the farm fence. The cables and hoses will connect hydraulically powered in-tank vehicle with the ex-tank controls and water skid via the umbilical. The HPM consists of an adjustable height pipe with two pairs of opposed, high pressure, low volume water orifices located on the bottom of the pipe. The mixer is capable of being rotated 360 degrees and has an adjustable height range of approximately 7 feet. The positioning of the mixer is performed remotely using a hydraulic system. Additionally, the mixer has a single orifice on the bottom of the unit that can be used as an operational or installation aid. The in-tank vehicle will house one to four high pressure water nozzles. The RWL

will be operated with the nozzle submerged to avoid aerosols in the tank. A rupture disc will be used to prevent reaching pressures above 37,000 psig.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	5.99E+00	Am - 241	8.68E+03	Am - 243	3.39E-01
Ba - 137 m	4.26E+07	C - 14	6.25E+02	Cd - 113 m	4.95E+03
Cm - 242	1.97E+01	Cm - 243	1.80E+00	Cm - 244	1.90E+01
Co - 60	2.52E+03	Cs - 134	3.44E+04	Cs - 137	4.89E+07
Eu - 152	8.49E+02	Eu - 154	1.45E+04	Eu - 155	9.54E+03
H - 3	5.95E+03	I - 129	2.95E+01	Nb - 93 m	1.01E+03
Ni - 59	1.05E+02	Ni - 63	9.30E+03	Np - 237	9.50E+01
Pa - 231	1.25E+01	Pu - 238	1.65E+02	Pu - 239	3.17E+03
Pu - 240	5.36E+02	Pu - 241	4.80E+03	Pu - 242	3.34E-02
Ra - 226	1.27E-02	Ra - 228	1.15E+01	Ru - 106	1.22E-02
Sb - 125	1.73E+04	Se - 79	6.36E+01	Sm - 151	8.93E+05
Sn - 126	2.59E+02	Sr - 90	2.91E+06	Tc - 99	2.24E+04
Th - 229	4.20E-01	Th - 232	1.26E+00	U - 232	3.66E+00
U - 233	3.02E+01	U - 234	1.07E+01	U - 235	4.44E-01
U - 236	2.73E-01	U - 238	9.86E+00	Y - 90	2.91E+06
Zr - 93	1.25E+03				

4) ABATEMENT TECHNOLOGY- Ductwork insulation
All ventilation ductwork from the exit of the tank to the inlet of the exhauster filter housing shall be insulated. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

5) ABATEMENT TECHNOLOGY- Annual testing
Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1 Section TA. HEPA filters shall have a minimum efficiency of 99.95%. (WAC 246-247-040(5)), (WAC 246-247-060(5)) and (WAC 246-247-075(2))

6) ABATEMENT TECHNOLOGY- Filter protection
Relative humidity shall be monitored, at least once a month, downstream of the heater and prior to the HEPA filters to ensure the air stream does not exceed 70% relative humidity. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

7) RELEASE RATES - WDOH Log
The annual possession quantity shall be tracked on a WDOH approved log. (WAC 246-247-080(7))

8) WDOH ALTERNATE APPROVAL- Standards
General WAC 246-247 technology standard exemptions justified and documented in RPP-19233, WAC 246-247 technology standard exemption justification for waste tank ventilation systems, may be applied to Phase II NOC retrieval exhauster operations. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

9) ALTERNATE APPROVAL - NDA Method

A pre-operational NDA of the exhauster(s) HEPA filters and a post-operational NDA will be performed the first time each of the four waste retrieval methods (mobile retrieval system, vacuum retrieval, supernatant sluicing, and saltcake dissolution with supernatant) when placed into service. The post-operational NDA should occur after one cycle or phase of waste retrieval operation is completed, a method replaces another method during a cycle/phase or six months from the in-service date, whichever occurs first. The facility may opt to replace the exhauster's HEPA filters prior to placing a new waste retrieval method in service and eliminate the pre-operational NDA. (WAC 246-247-040(5)), (WAC 246-247-060(5)) and (WAC 246-247-075(4))

10) WDOH NOTIFICATIONS - Differential pressure out of range
The differential pressure readings for the pre-filters and both stages of HEPA filters shall be monitored, recorded and trended daily. The exhaust system will be configured to automatically shut down at 5.9 inches of water (or less) pressure differential across the HEPA filter(s) for the first filter in series or multiple filters in series as indicated by the local readout. If the final HEPA filter in the system exceeds 5.9 inches of water pressure differential across the filter, the cause will be determined and WDOH will be notified through normal established channels. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

11) STANDARDS - stack monitoring systems
The emission unit stack monitoring system shall meet the requirements of ANSI/HPS N13.1-1999 including the stack monitoring system inspection requirements. (WAC 246-247-040(5)), (WAC 246-247-060(5)) and (WAC 246-247-075(2))

12) STANDARDS - Startup leak testing
New or altered sections of ductwork shall be leak tested in accordance with the requirements of ASME AG-1 Section SA prior to use. Normal maintenance of the system (e.g. replacing gaskets, replacement of in kind components, flow profile analysis in the ductwork, air sampling from test ports in the duct and demister flushing) are not considered to be alteration. (WAC 246-247-040(5)), (WAC 246-247-060(5)) and (WAC 246-247-075(2))

13) CONTAMINATION CONTROL- Max operating pressure
During waste retrieval operations the maximum pressure for any waste retrieval method shall not exceed 37,000 psig. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

14) CONTAMINATION CONTROL- Monthly Radiological Survey
While the exhauster is operating, and/or tank waste retrieval is underway, all ductwork connections shall have a radiological survey performed monthly to ensure ductwork connections are not degrading. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

15) CONTAMINATION CONTROL exhauster alternate usages
The exhauster will be operated occasionally during periods of non-retrieval in support of tank waste retrieval preparation activities and to aid in evaporation of residual flush water or sluicing liquid that remains in the tank. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

16) CONTAMINATION CONTROL- Active ventilation
All receiver tanks (including waste retrieval process tanks for tank TRU retrieval (staging) SSTs, storage DSTs, or other staging/storage vessels, but not including batch vessel supporting vacuum retrieval) shall have active ventilation during waste receipt, unless alternative controls are documented and approved by WDOH. If the exhauster goes down due to off-normal conditions while retrieval is occurring, the system should be placed into a safe configuration, minimizing dose to personnel and the environment. These steps may include: flushing the lines, pumps, and the waste transfer system of slurry solution using DST supernatant or water; pumping down the tank liquid to minimize remaining liquids; and halting waste retrieval. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

Emission Unit ID: 751

200E P-241AZ301-001

241-AZ-301

This is a MINOR, PASSIVELY ventilated emission unit.

241-AZ TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a catch tank passive breather filter ventilation system used to support tank farm operations, such as but not limited to waste retrieval and operation support activities for 241-AZ Tank Farm. The tanks stored radioactive waste during transfer operations. Any activity other than temporary storage and normal operation support will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is a passive breather filter ventilation system that operates continuously.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
E-525 Double-Shell Tank (DST) Transfer System Modifications Project (Replaced NOC ID 786)	AIR 12-334	2/23/2012	855

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.70E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 3.70E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activies that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16)), may be conducted.
241-AZ-151 CATCH TANK BYPASS
The modification description for the 241-AZ-151 catch tank bypass modification includes the installation of a new RCRA-compliant condensate distribution system for condensate generated from the existing 241-AZ-702 ventilation system. This will involve tapping into existing ventilation headers. This work will be done according to ALARACT 16 requirements. This new system will consist of a 1200 gallon capacity catch tank (241-AZ-301), secondary containment, piping, pumps, and controls. The system is designed to collect condensate at rate of 0.29 gallons per minute (154,424 gallons per year). The tank will be emptied every 2 to 3 days. At that time, the condensate will be pumped back to one of the 241-AY or 241-AZ tanks at a rate of 4 to 5 gallons per minute.

Condensate accumulation is currently estimated at between 6000 to 8000 gallons per month- 72,000 to 96,000 gallons per year.

The new 241-AZ-301 tank and system will be located outside the northeast corner of building 241-AZ-702. Most of the secondary containment structure will be located below grade (except for the cover that will be located above grade) to provide operator access and remote valve operation. A HEPA filter will also be installed above grade. This filter will be connected to 241-AZ-301 tank and will be used as the vent for the 241-AZ-301 tank.

The lower level of the fabricated tank system will contain the receiver tank for the condensate coming from the AZ-PC-SP-1 seal pot via line AZ-503. Other components housed in the lower level will include the sump, sump suction line, tank suction piping, tank return piping, tank vent lines, instrument access risers, leak detection, and freeze protection, as required.

The upper level of the fabricated tank system will contain the distribution pumps, valves, instrumentation, and controls. Operator access will be provided as required (e.g., access ladder, door in system cover, mid-level grating to support operator). Distribution valves will be located to provide the ability to use remote valve actuators. Freeze protection for the piping, pumps, and valves will be used as required.

The AZ-PC-SP-1 seal pot is located in the 241-AZ-702 building and this seal pot serves as a collection point for condensate originating from the 241-AZ-702 ventilation system. The 241-AZ-702 ventilation system provides primary tank ventilation for the 241-AY and 241-AZ DSTs. The existing 241-AZ-151 catch tank would be isolated in a separate effort to support other commitments.

Currently there are two drain paths into the 241-AZ-151 catch tank that will remain active after June 30, 2005. Those two drain paths are the condensate from the 241-AZ-702 facility and the 241-AZ-801A floor drain. The 241-AZ-702 condensate drain line will be rerouted to the 241-AY tanks and also to the 241-AZ tanks. In addition, the
241-AZ-801A floor drain will be isolated. In addition to the installation of a drain line to AZ-102, a new jumper will be installed in the 241-AZ-02A pit. This work will be accomplished under ALARACT 4,6,14 and 15.

241-AN & 241-AW CLEAN OUT BOX TRANSFER LINE MODIFICATIONS
Some of the transfer lines associated with 241-AN tank farm, 241-AW tank farm, and the 242-A-Evaporator facilities were constructed with clean out boxes (COBs). A COB provides access to transfer lines in case of line plugging. Sixteen COBs have been identified on transfer lines that will remain operational after June 30, 2005.

These COBs will have the upper portion of the structure cut off, caps welded on the primary pipes and encasements, and the upper structure of the COB will be isolated and disposed. That modification will entail approximately 100 one-inch pipe cuts,
and approximately 230- three- inch pipe cuts for SY transfer lines bounding any possible two-inch pipe cuts. The primary transfer lines and encasement pipes will be capped on the branch section and welded to the COB structure. The COBs are not currently compliant for several reasons, including:

The COBs do not have an operational drain and do not have adequate minimum volume to act as secondary containment for the primary pipe
The COBs are not pressure tight and cannot meet the 60 psig pressure rating of the encasement piping system.

Therefore, because the transfer lines associated with COBs will remain operational, the COBs must either be modified to be regulatory compliant or deactivated/isolated and removed.

The AN and AW Farms COB design consists of a 24-inch diameter steel cylinder formed from 1/4-inch thick rolled steel plate and mounted on a 12-inch vertical encasement pipe. The vertical encasement extends about four feet below grade to the slurry transfer line. A concrete anchor block supports the COB, encasement, and transfer pipe.

The 16 COBs to be deactivated and/or isolated by the E-525 Project are:

AN FARM

COB-AN-7, COB-AN-8, COB-AN-9

AW FARM

COB-AW-1, COB-AW-2, COB-AW-3, COB-AW-4, COB-AW-5, COB-AW-6, COB-AW-7, COB-AW-8, COB-AW -9, COB-AW-10, COB-AW-11, COB-AW-12

242-A Evaporator

COB-A-30

In addition to the COB modifications and the 241-AN and 241-AW transfer line modifications, entry into tank farm pits will be necessary to complete this package. The pit work will involve removal of jumpers, post modification testing, and administrative isolation (e.g. lock and tag). Not all activities will be performed in each pit. The pits involved are those listed below:

Table 1. Clean Out Box Transfer Line Modification
(Pit Number / Number of Entries / Reason for Entries)

241-AN-A / 6 / Post modification pressure tests and removal of jumpers.

241-AN-B / 3 / Post modification pressure testing, jumper removal, and lock and tag isolation.

241-AN-01A / 3 / Post modification pressure testing and jumper removal.

241-AN-04A / 3 / Post modification pressure testing and jumper removal.

241-AN-07A / 3 / Post modification pressure testing and jumper removal.

241-AW-02E / 6 / Post modification pressure testing and jumper removal.

241-AW-02D / 1 / Post modification pressure testing of encasements.

241-AW-05A / 3 / Post modification pressure testing and jumper removal.

241-AW-06A / 3 / Post modification pressure test and jumper removal.

241-AW-A / 6 / Post modification pressure testing and jumper removal.

241-AW-B / 6 / Post modification pressure testing and jumper removal.

242-A Evaporator / 2 / Post Modification.

SY TRANSFER LINE MODIFICATIONS
Work under this package will involve excavating and removing the lines identified in Table 2. Each line to be removed, cut into sections, and disposed of in accordance with the tank farm solid waste disposal procedures. Pit walls will be core drilled as needed to accommodate the new pipe-in-pipe RCRA compliant configuration.

Excavation for the 241-SY tank farm line modification work will be between the pits listed in Table 2. Pipe trenches will be excavated to remove and install the new transfer lines. Approximately 230 – 2 and 3 inch pipe cuts will be involved when removing the old transfer lines. Excavation will be accomplished with the guzzler and hand digging.

Table 2. 241-SY Tank Farm Transfer Lines and Pit/Nozzle End Points.
(Line Number / SIZE/ End Point 1 / End Point 2)

SL-177 / 2" / 102-SY-Pump Pit / SY-A-Valve Pit

SN-277 / 3" / 102-SY-Pump / SY-A-Valve Pit

SN-285 / 3" / 102-SY-Pump Pit / SY-A-Valve Pit.

SL-180 / 2" / SY- A-Valve Pit / SY-B-Valve Pit.

SN-280 / 3" / SY-A-Valve Pit / SY-B-Valve Pit.

SN-286 / 3" / 102-SY-Pump Pit / SY-B-Valve Pit.

SN-278 / 3" / 101-SY-Pump Pit / SY-B-Valve Pit.

SN-279 / 3" / 103-SY-Pump Pit / SY-B-Valve Pit.

In addition to the transfer line modification work within this package, entry into tank farm pump and valve pits will be necessary. The pit work will involve such activities as removal of jumpers. Not all activities will be performed in each pit. The pits involved are listed in Table 3 and 4.

Table 3. SY Transfer Line Modification
(Pit / Number of Entries / Reason for Entries)

241-SY-02A / 4 / Core drilling, installation for new nozzles and post modification pressure testing.

241-SY-A / 6 / Core drilling for new nozzles and post modification pressure testing.

241-SY-B / 5 / Core drilling for new nozzles and post modification pressure testing.

241-SY-01A / 2 / Core drilling for new nozzles and post modification pressure testing.

241-SY-03A / 2 / Core drilling for new nozzles and post modification pressure testing.

Table 4: AZ Jumper Replacement
(Pit / Number Of entries / Reason for Entries)

AZ-02A / 2 / Remove cover block to remove and install jumper.

204-AR TRANSFER LINE MODIFICATION

The 204-AR Waste Unloading Facility will continue to be in operation after June 30, 2005. Waste transfer line LIQW-702 will be modified to extend the transfer line encasement through the pit wall. This pipe is buried approximately three and a half feet below grade, so the excavated area will be approximately 10’ x 10’ x 6’. A portion of the slab under an old laundry facility and a section of the asphalt surface adjacent to the doorstep of the facility will require demolition for access.

The new encasement section will be open-ended, upstream of the exterior wall seal plate. The obsolete air purge connection to the existing encasement pipe will be removed.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	4.70E-03	Am - 241	7.76E+02	Am - 243	4.29E-02
Ba - 137 m	1.41E+06	C - 14	5.77E+00	Cd - 113 m	1.76E+02
Cm - 242	7.44E+00	Cm - 243	1.93E-01	Cm - 244	2.63E+00
Co - 60	1.07E+02	Cs - 134	3.32E+00	Cs - 137	1.49E+06
Eu - 152	8.21E+00	Eu - 154	6.09E+02	Eu - 155	7.03E+02
H - 3	8.16E+02	I - 129	1.12E+00	Nb - 93 m	2.04E+01
Ni - 59	1.82E+00	Ni - 63	1.73E+02	Np - 237	9.02E-01
Pa - 231	1.19E-02	Pu - 238	6.19E+00	Pu - 239	1.07E+02
Pu - 240	2.26E+01	Pu - 241	3.89E+02	Pu - 242	2.37E-03
Ra - 226	4.36E-04	Ra - 228	1.98E-01	Ru - 106	1.49E-04
Sb - 125	8.20E+01	Se - 79	2.06E+01	Sm - 151	3.25E+04
Sn - 126	6.86E+00	Sr - 90	1.68E+05	Tc - 99	1.34E+03
Th - 229	7.22E-03	Th - 232	3.26E-02	U - 232	4.66E-01
U - 233	1.91E+00	U - 234	2.57E-01	U - 235	5.90E-02
U - 236	1.05E-01	U - 238	1.13E+00	Y - 90	1.67E+05
Zr - 93	2.16E+01				

4) The breather filter shall be individually tested, annually, to the requirements of ASME AG-1 Section TA, and shall have a minimum efficiency of 99.95%.

Emission Unit ID: 755

200W DVS - Active

Mobile Drum Venting System (Active Vent)

This is a MINOR, ACTIVELY ventilated emission unit.

TRU Waste Retrieval

Emission Unit Information

Stack Height: ft. m. Stack Diameter 0.10 ft. 0.03 m.

Average Stack Effluent Temperature: 70 degrees Fahrenheit. 21 degrees Celsius.

Average Stack ExhaustVelocity: ft/second. m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA Type Filter	1	Shall be a NucFil ® Model IHF-004 or other with prior approval by the department.

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)		TOTAL ALPHA TOTAL BETA TOTAL GAMMA	End of each shift of operation

Sampling Requirements Smears of the exhuast vent at the end of each shift of operation.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities for the TRU retrieval project Drum Venting Systems support decontamination and decommissioning operations at the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operation of the Transuranic Waste Retrieval Project (Replaces NOC 719)	AIR 11-1006	10/19/2011	804

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.00E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Transuranic waste retrieval involves the processes for removing and dispositioning buried suspect transuranic mixed low-level radioactive waste (hereafter called TRU waste) from Hanford Site burial trenches for storage or disposal at other approved locations. Dispositioning is the orderly administration and handling of waste (including contaminated soil) from the low level burial grounds to place it in approved storage or disposal status. The handling includes such actions as: packaging, labeling and tracking waste; venting, assaying, and staging waste; inspecting waste and waste staging areas; sampling/characterizing/designating waste; making arrangements for the transfer of waste; completing necessary paperwork; and performing radiological and/or industrial hygiene surveys. Two containment systems are associated with this approval. One is Emission Unit 1327, Next Generation Retrieval (NGR) and, the other system will be used for the retrieval of large containers and is referred to as Emission Unit 1322, Portable Enclosure System (PES). These emission units will be used when retrieval activities exceed EU 486: 200 Area diffuse and fugitive contamination limits. In addition there are 3 types of drum venting systems and HEPA-filtered Vacuum Units (HVU) used with these venting systems and also during excavation and retrieval.
See the following emission units for a detailed description of additional controls/conditions and limits under

this approval:

EU 455	HEPA Vacuums
EU 486	200 Area Diffuse/ Fugitive; Operation of the Transuranic Waste Retrieval Project
EU 755	Mobile Drum Venting System (Active Ventilation) (MDVS)
EU 756	Mobile Drum Venting System (Passive Ventilation) (MDVS)
EU 1181	Categorical Drum Venting System 2 (DVS2)
EU 1322	Portable Enclosure System #1 (PES)
EU 1326	Vapor Extraction System (VES)
EU 1327	Next Generation Retrieval (NGR)

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 3.92E+01 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	6.40E-07	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Alpha release rate based on Am-241 + Progeny. It is recognized that other radionuclides may be present in very limited quantities.
See condition; Release rates: Dart and other Venting Systems.

B/G - 0	9.60E-06	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Beta/Gamma release rate based on Cs-137 + Progeny. It is recognized that other radionuclides may be present in very limited quantities.
See condition; Release rates: Dart and other Venting Systems.

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	Am - 243	Cf - 252	Cm - 244	Cs - 134
Cs - 137	Eu - 152	Eu - 154	Pu - 238	Pu - 239/240
Pu - 241	Sr - 90	U - 234	U - 235	U - 236
U - 238				

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) PROCESS DESCRIPTION: VENTING OF CONTAINERS
This approval applies to these additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

All work will be performed to meet ALARA practices and will be conducted according to applicable operating procedures, radiological control procedures, and radiological work permit (RWPs).
Vent filters will continue to be installed in designated containers via one of the drum venting systems described in this process description. These systems will ensure personnel and environmental protection. The methodology will require penetrating the container and inserting a vent. Penetration of the lid will be accomplished by either drilling through the lid or puncturing the lid with a filter dart (using Dart System). Container venting systems are described in the following text. Designated drums slated for venting will be vented with the Mobile Drum Venting System (MDVS), Drum Venting System 2 (DVS2), or other venting methods. (WAC 246-247-040(5) and WAC 246-247-060(5))

5) PROCESS DESCRIPTION: MDVS
This approval applies to these additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The MDVS is enclosed in a trailer containing equipment allowing an operator to sample or vent the drum and

install a Nucfil® or equivalent filter. Potential emissions from MDVS operations are point source emissions controlled as described in PROCESS DESCRIPTION: VENTING OF CONTAINERS, MDSV. Inside the MDVS trailer, bulging or potentially pressurized drums may be overpacked, placed in restraints and then vented. (WAC 246-247-040(5) and WAC 246-247-060(5))

6) ABATEMENT TECHNOLOGY: MDVS
The MDVS has a testable HEPA type filter for all emissions resulting from screening headspace gas sampling (HSGS) for hydrogen content and NucFil or equivalent filter installation. Metal filings or other residual cuttings from the drilling/filter installation process are removed from the drum lid with a HEPA vacuum. The test compartment is ventilated with a HEPA type filter and is designed to withstand a deflagration as described in the performance specification for this venting system (HNF 12180, Venting System for Low Level Burial Grounds Performance Specification).
The average annual flow for the exhaust port for the venting and HSGS operations is approximately 1 E- 4 meters ^3 /s. (consisting of a continuous flow in the milliliter per second range, with intermittent spikes in the liter per second range). The HEPA vacuum exhausts intermittently into the test chamber (at less than 300 cfm or 1.4 E-1 meters^3 /s.). (WAC 246-247-040(5) and WAC 246-247-060(5))

7) WDOH NOTIFICATION - Drum vent failure
The department shall be notified via email or the established procedures in the Environmental Notification program within 24 hours of all drum vents that fail to be installed properly and smears show >2,000 dpm/100 cm^2 alpha or >100,000 dpm/100 cm^2 beta/gamma removable contamination (an example of a "failure" is a pressure release that blows past the seat of the boot or a deflagration). (WAC 246-247-040(5) and WAC 246-247-060(5))

8) WDOH NOTIFICATION - Loss of containment
WDOH will be notified per WAC 246-247-080(5) via email or the established procedures in the Environmental Notification program if a loss of containment occurs (dropping, spilling, puncturing a container, or otherwise encountering loss of integrity where contamination escapes containment), which exceeds 100,000 dpm/100 cm^2 beta/gamma or 2,000 dpm/100 cm^2 alpha removable contamination. (WAC 246-247-040(5) and WAC 246-247-060(5))

9) ALTERNATIVE RELEASE RATE APPROVAL, RELEASE RATES: INSTALLATION OF DRUM VENTS
These alternative release fractions are approved for this emission unit

A maximum of 9,000 containers of waste will be processed per year using the MDVS and/or DVS2s venting systems. The processing rate is designed to reflect potential emissions during an average handling time of 60 minutes per container. One drum is processed at a time per DVS or DVS2. Using a release fraction of 1.0 E-03 for particulates and a time factor of 1.03 (60 minutes per container multiplied by 9,000 containers and divided by 526,000 minutes per year),
The predicted release rate from the MDVS (active vent) without any emissions control equipment is 2.1 E-02 Ci/year and the predicted release rate with emissions control equipment is 1.0 E-05 Ci/year. The predicted release rates for the representative radionuclides Am-241+Progeny and Cs-137+Progeny are as follows:

Unabated PTE;	Am-241+Progeny	1.3E-03 Ci/yr	:	Cs-137+Progeny	1.9E-02 Ci/yr
Abated PTE	Am-241+Progeny	6.4E-07 Ci/y	:	Cs-137+Progeny	9.6E-06 Ci/yr

The predicted release rate (unabated) for using the MDVS (passive vent) without any emissions control equipment is 2.2E-05 Ci/yr and the predicted release rate (abated) with emissions control equipment is 2.2E-05 Ci/yr. The predicted release rates for the representative radionuclides Am 241+Progeny and Cs-137+Progeny are as follows:

Unabated PTE;	Am-241+Progeny	4.3E-07 Ci/yr	:	Cs-137+Progeny	2.2E-05 Ci/yr
Abated PTE	Am-241+Progeny	4.3E-07 Ci/y	:	Cs-137+Progeny	2.2E-05 Ci/yr

The passive vent of the MDVS exhausts potential emissions from the use of the HEPA Vacuum mounted in the test chamber to collect metal filings after installation of a NucFil or equivalent filter. Release rates are calculated by multiplying surface area vacuumed by the contamination level. An estimate of the release rate is calculated by assuming the surface area of the boot that covers the drum lid during the filter installation process (8.3 square inches) multiplied by 9,000 drums with an average contamination level of 10,000 dpm/100 cm^2 beta/gamma and 200 dpm/100 cm^2 alpha. Using a release fraction of 1.0 for the HEPA vacuum use, the potential release rates from using the DVS is 4.3E-7 Ci/yr americium-241 and 2.2E-05 Ci/yr cesium-137. (WAC 246-247-040(5), WAC 246-247-060(5), WAC 246-247-075(4))

10) ALTERNATIVE APPROVAL-Annual Replacement
The system shall be built to meet NQA-1 requirements and shall be aerosol tested annually using ANSI N-510 as guidance for non-ANSI N-509 systems. If in-field aerosol testing is not feasible, an approved alternative is given to replace the filters on an annual basis with the manufacturer tested and certification of HEPA filter with a tested rating of 99.97% efficiency. Records of this testing shall be maintained on file. (WAC 246-247-040(5), WAC 246-

247-060(5), WAC 246-247-075(4))

11) CONTAMINATION CONTROL- Removable contamination
Fixatives or other controls will be employed if removable contamination levels (other than spot contamination) exceed 100,000 dpm/100 cm^2 beta/gamma or exceed 2,000 dpm/100 cm^2 alpha. (WAC 246-247-040(5) and WAC 246-247-060(5))

12) CONTAMINATION CONTROL- Post filter installation
The top of the drum shall be surveyed while inside the DVS, after installation of the NucFil® filter. If removable contamination is found, the drum lid shall be decontaminated before removal from the DVS. The drum shall be surveyed prior to leaving or immediately after removal from the DVS. Once removed from the DVS, the drum must be immediately decontaminated or contained such that the drum is free of removable contamination (i.e., less than 20 dpm/ 100 cm^2 alpha and less than 1000 dpm/100 cm^2 beta/gamma). Decontamination at the LLBG is attempted in a graded approach (dry rags, wet rags, decontamination solutions, fixatives, or over packing if other methods prove unsuccessful). (WAC 246-247-040(5) and WAC 246-247-060(5))

Emission Unit ID: 756

200W DVS - Passive

Mobile Drum Venting System (Passive Vent)

This is a MINOR, PASSIVELY ventilated emission unit.

TRU Waste Retrieval

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA Type Filter	1	Shall be a Pall ® Model Ultramet or other with prior approval by the department.

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)		TOTAL ALPHA TOTAL BETA TOTAL GAMMA	End of each shift of operation.

Sampling Requirements Smears of the exhuast vent at the end of each shift of operation.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities for the TRU retrieval project Drum Venting Systems support decontamination and decommissioning operations at the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operation of the Transuranic Waste Retrieval Project (Replaces NOC 719)	AIR 11-1006	10/19/2011	804

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.00E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Transuranic waste retrieval involves the processes for removing and dispositioning buried suspect transuranic mixed low-level radioactive waste (hereafter called TRU waste) from Hanford Site burial trenches for storage or disposal at other approved locations. Dispositioning is the orderly administration and handling of waste (including contaminated soil) from the low level burial grounds to place it in approved storage or disposal status. The handling includes such actions as: packaging, labeling and tracking waste; venting, assaying, and staging waste; inspecting waste and waste staging areas; sampling/characterizing/designating waste; making arrangements for the transfer of waste; completing necessary paperwork; and performing radiological and/or industrial hygiene surveys. Two containment systems are associated with this approval. One is Emission Unit 1327, Next Generation Retrieval (NGR) and, the other system will be used for the retrieval of large containers and is referred to as Emission Unit 1322, Portable Enclosure System (PES). These emission units will be used when retrieval activities exceed EU 486: 200 Area diffuse and fugitive contamination limits. In addition there are 3 types of drum venting systems and HEPA-filtered Vacuum Units (HVU) used with these venting systems and also during excavation and retrieval.
See the following emission units for a detailed description of additional controls/conditions and limits under this approval:
EU 455 HEPA Vacuums
EU 486 200 Area Diffuse/ Fugitive; Operation of the Transuranic Waste Retrieval Project
EU 755 Mobile Drum Venting System (Active Ventilation) (MDVS)

EU 756	Mobile Drum Venting System (Passive Ventilation) (MDVS)
EU 1181	Categorical Drum Venting System 2 (DVS2)
EU 1322	Portable Enclosure System #1 (PES)
EU 1326	Vapor Extraction System (VES)
EU 1327	Next Generation Retrieval (NGR)

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 3.92E+01 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	4.30E-07	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Alpha release rate based on Am-241 + Progeny. It is recognized that other radionuclides may be present in very limited quantities.
See condition; Alternate Release Rate Approval, Release Rates: Installation of Drum Vents.

B/G - 0	2.20E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Beta/Gamma release rate based on Cs-137 + Progeny. It is recognized that other radionuclides may be present in very limited quantities.
See condition; Alternate Release Rate Approval, Release Rates: Installation of Drum Vents.

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	Am - 243	Cf - 252	Cm - 244	Cs - 134
Cs - 137	Eu - 152	Eu - 154	Pu - 238	Pu - 239/240
Pu - 241	Sr - 90	U - 234	U - 235	U - 236
U - 238				

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) PROCESS DESCRIPTION: VENTING OF CONTAINERS
This approval applies to these additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

All work will be performed to meet ALARA practices and will be conducted according to applicable operating procedures, radiological control procedures, and radiological work permit (RWPs).
Vent filters will continue to be installed in designated containers via one of the drum venting systems described in this process description. These systems will ensure personnel and environmental protection. The methodology will require penetrating the container and inserting a vent. Penetration of the lid will be accomplished by either drilling through the lid or puncturing the lid with a filter dart (using Dart System). Container venting systems are described in the following text. Designated drums slated for venting will be vented with the Mobile Drum Venting System (MDVS), Drum Venting System 2 (DVS2), or other venting methods. (WAC 246-247-040(5) and WAC 246-247-060(5))

5) PROCESS DESCRIPTION MDVS
This approval applies to these additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The MDVS is enclosed in a trailer containing equipment allowing an operator to sample or vent the drum and install a Nucfi®l or equivalent filter. Potential emissions from MDVS operations are point source emissions controlled as described in VENTING OF CONTAINERS, MDSV. Inside the MDVS trailer, bulging or potentially pressurized drums may be overpacked, placed in restraints and then vented. (WAC 246-247-040(5) and WAC 246-247-060(5))

6) ABATEMENT TECHNOLOGY: MDVS

The MDVS has a testable HEPA type filter for all emissions resulting from screening headspace gas sampling (HSGS) for hydrogen content and NucFil or equivalent filter installation. Metal filings or other residual cuttings from the drilling/filter installation process are removed from the drum lid with a HEPA vacuum. The test compartment is ventilated with a HEPA type filter and is designed to withstand a deflagration as described in the performance specification for this venting system (HNF 12180, Venting System for Low Level Burial Grounds Performance Specification).

The average annual flow for the exhaust port for the venting and HSGS operations is approximately 1 E- 4 meters ^3 /s. (consisting of a continuous flow in the milliliter per second range, with intermittent spikes in the liter per second range). The HEPA vacuum exhausts intermittently into the test chamber (at less than 300 cfm or 1.4 E-1 meters^3 /s.). (WAC 246-247-040(5) and WAC 246-247-060(5))

7) ALTERNATIVE APPROVAL-Annual Replacement

The system shall be built to meet NQA-1 requirements and shall be aerosol tested annually using ANSI N-510 as guidance for non-ANSI N-509 systems. If in-field aerosol testing is not feasible, an approved alternative is given to replace the filters on an annual basis with the manufacturer tested and certification of HEPA filter with a tested rating of 99.97% efficiency. Records of this testing shall be maintained on file. (WAC 246-247-040(5), WAC 246-247-060(5), WAC 246-247-075(4))

8) ALTERNATIVE RELEASE RATE APPROVAL, RELEASE RATES: INSTALLATION OF DRUM VENTS

These alternative release fractions are approved for this emission unit

A maximum of 9,000 containers of waste will be processed per year using the MDVS and/or DVS2s venting systems. The processing rate is designed to reflect potential emissions during an average handling time of 60 minutes per container. One drum is processed at a time per DVS or DVS2. Using a release fraction of 1.0 E-03 for particulates and a time factor of 1.03 (60 minutes per container multiplied by 9,000 containers and divided by 526,000 minutes per year),

The predicted release rate from the MDVS (active vent) without any emissions control equipment is 2.1 E-02 Ci/year and the predicted release rate with emissions control equipment is 1.0 E-05 Ci/year. The predicted release rates for the representative radionuclides Am-241+Progeny and Cs-137+Progeny are as follows:

Unabated PTE;	Am-241+Progeny	1.3E-03 Ci/yr	:	Cs-137+Progeny	1.9E-02 Ci/yr
Abated PTE	Am-241+Progeny	6.4E-07 Ci/y	:	Cs-137+Progeny	9.6E-06 Ci/yr

The predicted release rate (unabated) for using the MDVS (passive vent) without any emissions control equipment is 2.2E-05 Ci/yr and the predicted release rate (abated) with emissions control equipment is 2.2E-05 Ci/yr. The predicted release rates for the representative radionuclides Am 241+Progeny and Cs-137+Progeny are as follows:

Unabated PTE;	Am-241+Progeny	4.3E-07 Ci/yr	:	Cs-137+Progeny	2.2E-05 Ci/yr
Abated PTE	Am-241+Progeny	4.3E-07 Ci/y	:	Cs-137+Progeny	2.2E-05 Ci/yr

The passive vent of the MDVS exhausts potential emissions from the use of the HEPA Vacuum mounted in the test chamber to collect metal filings after installation of a NucFil or equivalent filter. Release rates are calculated by multiplying surface area vacuumed by the contamination level. An estimate of the release rate is calculated by assuming the surface area of the boot that covers the drum lid during the filter installation process (8.3 square inches) multiplied by 9,000 drums with an average contamination level of 10,000 dpm/100 cm^2 beta/gamma and 200 dpm/100 cm^2 alpha. Using a release fraction of 1.0 for the HEPA vacuum use, the potential release rates from using the DVS is 4.3E-7 Ci/yr americium-241 and 2.2E-05 Ci/yr cesium-137. (WAC 246-247-040(5), WAC 246-247-060(5), WAC 246-247-075(4))

9) WDOH NOTIFICATION - Drum vent failure

The department shall be notified via email or the established procedures in the Environmental Notification program within 24 hours of all drum vents that fail to be installed properly and smears show >2,000 dpm/100 cm^2 alpha or >100,000 dpm/100 cm^2 beta/gamma removable contamination (an example of a "failure" is a pressure release that blows past the seat of the boot or a deflagration). (WAC 246-247-040(5) and WAC 246-247-060(5))

10) WDOH NOTIFICATION- Deflagration

The test compartment is passively ventilated with a HEPA-type filter and is designed to withstand a deflagration as described in the performance specification for this venting system. If deflagration occurs, all activities associated with this license shall cease and the department shall be notified via email or the established procedures in the Environmental Notification program. (WAC 246-247-040(5) and WAC 246-247-060(5))

11) WDOH NOTIFICATION - Loss of containment

WDOH will be notified per WAC 246-247-080(5) via email or the established procedures in the Environmental Notification program if a loss of containment occurs (dropping, spilling, puncturing a container, or otherwise encountering loss of integrity where contamination escapes containment), which exceeds 100,000 dpm/100 cm^2

beta/gamma or 2,000 dpm/100 cm^2 alpha removable contamination. (WAC 246-247-040(5) and WAC 246-247-060(5))

12) CONTAMINATION CONTROL- Removable contamination
Fixatives or other controls will be employed if removable contamination levels exceed 100,000 dpm/100 cm^2 beta/gamma or exceed 2,000 dpm/100 cm^2 alpha. (WAC 246-247-040(5) and WAC 246-247-060(5))

13) CONTAMINATION CONTROL- Post filter installation
The top of the drum shall be surveyed while inside the DVS, after installation of the NucFil® filter. If removable contamination is found, the drum lid shall be decontaminated before removal from the DVS. The drum shall be surveyed prior to leaving or immediately after removal from the DVS. Once removed from the DVS, the drum must be immediately decontaminated or contained such that the drum is free of removable contamination (i.e., less than 20 dpm/ 100 cm^2 alpha and less than 1000 dpm/100 cm^2 beta/gamma). Decontamination at the LLBG is attempted in a graded approach (dry rags, wet rags, decontamination solutions, fixatives, or over packing if other methods prove unsuccessful). (WAC 246-247-040(5) and WAC 246-247-060(5))

Emission Unit ID: 855

200E P-296A046-001

296-A-46

This is a MAJOR, ACTIVELY ventilated emission unit.

241-AW TANK FARM

Emission Unit Information

Stack Height: 27.88 ft. 8.50 m. Stack Diameter 0.84 ft. 0.26 m.

Average Stack Effluent Temperature: 94 degrees Fahrenheit. 34 degrees Celsius.

Average Stack ExhaustVelocity: 47.52 ft/second. 14.48 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Deentrainer	1	Operational at all times, when the exhauster is in use.
	Heater	1	Operational at all times, when the exhauster is in use.
	Prefilter	1	
	HEPA	2	In series.
	Fan	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	Sr-90, Cs-137, Am-241, Y-90, Cs-134, Pa-231, Pu-238, Pu-239, Pu-240, Pu-241	Continuous

Sampling Requirements Record sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a primary exhauster used to support tank farm operations by ventilating the DSTs in 241-AW Tank Farm during storage, maintenance, and normal operations. Any activity other than storage, maintenance, and normal operations will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. This emission unit may be operated independently or concurrently with emission unit 296-A-47. The emission unit operates intermittently.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operation of New Ventilation Systems in AN and AW Tank Farms. (Replaced NOC ID 802)	AIR 11-1004	10/10/2011	809

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 2.60E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.33E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The 296-A-44 and 296-A-45 shall ventilate the 241-AN Double Shell Tank (DST) Farm which consists of seven individual DSTs. The 296-A-46 and 296-A-47 shall ventilate the 241-AW Double Shell Tank (DST) Farm which

consists of six individual DSTs. The DSTs are fabricated as two concentric tanks surrounded by a concrete shell. The inner tank containing the waste is 75 feet in diameter and 46.8 feet high at the crown. Each tank stores 1.14E6 gallons. The DSTs are used for storage, treatment, retrieval, and disposal of the waste contained in the tanks, as well as transfers to the Waste Treatment Plant.

The 296-A-44, 296-A-45, 296-A-46 and 296-A-47 ventilation systems serve to remove heat, and serve as containment systems for radioactive particulates present in the tank headspace, they ventilate/remove flammable gases and vapors that evolve from the liquid surface in the DSTs. The ventilation systems do this by drawing air into the tank vapor space. After the air leaves the vapor space the air is conditioned by the ventilation system. It removes entrained moisture, the relative humidity is reduced, and particulates are filtered out. Before discharge of this air to the atmosphere from the stack, the air is monitored and sampled for radionculide particulates.

Occasionally, the exhausters may be shut down for testing and sampling purposes to evaluate waste conditions, meteorological effects, and/or ventilation configuration on individual DST Ventilation rates.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	1.29E+02	Am - 241	9.67E+04	Am - 243	1.34E+01
Ba - 137 m	1.61E+07	C - 14	4.38E+02	Cd - 113 m	7.25E+03
Cm - 242	6.99E+01	Cm - 243	7.92E+00	Cm - 244	2.25E+02
Co - 60	4.13E+03	Cs - 134	1.08E+04	Cs - 137	1.70E+07
Eu - 152	1.01E+03	Eu - 154	4.26E+04	Eu - 155	4.42E+04
H - 3	2.47E+03	I - 129	8.13E+00	Nb - 93 m	1.77E+03
Ni - 59	7.44E+02	Ni - 63	7.02E+04	Np - 237	5.18E+01
Pa - 231	2.70E+02	Pu - 238	2.59E+03	Pu - 239	2.71E+04
Pu - 240	4.86E+03	Pu - 241	6.00E+04	Pu - 242	3.77E-01
Ra - 226	2.38E+02	Ra - 228	3.65E+01	Ru - 106	1.02E+03
Sb - 125	2.04E+04	Se - 79	5.38E+01	Sm - 151	1.48E+06
Sn - 126	2.21E+02	Sr - 90	2.08E+07	Tc - 99	6.09E+03
Th - 229	2.49E+01	Th - 232	6.08E+00	U - 232	2.73E+01
U - 233	4.46E+02	U - 234	6.14E+01	U - 235	2.34E+00
U - 236	2.73E+00	U - 238	5.06E+01	Y - 90	2.08E+07
Zr - 93	1.80E+03				

4) Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1. HEPA filters shall have a minimum efficiency of 99.95%.
5) Prior to operation of the ventilation system a leak test of the entire train including the ductwork from the exit of the tank to the entrance to the stack shall be performed meeting the requirements called out in ASME AG-1.
6) The Annual Possession Quantity shall be tracked on a WDOH approved log.
7) The ductwork between the de-entrainer and heater, along with the filter housings shall be insulated.

8) The effluent monitoring and sampling system shall meet the requirements of ANSI N13.1-1999. A written technical basis document required by Section 4 of ANSI N13.1-1999 shall be provided to WDOH for review and approval.

9) The exhauster shall be operational during all waste transfer, waste disturbing, or particulate generating activities.

10) Tank waste will be maintained at a ph of 8 or greater to ensure that the radionuclide C-14 is not emitted as a gas. This condition will be met by maintaining tank sampling and tank analysis documents in accordance with the "Waste Chemistry Limits" outlined in the document "Operating Specifications for the Double-Shell Storage Tanks, OSD-T-151-00007".

11) When the tracer gas tests and data collection are conducted on the AN and AW tank farms the tracer gas to be used during the tests is helium.

12) When the tracer gas tests and data collection are conducted on the AN and AW tank farms the tracer gas helium will be injected into the double shell tanks at a rate not to exceed 10 cubic feet per minute.

13) When the tracer gas tests and data collection are conducted on the AN and AW tank farms the passive filtered vents will be in the open position. If a tracer gas test requires the passive filtered vents to be closed notification to the Washington State Department of Health will be made indicating when the vents will be closed and for how long.

14) When the tracer gas tests and data collection are conducted on the AN and AW tank farms no waste disturbing activities will occur.

Emission Unit ID: 856

200E P-296A047-001

296-A-47

This is a MAJOR, ACTIVELY ventilated emission unit.

241-AW TANK FARM

Emission Unit Information

Stack Height: 27.88 ft. 8.50 m. Stack Diameter 0.84 ft. 0.26 m.

Average Stack Effluent Temperature: 94 degrees Fahrenheit. 34 degrees Celsius.

Average Stack ExhaustVelocity: 47.52 ft/second. 14.48 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Deentrainer	1	Operational at all times, when the exhauster is in use.
	Heater	1	Operational at all times, when the exhauster is in use.
	Prefilter	1	
	HEPA	2	In series.
	Fan	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	Sr-90, Cs-137, Am-241, Y-90, Cs-134, Pa-231, Pu-238, Pu-239, Pu-240, Pu-241	Continuous

Sampling Requirements Record sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a primary exhauster used to support tank farm operations by ventilating the DSTs in 241-AW Tank Farm during storage, maintenance, and normal operations. Any activity other than storage, maintenance, and normal operations will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. This emission unit may be operated independently or concurrently with emission unit 296-A-46. The emission unit operates intermittently.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operation of New Ventilation Systems in AN and AW Tank Farms. (Replaced NOC ID 802)	AIR 11-1004	10/10/2011	809

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 2.60E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.33E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The 296-A-44 and 296-A-45 shall ventilate the 241-AN Double Shell Tank (DST) Farm which consists of seven individual DSTs. The 296-A-46 and 296-A-47 shall ventilate the 241-AW Double Shell Tank (DST) Farm which

consists of six individual DSTs. The DSTs are fabricated as two concentric tanks surrounded by a concrete shell. The inner tank containing the waste is 75 feet in diameter and 46.8 feet high at the crown. Each tank stores 1.14E6 gallons. The DSTs are used for storage, treatment, retrieval, and disposal of the waste contained in the tanks, as well as transfers to the Waste Treatment Plant.

The 296-A-44, 296-A-45, 296-A-46 and 296-A-47 ventilation systems serve to remove heat, and serve as containment systems for radioactive particulates present in the tank headspace, they ventilate/remove flammable gases and vapors that evolve from the liquid surface in the DSTs. The ventilation systems do this by drawing air into the tank vapor space. After the air leaves the vapor space the air is conditioned by the ventilation system. It removes entrained moisture, the relative humidity is reduced, and particulates are filtered out. Before discharge of this air to the atmosphere from the stack, the air is monitored and sampled for radionculide particulates.

Occasionally, the exhausters may be shut down for testing and sampling purposes to evaluate waste conditions, meteorological effects, and/or ventilation configuration on individual DST Ventilation rates.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	1.29E+02	Am - 241	9.67E+04	Am - 243	1.34E+01
Ba - 137 m	1.61E+07	C - 14	4.38E+02	Cd - 113 m	7.25E+03
Cm - 242	6.99E+01	Cm - 243	7.92E+00	Cm - 244	2.25E+02
Co - 60	4.13E+03	Cs - 134	1.08E+04	Cs - 137	1.70E+07
Eu - 152	1.01E+03	Eu - 154	4.26E+04	Eu - 155	4.42E+04
H - 3	2.47E+03	I - 129	8.13E+00	Nb - 93 m	1.77E+03
Ni - 59	7.44E+02	Ni - 63	7.02E+04	Np - 237	5.18E+01
Pa - 231	2.70E+02	Pu - 238	2.59E+03	Pu - 239	2.71E+04
Pu - 240	4.86E+03	Pu - 241	6.00E+04	Pu - 242	3.77E-01
Ra - 226	2.38E+02	Ra - 228	3.65E+01	Ru - 106	1.02E+03
Sb - 125	2.04E+04	Se - 79	5.38E+01	Sm - 151	1.48E+06
Sn - 126	2.21E+02	Sr - 90	2.08E+07	Tc - 99	6.09E+03
Th - 229	2.49E+01	Th - 232	6.08E+00	U - 232	2.73E+01
U - 233	4.46E+02	U - 234	6.14E+01	U - 235	2.34E+00
U - 236	2.73E+00	U - 238	5.06E+01	Y - 90	2.08E+07
Zr - 93	1.80E+03				

4) Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1. HEPA filters shall have a minimum efficiency of 99.95%.
5) Prior to operation of the ventilation system a leak test of the entire train including the ductwork from the exit of the tank to the entrance to the stack shall be performed meeting the requirements called out in ASME AG-1.
6) The Annual Possession Quantity shall be tracked on a WDOH approved log.
7) The ductwork between the de-entrainer and heater, along with the filter housings shall be insulated.

8) The effluent monitoring and sampling system shall meet the requirements of ANSI N13.1-1999. A written technical basis document required by Section 4 of ANSI N13.1-1999 shall be provided to WDOH for review and approval.

9) The emission unit shall meet the quality assurance requirements of 40 CFR 61 Subpart H, as effective on October 9, 2002.

10) The exhauster shall be operational during all waste transfer, waste disturbing, or particulate generating activities.

11) Tank waste will be maintained at a ph of 8 or greater to ensure that the radionuclide C-14 is not emitted as a gas. This condition will be met by maintaining tank sampling and tank analysis documents in accordance with the "Waste Chemistry Limits" outlined in the document "Operating Specifications for the Double-Shell Storage Tanks, OSD-T-151-00007".

12) When the tracer gas tests and data collection are conducted on the AN and AW tank farms the tracer gas to be used during the tests is helium.

13) When the tracer gas tests and data collection are conducted on the AN and AW tank farms the tracer gas helium will be injected into the double shell tanks at a rate not to exceed 10 cubic feet per minute.

14) When the tracer gas tests and data collection are conducted on the AN and AW tank farms the passive filtered vents will be in the open position. If a tracer gas test requires the passive filtered vents to be closed notification to the Washington State Department of Health will be made indicating when the vents will be closed and for how long.

15) When the tracer gas tests and data collection are conducted on the AN and AW tank farms no waste disturbing activities will occur.

Emission Unit ID: 878

200W P-BULKVIT-001

Bulk Vit Demo Exhauster

This is a MAJOR, ACTIVELY ventilated emission unit.

Supplemental Treatment Test Demonstration Facility

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Quench		One in operation
	Mist Eliminator		One in operation
	Heater		One in operation
	HEPAs		Two banks of HEPAs in series.

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B, Method 114	Cs-137, C-14, Sr-90, Tc-99	Continuous

Sampling Requirements Record Sample collected biweekly, and a continuous air monitor for beta, and gamma.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a building/facility exhauster that is use to ventilate building and facility operations such as but not limited to process vessels, contaminated rooms, cells, glove boxes, hoods, abandoned facilities awaiting decommissioning, and vaults that support tank farm operations, maintenance and surveillance activities for tank farms. The exhauster can be used to support current surveillance, maintenance activities, operations or decommissioning, decontamination, and cleanup activities within the building/facility. Many of the activities other normal surveillance, maintenance, and operation support will be or are regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is a building/facility exhauster ventilation system that operates intermittently. This exhauster is not operational at this time.

Emission Unit ID: 885

200 W-296P049-001

296-P-49

This is a MAJOR, ACTIVELY ventilated emission unit.

Tank Farms

Emission Unit Information

Stack Height: 28.00 ft. 8.53 m. Stack Diameter 0.83 ft. 0.25 m.

Average Stack Effluent Temperature: 90 degrees Fahrenheit. 32 degrees Celsius.

Average Stack ExhaustVelocity: 91.72 ft/second. 27.96 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Deentrainer	1	Operational at all times, when the exhauster is in use.
	Heater	1	Operational at all times, when the exhauster is in use.
	Prefilter	1	
	HEPA	2	In series.
	Fan	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	Cs-137, Sr-90	Continuous

Sampling Requirements Record sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a skid/mobile type portable exhauster used to support tank farm operations, such as but not limited to, waste characterization, waste retrieval, decommissioning, deactivation, maintenance, and construction and operation support activities. The emission unit is a portable exhauster that operates intermittently. The exhauster is not operational at this time.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Categorical Tank Farm Facility Waste Retrieval and Closure: Phase II Waste Retrieval Operations (Replaced NOC ID 816)	AIR 12-307	2/23/2012	825

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.31E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.61E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted.

   The operation of the waste retrieval system(s) for the removal of radioactive wastes from all 149 Single Shell Tanks (SST) at the Hanford Site.

   SALTCAKE DISSOLUTION WASTE RETRIEVAL SYSTEM

The saltcake dissolution waste retrieval system may be used to retrieve soluble saltcake waste. This method retrieves the soluble portion of the waste only, resulting in very few of the solids being pumped from the tank. The saltcake dissolution waste retrieval system deployed in the SSTs is for water, chemical agent, or catalyst liquid to be added to the tank using a variety of spray nozzles or "sprinklers". The approach is to sprinkle the waste surface with water, chemical agent, or catalyst liquid. The added water, chemical agent, or catalyst liquid must stay in contact with the saltcake for a long enough period of time for the brine to become saturated. Once the brine is saturated, it is pumped from the SST to a receiver tank, staging tank, storage DST or other staging/storage vessel associated with the supplemental treatment, packaging or disposal. Salt solution will be removed using the existing saltwell pump or other pump placed into the tank.

A tank not equipped with a saltwell pump, a transfer pump (progressive cavity, vertical turbine) can be installed and operated.

Remotely directable water distribution devices will be located in risers spaced as far apart as practical. A combination of spraying waster, chemical agent, or catalyst liquid to dissolve the saltcake can be used in conjunction with directing a flow of water or recirculating water at the waste to move it to the pump suction to allow the pumping of waste from the tank. Recirculated waste from the pump may be sent back to the tank as an alternative to using water to direct dissolution waste to the pump suction.

MODIFIED SLUCING WASTE RETRIEVAL SYSTEM

Modified sluicing can be used for some SST waste retrieval. Modified sluicing is the introduction of liquid at low to moderate pressures and volumes into the waste. The liquid dissolves and breaks apart solid materials and suspends them in the waste slurry. A transfer pump installed in the tank provides the motive force to transfer the liquid slurry to a receiver tank.

Modified sluicing introduces sluice liquid in a controlled fashion using multiple sluicing nozzles at varying pressures and flows, then pumps out the resultant waste slurry. This maintains minimal liquid inventories within the tank at all times. The liquids that could be used in modified sluicing include water, recirculated supernatant/water from the receiving Double Shell Tank, recirculated supernatant/water, chemical agent or catalyst liquid.

VACUUM WASTE RETRIEVAL SYSTEM

A vacuum waste retrieval system can be used for waste retrieval activities in the (SSTs). The vacuum waste retrieval system is introduced into the SSTs by means of an articulating mast system (AMS). The AMS has a horizontal reach and rotational capabilities of 360 degrees. The AMS has a retracted position and can be extended vertically. Air is mixed at the suction end of the AMS enabling the required vertical lift for the waste to a topside receiver tank, batch vessel or a staging SST, storage DST, or other staging/storage vessels associated with supplemental treatment, packaging or disposal.

The AMS will be deployed through and attached to standard riser flanges that are available on the SSTs. Cameras can also be installed in other risers for in-tank viewing and control of the AMS.

For the 200-series tanks in the 241-C, 241-U, 241-B and 241-T Tank Farms a vacuum retrieval process tank, staging tank, staging SST, storage DST or other staging/storage vessel will be deployed. The receiver tank will receive waste in batches from whichever tank is connected into the vacuum retrieval system. The vacuum pressure used to draw up the waste from the tank to the receiver tank is relieved back into the SST being retrieved.

MOBILE RETRIEVAL SYSTEM

A Mobile Retrieval System (MRS) can be used to retrieve waste from some SSTs. The MRS consists of two in-tank systems. The first is a robotic crawler inserted through one riser the second is an AMS inserted through a second riser. The AMS retrieves the sludge from the tank using a vacuum with assisting pneumatic conveyance. The AMS vacuum tube has a horizontal reach and can be extended to the bottom of the tank. The arm rotates 360 degrees. The vacuum will be directed through the AMS in the tank to the end effector, which is in contact with the waste. The pneumatic conveyance-assisted vacuum retrieval system will draw the waste up through the vacuum to the waste vessel in the vessel skid in batches. The AMS is then valved out while the waste vessel is

emptied and pumped out through the over ground transfer lines to a DST, a staging SST or other treatment/disposal options. When the waste vessel is nearly empty, the transfer line will be valved out and the AMS will be valved back in and another batch of waste will be removed from the tank. This process will be repeated until waste near the center of the tank is removed. The robotic crawler will be remotely controlled to move and/or wash waste toward the center of the tank.

The robotic crawler is equipped with a plow blade at the front for pushing/pulling wastes, a screw pump to jet wastes through a small nozzle towards the center of the tank, the ability to direct hot or cold water through the same nozzle to wash wastes off of in-tank equipment, dissolve waste agglomerations in the tank, and wash waste toward the center of the tank for removal.
Any new retrieval methods or changes to processes will need to be provided to WDOH in a revised NOC prior to implementation.

MOBILE ARM RETRIEVAL SYSTEM

The Mobile Arm Retrieval System (MARS) is a waste retrieval system used to retrieve waste from single-shell tanks (SSTs) and move the waste to the double-shell tanks (DSTs). The MARS employs two design options similar to currently permitted systems: 1) a sluicing retrieval option which is intended for retrieval of non1eaker tanks and 2) a vacuum retrieval option is intended for retrieval of assumed 1eaker tanks. Both options use an arm and sluicing jets and/or a high pressure water scarifier to break up the waste. The sluicer uses waste supernatant recycled from the DST to form a liquid jet using a nozzle. The scarifier uses filtered, pressurized water that comes from a high pressure water skid.

The equipment portion of the MARS includes a vertical, carbon steel mast (square cross section) as the main structural member. Attached to the vertical mast is a carbon fiber robotic arm. The arm is attached to a traveler that raises and lowers the arm relative to the vertical mast. The arm rotates 360 degrees - 380 degrees on a turntable located in the pit box. The arm also pivots up and down from an elbow at the traveler (hydraulic system) and extends and retracts (hydraulic system). The end of the arm articulates. The arm thus provides for a large range of motion such that the sluicing devices (recycle sluicer, water scarifier) located at the end of the arm can aim at most portions of the tank and from varying (e.g., short) distances.

The containment box which encloses the MARS will be ventilated by two parallel installed radial filters. The purpose of these filters is to minimize contamination from migrating up from the tank into the containment box via the open space on the large riser during retrieval operations. Minimization of contamination inside the containment box is desired should entry into the box ever be required for repairs. Inflow through these filters during retrieval is estimated to reach up to 60 cubic feet per minute (cfm). A valve will be installed between the filters and the containment box so filters can be isolated from the box. However, because the location of the valve will be approximately 12 feet above ground and difficult to reach without properly installed and inspected scaffolding, the valve will be left open at all times until retrieval of the tank is complete. Once retrieval is complete the valve will be closed.

REMOTE WATER LANCE

The completion of tank retrieval may also be aided by a Remote Water Lance (RWL) that is a high pressure water device, or hydro laser. Alternatively, a High Pressure Mixer (HPM) may be used in the same capacity. The systems will consist of both ex-tank and in-tank components. The ex-tank components will be comprised of; high pressure systems, operating controls, cables, and hoses. The in-tank components will be comprised of; umbilical, in-tank vehicle, high pressure nozzle(s), or the high pressure mixer.

The high pressure water systems will provide the water at the desired pressure, not to exceed 37,000 psig. A conditioning system will be used to filter the raw water entering the skid to ensure that no abrasive materials are entrained in the water. The water volumetric flow rate will be on the order of 4 to 18 gpm for the HPM and from 6 to 15 gpm for the RWL. The operating controls will be located in a control trailer outside of the farm fence. The cables and hoses will connect hydraulically powered in-tank vehicle with the ex-tank controls and water skid via the umbilical. The HPM consists of an adjustable height pipe with two pairs of opposed, high pressure, low volume water orifices located on the bottom of the pipe. The mixer is capable of being rotated 360 degrees and has an adjustable height range of approximately 7 feet. The positioning of the mixer is performed remotely using a

hydraulic system. Additionally, the mixer has a single orifice on the bottom of the unit that can be used as an operational or installation aid. The in-tank vehicle will house one to four high pressure water nozzles. The RWL will be operated with the nozzle submerged to avoid aerosols in the tank. A rupture disc will be used to prevent reaching pressures above 37,000 psig.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	5.99E+00	Am - 241	8.68E+03	Am - 243	3.39E-01
Ba - 137 m	4.26E+07	C - 14	6.25E+02	Cd - 113 m	4.95E+03
Cm - 242	1.97E+01	Cm - 243	1.80E+00	Cm - 244	1.90E+01
Co - 60	2.52E+03	Cs - 134	3.44E+04	Cs - 137	4.89E+07
Eu - 152	8.49E+02	Eu - 154	1.45E+04	Eu - 155	9.54E+03
H - 3	5.95E+03	I - 129	2.95E+01	Nb - 93 m	1.01E+03
Ni - 59	1.05E+02	Ni - 63	9.30E+03	Np - 237	9.50E+01
Pa - 231	1.25E+01	Pu - 238	1.65E+02	Pu - 239	3.17E+03
Pu - 240	5.36E+02	Pu - 241	4.80E+03	Pu - 242	3.34E-02
Ra - 226	1.27E-02	Ra - 228	1.15E+01	Ru - 106	1.22E-02
Sb - 125	1.73E+04	Se - 79	6.36E+01	Sm - 151	8.93E+05
Sn - 126	2.59E+02	Sr - 90	2.91E+06	Tc - 99	2.24E+04
Th - 229	4.20E-01	Th - 232	1.26E+00	U - 232	3.66E+00
U - 233	3.02E+01	U - 234	1.07E+01	U - 235	4.44E-01
U - 236	2.73E-01	U - 238	9.86E+00	Y - 90	2.91E+06
Zr - 93	1.25E+03				

4) ABATEMENT TECHNOLOGY- Ductwork insulation
All ventilation ductwork from the exit of the tank to the inlet of the exhauster filter housing shall be insulated. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

5) ABATEMENT TECHNOLOGY- Annual testing
Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1 Section TA. HEPA filters shall have a minimum efficiency of 99.95%. (WAC 246-247-040(5)), (WAC 246-247-060(5)) and (WAC 246-247-075(2))

6) ABATEMENT TECHNOLOGY- Filter protection
Relative humidity shall be monitored, at least once a month, downstream of the heater and prior to the HEPA filters to ensure the air stream does not exceed 70% relative humidity. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

7) RELEASE RATES - WDOH Log
The annual possession quantity shall be tracked on a WDOH approved log. (WAC 246-247-080(7))

8) WDOH ALTERNATE APPROVAL- Standards
General WAC 246-247 technology standard exemptions justified and documented in RPP-19233, WAC 246-247 technology standard exemption justification for waste tank ventilation systems, may be applied to Phase II NOC

retrieval exhauster operations. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

9) ALTERNATE APPROVAL - NDA Method
A pre-operational NDA of the exhauster(s) HEPA filters and a post-operational NDA will be performed the first time each of the four waste retrieval methods (mobile retrieval system, vacuum retrieval, supernatant sluicing, and saltcake dissolution with supernatant) when placed into service. The post-operational NDA should occur after one cycle or phase of waste retrieval operation is completed, a method replaces another method during a cycle/phase or six months from the in-service date, whichever occurs first. The facility may opt to replace the exhauster's HEPA filters prior to placing a new waste retrieval method in service and eliminate the pre-operational NDA. (WAC 246-247-040(5)), (WAC 246-247-060(5)) and (WAC 246-247-075(4))

10) WDOH NOTIFICATIONS - Differential pressure out of range
The differential pressure readings for the pre-filters and both stages of HEPA filters shall be monitored, recorded and trended daily. The exhaust system will be configured to automatically shut down at 5.9 inches of water (or less) pressure differential across the HEPA filter(s) for the first filter in series or multiple filters in series as indicated by the local readout. If the final HEPA filter in the system exceeds 5.9 inches of water pressure differential across the filter, the cause will be determined and WDOH will be notified through normal established channels. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

11) STANDARDS - stack monitoring systems
The emission unit stack monitoring system shall meet the requirements of ANSI/HPS N13.1-1999 including the stack monitoring system inspection requirements. (WAC 246-247-040(5)), (WAC 246-247-060(5)) and (WAC 246-247-075(2))

12) STANDARDS - Startup leak testing
New or altered sections of ductwork shall be leak tested in accordance with the requirements of ASME AG-1 Section SA prior to use. Normal maintenance of the system (e.g. replacing gaskets, replacement of in kind components, flow profile analysis in the ductwork, air sampling from test ports in the duct and demister flushing) are not considered to be alteration. (WAC 246-247-040(5)), (WAC 246-247-060(5)) and (WAC 246-247-075(2))

13) CONTAMINATION CONTROL- Max operating pressure
During waste retrieval operations the maximum pressure for any waste retrieval method shall not exceed 37,000 psig. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

14) CONTAMINATION CONTROL- Monthly Radiological Survey
While the exhauster is operating, and/or tank waste retrieval is underway, all ductwork connections shall have a radiological survey performed monthly to ensure ductwork connections are not degrading. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

15) CONTAMINATION CONTROL exhauster alternate usages
The exhauster will be operated occasionally during periods of non-retrieval in support of tank waste retrieval preparation activities and to aid in evaporation of residual flush water or sluicing liquid that remains in the tank. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

16) CONTAMINATION CONTROL- Active ventilation
All receiver tanks (including waste retrieval process tanks for tank TRU retrieval (staging) SSTs, storage DSTs, or other staging/storage vessels, but not including batch vessel supporting vacuum retrieval) shall have active ventilation during waste receipt, unless alternative controls are documented and approved by WDOH. If the exhauster goes down due to off-normal conditions while retrieval is occurring, the system should be placed into a safe configuration, minimizing dose to personnel and the environment. These steps may include: flushing the lines, pumps, and the waste transfer system of slurry solution using DST supernatant or water; pumping down the tank liquid to minimize remaining liquids; and halting waste retrieval. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

Emission Unit ID: 886

200 W-296P050-001

296-P-50

This is a MAJOR, ACTIVELY ventilated emission unit.

Tank Farms

Emission Unit Information

Stack Height: 28.00 ft. 8.53 m. Stack Diameter 0.83 ft. 0.25 m.

Average Stack Effluent Temperature: 90 degrees Fahrenheit. 32 degrees Celsius.

Average Stack ExhaustVelocity: 91.72 ft/second. 27.96 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Deenttrainer	1	Operational at all times, when exhauster is in use.
	Heater	1	Operational at all times, when exhauster is in use.
	Prefilter	1	
	HEPA	2	In series.
	Fan	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	Cs-137, Sr-90	Continuous

Sampling Requirements Record sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a skid/mobile type portable exhauster used to support tank farm operations, such as but not limited to, waste characterization, waste retrieval, decommissioning, deactivation, maintenance, and construction and operation support activities. The emission unit is a portable exhauster that operates intermittently. The exhauster is not operational at this time.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Categorical Tank Farm Facility Waste Retrieval and Closure: Phase II Waste Retrieval Operations (Replaced NOC ID 816)	AIR 12-307	2/23/2012	825

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.31E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.61E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted.

   The operation of the waste retrieval system(s) for the removal of radioactive wastes from all 149 Single Shell Tanks (SST) at the Hanford Site.

   SALTCAKE DISSOLUTION WASTE RETRIEVAL SYSTEM

The saltcake dissolution waste retrieval system may be used to retrieve soluble saltcake waste. This method retrieves the soluble portion of the waste only, resulting in very few of the solids being pumped from the tank. The saltcake dissolution waste retrieval system deployed in the SSTs is for water, chemical agent, or catalyst liquid to be added to the tank using a variety of spray nozzles or "sprinklers". The approach is to sprinkle the waste surface with water, chemical agent, or catalyst liquid. The added water, chemical agent, or catalyst liquid must stay in contact with the saltcake for a long enough period of time for the brine to become saturated. Once the brine is saturated, it is pumped from the SST to a receiver tank, staging tank, storage DST or other staging/storage vessel associated with the supplemental treatment, packaging or disposal. Salt solution will be removed using the existing saltwell pump or other pump placed into the tank.

A tank not equipped with a saltwell pump, a transfer pump (progressive cavity, vertical turbine) can be installed and operated.

Remotely directable water distribution devices will be located in risers spaced as far apart as practical. A combination of spraying waster, chemical agent, or catalyst liquid to dissolve the saltcake can be used in conjunction with directing a flow of water or recirculating water at the waste to move it to the pump suction to allow the pumping of waste from the tank. Recirculated waste from the pump may be sent back to the tank as an alternative to using water to direct dissolution waste to the pump suction.

MODIFIED SLUCING WASTE RETRIEVAL SYSTEM

Modified sluicing can be used for some SST waste retrieval. Modified sluicing is the introduction of liquid at low to moderate pressures and volumes into the waste. The liquid dissolves and breaks apart solid materials and suspends them in the waste slurry. A transfer pump installed in the tank provides the motive force to transfer the liquid slurry to a receiver tank.

Modified sluicing introduces sluice liquid in a controlled fashion using multiple sluicing nozzles at varying pressures and flows, then pumps out the resultant waste slurry. This maintains minimal liquid inventories within the tank at all times. The liquids that could be used in modified sluicing include water, recirculated supernatant/water from the receiving Double Shell Tank, recirculated supernatant/water, chemical agent or catalyst liquid.

VACUUM WASTE RETRIEVAL SYSTEM

A vacuum waste retrieval system can be used for waste retrieval activities in the (SSTs). The vacuum waste retrieval system is introduced into the SSTs by means of an articulating mast system (AMS). The AMS has a horizontal reach and rotational capabilities of 360 degrees. The AMS has a retracted position and can be extended vertically. Air is mixed at the suction end of the AMS enabling the required vertical lift for the waste to a topside receiver tank, batch vessel or a staging SST, storage DST, or other staging/storage vessels associated with supplemental treatment, packaging or disposal.

The AMS will be deployed through and attached to standard riser flanges that are available on the SSTs. Cameras can also be installed in other risers for in-tank viewing and control of the AMS.

For the 200-series tanks in the 241-C, 241-U, 241-B and 241-T Tank Farms a vacuum retrieval process tank, staging tank, staging SST, storage DST or other staging/storage vessel will be deployed. The receiver tank will receive waste in batches from whichever tank is connected into the vacuum retrieval system. The vacuum pressure used to draw up the waste from the tank to the receiver tank is relieved back into the SST being retrieved.

MOBILE RETRIEVAL SYSTEM

A Mobile Retrieval System (MRS) can be used to retrieve waste from some SSTs. The MRS consists of two in-tank systems. The first is a robotic crawler inserted through one riser the second is an AMS inserted through a second riser. The AMS retrieves the sludge from the tank using a vacuum with assisting pneumatic conveyance. The AMS vacuum tube has a horizontal reach and can be extended to the bottom of the tank. The arm rotates 360 degrees. The vacuum will be directed through the AMS in the tank to the end effector, which is in contact with the waste. The pneumatic conveyance-assisted vacuum retrieval system will draw the waste up through the vacuum to the waste vessel in the vessel skid in batches. The AMS is then valved out while the waste vessel is

emptied and pumped out through the over ground transfer lines to a DST, a staging SST or other treatment/disposal options. When the waste vessel is nearly empty, the transfer line will be valved out and the AMS will be valved back in and another batch of waste will be removed from the tank. This process will be repeated until waste near the center of the tank is removed. The robotic crawler will be remotely controlled to move and/or wash waste toward the center of the tank.

The robotic crawler is equipped with a plow blade at the front for pushing/pulling wastes, a screw pump to jet wastes through a small nozzle towards the center of the tank, the ability to direct hot or cold water through the same nozzle to wash wastes off of in-tank equipment, dissolve waste agglomerations in the tank, and wash waste toward the center of the tank for removal.
Any new retrieval methods or changes to processes will need to be provided to WDOH in a revised NOC prior to implementation.

MOBILE ARM RETRIEVAL SYSTEM

The Mobile Arm Retrieval System (MARS) is a waste retrieval system used to retrieve waste from single-shell tanks (SSTs) and move the waste to the double-shell tanks (DSTs). The MARS employs two design options similar to currently permitted systems: 1) a sluicing retrieval option which is intended for retrieval of non1eaker tanks and 2) a vacuum retrieval option is intended for retrieval of assumed 1eaker tanks. Both options use an arm and sluicing jets and/or a high pressure water scarifier to break up the waste. The sluicer uses waste supernatant recycled from the DST to form a liquid jet using a nozzle. The scarifier uses filtered, pressurized water that comes from a high pressure water skid.

The equipment portion of the MARS includes a vertical, carbon steel mast (square cross section) as the main structural member. Attached to the vertical mast is a carbon fiber robotic arm. The arm is attached to a traveler that raises and lowers the arm relative to the vertical mast. The arm rotates 360 degrees - 380 degrees on a turntable located in the pit box. The arm also pivots up and down from an elbow at the traveler (hydraulic system) and extends and retracts (hydraulic system). The end of the arm articulates. The arm thus provides for a large range of motion such that the sluicing devices (recycle sluicer, water scarifier) located at the end of the arm can aim at most portions of the tank and from varying (e.g., short) distances.

The containment box which encloses the MARS will be ventilated by two parallel installed radial filters. The purpose of these filters is to minimize contamination from migrating up from the tank into the containment box via the open space on the large riser during retrieval operations. Minimization of contamination inside the containment box is desired should entry into the box ever be required for repairs. Inflow through these filters during retrieval is estimated to reach up to 60 cubic feet per minute (cfm). A valve will be installed between the filters and the containment box so filters can be isolated from the box. However, because the location of the valve will be approximately 12 feet above ground and difficult to reach without properly installed and inspected scaffolding, the valve will be left open at all times until retrieval of the tank is complete. Once retrieval is complete the valve will be closed.

REMOTE WATER LANCE

The completion of tank retrieval may also be aided by a Remote Water Lance (RWL) that is a high pressure water device, or hydro laser. Alternatively, a High Pressure Mixer (HPM) may be used in the same capacity. The systems will consist of both ex-tank and in-tank components. The ex-tank components will be comprised of; high pressure systems, operating controls, cables, and hoses. The in-tank components will be comprised of; umbilical, in-tank vehicle, high pressure nozzle(s), or the high pressure mixer.

The high pressure water systems will provide the water at the desired pressure, not to exceed 37,000 psig. A conditioning system will be used to filter the raw water entering the skid to ensure that no abrasive materials are entrained in the water. The water volumetric flow rate will be on the order of 4 to 18 gpm for the HPM and from 6 to 15 gpm for the RWL. The operating controls will be located in a control trailer outside of the farm fence. The cables and hoses will connect hydraulically powered in-tank vehicle with the ex-tank controls and water skid via the umbilical. The HPM consists of an adjustable height pipe with two pairs of opposed, high pressure, low volume water orifices located on the bottom of the pipe. The mixer is capable of being rotated 360 degrees and has an adjustable height range of approximately 7 feet. The positioning of the mixer is performed remotely using a

hydraulic system. Additionally, the mixer has a single orifice on the bottom of the unit that can be used as an operational or installation aid. The in-tank vehicle will house one to four high pressure water nozzles. The RWL will be operated with the nozzle submerged to avoid aerosols in the tank. A rupture disc will be used to prevent reaching pressures above 37,000 psig.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	5.99E+00	Am - 241	8.68E+03	Am - 243	3.39E-01
Ba - 137 m	4.26E+07	C - 14	6.25E+02	Cd - 113 m	4.95E+03
Cm - 242	1.97E+01	Cm - 243	1.80E+00	Cm - 244	1.90E+01
Co - 60	2.52E+03	Cs - 134	3.44E+04	Cs - 137	4.89E+07
Eu - 152	8.49E+02	Eu - 154	1.45E+04	Eu - 155	9.54E+03
H - 3	5.95E+03	I - 129	2.95E+01	Nb - 93 m	1.01E+03
Ni - 59	1.05E+02	Ni - 63	9.30E+03	Np - 237	9.50E+01
Pa - 231	1.25E+01	Pu - 238	1.65E+02	Pu - 239	3.17E+03
Pu - 240	5.36E+02	Pu - 241	4.80E+03	Pu - 242	3.34E-02
Ra - 226	1.27E-02	Ra - 228	1.15E+01	Ru - 106	1.22E-02
Sb - 125	1.73E+04	Se - 79	6.36E+01	Sm - 151	8.93E+05
Sn - 126	2.59E+02	Sr - 90	2.91E+06	Tc - 99	2.24E+04
Th - 229	4.20E-01	Th - 232	1.26E+00	U - 232	3.66E+00
U - 233	3.02E+01	U - 234	1.07E+01	U - 235	4.44E-01
U - 236	2.73E-01	U - 238	9.86E+00	Y - 90	2.91E+06
Zr - 93	1.25E+03				

4) ABATEMENT TECHNOLOGY- Ductwork insulation
All ventilation ductwork from the exit of the tank to the inlet of the exhauster filter housing shall be insulated. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

5) ABATEMENT TECHNOLOGY- Annual testing
Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1 Section TA. HEPA filters shall have a minimum efficiency of 99.95%. (WAC 246-247-040(5)), (WAC 246-247-060(5)) and (WAC 246-247-075(2))

6) ABATEMENT TECHNOLOGY- Filter protection
Relative humidity shall be monitored, at least once a month, downstream of the heater and prior to the HEPA filters to ensure the air stream does not exceed 70% relative humidity. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

7) RELEASE RATES - WDOH Log
The annual possession quantity shall be tracked on a WDOH approved log. (WAC 246-247-080(7))

8) WDOH ALTERNATE APPROVAL- Standards
General WAC 246-247 technology standard exemptions justified and documented in RPP-19233, WAC 246-247 technology standard exemption justification for waste tank ventilation systems, may be applied to Phase II NOC

retrieval exhauster operations. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

9) ALTERNATE APPROVAL - NDA Method
A pre-operational NDA of the exhauster(s) HEPA filters and a post-operational NDA will be performed the first time each of the four waste retrieval methods (mobile retrieval system, vacuum retrieval, supernatant sluicing, and saltcake dissolution with supernatant) when placed into service. The post-operational NDA should occur after one cycle or phase of waste retrieval operation is completed, a method replaces another method during a cycle/phase or six months from the in-service date, whichever occurs first. The facility may opt to replace the exhauster's HEPA filters prior to placing a new waste retrieval method in service and eliminate the pre-operational NDA. (WAC 246-247-040(5)), (WAC 246-247-060(5)) and (WAC 246-247-075(4))

10) WDOH NOTIFICATIONS - Differential pressure out of range
The differential pressure readings for the pre-filters and both stages of HEPA filters shall be monitored, recorded and trended daily. The exhaust system will be configured to automatically shut down at 5.9 inches of water (or less) pressure differential across the HEPA filter(s) for the first filter in series or multiple filters in series as indicated by the local readout. If the final HEPA filter in the system exceeds 5.9 inches of water pressure differential across the filter, the cause will be determined and WDOH will be notified through normal established channels. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

11) STANDARDS - stack monitoring systems
The emission unit stack monitoring system shall meet the requirements of ANSI/HPS N13.1-1999 including the stack monitoring system inspection requirements. (WAC 246-247-040(5)), (WAC 246-247-060(5)) and (WAC 246-247-075(2))

12) STANDARDS - Startup leak testing
New or altered sections of ductwork shall be leak tested in accordance with the requirements of ASME AG-1 Section SA prior to use. Normal maintenance of the system (e.g. replacing gaskets, replacement of in kind components, flow profile analysis in the ductwork, air sampling from test ports in the duct and demister flushing) are not considered to be alteration. (WAC 246-247-040(5)), (WAC 246-247-060(5)) and (WAC 246-247-075(2))

13) CONTAMINATION CONTROL- Max operating pressure
During waste retrieval operations the maximum pressure for any waste retrieval method shall not exceed 37,000 psig. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

14) CONTAMINATION CONTROL- Monthly Radiological Survey
While the exhauster is operating, and/or tank waste retrieval is underway, all ductwork connections shall have a radiological survey performed monthly to ensure ductwork connections are not degrading. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

15) CONTAMINATION CONTROL exhauster alternate usages
The exhauster will be operated occasionally during periods of non-retrieval in support of tank waste retrieval preparation activities and to aid in evaporation of residual flush water or sluicing liquid that remains in the tank. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

16) CONTAMINATION CONTROL- Active ventilation
All receiver tanks (including waste retrieval process tanks for tank TRU retrieval (staging) SSTs, storage DSTs, or other staging/storage vessels, but not including batch vessel supporting vacuum retrieval) shall have active ventilation during waste receipt, unless alternative controls are documented and approved by WDOH. If the exhauster goes down due to off-normal conditions while retrieval is occurring, the system should be placed into a safe configuration, minimizing dose to personnel and the environment. These steps may include: flushing the lines, pumps, and the waste transfer system of slurry solution using DST supernatant or water; pumping down the tank liquid to minimize remaining liquids; and halting waste retrieval. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

Emission Unit ID: 888

Hanford Sitewide

Tanker Loading of Contaminated Waste Water

This is a MINOR, PASSIVELY ventilated emission unit.

Tanker Truck Loading Categorical

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114	Total alpha, total beta	As listed in the following Conditions and Limitations.

Sampling Requirements As listed in the following Conditions and Limitations.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status The tanker trucks are designed to receive and temporarily hold low level contaminated liquids for transport to LERF, ETF, and/or DST.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Tanker Truck Loading of Radioactively Contaminated Waste Water	AIR 09-705	7/28/2009	696

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 6.00E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted. The approved activities are limited to transfer of radioactive waste water (e.g., purgewater, pool cell water, decontamination solutions) from various locations on the Hanford site by mobile tanker trucks. The tanker trucks will be used to transport this wastewater to the Liquid Effluent Retention Facility (LERF), the 200 Areas Effluent Treatment Facility (ETF), and/or to a Double-Shell Tank (DST) located in one of the 200 Area tank farms. The proposed action includes isolated instances where small quantities of wastewater might be transferred to 55 gallon drums or smaller containers, and transported to LERF, the ETF, and/or to a DST. The license is a categorical license under WAC 246-247-060(8). In the text of the license conditions, it should be understood that the term "tanker" or "tanker/drum" or variants of these terms includes smaller containers, so that the license shall apply to loading of tankers, drums, or smaller containers.

The physical and chemical processes associated with tanker truck loading activities are:
- Isotopic analysis of wastewater.
- Tanker truck or truck deployment.
- Hookup of transfer equipment for transfer of wastewater into tanker, drums, or smaller containers.
- Wastewater transfer to the tanker truck, drums, or smaller containers via pumping or vacuum transfer.
- Associated surveys, spill prevention, other radcon activities.
- Decontamination of tanker/drums/smaller containers.
- Decontamination or packaging of transfer equipment for transport.
- Decontamination or packaging of spillage and resulting contamination.

Unloading of the tanker trucks, drums, or smaller containers is not licensed under this approval.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 6.00E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	3.60E-07	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Any radionuclide on the chart of the nuclides could be encountered during tanker loading operations. The radionuclides specifically listed in the NOC application were chosen to conservatively represent all radionuclide emissions that may occur in particulate form. A small contribution from the gaseous radionuclides may be encountered. Although any radionuclide could be present, for conservatism all beta/gamma is assumed to be Cs-137 and all alpha is assumed to be Am-241 for dose calculation estimates. Other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta-gamma constituents.

Beta - 0	1.10E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Any radionuclide on the chart of the nuclides could be encountered during tanker loading operations. The radionuclides specifically listed in the NOC application were chosen to conservatively represent all radionuclide emissions that may occur in particulate form. A small contribution from the gaseous radionuclides may be encountered. Although any radionuclide could be present, for conservatism all beta/gamma is assumed to be Cs-137 and all alpha is assumed to be Am-241 for dose calculation estimates. Other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha and total beta-gamma constituents.

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) At all times, activities shall conform to procedures for prior characterization and handling of radioactive liquid approved in accord with applicable QA program. Prior to commencing liquid transfer into tanker/drum/smaller container:

a) Waste liquid shall be characterized, and acceptability at the LERF, ETF, and DST shall be verified.
b) All transfer line hookups shall be inspected to verify leak-tight connections.
c) Spill prevention measures shall be verified to be in place.
d) Volume of tanker/drum/smaller container contents shall be verified and documented.
e) Seals separating tanker/drum/smaller container contents from environment shall be verified fully functional.

During the loading operation:

f) Surveys shall be performed according to radiation control procedures approved via applicable QA program.
g) Fill rates shall be controlled below 50 cfm.

On completion of the loading operation:

h) All tanker/drum fittings shall be disconnected and closed.
i) All liquid/gas release points on the tanker/drum shall be closed and shall remain closed until commencement of unloading operations at the LERF, ETF, and/or DST.
j) Spill prevention measures shall remain in place until the tanker/drum is closed.
k) The tanker/drum shall be surveyed and if necessary decontaminated before release for transport.
l) Transfer equipment shall be surveyed and if necessary decontaminated or packaged for transport subject to radcon procedures approved in accord with applicable QA program.
m) Spillage shall be surveyed and if necessary decontaminated or packaged for transport and disposal subject to radcon procedures approved in accord with applicable QA program.
n) Volume of tanker/drum contents shall be verified and documented.

The surface contamination release criteria for the vehicle, tanker, drums, and transport equipment shall be documented and approved in accord with an applicable QA program.

(WAC 246-247-040(5))

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5) Log, Monitoring, and Demonstration of Compliance to Licensed Emission Limit:

a) A single log shall be maintained, reflect each individual loading operation, and be updated after each individual tanker/drum/container is offloaded, so long as the emissions associated with the transferred but un-logged quantity (material residing in partially filled tankers) remain less than 10% of licensed limit, as estimated using the method described in this condition.

b) The log shall record the sum to date of the calendar year's emissions estimated using the method described in this condition for activities herein licensed.

c) The log shall include monthly confirmation that licensed annual emission limits have not been exceeded, that transfer flow rates remain below the limit specified in this license, and identify the radiological work package under which each loading is accomplished.

d) The estimated emissions for each loading operation shall be determined using one of the following methods:

Method 1: From the characterization of the liquid being loaded, gross alpha and gross beta/gamma activities shall be determined. The emission shall be determined using the volume of liquid transferred, an assumed release fraction of 0.001, location-specific dose conversion factors from the latest revision of HNF-3602, assuming gross alpha is 241-Am and gross beta/gamma is 137-Cs

Method 2: From the characterization of the liquid being loaded, a complete isotopic distribution of radionuclides shall be determined. The emission shall be determined using the volume of liquid transferred, an assumed release fraction of 0.001, and location-specific dose conversion factors from the latest revision of HNF-3602 for the known isotopes

(WAC 246-247-040(5), WAC 246-247-080(7), WAC 246-247-075(3))

Emission Unit ID: 894

200W P-241UX302A-001

241-UX-302A

This is a MINOR, PASSIVELY ventilated emission unit.

241-U TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows the catch tank to vent to the atmosphere under tank farm storage, maintenance, and operations. Any activity other than waste transfer support, maintenance, and normal opeations will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is a passive breather filter ventilation that operates continuously.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Installation and Operation of Breather Filters on Miscellaneous Tanks. (Replaced NOC ID 739)	AIR 12-342	2/23/2012	865

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.88E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.88E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted.

Installation of a passive breather filter on tanks 241-UX-302A, 241-AZ-154, 241-U-301B and 241-S-302. The breather filter will be a radial HEPA filter with a removal efficiency of 99.97% and a rated capacity of 40 cfm. The filter will be replaced on an annual basis, eliminating the need for annual aerosol testing. The breather filter shall minimize the amount of radioactive particulates emitted as a consequence of tank breathing due to barometric pressure changes. The catch tank will breath at a rate of approximately 0.007 cfm with a flow rate less than 1 cfm.

The 241-UX-302A catch tank is a 17,760 gallon capacity catch tank which has been isolated and currently

contains 1,736 gallons of waste.

The 241-AZ-154 catch tank is a 869 gallon capacity catch tank designed to receive condensate from the 241-AZ and 241-AY double shell tank heating coils. The steam coils have sense been blanked off. Current data indicates the tank is empty. Periodically water intrusion is seen in this tank from rain and snow.

The 241-U-301B catch tank is a 36,000 gallon capacity catch tank designed to support waste transfers from 244-TX via 241-U-151 and 241-U-152. Current data indicates that 1,467 gallons of waste remain in this tank.

The 241-S-302 catch tank is a 17,700 gallon capacity catch tank designed to receive leakage, spills, line flushes and drainage associated with support waste transfers through Diversion Box 240-S-151. Since isolation in 1987 the tank has received intrusion of snow melt and rainwaterto it's present level.

The installation of breather filters is intended to minimize any radioactive particulates that may be emitted as a consequence of barometric pressure changes.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Alpha - 0	8.48E-05	Beta - 0	3.02E+00	Gamma - 0	3.14E-01
Based on Pu239/240		Based on Sr-90		Based on Cs137	

4) The breather filter must be replaced annually. The new filter must be a Type 1 (radial flow filter) with a Type C filter pack, as define by AG-1 Code on Nuclear Air and Gas Treatment Section FK, Special HEPA Filters. The filter frames, end-caps, flanges, and grilles must be made of 304/304L stainless steel. The filter must use UL-586 compliant resin to provide the sealing of the filter media to the frame. The filter must have a minimum removal efficiency of 99.97% and a rated flow of 40 cfm.

5) All removal and installation operations, of the breather filter, must follow the requirements outlined in ALARACT 1 "Demonstration for Riser Preparation/Opening", and ALARACT 16 "Demonstration for Work on Potentially Contaminated Ventilation System Components".

6) The breather filter must meet all of the requirements as described in the AG-1 COMPLIANCE MATRIX FOR FLANDERS FILTER MODEL 0-007-1-12-RF-NU-00-E3-Z04059B (or current equivalent)" as described by the AG-1 Compliance Matrix attached to the Notice of Construction application as Appendix A.

Should a change to the Compliance Matrix be required, WDOH approval of the deviation shall be obtained prior to installation of the new breather filter.

Emission Unit ID: 910

200 E P-241ER311-001

241-ER-311

This is a MINOR, PASSIVELY ventilated emission unit.

Tank Farms

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows the catch tank to vent to the atmosphere under tank farm storage, maintenance, and operations. Any activity other than waste transfer support, maintenance, and normal operations will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is a passive breather filter ventilation system that operates continuously.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Removal of Liquid from Catch Tank 241-ER-311(Replaced NOC 718)	AIR 12-329	2/23/2012	850

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.47E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.47E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The action will include the operation of a 500 cfm portable exhauster connected to a riser in conjunction with a inlet HEPA filter to remove evaporate liquid in the 241-ER-311 Catch Tank. A small volume of the liquid may be pumped out during this activity. There may also be an insertion of a sleeve inside the existing risers to direct air flow closer to the liquid surface.

During riser preparation controls will be established using as low as reasonably achievable control technology (ALARACT 1) "Demonstration for riser preparation/opening", ALARACT 4 "Demonstration for packaging and transportation of waste", ALARACT 6 "Demonstration for pit access", ALARACT 13 "Demonstration for

installation, operation, and removal of tank equipment", ALARACT 14 "Demonstration for pit work", ALARACT 15 "Demonstration for size reduction of waste equipment for disposal", and ALARACT 16 "Demonstration for work on potentially contaminated ventilation system components".

A portable, 500 cfm ventilation system will be installed on a riser on the 241-ER-311 Catch Tank. The portable exhauster consists of a skid mounted air clean-up train, which includes a heater, a pre-filter, two HEPA filters in series, and a fan, prior to the stack. During exhauster operation air from the tank will be heated before passing through the pre-filter and two HEPA filters to ensure that condensation of air stream moisture is minimized through this section. Drains in each of the filter and heater housings allow entry condensed liquid to flow away from the components and to be collected in a seal pot for removal.

Ductwork will be used to connect the exhauster inlet to the tank riser. Ductwork will essentially be fabricated in conformance with ASME B31.3 Process Piping, and it will meet the requirements of ASME AG-1, Section SA, with the exceptions noted in RPP-1923, "General WAC 246-247 Technology Standards Exemption Justification for Waste Tank Ventilation Systems".

A 500 cfm inlet HEPA filter in an ASME AG-1 compliant housing will be installed on a second riser on the 241-ER-311 to accommodate the inlet air stream created by the use of the portable exhauster. When the exhauster is not running, the inlet HEPA filter will serve as a tank barometric breather filter to provide abatement of particulate emissions from the tank.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Am - 241	4.79E-04	Cs - 137	9.36E+00	Pu - 239/240	3.36E-04
Sr - 89/90	2.88E+00				

4) Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1 Section TA. HEPA filters shall have a minimum efficiency of 99.95%.

5) The 500 CFM HEPA filter shall comply with the requirements of ASME/ANSI AG-1 Section FC, and the housing shall comply with the requirements of Section HA.

Emission Unit ID: 912

200E P-244A-003

244-A Annulus HEPA

This is a MINOR, PASSIVELY ventilated emission unit.

244-A DCRT

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a double contained receiver tank (DCRT) passive breather filter ventilation system used to support tank farm operations, such as waste retrieval and operation support activities for the 241-A Tank Farm. The tank stored radioactive waste during transfer operations. Any activity other than temporary storage and normal operation support will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit has a passive breather filter ventilation system that operates continuously.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Isolation and Closure of Exhaust Stacks 296-A-25, 296-B-28, 296-S-22 and 296-T-18 (Replaces NOC 796)	AIR 12-338	2/23/2012	859

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.20E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.20E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

244-S DCRT (296-S-22 STACK)

Passive Ventilation Breather Filter System Installation:

A passive ventilation breather filter system will be installed on an existing above-grade riser on the primary receiver tank in accordance with ALARACT Demonstration 1 and 16. The primary tank breather filter will serve as the static vent for the instrument air injected (at a maximum of 9 cubic feet per hour) into the receiver tank

through a set of three weight-factor dip tubes, which mixes with, and dilutes, any flammable gases. The primary tank breather filter will allow flammable gases to escape while collecting any airborne radioactive particulates.

A passive ventilation breather filter system will be installed above-grade on an existing riser or the existing annulus inlet filter riser in accordance with ALARACT 1 and 16. The annulus breather filter will provide for the exchange of ambient air with the annulus tank during atmospheric pressure fluctuations and will allow vapors to escape.

The breather filter system will, at a minimum, consist of an isolation valve (normally open during operation), filter housing, HEPA filter, and loop seal assembly. The isolation valve will isolate the HEPA filter from the tank to facilitate testing of the filter, and to isolate the system until the filter or housing can be replaced.

HEPA Filter Bank Isolation and Removal:

The isolation and removal of the HEPA filter bank located in the 244-S DCRT filter pit will require the deactivation of the HEPA filter bank instrumentation and alarms, the removal and disposal of the HEPA filter bank, and the installation of the filter pit duct jumper assembly, in accordance with ALARACT Demonstrations 6, 14, and 16. The 296-S-22 exhauster is equipped with a HEPA filter bank inside the filter pit. The HEPA filter bank is attached to three nozzles in the filter pit: one nozzle to the catch tank, one nozzle to the annulus, and one nozzle to the ventilation exhaust ductwork. The HEPA filter bank will be disconnected from the nozzles and removed for disposal. A filter pit duct jumper assembly (4" schedule 40 pipe) will be connected to the catch tank nozzle and ventilation exhaust ductwork nozzle to provide the ventilation path to the newly installed passive breather filters. The third nozzle to the annulus will be closed in the filter pit. The filter pit duct jumper assembly will be fabricated in accordance with ASME B31.3 and tested in accordance with ASME AG-1.

Electrical Equipment and Instrumentation Isolation:

The isolation of electrical equipment and instrumentation on the 244-S DCRT will require the disconnection of various power supplies (e.g., exhaust fan, motor operated valves, heat trace, sampler pumps, continuous air monitor, and alarms) and isolation of instrumentation (e.g., HEPA filter bank pressure indicators) that support operation and monitoring of the stack ventilation system in accordance with ALARACT 16. Disconnection is the physical disconnection and removal of wires from the power source. Pit entries are not required to disconnect power or isolate instrumentation.

296-S-22 Stack Isolation:

The 296-S-22 stack will be isolated via mechanical isolations. Blank flanges will be installed on the duct end and on the suction side of the exhaust fan. A closure cap will be installed on top of the exhaust stack. The exhaust stack drain line will be cut and capped above grade. This work will be done in accordance with ALARACT Demonstration 16.

244-TX DCRT (296-T-18 STACK)

Passive Ventilation Breather Filter Installation:

A passive ventilation breather filter system will be installed on an existing above-grade riser on the primary receiver tank in accordance with ALARACT Demonstration 1 and 16. The primary tank breather filter will serve as the static vent for the instrument air injected (at a maximum of 9 cubic feet per hour) into the receiver tank through a set of three weight-factor dip tubes, which mixes with, and dilutes, any flammable gases. The primary tank breather filter will allow flammable gases to escape while collecting any airborne radioactive particulates.

A passive ventilation breather filter system will be installed above-grade on an existing riser or the existing annulus inlet filter riser in accordance with ALARACT 1 and 16. The annulus breather filter will provide for the exchange of ambient air with the annulus tank during atmospheric pressure fluctuations and will collect potential airborne radioactive particulates from the annulus space while allowing vapors to escape.

The breather filter system will, at a minimum, consist of an isolation valve (normally open during operation), filter housing, HEPA filter, and loop seal assembly. The isolation valve will isolate the HEPA filter from the tank to

facilitate testing of the filter, and to isolate the system until the filter or housing can be replaced.

HEPA Filter Bank Isolation and Removal:

Removal of the HEPA filter bank in the 244-TX DCRT filter pit is not required. The HEPA filter bank will be isolated via closure of manual valves and the deactivation of motor-controlled valves. Above-grade duct/pipe will be capped. The associated HEPA filter bank instrumentation and alarms will be deactivated. This work will be done in accordance with ALARACT 16.

Electrical Equipment and Instrumentation Isolation:

The isolation of electrical equipment and instrumentation on the 244-TX DCRT will require the disconnection of various power supplies (e.g., exhaust fan, motor operated valves, heat trace, sampler pumps, continuous air monitor, and alarms) and isolation of instrumentation (e.g., HEPA filter bank pressure indicators) that support operation and monitoring of the stack ventilation system. Disconnection is the physical disconnection and removal of wires from the power source in accordance with ALARACT Demonstration 16. Pit entries are not required to disconnect power or isolate instrumentation.

296-T-18 Stack Isolation:

The 296-T-18 stack will be isolated via mechanical isolations. A blank flange will be installed at the suction side of the exhaust fan or at another suitable location near the filter pit outlet to the exhaust stack. A closure cap will be installed on top of the exhaust stack. The exhaust stack drain line will be cut and capped above grade. This work will be done in accordance with ALARACT Demonstration 16.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	2.04E-02	Am - 241	1.17E+01	Am - 243	3.58E-04
Ba - 137 m	2.69E+03	C - 14	4.06E-01	Cd - 113 m	1.40E+00
Cm - 242	1.19E-02	Cm - 243	6.91E-04	Cm - 244	1.26E-02
Co - 60	6.18E-01	Cs - 134	6.84E-03	Cs - 137	2.84E+03
Eu - 152	1.18E-01	Eu - 154	9.29E+00	Eu - 155	5.09E+00
H - 3	1.53E+00	I - 129	5.01E-03	Nb - 93 m	4.18E-01
Ni - 59	1.57E-01	Ni - 63	1.46E+01	Np - 237	9.67E-03
Pa - 231	4.25E-02	Pu - 238	4.84E-01	Pu - 239	9.45E+00
Pu - 240	1.57E+00	Pu - 241	1.23E+01	Pu - 242	8.61E-05
Ra - 226	3.73E-02	Ra - 228	8.82E-03	Ru - 106	8.01E-06
Sb - 125	6.95E-01	Se - 79	1.22E-02	Sm - 151	3.74E+02
Sn - 126	6.02E-02	Sr - 90	5.31E+03	Tc - 99	2.76E+00
Th - 229	4.01E-03	Th - 232	1.13E-03	U - 232	6.22E-03
U - 233	7.78E-02	U - 234	3.07E-02	U - 235	1.28E-03
U - 236	6.36E-04	U - 238	2.87E-02	Y - 90 m	5.31E+03

Zr - 93	5.03E-01

4) Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1. HEPA filters shall have a minimum efficiency of 99.95%.

Emission Unit ID: 922

200E P-244BX-003

244-BX Annulus HEPA

This is a MINOR, PASSIVELY ventilated emission unit.

244-BX-DCRT

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a double container receiver tank (DCRT) passive breather filter ventilation system used to support tank farm operations, such as but not limited to waste retrieval and operation support activities for 241-BX Tank Farm. The tanks stored radioactive waste during transfer operations. Any activity other than temporary storage and normal opeation support will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is a passive breather filter ventilation system that operates continuously.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Isolation and Closure of Exhaust Stacks 296-A-25, 296-B-28, 296-S-22 and 296-T-18 (Replaces NOC 796)	AIR 12-338	2/23/2012	859

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.20E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.20E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

244-S DCRT (296-S-22 STACK)

Passive Ventilation Breather Filter System Installation:

A passive ventilation breather filter system will be installed on an existing above-grade riser on the primary receiver tank in accordance with ALARACT Demonstration 1 and 16. The primary tank breather filter will serve as the static vent for the instrument air injected (at a maximum of 9 cubic feet per hour) into the receiver tank

through a set of three weight-factor dip tubes, which mixes with, and dilutes, any flammable gases. The primary tank breather filter will allow flammable gases to escape while collecting any airborne radioactive particulates.

A passive ventilation breather filter system will be installed above-grade on an existing riser or the existing annulus inlet filter riser in accordance with ALARACT 1 and 16. The annulus breather filter will provide for the exchange of ambient air with the annulus tank during atmospheric pressure fluctuations and will allow vapors to escape.

The breather filter system will, at a minimum, consist of an isolation valve (normally open during operation), filter housing, HEPA filter, and loop seal assembly. The isolation valve will isolate the HEPA filter from the tank to facilitate testing of the filter, and to isolate the system until the filter or housing can be replaced.

HEPA Filter Bank Isolation and Removal:

The isolation and removal of the HEPA filter bank located in the 244-S DCRT filter pit will require the deactivation of the HEPA filter bank instrumentation and alarms, the removal and disposal of the HEPA filter bank, and the installation of the filter pit duct jumper assembly, in accordance with ALARACT Demonstrations 6, 14, and 16. The 296-S-22 exhauster is equipped with a HEPA filter bank inside the filter pit. The HEPA filter bank is attached to three nozzles in the filter pit: one nozzle to the catch tank, one nozzle to the annulus, and one nozzle to the ventilation exhaust ductwork. The HEPA filter bank will be disconnected from the nozzles and removed for disposal. A filter pit duct jumper assembly (4" schedule 40 pipe) will be connected to the catch tank nozzle and ventilation exhaust ductwork nozzle to provide the ventilation path to the newly installed passive breather filters. The third nozzle to the annulus will be closed in the filter pit. The filter pit duct jumper assembly will be fabricated in accordance with ASME B31.3 and tested in accordance with ASME AG-1.

Electrical Equipment and Instrumentation Isolation:

The isolation of electrical equipment and instrumentation on the 244-S DCRT will require the disconnection of various power supplies (e.g., exhaust fan, motor operated valves, heat trace, sampler pumps, continuous air monitor, and alarms) and isolation of instrumentation (e.g., HEPA filter bank pressure indicators) that support operation and monitoring of the stack ventilation system in accordance with ALARACT 16. Disconnection is the physical disconnection and removal of wires from the power source. Pit entries are not required to disconnect power or isolate instrumentation.

296-S-22 Stack Isolation:

The 296-S-22 stack will be isolated via mechanical isolations. Blank flanges will be installed on the duct end and on the suction side of the exhaust fan. A closure cap will be installed on top of the exhaust stack. The exhaust stack drain line will be cut and capped above grade. This work will be done in accordance with ALARACT Demonstration 16.

244-TX DCRT (296-T-18 STACK)

Passive Ventilation Breather Filter Installation:

A passive ventilation breather filter system will be installed on an existing above-grade riser on the primary receiver tank in accordance with ALARACT Demonstration 1 and 16. The primary tank breather filter will serve as the static vent for the instrument air injected (at a maximum of 9 cubic feet per hour) into the receiver tank through a set of three weight-factor dip tubes, which mixes with, and dilutes, any flammable gases. The primary tank breather filter will allow flammable gases to escape while collecting any airborne radioactive particulates.

A passive ventilation breather filter system will be installed above-grade on an existing riser or the existing annulus inlet filter riser in accordance with ALARACT 1 and 16. The annulus breather filter will provide for the exchange of ambient air with the annulus tank during atmospheric pressure fluctuations and will collect potential airborne radioactive particulates from the annulus space while allowing vapors to escape.

The breather filter system will, at a minimum, consist of an isolation valve (normally open during operation), filter housing, HEPA filter, and loop seal assembly. The isolation valve will isolate the HEPA filter from the tank to

facilitate testing of the filter, and to isolate the system until the filter or housing can be replaced.

HEPA Filter Bank Isolation and Removal:

Removal of the HEPA filter bank in the 244-TX DCRT filter pit is not required. The HEPA filter bank will be isolated via closure of manual valves and the deactivation of motor-controlled valves. Above-grade duct/pipe will be capped. The associated HEPA filter bank instrumentation and alarms will be deactivated. This work will be done in accordance with ALARACT 16.

Electrical Equipment and Instrumentation Isolation:

The isolation of electrical equipment and instrumentation on the 244-TX DCRT will require the disconnection of various power supplies (e.g., exhaust fan, motor operated valves, heat trace, sampler pumps, continuous air monitor, and alarms) and isolation of instrumentation (e.g., HEPA filter bank pressure indicators) that support operation and monitoring of the stack ventilation system. Disconnection is the physical disconnection and removal of wires from the power source in accordance with ALARACT Demonstration 16. Pit entries are not required to disconnect power or isolate instrumentation.

296-T-18 Stack Isolation:

The 296-T-18 stack will be isolated via mechanical isolations. A blank flange will be installed at the suction side of the exhaust fan or at another suitable location near the filter pit outlet to the exhaust stack. A closure cap will be installed on top of the exhaust stack. The exhaust stack drain line will be cut and capped above grade. This work will be done in accordance with ALARACT Demonstration 16.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	4.12E-02	Am - 241	2.37E+01	Am - 243	7.23E-04
Ba - 137 m	5.43E+03	C - 14	8.19E-01	Cd - 113 m	2.83E+00
Cm - 242	2.40E-02	Cm - 243	1.39E-03	Cm - 244	2.56E-02
Co - 60	1.25E+00	Cs - 134	1.38E-02	Cs - 137	5.74E+03
Eu - 152	2.38E-01	Eu - 154	1.88E+01	Eu - 155	1.03E+01
H - 3	3.09E+00	I - 129	1.03E-02	Nb - 93 m	8.44E-01
Ni - 59	3.18E-01	Ni - 63	2.95E+01	Np - 237	1.95E-02
Pa - 231	8.58E-02	Pu - 238	9.78E-01	Pu - 239	1.91E+01
Pu - 240	3.17E+00	Pu - 241	2.48E+01	Pu - 242	1.74E-04
Ra - 226	7.54E-02	Ra - 228	1.78E-02	Ru - 106	1.62E-05
Sb - 125	1.40E+00	Se - 79	2.46E-02	Sm - 151	7.55E+02
Sn - 126	1.22E-01	Sr - 90	1.07E+04	Tc - 99	5.57E+00
Th - 229	8.09E-03	Th - 232	2.28E-03	U - 232	1.26E-02
U - 233	1.57E-01	U - 234	6.19E-02	U - 235	2.59E-03
U - 236	1.28E-03	U - 238	5.80E-02	Y - 90	1.07E+04

Zr - 93	1.02E+00

4) Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1. HEPA filters shall have a minimum efficiency of 99.95%.

Emission Unit ID: 959

200W P-244S-003

244-S Annulus HEPA

This is a MINOR, PASSIVELY ventilated emission unit.

244 S-DCRT

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a double container receiver tank (DCRT) passive breather filter ventilation system used to support tank farm operations, such as but not limited to waste retrieval and operation support activities for 241-S Tank Farm. The tanks stored radioactive waste during transfer operations. Any activity other than temporary storage and normal operation support will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission untis associated with the activity. The emission unit is a passive breather filter ventilation system that operates continuously.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Isolation and Closure of Exhaust Stacks 296-A-25, 296-B-28, 296-S-22 and 296-T-18 (Replaces NOC 796)	AIR 12-338	2/23/2012	859

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.20E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.20E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

244-S DCRT (296-S-22 STACK)

Passive Ventilation Breather Filter System Installation:

A passive ventilation breather filter system will be installed on an existing above-grade riser on the primary receiver tank in accordance with ALARACT Demonstration 1 and 16. The primary tank breather filter will serve as the static vent for the instrument air injected (at a maximum of 9 cubic feet per hour) into the receiver tank

through a set of three weight-factor dip tubes, which mixes with, and dilutes, any flammable gases. The primary tank breather filter will allow flammable gases to escape while collecting any airborne radioactive particulates.

A passive ventilation breather filter system will be installed above-grade on an existing riser or the existing annulus inlet filter riser in accordance with ALARACT 1 and 16. The annulus breather filter will provide for the exchange of ambient air with the annulus tank during atmospheric pressure fluctuations and will allow vapors to escape.

The breather filter system will, at a minimum, consist of an isolation valve (normally open during operation), filter housing, HEPA filter, and loop seal assembly. The isolation valve will isolate the HEPA filter from the tank to facilitate testing of the filter, and to isolate the system until the filter or housing can be replaced.

HEPA Filter Bank Isolation and Removal:

The isolation and removal of the HEPA filter bank located in the 244-S DCRT filter pit will require the deactivation of the HEPA filter bank instrumentation and alarms, the removal and disposal of the HEPA filter bank, and the installation of the filter pit duct jumper assembly, in accordance with ALARACT Demonstrations 6, 14, and 16. The 296-S-22 exhauster is equipped with a HEPA filter bank inside the filter pit. The HEPA filter bank is attached to three nozzles in the filter pit: one nozzle to the catch tank, one nozzle to the annulus, and one nozzle to the ventilation exhaust ductwork. The HEPA filter bank will be disconnected from the nozzles and removed for disposal. A filter pit duct jumper assembly (4" schedule 40 pipe) will be connected to the catch tank nozzle and ventilation exhaust ductwork nozzle to provide the ventilation path to the newly installed passive breather filters. The third nozzle to the annulus will be closed in the filter pit. The filter pit duct jumper assembly will be fabricated in accordance with ASME B31.3 and tested in accordance with ASME AG-1.

Electrical Equipment and Instrumentation Isolation:

The isolation of electrical equipment and instrumentation on the 244-S DCRT will require the disconnection of various power supplies (e.g., exhaust fan, motor operated valves, heat trace, sampler pumps, continuous air monitor, and alarms) and isolation of instrumentation (e.g., HEPA filter bank pressure indicators) that support operation and monitoring of the stack ventilation system in accordance with ALARACT 16. Disconnection is the physical disconnection and removal of wires from the power source. Pit entries are not required to disconnect power or isolate instrumentation.

296-S-22 Stack Isolation:

The 296-S-22 stack will be isolated via mechanical isolations. Blank flanges will be installed on the duct end and on the suction side of the exhaust fan. A closure cap will be installed on top of the exhaust stack. The exhaust stack drain line will be cut and capped above grade. This work will be done in accordance with ALARACT Demonstration 16.

244-TX DCRT (296-T-18 STACK)

Passive Ventilation Breather Filter Installation:

A passive ventilation breather filter system will be installed on an existing above-grade riser on the primary receiver tank in accordance with ALARACT Demonstration 1 and 16. The primary tank breather filter will serve as the static vent for the instrument air injected (at a maximum of 9 cubic feet per hour) into the receiver tank through a set of three weight-factor dip tubes, which mixes with, and dilutes, any flammable gases. The primary tank breather filter will allow flammable gases to escape while collecting any airborne radioactive particulates.

A passive ventilation breather filter system will be installed above-grade on an existing riser or the existing annulus inlet filter riser in accordance with ALARACT 1 and 16. The annulus breather filter will provide for the exchange of ambient air with the annulus tank during atmospheric pressure fluctuations and will collect potential airborne radioactive particulates from the annulus space while allowing vapors to escape.

The breather filter system will, at a minimum, consist of an isolation valve (normally open during operation), filter housing, HEPA filter, and loop seal assembly. The isolation valve will isolate the HEPA filter from the tank to

facilitate testing of the filter, and to isolate the system until the filter or housing can be replaced.

HEPA Filter Bank Isolation and Removal:

Removal of the HEPA filter bank in the 244-TX DCRT filter pit is not required. The HEPA filter bank will be isolated via closure of manual valves and the deactivation of motor-controlled valves. Above-grade duct/pipe will be capped. The associated HEPA filter bank instrumentation and alarms will be deactivated. This work will be done in accordance with ALARACT 16.

Electrical Equipment and Instrumentation Isolation:

The isolation of electrical equipment and instrumentation on the 244-TX DCRT will require the disconnection of various power supplies (e.g., exhaust fan, motor operated valves, heat trace, sampler pumps, continuous air monitor, and alarms) and isolation of instrumentation (e.g., HEPA filter bank pressure indicators) that support operation and monitoring of the stack ventilation system. Disconnection is the physical disconnection and removal of wires from the power source in accordance with ALARACT Demonstration 16. Pit entries are not required to disconnect power or isolate instrumentation.

296-T-18 Stack Isolation:

The 296-T-18 stack will be isolated via mechanical isolations. A blank flange will be installed at the suction side of the exhaust fan or at another suitable location near the filter pit outlet to the exhaust stack. A closure cap will be installed on top of the exhaust stack. The exhaust stack drain line will be cut and capped above grade. This work will be done in accordance with ALARACT Demonstration 16.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	2.04E-02	Am - 241	1.17E+01	Am - 243	3.58E-04
Ba - 137 m	2.69E+03	C - 14	4.06E-01	Cd - 113 m	1.40E+00
Cm - 242	1.19E-02	Cm - 243	6.91E-04	Cm - 244	1.26E-02
Co - 60	6.18E-01	Cs - 134	6.84E-03	Cs - 137	2.84E+03
Eu - 152	1.18E-01	Eu - 154	9.29E+00	Eu - 155	5.09E+00
H - 3	1.53E+00	I - 129	5.10E-03	Nb - 93 m	4.18E-01
Ni - 59	1.57E-01	Ni - 63	1.46E+01	Np - 237	9.67E-03
Pa - 231	4.25E-02	Pu - 238	4.84E-01	Pu - 239	9.45E+00
Pu - 240	1.57E+00	Pu - 241	1.23E+01	Pu - 242	8.61E-05
Ra - 226	3.73E-02	Ra - 228	8.82E-03	Ru - 106	8.01E-06
Sb - 125	6.95E-01	Se - 79	1.22E-02	Sm - 151	3.74E+02
Sn - 126	6.02E-02	Sr - 90	5.31E+03	Tc - 99	2.76E+00
Th - 229	4.01E-03	Th - 232	1.13E-03	U - 232	6.22E-03
U - 233	7.78E-02	U - 234	3.07E-02	U - 235	1.28E-03
U - 236	6.36E-04	U - 238	2.87E-02	Y - 90	5.31E+03

Zr - 93	5.03E-01

4) Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1. HEPA filters shall have a minimum efficiency of 99.95%.

Emission Unit ID: 969

200W P-244TX-003

244-TX Annulus HEPA

This is a MINOR, PASSIVELY ventilated emission unit.

244-TX DCRT

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a double container receiver tank (DCRT) passive breather filter ventilation system used to support tank farm operations, such as but not limited to wasted retrieval and operation support activities for 241-TX Tank Farm. The tanks stored radioactive waste during transfer operations. Any activity other than temporary storage and normal operation support will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is a passive breather filter ventilation system that operates continuously.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Isolation and Closure of Exhaust Stacks 296-A-25, 296-B-28, 296-S-22 and 296-T-18 (Replaces NOC 796)	AIR 12-338	2/23/2012	859

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.20E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.20E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

244-S DCRT (296-S-22 STACK)

Passive Ventilation Breather Filter System Installation:

A passive ventilation breather filter system will be installed on an existing above-grade riser on the primary receiver tank in accordance with ALARACT Demonstration 1 and 16. The primary tank breather filter will serve as the static vent for the instrument air injected (at a maximum of 9 cubic feet per hour) into the receiver tank

through a set of three weight-factor dip tubes, which mixes with, and dilutes, any flammable gases. The primary tank breather filter will allow flammable gases to escape while collecting any airborne radioactive particulates.

A passive ventilation breather filter system will be installed above-grade on an existing riser or the existing annulus inlet filter riser in accordance with ALARACT 1 and 16. The annulus breather filter will provide for the exchange of ambient air with the annulus tank during atmospheric pressure fluctuations and will allow vapors to escape.

The breather filter system will, at a minimum, consist of an isolation valve (normally open during operation), filter housing, HEPA filter, and loop seal assembly. The isolation valve will isolate the HEPA filter from the tank to facilitate testing of the filter, and to isolate the system until the filter or housing can be replaced.

HEPA Filter Bank Isolation and Removal:

The isolation and removal of the HEPA filter bank located in the 244-S DCRT filter pit will require the deactivation of the HEPA filter bank instrumentation and alarms, the removal and disposal of the HEPA filter bank, and the installation of the filter pit duct jumper assembly, in accordance with ALARACT Demonstrations 6, 14, and 16. The 296-S-22 exhauster is equipped with a HEPA filter bank inside the filter pit. The HEPA filter bank is attached to three nozzles in the filter pit: one nozzle to the catch tank, one nozzle to the annulus, and one nozzle to the ventilation exhaust ductwork. The HEPA filter bank will be disconnected from the nozzles and removed for disposal. A filter pit duct jumper assembly (4" schedule 40 pipe) will be connected to the catch tank nozzle and ventilation exhaust ductwork nozzle to provide the ventilation path to the newly installed passive breather filters. The third nozzle to the annulus will be closed in the filter pit. The filter pit duct jumper assembly will be fabricated in accordance with ASME B31.3 and tested in accordance with ASME AG-1.

Electrical Equipment and Instrumentation Isolation:

The isolation of electrical equipment and instrumentation on the 244-S DCRT will require the disconnection of various power supplies (e.g., exhaust fan, motor operated valves, heat trace, sampler pumps, continuous air monitor, and alarms) and isolation of instrumentation (e.g., HEPA filter bank pressure indicators) that support operation and monitoring of the stack ventilation system in accordance with ALARACT 16. Disconnection is the physical disconnection and removal of wires from the power source. Pit entries are not required to disconnect power or isolate instrumentation.

296-S-22 Stack Isolation:

The 296-S-22 stack will be isolated via mechanical isolations. Blank flanges will be installed on the duct end and on the suction side of the exhaust fan. A closure cap will be installed on top of the exhaust stack. The exhaust stack drain line will be cut and capped above grade. This work will be done in accordance with ALARACT Demonstration 16.

244-TX DCRT (296-T-18 STACK)

Passive Ventilation Breather Filter Installation:

A passive ventilation breather filter system will be installed on an existing above-grade riser on the primary receiver tank in accordance with ALARACT Demonstration 1 and 16. The primary tank breather filter will serve as the static vent for the instrument air injected (at a maximum of 9 cubic feet per hour) into the receiver tank through a set of three weight-factor dip tubes, which mixes with, and dilutes, any flammable gases. The primary tank breather filter will allow flammable gases to escape while collecting any airborne radioactive particulates.

A passive ventilation breather filter system will be installed above-grade on an existing riser or the existing annulus inlet filter riser in accordance with ALARACT 1 and 16. The annulus breather filter will provide for the exchange of ambient air with the annulus tank during atmospheric pressure fluctuations and will collect potential airborne radioactive particulates from the annulus space while allowing vapors to escape.

The breather filter system will, at a minimum, consist of an isolation valve (normally open during operation), filter housing, HEPA filter, and loop seal assembly. The isolation valve will isolate the HEPA filter from the tank to

facilitate testing of the filter, and to isolate the system until the filter or housing can be replaced.

HEPA Filter Bank Isolation and Removal:

Removal of the HEPA filter bank in the 244-TX DCRT filter pit is not required. The HEPA filter bank will be isolated via closure of manual valves and the deactivation of motor-controlled valves. Above-grade duct/pipe will be capped. The associated HEPA filter bank instrumentation and alarms will be deactivated. This work will be done in accordance with ALARACT 16.

Electrical Equipment and Instrumentation Isolation:

The isolation of electrical equipment and instrumentation on the 244-TX DCRT will require the disconnection of various power supplies (e.g., exhaust fan, motor operated valves, heat trace, sampler pumps, continuous air monitor, and alarms) and isolation of instrumentation (e.g., HEPA filter bank pressure indicators) that support operation and monitoring of the stack ventilation system. Disconnection is the physical disconnection and removal of wires from the power source in accordance with ALARACT Demonstration 16. Pit entries are not required to disconnect power or isolate instrumentation.

296-T-18 Stack Isolation:

The 296-T-18 stack will be isolated via mechanical isolations. A blank flange will be installed at the suction side of the exhaust fan or at another suitable location near the filter pit outlet to the exhaust stack. A closure cap will be installed on top of the exhaust stack. The exhaust stack drain line will be cut and capped above grade. This work will be done in accordance with ALARACT Demonstration 16.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	4.12E-02	Am - 241	2.37E+01	Am - 243	7.23E-04
Ba - 137 m	5.43E+03	C - 14	8.19E-01	Cd - 113 m	2.83E+00
Cm - 242	2.40E-02	Cm - 243	1.39E-03	Cm - 244	2.56E-02
Co - 60	1.25E+00	Cs - 134	1.38E-02	Cs - 137	5.74E+03
Eu - 152	2.38E-01	Eu - 154	1.88E+01	Eu - 155	1.03E+01
H - 3	3.09E+00	I - 129	1.03E-02	Nb - 93 m	8.44E-01
Ni - 59	3.18E-01	Ni - 63	2.95E+01	Np - 237	1.95E-02
Pa - 231	8.58E-02	Pu - 238	4.50E+02	Pu - 239	3.16E+01
Pu - 240	1.92E+01	Pu - 241	6.28E+04	Pu - 242	1.74E-04
Ra - 226	7.54E-02	Ra - 228	1.78E-02	Ru - 106	1.62E-05
Sb - 125	1.40E+00	Se - 79	2.46E-02	Sm - 151	7.55E+02
Sn - 126	1.22E-01	Sr - 90	1.07E+04	Tc - 99	5.57E+00
Th - 229	8.09E-03	Th - 232	2.28E-03	U - 232	1.26E-02
U - 233	1.57E-01	U - 234	6.19E-02	U - 235	2.59E-03
U - 236	1.28E-03	U - 238	5.80E-02	Y - 90	1.07E+04

Zr - 93	1.02E+00

4) Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1. HEPA filters shall have a minimum efficiency of 99.95%.

Emission Unit ID: 1128

400 Area Diffuse/Fugitive

400 Area Diffuse/Fugitive Emissions

This is a MINOR, FUGITIVE, non-point source emission unit.

400 Area diffuse/fugitive emissions

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114	Each radionuclide that could contribute greater than 10 percent of the potential-to-emit TEDE	Per the sitewide ambient monitoring program

Sampling Requirements Per the sitewide ambient monitoring program samples will be collected from the existing near-facility monitoring stations

Additional Requirements

See Section 5 of the general conditions in this license for additional information.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Associated with emissions from operations, deactivation, surveillance and maintenance, and inactive sites in the 400 Area from sources not actively ventilated.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Sodium Residuals Reaction/Removal and other Deactivation Work Activities at the Fast Flux Test Facility Replaces NOC 776)	AIR 12-314	2/23/2012	833

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.70E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The activity will involve reaction of sodium residuals associated with the Fast Flux Test Facility Project systems and equipment. This activity could be conducted in place or at designated cleaning locations. Typically, the sodium residuals would be reacted with superheated steam. The primary advantages of the superheated steam process (SSP) are that it does not allow condensation to occur and component cleaning can be performed in a shorter time period. Prior to steam injection into the system to be cleaned the steam is heated to ~ 204 C (400 F). The equipment to be cleaned is heated to a minimum of 100 C (212 F) and higher if possible. Most systems will require multiple injection points. As the superheated steam reacts with the metallic sodium, the temperature increases. The temperature is controlled such that the maximum reaction temperature is no greater than ~538 C (1,000 F).

Because of the high initial temperature and the increase of the temperature caused by the reaction, no condensation occurs. The caustic formed is a liquid at the processing temperatures and because it is denser than the liquid sodium, it settles to the bottom of any pools leaving the sodium on top where it is always exposed to the superheated steam. Due to the continued exposure of the molten sodium to the superheated steam, the reaction continues at a constant rate. Superheated steam injection is continued until hydrogen is no longer being generated. The system is then cooled and rinsed and the fluid is drained from the system.

PERFORM IN PLACE CLEANING OF VESSELS, COMPONENTS, AND LARGE BORE PIPE
A PTRAEU would be used to clean, in place, large bore sodium pipe [greater than or equal to ~20 centimeter (8 inch) diameter], components and vessels in the primary and secondary sodium cooling systems. The PTRAEU also would be used to clean the Interim Decay Storage (IDS) and Fuel Storage Facility (FSF) vessels [Note: Select components in the primary sodium system, and large diameter piping and components in the secondary sodium system may be removed and cleaned in FSF or the Maintenance and Storage Facility (MASF), as described below].

Typically, penetrations into the piping/vessels would be made at appropriate locations using a low speed drill. Existing sodium heating systems would be energized, and piping/vessels heated to liquefy the existing sodium residuals. A PTRAEU would be connected to the penetration points, and used at various locations to inject the superheated steam into plant systems.

The superheated steam would be injected. Hydrogen generation would be monitored to follow the reaction. Sulfuric acid would be added to the resultant process liquid (i.e., sodium hydroxide solution) to reduce the pH to <13. This solution would be routed for offloading to tanker transport for overland transfer to Liquid Effluent Treatment Facility (LERF) and subsequent treatment at 200 Area Effluent Treatment Facility (ETF). If needed or chosen for use during these activities, the categorical NOC for sitewide use of tanker loading for wastewater could be used.

REMOVE SMALL BORE PIPE AND COMPONENTS FOR REACTION IN A CLEANING STATION
Small bore piping [<20 centimeter (8 inch) diameter], valves and other components [e.g., core component pots from IDS, fuel storage tubes from FSF, and dump heat exchangers (DHX) tube bundles] may be removed and processed in a proposed stationary cleaning station that would be located in FSF. Mechanical means (e.g., portable saws, pipe cutters) would be used to cut the pipe, valves, and components into manageable size. All heat exchanger tube bundles, which contain multiple parallel flow paths, would be dismantled to ensure effective cleaning.

The proposed FSF stationary cleaning station would consist of a chamber with removable rack for loading piping and components. The piping would be loaded at an angle, allowing the residual sodium to drain to a catch basin when heated before the injection of inert gas and/or reaction medium. The process in the cleaning station would be consistent with the in place process where the resultant waste sodium hydroxide solution is collected, the pH reduced to <13, and transported to the 200 Areas. The FSF is considered an appropriate location due to availability of sufficient floor space, existing overhead crane, available utilities, and proximity to proposed operations. If needed or chosen for use during these activities, the categorical NOC for sitewide use of tanker loading for wastewater could be used.

Cleaned piping and components would be disposed of in a Hanford Site solid waste management facility.

REMOVE LARGE COMPONENTS FOR CLEANING
The large diameter cleaning vessel (LDCV) located in the existing MASF could be used for cleaning large components following removal (e.g., primary sodium pumps, intermediate heat exchanger (IHX) tube bundles, and instrument trees). The LDCV could be retrofitted with a new super heated steam supply and associated control system for use in cleaning the aforementioned components. The IHX tube bundles, which contain multiple parallel sodium flow paths, may be dismantled to ensure effective cleaning. Small bore pipe and components also could be cleaned in MASF, if necessary.

OTHER DEACTIVATION ACTIVITIES
Other related routine, continued deactivation activities that could occur as part of the proposed action are: remove/dispose of asbestos; remove/stabilize existing hazards in conjunction with systems and equipment deactivation associated with sodium residuals; remove/recycle/dispose excess deactivated equipment and components; and remove depleted uranium and/or lead shielding.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 5.70E-03 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0 Alpha release rate based on Pu-239	9.00E-15	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
B/G - 0 Beta/Gamma release rate based on Cs-137	1.50E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

The radioactive isotopes identified for this emission unit are (no quantities specified):

Ba - 137 m	Co - 60	Cs - 134	Cs - 137	H - 3
Mn - 54	Na - 22	Pu - 239	Ru - 103	Zn - 65

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) Operations shall be performed in accordance with the controls specified in radiation work planning documents and/or operating procedures and shall be available for inspection upon request.

5) All activities shall be conducted under the auspices of radiological or health physics control technicians or personnel. Routine field surveys, including swipes/smears, shall be conducted. Fixatives, covers, or other standard measures shall be used, as necessary to contain contamination.

6) Appropriate spill prevention procedures shall be in place to minimize release of radioactive liquid waste to the environment, and to provide immediate cleanup of any liquid spills.

7) The total amount of sodium reacted from all emission units shall not exceed 4,000 gallons per year with no more than 2,000 gallons challenging a single emission unit.

8) Other radioisotopes may be present due to activation products, fission products, decay products, and tracer gases. These other isotopes are approved for this emission unit and will not contribute significantly to the calculated potential-to-emit.

Emission Unit ID: 1129

200W P-241U301B-001

241-U-301B

This is a MINOR, PASSIVELY ventilated emission unit.

241-U TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows the catch tank to vent to the atmosphere under tank farm storage, maintenance and operations. Any activity other than waste transfer support, maintenance, and normal operations will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is a passive breather filter that operated continuously.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Installation and Operation of Breather Filters on Miscellaneous Tanks. (Replaced NOC ID 739)	AIR 12-342	2/23/2012	865

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.88E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.88E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted.

Installation of a passive breather filter on tanks 241-UX-302A, 241-AZ-154, 241-U-301B and 241-S-302. The breather filter will be a radial HEPA filter with a removal efficiency of 99.97% and a rated capacity of 40 cfm. The filter will be replaced on an annual basis, eliminating the need for annual aerosol testing. The breather filter shall minimize the amount of radioactive particulates emitted as a consequence of tank breathing due to barometric pressure changes. The catch tank will breath at a rate of approximately 0.007 cfm with a flow rate less than 1 cfm.

The 241-UX-302A catch tank is a 17,760 gallon capacity catch tank which has been isolated and currently

contains 1,736 gallons of waste.

The 241-AZ-154 catch tank is a 869 gallon capacity catch tank designed to receive condensate from the 241-AZ and 241-AY double shell tank heating coils. The steam coils have sense been blanked off. Current data indicates the tank is empty. Periodically water intrusion is seen in this tank from rain and snow.

The 241-U-301B catch tank is a 36,000 gallon capacity catch tank designed to support waste transfers from 244-TX via 241-U-151 and 241-U-152. Current data indicates that 1,467 gallons of waste remain in this tank.

The 241-S-302 catch tank is a 17,700 gallon capacity catch tank designed to receive leakage, spills, line flushes and drainage associated with support waste transfers through Diversion Box 240-S-151. Since isolation in 1987 the tank has received intrusion of snow melt and rainwaterto it's present level.

The installation of breather filters is intended to minimize any radioactive particulates that may be emitted as a consequence of barometric pressure changes.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Am - 241	1.11E-09	Pu - 234	1.39E-09	Sr - 82	3.33E-09
U - 0	1.28E-10	U - 0	3.28E-10	Zn - 65	7.77E-08

4) The breather filter must meet all of the requirements as described in the AG-1 COMPLIANCE MATRIX FOR FLANDERS FILTER MODEL 0-007-1-12-RF-NU-00-E3-Z04059B (or current equivalent)" as described by the AG-1 Compliance Matrix attached to the Notice of Construction application as Appendix A.

   Should a change to the Compliance Matrix be required, WDOH approval of the deviation shall be obtained prior to installation of the new breather filter.

5) All removal and installation operations, of the breather filter, must follow the requirements outlined in ALARACT 1 "Demonstration for Riser Preparation/Opening", and ALARACT 16 "Demonstration for Work on Potentially Contaminated Ventilation System Components".

6) The breather filter must be replaced annually. The new filter must be a Type 1 (radial flow filter) with a Type C filter pack, as define by AG-1 Code on Nuclear Air and Gas Treatment Section FK, Special HEPA Filters. The filter frames, end-caps, flanges, and grilles must be made of 304/304L stainless steel. The filter must use UL-586 compliant resin to provide the sealing of the filter media to the frame. The filter must have a minimum removal efficiency of 99.97% and a rated flow of 40 cfm.

Emission Unit ID: 1130

200E P-241AZ154-001

241-AZ-154

This is a MINOR, PASSIVELY ventilated emission unit.

241-AZ TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows the catch tank to vent to the atmosphere under tank farm storage, maintenance and operations. Any activity other than waste transfer support, maintenance, and normal operations will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is a passive breather filter that operated continuously.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Installation and Operation of Breather Filters on Miscellaneous Tanks. (Replaced NOC ID 739)	AIR 12-342	2/23/2012	865

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.88E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.88E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted.

Installation of a passive breather filter on tanks 241-UX-302A, 241-AZ-154, 241-U-301B and 241-S-302. The breather filter will be a radial HEPA filter with a removal efficiency of 99.97% and a rated capacity of 40 cfm. The filter will be replaced on an annual basis, eliminating the need for annual aerosol testing. The breather filter shall minimize the amount of radioactive particulates emitted as a consequence of tank breathing due to barometric pressure changes. The catch tank will breath at a rate of approximately 0.007 cfm with a flow rate less than 1 cfm.

The 241-UX-302A catch tank is a 17,760 gallon capacity catch tank which has been isolated and currently

contains 1,736 gallons of waste.

The 241-AZ-154 catch tank is a 869 gallon capacity catch tank designed to receive condensate from the 241-AZ and 241-AY double shell tank heating coils. The steam coils have sense been blanked off. Current data indicates the tank is empty. Periodically water intrusion is seen in this tank from rain and snow.

The 241-U-301B catch tank is a 36,000 gallon capacity catch tank designed to support waste transfers from 244-TX via 241-U-151 and 241-U-152. Current data indicates that 1,467 gallons of waste remain in this tank.

The 241-S-302 catch tank is a 17,700 gallon capacity catch tank designed to receive leakage, spills, line flushes and drainage associated with support waste transfers through Diversion Box 240-S-151. Since isolation in 1987 the tank has received intrusion of snow melt and rainwaterto it's present level.

The installation of breather filters is intended to minimize any radioactive particulates that may be emitted as a consequence of barometric pressure changes.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Alpha - 0	1.99E-11	Beta - 0	1.32E-08	Gamma - 0	1.27E-08
Based on 241Am		Based on 90Sr		Based on 137Cs	

4) The breather filter must meet all of the requirements as described in the AG-1 COMPLIANCE MATRIX FOR FLANDERS FILTER MODEL 0-007-1-12-RF-NU-00-E3-Z04059B (or current equivalent)" as described by the AG-1 Compliance Matrix attached to the Notice of Construction application as Appendix A.

   Should a change to the Compliance Matrix be required, WDOH approval of the deviation shall be obtained prior to installation of the new breather filter.

5) All removal and installation operations, of the breather filter, must follow the requirements outlined in ALARACT 1 "Demonstration for Riser Preparation/Opening", and ALARACT 16 "Demonstration for Work on Potentially Contaminated Ventilation System Components".

6) The breather filter must be replaced annually. The new filter must be a Type 1 (radial flow filter) with a Type C filter pack, as define by AG-1 Code on Nuclear Air and Gas Treatment Section FK, Special HEPA Filters. The filter frames, end-caps, flanges, and grilles must be made of 304/304L stainless steel. The filter must use UL-586 compliant resin to provide the sealing of the filter media to the frame. The filter must have a minimum removal efficiency of 99.97% and a rated flow of 40 cfm.

Emission Unit ID: 1176

400

FFTF PTRAEU's

This is a MINOR, ACTIVELY ventilated emission unit.

FAST FLUX TEST FACILITY COMPLEX

Abatement Technology NONE WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Estimates based on sodium residuals reacted.	Ratio of dissolved isotopic sodium.	Prior to transfer; or once a calendar year during active operations.

Sampling Requirements Samples of waste water.

Additional Requirements

Estimates will be based on sample analyses of collected waste water from sodium residuals reaction. The basis for determining the maximum airborne radiological releases would be a 1:1 ratio of dissolved isotopic sodium (i.e., sodium-22) to the calculated curies released.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Sodium Residuals Reaction/Removal and other Deactivation Work Activities at the Fast Flux Test Facility Replaces NOC 776)	AIR 12-314	2/23/2012	833

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.70E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The activity will involve reaction of sodium residuals associated with the Fast Flux Test Facility Project systems and equipment. This activity could be conducted in place or at designated cleaning locations. Typically, the sodium residuals would be reacted with superheated steam. The primary advantages of the superheated steam process (SSP) are that it does not allow condensation to occur and component cleaning can be performed in a shorter time period. Prior to steam injection into the system to be cleaned the steam is heated to ~ 204 C (400 F). The equipment to be cleaned is heated to a minimum of 100 C (212 F) and higher if possible. Most systems will require multiple injection points. As the superheated steam reacts with the metallic sodium, the temperature increases. The temperature is controlled such that the maximum reaction temperature is no greater than ~538 C (1,000 F).

Because of the high initial temperature and the increase of the temperature caused by the reaction, no condensation occurs. The caustic formed is a liquid at the processing temperatures and because it is denser than the liquid sodium, it settles to the bottom of any pools leaving the sodium on top where it is always exposed to the superheated steam. Due to the continued exposure of the molten sodium to the superheated steam, the reaction continues at a constant rate. Superheated steam injection is continued until hydrogen is no longer being generated. The system is then cooled and rinsed and the fluid is drained from the system.

PERFORM IN PLACE CLEANING OF VESSELS, COMPONENTS, AND LARGE BORE PIPE
A PTRAEU would be used to clean, in place, large bore sodium pipe [greater than or equal to ~20 centimeter (8 inch) diameter], components and vessels in the primary and secondary sodium cooling systems. The PTRAEU also would be used to clean the Interim Decay Storage (IDS) and Fuel Storage Facility (FSF) vessels [Note: Select components in the primary sodium system, and large diameter piping and components in the secondary sodium system may be removed and cleaned in FSF or the Maintenance and Storage Facility (MASF), as described below].

Typically, penetrations into the piping/vessels would be made at appropriate locations using a low speed drill. Existing sodium heating systems would be energized, and piping/vessels heated to liquefy the existing sodium residuals. A PTRAEU would be connected to the penetration points, and used at various locations to inject the superheated steam into plant systems.

The superheated steam would be injected. Hydrogen generation would be monitored to follow the reaction. Sulfuric acid would be added to the resultant process liquid (i.e., sodium hydroxide solution) to reduce the pH to <13. This solution would be routed for offloading to tanker transport for overland transfer to Liquid Effluent Treatment Facility (LERF) and subsequent treatment at 200 Area Effluent Treatment Facility (ETF). If needed or chosen for use during these activities, the categorical NOC for sitewide use of tanker loading for wastewater could be used.

REMOVE SMALL BORE PIPE AND COMPONENTS FOR REACTION IN A CLEANING STATION
Small bore piping [<20 centimeter (8 inch) diameter], valves and other components [e.g., core component pots from IDS, fuel storage tubes from FSF, and dump heat exchangers (DHX) tube bundles] may be removed and processed in a proposed stationary cleaning station that would be located in FSF. Mechanical means (e.g., portable saws, pipe cutters) would be used to cut the pipe, valves, and components into manageable size. All heat exchanger tube bundles, which contain multiple parallel flow paths, would be dismantled to ensure effective cleaning.

The proposed FSF stationary cleaning station would consist of a chamber with removable rack for loading piping and components. The piping would be loaded at an angle, allowing the residual sodium to drain to a catch basin when heated before the injection of inert gas and/or reaction medium. The process in the cleaning station would be consistent with the in place process where the resultant waste sodium hydroxide solution is collected, the pH reduced to <13, and transported to the 200 Areas. The FSF is considered an appropriate location due to availability of sufficient floor space, existing overhead crane, available utilities, and proximity to proposed operations. If needed or chosen for use during these activities, the categorical NOC for sitewide use of tanker loading for wastewater could be used.

Cleaned piping and components would be disposed of in a Hanford Site solid waste management facility.

REMOVE LARGE COMPONENTS FOR CLEANING
The large diameter cleaning vessel (LDCV) located in the existing MASF could be used for cleaning large components following removal (e.g., primary sodium pumps, intermediate heat exchanger (IHX) tube bundles, and instrument trees). The LDCV could be retrofitted with a new super heated steam supply and associated control system for use in cleaning the aforementioned components. The IHX tube bundles, which contain multiple parallel sodium flow paths, may be dismantled to ensure effective cleaning. Small bore pipe and components also could be cleaned in MASF, if necessary.

OTHER DEACTIVATION ACTIVITIES
Other related routine, continued deactivation activities that could occur as part of the proposed action are: remove/dispose of asbestos; remove/stabilize existing hazards in conjunction with systems and equipment deactivation associated with sodium residuals; remove/recycle/dispose excess deactivated equipment and components; and remove depleted uranium and/or lead shielding.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 5.70E-03 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0 Alpha release rate based on PU-239	1.80E-14	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
B/G - 0 Beta/Gamma release rate based on Cs-137	2.50E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

The radioactive isotopes identified for this emission unit are (no quantities specified):

Ba - 137 m	Co - 60	Cs - 134	H - 3	Mn - 54
Na - 22	Ru - 106	Zn - 65		

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) Operations shall be performed in accordance with the controls specified in radiation work planning documents and/or operating procedures and shall be available for inspection upon request.

5) All activities shall be conducted under the auspices of radiological or health physics control technicians or personnel. Routine field surveys, including swipes/smears, shall be conducted. Fixatives, covers, or other standard measures shall be used, as necessary to contain contamination.

6) Appropriate spill prevention procedures shall be in place to minimize release of radioactive liquid waste to the environment, and to provide immediate cleanup of any liquid spills.

7) The total amount of sodium reacted from all emission units shall not exceed 4,000 gallons per year with no more than 2,000 gallons challenging a single emission unit.

8) Other radioisotopes may be present due to activation products, fission products, decay products, and tracer gases. These other isotopes are approved for this emission unit and will not contribute significantly to the calculated potential-to-emit.

Emission Unit ID: 1180

300 EP-331-02-S

EP-331-02-S

This is a MINOR, ACTIVELY ventilated emission unit.

331 LIFE SCI LAB

Emission Unit Information

Stack Height: 42.25 ft. 12.88 m. Stack Diameter 2.00 ft. 0.61 m.

Average Stack Effluent Temperature: 75 degrees Fahrenheit. 24 degrees Celsius.

Average Stack ExhaustVelocity: 25.70 ft/second. 7.83 m/second.

Abatement Technology NONE WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	None		There are no HEPA filters Installed

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
	The radionuclide emissions will be determined using 40 CFR 61, Appendix D calculations in lieu of monitoring (EPA 1989)		

Sampling Requirements None

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status EP-331-02-S exhausts a combination of non-filtered room air and hood exhaust from Rooms 195 through 198 as well as the clean corridor 124.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Life Science Laboratory - I (331 Building), Revision 0	AIR 11-302	3/9/2011	787

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 4.97E-04 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) The mission of the 331 Building is to conduct fundamental science and develop environmental technology. Research activities conducted in the 331 Building support the Hanford Site environmental mission and other key DOE missions of national and international importance. Research activities performed within the 331 Building include the use of radioactive materials. Laboratory processes are conducted “continuously” (i.e., year-round, during normal business, swing-shift, night-shift, and weekend hours). The 331 Building provides research capabilities to study the interactions of chemicals and radionuclides with plants, animals, and microorganisms and the fate of chemicals and radionuclides in the environment. The building also has research capabilities for conducting studies on the uptake and transformation effects of radioactive material and chemicals in soils, plants, animals, and microorganisms.
In particular, the Biological Monitoring and Modeling Group conducts experimental studies to understand deposition, metabolism, and clearance of materials using whole animal in vivo and cellular in vitro model systems, as well as basic and applied studies to evaluate the health risks associated with internal and external radiation exposures. This work is to provide data that serves as a basis for precise cross-species and low-dose extrapolation of health risks and to supply information to understand disease mechanisms as well as levels and effect. Research emphasis is currently in studies to understand species differences in radiation exposures, evaluation of efficacy of mitigators and protectors of internal and external radiation exposures, chemical-

specific studies to understand health risks associated with exposure, and studies to understand mechanisms of species-dependent environmental injuries. The systems under study include: laboratory rodents and larger animal models, and cellular systems (isolated hepatocytes, etc.). An outcome of this research program activity is the development of instrumentation and analytical methods that are applied in an innovative manner to facilitate a new level of understanding of human exposure and response that can be applied to other important research initiatives.

The research activities conducted in the 331 Building, emission unit EP-331-02-S include:

•Examining the uptake and transformation effects of radionuclides in soils, plants, animals, and microorganisms.
•Experimental studies with molecular and cellular processes.
•Laboratory setup projects involving fume hood removals/upgrades and ductwork tie-in.
•Measurements of exposures to physical, radiological, and chemical agents.
•Research activities involving various types of radioactive material, including mixed activation products (MAPs), mixed fission products (MFPs), and naturally-occurring radioactive material, actinides, and a wide range of standards and tracer radionuclides.
•Studies to determine precise cross-species and low-dose extrapolation of health risks and to understand disease mechanisms.
•Studies of the health effects of chemical and radiation exposure on animals and in cells grown in culture.
•Studies with radioactive tracer materials in biological and non-biological systems.
•Work with animals including dosing and material recovery (e.g., feces and urine).

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 4.97E-04 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Ac - 225	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ac - 227	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ac - 228	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ag - 108	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ag - 108 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ag - 109 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ag - 110 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ag - 110	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ag - 111	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Al - 26	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Al - 28	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

Am - 241	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Am - 241	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Am - 242 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Am - 242	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Am - 243	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Am - 245	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ar - 37	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ar - 39	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ar - 41	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ar - 42	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
As - 74	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
As - 76	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
At - 217	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Au - 195	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Au - 198	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ba - 131	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ba - 133	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ba - 133 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ba - 137 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ba - 139	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

Ba - 140	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 141	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 142	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Be - 10	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Be - 7	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 207	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 210	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 211	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 212	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 213	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 214	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bk - 249	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bk - 250	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Br - 82	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Br - 82 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Br - 83	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Br - 84	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Br - 84 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Br - 85	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

C - 11	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

C - 14	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

C - 15	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ca - 41	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ca - 45	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ca - 47	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cd - 109	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cd - 113	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cd - 113 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cd - 115 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cd - 115	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ce - 139	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ce - 141	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ce - 142	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ce - 143	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ce - 144	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cf - 249	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cf - 250	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cf - 251	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cf - 252	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cl - 36	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cm - 241	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Cm - 242	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Cm - 243	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Cm - 244	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Cm - 245	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Cm - 246	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Cm - 247	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Cm - 248	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Co - 56	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Co - 57	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Co - 58	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Co - 60	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Cr - 49	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Cr - 51	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Cr - 55	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Cs - 131	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Cs - 132	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Cs - 134 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Cs - 134	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Cs - 135	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

Cs - 136	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 137	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 137	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 138	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 139	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cu - 64	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Dy - 165	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Er - 169	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Er - 171	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Es - 254	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 150	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 152 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 152	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 154	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 155	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 156	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Eu - 157	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

F - 18	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Fe - 55	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Fe - 59	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Fr - 221	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Fr - 223	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ga - 67	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ga - 72	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Gd - 148	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Gd - 149	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Gd - 151	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Gd - 152	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Gd - 153	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ge - 68	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
H - 3	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Hf - 175	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Hf - 178 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Hf - 181	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Hf - 182	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Hg - 203	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ho - 166 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ho - 166	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 122	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 123	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

I - 125	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 129	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 130	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 130 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 131	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 132	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 132 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 133	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 133 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 134	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 134 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 135	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
In - 106	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
In - 111	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
In - 113 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
In - 114 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
In - 114	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
In - 115	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
In - 115 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ir - 192	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

K - 40	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
K - 42	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Kr - 81 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Kr - 81	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Kr - 83 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Kr - 85 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Kr - 85	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Kr - 87	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Kr - 88	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Kr - 89	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Kr - 90	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
La - 138	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
La - 140	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
La - 141	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
La - 142	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Lu - 177	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Mg - 27	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Mg - 28	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Mn - 52	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Mn - 54	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

Mn - 56	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mo - 93	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mo - 99	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

N - 13	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Na - 22	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Na - 24	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 91 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 91	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 92	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 93 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 94	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 95 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 95	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 97	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 97 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nd - 144	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nd - 147	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ni - 56	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ni - 59	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ni - 63	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ni - 65	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Np - 235	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Np - 236	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Np - 237	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Np - 238	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Np - 239	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Np - 240	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Np - 240 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

O - 15	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Os - 191	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

P - 32	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

P - 33	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pa - 231	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pa - 233	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pa - 234	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pa - 234 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pb - 209	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pb - 210	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pb - 211	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pb - 212	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pb - 214	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pd - 103	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pd - 107	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pd - 109	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 145	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 146	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 147	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 148 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 148	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 149	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 151	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 208	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 209	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 210	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 211	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 212	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 213	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 214	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 215	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 216	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 218	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pr - 143	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pr - 144 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pr - 144	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 234	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 236	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 237	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 238	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 239	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 240	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 241	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 242	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 243	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 244	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ra - 223	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ra - 224	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ra - 225	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ra - 226	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ra - 228	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 81	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 83	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 84	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 86	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 87	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 88	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 89	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 90	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 90 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Re - 186	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Re - 187	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Re - 188	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rh - 102	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rh - 103 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rh - 105	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rh - 105 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rh - 106	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rn - 219	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rn - 220	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rn - 222	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rn - 224	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ru - 103	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ru - 105	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ru - 106	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ru - 97	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
S - 35	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sb - 122	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sb - 124	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sb - 125	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sb - 126	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sb - 126 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sb - 127	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sb - 129	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sc - 46	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sc - 47	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Se - 75	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Se - 79 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Se - 79	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Si - 31	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sm - 145	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sm - 146	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

Sm - 147	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sm - 151	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sm - 153	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sm - 157	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sn - 113	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sn - 117 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sn - 119 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sn - 121 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sn - 121	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sn - 123	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sn - 125	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sn - 126	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sr - 85	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sr - 87 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sr - 89	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sr - 90	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sr - 91	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sr - 92	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ta - 179	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ta - 182	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

Ta - 183	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tb - 160	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tb - 161	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 101	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 95 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 97	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 97 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 98	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 99 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 99	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 121 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 121	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 123	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 123 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 125 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 127 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 127	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 129 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 129	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 131	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 131 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 132	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 133	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 133 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 134	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 227	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 228	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 229	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 230	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 231	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 232	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 233	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 234	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ti - 44	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ti - 45	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ti - 51	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tl - 201	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tl - 204	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tl - 206	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tl - 207	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tl - 208	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Tl - 209	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Tm - 170	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Tm - 171	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 232	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 233	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 234	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 235	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 236	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 237	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 238	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 239	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 240	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
V - 48	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
V - 49	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
W - 181	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
W - 185	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
W - 187	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
W - 188	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 122	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

Xe - 123	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 125	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 127	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 127 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 129 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 131 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 133 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 133	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 135	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 135 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 137	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 138	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Y - 88	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Y - 90 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Y - 90	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Y - 91 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Y - 91	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Y - 92	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Y - 93	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Yb - 164	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

Yb - 169	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Yb - 175	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Yb - 177	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Zn - 65	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Zn - 69	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Zn - 69 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Zr - 88	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Zr - 89	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Zr - 93	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Zr - 95	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Zr - 97	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

The radioactive isotopes identified for this emission unit are (no quantities specified):

Ac - 225	Ac - 227	Ac - 228	Ag - 108 m	Ag - 108
Ag - 109 m	Ag - 110 m	Ag - 110	Ag - 111	Al - 26
Al - 28	Am - 241	Am - 242 m	Am - 242	Am - 243
Am - 245	Ar - 37	Ar - 39	Ar - 41	Ar - 42
As - 74	As - 76	At - 217	Au - 195	Au - 198
Ba - 131	Ba - 133	Ba - 133 m	Ba - 137 m	Ba - 139
Ba - 140	Ba - 141	Ba - 142	Be - 10	Be - 7
Bi - 207	Bi - 210	Bi - 211	Bi - 212	Bi - 213
Bi - 214	Bk - 249	Bk - 250	Br - 82	Br - 82 m
Br - 83	Br - 84	Br - 84 m	Br - 85	C - 11
C - 14	C - 15	Ca - 41	Ca - 45	Ca - 47
Cd - 109	Cd - 113 m	Cd - 113	Cd - 115 m	Cd - 115
Ce - 139	Ce - 141	Ce - 142	Ce - 143	Ce - 144
Cf - 249	Cf - 250	Cf - 251	Cf - 252	Cl - 36
Cm - 241	Cm - 242	Cm - 243	Cm - 244	Cm - 245
Cm - 246	Cm - 247	Cm - 248	Co - 56	Co - 57
Co - 58	Co - 60	Cr - 49	Cr - 51	Cr - 55

Cs - 131	Cs - 132	Cs - 134	Cs - 134 m	Cs - 135
Cs - 136	Cs - 137	Cs - 138	Cs - 139	Cu - 64
Dy - 165	Er - 169	Er - 171	Es - 254	Eu - 150
Eu - 152	Eu - 152 m	Eu - 154	Eu - 155	Eu - 156
Eu - 157	F - 18	Fe - 55	Fe - 59	Fr - 221
Fr - 223	Ga - 67	Ga - 72	Gd - 148	Gd - 149
Gd - 151	Gd - 152	Gd - 153	Ge - 68	H - 3
Hf - 175	Hf - 178 m	Hf - 181	Hf - 182	Hg - 203
Ho - 166	Ho - 166 m	I - 122	I - 123	I - 125
I - 129	I - 130	I - 130 m	I - 131	I - 132
I - 132 m	I - 133	I - 133 m	I - 134	I - 134 m
I - 135	In - 106	In - 111	In - 113 m	In - 114 m
In - 114	In - 115	In - 115 m	Ir - 192	K - 40
K - 42	Kr - 81	Kr - 81 m	Kr - 83 m	Kr - 85
Kr - 85 m	Kr - 87	Kr - 88	Kr - 89	Kr - 90
La - 138	La - 140	La - 141	La - 142	Lu - 177
Mg - 27	Mg - 28	Mn - 52	Mn - 54	Mn - 56
Mo - 93	Mo - 99	N - 13	Na - 22	Na - 24
Nb - 91	Nb - 91 m	Nb - 92	Nb - 93 m	Nb - 94
Nb - 95	Nb - 95 m	Nb - 97	Nb - 97 m	Nd - 144
Nd - 147	Ni - 56	Ni - 59	Ni - 63	Ni - 65
Np - 235	Np - 236	Np - 237	Np - 238	Np - 239
Np - 240	Np - 240 m	O - 15	Os - 191	P - 32
P - 33	Pa - 231	Pa - 233	Pa - 234	Pa - 234 m
Pb - 209	Pb - 210	Pb - 211	Pb - 212	Pb - 214
Pd - 103	Pd - 107	Pd - 109	Pm - 145	Pm - 146
Pm - 147	Pm - 148 m	Pm - 148	Pm - 149	Pm - 151
Po - 208	Po - 209	Po - 210	Po - 211	Po - 212
Po - 213	Po - 214	Po - 215	Po - 216	Po - 218
Pr - 143	Pr - 144	Pr - 144 m	Pu - 234	Pu - 236
Pu - 237	Pu - 238	Pu - 239	Pu - 240	Pu - 241
Pu - 242	Pu - 243	Pu - 244	Ra - 223	Ra - 224
Ra - 225	Ra - 226	Ra - 228	Rb - 81	Rb - 83
Rb - 84	Rb - 86	Rb - 87	Rb - 88	Rb - 89
Rb - 90	Rb - 90 m	Re - 186	Re - 187	Re - 188
Rh - 102	Rh - 103 m	Rh - 105	Rh - 105 m	Rh - 106
Rn - 219	Rn - 220	Rn - 222	Rn - 224	Ru - 103
Ru - 105	Ru - 106	Ru - 97	S - 35	Sb - 122
Sb - 124	Sb - 125	Sb - 126	Sb - 126 m	Sb - 127
Sb - 129	Sc - 46	Sc - 47	Se - 75	Se - 79
Se - 79 m	Si - 31	Sm - 145	Sm - 146	Sm - 147

Sm - 151	Sm - 153	Sm - 157	Sn - 113	Sn - 117 m
Sn - 119 m	Sn - 121 m	Sn - 121	Sn - 123	Sn - 125
Sn - 126	Sr - 85	Sr - 87 m	Sr - 89	Sr - 90
Sr - 91	Sr - 92	Ta - 179	Ta - 182	Ta - 183
Tb - 160	Tb - 161	Tc - 101	Tc - 95 m	Tc - 97
Tc - 97 m	Tc - 98	Tc - 99	Tc - 99 m	Te - 121 m
Te - 121	Te - 123	Te - 123 m	Te - 125 m	Te - 127 m
Te - 127	Te - 129 m	Te - 129	Te - 131	Te - 131 m
Te - 132	Te - 133	Te - 133 m	Te - 134	Th - 227
Th - 228	Th - 229	Th - 230	Th - 231	Th - 232
Th - 233	Th - 234	Ti - 44	Ti - 45	Ti - 51
Tl - 201	Tl - 204	Tl - 206	Tl - 207	Tl - 208
Tl - 209	Tm - 170	Tm - 171	U - 232	U - 233
U - 234	U - 235	U - 236	U - 237	U - 238
U - 239	U - 240	V - 48	V - 49	W - 181
W - 185	W - 187	W - 188	Xe - 122	Xe - 123
Xe - 125	Xe - 127	Xe - 127 m	Xe - 129 m	Xe - 131 m
Xe - 133	Xe - 133 m	Xe - 135	Xe - 135 m	Xe - 137
Xe - 138	Y - 88	Y - 90	Y - 90 m	Y - 91
Y - 91 m	Y - 92	Y - 93	Yb - 164	Yb - 169
Yb - 175	Yb - 177	Zn - 65	Zn - 69	Zn - 69 m
Zr - 88	Zr - 89	Zr - 93	Zr - 95	Zr - 97

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) Any new radionuclides will be reported in Annual Report. (WAC 246-247 (040) 5, 060(5))

5) The facility will track the use of the radioactive material used to ensure that the limits are not exceeded. (WAC 246-247 (040) 5, 060(5))

Emission Unit ID: 1181

200W

Catagorical Drum Venting System 2 (Active)

This is a MINOR, ACTIVELY ventilated emission unit.

TRU Waste Retrieval

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA		Up to 3 per Drum Venting System, aerosol tested annually.
	Glove Bag		Up to 3 per Drum Venting System.

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)		TOTAL ALPHA TOTAL BETA TOTAL GAMMA	End of each shift of operation.

Sampling Requirements Smears of the exhuast vent at the end of each shift of operation.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities for the TRU retrieval project support decontamination and decommissioning operations at the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operation of the Transuranic Waste Retrieval Project (Replaces NOC 719)	AIR 11-1006	10/19/2011	804

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.00E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Transuranic waste retrieval involves the processes for removing and dispositioning buried suspect transuranic mixed low-level radioactive waste (hereafter called TRU waste) from Hanford Site burial trenches for storage or disposal at other approved locations. Dispositioning is the orderly administration and handling of waste (including contaminated soil) from the low level burial grounds to place it in approved storage or disposal status. The handling includes such actions as: packaging, labeling and tracking waste; venting, assaying, and staging waste; inspecting waste and waste staging areas; sampling/characterizing/designating waste; making arrangements for the transfer of waste; completing necessary paperwork; and performing radiological and/or industrial hygiene surveys. Two containment systems are associated with this approval. One is Emission Unit 1327, Next Generation Retrieval (NGR) and, the other system will be used for the retrieval of large containers and is referred to as Emission Unit 1322, Portable Enclosure System (PES). These emission units will be used when retrieval activities exceed EU 486: 200 Area diffuse and fugitive contamination limits. In addition there are 3 types of drum venting systems and HEPA-filtered Vacuum Units (HVU) used with these venting systems and also during excavation and retrieval.
See the following emission units for a detailed description of additional controls/conditions and limits under this approval:
EU 455 HEPA Vacuums

EU 486	200 Area Diffuse/ Fugitive; Operation of the Transuranic Waste Retrieval Project
EU 755	Mobile Drum Venting System (Active Ventilation) (MDVS)
EU 756	Mobile Drum Venting System (Passive Ventilation) (MDVS)
EU 1181	Categorical Drum Venting System 2 (DVS2)
EU 1322	Portable Enclosure System #1 (PES)
EU 1326	Vapor Extraction System (VES)
EU 1327	Next Generation Retrieval (NGR)

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 3.92E+01 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	6.40E-07	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Alpha release rate based on Am-241 + Progeny. It is recognized that other radionuclides may be present in very limited quantities.
See condition; Alternate Release Rate Approval, Release Rates: Installation of Drum Vents.

B/G - 0	9.60E-06	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

Beta/Gamma release rate based on Cs-137 + Progeny. It is recognized that other radionuclides may be present in very limited quantities.
See condition; Alternate Release Rate Approval, Release Rates: Installation of Drum Vents..

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	Am - 243	Cf - 252	Cm - 244	Cs - 134
Cs - 137	Eu - 152	Eu - 154	Pu - 238	Pu - 239/240
Pu - 241	Sr - 90	U - 234	U - 235	U - 236
U - 238				

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) PROCESS DESCRIPTION: VENTING OF CONTAINERS
This approval applies to these additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The work will be performed to meet ALARA practices and will be conducted according to applicable operating procedures, radiological control procedures, and radiological work permit (RWPs).
Vent filters will continue to be installed in designated containers via one of the drum venting systems described in this license. These systems will ensure personnel and environmental protection. The methodology will require penetrating the container and inserting a vent. Penetration of the lid will be accomplished by either drilling through the lid or puncturing the lid with a filter dart (using Dart System). Container venting systems are described in the license conditions. Designated drums slated for venting will be vented with the Mobile Drum Venting System (MDVS) , Drum Venting System 2 (DVS2) , or other venting methods. (WAC 246-247-040(5) and WAC 246-247-060(5))

5) PROCESS DESCRIPTION: DVS2
This approval applies to these additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

A vent system utilizing a pneumatic drill, DVS2, is remotely actuated to vent the drum. After the drum is vented, a filter is hand installed, the head space of the drum is sampled and the drum is staged in a designated area.
Glove bags will be used to contain potential contamination. A portable HEPA vacuum with variable speed is

connected to the HEPA filtered port on the glovebag and will be used for exhausting the glovebag. The vacuum will be operated during venting and for a short time following venting at a low flow. Glove bags will also have ports to take smears to check for contamination or to sample for hazardous gases. As many as three DVS2 venting units, each with up to three venting stations, will be installed in a weather structure enclosure such as a conex box. Plans include having up to three of the DVS2 units in the burial grounds, for a total of nine DVS2 venting stations. (WAC 246-247-040(5) and WAC 246-247-060(5))

6) ABATEMENT TECHNOLOGY: DVS2
The DVS2 will be exhausted with a HEPA vacuum to contain potential contamination. Glovebags will have ports to check for contamination or hazardous gases after venting. DVS2 stations will be installed within an enclosure such as a Conex box or trailer, to form a DVS2 unit. The DVS2 unit will have side doors that will open to accommodate loading and unloading the drums. The HEPA vacuum flow is controlled with a ball valve to less than 10 cfm or 4.7E-03 cubic meters/s. (WAC 246-247-040(5) and WAC 246-247-060(5))

7) ALTERNATIVE RELEASE RATE APPROVAL, RELEASE RATES: INSTALLATION OF DRUM VENTS
These alternative release fractions are approved for this emission unit

A maximum of 9,000 containers of waste will be processed per year using the MDVS and/or DVS2s venting systems. The processing rate is designed to reflect potential emissions during an average handling time of 60 minutes per container. One drum is processed at a time per DVS or DVS2. Using a release fraction of 1.0 E-03 for particulates and a time factor of 1.03 (60 minutes per container multiplied by 9,000 containers and divided by 526,000 minutes per year),
The predicted release rate from the MDVS (active vent) without any emissions control equipment is 2.1 E-02 Ci/year and the predicted release rate with emissions control equipment is 1.0 E-05 Ci/year. The predicted release rates for the representative radionuclides Am-241+Progeny and Cs-137+Progeny are as follows:

Unabated PTE;	Am-241+Progeny	1.3E-03 Ci/yr	:	Cs-137+Progeny	1.9E-02 Ci/yr
Abated PTE	Am-241+Progeny	6.4E-07 Ci/y	:	Cs-137+Progeny	9.6E-06 Ci/yr

The predicted release rate (unabated) for using the MDVS (passive vent) without any emissions control equipment is 2.2E-05 Ci/yr and the predicted release rate (abated) with emissions control equipment is 2.2E-05 Ci/yr. The predicted release rates for the representative radionuclides Am 241+Progeny and Cs-137+Progeny are as follows:

Unabated PTE;	Am-241+Progeny	4.3E-07 Ci/yr	:	Cs-137+Progeny	2.2E-05 Ci/yr
Abated PTE	Am-241+Progeny	4.3E-07 Ci/y	:	Cs-137+Progeny	2.2E-05 Ci/yr

The passive vent of the MDVS exhausts potential emissions from the use of the HEPA Vacuum mounted in the test chamber to collect metal filings after installation of a NucFil or equivalent filter. Release rates are calculated by multiplying surface area vacuumed by the contamination level. An estimate of the release rate is calculated by assuming the surface area of the boot that covers the drum lid during the filter installation process (8.3 square inches) multiplied by 9,000 drums with an average contamination level of 10,000 dpm/100 cm^2 beta/gamma and 200 dpm/100 cm^2 alpha. Using a release fraction of 1.0 for the HEPA vacuum use, the potential release rates from using the DVS is 4.3E-7 Ci/yr americium-241 and 2.2E-05 Ci/yr cesium-137. (WAC 246-247-040(5), WAC 246-247-060(5), WAC 246-247-075(4))

8) WDOH NOTIFICATION - Drum vent failure
The department shall be notified via email or the established procedures in the Environmental Notification program within 24 hours of all drum vents that fail to be installed properly and smears show >2,000 dpm/100 cm^2 alpha or >100,000 dpm/100 cm^2 beta/gamma removable contamination (an example of a "failure" is a pressure release that blows past the seat of the boot or a deflagration). (WAC 246-247-040(5) and WAC 246-247-060(5))

9) WDOH NOTIFICATION - Loss of containment
WDOH will be notified per WAC 246-247-080(5) via email or the established procedures in the Environmental Notification program if a loss of containment occurs (dropping, spilling, puncturing a container, or otherwise encountering loss of integrity where contamination escapes containment), which exceeds 100,000 dpm/100 cm^2 beta/gamma or 2,000 dpm/100 cm^2 alpha removable contamination. (WAC 246-247-040(5) and WAC 246-247-060(5))

10) CONTAMINATION CONTROL- Removable contamination
Fixatives or other controls will be employed if removable contamination levels (other than spot contamination) exceed 100,000 dpm/100 cm^2 beta/gamma or exceed 2,000 dpm/100 cm^2 alpha. (WAC 246-247-040(5) and WAC 246-247-060(5))

11) CONTROL TECHNOLOGY-HVU
HVUs shall be tested at 99.95% removal efficiency and shall be aerosol tested annually using ANSI N-510 as

guidance for non-ANSI N-509 systems. Records of this testing shall be maintained on file. (WAC 246-247-040(5) and WAC 246-247-060(5))

Emission Unit ID: 1183

200W 200W S-MO444-001

HSGS Analysis Facility

This is a MINOR, ACTIVELY ventilated emission unit.

Waste Receiving and Processing Facility (WRAP)

Emission Unit Information

Stack Height: 10.00 ft. 3.05 m. Stack Diameter 0.50 ft. 0.15 m.

Average Stack Effluent Temperature: 70 degrees Fahrenheit. 21 degrees Celsius.

Average Stack ExhaustVelocity: 4.00 ft/second. 1.22 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075(3)	Emissions will be calculated per conditions below.	Total Alpha (assumed Am-241) and Total Beta (assumed Sr-90)	

Sampling Requirements None

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities at the WRAP HSGS Analysis Facility involve laboratory scale analysis operations supporting the Hanford TRU program mission.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Waste Receiving and Processing Facility (Replaces NOC 638)	AIR 12-301	2/23/2012	810

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 5.42E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) The mission of the WRAP includes examining, assaying, characterizing, treating, verifying, and repackaging solid radioactive waste material and mixed radioactive waste to enable treatment, storage, or disposal. The WRAP manages many categories of radioactive materials such as low-level waste (LLW), transuranic (TRU) waste, TRU mixed waste, and low-level mixed waste (LLMW) in contact-handled (CH) containers where the external surface dose rate does not exceed 200 mrem/hr. CH containers are defined as packages having surface dose rates of less than 200 mrem/hr. Remote–handled (RH) containers (i.e., containers where the external surface dose rate is equal to or greater than 200 mrem/hr) also are processed and stored at WRAP in accordance with the approved safety analysis.
Building 2336-W at the WRAP consists of the following areas
- Shipping and receiving area
- Nondestructive examination/nondestructive assay (NDE/NDA) area
- Process area
- Ancillary support areas, including the heating, ventilation, and air conditioning (HVAC), electrical room, mechanical room, and administration areas

See the following emission units for a detailed description of additional controls/conditions and limits under this approval.
EU 193 296-W-4; Waste Receiving and Processing Facility
EU 486 200 Area Diffuse/Fugitive; Waste Receiving and Processing Facility
Eu 1183 HSGS Analysis Facility

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 1.02E+02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

DE - 0	7.49E-10	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

DE-Ci is a method of normalizing the exposure risk of the Various isotopes, where the DE-Ci are represented as PU-239.

4) PROCESS DESCRIPTION - Analysis of Headspace Gas Samples

This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Analyses of head space gas samples are to be performed on samples obtained from TRU solid waste storage containers in various field locations. HSGS is performed per Radioactive Air Emissions Notice of Construction Application for the Transuranic Waste Retrieval Project (DOE/RL 2001 57). The HSGS protocol employs a syringe sampling system to collect up to a 100 ml sample from the container headspace through a filter into a gastight syringe for analysis. To sample the container head space gas, a side-port needle is pressed through the sample port septum and into the head space beneath the lid. This permits the gas to be drawn under a vacuum directly into the syringe.

Samples are withdrawn into a syringe through a 0.5 micron filter (99.95% efficient, Pall Corporation* or equivalent). The syringe is transported to a field laboratory where the sample is inserted into the gas chromatograph mass spectrometer (GCMS) equipment.

The emissions will be vented from the GCMS and exhausted to the atmosphere through a ceiling fan. The process involves injecting the HSGS sample into the GCMS for analysis. The analysis involves heating the gas to greater than 200°C and then emitting the analyzed gas at a rate of approximately 30 ml/min. Up to 150 of these samples are planned to be analyzed per week. Emission calculations indicate that this process will result in a maximum potential to emit (PTE) of approximately 8.0E-10 mrem/yr total effective dose equivalent (TEDE) to the onsite receptor.

5) PROCESS DESCRIPTION - Headspace Gas Sampling

This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The 2404-WC building has been transferred into the WRAP complex from the Central Waste Complex (CWC) and includes equipment within the 2404-WC building for HSGS of solid waste storage containers. HSGS is also performed in the 2336-W Process Area. This activity normally occurs within the 2404-WC after NDE and NDA in 2336-W.

Containers subjected to HSGS at WRAP are already vented with NucFil® filters or other vent mechanisms. In some cases, a container might have had a vent clip. An approved particulate filter or filter with equivalent volatile organic compound (VOC) dispersion characteristics is installed in the container, to allow characterization sampling. Withdrawing a sample for HSGS, from containers with existing vents does not create a new pathway for potential radioactive air emissions. The HSGS sampling protocol employs either the use of a syringe or a canister-sampling system to collect headspace-gas samples for analysis and quality control.

The sampling system for collecting headspace gas, consists of a side port needle (e.g., a hollow needle sealed at the tip with a small opening on its side close to the tip), a filter to prevent particles from contaminating the gas sample, and an adapter to connect the side port needle to the filter or sampling port. To sample the headspace gas, a side port needle is pressed through the sample port or filter and into the headspace beneath the lid. The gas is drawn under a vacuum directly into the sampling system.

Emission Unit ID: 1185

300

361 Building

This is a MINOR, FUGITIVE, non-point source emission unit.

300 Diffuse/Fugitive Emissions

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075[3]	None	None	None

Sampling Requirements Radionuclide emissions will be determined using 40 CFR 61 Appendix D calculations in lieu of monitoring.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status The 361 Building provides a space to house monitoring instrumentation.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operation of the 361 Building in Testing Equipment Operability Utilizing Radioxenon and Radon(Replaced NOC 657)	AIR 12-340	2/23/2012	862

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 2.05E-04 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   The proposed action is to perform equipment operability utilizing radioxenon and radon to evaluate atmospheric gases. Releases will occur inside the building after being routed through the sample system and collected in a sample archive bottle. Any remaining radioactive gases will be a fugitive emission from the building.

   The 361 Building is a pre-cast concrete portable equipment shelter that is permanently located in the southwest corner of the 300 Area on the Hanford Site. Sampling equipment (i.e., Swedish Automatic Unit for Noble gas and Acquisition and analysis [SAUNA]) will be installed to sample atmospheric xenon some of which may be radioactive. Periodically a radioactive xenon and/or radon calibration gas will be used to confirm operability of the instrument. The SAUNA is a collection and analysis system. Radioxenon and radon will be consumed by the system, analyzed, transferred to an archive storage bottle, and then finally released by evacuating the archive bottle into the room air space.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 2.05E-04 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Rn - 222	2.00E-02	Gas	WAC 246-247-030(21)(a)
Xe - 122	6.70E-03	Gas	WAC 246-247-030(21)(a)

Xe - 123	5.40E-03	Gas	WAC 246-247-030(21)(a)
Xe - 125	2.70E-03	Gas	WAC 246-247-030(21)(a)
Xe - 127	2.00E-03	Gas	WAC 246-247-030(21)(a)
Xe - 131 m	2.00E-01	Gas	WAC 246-247-030(21)(a)
Xe - 133	4.20E-01	Gas	WAC 246-247-030(21)(a)
Xe - 133 m	2.50E-01	Gas	WAC 246-247-030(21)(a)
Xe - 135	2.00E-02	Gas	WAC 246-247-030(21)(a)
Xe - 135 m	2.00E-02	Gas	WAC 246-247-030(21)(a)
Xe - 137	1.00E-02	Gas	WAC 246-247-030(21)(a)
Xe - 138	1.00E-02	Gas	WAC 246-247-030(21)(a)

The radioactive isotopes identified for this emission unit are (no quantities specified):

Rn - 222	Xe - 122	Xe - 123	Xe - 125	Xe - 127
Xe - 131 m	Xe - 133	Xe - 133 m	Xe - 135	Xe - 135 m
Xe - 137	Xe - 138			

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) Because the total unabated potential-to-emit (PTE) for this project is < 0.1 mrem/yr total effective dose equivalent (TEDE) to the maximally exposed individual (MEI), the radionuclide emissions will be determined using 40 CFR 61 Appendix D calculations in lieu of monitoring. [WAC 246-247-040(5), -060(5)]

Emission Unit ID: 1186

200

Decon Trailer (intermittent powered exhaust)

This is a MINOR, ACTIVELY ventilated emission unit.

Miscellaneous Support Facilities

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Fan	1	Intermittent operation

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075[2]	40 CFR 61, Appendix B, Method 114	Each radionuclide that could contribute greater than 10 percent of the potential-to-emit TEDE	Per the sitewide ambient monitoring program samples will be collected from the existing near-facility monitoring stations

Sampling Requirements Per the sitewide ambient monitoring program

Additional Requirements

See Section 5 of the general conditions in this license for additional information.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
200/600 Areas Facilities Support Decontamination Trailer (Intermittent powered exhaust)(Replaced NOC 678)	AIR 12-323	2/23/2012	844

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.73E-04 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) The decontamination trailer will be comprised of two rooms; one for decontamination activities, and one for support equipment. The decontamination room will have overhead showers (one low flow and one higher flow) and washing and decontamination fixtures. A support equipment room will be adjacent to the decontamination room and contain support systems, e.g. generator, water storage, pumps. The decontamination trailer will be self contained to include a generator, heating, ventilation, air conditioning (HVAC), clean water storage and waste water collection systems. The decontamination trailer will be moved from job to job, within the 200 Area and the adjacent 600 Area(i.e., the area up to 70 meters south of the 200 E Area, as far west as B-pond, as far north as the 212-N, P, and R buildings, the area between the 200E and 200W Areas and as far south as the S-pond.)
Waste water from the collection system will be transferred to other licensed container(s).

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 3.73E-04 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	2.00E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Alpha release rates based on Am-241. While the potential release rates for all emissions are conservatively represented by Am-241 (alpha) and Cs-137 + D (beta-gamma), essentially any radionuclide may be present.

B/G - 0	1.00E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Beta/Gamma release rates based on Cs-137 +D. While the potential release rates for all emissions are conservatively represented by Am-241 (alpha) and Cs-137 + D (beta-gamma), essentially any radionuclide may be present.

4) Periodic Confirmatory Measurements (PCM) for the vented and diffuse and fugitive emissions will be provided by the established near facility monitoring and augmented by radiological surveys during personnel decontamination operations (e.g., smears and hand-held radiation monitoring measurements of the interior/exterior of the decontamination trailer). These methods are intended to demonstrate compliance by showing that while remaining under the contamination levels by which work is controlled, the actual emissions inherently will be below the emission estimates.

5) Emissions will be included in the overall fugitive and diffuse emission estimate for reporting purposes as part of the approved ambient air monitoring conducted at the Hanford Site perimeter.

Emission Unit ID: 1187

200

Decon Trailer (Collection Tank Vents)

This is a MINOR, PASSIVELY ventilated emission unit.

Miscellaneous Support Facilities

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075[2]	40 CFR 61, Appendix B, Method 114	Each radionuclide that could contribute greater than 10 percent of the potential-to-emit TEDE	Per the sitewide ambient monitoring program samples will be collected from the existing near-facility monitoring stations

Sampling Requirements Per the sitewide ambient monitoring program

Additional Requirements

See Section 5 of the general conditions in this license for additional information.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
200/600 Areas Facilities Support Decontamination Trailer (Intermittent powered exhaust)(Replaced NOC 678)	AIR 12-323	2/23/2012	844

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 3.73E-04 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) The decontamination trailer will be comprised of two rooms; one for decontamination activities, and one for support equipment. The decontamination room will have overhead showers (one low flow and one higher flow) and washing and decontamination fixtures. A support equipment room will be adjacent to the decontamination room and contain support systems, e.g. generator, water storage, pumps. The decontamination trailer will be self contained to include a generator, heating, ventilation, air conditioning (HVAC), clean water storage and waste water collection systems. The decontamination trailer will be moved from job to job, within the 200 Area and the adjacent 600 Area(i.e., the area up to 70 meters south of the 200 E Area, as far west as B-pond, as far north as the 212-N, P, and R buildings, the area between the 200E and 200W Areas and as far south as the S-pond.)
Waste water from the collection system will be transferred to other licensed container(s).

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 3.73E-04 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	2.00E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Alpha release rates based on Am-241. While the potential release rates for all emissions are conservatively represented by Am-241 (alpha) and Cs-137 + D (beta-gamma), essentially any radionuclide may be present.

B/G - 0	1.00E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Beta/Gamma release rates based on Cs-137 +D. While the potential release rates for all emissions are conservatively represented by Am-241 (alpha) and Cs-137 + D (beta-gamma), essentially any radionuclide may be present.

4) Periodic Confirmatory Measurements (PCM) for the vented and diffuse and fugitive emissions will be provided by

the established near facility monitoring and augmented by radiological surveys during personnel decontamination operations (e.g., smears and hand-held radiation monitoring measurements of the interior/exterior of the decontamination trailer). These methods are intended to demonstrate compliance by showing that while remaining under the contamination levels by which work is controlled, the actual emissions inherently will be below the emission estimates.

5) Emissions will be included in the overall fugitive and diffuse emission estimate for reporting purposes as part of the approved ambient air monitoring conducted at the Hanford Site perimeter.

Emission Unit ID: 1207

200W P-241SX107-001

241-SX-107

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 1208

200W P-241SX108-001

241-SX-108

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 1209

200W P-241SX109-001

241-SX-109

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 1210

200W P-241SX110-001

241-SX-110

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 1211

200W P-241SX111-001

241-SX-111

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 1212

200W P-241SX112-001

241-SX-112

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 1213

200W P-241SX114-001

241-SX-114

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 1219

200W P-241SX101-001

241-SX-101

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 1220

200W P-241SX102-001

241-SX-102

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 1221

200W P-241SX103-001

241-SX-103

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 1222

200W P-241SX104-001

241-SX-104

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 1223

200W P-241SX105-001

241-SX-105

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 1224

200W P-241SX106-001

241-SX-106

This is a MINOR, PASSIVELY ventilated emission unit.

241-SX TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 1227

200W P-241S304-001

241-S-304

This is a MINOR, PASSIVELY ventilated emission unit.

241-S TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows the catch tank to vent to the atmosphere under tank farm storage, maintenance, and operations. Any activity other than waste transfer support, maintenance, and normal operations will be regulated and or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is a passive breather filter ventilation that operates continuously.

Emission Unit ID: 1228

600 P-6241V-001

6241-V Vent Station Cross Site

This is a MINOR, PASSIVELY ventilated emission unit.

Cross Site Vent Station 6241

Emission Unit Information

Stack Height: ft. m. Stack Diameter ft. m.

Average Stack Effluent Temperature: degrees Fahrenheit. degrees Celsius.

Average Stack ExhaustVelocity: 8.30 ft/second. 2.53 m/second.

Abatement Technology ALARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency

Sampling Requirements None

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status

Emission Unit ID: 1229

200E P-241A417-001

241-A-417

This is a MINOR, PASSIVELY ventilated emission unit.

241-A TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows the catch tank to vent to the atmosphere under tank farm storage, maintenance, and operations. Any activity other than waste transfer support, maintenance, and normal operations will be regulated and or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is a passive breather filter ventilation that operates continuously.

Emission Unit ID: 1230

600 P-6241A-001

6241-A Diversion Box

This is a MINOR, PASSIVELY ventilated emission unit.

Diversion Box

Emission Unit Information

Stack Height: ft. m. Stack Diameter ft. m.

Average Stack Effluent Temperature: degrees Fahrenheit. degrees Celsius.

Average Stack ExhaustVelocity: 8.30 ft/second. 2.53 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency

Sampling Requirements None

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status

Emission Unit ID: 1231

200 P-241EW151-001

241-EW-151

This is a MINOR, PASSIVELY ventilated emission unit.

241-EW

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows the catch tank to vent to the atmosphere under tank farm storage, maintenance, and operations. Any activity other than waste transfer support, maintenance, and normal operations will be regulated and/or permitted under the appropriate regulations and or permits for the activitity being performed. And the emission units associated with the activity. The emission un is a passive breather filter ventilation that operated continuously.

Emission Unit ID: 1232

200W P-241S302-001

241-S-302

This is a MAJOR, PASSIVELY ventilated emission unit.

241-S TANK FARM

Emission Unit Information

Stack Height: 5.00 ft. 1.52 m. Stack Diameter 0.13 ft. 0.04 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA		Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Once per month.

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days. Annual NDA of the filter shall be conducted for reporting purposes.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows the catch tank to vent to the atmosphere under tank farm storage, maintenance, and operations. Any activity other than waste transfer support, maintenance, and normal opeations will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. The emission unit is a passive breather filter ventilation that operates continuously.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Installation and Operation of Breather Filters on Miscellaneous Tanks. (Replaced NOC ID 739)	AIR 12-342	2/23/2012	865

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.88E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.88E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted.

Installation of a passive breather filter on tanks 241-UX-302A, 241-AZ-154, 241-U-301B and 241-S-302. The breather filter will be a radial HEPA filter with a removal efficiency of 99.97% and a rated capacity of 40 cfm. The filter will be replaced on an annual basis, eliminating the need for annual aerosol testing. The breather filter shall minimize the amount of radioactive particulates emitted as a consequence of tank breathing due to barometric pressure changes. The catch tank will breath at a rate of approximately 0.007 cfm with a flow rate less than 1 cfm.

The 241-UX-302A catch tank is a 17,760 gallon capacity catch tank which has been isolated and currently

contains 1,736 gallons of waste.

The 241-AZ-154 catch tank is a 869 gallon capacity catch tank designed to receive condensate from the 241-AZ and 241-AY double shell tank heating coils. The steam coils have sense been blanked off. Current data indicates the tank is empty. Periodically water intrusion is seen in this tank from rain and snow.

The 241-U-301B catch tank is a 36,000 gallon capacity catch tank designed to support waste transfers from 244-TX via 241-U-151 and 241-U-152. Current data indicates that 1,467 gallons of waste remain in this tank.

The 241-S-302 catch tank is a 17,700 gallon capacity catch tank designed to receive leakage, spills, line flushes and drainage associated with support waste transfers through Diversion Box 240-S-151. Since isolation in 1987 the tank has received intrusion of snow melt and rainwaterto it's present level.

The installation of breather filters is intended to minimize any radioactive particulates that may be emitted as a consequence of barometric pressure changes.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Am - 241 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Ce - 144 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cm - 243 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Co - 60 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cs - 134 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cs - 137 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Eu - 152 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Eu - 154 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Eu - 155 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Nb - 94 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 239/240 3.05E+00 Identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls.	Ra - 226 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
RuRh - 106 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Sb - 125 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Sr - 89/90 1.58E+03 Identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls.

4) The breather filter must meet all of the requirements as described in the AG-1 COMPLIANCE MATRIX FOR FLANDERS FILTER MODEL 0-007-1-12-RF-NU-00-E3-Z04059B (or current equivalent)" as described by the AG-1 Compliance Matrix attached to the Notice of Construction application as Appendix A.

   Should a change to the Compliance Matrix be required, WDOH approval of the deviation shall be obtained prior to installation of the new breather filter.

5) All removal and installation operations, of the breather filter, must follow the requirements outlined in ALARACT 1 "Demonstration for Riser Preparation/Opening", and ALARACT 16 "Demonstration for Work on Potentially Contaminated Ventilation System Components".

6) The breather filter must be replaced annually. The new filter must be a Type 1 (radial flow filter) with a Type C filter pack, as define by AG-1 Code on Nuclear Air and Gas Treatment Section FK, Special HEPA Filters. The filter frames, end-caps, flanges, and grilles must be made of 304/304L stainless steel. The filter must use UL-586 compliant resin to provide the sealing of the filter media to the frame. The filter must have a minimum removal efficiency of 99.97% and a rated flow of 40 cfm.

7) The TEDE from 241-S-302 emission unit shall not exceed 1.88E-01

Emission Unit ID: 1243

200 200 W-TRUDECON-001

Decon Trailer TRU Waste Retrieval (Intermit. Op.)

This is a MINOR, PASSIVELY ventilated emission unit.

Miscellaneous Support Facilities

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075[2]	40 CFR 61, Appendix B, Method 114	Each radionuclide that could contribute greater than 10 percent of the potential-to-emit TEDE	Per the sitewide ambient monitoring program samples will be collected from the existing near-facility monitoring stations

Sampling Requirements Per the sitewide ambient monitoring program

Additional Requirements

See Section 5 of the general conditions in this license for additional information.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Decontamination Trailer at the Transuranic Waste Retrieval Project (Replaced NOC 743)	AIR 12-330	2/23/2012	851

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.55E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

All work will be performed in accordance with approved radiological control methods and as low as reasonably achievable (ALARA) program requirements. These requirements will be carried out through radiological control procedures.

The general physical processes associated with decontamination activities in the decontamination trailer will consist of the following:

On identification of the need for additional decontamination of personnel, affected individuals will be escorted to the decontamination trailer.

As appropriate, contaminated clothing, coverings, and/or articles will be removed, packaged, and dispositioned in accordance with applicable facility waste handling procedures.

Personnel decontamination processes might include various methods or a combination of cleaning agents (e.g., soap and water, pre-moistened towelettes, shaving cream-type

foam decontamination agents for facial areas; removal of hair; and abrasive soaps for toughened skin surfaces [e.g., hands and feet]).

Spent decontamination solutions will be transferred from the holding tanks directly to a mobile disposal unit or containerized (e.g., packaged in absorbents in drums or placed in drums or carboys) and transported to existing facilities on the Hanford Site for disposal.

Periodic maintenance inspections of the decontamination trailer will be performed without use of containment or portable exhausters.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 1.55E-05 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Am - 241	8.37E-04	Solid	WAC 246-247-030(21)(a)
Alpha release rate based on Am-241. Any radionuclide might be present Am-241 is representative of the alpha-emitting radionuclides present.			
Cs - 137	4.19E-03	Solid	WAC 246-247-030(21)(a)
Beta/Gamma release rate based on Cs-137. CS-137 is representative of the Beta/gamma-emitting radionuclides present.			

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241 Cs - 137

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) Periodic Confirmatory Measurements (PCM) for the passively vented emissions shall be provided by the established near facility monitoring and augmented by radiological surveys during personnel decontamination operations (e.g., smears and hand-held radiation monitoring measurements of the interior/exterior of the decontamination trailer). These methods are intended to demonstrate compliance by showing that while remaining under the contamination levels by which work is controlled, the actual emissions inherently will be below the emission estimates.

Emission Unit ID: 1244

200 W-TRUDECON-002

Decon Trailer TRU (Collection Tank Vents)

This is a MINOR, PASSIVELY ventilated emission unit.

Miscellaneous Support Facilities

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency

Sampling Requirements None

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Decontamination Trailer at the Transuranic Waste Retrieval Project (Replaced NOC 743)	AIR 12-330	2/23/2012	851

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.55E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

All work will be performed in accordance with approved radiological control methods and as low as reasonably achievable (ALARA) program requirements. These requirements will be carried out through radiological control procedures.

The general physical processes associated with decontamination activities in the decontamination trailer will consist of the following:

On identification of the need for additional decontamination of personnel, affected individuals will be escorted to the decontamination trailer.

As appropriate, contaminated clothing, coverings, and/or articles will be removed, packaged, and dispositioned in accordance with applicable facility waste handling procedures.

Personnel decontamination processes might include various methods or a combination of cleaning agents (e.g., soap and water, pre-moistened towelettes, shaving cream-type foam decontamination agents for facial areas; removal of hair; and abrasive soaps for toughened skin surfaces [e.g., hands and feet]).

Spent decontamination solutions will be transferred from the holding tanks directly to a mobile disposal unit or containerized (e.g., packaged in absorbents in drums or placed in drums or carboys) and transported to existing facilities on the Hanford Site for

disposal.

Periodic maintenance inspections of the decontamination trailer will be performed without use of containment or portable exhausters.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 1.55E-05 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Am - 241	8.37E-04	Solid	WAC 246-247-030(21)(a)
Alpha release rate based on Am-241. Any radionuclide might be present Am-241 is representative of the alpha-emitting radionuclides present.			
Cs - 137	4.19E-03	Solid	WAC 246-247-030(21)(a)
Beta/Gamma release rate based on Cs-137. CS-137 is representative of the Beta/gamma-emitting radionuclides present.			

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241 Cs - 137

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) Periodic Confirmatory Measurements (PCM) for the vented and diffuse and fugitive emissions shall be provided by the established near facility monitoring and augmented by radiological surveys during personnel decontamination operations (e.g., smears and hand-held radiation monitoring measurements of the interior/exterior of the decontamination trailer). These methods are intended to demonstrate compliance by showing that while remaining under the contamination levels by which work is controlled, the actual emissions inherently will be below the emission estimates.

5) Emissions will be included in the overall fugitive and diffuse emission estimate for reporting purposes as part of the approved ambient air monitoring conducted at the Hanford Site perimeter.

Emission Unit ID: 1249

200W P-241S102-002

241-S-102 Inlet Filter

This is a MINOR, PASSIVELY ventilated emission unit.

241-S TANK FARM

Emission Unit Information

Stack Height: 3.00 ft. 0.91 m. Stack Diameter 0.33 ft. 0.10 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 1.91 ft/second. 0.58 m/second.

Abatement Technology

NONE WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	1	Passive Breather Filter

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)		Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	1 per year

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a passive breather filter that allows a SST to vent to the atmosphere under tank farm storage, maintenance, and operation. The tank stores the radioactive waste awaiting retrieval, treatment, and proper disposal under the applicable federal and state regulations and/or permits. The SST scheduled activities of waste retrieval, decommissioning, and eventual closure will be completed under applicable federal and state regulations and/or permits. Any activity other than storage, maintenance, and normal operation conducted at the tank will obtain the appropriate permits for the activity and the emission units associated with the activity as required by the regulations applicable to the activity. The emission unit is a passive breather filter and is part of the tank's ventilation system that operates continuously.

Emission Unit ID: 1250

600 J-Hammer-001

HAMMER

This is a MINOR, FUGITIVE, non-point source emission unit.

HAMMER

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075(4)	In accordance with the Radiation Protection Plan and Radiological Control Manual .	TOTAL BETA/GAMMA	During each use of material

Sampling Requirements After each use - with radiological surveys/smears .

Additional Requirements

Radioactive material surevy and inventory records will be maintained for the activity to demonstrate that total Tc-99m usage each calendar year stays below the projected annual possession quantity.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Training using Tc-99m (Technetium-99 metastable) within the Hazardous Materials Management and Emergency Response (HAMMER) training complex, but will typically occur at either 1) a tank farm simulator facility on the western side of the complex; 2) a tactical maze building in the northeast corner of the complex; 3) a simulated hazardous waste facility in the north central part of the complex; or 4) a training tower near the center of the complex.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Use of Radioactive Materials at the Volpentest HAMMER/Hanford Training and Education Center	AIR 09-903	9/15/2009	749

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 8.30E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   The activities that will utilize the radioactive material Tc-99m will simulate what may be encountered in the event of a radiological dispersal type incident. A syringe or other low pressure spray device will be used to disperse droplets of Tc-99m solution into/onto various chosen surfaces, including but not limited to, lab ware, tabletops, and/or mock improvised explosive components. After the Tc-99m is dispersed, the training area will be surveyed to ensure the contamination is limited to the desired surfaces. The proposed activities could take place at any suitable location within the HAMMER training complex, but will typically occur at either 1) a tank farm simulator facility on the western side of the complex; 2) a tactical maze building in the northeast corner of the complex; 3) a simulated hazardous waste facility in the north central part of the complex; or 4) a training tower near the center of the complex. The proposed activities will take place at least 90 meters from either of the designated dose receptor locations (Al Alm Building or Administration Building).

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 8.30E-05 mrem/year. Approved are the associated potential release rates (Curies/year) of:

The radioactive isotopes identified for this emission unit are (no quantities specified):

Tc - 99 m

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) No aerial dispersion (means any dispersion directly up into the atmosphere or directly out over the ground with no selected target) of Tc-99m shall be permitted. WAC 246-247-040(5) and 060(5)

5) After the Tc-99m is dispersed, the training area shall be surveyed to ensure the contamination is limited to the desired surfaces. WAC 246-247-040(5) and 060(5)

6) Application of Tc-99m solutions shall be limited to a syringe or low pressure garden sprayer. WAC 246-247-040(5) and 060(5)

7) Any other building/site that HAMMER personnel want to apply Tc-99m shall get prior approval from the Department if those buildings are less than 90 meters from either the Al Alm building or HAMMER administrative building. WAC 246-247-040(5) and 060(5)

8) No Tc-99m shall be applied outdoors when sustained wind conditions reach or exceed 20 miles per hour. WAC 246-247-040(5) and 060(5)

9) A log of radioactive materials inventory shall be maintained for the proposed activities to demonstrate total Tc-99m usage for the calendar year. WAC 246-247-040(5) and 060(5)

10) After each training evolution, potentially contaminated materials and equipment shall be packaged and moved to a radioactive materials management area at HAMMER for a minimum of 10 half-lives (approximately 60 hours) to allow the Tc-99m contamination to decay to less than background levels.WAC 246-247-040(5) and 060(5)

11) The training area shall be surveyed to verify there is no remaining contamination before it is released to general public. WAC 246-247-040(5) and 060(5)

12) Radiation protection personnel and/or physical barriers shall be used to control access to the training areas being contaminated. WAC 246-247-040(5) and 060(5)

13) If contamination is found outside the controlled area, it shall be removed using sticky tape, wipes, or other simular appropriate decontamination methods. WAC 246-247-040(5) and 060(5)

Emission Unit ID: 1289

200

Decon Trailer 200 East (Int. Power Exhaust)

This is a MINOR, ACTIVELY ventilated emission unit.

Miscellaneous Support Facilities

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency

Sampling Requirements None

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Intermittent Powered exhaust of the Decon Trailer at 200 East Tank Farm

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Tank Farm Decontamination Trailer East(Replaces NOC 791)	AIR 12-335	2/23/2012	856

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.70E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.70E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   a. Upon identification of the need of additional decontamination activities in the 200 area, individuals would be escorted to the nearest decontamination trailer.

   b. As appropriate, contaminated clothing, coverings, and/or articles will be removed and packaged for laboratory analysis and/or disposition, in accordance with As Low As Reasonably Achievable Control Technology (ALARACT) 4 and 12, Tank Farm ALARACT Demonstration for Packaging and Transportation of Waste and Tank Farm ALARACT Demonstration for Packaging and Transportation of Equipment and Vehicles, RPP HNF-4327.

   c. Personnel decontamination processes might include various methods or a combination of cleaning agents and /or chemicals. For example: soap and water, pre-moistened towelettes, removal of hair, abrasive soaps for toughened skin surfaces (e.g., hands and feet), and chelating agents.

   d. Spent decontamination solutions will be transferred from the holding tanks and/or bladder and containerized (e.g., packaged in absorbents in drums or placed in drums or carboys) and transported to existing facilities on the Hanford Site for disposal.

   e. Periodic maintenance inspection of the decontamination trailers will be performed without the use of containment or portable exhausters.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Pu - 239	1.40E-01	Sr - 90	1.40E-01
Alpha rates are based on PU-239+D. While the potential release rates for all emissions are conservatively represented by Pu-239+D (Alpha) and Sr-90+D (Beta/gamma), essentially any radionuclide may be present.		Beta/Gamma release rates are based on Sr-90+D. While the potential release rates for all emissions are conservatively represented by Pu-239+D (Alpha) and Sr-90+D (Beta/gamma), essentially any radionuclide may be present.	

4) Periodic Confirmatory Measurements (PCM) for the vented and diffuse and fugitive emissions will be provided by the established near facility monitoring and augmented by radiological surveys during personnel decontamination operations (e.g., smears and hand-held radiation monitoring measurements of the interior/exterior of the decontamination trailer). These methods are intended to demonstrate compliance by showing that while remaining under the contamination levels by which work is controlled, the actual emissions inherently will be below the emission estimates.

5) Emissions will be included in the overall fugitive and diffuse emission estimate for reporting purposes as part of the approved ambient air monitoring conducted at the Hanford Site perimeter.

6) A log shall be maintained for each emission unit. The log shall contain records of important operations parameters including the date, location, and duration of the release, measured or calculated radionuclide concentrations, the type of emissions (liquid, gaseous, solid), and type of emission control and monitoring equipment.
The emissions may be calculated from the best estimate of radiological material from surveys performed during personnel decontamination operations (WAC 246-247-040(5) and WAC 246-247-060(5)

Emission Unit ID: 1290

200

Decon Trailer 200 West (int Powered exh)

This is a MINOR, ACTIVELY ventilated emission unit.

Miscellaneous Support Facilities

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency

Sampling Requirements None

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Intermittant Powered exhaust of the 200 West Decontamination Trailer

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Tank Farm Decontamination Trailer West(Replaces NOC 792)	Air 12-336	2/23/2012	857

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.70E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.70E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   a. Upon identification of the need of additional decontamination activities in the 200 area, individuals would be escorted to the nearest decontamination trailer.

   b. As appropriate, contaminated clothing, coverings, and/or articles will be removed and packaged for laboratory analysis and/or disposition, in accordance with As Low As Reasonably Achievable Control Technology (ALARACT) 4 and 12, Tank Farm ALARACT Demonstration for Packaging and Transportation of Waste and Tank Farm ALARACT Demonstration for Packaging and Transportation of Equipment and Vehicles, RPP HNF-4327.

   c. Personnel decontamination processes might include various methods or a combination of cleaning agents and /or chemicals. For example: soap and water, pre-moistened towelettes, removal of hair, abrasive soaps for toughened skin surfaces (e.g., hands and feet), and chelating agents.

   d. Spent decontamination solutions will be transferred from the holding tanks and/or bladder and containerized (e.g., packaged in absorbents in drums or placed in drums or carboys) and transported to existing facilities on the Hanford Site for disposal.

   e. Periodic maintenance inspection of the decontamination trailers will be performed without the use of containment or portable exhausters.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Pu - 239	1.40E-01	Sr - 90	1.40E-01
Alpha rates are based on PU-239+D. While the potential release rates for all emissions are conservatively represented by Pu-239+D (Alpha) and Sr-90+D (Beta/gamma), essentially any radionuclide may be present.		Beta/Gamma release rates are based on Sr-90+D. While the potential release rates for all emissions are conservatively represented by Pu-239+D (Alpha) and Sr-90+D (Beta/gamma), essentially any radionuclide may be present.	

4) Periodic Confirmatory Measurements (PCM) for the vented and diffuse and fugitive emissions will be provided by the established near facility monitoring and augmented by radiological surveys during personnel decontamination operations (e.g., smears and hand-held radiation monitoring measurements of the interior/exterior of the decontamination trailer). These methods are intended to demonstrate compliance by showing that while remaining under the contamination levels by which work is controlled, the actual emissions inherently will be below the emission estimates.

5) Emissions will be included in the overall fugitive and diffuse emission estimate for reporting purposes as part of the approved ambient air monitoring conducted at the Hanford Site perimeter.

6) A log shall be maintained for each emission unit. The log shall contain records of important operations parameters including the date, location, and duration of the release, measured or calculated radionuclide concentrations, the type of emissions (liquid, gaseous, solid), and type of emission control and monitoring equipment.
The emissions may be calculated from either tank water samples or from the best estimate of radiological material from surveys performed during personnel decontamination operations (WAC 246-247-040(5) and WAC 246-247-060(5))

Emission Unit ID: 1291

200

Decon Trailer 200 E (Collection Tank Vent)

This is a MINOR, PASSIVELY ventilated emission unit.

Miscellaneous Support Facilities

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency

Sampling Requirements None

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Tank Farm Decontamination Trailer East(Replaces NOC 791)	AIR 12-335	2/23/2012	856

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.70E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.70E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   a. Upon identification of the need of additional decontamination activities in the 200 area, individuals would be escorted to the nearest decontamination trailer.

   b. As appropriate, contaminated clothing, coverings, and/or articles will be removed and packaged for laboratory analysis and/or disposition, in accordance with As Low As Reasonably Achievable Control Technology (ALARACT) 4 and 12, Tank Farm ALARACT Demonstration for Packaging and Transportation of Waste and Tank Farm ALARACT Demonstration for Packaging and Transportation of Equipment and Vehicles, RPP HNF-4327.

   c. Personnel decontamination processes might include various methods or a combination of cleaning agents and /or chemicals. For example: soap and water, pre-moistened towelettes, removal of hair, abrasive soaps for toughened skin surfaces (e.g., hands and feet), and chelating agents.

   d. Spent decontamination solutions will be transferred from the holding tanks and/or bladder and containerized (e.g., packaged in absorbents in drums or placed in drums or carboys) and transported to existing facilities on the Hanford Site for disposal.

   e. Periodic maintenance inspection of the decontamination trailers will be performed without the use of containment or portable exhausters.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Pu - 239	1.40E-01	Sr - 90	1.40E-01
Alpha rates are based on PU-239+D. While the potential release rates for all emissions are conservatively represented by Pu-239+D (Alpha) and Sr-90+D (Beta/gamma), essentially any radionuclide may be present.		Beta/Gamma release rates are based on Sr-90+D. While the potential release rates for all emissions are conservatively represented by Pu-239+D (Alpha) and Sr-90+D (Beta/gamma), essentially any radionuclide may be present.	

4) Periodic Confirmatory Measurements (PCM) for the vented and diffuse and fugitive emissions will be provided by the established near facility monitoring and augmented by radiological surveys during personnel decontamination operations (e.g., smears and hand-held radiation monitoring measurements of the interior/exterior of the decontamination trailer). These methods are intended to demonstrate compliance by showing that while remaining under the contamination levels by which work is controlled, the actual emissions inherently will be below the emission estimates.

5) Emissions will be included in the overall fugitive and diffuse emission estimate for reporting purposes as part of the approved ambient air monitoring conducted at the Hanford Site perimeter.

6) A log shall be maintained for each emission unit. The log shall contain records of important operations parameters including the date, location, and duration of the release, measured or calculated radionuclide concentrations, the type of emissions (liquid, gaseous, solid), and type of emission control and monitoring equipment.
The emissions may be calculated from either tank water samples or from the best estimate of radiological material from surveys performed during personnel decontamination operations (WAC 246-247-040(5) and WAC 246-247-060(5))

Emission Unit ID: 1292

200

Decon Trailer 200 West (Collection Tank Vent)

This is a MINOR, PASSIVELY ventilated emission unit.

Miscellaneous Support Facilities

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency

Sampling Requirements None

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Tank Farm Decontamination Trailer West(Replaces NOC 792)	Air 12-336	2/23/2012	857

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.70E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.70E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

   a. Upon identification of the need of additional decontamination activities in the 200 area, individuals would be escorted to the nearest decontamination trailer.

   b. As appropriate, contaminated clothing, coverings, and/or articles will be removed and packaged for laboratory analysis and/or disposition, in accordance with As Low As Reasonably Achievable Control Technology (ALARACT) 4 and 12, Tank Farm ALARACT Demonstration for Packaging and Transportation of Waste and Tank Farm ALARACT Demonstration for Packaging and Transportation of Equipment and Vehicles, RPP HNF-4327.

   c. Personnel decontamination processes might include various methods or a combination of cleaning agents and /or chemicals. For example: soap and water, pre-moistened towelettes, removal of hair, abrasive soaps for toughened skin surfaces (e.g., hands and feet), and chelating agents.

   d. Spent decontamination solutions will be transferred from the holding tanks and/or bladder and containerized (e.g., packaged in absorbents in drums or placed in drums or carboys) and transported to existing facilities on the Hanford Site for disposal.

   e. Periodic maintenance inspection of the decontamination trailers will be performed without the use of containment or portable exhausters.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Pu - 239	1.40E-01	Sr - 90	1.40E-01
Alpha rates are based on PU-239+D. While the potential release rates for all emissions are conservatively represented by Pu-239+D (Alpha) and Sr-90+D (Beta/gamma), essentially any radionuclide may be present.		Beta/Gamma release rates are based on Sr-90+D. While the potential release rates for all emissions are conservatively represented by Pu-239+D (Alpha) and Sr-90+D (Beta/gamma), essentially any radionuclide may be present.	

4) Periodic Confirmatory Measurements (PCM) for the vented and diffuse and fugitive emissions will be provided by the established near facility monitoring and augmented by radiological surveys during personnel decontamination operations (e.g., smears and hand-held radiation monitoring measurements of the interior/exterior of the decontamination trailer). These methods are intended to demonstrate compliance by showing that while remaining under the contamination levels by which work is controlled, the actual emissions inherently will be below the emission estimates.

5) Emissions will be included in the overall fugitive and diffuse emission estimate for reporting purposes as part of the approved ambient air monitoring conducted at the Hanford Site perimeter.

6) A log shall be maintained for each emission unit. The log shall contain records of important operations parameters including the date, location, and duration of the release, measured or calculated radionuclide concentrations, the type of emissions (liquid, gaseous, solid), and type of emission control and monitoring equipment.
The emissions may be calculated from either tank water samples or from the best estimate of radiological material from surveys performed during personnel decontamination operations (WAC 246-247-040(5) and WAC 246-247-060(5))

Emission Unit ID: 1293

200 W-296P107-001

296-P-107

This is a MAJOR, ACTIVELY ventilated emission unit.

Tank Farms

Emission Unit Information

Stack Height: 28.00 ft. 8.53 m. Stack Diameter 0.83 ft. 0.25 m.

Average Stack Effluent Temperature: 90 degrees Fahrenheit. 32 degrees Celsius.

Average Stack ExhaustVelocity: 91.28 ft/second. 27.82 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Deentrainer	1	Operational at all times when exhauster is in use
	Heater	1	Operational at all times when exhauster is in use
	Prefilter	1	
	HEPA Filter	2	In series
	Fan	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	Cs-137, Sr-90	Continuous

Sampling Requirements Record sample

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a skid/mobile type portable exhauster used to support tank farm operations, such as but not limited to, waste characterization, waste retrieval, decommissioning, deactivation, maintenance, and construction and operation support activities. The emission unit is a portable exhauster that operates intermittently.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Categorical Tank Farm Facility Waste Retrieval and Closure: Phase II Waste Retrieval Operations (Replaced NOC ID 816)	AIR 12-307	2/23/2012	825

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.31E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.61E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted.

The operation of the waste retrieval system(s) for the removal of radioactive wastes from all 149 Single Shell Tanks (SST) at the Hanford Site.

SALTCAKE DISSOLUTION WASTE RETRIEVAL SYSTEM

The saltcake dissolution waste retrieval system may be used to retrieve soluble saltcake waste. This method

retrieves the soluble portion of the waste only, resulting in very few of the solids being pumped from the tank. The saltcake dissolution waste retrieval system deployed in the SSTs is for water, chemical agent, or catalyst liquid to be added to the tank using a variety of spray nozzles or "sprinklers". The approach is to sprinkle the waste surface with water, chemical agent, or catalyst liquid. The added water, chemical agent, or catalyst liquid must stay in contact with the saltcake for a long enough period of time for the brine to become saturated. Once the brine is saturated, it is pumped from the SST to a receiver tank, staging tank, storage DST or other staging/storage vessel associated with the supplemental treatment, packaging or disposal. Salt solution will be removed using the existing saltwell pump or other pump placed into the tank.

A tank not equipped with a saltwell pump, a transfer pump (progressive cavity, vertical turbine) can be installed and operated.

Remotely directable water distribution devices will be located in risers spaced as far apart as practical. A combination of spraying waster, chemical agent, or catalyst liquid to dissolve the saltcake can be used in conjunction with directing a flow of water or recirculating water at the waste to move it to the pump suction to allow the pumping of waste from the tank. Recirculated waste from the pump may be sent back to the tank as an alternative to using water to direct dissolution waste to the pump suction.

MODIFIED SLUCING WASTE RETRIEVAL SYSTEM

Modified sluicing can be used for some SST waste retrieval. Modified sluicing is the introduction of liquid at low to moderate pressures and volumes into the waste. The liquid dissolves and breaks apart solid materials and suspends them in the waste slurry. A transfer pump installed in the tank provides the motive force to transfer the liquid slurry to a receiver tank.

Modified sluicing introduces sluice liquid in a controlled fashion using multiple sluicing nozzles at varying pressures and flows, then pumps out the resultant waste slurry. This maintains minimal liquid inventories within the tank at all times. The liquids that could be used in modified sluicing include water, recirculated supernatant/water from the receiving Double Shell Tank, recirculated supernatant/water, chemical agent or catalyst liquid.

VACUUM WASTE RETRIEVAL SYSTEM

A vacuum waste retrieval system can be used for waste retrieval activities in the (SSTs). The vacuum waste retrieval system is introduced into the SSTs by means of an articulating mast system (AMS). The AMS has a horizontal reach and rotational capabilities of 360 degrees. The AMS has a retracted position and can be extended vertically. Air is mixed at the suction end of the AMS enabling the required vertical lift for the waste to a topside receiver tank, batch vessel or a staging SST, storage DST, or other staging/storage vessels associated with supplemental treatment, packaging or disposal.

The AMS will be deployed through and attached to standard riser flanges that are available on the SSTs. Cameras can also be installed in other risers for in-tank viewing and control of the AMS.

For the 200-series tanks in the 241-C, 241-U, 241-B and 241-T Tank Farms a vacuum retrieval process tank, staging tank, staging SST, storage DST or other staging/storage vessel will be deployed. The receiver tank will receive waste in batches from whichever tank is connected into the vacuum retrieval system. The vacuum pressure used to draw up the waste from the tank to the receiver tank is relieved back into the SST being retrieved.

MOBILE RETRIEVAL SYSTEM

A Mobile Retrieval System (MRS) can be used to retrieve waste from some SSTs. The MRS consists of two in-tank systems. The first is a robotic crawler inserted through one riser the second is an AMS inserted through a second riser. The AMS retrieves the sludge from the tank using a vacuum with assisting pneumatic conveyance. The AMS vacuum tube has a horizontal reach and can be extended to the bottom of the tank. The arm rotates 360 degrees. The vacuum will be directed through the AMS in the tank to the end effector, which is in contact with the waste. The pneumatic conveyance-assisted vacuum retrieval system will draw the waste up through the vacuum to the waste vessel in the vessel skid in batches. The AMS is then valved out while the waste vessel is emptied and pumped out through the over ground transfer lines to a DST, a staging SST or other

treatment/disposal options. When the waste vessel is nearly empty, the transfer line will be valved out and the AMS will be valved back in and another batch of waste will be removed from the tank. This process will be repeated until waste near the center of the tank is removed. The robotic crawler will be remotely controlled to move and/or wash waste toward the center of the tank.

The robotic crawler is equipped with a plow blade at the front for pushing/pulling wastes, a screw pump to jet wastes through a small nozzle towards the center of the tank, the ability to direct hot or cold water through the same nozzle to wash wastes off of in-tank equipment, dissolve waste agglomerations in the tank, and wash waste toward the center of the tank for removal.
Any new retrieval methods or changes to processes will need to be provided to WDOH in a revised NOC prior to implementation.

MOBILE ARM RETRIEVAL SYSTEM

The Mobile Arm Retrieval System (MARS) is a waste retrieval system used to retrieve waste from single-shell tanks (SSTs) and move the waste to the double-shell tanks (DSTs). The MARS employs two design options similar to currently permitted systems: 1) a sluicing retrieval option which is intended for retrieval of non1eaker tanks and 2) a vacuum retrieval option is intended for retrieval of assumed 1eaker tanks. Both options use an arm and sluicing jets and/or a high pressure water scarifier to break up the waste. The sluicer uses waste supernatant recycled from the DST to form a liquid jet using a nozzle. The scarifier uses filtered, pressurized water that comes from a high pressure water skid.

The equipment portion of the MARS includes a vertical, carbon steel mast (square cross section) as the main structural member. Attached to the vertical mast is a carbon fiber robotic arm. The arm is attached to a traveler that raises and lowers the arm relative to the vertical mast. The arm rotates 360 degrees - 380 degrees on a turntable located in the pit box. The arm also pivots up and down from an elbow at the traveler (hydraulic system) and extends and retracts (hydraulic system). The end of the arm articulates. The arm thus provides for a large range of motion such that the sluicing devices (recycle sluicer, water scarifier) located at the end of the arm can aim at most portions of the tank and from varying (e.g., short) distances.

The containment box which encloses the MARS will be ventilated by two parallel installed radial filters. The purpose of these filters is to minimize contamination from migrating up from the tank into the containment box via the open space on the large riser during retrieval operations. Minimization of contamination inside the containment box is desired should entry into the box ever be required for repairs. Inflow through these filters during retrieval is estimated to reach up to 60 cubic feet per minute (cfm). A valve will be installed between the filters and the containment box so filters can be isolated from the box. However, because the location of the valve will be approximately 12 feet above ground and difficult to reach without properly installed and inspected scaffolding, the valve will be left open at all times until retrieval of the tank is complete. Once retrieval is complete the valve will be closed.

REMOTE WATER LANCE

The completion of tank retrieval may also be aided by a Remote Water Lance (RWL) that is a high pressure water device, or hydro laser. Alternatively, a High Pressure Mixer (HPM) may be used in the same capacity. The systems will consist of both ex-tank and in-tank components. The ex-tank components will be comprised of; high pressure systems, operating controls, cables, and hoses. The in-tank components will be comprised of; umbilical, in-tank vehicle, high pressure nozzle(s), or the high pressure mixer.

The high pressure water systems will provide the water at the desired pressure, not to exceed 37,000 psig. A conditioning system will be used to filter the raw water entering the skid to ensure that no abrasive materials are entrained in the water. The water volumetric flow rate will be on the order of 4 to 18 gpm for the HPM and from 6 to 15 gpm for the RWL. The operating controls will be located in a control trailer outside of the farm fence. The cables and hoses will connect hydraulically powered in-tank vehicle with the ex-tank controls and water skid via the umbilical. The HPM consists of an adjustable height pipe with two pairs of opposed, high pressure, low volume water orifices located on the bottom of the pipe. The mixer is capable of being rotated 360 degrees and has an adjustable height range of approximately 7 feet. The positioning of the mixer is performed remotely using a hydraulic system. Additionally, the mixer has a single orifice on the bottom of the unit that can be used as an

operational or installation aid. The in-tank vehicle will house one to four high pressure water nozzles. The RWL will be operated with the nozzle submerged to avoid aerosols in the tank. A rupture disc will be used to prevent reaching pressures above 37,000 psig.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	5.99E+00	Am - 241	8.68E+03	Am - 243	3.39E-01
Ba - 137 m	4.26E+07	C - 14	6.25E+02	Cd - 113 m	4.95E+03
Cm - 242	1.97E+01	Cm - 243	1.80E+00	Cm - 244	1.90E+01
Co - 60	2.52E+03	Cs - 134	3.44E+04	Cs - 137	4.89E+07
Eu - 152	8.49E+02	Eu - 154	1.45E+04	Eu - 155	9.54E+03
H - 3	5.95E+03	I - 129	2.95E+01	Nb - 93 m	1.01E+03
Ni - 59	1.05E+02	Ni - 63	9.30E+03	Np - 237	9.50E+01
Pa - 231	1.25E+01	Pu - 238	1.65E+02	Pu - 239	3.17E+03
Pu - 240	5.36E+02	Pu - 241	4.80E+03	Pu - 242	3.34E-02
Ra - 226	1.27E-02	Ra - 228	1.15E+01	Ru - 106	1.22E-02
Sb - 125	1.73E+04	Se - 79	6.36E+01	Sm - 151	8.93E+05
Sn - 126	2.59E+02	Sr - 90	2.91E+06	Tc - 99	2.24E+04
Th - 229	4.20E-01	Th - 232	1.26E+00	U - 232	3.66E+00
U - 233	3.02E+01	U - 234	1.07E+01	U - 235	4.44E-01
U - 236	2.73E-01	U - 238	9.86E+00	Y - 90	2.91E+06
Zr - 93	1.25E+03				

4) ABATEMENT TECHNOLOGY- Ductwork insulation
All ventilation ductwork from the exit of the tank to the inlet of the exhauster filter housing shall be insulated. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

5) ABATEMENT TECHNOLOGY- Annual testing
Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1 Section TA. HEPA filters shall have a minimum efficiency of 99.95%. (WAC 246-247-040(5)), (WAC 246-247-060(5)) and (WAC 246-247-075(2))

6) ABATEMENT TECHNOLOGY- Filter protection
Relative humidity shall be monitored, at least once a month, downstream of the heater and prior to the HEPA filters to ensure the air stream does not exceed 70% relative humidity. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

7) RELEASE RATES - WDOH Log
The annual possession quantity shall be tracked on a WDOH approved log. (WAC 246-247-080(7))

8) WDOH ALTERNATE APPROVAL- Standards
General WAC 246-247 technology standard exemptions justified and documented in RPP-19233, WAC 246-247 technology standard exemption justification for waste tank ventilation systems, may be applied to Phase II NOC retrieval exhauster operations. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

9) ALTERNATE APPROVAL - NDA Method
A pre-operational NDA of the exhauster(s) HEPA filters and a post-operational NDA will be performed the first time each of the four waste retrieval methods (mobile retrieval system, vacuum retrieval, supernatant sluicing, and saltcake dissolution with supernatant) when placed into service. The post-operational NDA should occur after one cycle or phase of waste retrieval operation is completed, a method replaces another method during a cycle/phase or six months from the in-service date, whichever occurs first. The facility may opt to replace the exhauster's HEPA filters prior to placing a new waste retrieval method in service and eliminate the pre-operational NDA. (WAC 246-247-040(5)), (WAC 246-247-060(5)) and (WAC 246-247-075(4))

10) WDOH NOTIFICATIONS - Differential pressure out of range
The differential pressure readings for the pre-filters and both stages of HEPA filters shall be monitored, recorded and trended daily. The exhaust system will be configured to automatically shut down at 5.9 inches of water (or less) pressure differential across the HEPA filter(s) for the first filter in series or multiple filters in series as indicated by the local readout. If the final HEPA filter in the system exceeds 5.9 inches of water pressure differential across the filter, the cause will be determined and WDOH will be notified through normal established channels. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

11) STANDARDS - stack monitoring systems
The emission unit stack monitoring system shall meet the requirements of ANSI/HPS N13.1-1999 including the stack monitoring system inspection requirements. (WAC 246-247-040(5)), (WAC 246-247-060(5)) and (WAC 246-247-075(2))

12) STANDARDS - Startup leak testing
New or altered sections of ductwork shall be leak tested in accordance with the requirements of ASME AG-1 Section SA prior to use. Normal maintenance of the system (e.g. replacing gaskets, replacement of in kind components, flow profile analysis in the ductwork, air sampling from test ports in the duct and demister flushing) are not considered to be alteration. (WAC 246-247-040(5)), (WAC 246-247-060(5)) and (WAC 246-247-075(2))

13) CONTAMINATION CONTROL- Max operating pressure
During waste retrieval operations the maximum pressure for any waste retrieval method shall not exceed 37,000 psig. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

14) CONTAMINATION CONTROL- Monthly Radiological Survey
While the exhauster is operating, and/or tank waste retrieval is underway, all ductwork connections shall have a radiological survey performed monthly to ensure ductwork connections are not degrading. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

15) CONTAMINATION CONTROL exhauster alternate usages
The exhauster will be operated occasionally during periods of non-retrieval in support of tank waste retrieval preparation activities and to aid in evaporation of residual flush water or sluicing liquid that remains in the tank. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

16) CONTAMINATION CONTROL- Active ventilation
All receiver tanks (including waste retrieval process tanks for tank TRU retrieval (staging) SSTs, storage DSTs, or other staging/storage vessels, but not including batch vessel supporting vacuum retrieval) shall have active ventilation during waste receipt, unless alternative controls are documented and approved by WDOH. If the exhauster goes down due to off-normal conditions while retrieval is occurring, the system should be placed into a safe configuration, minimizing dose to personnel and the environment. These steps may include: flushing the lines, pumps, and the waste transfer system of slurry solution using DST supernatant or water; pumping down the tank liquid to minimize remaining liquids; and halting waste retrieval. (WAC 246-247-040(5)) and (WAC 246-247-060(5))

Emission Unit ID: 1294

200E P-242A-003

296-A-21A

This is a MINOR, ACTIVELY ventilated emission unit.

242-A Evaporator

Emission Unit Information

Stack Height: 50.00 ft. 15.24 m. Stack Diameter 3.00 ft. 0.91 m.

Average Stack Effluent Temperature: 80 degrees Fahrenheit. 27 degrees Celsius.

Average Stack ExhaustVelocity: 47.10 ft/second. 14.36 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
K-1 Exhaust System	Prefilter	3	3 parallel flow paths, 1 bank (3 x 3 array) per flow path, 2 in operation, 1 in standby
K-1 Exhaust System	HEPA Filter	3	3 parallel flow paths, 2 bank (3 x 3 array per bank) per flow path, 2 in operation, 1 in standby
K-1 Exhaust System	Fan	2	1 in operation, 1 in standby

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114(3)	TOTAL ALPHA TOTAL BETA	1 week sample/4 times per year

Sampling Requirements Record Sample

Additional Requirements

The exhaust air from the stack is monitored by a record sampler through shrouded probe extraction nozzle on sample probe located in the stack. The filter paper is analyzed and the results of the analysis document emissions.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status The 242-A Evaporator Building K-1 ventilation system is designed for air flow from areas of lesser contamination to areas of greater contamination. The contaminated K-1 zones are maintained at a negative pressure to control the spread of contamination. The K-1 ventilation system exhaust rooms in the Hot Zones: evaporator; pump; condenser; load out and hot equipment storage; and loading rooms; and the ion exchange enclosure.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
242-A Evaporator Building Exhauster K-1 Upgrade (Replaced NOC 794)	AIR 12-341	2/23/2012	864

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.30E-06 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 6.40E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted.

The 242-A Evaporator Building Ventilation Systems are designed for air flow from uncontaminated to progressively more contaminated zones. The contaminated (hot) zones are maintained at a negative pressure, while the non-contaminated (cold) zones are maintained at a positive pressure. This is considered a secondary

confinement for liquids and airborne particulates released to the building. Maintaining the proper pressure in each zone will ensure that any leakage between the zones will always flow from a cold to a hot zone minimizing the spread of contamination.

The K-1Ventilation system exhausts the following rooms in the Hot Zone:
- Evaporator Room
- Pump Room
- Condenser Room
- Ion Exchange Enclosure
- Load-Out and Hot Equipment Storage Room
- Loading Room

Air is exhausted from the condenser, ion exchange, evaporator, and pump rooms through separate underground ducts into a common header to the three exhaust flter trains..

Exhaust air from this common header passes through the two exhaust trains having a pre-filter section and two stages of HEPA filters in series, with a third filter train being redundant as backup, before it is exhausted through stack 296-A-21A.

Air flow moves from areas of lesser contamination to areas of greater contamination, while maintaining a negative air pressure. This system has two fans, each with a 100 percent system flow capability, with one in operation and the other fan as back-up. Failure to maintain a specified flow will cause the shutdown of the primary fan and initiate the startup of the backup exhaust fan. The ventilation system will have an approximate flow rate of 18,000 cfm (max 19,500 cfm). Each filter train will have a 50 percent system flow rate, or approximately 9,000 cfm.

Negative pressure in the hot zones is maintained by the operation of the vortex damper mounted on the suction of electric exhaust fan. The backup fan has a similar vortex damper. Both dampers are adjusted automatically to maintain a preset negative pressure in the Evaporator room when their respective fan is operating.

The exhaust air from the stack will be monitored by a record sampler and a beta continuous air monitor (CAM). The stack radiation detector monitors the exhaust air discharged out of Stack 296-A-21A and initiates an automatic shutdown of both exhaust fans if beta radioactive emissions exceed the set point. A sample of the exhaust air is withdrawn from the stack through a shrouded probe and is sent to a record sampler where radioactive particulates are collected on a filter paper. The filter paper is analyzed and the results of the analysis document emissions from the 291-A-21A Stack.

Any other replacement, replacement-in-kind, or upgrades of parts and/or equipment not here specified, shall require review, and/or review and approval (WAC 246-247-030(16), WAC 246-247-030(19)).

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	Alpha - 0 based on Am-241	4.20E-03	Am - 241	
Am - 243	Ba - 137 m		Beta - 0 based on Sr-90	1.80E-02
C - 14	Cd - 113 m		Cm - 242	
Cm - 243	Cm - 244		Co - 60	
Cs - 134	Cs - 137		Eu - 152	
Eu - 154	Eu - 155		H - 3	
I - 129	Nb - 93 m		Ni - 59	
Ni - 63	Np - 237		Pa - 231	

Pu - 238	Pu - 239	Pu - 240
Pu - 241	Pu - 242	Ra - 226
Ra - 228	Ru - 106	Sb - 125
Se - 79	Sm - 151	Sn - 126
Sr - 90	Tc - 99	Th - 229
Th - 232	U - 232	U - 233
U - 234	U - 235	U - 236
U - 238	Y - 90	Zr - 93

4) The Technical Basis Document required by ANSI N13. 1-1999 (Clause 4) is required for review prior to startup operations of the stack.

5) Ensure the HEPA manufactures temperature, humidity, and air flow ratings are not exceeded (i.e, to ensure HEPA filter media is not ruptured nor performance compromised).

6) To verify the alternate potential-to-emit calculation method, annually provide the back-calculation using the measured emission rates and in situ measurements of the control equipment efficiencies (WAC 246-247-030(21)). A re-evaluation of the need for this requirement may be requested after 5 years of operation.

7) Periodic confirmatory monitoring (PCM) shall be required to verify low emissions monitoring during construction, deactivation, and operation activities. The PCM, as described in ALARACT 5, will be used to verify low emissions during manual soil excavation.

   If a regulated Filtered Vacuum Truck (FVT) is used, the PCM will be performed as required by either NOC_ID 774 "Operation of the Guzzler ™ in Tank Farm Facilities" or NOC _ID 658 "Use of the Guzzler™ (Filter Vacuum Truck) Vacuum Excavation System for Radiologically Limited Activities on the Hanford Site," or one of the latest WDOH approval of these two licenses. A FVT log will be used to track these emissions.

   Monitoring during equipment installation and deactivation activities will be in accordance with the following ALARACT Demonstrations and the WRPS Radiological Control Manual:
   - ALARACT 4 - Tank Farm ALARACT Demonstration for Packaging and Transportation of Waste
   - ALARACT 15 - Tank Farm ALARACT Demonstration for Size Reduction of Waste Equipment for Disposal Contaminated Ventilation Systems Components
   - ALARACT 16 - Tank Farm ALARACT Demonstration for Work on Potentially Contaminated Ventilation System Components
   - HNF-5183 - Tank Farms Radiological Control Manual.

8) A report of closure for 296-A-21 is required when this emission unit is permanently deactivated and isolated, so the department can perform a closure inspection prior to the system's disposal.

9) The facility shall notify the department of any unplanned shutdown of exhaust fans (e.g., triggered by a high exhaust stack beta radiation level).

Emission Unit ID: 1322

200 W-PES-001

Portable Enclosure System #1

This is a MAJOR, ACTIVELY ventilated emission unit.

Portable Enclosure System

Emission Unit Information

Stack Height: 26.00 ft. 7.92 m. Stack Diameter 1.67 ft. 0.51 m.

Average Stack Effluent Temperature: 70 degrees Fahrenheit. 21 degrees Celsius.

Average Stack ExhaustVelocity: 47.90 ft/second. 14.60 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Prefilter	6	Three by two for total of six.
	1st Stage HEPA Filter	6	Aerosol tested annually to 99.95% removal of a particulate with a median diameter of 0.7 micron. Three by two housing for total of six HEPA filters.
	2nd Stage HEPA Filter	6	Aerosol tested annually to 99.95% removal of a particulate with a median diameter of 0.7 micron. Three by two housing for total of six HEPA filters

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	Each radionuclide that could contribute greater than 10% of the potential TEDE	Once per year minimum.

Sampling Requirements Destructive Examination (DE) of the filters. Daily samoling of the access doors when exhaust system is shut down with inventory inside

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Portable enclosure used to support waste retrieval.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operation of the Transuranic Waste Retrieval Project (Replaces NOC 719)	AIR 11-1006	10/19/2011	804

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.00E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Transuranic waste retrieval involves the processes for removing and dispositioning buried suspect transuranic mixed low-level radioactive waste (hereafter called TRU waste) from Hanford Site burial trenches for storage or disposal at other approved locations. Dispositioning is the orderly administration and handling of waste

(including contaminated soil) from the low level burial grounds to place it in approved storage or disposal status. The handling includes such actions as: packaging, labeling and tracking waste; venting, assaying, and staging waste; inspecting waste and waste staging areas; sampling/characterizing/designating waste; making arrangements for the transfer of waste; completing necessary paperwork; and performing radiological and/or industrial hygiene surveys. Two containment systems are associated with this approval. One is Emission Unit 1327, Next Generation Retrieval (NGR) and, the other system will be used for the retrieval of large containers and is referred to as Emission Unit 1322, Portable Enclosure System (PES). These emission units will be used when retrieval activities exceed EU 486: 200 Area diffuse and fugitive contamination limits. In addition there are 3 types of drum venting systems and HEPA-filtered Vacuum Units (HVU) used with these venting systems and also during excavation and retrieval.
See the following emission units for a detailed description of additional controls/conditions and limits under this approval:

EU 455	HEPA Vacuums
EU 486	200 Area Diffuse/ Fugitive; Operation of the Transuranic Waste Retrieval Project
EU 755	Mobile Drum Venting System (Active Ventilation) (MDVS)
EU 756	Mobile Drum Venting System (Passive Ventilation) (MDVS)
EU 1181	Categorical Drum Venting System 2 (DVS2)
EU 1322	Portable Enclosure System #1 (PES)
EU 1326	Vapor Extraction System (VES)
EU 1327	Next Generation Retrieval (NGR)

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 3.92E+01 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Am - 241	8.30E+00

Alpha release rate based on Am-241 + Progeny. It is recognized that other radionuclides may be present in very limited quantities.

Cs - 137	1.60E+00

Beta/Gamma release rate based on Cs-137 + Progeny. It is recognized that other radionuclides may be present in very limited quantities.

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	Am - 243	Cf - 252	Cm - 244	Cs - 134
Cs - 137	Eu - 152	Eu - 154	Pu - 238	Pu - 239/240
Pu - 241	Sr - 90	U - 234	U - 235	U - 236
U - 238				

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) PROCESS DESCRIPTION: PORTABLE ENCLOSURE SYSTEM (PES)
This approval applies to these additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The PES may be used for larger containers or multiple containers, based on the controls established in this emission unit.. Due to the size and or weight of the waste packages, crane and rigging may be required in conjunction with use of the PES. (WAC 246-247-040(5) and WAC 246-247-060(5))

5) ABATEMENT TECHNOLOGY: EXCAVATION AND RETRIEVAL OF CONTAINERS
The administrative control points set in this emission unit for contamination, as monitored by standard radiological field instrumentation, will be used to bound emissions based on current efficiencies of typical RadCon field

contamination instruments. The controls listed within this approval apply to TRU Waste Retrieval Project open air excavation and retrieval activities. (WAC 246-247-040(5) and WAC 246-247-060(5))

6) ABATEMENT TECHNOLOGY: PES

The PES is a portable hard-sided containment unit. Its function is to provide containment and filtered ventilation for work performed on degraded containers. The proposed abatement technology for the PES will consist of 2 banks of HEPA filters with an in-place testable efficiency of 99.95% for removal of test aerosol particulate with a median diameter of 0.7 micron. The annual average volumetric flow rate through this intermittently operated exhaust system is 2.8 cubic meters/s.. The PES will be approximately 30 ft by 36 ft by 20 ft high, will weigh approximately 30 tons, and project engineering calculations have been performed to show that it will remain stable and in place in an 85 mph wind. In addition, negative pressure ensures no outleakage during routine operations. The enclosure is built of flanged panels but the doors have normal air gaps. Gravity dampers are installed on the air inlets to the enclosure to eliminate mass flow back into the environment. Stack height is approximately 26 feet from ground level (18 feet from top of fan outlet) and stack diameter is approximately 20 inches.

A heater is not installed in the PES exhauster because condensed moisture is not anticipated in the filter housing. During normal operation of the system, the air that is exhausted through the system is outside air. This is based on the fact that outside air is being drawn into the PES exhauster at the rate of approximately 2.8 cubic meters/s. and is not conditioned before entering the facility. There is no planned heat source within the structure during operation. As a result, the air will have basically the same properties as the outside air (dry-bulb temperature, humidity, dew point temperature, etc.). A misting system is planned to be used in the PES to help reduce the amount of airborne particulate that could be suspended during box retrieval. However, due to the considerable volume of air changes and the minimal rate of water required for misting used, it is not anticipated that the properties of the exhaust air will change substantially due to the misting (i.e., increase moisture content, change dew point, etc.). As a result, since the air entering the exhaust system will be basically at the same temperature as the outside air, condensation will not occur because the dew point temperature will not be achieved.

A seal pot will be located at the inlet end of the skid to provide sufficient space as a precaution for any condensate to drain from the filter train or the fan housing. The seal pot will have low added water limits to ensure there will be enough water in the pot to prevent a contaminant escape air path, and a high limit to prevent overflow of the seal pot, leakage of water, or wetting of the filter housing or fan housing. (WAC 246-247-040(5) and WAC 246-247-060(5))

7) WDOH NOTIFICATION - Implementing PES or NGR containment

During high hazard work activities, removable surface contamination is maintained less than 2,000,000 dpm/100 cm^2 alpha and/or less than 4 rad/hr/100 cm^2 beta-gamma, limited to a 1 ft^2 area. For an allowed increase in contaminated area footprint of 4 ft^2 the limiting condition for removable contamination will be 500,000 dpm/100 cm^2 alpha and or 1rad/hr/100 cm^2 beta-gamma. Exceeding any of these contamination limits will require work to stop, and notification to Operation and RadCon management in accordance with the RWP. Notification to WDOH via email or the established procedures in the Environmental Notification program will be required. For work to continue above any of these limiting radiological conditions, the NGR containment system or the PES and commensurate controls will be implemented. The NGR containment or PES exhaust system will be utilized to minimize the potential for contamination spreads outside of posted radiological areas. (WAC 246-247-040(5) and WAC 246-247-060(5))

8) ALTERNATIVE APPROVAL- Destructive Examination

Approval is given for alternative flow monitoring and sample extraction method for the NGR and PES. Destructive Examination (DE) of the final stage HEPA filter of the PES or NGR containment, which will be performed once per calendar year any time the system is used within the calendar year. This authorization will remain in force for three years from the date of issue of the license, additional extensions on the life of the system will require installation of continuous flow measurement and sample extraction in accordance with ANSI/HPS N13.1-1999. (WAC 246-247-040(5), WAC 246-247-060(5), WAC 246-247-075(4))

9) CONTROL TECHNOLOGY-Filter protection

The PES will be operated as an unheated structure whenever the HEPA exhaust system is in operation. (WAC 246-247-040(5) and WAC 246-247-060(5))

10) CONTROL TECHNOLOGY- Filter protection 85% humidity

The PES will not be operated if overall relative humidity, including humidity caused by misting, exceeds 85%. (WAC 246-247-040(5) and WAC 246-247-060(5))

11) CONTAMINATION CONTROL- NGR/PES activities

Activities done under confinement structure of PES and NGR will be considered to be diffuse and fugitive activities unless under active ventilation conditions (WAC 246-247-040(5) and WAC 246-247-060(5))

12) CONTAMINATION CONTROL- ARA
Adherence to contamination limits in the immediate work location for medium and high-hazard work will help ensure that the work area airborne radioactivity limits (i.e., 1.0E-09 µCi/ml for alpha emitters and 2E-06 µCi/ml for beta-gamma emitters) are not exceeded. (WAC 246-247-040(5) and WAC 246-247-060(5))

13) CONTAMINATION CONTROL-soil removal, container handling
Both Alpha and beta-gamma contamination field surveys shall be performed for all removable contamination surveys, prior to and during soil removal (excluding overburden removal) and overpacking activities and when placing degraded outer container contents into replacement containers. Alpha surveys alone shall be performed for direct readings of container surfaces. Beta/gamma direct readings are influenced by container contents, so are not as useful and are not required. (WAC 246-247-040(5) and WAC 246-247-060(5))

14) CONTAMINATION CONTROL- daily surveys
When exhaust system is shut down with inventory inside the NGR or PES, radiological control technicians will perform daily radiological swipe surveys on the access doors to the PES or NGR during normal work days. (WAC 246-247-040(5) and WAC 246-247-060(5))

15) ALARACT APROVAL- container handling
The process for handling of abnormal or severely degraded containers as described in PROCESS DESCRIPTION: EXCAVATION AND RETRIEVAL OF CONTAINERS, for bagging, overpacking, placing degraded outer container contents into replacement containers or in-situ grouting is approved as meeting ALARACT, and these processes and associated records and procedures will be subject to inspection upon request by the department. (WAC 246-247-040(5) and WAC 246-247-060(5))

16) CONTAMINATION DOCUMENTATION - Exposed packages
During repackaging activities (i.e., when transferring the contents of a degraded container into a new container or containers) an operations log will be kept noting conditions of the transferred contents/packages.. RadCon will generate and retain radiological records documenting air sample results and removable contamination conditions during retrieval of each container. (WAC 246-247-040(5) and WAC 246-247-060(5))

Emission Unit ID: 1326

200W 296-P-53

Vapor Extraction System

This is a MINOR, ACTIVELY ventilated emission unit.

TRU Waste Retrieval

Emission Unit Information

Stack Height: ft. m. Stack Diameter ft. m.

Average Stack Effluent Temperature: degrees Fahrenheit. degrees Celsius.

Average Stack ExhaustVelocity: ft/second. m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA Filter		

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075(3)	Near Field Monitoring	All radionuclides which could contribute greater than 0.1 mrem/yr to the MEI, or represent greater than 10% of the unabated PTE or represent greater than 25% of the abated dose.	once per month when operining

Sampling Requirements Smears of the exhuast vent when the system is operated at any time wihin a month.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status The VES will be used to remove volatile organic compounds from soil gases and vapors from vents located in 218-W-3A

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operation of the Transuranic Waste Retrieval Project (Replaces NOC 719)	AIR 11-1006	10/19/2011	804

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.00E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Transuranic waste retrieval involves the processes for removing and dispositioning buried suspect transuranic mixed low-level radioactive waste (hereafter called TRU waste) from Hanford Site burial trenches for storage or disposal at other approved locations. Dispositioning is the orderly administration and handling of waste (including contaminated soil) from the low level burial grounds to place it in approved storage or disposal status. The handling includes such actions as: packaging, labeling and tracking waste; venting, assaying, and staging waste; inspecting waste and waste staging areas; sampling/characterizing/designating waste; making arrangements for the transfer of waste; completing necessary paperwork; and performing radiological and/or industrial hygiene surveys. Two containment systems are associated with this approval. One is Emission Unit 1327, Next Generation Retrieval (NGR) and, the other system will be used for the retrieval of large containers and is referred to as Emission Unit 1322, Portable Enclosure System (PES). These emission units will be used when retrieval activities exceed EU 486: 200 Area diffuse and fugitive contamination limits. In

addition there are 3 types of drum venting systems and HEPA-filtered Vacuum Units (HVU) used with these venting systems and also during excavation and retrieval.
See the following emission units for a detailed description of additional controls/conditions and limits under this approval:

EU 455	HEPA Vacuums
EU 486	200 Area Diffuse/ Fugitive; Operation of the Transuranic Waste Retrieval Project
EU 755	Mobile Drum Venting System (Active Ventilation) (MDVS)
EU 756	Mobile Drum Venting System (Passive Ventilation) (MDVS)
EU 1181	Categorical Drum Venting System 2 (DVS2)
EU 1322	Portable Enclosure System #1 (PES)
EU 1326	Vapor Extraction System (VES)
EU 1327	Next Generation Retrieval (NGR)

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 3.92E+01 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Am - 241	2.50E-03	Liquid/Particulate Solid

Alpha release rate based on Am-241 + Progeny. It is recognized that other radionuclides may be present in very limited quantities.

Cs - 137	3.80E-02	Liquid/Particulate Solid

Beta/Gamma release rate based on Cs-137 + Progeny. It is recognized that other radionuclides may be present in very limited quantities.

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	Am - 243	Cf - 252	Cm - 244	Cs - 134
Cs - 137	Eu - 152	Eu - 154	Pu - 238	Pu - 239/240
Pu - 241	Sr - 90	U - 234	U - 235	U - 236
U - 238				

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) PROCESS DESCRIPTION: VAPOR EXTRACTION SYSTEM
This approval applies to these additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The VES will be used to remove volatile organic compounds (VOCs) from soil gases and vapors from vents located in 218-W-3A. A powered and filtered system will be attached to the VES risers and operated in batch mode. This process will consist of venting the vapor space and will not include venting during excavation or retrieval activities. The existing vent lines in the burial grounds will be connected to a powered ventilation system which will remove VOCs from the vapor space. The entire trench will not be vented as a unit, but the powered venting system will be positioned over a section of the trench and then moved further along, connecting to the nearest VES riser(s) as required per project direction.
Flexible hoses are connected from the vents to the VES. Vapor from the vents may be drawn through a demister and primary water separator (dropout tank) before it passes through a HEPA-type filter. The vapor stream leaving may then pass through a cooler before reaching the primary granular-activated carbon (GAC) canister. From the primary GAC canister the vapor line flows into the polishing GAC canister. The vapor stream leaving the polishing GAC canister is exhausted out of the VES stack. (WAC 246-247-040(5) and WAC 246-247-060(5))

5) ABATEMENT TECHNOLOGY: EXCAVATION AND RETRIEVAL OF CONTAINERS
It is recognized that other radionuclides may be present in very limited quantities. Encountering contamination is

expected during excavation. The administrative control points set in this emission unit for contamination, as monitored by standard radiological field instrumentation, will be used to bound emissions based on current efficiencies of typical RadCon field contamination instruments.

The controls listed within this approval apply to TRU Waste Retrieval Project open air excavation and retrieval activities. (WAC 246-247-040(5) and WAC 246-247-060(5))

6) ABATEMENT TECHNOLOGY: VAPOR EXTRACTION SYSTEM
Operation of the Vapor Extraction System: A VES powered ventilation system operated for several years in the LLBG as a Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) activity associated with the Groundwater Project. No radionuclide particulate emissions were detected from the VES vents during this operation. However, based on engineering estimates and the operation of not venting the entire trench at once, but in a series of sections, it is assumed that the equivalent radionuclide contents of two degraded containers per vented section will provide the basis for the source of potential emissions. A HEPA type filter may be used, but no credit is taken for abatement. The annual average volumetric flow rate through this exhaust system is 4.7E-02 cubic meters/s. (WAC 246-247-040(5) and WAC 246-247-060(5))

7) RELEASE RATES: VES
It is assumed that there is a potential to have two degraded drums within the trench for the basis of the APQ, since only a portion of the trench is vented at any given time. Using a release fraction of 1E-03 for particulates, the predicted release rate (unabated) for the VES without any emissions control equipment is 4.0E 02 Ci/Yr. The predicted release rate (abated) with emissions control equipment is the same as unabated. The predicted release rates for the representative radionuclides Am-241+Progeny and Cs 137+Progeny are as follows:

Unabated PTE;	Am-241+Progeny	2.5E-03 Ci/yr	:	Cs-137+Progeny	3.8E-02 Ci/yr
Abated PTE;	Am-241+Progeny	2.5E-03 Ci/y	:	Cs-137+Progeny	3.8E 02 Ci/yr

(WAC 246-247-040(5) and WAC 246-247-060(5))

8) CONTAMINATION CONTROL- confirmatory monitoring
Periodic confirmatory monitoring will consist of periodic field surveys of swipes/smears taken at the exhaust point when the system is operated any time within a month, combined with the continuous monitoring provided by the 200 Area near facility ambient air monitoring network. (WAC 246-247-040(5) and WAC 246-247-060(5))

9) CONTROL TECHNOLOGY STANDARDS
The VES will contain HEPA-type filters but no credit is taken for them in the system. This system will rely on the near facility monitors, and since there is no monitoring system in the VES, the listed standards are not applicable.

10) RESTRICTION ON STARTUP
Prior to putting EU 1326, Vapor Extraction System into service USDOE will provide WDOH with the technical specifications for the fan and filter housings. WDOH will need to approve and reissue the License for Operation of the Transuranic Waste Retrieval Project prior to startup.

Emission Unit ID: 1327

200W 296-P-52

Next Generation Retrieval (Active)

This is a MINOR, ACTIVELY ventilated emission unit.

TRU Waste Retrieval

Emission Unit Information

Stack Height: 3.00 ft. 0.91 m. Stack Diameter 0.66 ft. 0.20 m.

Average Stack Effluent Temperature: degrees Fahrenheit. degrees Celsius.

Average Stack ExhaustVelocity: ft/second. m/second.

Abatement Technology ALARACT WAC 246-247-040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
Controlled work area	Prefilter		Aerosol tested annually to 99.95% removal of a particulate with a median diameter of 0.7 micron.
Controlled work area	1st Stage HEPA Filter		Aerosol tested annually to 99.95% removal of a particulate with a median diameter of 0.7 micron.
Controlled work area	2nd Stage HEPA Filter		Aerosol tested annually to 99.95% removal of a particulate with a median diameter of 0.7 micron.

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	All radionuclides which could contribute 10% of the potential TEDE.	Once per month anytime it is operated

Sampling Requirements Destructive Examination (DE) of the filters. Daily sampling of the access doors when exhaust system is shut down with inventory inside

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities for the TRU retrieval project support decontamination and decommissioning operations at the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operation of the Transuranic Waste Retrieval Project (Replaces NOC 719)	AIR 11-1006	10/19/2011	804

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.00E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

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(including contaminated soil) from the low level burial grounds to place it in approved storage or disposal status. The handling includes such actions as: packaging, labeling and tracking waste; venting, assaying, and staging waste; inspecting waste and waste staging areas; sampling/characterizing/designating waste; making arrangements for the transfer of waste; completing necessary paperwork; and performing radiological and/or industrial hygiene surveys. Two containment systems are associated with this approval. One is Emission Unit 1327, Next Generation Retrieval (NGR) and, the other system will be used for the retrieval of large containers and is referred to as Emission Unit 1322, Portable Enclosure System (PES). These emission units will be used when retrieval activities exceed EU 486: 200 Area diffuse and fugitive contamination limits. In addition there are 3 types of drum venting systems and HEPA-filtered Vacuum Units (HVU) used with these venting systems and also during excavation and retrieval.
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EU 1322	Portable Enclosure System #1 (PES)
EU 1326	Vapor Extraction System (VES)
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3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 3.92E+01 mrem/year. Approved are the associated potential release rates (Curies/year) of:

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Beta/Gamma release rate based on Cs-137 + Progeny. It is recognized that other radionuclides may be present in very limited quantities.

The radioactive isotopes identified for this emission unit are (no quantities specified):

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Pu - 241	Sr - 90	U - 234	U - 235	U - 236
U - 238				

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) PROCESS DESCRIPTION: EXCAVATION AND RETRIEVAL OF CONTAINERS
This approval applies to these additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

Work will be performed in accordance with as low as reasonably achievable (ALARA) requirements as determined by the Radiological Control organization.
One type of configuration is a V notched trench, containers in some trenches may not have been stacked or placed in any orderly manner for burial. The specific steps or approach to uncovering the containers will vary according to the configuration of the trench to be uncovered, the type of containers to be retrieved, the proximity of nearby trenches or fences, the designated location of the spoils pile, the planned extent of the soil removal, and other

considerations.
Work to be performed within some trenches may be performed within a weather resistant structure(s) that will be re-locatable along the trench. Weather enclosures are effectively used for similar remediation activities at other U.S. Department of Energy (DOE) sites and in general industrial use. Experience during retrieval activities has shown that operational efficiencies can be improved if the operations are protected from impacts due to weather such as wind, rain, snow, and temperature extremes. The use of a weather resistant enclosure could allow a more effective recovery from events involving degraded containers and potential contamination spreads.
Prior to and during overburden removal, subsurface surveys such as ground penetrating radar, electromagnetic inductance, and magnetometer are performed. These surveys provide information regarding container depth, configuration, type, and condition. They may also identify and locate underground obstructions.
The overburden soil will be removed to expose the waste containers. Excavation equipment will be chosen to effectively remove soil and retrieve the waste containers while minimizing damage to the containers. Excavation activities will be monitored to identify contamination that might be present and to implement controls to minimize emissions.
The most efficient methodology for removing the uncontaminated overburden from the containers will include the maximum use of conventional methods such as excavators, backhoes, front end loaders, brooms (boom mounted), or manual digging with shovels and similar hand tools. To excavate contaminated soil, hand tools predominantly will be used. Remotely-operated vehicles may be used to minimize personnel exposure in areas where high radiological and/or chemical hazards are discovered or anticipated. High efficiency particulate air (HEPA) filtered vacuums may be used for soil excavation for this application. Spot contamination removal will be done in accordance with the HEPA filtered vacuum unit (HVU) NOC (DOE/RL 97 50, Radioactive Air Emissions Notice of Construction for HEPA Filtered Vacuum Radioactive Air Emission Units, as amended). Within the V Notched trenches, it is more likely that the use of a HEPA-filtered vacuum to remove larger quantities of soil from the top surface of buried containers and soil materials in the interstices surrounding containers will be employed. Any use of the sitewide HVU will be performed under the NOC applicable to the unit.
An estimated 300 cubic meters of soil at contamination detection levels occupies the void spaces between the containers buried in the trenches.
Excavation activities will be controlled closely. Heavy equipment, hand tools, light equipment, or HVUs will be used to complete the soil removal operations and to access and remove the plastic and plywood materials covering the containers.
All containers will be inspected to verify integrity. The container inspection will consist of a visual examination to determine if there are significant indications of corrosion, holes, dents or other visual deformities. All containers could be moved, turned, or otherwise relocated (manually or with powered equipment, slings, clamps, or appropriate rigging) to facilitate an adequate visual inspection.
The exposed containers will also be visually inspected and surveyed for contamination. Externally contaminated containers will have fixative applied or will be decontaminated. Containers may also be bagged or overpacked as needed. Overpacking means placing containers within a larger closed container. Bulging or potentially pressurized containers will be vented as described in NOC 486 condition 16, VENTING OF CONTAINERS.
Severely degraded containers will be repackaged or in-situ grouted. Repackaging means transferring the contents of a degraded container into a new container or containers. The entire contents of the container will not be sorted but will be placed into the new container or containers through the use of slings, clamshell excavators, manual labor, or the best available method that minimizes potential emissions.
Repackaging may include size reduction. Size reducing, cutting or disassembling material and equipment may be required to ensure personnel safety and/or more economical waste packaging. The process will include mechanical cutting techniques such as low speed sawing, drilling, snipping, and shearing. The process will also include bending and crimping to preclude the need for cutting operations where possible.
Containers may include but are not limited to drums, metal boxes, concrete boxes, fiberglass reinforced boxes, culverts, and sealed gloveboxes.
In-situ grouting will involve grouting around and/or throughout the waste, such that the entire waste container can be removed as a monolith. Retrieval activities will include appropriate disposition of small amounts of incidental contaminated soil (e.g., containerized or fixed in place). Larger areas of contamination could be fixed and the area posted as required by the Radiological Control organization for later disposition. Bulk transfer of contaminated soils for disposal also could occur.
Some containers will be assayed and, if they assay as TRU waste, they may be further examined to determine whether they contain items prohibited from disposal at the Waste Isolation Pilot Plant (WIPP). Any prohibited items will be removed at a later date. Unvented TRU waste containers may be staged for venting in the burial grounds or may be moved to the Central Waste Complex (CWC) or another treatment, storage or disposal (TSD) site for venting.

A number of retrieved containers are in good condition but are not vented. Although not technically meeting the definition of 'sealed' containers, Washington State Department of Health (WDOH) has recognized these as closed containers such that potential emissions from these non vented containers need not be included so far as potential emissions specific to waste during removal from the trenches. Once vented, the containers are included for calculating release rates in NOC 486 condition 4 STAGING OF RETRIEVED CONTAINERS for staging and handling operations. An estimated annual maximum of 15,200 vented containers of waste will be managed during the peak years of this project.
Containers may be staged in the burial grounds pending further processing or transfer. Waste containers are considered retrieved once transferred to an approved TSD facility. (WAC 246-247-040(5) and WAC 246-247-060(5))

5) PROCESS DESCRIPTION: NEXT GENERATION RETRIEVAL (NGR)
This approval applies to these additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

NGR activities will consist of removal of containers, primarily drums but also boxes, from the burial grounds and venting the TRU waste containers using the Dart process. Bulging drums may be vented using the DVS2. Excavation, assay, and inspection activities will be the same as described in EXCAVATION AND RETRIEVAL OF CONTAINERS. TRU waste containers will be separated from low-level waste (LLW) containers during the NGR retrieval and characterization process. NGR containers that assay as LLW will not be routinely vented. The retrieved containers may require overpacking or repackaging. Overpacking is expected to be performed as described in PROCESS DESCRIPTION: EXCAVATION AND RETRIEVAL OF CONTAINERS. Many of the containers (approximately 250/yr) are expected to be so severely degraded that they cannot be overpacked. Their contents will be repackaged, as described in PROCESS DESCRIPTION: EXCAVATION AND RETRIEVAL OF CONTAINERS. Venting of containers will also occur as described in PROCESS DESCRIPTION: VENTING OF CONTAINERS.
An exhaust system (NGR containment system or PES) may be used for NGR container retrieval activities based on the controls established within Emission Unit 1327 Next Generation Retrieval (WAC 246-247-040(5) and WAC 246-247-060(5))

6) ABATEMENT TECHNOLOGY: EXCAVATION AND RETRIEVAL OF CONTAINERS
The administrative control points set in this emission unit for contamination, as monitored by standard radiological field instrumentation, will be used to bound emissions based on current efficiencies of typical RadCon field contamination instruments.
The controls listed within this approval apply to TRU Waste Retrieval Project open air excavation and retrieval activities. (WAC 246-247-040(5) and WAC 246-247-060(5))

7) ABATEMENT TECHNOLOGY: NGR CONTAINMENT
The controls described below will be used for NGR containment system exhaust. The greenhouse design of this unit will incorporate an engineered active ventilation system to reduce to acceptable levels and minimize the risk of a radionuclide airborne discharge to the onsite or offsite environment during any retrieval operation.
The annual average volumetric flow rate through the intermittently operated NGR containment system exhauster is 0.47 cubic meters/sec (1000 cfm) providing up to 27.8 air exchanges per hour within the greenhouse. Ventilation for this NGR containment system will include greenhouse inlet filters, pressure control flaps, an inlet demister pad with a collection sump located inside the greenhouse, a heater unit, two (2) exhaust HEPA filters (1st and 2nd stage), downstream ducting, a downstream flow control damper, and an exhaust fan. Each HEPA filter stage will provide an in-place testable efficiency of at least 99.95% for removal of test aerosol particulate with a median diameter of 0.7 micron. The exhaust duct is 8 inches in diameter and will exhaust at least 3 feet above grade.
When the NGR containment system is in use (with personnel inside and working with waste) the active ventilation system will be in operation. During ventilation system operation, airflow into this containment system will be through 30% efficient inlet filters. Containment tent pressure will be controlled with simple flaps that will cover these filters. The demister and heater unit will prevent water buildup on the HEPA filters and allow operation when the humidity is above 70% relative humidity and/or when misting is used during retrieval operations to control contamination spread. (WAC 246-247-040(5) and WAC 246-247-060(5))

8) WDOH NOTIFICATION - Implementing PES or NGR containment
During high hazard work activities, removable surface contamination is maintained less than 2,000,000 dpm/100 cm^2 alpha and/or less than 4 rad/hr/100 cm^2 beta-gamma, limited to a 1 ft^2 area. For an allowed increase in contaminated area footprint of 4 ft^2 the limiting condition for removable contamination will be 500,000 dpm/100 cm^2 alpha and or 1rad/hr/100 cm^2 beta-gamma. Exceeding any of these contamination limits will require work to

stop, and notification to Operation and RadCon management in accordance with the RWP. Notification to WDOH via email or the established procedures in the Environmental Notification program will be required. For work to continue above any of these limiting radiological conditions, the NGR containment system or the PES and commensurate controls will be implemented. The NGR containment or PES exhaust system will be utilized to minimize the potential for contamination spreads outside of posted radiological areas. (WAC 246-247-040(5) and WAC 246-247-060(5))

9) ALTERNATIVE APPROVAL- Destructive Examination
Approval is given for alternative flow monitoring and sample extraction method for the NGR and PES. Destructive Examination (DE) of the final stage HEPA filter of the PES or NGR containment, which will be performed once per calendar year any time the system is used within the calendar year. This authorization will remain in force for three years from the date of issue of the license, additional extensions on the life of the system will require installation of continuous flow measurement and sample extraction in accordance with ANSI/HPS N13.1-1999. (WAC 246-247-040(5), WAC 246-247-060(5), WAC 246-247-075(4))

10) ALARACT APROVAL- container handling
The process for handling of abnormal or severely degraded containers as described in PROCESS DESCRIPTION: EXCAVATION AND RETRIEVAL OF CONTAINERS, for bagging, overpacking, placing degraded outer container contents into replacement containers or in-situ grouting is approved as meeting ALARACT, and these processes and associated records and procedures will be subject to inspection upon request by the department. (WAC 246-247-040(5) and WAC 246-247-060(5))

11) CONTAMINATION CONTROL- soil removal, container handling
Both Alpha and beta-gamma contamination field surveys shall be performed for all removable contamination surveys, prior to and during soil removal (excluding overburden removal) and overpacking activities and when placing degraded outer container contents into replacement containers. Alpha surveys alone shall be performed for direct readings of container surfaces. Beta/gamma direct readings are influenced by container contents, so are not as useful and are not required. (WAC 246-247-040(5) and WAC 246-247-060(5))

12) CONTAMINATION CONTROL- daily surveys
When exhaust system is shut down with inventory inside the NGR or PES, radiological control technicians will perform daily radiological swipe surveys on the access doors to the PES or NGR during normal work days. (WAC 246-247-040(5) and WAC 246-247-060(5))

13) CONTAMINATION CONTROL- ARA
Adherence to contamination limits in the immediate work location for medium and high-hazard work will help ensure that the work area airborne radioactivity limits (i.e., 1.0E-09 µCi/ml for alpha emitters and 2E-06 µCi/ml for beta-gamma emitters) are not exceeded. (WAC 246-247-040(5) and WAC 246-247-060(5))

14) CONTROL TECHNOLOGY- operational conditions
When operating the NGR containment system, an in-line demister and in-line heating system must both be in operation upstream of the HEPA filters. (WAC 246-247-040(5) and WAC 246-247-060(5))

15) CONTAMINATION CONTROL- NGR/PES activities
Activities done under confinement structure of PES and NGR will be considered to be diffuse and fugitive activities unless under active ventilation conditions (WAC 246-247-040(5) and WAC 246-247-060(5))

16) CONTAMINATION DOCUMENTATION - Exposed packages
During repackaging activities (i.e., when transferring the contents of a degraded container into a new container or containers) an operations log will be kept noting conditions of the transferred contents/packages.. RadCon will generate and retain radiological records documenting air sample results and removable contamination conditions during retrieval of each container. (WAC 246-247-040(5) and WAC 246-247-060(5))

Emission Unit ID: 1328

200E P-296A048-001

296-A-48

This is a MAJOR, ACTIVELY ventilated emission unit.

241-AP TANK FARM

Emission Unit Information

Stack Height: 40.00 ft. 12.19 m. Stack Diameter 0.80 ft. 0.24 m.

Average Stack Effluent Temperature: 110 degrees Fahrenheit. 43 degrees Celsius.

Average Stack ExhaustVelocity: 46.00 ft/second. 14.02 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Deenttrainer	1	Operational at all times, when the exhauster is in use.
	Heater	1	Operational at all times, when the exhauster is in use.
	Prefilter	1	Bank of prefilter NOTE: 1 bank of prefilters not required for abatement control
	HEPA	2	2 HEPA's in series per bank; 2 banks; 1 HEPA per bank required operational.
	Fan	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	137Cs, 90Sr	Continuous

Sampling Requirements Record sample.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a primary exhauster used to support tank farm operations by ventilating the DSTs in 241 AP Tank Farm during storage, maintenance and normal operations. Any activity other than storage, maintenance, and normal operations will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. This emission unit may be operated independently or concurrently with emission unit 296-A-49. The emission unit operates intermittenlty.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-AP Tank Farm Ventilation System Upgrade operational permit for "Radioactive Air Emissions NOC for 241-SY, 241-AP, and 241 AY/AZ Tank Farm Ventilation System Upgrade"	AIR 11-916	9/26/2011	818

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 2.62E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.09E+02 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The upgraded ventilation systems will support future tank farm operation activities and waste feed delivery to Hanford's Waste Treatment and Immobilization Plant (WTP).

The ventilation exhausters are being upgraded with increased flow rates to accommodate the increased heat from the mixer pumps, which will be added to mix the waste in the waste tanks prior to transfers and feed delivery to the WTP. The upgraded ventilation systems include replacing the existing exhauster trains with two new identical parallel exhauster trains. The ventilation systems will be installed on new concrete pads. Each exhauster train for the 241-AP ventilation system upgrade is capable of up to 3,000 Standard Cubic Feet per Minute (scfm) flow rate. Operation of the upgraded ventilation systems will support the storage, treatment, retrieval, sampling, mixing, and transfer of the waste in the tanks. Removal of the obsolete exhausters and exhaust filter trains will be performed under separate department approval. Monitoring of the obsolete exhausters shall be in accordance the As Low As Reasonably Achievable (ALARA) principles.

The emissions to the ambient air resulting from the proposed actions covered by this NOC application, in conjunction with other operations on the Hanford Site, shall not exceed the National Emission Standard of 10 millirem (mrem) per year (40 CFR 61, Subpart H).

The new ventilation system shall consist of a de-entrainer system for removal of moisture from vented air, a heater for lowering the relative humidity of the vented air, one bank of pre-filters, two banks of HEPA filters in series, and an exhaust fan. Either subsystem de-entrainer may be used with either HEPA filter subsystem via a ventilation duct cross-tie.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	3.33E+00	Am - 241	9.17E+04	Am - 243	4.39E+01
Ba - 137 m	1.44E+07	C - 14	1.12E+02	Cd - 113 m	1.32E+03
Cm - 242	8.25E+01	Cm - 243	8.38E+00	Cm - 244	1.86E+02
Co - 60	1.95E+03	Cs - 134	6.82E+02	Cs - 137	1.52E+07
Eu - 152	6.02E+02	Eu - 154	3.28E+04	Eu - 155	1.90E+04
H - 3	6.34E+02	I - 129	8.39E+00	Nb - 93 m	8.69E+02
Ni - 59	5.06E+02	Ni - 63	4.46E+04	Np - 237	4.79E+01
Pa - 231	1.70E+00	Pu - 238	1.02E+03	Pu - 239	1.44E+04
Pu - 240	3.33E+03	Pu - 241	3.69E+04	Pu - 242	2.87E-01
Ra - 226	3.34E-03	Ra - 228	5.91E+00	Ru - 106	1.14E+01
Sb - 125	3.63E+03	Se - 79	4.63E+01	Sm - 151	1.83E+06
Sn - 126	1.65E+02	Sr - 90	2.33E+07	Tc - 99	7.24E+03
Th - 229	1.30E+00	Th - 232	5.91E+00	U - 232	6.24E+00
U - 233	5.24E+02	U - 234	6.50E+01	U - 235	2.49E+00
U - 236	3.07E+00	U - 238	5.38E+01	Y - 90	2.33E+07
Zr - 93	1.06E+03				

4) CONTROL TECHNOLOGY- Annual HEPA Filter test
Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1. HEPA filters shall have a minimum efficiency of 99.95%. (WAC 246-247-060(5) and WAC 246-247-080(7)).

5) WDOH APPROVED LOG
The Annual Possession Quantity shall be tracked on a WDOH approved log. (WAC 246-247-060(5) and WAC 246-247-080(7)).

6) CONTROL TECHNOLOGY- Ductwork insulation
The ductwork between the de-entrainer and heater, along with the filter housings shall be insulated. (WAC 246-247-040(5) and WAC 246-247-060(5)).

7) CONTROL TECHNOLOGY- Exhauster operation
The exhauster shall be operational during waste transfers, waste disturbing, or vapor space particulate generating activities. In the event there is an unplanned shutdown of the exhauster, waste transfer lines may be flushed. (WAC 246-247-040(5) and WAC 246-247-060(5)).

8) CONTAMINATION CONTROL- ph control
Tank waste will be maintained at a ph of 8 or greater to ensure that the radionuclide C-14 is not emitted as a gas. This condition will be met by maintaining tank sampling and tank analysis documents in accordance with the "Waste Chemistry Limits" outlined in the latest version of document "Operating Specifications for the Double-Shell Storage Tanks, OSD-T-151-00007". (WAC 246-247-060(5) and WAC 246-247-080(7)).

9) CONTAMINATION CONTROL- tracer gas studies
When the tracer gas tests and data collection are conducted on the AP tank farms the tracer gas to be used during the tests is helium. (WAC 246-247-060(5) and WAC 246-247-080(7)).

10) CONTAMINATION CONTROL- Tracer gas injection rate
When the tracer gas tests and data collection are conducted on the AP tank farms the tracer gas helium will be injected into the double shell tanks at a rate not to exceed 10 cubic feet per minute. (WAC 246-247-060(5) and WAC 246-247-080(7)).

11) CONTAMINATION CONTROL- WDOH Notification,Tracer gas vent valves
When the tracer gas tests and data collection are conducted on the AP tank farms the passive filtered vents will be in the open position. If a tracer gas test requires the passive filtered vents to be closed notification to the Washington State Department of Health will be made indicating when the vents will be closed and for how long. (WAC 246-247-060(5) and WAC 246-247-080(7)).

12) CONTAMINATION CONTROL- Operations during tracer gas studies
When the tracer gas tests and data collection are conducted on the AP tank farms no waste disturbing activities will occur. (WAC 246-247-060(5) and WAC 246-247-080(7)).

Emission Unit ID: 1329

200E P-296A049-001

296-A-49

This is a MAJOR, ACTIVELY ventilated emission unit.

241-AP TANK FARM

Emission Unit Information

Stack Height: 40.00 ft. 12.19 m. Stack Diameter 0.80 ft. 0.24 m.

Average Stack Effluent Temperature: 110 degrees Fahrenheit. 43 degrees Celsius.

Average Stack ExhaustVelocity: 46.00 ft/second. 14.02 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Deenttrainer	1	Operational at all times, when the exhauster is in use.
	Heater	1	Operational at all times, when the exhauster is in use.
	Prefilter	1	Bank of prefilter NOTE: 1 bank of prefilters not required for abatement control
	HEPA	2	2 HEPA's in series per bank; 2 banks; 1 HEPA per bank required operational.
	Fan	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	137Cs, 90Sr	Continuous

Sampling Requirements Record sample.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a primary exhauster used to support tank farm operations by ventilating the DSTs in 241 AP Tank Farm during storage, maintenance and normal operations. Any activity other than storage, maintenance, and normal operations will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. This emission unit may be operated independently or concurrently with emission unit 296-A-48. The emission unit operates intermittenlty.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-AP Tank Farm Ventilation System Upgrade operational permit for "Radioactive Air Emissions NOC for 241-SY, 241-AP, and 241 AY/AZ Tank Farm Ventilation System Upgrade"	AIR 11-916	9/26/2011	818

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 2.62E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 5.09E+02 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The upgraded ventilation systems will support future tank farm operation activities and waste feed delivery to Hanford's Waste Treatment and Immobilization Plant (WTP).

The ventilation exhausters are being upgraded with increased flow rates to accommodate the increased heat from the mixer pumps, which will be added to mix the waste in the waste tanks prior to transfers and feed delivery to the WTP. The upgraded ventilation systems include replacing the existing exhauster trains with two new identical parallel exhauster trains. The ventilation systems will be installed on new concrete pads. Each exhauster train for the 241-AP ventilation system upgrade is capable of up to 3,000 Standard Cubic Feet per Minute (scfm) flow rate. Operation of the upgraded ventilation systems will support the storage, treatment, retrieval, sampling, mixing, and transfer of the waste in the tanks. Removal of the obsolete exhausters and exhaust filter trains will be performed under separate department approval. Monitoring of the obsolete exhausters shall be in accordance the As Low As Reasonably Achievable (ALARA) principles.

The emissions to the ambient air resulting from the proposed actions covered by this NOC application, in conjunction with other operations on the Hanford Site, shall not exceed the National Emission Standard of 10 millirem (mrem) per year (40 CFR 61, Subpart H).

The new ventilation system shall consist of a de-entrainer system for removal of moisture from vented air, a heater for lowering the relative humidity of the vented air, one bank of pre-filters, two banks of HEPA filters in series, and an exhaust fan. Either subsystem de-entrainer may be used with either HEPA filter subsystem via a ventilation duct cross-tie.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	3.33E+00	Am - 241	9.17E+04	Am - 243	4.39E+01
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Cm - 242	8.25E+01	Cm - 243	8.38E+00	Cm - 244	1.86E+02
Co - 60	1.95E+03	Cs - 134	6.82E+02	Cs - 137	1.52E+07
Eu - 152	6.02E+02	Eu - 154	3.28E+04	Eu - 155	1.90E+04
H - 3	6.34E+02	I - 129	8.39E+00	Nb - 93 m	8.69E+02
Ni - 59	5.06E+02	Ni - 63	4.46E+04	Np - 237	4.79E+01
Pa - 231	1.70E+00	Pu - 238	1.02E+03	Pu - 239	1.44E+04
Pu - 240	3.33E+03	Pu - 241	3.69E+04	Pu - 242	2.87E-01
Ra - 226	3.34E-03	Ra - 228	5.91E+00	Ru - 106	1.14E+01
Sb - 125	3.63E+03	Se - 79	4.63E+01	Sm - 151	1.83E+06
Sn - 126	1.65E+02	Sr - 90	2.33E+07	Tc - 99	7.24E+03
Th - 229	1.30E+00	Th - 232	5.91E+00	U - 232	6.24E+00
U - 233	5.24E+02	U - 234	6.50E+01	U - 235	2.49E+00
U - 236	3.07E+00	U - 238	5.38E+01	Y - 90	2.33E+07
Zr - 93	1.06E+03				

4) CONTROL TECHNOLOGY- Annual HEPA Filter test
Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1. HEPA filters shall have a minimum efficiency of 99.95%. (WAC 246-247-060(5) and WAC 246-247-080(7)).

5) WDOH APPROVED LOG
The Annual Possession Quantity shall be tracked on a WDOH approved log. (WAC 246-247-060(5) and WAC 246-247-080(7)).

6) CONTROL TECHNOLOGY- Ductwork insulation
The ductwork between the de-entrainer and heater, along with the filter housings shall be insulated. (WAC 246-247-040(5) and WAC 246-247-060(5)).

7) CONTROL TECHNOLOGY- Exhauster operation
The exhauster shall be operational during waste transfers, waste disturbing, or vapor space particulate generating activities. In the event there is an unplanned shutdown of the exhauster, waste transfer lines may be flushed. (WAC 246-247-040(5) and WAC 246-247-060(5)).

8) CONTAMINATION CONTROL- ph control
Tank waste will be maintained at a ph of 8 or greater to ensure that the radionuclide C-14 is not emitted as a gas. This condition will be met by maintaining tank sampling and tank analysis documents in accordance with the "Waste Chemistry Limits" outlined in the latest version of document "Operating Specifications for the Double-Shell Storage Tanks, OSD-T-151-00007". (WAC 246-247-060(5) and WAC 246-247-080(7)).

9) CONTAMINATION CONTROL- tracer gas studies
When the tracer gas tests and data collection are conducted on the AP tank farms the tracer gas to be used during the tests is helium. (WAC 246-247-060(5) and WAC 246-247-080(7)).

10) CONTAMINATION CONTROL- Tracer gas injection rate
When the tracer gas tests and data collection are conducted on the AP tank farms the tracer gas helium will be injected into the double shell tanks at a rate not to exceed 10 cubic feet per minute. (WAC 246-247-060(5) and WAC 246-247-080(7)).

11) CONTAMINATION CONTROL- WDOH Notification,Tracer gas vent valves
When the tracer gas tests and data collection are conducted on the AP tank farms the passive filtered vents will be in the open position. If a tracer gas test requires the passive filtered vents to be closed notification to the Washington State Department of Health will be made indicating when the vents will be closed and for how long. (WAC 246-247-060(5) and WAC 246-247-080(7)).

12) CONTAMINATION CONTROL- Operations during tracer gas studies
When the tracer gas tests and data collection are conducted on the AP tank farms no waste disturbing activities will occur. (WAC 246-247-060(5) and WAC 246-247-080(7)).

Emission Unit ID: 1330

200E P-296A050-001

296-A-50

This is a MAJOR, ACTIVELY ventilated emission unit.

241-AY/AZ TANK FARM

Emission Unit Information

Stack Height: 40.00 ft. 12.19 m. Stack Diameter 0.80 ft. 0.24 m.

Average Stack Effluent Temperature: 110 degrees Fahrenheit. 43 degrees Celsius.

Average Stack ExhaustVelocity: 46.00 ft/second. 14.02 m/second.

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Deenttrainer	1	Operational at all times, when the exhauster is in use.
	Heater	1	Operational at all times, when the exhauster is in use.
	Prefilter	1	Bank of prefilter NOTE: 1 bank of prefilters not required for abatement control
	HEPA	2	2 HEPA's in series per bank; 2 banks; 1 HEPA per bank required operational.
	Fan	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	137Cs, 90Sr	Continuous

Sampling Requirements Record sample.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a primary exhauster used to support tank farm operations by ventilating the DSTs in 241 AY/AZ Tank Farm during storage, maintenance and normal operations. Any activity other than storage, maintenance, and normal operations will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. This emission unit may be operated independently or concurrently with emission unit 296-A-51. The emission unit operates intermittently.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-AY/AZ Tank Farm Ventilation System Upgrade operational permit for "Radioactive Air Emissions NOC for 241-SY, 241-AP, and 241 AY/AZ Tank Farm Ventilation System Upgrade"	AIR 11-917	9/26/2011	819

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.72E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 3.33E+02 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The upgraded ventilation systems will support future tank farm operation activities and waste feed delivery to Hanford's Waste Treatment and Immobilization Plant (WTP).

The ventilation exhausters are being upgraded with increased flow rates to accommodate the increased heat from the mixer pumps, which will be added to mix the waste in the waste tanks prior to transfers and feed delivery to the WTP. The upgraded ventilation systems include replacing the existing exhauster trains with two new identical parallel exhauster trains. The ventilation systems will be installed on new concrete pads. Each exhauster train for the 241-AY/AZ ventilation system upgrade is capable of up to 3,000 Standard Cubic Feet per Minute (scfm) flow rate. Operation of the upgraded ventilation systems will support the storage, treatment, retrieval, sampling, mixing, and transfer of the waste in the tanks. Removal of the obsolete exhausters and exhaust filter trains will be performed under separate department approval. Monitoring of the obsolete exhausters shall be in accordance the As Low As Reasonably Achievable (ALARA) principles.

The emissions to the ambient air resulting from the proposed actions covered by this NOC application, in conjunction with other operations on the Hanford Site, shall not exceed the National Emission Standard of 10 millirem (mrem) per year (40 CFR 61, Subpart H).

The new ventilation system shall consist of a de-entrainer system for removal of moisture from vented air, a heater for lowering the relative humidity of the vented air, one bank of pre-filters, two banks of HEPA filters in series, and an exhaust fan. Either subsystem de-entrainer may be used with either HEPA filter subsystem via a ventilation duct cross-tie.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	3.15E+00	Am - 241	7.42E+04	Am - 243	3.50E+01
Ba - 137 m	9.15E+06	C - 14	6.70E+01	Cd - 113 m	9.33E+02
Cm - 242	6.62E+01	Cm - 243	7.33E+00	Cm - 244	1.63E+02
Co - 60	1.41E+03	Cs - 134	6.41E+02	Cs - 137	9.68E+06
Eu - 152	3.81E+02	Eu - 154	2.33E+04	Eu - 155	1.60E+04
H - 3	4.25E+02	I - 129	4.93E+00	Nb - 93 m	5.48E+02
Ni - 59	2.85E+02	Ni - 63	2.49E+04	Np - 237	3.96E+01
Pa - 231	9.04E-01	Pu - 238	7.31E+02	Pu - 239	9.56E+03
Pu - 240	2.14E+03	Pu - 241	2.35E+04	Pu - 242	1.78E-01
Ra - 226	2.04E-03	Ra - 228	5.37E+00	Ru - 106	1.11E+01
Sb - 125	3.22E+03	Se - 79	2.78E+01	Sm - 151	1.41E+06
Sn - 126	1.07E+02	Sr - 90	1.52E+07	Tc - 99	4.15E+03
Th - 229	1.19E+00	Th - 232	5.37E+00	U - 232	5.45E+00
U - 233	4.73E+02	U - 234	4.20E+01	U - 235	1.55E+00
U - 236	2.38E+00	U - 238	3.33E+01	Y - 90	1.52E+07
Zr - 93	6.85E+02				

4) CONTROL TECHNOLOGY- Annual HEPA Filter test
Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1. HEPA filters shall have a minimum efficiency of 99.95%. (WAC 246-247-060(5) and WAC 246-247-080(7)).

5) WDOH APPROVED LOG
The Annual Possession Quantity shall be tracked on a WDOH approved log. (WAC 246-247-060(5) and WAC 246-247-080(7)).

6) CONTROL TECHNOLOGY- Ductwork insulation
The ductwork between the de-entrainer and heater, along with the filter housings shall be insulated. (WAC 246-247-040(5) and WAC 246-247-060(5)).

7) CONTROL TECHNOLOGY- Exhauster operation
The exhauster shall be operational during waste transfers, waste disturbing, or vapor space particulate generating activities. In the event there is an unplanned shutdown of the exhauster, waste transfer lines may be flushed. (WAC 246-247-040(5) and WAC 246-247-060(5)).

8) CONTAMINATION CONTROL- ph control
Tank waste will be maintained at a ph of 8 or greater to ensure that the radionuclide C-14 is not emitted as a gas. This condition will be met by maintaining tank sampling and tank analysis documents in accordance with the "Waste Chemistry Limits" outlined in the latest version of document "Operating Specifications for the Double-Shell Storage Tanks, OSD-T-151-00007". (WAC 246-247-060(5) and WAC 246-247-080(7)).

9) CONTAMINATION CONTROL- tracer gas studies
When the tracer gas tests and data collection are conducted on theAY/AZ tank farms the tracer gas to be used during the tests is helium. (WAC 246-247-060(5) and WAC 246-247-080(7)).

10) CONTAMINATION CONTROL- Tracer gas injection rate
When the tracer gas tests and data collection are conducted on the AY/AZtank farms the tracer gas helium will be injected into the double shell tanks at a rate not to exceed 10 cubic feet per minute. (WAC 246-247-060(5) and WAC 246-247-080(7)).

11) CONTAMINATION CONTROL- WDOH Notification,Tracer gas vent valves
When the tracer gas tests and data collection are conducted on the AY/AZ tank farms the passive filtered vents will be in the open position. If a tracer gas test requires the passive filtered vents to be closed notification to the Washington State Department of Health will be made indicating when the vents will be closed and for how long. (WAC 246-247-060(5) and WAC 246-247-080(7)).

12) CONTAMINATION CONTROL- Operations during tracer gas studies
When the tracer gas tests and data collection are conducted on the AY/AZ tank farms no waste disturbing activities will occur. (WAC 246-247-060(5) and WAC 246-247-080(7)).

Emission Unit ID: 1331

200E P-296A051-001

296-A-51

This is a MAJOR, ACTIVELY ventilated emission unit.

241-AY/AZ TANK FARM

Emission Unit Information

Stack Height: 40.00 ft. 12.19 m. Stack Diameter 0.80 ft. 0.24 m.

Average Stack Effluent Temperature: 110 degrees Fahrenheit. 43 degrees Celsius.

Average Stack ExhaustVelocity: 46.00 ft/second. 14.02 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Deenttrainer	1	Operational at all times, when the exhauster is in use.
	Heater	1	Operational at all times, when the exhauster is in use.
	Prefilter	1	Bank of prefilter NOTE: 1 bank of prefilters not required for abatement control
	HEPA	2	2 HEPA's in series per bank; 2 banks; 1 HEPA per bank required operational.
	Fan	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4) & WAC 246-247-75(2)	40 CFR 61, Appendix B Method 114	137Cs, 90Sr	Continuous

Sampling Requirements Record sample.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a primary exhauster used to support tank farm operations by ventilating the DSTs in 241-AY/AZ Tank Farm during storage, maintenance and normal operations. Any activity other than storage, maintenance, and normal operations will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. This emission unit may be operated independently or concurrently with emission unit 296-A-50. The emission unit operates intermittently.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-AY/AZ Tank Farm Ventilation System Upgrade operational permit for "Radioactive Air Emissions NOC for 241-SY, 241-AP, and 241 AY/AZ Tank Farm Ventilation System Upgrade"	AIR 11-917	9/26/2011	819

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.72E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 3.33E+02 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The upgraded ventilation systems will support future tank farm operation activities and waste feed delivery to Hanford's Waste Treatment and Immobilization Plant (WTP).

The ventilation exhausters are being upgraded with increased flow rates to accommodate the increased heat from the mixer pumps, which will be added to mix the waste in the waste tanks prior to transfers and feed delivery to the WTP. The upgraded ventilation systems include replacing the existing exhauster trains with two new identical parallel exhauster trains. The ventilation systems will be installed on new concrete pads. Each exhauster train for the 241-AY/AZ ventilation system upgrade is capable of up to 3,000 Standard Cubic Feet per Minute (scfm) flow rate. Operation of the upgraded ventilation systems will support the storage, treatment, retrieval, sampling, mixing, and transfer of the waste in the tanks. Removal of the obsolete exhausters and exhaust filter trains will be performed under separate department approval. Monitoring of the obsolete exhausters shall be in accordance the As Low As Reasonably Achievable (ALARA) principles.

The emissions to the ambient air resulting from the proposed actions covered by this NOC application, in conjunction with other operations on the Hanford Site, shall not exceed the National Emission Standard of 10 millirem (mrem) per year (40 CFR 61, Subpart H).

The new ventilation system shall consist of a de-entrainer system for removal of moisture from vented air, a heater for lowering the relative humidity of the vented air, one bank of pre-filters, two banks of HEPA filters in series, and an exhaust fan. Either subsystem de-entrainer may be used with either HEPA filter subsystem via a ventilation duct cross-tie.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	3.15E+00	Am - 241	7.42E+04	Am - 243	3.50E+01
Ba - 137 m	9.15E+06	C - 14	6.70E+01	Cd - 113 m	9.33E+02
Cm - 242	6.62E+01	Cm - 243	7.33E+00	Cm - 244	1.63E+02
Co - 60	1.41E+03	Cs - 134	6.41E+02	Cs - 137	9.68E+06
Eu - 152	3.81E+02	Eu - 154	2.33E+04	Eu - 155	1.60E+04
H - 3	4.25E+02	I - 129	4.93E+00	Nb - 93 m	5.48E+02
Ni - 59	2.85E+02	Ni - 63	2.49E+04	Np - 237	3.96E+01
Pa - 231	9.04E-01	Pu - 238	7.31E+02	Pu - 239	9.56E+03
Pu - 240	2.14E+03	Pu - 241	2.35E+04	Pu - 242	1.78E-01
Ra - 226	2.04E-03	Ra - 228	5.37E+00	Ru - 106	1.11E+01
Sb - 125	3.22E+03	Se - 79	2.78E+01	Sm - 151	1.41E+06
Sn - 126	1.07E+02	Sr - 90	1.52E+07	Tc - 99	4.15E+03
Th - 229	1.19E+00	Th - 232	5.37E+00	U - 232	5.45E+00
U - 233	4.73E+02	U - 234	4.20E+01	U - 235	1.55E+00
U - 236	2.38E+00	U - 238	3.33E+01	Y - 90	1.52E+07
Zr - 93	6.85E+02				

4) CONTROL TECHNOLOGY- Annual HEPA Filter test
Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1. HEPA filters shall have a minimum efficiency of 99.95%. (WAC 246-247-060(5) and WAC 246-247-080(7)).

5) WDOH APPROVED LOG
The Annual Possession Quantity shall be tracked on a WDOH approved log. (WAC 246-247-060(5) and WAC 246-247-080(7)).

6) CONTROL TECHNOLOGY- Ductwork insulation
The ductwork between the de-entrainer and heater, along with the filter housings shall be insulated. (WAC 246-247-040(5) and WAC 246-247-060(5)).

7) CONTROL TECHNOLOGY- Exhauster operation
The exhauster shall be operational during waste transfers, waste disturbing, or vapor space particulate generating activities. In the event there is an unplanned shutdown of the exhauster, waste transfer lines may be flushed. (WAC 246-247-040(5) and WAC 246-247-060(5)).

8) CONTAMINATION CONTROL- ph control
Tank waste will be maintained at a ph of 8 or greater to ensure that the radionuclide C-14 is not emitted as a gas. This condition will be met by maintaining tank sampling and tank analysis documents in accordance with the "Waste Chemistry Limits" outlined in the latest version of document "Operating Specifications for the Double-Shell Storage Tanks, OSD-T-151-00007". (WAC 246-247-060(5) and WAC 246-247-080(7)).

9) CONTAMINATION CONTROL- tracer gas studies
When the tracer gas tests and data collection are conducted on the AY/AZ tank farms the tracer gas to be used during the tests is helium. (WAC 246-247-060(5) and WAC 246-247-080(7)).

10) CONTAMINATION CONTROL- Tracer gas injection rate
When the tracer gas tests and data collection are conducted on the AY/AZ tank farms the tracer gas helium will be injected into the double shell tanks at a rate not to exceed 10 cubic feet per minute. (WAC 246-247-060(5) and WAC 246-247-080(7)).

11) CONTAMINATION CONTROL- WDOH Notification,Tracer gas vent valves
When the tracer gas tests and data collection are conducted on the AY/AZ tank farms the passive filtered vents will be in the open position. If a tracer gas test requires the passive filtered vents to be closed notification to the Washington State Department of Health will be made indicating when the vents will be closed and for how long. (WAC 246-247-060(5) and WAC 246-247-080(7)).

12) CONTAMINATION CONTROL- Operations during tracer gas studies
When the tracer gas tests and data collection are conducted on the AY/AZ tank farms no waste disturbing activities will occur. (WAC 246-247-060(5) and WAC 246-247-080(7)).

Emission Unit ID: 1333

300

318 Building

This is a MINOR, FUGITIVE, non-point source emission unit.

300 Diffuse/Fugitive Emissions

Emission Unit Information

Stack Height: ft. m. Stack Diameter ft. m.

Average Stack Effluent Temperature: degrees Fahrenheit. degrees Celsius.

Average Stack ExhaustVelocity: ft/second. m/second.

Abatement Technology ALARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075[3]	Tracking system	As listed in condition 3 of this emission unit.	Tracking system.

Sampling Requirements Radionuclide emissions will be determined using 40 CFR 61 Appendix D calculations in lieu of monitoring.

Additional Requirements

Emission results shall be reported in the Hanford Site Air Operating Permit Annual Compliance Certification Report

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
J-318 Fugitive Emissions from the 318 Building (Radiological Calibrations Laboratory), 300 Area, Hanford Site	AIR 11-808	8/11/2011	815

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 4.25E-04 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) The 318 Building provided technical services in internal dosimetry, external dosimetry, instrument calibration, repair, and testing for protecting the health of workers and the public, and providing liability protection for government and industrial customers. Additionally, workplace measurements are applied to research and development (R&D) activities to better understand and determine occupational exposures. Work activities are performed “continuously” (i.e. year-round, normal-business, swing-shift, and night-shift hours).

   In addition to the technical services, there is direct support for environment, health, safety and security systems. Product line R&D includes a strategic intent of assisting the government and individual customers to comply with exposure limits by providing accurate information about the level of exposure and dose to the workers from chemical and radioactive agents. The 318 Building also supports national nuclear security activities; it also stages and maintains equipment and performs team training for radiological assistance, training, and response to radiological incidents.

   The laboratory activities conducted in the 318 Building include:
   •Instrument testing with dispersible short-lived medical isotopes.
   •Laboratory setup projects.
   •Provide technical services in dosimetry and instrumentation (e.g., calibrations, and ANSI N42 equipment testing).
   •Research activities involving the use and creation of mixed activation products (MAPs) and mixed fission

products (MFPs)
•Research and laboratory activities that may include processes where the temperature may be equal to or exceed 100C.
•Research capabilities to support determining occupational and environmental doses and exposures.
•Research capabilities to support the development of radiation detection and measuring instruments.
•Support of national nuclear security and radiological assistance activities (e.g., equipment and sample management, and training).

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 4.25E-04 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Ac - 225	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ac - 227	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ac - 228	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ag - 108	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ag - 108 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ag - 109 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ag - 110	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ag - 110 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ag - 111	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ag - 111 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ag - 113	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Al - 26	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Al - 28	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Am - 241	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Am - 241	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Am - 242	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

Am - 242 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Am - 243	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Am - 245	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Am - 246	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ar - 37	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ar - 39	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ar - 41	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ar - 42	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

As - 74	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

As - 76	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

As - 77	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

At - 217	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Au - 195	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Au - 198	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Au - 198 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 131	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 133	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 133 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 137 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 139	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 140	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 141	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 142	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ba - 143	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Be - 10	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Be - 7	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 207	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 208	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 210 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 210	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 211	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 212	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 213	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bi - 214	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bk - 249	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Bk - 250	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Br - 82	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Br - 82 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Br - 83	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Br - 84	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Br - 84 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Br - 85	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
C - 11	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
C - 14	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
C - 15	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ca - 41	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ca - 45	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ca - 47	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Cd - 107	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Cd - 109	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Cd - 111 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Cd - 113	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Cd - 113 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Cd - 115	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Cd - 115 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Cd - 117	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Cd - 117 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ce - 139	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ce - 141	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ce - 142	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

Ce - 143	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ce - 144	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cf - 249	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cf - 250	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cf - 251	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cf - 252	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cl - 36	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cm - 241	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cm - 242	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cm - 243	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cm - 244	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cm - 245	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cm - 246	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cm - 247	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cm - 248	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Co - 56	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Co - 57	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Co - 58	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Co - 60 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Co - 60	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cr - 49	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cr - 51	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cr - 55	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 131	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 132	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 134	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 134 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 135	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 136	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 137	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 137	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 138	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 139	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 140	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cs - 141	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cu - 64	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Cu - 66	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Dy - 165	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Dy - 169	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Er - 169	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Er - 171	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Es - 254	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Eu - 150	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Eu - 152	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Eu - 152 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Eu - 154	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Eu - 155	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Eu - 156	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Eu - 157	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
F - 18	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Fe - 55	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Fe - 59	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Fr - 221	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Fr - 223	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ga - 67	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ga - 68	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ga - 70	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ga - 72	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Gd - 148	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Gd - 149	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

Gd - 151	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Gd - 152	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Gd - 153	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ge - 68	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ge - 71	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ge - 71 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ge - 75	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ge - 77	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ge - 77 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
H - 3	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Hf - 175	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Hf - 178	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Hf - 178 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Hf - 181	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Hf - 182	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Hg - 203	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ho - 163	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ho - 166	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ho - 166 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 122	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

I - 123	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 125	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 125	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 126	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 128	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 129	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 130	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 130 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 131	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 131	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 132	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 132 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 133	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 133 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 134	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 134 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
I - 135	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
In - 106	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
In - 111	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
In - 113 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

In - 114	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
In - 114 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
In - 115	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
In - 115 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
In - 116	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
In - 116 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
In - 117	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
In - 117 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ir - 192	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
K - 40	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
K - 42	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Kr - 81	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Kr - 81 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Kr - 83 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Kr - 85	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Kr - 85 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Kr - 87	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Kr - 88	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Kr - 89	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Kr - 90	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

La - 137	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

La - 138	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

La - 140	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

La - 141	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

La - 142	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

La - 144	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Lu - 177	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mg - 27	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mg - 28	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mn - 52	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mn - 54	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mn - 56	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mo - 103	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mo - 104	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mo - 105	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mo - 93	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Mo - 99	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

N - 13	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Na - 22	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Na - 24	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Na - 24 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 100	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 101	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 103	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 91	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 91 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 92	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 93 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 94	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 95	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 95 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 97	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 97 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 98 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nb - 98	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nd - 144	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nd - 147	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Nd - 149	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ni - 56	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ni - 59	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ni - 63	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ni - 65	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Np - 235	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Np - 236	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Np - 237	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Np - 238	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Np - 239	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Np - 240	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Np - 240 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

O - 15	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

O - 19	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Os - 191	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

P - 32	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

P - 33	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pa - 231	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pa - 233	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pa - 234	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pa - 234 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pb - 209	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pb - 210	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pb - 211	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pb - 212	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pb - 214	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pd - 103	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pd - 107	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pd - 109	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pd - 111	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pd - 111 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 143	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 144	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 145	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 146	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 147	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 148	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 148 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 149	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pm - 151	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 208	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 209	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 210	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 211	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 212	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 213	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 214	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 215	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 216	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Po - 218	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pr - 143	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pr - 144	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pr - 144 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pr - 145	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 234	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 236	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 237	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 238	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 239	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 240	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 241	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 242	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 243	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 244	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Pu - 246	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ra - 223	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ra - 224	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ra - 225	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ra - 226	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ra - 228	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 81	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 83	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 84	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 86	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 87	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 88	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 89	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 90	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rb - 90 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Re - 186	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Re - 187	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Re - 188	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rh - 101	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rh - 102	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rh - 102 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rh - 103 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rh - 104	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rh - 105	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rh - 105 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rh - 106	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rn - 219	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rn - 220	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rn - 222	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Rn - 224	Gas	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ru - 103	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ru - 105	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ru - 106	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ru - 97	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

S - 35	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sb - 122	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sb - 124	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sb - 125	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sb - 126	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sb - 126 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sb - 127	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sb - 128 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sb - 128	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sb - 129	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sb - 130	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sc - 44	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sc - 46	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sc - 47	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Se - 75	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Se - 79	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Se - 79 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Si - 31	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sm - 145	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sm - 146	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sm - 147	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sm - 148	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sm - 151	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sm - 153	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sm - 157	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Sn - 113	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sn - 117 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sn - 119 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sn - 121	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sn - 121 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sn - 123	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sn - 125	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sn - 126	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sn - 127	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sn - 128	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sr - 85	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sr - 87 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sr - 89	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sr - 90	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sr - 91	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sr - 92	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ta - 179	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ta - 180	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ta - 182	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ta - 182 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

Ta - 183	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tb - 157	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tb - 158	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tb - 160	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tb - 161	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 101	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 103	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 106	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 95 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 97	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 97 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 98	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 99	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tc - 99 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 121	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 121 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 123	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 123 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 125 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 127	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 127 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 129	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 129 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 131	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 131 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 132	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 133	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 133 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Te - 134	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 227	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 228	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 229	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 230	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 231	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 232	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 233	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Th - 234	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ti - 44	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ti - 45	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Ti - 51	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Tl - 201	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Tl - 204	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Tl - 206	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Tl - 207	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Tl - 208	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Tl - 209	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Tm - 168	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Tm - 170	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Tm - 171	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 232	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 233	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 234	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 235	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 236	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 237	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 238	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 239	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 240	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
V - 48	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
V - 49	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

W - 181	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
W - 185	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
W - 187	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
W - 188	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 122	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 123	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 125	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 127	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 127 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 129 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 131 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 133	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 133 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 135	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 135 m	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 137	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 138	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Xe - 139	Gas	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Y - 88	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Y - 90	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

Y - 90 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Y - 91	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Y - 91 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Y - 92	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Y - 93	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Yb - 164	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Yb - 169	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Yb - 175	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Yb - 177	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zn - 65	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zn - 69	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zn - 69 m	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zr - 100	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zr - 88	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zr - 89	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zr - 93	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zr - 95	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zr - 97	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zr - 98	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

Zr - 99	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.

The radioactive isotopes identified for this emission unit are (no quantities specified):

Ac - 225	Ac - 227	Ac - 228	Ag - 108 m	Ag - 108
Ag - 109 m	Ag - 110 m	Ag - 110	Ag - 111	Ag - 111 m
Ag - 113	Al - 26	Al - 28	Am - 241	Am - 242 m
Am - 242	Am - 243	Am - 245	Am - 246	Ar - 37
Ar - 39	Ar - 41	Ar - 42	As - 74	As - 76
As - 77	At - 217	Au - 195	Au - 198	Au - 198 m
Ba - 131	Ba - 133	Ba - 133 m	Ba - 137 m	Ba - 139
Ba - 140	Ba - 141	Ba - 142	Ba - 143	Be - 10
Be - 7	Bi - 207	Bi - 208	Bi - 210 m	Bi - 210
Bi - 211	Bi - 212	Bi - 213	Bi - 214	Bk - 249
Bk - 250	Br - 82	Br - 82 m	Br - 83	Br - 84
Br - 84 m	Br - 85	C - 11	C - 14	C - 15
Ca - 41	Ca - 45	Ca - 47	Cd - 107	Cd - 109
Cd - 111 m	Cd - 113 m	Cd - 113	Cd - 115 m	Cd - 115
Cd - 117	Cd - 117 m	Ce - 139	Ce - 141	Ce - 142
Ce - 143	Ce - 144	Cf - 249	Cf - 250	Cf - 251
Cf - 252	Cl - 36	Cm - 241	Cm - 242	Cm - 243
Cm - 244	Cm - 245	Cm - 246	Cm - 247	Cm - 248
Co - 56	Co - 57	Co - 58	Co - 60	Co - 60 m
Cr - 49	Cr - 51	Cr - 55	Cs - 131	Cs - 132
Cs - 134	Cs - 134 m	Cs - 135	Cs - 136	Cs - 137
Cs - 138	Cs - 139	Cs - 140	Cs - 141	Cu - 64
Cu - 66	Dy - 165	Dy - 169	Er - 169	Er - 171
Es - 254	Eu - 150	Eu - 152	Eu - 152 m	Eu - 154
Eu - 155	Eu - 156	Eu - 157	F - 18	Fe - 55
Fe - 59	Fr - 221	Fr - 223	Ga - 67	Ga - 68
Ga - 70	Ga - 72	Gd - 148	Gd - 149	Gd - 151
Gd - 152	Gd - 153	Ge - 68	Ge - 71	Ge - 71 m
Ge - 75	Ge - 77	Ge - 77 m	H - 3	Hf - 175
Hf - 178	Hf - 178 m	Hf - 181	Hf - 182	Hg - 203
Ho - 163	Ho - 166	Ho - 166 m	I - 122	I - 123
I - 125	I - 126	I - 128	I - 129	I - 130
I - 130 m	I - 131	I - 132	I - 132 m	I - 133
I - 133 m	I - 134	I - 134 m	I - 135	In - 106
In - 111	In - 113 m	In - 114 m	In - 114	In - 115
In - 115 m	In - 116	In - 116 m	In - 117	In - 117 m
Ir - 192	K - 40	K - 42	Kr - 81	Kr - 81 m
Kr - 83 m	Kr - 85	Kr - 85 m	Kr - 87	Kr - 88
Kr - 89	Kr - 90	La - 137	La - 138	La - 140
La - 141	La - 142	La - 144	Lu - 177	Mg - 27

Mg - 28	Mn - 52	Mn - 54	Mn - 56	Mo - 103
Mo - 104	Mo - 105	Mo - 93	Mo - 99	N - 13
Na - 22	Na - 24	Na - 24 m	Nb - 100	Nb - 101
Nb - 103	Nb - 91	Nb - 91 m	Nb - 92	Nb - 93 m
Nb - 94	Nb - 95	Nb - 95 m	Nb - 97	Nb - 97 m
Nb - 98	Nb - 98 m	Nd - 144	Nd - 147	Nd - 149
Ni - 56	Ni - 59	Ni - 63	Ni - 65	Np - 235
Np - 236	Np - 237	Np - 238	Np - 239	Np - 240
Np - 240 m	O - 15	O - 19	Os - 191	P - 32
P - 33	Pa - 231	Pa - 233	Pa - 234	Pa - 234 m
Pb - 209	Pb - 210	Pb - 211	Pb - 212	Pb - 214
Pd - 103	Pd - 107	Pd - 109	Pd - 111	Pd - 111 m
Pm - 143	Pm - 144	Pm - 145	Pm - 146	Pm - 147
Pm - 148 m	Pm - 148	Pm - 149	Pm - 151	Po - 208
Po - 209	Po - 210	Po - 211	Po - 212	Po - 213
Po - 214	Po - 215	Po - 216	Po - 218	Pr - 143
Pr - 144	Pr - 144 m	Pr - 145	Pu - 234	Pu - 236
Pu - 237	Pu - 238	Pu - 239	Pu - 240	Pu - 241
Pu - 242	Pu - 243	Pu - 244	Pu - 246	Ra - 223
Ra - 224	Ra - 225	Ra - 226	Ra - 228	Rb - 81
Rb - 83	Rb - 84	Rb - 86	Rb - 87	Rb - 88
Rb - 89	Rb - 90	Rb - 90 m	Re - 186	Re - 187
Re - 188	Rh - 101	Rh - 102	Rh - 102 m	Rh - 103 m
Rh - 104	Rh - 105	Rh - 105 m	Rh - 106	Rn - 219
Rn - 220	Rn - 222	Rn - 224	Ru - 103	Ru - 105
Ru - 106	Ru - 97	S - 35	Sb - 122	Sb - 124
Sb - 125	Sb - 126	Sb - 126 m	Sb - 127	Sb - 128
Sb - 128 m	Sb - 129	Sb - 130	Sc - 44	Sc - 46
Sc - 47	Se - 75	Se - 79	Se - 79 m	Si - 31
Sm - 145	Sm - 146	Sm - 147	Sm - 148	Sm - 151
Sm - 153	Sm - 157	Sn - 113	Sn - 117 m	Sn - 119 m
Sn - 121 m	Sn - 121	Sn - 123	Sn - 125	Sn - 126
Sn - 127	Sn - 128	Sr - 85	Sr - 87 m	Sr - 89
Sr - 90	Sr - 91	Sr - 92	Ta - 179	Ta - 180
Ta - 182	Ta - 182 m	Ta - 183	Tb - 157	Tb - 158
Tb - 160	Tb - 161	Tc - 101	Tc - 103	Tc - 106
Tc - 95 m	Tc - 97	Tc - 97 m	Tc - 98	Tc - 99
Tc - 99 m	Te - 121 m	Te - 121	Te - 123	Te - 123 m
Te - 125 m	Te - 127 m	Te - 127	Te - 129 m	Te - 129
Te - 131	Te - 131 m	Te - 132	Te - 133	Te - 133 m
Te - 134	Th - 227	Th - 228	Th - 229	Th - 230

Th - 231	Th - 232	Th - 233	Th - 234	Ti - 44
Ti - 45	Ti - 51	Tl - 201	Tl - 204	Tl - 206
Tl - 207	Tl - 208	Tl - 209	Tm - 168	Tm - 170
Tm - 171	U - 232	U - 233	U - 234	U - 235
U - 236	U - 237	U - 238	U - 239	U - 240
V - 48	V - 49	W - 181	W - 185	W - 187
W - 188	Xe - 122	Xe - 123	Xe - 125	Xe - 127
Xe - 127 m	Xe - 129 m	Xe - 131 m	Xe - 133	Xe - 133 m
Xe - 135	Xe - 135 m	Xe - 137	Xe - 138	Xe - 139
Y - 88	Y - 90	Y - 90 m	Y - 91	Y - 91 m
Y - 92	Y - 93	Yb - 164	Yb - 169	Yb - 175
Yb - 177	Zn - 65	Zn - 69	Zn - 69 m	Zr - 100
Zr - 88	Zr - 89	Zr - 93	Zr - 95	Zr - 97
Zr - 98	Zr - 99			

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

Emission Unit ID: 1334

200 W-MARS-001

W-MARS-001

This is a MINOR, PASSIVELY ventilated emission unit.

Tank Farms

Emission Unit Information

Stack Height: 14.00 ft. 4.27 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA Filter	2	Parallel passive breather filters

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status The containment box which encloses the MARS will be ventilated by two parallel installed radial filters. The purpose of these filters is to minimize contamination from migrating up from the tank into the containment box via the open space on the large riser during retrieval operations. Minimization of contamination inside the containment box is desired should entry into the box ever be required for repairs. Inflow through these filters during retrieval is estimated to reach up to 60 cubic feet per minute (cfm). A valve will be installed between the filters and the containment box so filters can be isolated from the box. However, because the location of the valve will be approximately 12 feet above ground and difficult to reach without properly installed and inspected scaffolding, the valve will be left open at all times until retrieval of the tank is complete. Once retrieval is complete the valve will be closed.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Categorical Tank Farm Facility Waste Retrieval and Closure: Phase II Waste Retrieval Operations (Replaced NOC ID 816)	AIR 12-307	2/23/2012	825

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.31E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.61E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted.

The operation of the waste retrieval system(s) for the removal of radioactive wastes from all 149 Single Shell Tanks (SST) at the Hanford Site.

SALTCAKE DISSOLUTION WASTE RETRIEVAL SYSTEM

The saltcake dissolution waste retrieval system may be used to retrieve soluble saltcake waste. This method retrieves the soluble portion of the waste only, resulting in very few of the solids being pumped from the tank. The saltcake dissolution waste retrieval system deployed in the SSTs is for water, chemical agent, or catalyst liquid to be added to the tank using a variety of spray nozzles or "sprinklers". The approach is to sprinkle the waste surface with water, chemical agent, or catalyst liquid. The added water, chemical agent, or catalyst liquid must stay in contact with the saltcake for a long enough period of time for the brine to become saturated. Once the brine is saturated, it is pumped from the SST to a receiver tank, staging tank, storage DST or other staging/storage vessel associated with the supplemental treatment, packaging or disposal. Salt solution will be removed using the existing saltwell pump or other pump placed into the tank.

A tank not equipped with a saltwell pump, a transfer pump (progressive cavity, vertical turbine) can be installed and operated.

Remotely directable water distribution devices will be located in risers spaced as far apart as practical. A combination of spraying waster, chemical agent, or catalyst liquid to dissolve the saltcake can be used in conjunction with directing a flow of water or recirculating water at the waste to move it to the pump suction to allow the pumping of waste from the tank. Recirculated waste from the pump may be sent back to the tank as an alternative to using water to direct dissolution waste to the pump suction.

MODIFIED SLUCING WASTE RETRIEVAL SYSTEM

Modified sluicing can be used for some SST waste retrieval. Modified sluicing is the introduction of liquid at low to moderate pressures and volumes into the waste. The liquid dissolves and breaks apart solid materials and suspends them in the waste slurry. A transfer pump installed in the tank provides the motive force to transfer the liquid slurry to a receiver tank.

Modified sluicing introduces sluice liquid in a controlled fashion using multiple sluicing nozzles at varying pressures and flows, then pumps out the resultant waste slurry. This maintains minimal liquid inventories within the tank at all times. The liquids that could be used in modified sluicing include water, recirculated supernatant/water from the receiving Double Shell Tank, recirculated supernatant/water, chemical agent or catalyst liquid.

VACUUM WASTE RETRIEVAL SYSTEM

A vacuum waste retrieval system can be used for waste retrieval activities in the (SSTs). The vacuum waste retrieval system is introduced into the SSTs by means of an articulating mast system (AMS). The AMS has a horizontal reach and rotational capabilities of 360 degrees. The AMS has a retracted position and can be extended vertically. Air is mixed at the suction end of the AMS enabling the required vertical lift for the waste to a topside receiver tank, batch vessel or a staging SST, storage DST, or other staging/storage vessels associated with supplemental treatment, packaging or disposal.

The AMS will be deployed through and attached to standard riser flanges that are available on the SSTs. Cameras can also be installed in other risers for in-tank viewing and control of the AMS.

For the 200-series tanks in the 241-C, 241-U, 241-B and 241-T Tank Farms a vacuum retrieval process tank, staging tank, staging SST, storage DST or other staging/storage vessel will be deployed. The receiver tank will receive waste in batches from whichever tank is connected into the vacuum retrieval system. The vacuum pressure used to draw up the waste from the tank to the receiver tank is relieved back into the SST being retrieved.

MOBILE RETRIEVAL SYSTEM

A Mobile Retrieval System (MRS) can be used to retrieve waste from some SSTs. The MRS consists of two in-tank systems. The first is a robotic crawler inserted through one riser the second is an AMS inserted through a second riser. The AMS retrieves the sludge from the tank using a vacuum with assisting pneumatic conveyance. The AMS vacuum tube has a horizontal reach and can be extended to the bottom of the tank. The arm rotates 360 degrees. The vacuum will be directed through the AMS in the tank to the end effector, which is in contact with the waste. The pneumatic conveyance-assisted vacuum retrieval system will draw the waste up through the

vacuum to the waste vessel in the vessel skid in batches. The AMS is then valved out while the waste vessel is emptied and pumped out through the over ground transfer lines to a DST, a staging SST or other treatment/disposal options. When the waste vessel is nearly empty, the transfer line will be valved out and the AMS will be valved back in and another batch of waste will be removed from the tank. This process will be repeated until waste near the center of the tank is removed. The robotic crawler will be remotely controlled to move and/or wash waste toward the center of the tank.

The robotic crawler is equipped with a plow blade at the front for pushing/pulling wastes, a screw pump to jet wastes through a small nozzle towards the center of the tank, the ability to direct hot or cold water through the same nozzle to wash wastes off of in-tank equipment, dissolve waste agglomerations in the tank, and wash waste toward the center of the tank for removal.
Any new retrieval methods or changes to processes will need to be provided to WDOH in a revised NOC prior to implementation.

MOBILE ARM RETRIEVAL SYSTEM

The Mobile Arm Retrieval System (MARS) is a waste retrieval system used to retrieve waste from single-shell tanks (SSTs) and move the waste to the double-shell tanks (DSTs). The MARS employs two design options similar to currently permitted systems: 1) a sluicing retrieval option which is intended for retrieval of non1eaker tanks and 2) a vacuum retrieval option is intended for retrieval of assumed 1eaker tanks. Both options use an arm and sluicing jets and/or a high pressure water scarifier to break up the waste. The sluicer uses waste supernatant recycled from the DST to form a liquid jet using a nozzle. The scarifier uses filtered, pressurized water that comes from a high pressure water skid.

The equipment portion of the MARS includes a vertical, carbon steel mast (square cross section) as the main structural member. Attached to the vertical mast is a carbon fiber robotic arm. The arm is attached to a traveler that raises and lowers the arm relative to the vertical mast. The arm rotates 360 degrees - 380 degrees on a turntable located in the pit box. The arm also pivots up and down from an elbow at the traveler (hydraulic system) and extends and retracts (hydraulic system). The end of the arm articulates. The arm thus provides for a large range of motion such that the sluicing devices (recycle sluicer, water scarifier) located at the end of the arm can aim at most portions of the tank and from varying (e.g., short) distances.

The containment box which encloses the MARS will be ventilated by two parallel installed radial filters. The purpose of these filters is to minimize contamination from migrating up from the tank into the containment box via the open space on the large riser during retrieval operations. Minimization of contamination inside the containment box is desired should entry into the box ever be required for repairs. Inflow through these filters during retrieval is estimated to reach up to 60 cubic feet per minute (cfm). A valve will be installed between the filters and the containment box so filters can be isolated from the box. However, because the location of the valve will be approximately 12 feet above ground and difficult to reach without properly installed and inspected scaffolding, the valve will be left open at all times until retrieval of the tank is complete. Once retrieval is complete the valve will be closed.

REMOTE WATER LANCE

The completion of tank retrieval may also be aided by a Remote Water Lance (RWL) that is a high pressure water device, or hydro laser. Alternatively, a High Pressure Mixer (HPM) may be used in the same capacity. The systems will consist of both ex-tank and in-tank components. The ex-tank components will be comprised of; high pressure systems, operating controls, cables, and hoses. The in-tank components will be comprised of; umbilical, in-tank vehicle, high pressure nozzle(s), or the high pressure mixer.

The high pressure water systems will provide the water at the desired pressure, not to exceed 37,000 psig. A conditioning system will be used to filter the raw water entering the skid to ensure that no abrasive materials are entrained in the water. The water volumetric flow rate will be on the order of 4 to 18 gpm for the HPM and from 6 to 15 gpm for the RWL. The operating controls will be located in a control trailer outside of the farm fence. The cables and hoses will connect hydraulically powered in-tank vehicle with the ex-tank controls and water skid via the umbilical. The HPM consists of an adjustable height pipe with two pairs of opposed, high pressure, low volume water orifices located on the bottom of the pipe. The mixer is capable of being rotated 360 degrees and has

an adjustable height range of approximately 7 feet. The positioning of the mixer is performed remotely using a hydraulic system. Additionally, the mixer has a single orifice on the bottom of the unit that can be used as an operational or installation aid. The in-tank vehicle will house one to four high pressure water nozzles. The RWL will be operated with the nozzle submerged to avoid aerosols in the tank. A rupture disc will be used to prevent reaching pressures above 37,000 psig.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	5.99E+00	Am - 241	8.68E+03	Am - 243	3.39E-01
Ba - 137 m	4.26E+07	C - 14	6.25E+02	Cd - 113 m	4.95E+03
Cm - 242	1.97E+01	Cm - 243	1.80E+00	Cm - 244	1.90E+01
Co - 60	2.52E+03	Cs - 134	3.44E+04	Cs - 137	4.89E+07
Eu - 152	8.49E+02	Eu - 154	1.45E+04	Eu - 155	9.54E+03
H - 3	5.95E+03	I - 129	2.95E+01	Nb - 93 m	1.01E+03
Ni - 59	1.05E+02	Ni - 63	9.30E+03	Np - 237	9.50E+01
Pa - 231	1.25E+01	Pu - 238	1.65E+02	Pu - 239	3.17E+03
Pu - 240	5.36E+02	Pu - 241	4.80E+03	Pu - 242	3.34E-02
Ra - 226	1.27E-02	Ra - 228	1.15E+01	Ru - 106	1.22E-02
Sb - 125	1.73E+04	Se - 79	6.36E+01	Sm - 151	8.93E+05
Sn - 126	2.59E+02	Sr - 90	2.91E+06	Tc - 99	2.24E+04
Th - 229	4.20E-01	Th - 232	1.26E+00	U - 232	3.66E+00
U - 233	3.02E+01	U - 234	1.07E+01	U - 235	4.44E-01
U - 236	2.73E-01	U - 238	9.86E+00	Y - 90	2.91E+06
Zr - 93	1.25E+03				

4) ALTERNATIVE APPROVAL-Annual Replacement
Approval is given to replace the filters on an annual basis with the manufacturer tested and certification of HEPA filter with a tested rating of 99.97% efficiency. Records of this testing shall be maintained on file. (WAC 246-247-040(5), WAC 246-247-060(5), WAC 246-247-075(4))

Emission Unit ID: 1335

200W P-296S26-001

296-S-26

This is a MAJOR, ACTIVELY ventilated emission unit.

241-SY TANK FARM

Emission Unit Information

Stack Height: 40.00 ft. 12.19 m. Stack Diameter 0.80 ft. 0.24 m.

Average Stack Effluent Temperature: 110 degrees Fahrenheit. 43 degrees Celsius.

Average Stack ExhaustVelocity: 42.00 ft/second. 12.80 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Deenttrainer	1	Operational at all times, when the exhauster is in use.
	Heater	1	Operational at all times, when the exhauster is in use.
	Prefilter	1	Bank of prefilter NOTE: 1 bank of prefilters not required for abatement control
	HEPA	2	2 HEPA's in series per bank; 2 banks; 1 HEPA per bank required operational.
	Fan	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	137Cs, 90Sr	Continuous

Sampling Requirements Record sample.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a primary exhauster used to support tank farm operations by ventilating the DSTs in 241 SY Tank Farm during storage, maintenance and normal operations. Any activity other than storage, maintenance, and normal operations will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. This emission unit may be operated independently or concurrently with emission unit 296-S-27. The emission unit operates intermittently.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-SY Tank Farm Ventilation System Upgrade operational permit for "Radioactive Air Emissions NOC for 241-SY, 241-AP, and 241 AY/AZ Tank Farm Ventilation System Upgrade"	AIR 11-915	9/26/2011	817

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 4.56E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 8.57E+01 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The upgraded ventilation systems will support future tank farm operation activities and waste feed delivery to Hanford's Waste Treatment and Immobilization Plant (WTP).

The ventilation exhausters are being upgraded with increased flow rates to accommodate the increased heat from the mixer pumps, which will be added to mix the waste in the waste tanks prior to transfers and feed delivery to the WTP. The upgraded ventilation systems include replacing the existing exhauster trains with two new identical parallel exhauster trains. The ventilation systems will be installed on new concrete pads. Each exhauster train for the 241-SY ventilation system upgrade is capable of up to 2,500 Standard Cubic Feet per Minute (scfm) flow rate. Operation of the upgraded ventilation systems will support the storage, treatment, retrieval, sampling, mixing, and transfer of the waste in the tanks. Removal of the obsolete exhausters and exhaust filter trains will be performed under separate department approval. Monitoring of the obsolete exhausters shall be in accordance the As Low As Reasonably Achievable (ALARA) principles.

The emissions to the ambient air resulting from the proposed actions covered by this NOC application, in conjunction with other operations on the Hanford Site, shall not exceed the National Emission Standard of 10 millirem (mrem) per year (40 CFR 61, Subpart H).

The new ventilation system shall consist of a de-entrainer system for removal of moisture from vented air, a heater for lowering the relative humidity of the vented air, one bank of pre-filters, two banks of HEPA filters in series, and an exhaust fan. Either subsystem de-entrainer may be used with either HEPA filter subsystem via a ventilation duct cross-tie.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	2.82E-02	Am - 241	2.76E+04	Am - 243	1.02E+01
Ba - 137 m	1.56E+06	C - 14	3.38E+01	Cd - 113 m	1.68E+02
Cm - 242	8.43E+00	Cm - 243	6.35E-01	Cm - 244	1.38E+01
Co - 60	1.46E+02	Cs - 134	1.70E-01	Cs - 137	1.66E+06
Eu - 152	2.94E+01	Eu - 154	1.79E+03	Eu - 155	6.51E+02
H - 3	2.10E+02	I - 129	1.77E+00	Nb - 93 m	1.87E+02
Ni - 59	1.01E+02	Ni - 63	9.24E+03	Np - 237	9.86E+00
Pa - 231	1.22E-01	Pu - 238	3.81E+02	Pu - 239	9.81E+03
Pu - 240	2.15E+03	Pu - 241	1.51E+04	Pu - 242	1.55E-01
Ra - 226	3.67E-04	Ra - 228	1.49E-01	Ru - 106	5.89E-06
Sb - 125	2.69E+01	Se - 79	8.44E+00	Sm - 151	1.69E+05
Sn - 126	2.57E+01	Sr - 90	5.11E+06	Tc - 99	1.78E+03
Th - 229	3.45E-02	Th - 232	1.49E-01	U - 232	2.90E-01
U - 233	1.17E+01	U - 234	1.77E+01	U - 235	7.66E-01
U - 236	3.55E-01	U - 238	1.71E+01	Y - 90	5.11E+06
Zr - 93	1.97E+02				

4) CONTROL TECHNOLOGY- Annual HEPA Filter test
Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1. HEPA filters shall have a minimum efficiency of 99.95%. (WAC 246-247-060(5) and WAC 246-247-080(7)).

5) WDOH APPROVED LOG
The Annual Possession Quantity shall be tracked on a WDOH approved log. (WAC 246-247-060(5) and WAC 246-247-080(7)).

6) CONTROL TECHNOLOGY- Ductwork insulation
The ductwork between the de-entrainer and heater, along with the filter housings shall be insulated. (WAC 246-247-040(5) and WAC 246-247-060(5)).

7) CONTROL TECHNOLOGY- Exhauster operation
The exhauster shall be operational during waste transfers, waste disturbing, or vapor space particulate generating activities. In the event there is an unplanned shutdown of the exhauster, waste transfer lines may be flushed. (WAC 246-247-040(5) and WAC 246-247-060(5)).

8) CONTAMINATION CONTROL- ph control
Tank waste will be maintained at a ph of 8 or greater to ensure that the radionuclide C-14 is not emitted as a gas. This condition will be met by maintaining tank sampling and tank analysis documents in accordance with the "Waste Chemistry Limits" outlined in the latest version of document "Operating Specifications for the Double-Shell Storage Tanks, OSD-T-151-00007". (WAC 246-247-060(5) and WAC 246-247-080(7)).

9) CONTAMINATION CONTROL- tracer gas studies
When the tracer gas tests and data collection are conducted on the SY tank farms the tracer gas to be used during the tests is helium. (WAC 246-247-060(5) and WAC 246-247-080(7)).

10) CONTAMINATION CONTROL- Tracer gas injection rate
When the tracer gas tests and data collection are conducted on the SY tank farms the tracer gas helium will be injected into the double shell tanks at a rate not to exceed 10 cubic feet per minute. (WAC 246-247-060(5) and WAC 246-247-080(7)).

11) CONTAMINATION CONTROL- WDOH Notification-Tracer gas vent valves
When the tracer gas tests and data collection are conducted on the SY tank farms the passive filtered vents will be in the open position. If a tracer gas test requires the passive filtered vents to be closed notification to the Washington State Department of Health will be made indicating when the vents will be closed and for how long. (WAC 246-247-060(5) and WAC 246-247-080(7)).

12) CONTAMINATION CONTROL- Tracer gas studies
When the tracer gas tests and data collection are conducted on the SY tank farms no waste disturbing activities will occur. (WAC 246-247-060(5) and WAC 246-247-080(7)).

Emission Unit ID: 1342

200W P-296S27-001

296-S-27

This is a MAJOR, ACTIVELY ventilated emission unit.

241-SY TANK FARM

Emission Unit Information

Stack Height: 40.00 ft. 12.19 m. Stack Diameter 0.80 ft. 0.24 m.

Average Stack Effluent Temperature: 110 degrees Fahrenheit. 43 degrees Celsius.

Average Stack ExhaustVelocity: 42.00 ft/second. 12.80 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	Deenttrainer	1	Operational at all times, when the exhauster is in use.
	Heater	1	Operational at all times, when the exhauster is in use.
	Prefilter	1	Bank of prefilter NOTE: 1 bank of prefilters not required for abatement control
	HEPA	2	2 HEPA's in series per bank; 2 banks; 1 HEPA per bank required operational.
	Fan	1	

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	137Cs, 90Sr	Continuous

Sampling Requirements Record sample.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status This emission unit is a primary exhauster used to support tank farm operations by ventilating the DSTs in 241 SY Tank Farm during storage, maintenance and normal operations. Any activity other than storage, maintenance, and normal operations will be regulated and/or permitted under the appropriate regulations and/or permits for the activity being performed and the emission units associated with the activity. This emission unit may be operated independently or concurrently with emission unit 296-S-26. The emission unit operates intermittently.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
241-SY Tank Farm Ventilation System Upgrade operational permit for "Radioactive Air Emissions NOC for 241-SY, 241-AP, and 241 AY/AZ Tank Farm Ventilation System Upgrade"	AIR 11-915	9/26/2011	817

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 4.56E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 8.57E+01 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies to those additional activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The upgraded ventilation systems will support future tank farm operation activities and waste feed delivery to Hanford's Waste Treatment and Immobilization Plant (WTP).

The ventilation exhausters are being upgraded with increased flow rates to accommodate the increased heat from the mixer pumps, which will be added to mix the waste in the waste tanks prior to transfers and feed delivery to the WTP. The upgraded ventilation systems include replacing the existing exhauster trains with two new identical parallel exhauster trains. The ventilation systems will be installed on new concrete pads. Each exhauster train for the 241-SY ventilation system upgrade is capable of up to 2,500 Standard Cubic Feet per Minute (scfm) flow rate. Operation of the upgraded ventilation systems will support the storage, treatment, retrieval, sampling, mixing, and transfer of the waste in the tanks. Removal of the obsolete exhausters and exhaust filter trains will be performed under separate department approval. Monitoring of the obsolete exhausters shall be in accordance the As Low As Reasonably Achievable (ALARA) principles.

The emissions to the ambient air resulting from the proposed actions covered by this NOC application, in conjunction with other operations on the Hanford Site, shall not exceed the National Emission Standard of 10 millirem (mrem) per year (40 CFR 61, Subpart H).

The new ventilation system shall consist of a de-entrainer system for removal of moisture from vented air, a heater for lowering the relative humidity of the vented air, one bank of pre-filters, two banks of HEPA filters in series, and an exhaust fan. Either subsystem de-entrainer may be used with either HEPA filter subsystem via a ventilation duct cross-tie.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	2.82E-02	Am - 241	2.76E+04	Am - 243	1.02E+01
Ba - 137 m	1.56E+06	C - 14	3.38E+01	Cd - 113 m	1.68E+02
Cm - 242	8.43E+00	Cm - 243	6.35E-01	Cm - 244	1.38E+01
Co - 60	1.46E+02	Cs - 134	1.70E-01	Cs - 137	1.66E+06
Eu - 152	2.94E+01	Eu - 154	1.79E+03	Eu - 155	6.51E+02
H - 3	2.10E+02	I - 129	1.77E+00	Nb - 93 m	1.87E+02
Ni - 59	1.01E+02	Ni - 63	9.24E+03	Np - 237	9.86E+00
Pa - 231	1.22E-01	Pu - 238	3.81E+02	Pu - 239	9.81E+03
Pu - 240	2.15E+03	Pu - 241	1.51E+04	Pu - 242	1.55E-01
Ra - 226	3.67E-04	Ra - 228	1.49E-01	Ru - 106	5.89E-06
Sb - 125	2.69E+01	Se - 79	8.44E+00	Sm - 151	1.69E+05
Sn - 126	2.57E+01	Sr - 90	5.11E+06	Tc - 99	1.78E+03
Th - 229	3.45E-02	Th - 232	1.49E-01	U - 232	2.90E-01
U - 233	1.17E+01	U - 234	1.77E+01	U - 235	7.66E-01
U - 236	3.55E-01	U - 238	1.71E+01	Y - 90	5.11E+06
Zr - 93	1.97E+02				

4) CONTROL TECHNOLOGY- Annual HEPA Filter test
Each HEPA filter shall be in-place tested annually in accordance with the requirements of ASME AG-1. HEPA filters shall have a minimum efficiency of 99.95%. (WAC 246-247-060(5) and WAC 246-247-080(7)).

5) WDOH APPROVED LOG
The Annual Possession Quantity shall be tracked on a WDOH approved log. (WAC 246-247-060(5) and WAC 246-247-080(7)).

6) CONTROL TECHNOLOGY- Ductwork insulation
The ductwork between the de-entrainer and heater, along with the filter housings shall be insulated. WAC 246-247-040(5) and WAC 246-247-060(5)).

7) CONTROL TECHNOLOGY- Exhauster operation
The exhauster shall be operational during waste transfers, waste disturbing, or vapor space particulate generating activities. In the event there is an unplanned shutdown of the exhauster, waste transfer lines may be flushed. (WAC 246-247-040(5) and WAC 246-247-060(5)).

8) CONTAMINATION CONTROL- ph control
Tank waste will be maintained at a ph of 8 or greater to ensure that the radionuclide C-14 is not emitted as a gas. This condition will be met by maintaining tank sampling and tank analysis documents in accordance with the "Waste Chemistry Limits" outlined in the latest version of document "Operating Specifications for the Double-Shell Storage Tanks, OSD-T-151-00007". (WAC 246-247-060(5) and WAC 246-247-080(7)).

9) CONTAMINATION CONTROL- tracer gas studies
When the tracer gas tests and data collection are conducted on the SY tank farms the tracer gas to be used during the tests is helium. (WAC 246-247-060(5) and WAC 246-247-080(7)).

10) CONTAMINATION CONTROL- Tracer gas injection rate
When the tracer gas tests and data collection are conducted on the SY tank farms the tracer gas helium will be injected into the double shell tanks at a rate not to exceed 10 cubic feet per minute. (WAC 246-247-060(5) and WAC 246-247-080(7)).

11) CONTAMINATION CONTROL- WDOH Notification, Tracer gas vent valves
When the tracer gas tests and data collection are conducted on the SY tank farms the passive filtered vents will be in the open position. If a tracer gas test requires the passive filtered vents to be closed notification to the Washington State Department of Health will be made indicating when the vents will be closed and for how long. (WAC 246-247-060(5) and WAC 246-247-080(7)).

12) CONTAMINATION CONTROL- Operations during tracer gas studies
When the tracer gas tests and data collection are conducted on the SY tank farms no waste disturbing activities will occur. (WAC 246-247-060(5) and WAC 246-247-080(7)).

Emission Unit ID: 1343

200 W-MARS-002

W-MARS-002

This is a MINOR, PASSIVELY ventilated emission unit.

Tank Farms

Emission Unit Information

Stack Height: 14.00 ft. 4.27 m. Stack Diameter 1.13 ft. 0.34 m.

Average Stack Effluent Temperature: 55 degrees Fahrenheit. 13 degrees Celsius.

Average Stack ExhaustVelocity: 0.25 ft/second. 0.08 m/second.

Abatement Technology

BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA Filter	2	Parallel passive breather filters

Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B Method 114	Levels below 10,000 dpm/100cm2 beta/gamma and 200 dpm/100cm2 alpha will verify low emissions.	Every 365 days

Sampling Requirements Smear survey on the inside surface of the ducting and downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent.

Additional Requirements

Radial breather filters shall be replaced every 365 days. Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitation section, if applicable.

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status The containment box which encloses the MARS will be ventilated by two parallel installed radial filters. The purpose of these filters is to minimize contamination from migrating up from the tank into the containment box via the open space on the large riser during retrieval operations. Minimization of contamination inside the containment box is desired should entry into the box ever be required for repairs. Inflow through these filters during retrieval is estimated to reach up to 60 cubic feet per minute (cfm). A valve will be installed between the filters and the containment box so filters can be isolated from the box. However, because the location of the valve will be approximately 12 feet above ground and difficult to reach without properly installed and inspected scaffolding, the valve will be left open at all times until retrieval of the tank is complete. Once retrieval is complete the valve will be closed.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Categorical Tank Farm Facility Waste Retrieval and Closure: Phase II Waste Retrieval Operations (Replaced NOC ID 816)	AIR 12-307	2/23/2012	825

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

1) The total abated emission limit for this Notice of Construction is limited to 1.31E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.61E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in (WAC 246-247-030(16)), may be conducted.

   The operation of the waste retrieval system(s) for the removal of radioactive wastes from all 149 Single Shell Tanks (SST) at the Hanford Site.

SALTCAKE DISSOLUTION WASTE RETRIEVAL SYSTEM

The saltcake dissolution waste retrieval system may be used to retrieve soluble saltcake waste. This method retrieves the soluble portion of the waste only, resulting in very few of the solids being pumped from the tank. The saltcake dissolution waste retrieval system deployed in the SSTs is for water, chemical agent, or catalyst liquid to be added to the tank using a variety of spray nozzles or "sprinklers". The approach is to sprinkle the waste surface with water, chemical agent, or catalyst liquid. The added water, chemical agent, or catalyst liquid must stay in contact with the saltcake for a long enough period of time for the brine to become saturated. Once the brine is saturated, it is pumped from the SST to a receiver tank, staging tank, storage DST or other staging/storage vessel associated with the supplemental treatment, packaging or disposal. Salt solution will be removed using the existing saltwell pump or other pump placed into the tank.

A tank not equipped with a saltwell pump, a transfer pump (progressive cavity, vertical turbine) can be installed and operated.

Remotely directable water distribution devices will be located in risers spaced as far apart as practical. A combination of spraying waster, chemical agent, or catalyst liquid to dissolve the saltcake can be used in conjunction with directing a flow of water or recirculating water at the waste to move it to the pump suction to allow the pumping of waste from the tank. Recirculated waste from the pump may be sent back to the tank as an alternative to using water to direct dissolution waste to the pump suction.

MODIFIED SLUCING WASTE RETRIEVAL SYSTEM

Modified sluicing can be used for some SST waste retrieval. Modified sluicing is the introduction of liquid at low to moderate pressures and volumes into the waste. The liquid dissolves and breaks apart solid materials and suspends them in the waste slurry. A transfer pump installed in the tank provides the motive force to transfer the liquid slurry to a receiver tank.

Modified sluicing introduces sluice liquid in a controlled fashion using multiple sluicing nozzles at varying pressures and flows, then pumps out the resultant waste slurry. This maintains minimal liquid inventories within the tank at all times. The liquids that could be used in modified sluicing include water, recirculated supernatant/water from the receiving Double Shell Tank, recirculated supernatant/water, chemical agent or catalyst liquid.

VACUUM WASTE RETRIEVAL SYSTEM

A vacuum waste retrieval system can be used for waste retrieval activities in the (SSTs). The vacuum waste retrieval system is introduced into the SSTs by means of an articulating mast system (AMS). The AMS has a horizontal reach and rotational capabilities of 360 degrees. The AMS has a retracted position and can be extended vertically. Air is mixed at the suction end of the AMS enabling the required vertical lift for the waste to a topside receiver tank, batch vessel or a staging SST, storage DST, or other staging/storage vessels associated with supplemental treatment, packaging or disposal.

The AMS will be deployed through and attached to standard riser flanges that are available on the SSTs. Cameras can also be installed in other risers for in-tank viewing and control of the AMS.

For the 200-series tanks in the 241-C, 241-U, 241-B and 241-T Tank Farms a vacuum retrieval process tank, staging tank, staging SST, storage DST or other staging/storage vessel will be deployed. The receiver tank will receive waste in batches from whichever tank is connected into the vacuum retrieval system. The vacuum pressure used to draw up the waste from the tank to the receiver tank is relieved back into the SST being retrieved.

MOBILE RETRIEVAL SYSTEM

A Mobile Retrieval System (MRS) can be used to retrieve waste from some SSTs. The MRS consists of two in-tank systems. The first is a robotic crawler inserted through one riser the second is an AMS inserted through a second riser. The AMS retrieves the sludge from the tank using a vacuum with assisting pneumatic conveyance. The AMS vacuum tube has a horizontal reach and can be extended to the bottom of the tank. The arm rotates 360 degrees. The vacuum will be directed through the AMS in the tank to the end effector, which is in contact with

the waste. The pneumatic conveyance-assisted vacuum retrieval system will draw the waste up through the vacuum to the waste vessel in the vessel skid in batches. The AMS is then valved out while the waste vessel is emptied and pumped out through the over ground transfer lines to a DST, a staging SST or other treatment/disposal options. When the waste vessel is nearly empty, the transfer line will be valved out and the AMS will be valved back in and another batch of waste will be removed from the tank. This process will be repeated until waste near the center of the tank is removed. The robotic crawler will be remotely controlled to move and/or wash waste toward the center of the tank.

The robotic crawler is equipped with a plow blade at the front for pushing/pulling wastes, a screw pump to jet wastes through a small nozzle towards the center of the tank, the ability to direct hot or cold water through the same nozzle to wash wastes off of in-tank equipment, dissolve waste agglomerations in the tank, and wash waste toward the center of the tank for removal.
Any new retrieval methods or changes to processes will need to be provided to WDOH in a revised NOC prior to implementation.

MOBILE ARM RETRIEVAL SYSTEM

The Mobile Arm Retrieval System (MARS) is a waste retrieval system used to retrieve waste from single-shell tanks (SSTs) and move the waste to the double-shell tanks (DSTs). The MARS employs two design options similar to currently permitted systems: 1) a sluicing retrieval option which is intended for retrieval of non1eaker tanks and 2) a vacuum retrieval option is intended for retrieval of assumed 1eaker tanks. Both options use an arm and sluicing jets and/or a high pressure water scarifier to break up the waste. The sluicer uses waste supernatant recycled from the DST to form a liquid jet using a nozzle. The scarifier uses filtered, pressurized water that comes from a high pressure water skid.

The equipment portion of the MARS includes a vertical, carbon steel mast (square cross section) as the main structural member. Attached to the vertical mast is a carbon fiber robotic arm. The arm is attached to a traveler that raises and lowers the arm relative to the vertical mast. The arm rotates 360 degrees - 380 degrees on a turntable located in the pit box. The arm also pivots up and down from an elbow at the traveler (hydraulic system) and extends and retracts (hydraulic system). The end of the arm articulates. The arm thus provides for a large range of motion such that the sluicing devices (recycle sluicer, water scarifier) located at the end of the arm can aim at most portions of the tank and from varying (e.g., short) distances.

The containment box which encloses the MARS will be ventilated by two parallel installed radial filters. The purpose of these filters is to minimize contamination from migrating up from the tank into the containment box via the open space on the large riser during retrieval operations. Minimization of contamination inside the containment box is desired should entry into the box ever be required for repairs. Inflow through these filters during retrieval is estimated to reach up to 60 cubic feet per minute (cfm). A valve will be installed between the filters and the containment box so filters can be isolated from the box. However, because the location of the valve will be approximately 12 feet above ground and difficult to reach without properly installed and inspected scaffolding, the valve will be left open at all times until retrieval of the tank is complete. Once retrieval is complete the valve will be closed.

REMOTE WATER LANCE

The completion of tank retrieval may also be aided by a Remote Water Lance (RWL) that is a high pressure water device, or hydro laser. Alternatively, a High Pressure Mixer (HPM) may be used in the same capacity. The systems will consist of both ex-tank and in-tank components. The ex-tank components will be comprised of; high pressure systems, operating controls, cables, and hoses. The in-tank components will be comprised of; umbilical, in-tank vehicle, high pressure nozzle(s), or the high pressure mixer.

The high pressure water systems will provide the water at the desired pressure, not to exceed 37,000 psig. A conditioning system will be used to filter the raw water entering the skid to ensure that no abrasive materials are entrained in the water. The water volumetric flow rate will be on the order of 4 to 18 gpm for the HPM and from 6 to 15 gpm for the RWL. The operating controls will be located in a control trailer outside of the farm fence. The cables and hoses will connect hydraulically powered in-tank vehicle with the ex-tank controls and water skid via the umbilical. The HPM consists of an adjustable height pipe with two pairs of opposed, high pressure, low

volume water orifices located on the bottom of the pipe. The mixer is capable of being rotated 360 degrees and has an adjustable height range of approximately 7 feet. The positioning of the mixer is performed remotely using a hydraulic system. Additionally, the mixer has a single orifice on the bottom of the unit that can be used as an operational or installation aid. The in-tank vehicle will house one to four high pressure water nozzles. The RWL will be operated with the nozzle submerged to avoid aerosols in the tank. A rupture disc will be used to prevent reaching pressures above 37,000 psig.

3) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	5.99E+00	Am - 241	8.68E+03	Am - 243	3.39E-01
Ba - 137 m	4.26E+07	C - 14	6.25E+02	Cd - 113 m	4.95E+03
Cm - 242	1.97E+01	Cm - 243	1.80E+00	Cm - 244	1.90E+01
Co - 60	2.52E+03	Cs - 134	3.44E+04	Cs - 137	4.89E+07
Eu - 152	8.49E+02	Eu - 154	1.45E+04	Eu - 155	9.54E+03
H - 3	5.95E+03	I - 129	2.95E+01	Nb - 93 m	1.01E+03
Ni - 59	1.05E+02	Ni - 63	9.30E+03	Np - 237	9.50E+01
Pa - 231	1.25E+01	Pu - 238	1.65E+02	Pu - 239	3.17E+03
Pu - 240	5.36E+02	Pu - 241	4.80E+03	Pu - 242	3.34E-02
Ra - 226	1.27E-02	Ra - 228	1.15E+01	Ru - 106	1.22E-02
Sb - 125	1.73E+04	Se - 79	6.36E+01	Sm - 151	8.93E+05
Sn - 126	2.59E+02	Sr - 90	2.91E+06	Tc - 99	2.24E+04
Th - 229	4.20E-01	Th - 232	1.26E+00	U - 232	3.66E+00
U - 233	3.02E+01	U - 234	1.07E+01	U - 235	4.44E-01
U - 236	2.73E-01	U - 238	9.86E+00	Y - 90	2.91E+06
Zr - 93	1.25E+03				

4) ALTERNATIVE APPROVAL-Annual Replacement
Approval is given to replace the filters on an annual basis with the manufacturer tested and certification of HEPA filter with a tested rating of 99.97% efficiency. Records of this testing shall be maintained on file. (WAC 246-247-040(5), WAC 246-247-060(5), WAC 246-247-075(4))

Enclosure 2 Table 2-1 Diffuse and Fugitive Emission Units

Table 2–1. Diffuse or Fugitive Radioactive Air Emission Sources at the Hanford Site. (3 Sheets)

169	P-241ER153-001	170	P-241ER152-001	404	P-296B002-001
808	V10-11-1	818	State Approved Land Disposal Structure Pipeline 1	819	State Approved Land Disposal Structure Pipeline 2
820	State Approved Land Disposal Structure Pipeline 3	821	State Approved Land Disposal Structure Pipeline 4	822	State Approved Land Disposal Structure Pipeline 5
823	State Approved Land Disposal Structure Pipeline 6	824	State Approved Land Disposal Structure Pipeline 7	825	State Approved Land Disposal Structure Pipeline 8
826	State Approved Land Disposal Structure Pipeline 9	827	State Approved Land Disposal Structure Pipeline	828	State Approved Land Disposal Structure Pipeline
829	State Approved Land Disposal Structure Pipeline	830	State Approved Land Disposal Structure Pipeline	832	WESF LLW Floor Drain Vent (Central)
833	WESF LLW Floor Drain Vent (Southeast)	841	291-B-1	887	J-244ER152-002
895	200-E-44	896	200-E-53	897	200-E-117
898	200-E-118	900	200-E-121	901	200-E-125
902	207-B	903	207-A-SOUTH	904	216-A-24
906	216-B-3	907	218-E-10	908	218-E-12A
909	218-E-12B	911	241-A-302A	913	P-241ER151-001
914	P-241AX155-001	915	P-241AR151-001	916	241-A
917	241-AN	918	241-AP	919	241-AW
920	241-AX	921	241-AY	923	241-AZ
924	241-B	925	241-BX-154	926	241-BX
927	241-EW-151	928	244-AR Vault	929	UPR-200-E-18
930	UPR-200-E-100	931	UPR-200-E-112	932	241-C
933	UPR-200-E-78	934	UPR-200-E-84	935	UPR-600-20
936	200-W-54	937	200-W-81	938	200-W-82
939	200-W-83	940	200-W-84	941	200-W-92
942	200-W-106	943	207-U	944	216-T-4b
945	218-W-3A	946	218-W-3AE	947	218-W-4B
948	218-W-4C	949	231-W-151	950	241-S
951	241-SX	952	241-SY	953	241-T
954	241-TX	955	241-TX-154	956	241-TX-155
957	241-TY	958	241-U	960	241-U-151
961	241-U-152	962	242-T-135	963	291-S
966	UPR-200-W-38	967	UPR-20-W-65;UPR-200-W-73	968	UPR-200-W-82
970	UPR-200-W-113	971	UPR-200-E-83	972	UPR-200-N-1
978	2025EC71	979	203A	980	204A
981	206A	982	207BA	983	207S

984	207SL	985	210A	986	210E
987	211A	988	211B	989	211BA
990	211BA151	991	211BB	992	211S
993	211T	994	211T52	995	212A
996	212B	1000	213A	1001	214T
1002	215C	1003	216A	1004	216A29A
1005	216A524	1006	216E28A	1007	216E28B
1008	216E28C	1009	216ZP1	1011	216ZP1B
1012	216ZP1C	1013	217B	1014	218B
1015	218E14	1016	218E15	1017	218E7
1018	221A	1019	221BA	1020	221BB
1021	221BC	1022	221BD	1023	221BF
1024	221BG	1025	221BK	1026	221TA
1027	221TB	1028	222B	1029	222T
1035	225EC	1036	225W	1038	231Z
1039	241B361	1040	241WR	1041	2420W
1042	242AL11	1043	242B	1044	242BL
1045	252AB	1046	252AC	1047	2706T
1048	2706TA	1049	2706TB	1051	2711A
1055	2713W	1057	2715B	1058	2716B
1059	2716T	1060	2718S	1061	271B
1062	271BA	1063	271T	1066	272B
1067	272BA	1068	272BB	1070	276B
1071	276C	1072	276S	1073	276S141
1074	276S142	1078	2904S160	1079	2904S170
1080	2904S171	1081	2904S172	1083	291A
1084	291AA	1085	291AB	1086	291AC
1087	291AD	1088	291AE	1089	291AF
1091	291AH	1093	291AK	1094	291B
1095	291BA	1096	291BB	1097	291BC
1098	291BD	1099	291BF	1100	291BG
1101	291BH	1102	291BJ	1103	291BK
1104	292AA	1105	292AB	1106	292B
1107	292S	1108	292T	1110	293A
1111	293S	1112	294A	1113	294B
1114	295A	1115	295AA	1116	295AB
1117	295AC	1118	295AD	1120	296S012

Table 2–1. Diffuse or Fugitive Radioactive Air Emission Sources at the Hanford Site. (3 Sheets)

1121	300-214	1122	403	1123	4713C
1124	4717	1125	1218-HS Units at WRAP	1136	241-BY
1137	241-A-401	1138	241-A-431	1140	241-AP-271
1141	241-BY-254	1142	241-BY-301	1143	241-BY-302
1144	241-CX-70	1145	241-CX-71	1146	241-CX-72
1147	242-A-702	1148	243-G-8	1149	2707-AR
1150	2714-S	1151	271-CR	1152	292-AR

Enclosure 3 ALARACT Agreements

ALARACT 01.1

TANK FARM ALARACT DEOMONSTRATION FOR RISER PREPARATION / OPENING

1. **Description of Activity**

Risers which open directly into tanks containing high level waste, such as waste storage tanks, catch tanks, double contained receiver tanks, miscellaneous and other potentially, and known, contaminated risers in Tank Farm facilities shall be accessed using appropriate controls from the latest revision of HNF-5183, "Tank Farms Radiological Control Manual" and the latest revision of TFC-ESHQ-RP_RWP_C-02, "Radiological Containment".

Risers may have screw caps, blind flanges, shield plugs, or equipment installed in them. Preparation may include the following:

- Glove bags or other containments
- Windbreaks or containment tents
- Ground covering
- Decontamination
- Fixatives
- Industrial Hygiene samples

2. **Controls**

a. Follow ALARACT demonstration for "Packaging and Transportation of Waste" (ALARACT 4).

b. Follow ALARACT demonstration for "Installation, Operation, and Removal of Equipment" (ALARACT 13).

c. All containments used are in accordance with the Containment Selection Guide, Attachment A, from the latest revision of TFC-ESHQ-RP_RWP-C-02, Radiological Containment.

d. If sustained wind speeds are >25 mph, then do not open risers.

e. A local wind speed measurement device may be utilized in lieu of Hanford Meteorological Station readings, if local wind speed readings are taken in unobstructed location representative of the work area.

f. If a local wind speed device is used to measure wind speeds, then the use of the local wind speed device and measured wind speed readings must be documented in the Work Record.

g. Open riser time will be minimized.

h. HPT coverage will be performed as specified in the Radiological Work Permit.

i. Ground covering must be installed around the riser and may consist of material such as plastic sheeting rubber matting, foil backed paper, griflon, or any material that will prevent possible contamination from reaching the soil.

3. **Monitoring**

a. At a minimum, pre and post-job contamination surveys (smears) shall be taken.

b. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual.

4. <u>Records/Documentation</u>

a. Work Package

b. Radiological Work Permit

c. Radiological survey report(s)

5. <u>Emission Pathway</u>

a. Existing, active or passive point source.

6. <u>Facility Description</u>

a. All Tank Farm facilities

ALARACT 02.1

TANK FARM ALARACT DEMONSTRATION FOR INSTALLATION / OPERATION / REMOVAL OF PUSH MODE CORE SAMPLING EQUIPMENT

1. Description of Activity

Push Mode Core Sampling (PMCS) is conducted with the Rotary Mode Core Sampling System (RMCS). The RMCS System can operate in either push mode or rotary mode. The preferred mode of RMCS sampling is push mode, which does not involve rotation of the drill string or significant purge gas flow, and is the subject of this ALARACT demonstration. Each RMCS System consists of the sample platform, an optional diesel powered electric generator, an optional in-tank video camera, a pressurized nitrogen supply, and other support equipment. In addition to the three RMCS Systems, there is one PMCS System that operates only in push mode.

Core sampling system set up and sampling are controlled by operating procedures. Prior to moving the RMCS platform and equipment onto a tank, a walk down is performed. The walk down identifies any physical obstructions/barriers to platform placement and verifies the riser locations. The Core Sampling platform and equipment are then moved to the tank farm for system set up. System set up includes installation of the riser sleeve and riser equipment. This requires that the riser flange cover be removed. Following removal of the riser flange cover, the riser sleeve and riser adapter equipment are installed. This equipment seals against the riser flange, protecting the air pathway. The time between the removal of the flange cover and installation of the riser adapter equipment is kept to the minimum necessary to safely complete the task. HPT coverage is provided the entire time the riser is open.

The operation of core sampling begins by inserting a drill string made up of drill rod sections, into the waste. The first section to be installed is the core barrel in which the core sampler itself is seated. The rotary mode core samplers contain a seal against the bottom of the core barrel. The seal is designed to prevent back flow of tank waste into the drill string. This protects the air pathway out of the tank. The remaining drill rod sections are screwed on to the drill string and inserted into the tank until the starting point for the first core sample segment is reached.

After the first core sample segment has been taken, additional drill string sections and samplers may be added as needed. During push mode sampling, nitrogen (or other fluid such as water with a Lithium Bromide tracer) is used only in amounts sufficient to maintain the hydrostatic head and prevent or minimize movement of tank waste into the core barrel.

When the segment is complete, the drill string is disconnected from the core sample platform and is capped. The core sampler platform is rotated to align and connect the shielded receiving vessel (shielded receiver) with the drill string. During the connection the air pathway is protected by closed valves on the shielded receiver and on the adapter on the end of the drill string.

When the sampler is removed from the tank, it is placed directly into the shielded receiver without disturbing the air-tight seal between the shielded receiver and the drill string. The isolation valves on the shielded receiver and the drill string adapter are closed before disconnect ting the shielded receiver from the drill string. The platform then rotates to place the shielded receiver either directly over a shipping cask, or the shielded receiver may be positioned over an x-ray machine to allow the sampler to be x-rayed. In either case, the sealed drill string remains in place at the tank riser to maintain the seal to the atmosphere. From the shielded receiver, the sampler is mechanically lowered into a transport cask. Once the sampler is in the transport cask and the shielded receiver has been disconnected, the cask is

immediately sealed. While the sampler is being replaced after each segment, with the RMCS System, nitrogen is injected into the drill string at approximately 0.03 cubic meters per minute. This maintains the hydrostatic head in the drill string, minimizing waste from entering the drill string. This also allows for pressurization and depressurization of the shielded receiver, as necessary, for sampler change out. For the PMCS System, water is used to maintain the hydrostatic head. Once a complete core has been obtained, the RMCS platform can be repositioned on the same riser or moved to a different riser on the same tank to obtain additional cores. During RMCS breakdown, the drill string is sleeved as it is removed from the tank and placed into a waste container. When sampling is complete at one tank, the RMCS system will be disconnected and moved to the next tank.

2. <u>Controls</u>

a. When opening riser, use ALARACT demonstration controls for "Riser Preparation/Opening" (ALARACT 1).

b. Follow ALARACT demonstration for "Packaging and Transportation of Waste" (ALARACT 4).

c. HPT coverage will be performed as specified in the Radiological Work Permit.

d. If sustained wind speeds are >25 mph, then do not initiate sampling.

e. A local wind speed device may be utilized in lieu of Hanford Meteorological Station readings, if local wind speed readings are taken in an unobstructed
location representative of the work area.

f. If a local wind speed device is used to measure wind speeds, then the use of the local wind speed device and the measured wind speed readings must be documented in the Work Record.

g. Valves, caps, and plugs are used to minimize open riser time.

h. Core sampler seal in place.

i. Threaded connections and/or cam-locks.

j. Verify passive or active HEPA filtration on tanks.

k. Use approved Containment Selection Guide, Attachment A, from the latest revision of TFC-ESHQ-RP_RWP-C-02, Radiological Containment.

3. <u>Monitoring</u>

a. At a minimum, pre and post-job contamination surveys (smears) shall be taken.

b. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual.

4. <u>Records/Documentation</u>

a. Work Package

b. Radiological Work Permit

c. Radiological survey report(s)

5. **Emission Pathway**

   a. Existing, active or passive point sources (Displacement gas is used in drill string which is a closed system and has minimal/no emission impact).

6. **Facility Description**

   a. All SSTs, DSTs and miscellaneous tanks.

ALARACT 03.1

TANK FARM ALARACT DEMONSTRATION FOR INSTALLATION / OPERATION / REMOVAL OF AUGER SAMPLING EQUIPMENT

1. Description of Activity

Auger sampling represents one technique to remove a sample from tanks that have less than 25 vertical inches of hardened waste material. The auger sampling assembly uses the auger "bit" to obtain a sample of tank waste. Auger sampling equipment consists of an auger "bit," auger rod, auger sleeving assembly, receiving cask, and an on-site transfer cask (OTC).

To begin, a tank riser is opened and the auger adapter sleeving assembly is installed into the tank headspace. The installation of the auger sleeving assembly reduces open riser time. The auger sleeving assembly provides lateral strength to the auger bit and auger rod, and extends from the riser to the top of the waste surface. The receiver cask is then mounted on top of the auger adapter sleeving assembly via a cam lock fitting. This cam lock fitting seals the receiver cask to the auger adapter assembly that is sealed to the riser, thereby minimizing the open riser time.

The auger rod and auger bit assembly are lowered through the top of the receiver cask assembly, through the interior of the auger sleeving assembly, down to the surface of the tank waste. The portion of the auger rod extending above the riser is then hand rotated forcing the auger bit to penetrate the tank waste. The tank waste material fills the grooves (flutes) of the auger bit and this constitutes the waste sample.

The auger bit (now containing the sample) and auger rod are pulled up from the tank waste surface, through auger sleeving, and into the receiver cask on top of the riser. During this sample removal step, the auger rod exits the top of the receiver cask into the ambient environment. The auger rod is surveyed for contamination as it is extracted and contained if found to be contaminated. When the auger bit (sample) is within the receiver cask, a ball valve, mounted on the bottom of the receiver cask, is closed. The receiver cask is then isolated by placing a temporary cover over the auger rod port.

The receiver cask is moved via crane to the OTC. Once the receiver cask has been connected by a cam lock to the OTC, a handle is connected to the auger bit through the top of the receiver cask and the sample is lowered into the cask. The OTC is sealed and then provides a shipping container for the auger sample.

2. Controls

a. Follow ALARACT demonstration for “Riser Preparation/Opening” (ALARACT 1).

b. Follow ALARACT demonstration for “Packaging and Transportation of Waste” (ALARACT 4).

c. HPT coverage will be performed as specified in the Radiological Work Permit.

d. If sustained wind speeds are >25 mph, then do not initiate auger sampling.

e. A local wind speed measurement device may be utilized in lieu of Hanford Meteorological Station readings, if local wind speed readings are taken in unobstructed location representative of the work area.

f. If a local wind speed device is used to measure wind speeds, then the use of the local wind speed device and measured wind speed readings must be documented in the Work Record.

g. Use valves, caps, and plugs to minimize open riser time.

h. Cam locks used to secure cask to riser and shipping cask.

i. Verify passive or active HEPA filtration on tanks.

j. Contain contaminated equipment.

k. Temporary cover placed on top of receiving cask.

l. Sample contained when in shipping cask.

3. <u>Monitoring</u>

a. At a minimum, pre and post-job contamination surveys (smears) shall be taken.

b. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual.

4. <u>Records/Documentation</u>

a. Work Package

b. Radiological Work Permit

c. Radiological survey report(s)

5. <u>Emission Pathway</u>

a. Existing, active, or passive point source.

6. <u>Facility Description</u>

a. All Tank Farm Facilities

ALARACT 04.1

TANK FARM ALARACT DEMONSTRATION FOR PACKAGING AND TRANSPORTATION OF WASTE

1. **Description of Activity**

   Some materials become contaminated during work conducted within Tank Farm Facilities. Such contaminated materials, which are not released or otherwise controlled, are packaged, transported, and disposed of as waste in accordance with waste acceptance criteria of the receiving facility. Radioactive waste generated from Tank Farm operations activities such as pit work, excavations surveillances, housekeeping, maintenance, and tank sampling will be contained.

2. **Controls**

   a. Follow ALARACT demonstration for "Size Reduction of Waste Equipment for Disposal" (ALARACT 15).

   b. Radioactive waste will be contained in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual.

   c. Radioactive material with removable contamination levels in excess of 100 times Table 2-2 values should have additional packaging controls such as double wrapping, use of bags or other controls.

   d. A survey is conducted, prior to storage or transportation of waste within the WRPS sites, of the outer most packaging layer to verify that removable contamination meets the requirements of HNF-5183, Table 2-2.

3. **Monitoring**

   a. At a minimum, pre and post-job contamination surveys (smears) shall be taken.

   b. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual.

4. **Records/Documentation**

   a. Radiological Work Permit

   b. Radiological survey report(s)

5. **Emission Pathway**

   a. Active or passive, point sources and fugitive sources.

6. **Facility Description**

   a. All Tank Farm facilities except special nuclear material.

ALARACT 05.1

TANK FARM ALARACT DEMONSTRATION FOR SOIL EXCAVATION

1. **Description of Activity**

Contaminated soil is routinely excavated in Tank Farm facility Contamination Areas (CA's), High Contamination Areas (HCA's), Soil Contamination Areas (SCA's), and Underground Radioactive Material Areas (URMA's) to support riser preparation, repair and maintenance activities, soil sampling, cleanup of contamination, removal of vegetation and biological hazards, and other activities (e.g. laying of conduit or cables for power). This activity also includes the movement of excavated contaminated soil back into the excavation (backfilling).

All radioactively contaminated soil excavation is conducted using hand tools such as shovels, picks, rakes, etc., and/or an electric demolition hammer with spade attachment. No additional motor operated equipment is used.

Surveys are performed throughout the excavation to assure that worker safety and environmental protection is maintained.

2. **Controls**

a. Follow ALARACT demonstration for "Packaging and Transportation of Waste" (ALARACT 4).

b. Once the excavation begins, dust control is used as required.

c. HPT coverage will be performed as specified in the radiological work permit.

d. A beta-gamma survey of the ground surface is required prior to excavation in Contamination Areas (CA's), High Contamination Areas (HCA's), Soil Contamination Areas (SCA's), and Underground Radioactive Material Areas (URMA's). An alpha survey may be required prior to excavation per the latest revision of TWR-4675, TFC Radiological Source Term Report Including Technical Basis for Dual Survey Exemption.

e. For excavation in CA's, HCA's, SCA's, and URMA's, if beta-gamma activity greater than 1000 dpm/probe area (5000 dpm/100cm2) is identified, alpha surveys will also be performed.

f. To the extent practicable for the radiological conditions of the work area, using hand held instrument field survey techniques; clean soil is separated from the soil identified as contaminated.

g. Suppressants such as water, fixatives, covers, or windscreens shall be available and will be used as necessary, including at the end of each shift or when sustained predicted winds are >20 mph.

h. Excavation of radioactive material shall cease if sustained winds exceed 20 mph. A local wind speed measurement device may be utilized in lieu of Hanford Meteorological Station readings, if local wind speed readings are taken in unobstructed location that is representative of the work area.

i. If a local wind speed device is used to measure wind speeds, then the use of the local wind speed device and the measured wind speed readings taken from it must be documented in the Work Record.

j. If the net contamination for the general area is greater than 200 dpm/probe area alpha or greater than 500,000 dpm/probe area beta-gamma, stop work in the area exceeding this criteria; notify Environmental and Radcon, and implement the controls listed below. Once notifications have been made and the following controls implemented, excavation may continue:

- Soil shall be wetted prior to excavation if not already damp.

- General work place air monitoring shall be performed during excavation activities.

- Excavation and contaminated soil piles will be covered with plastic, or fixative applied at the end of each sift, and/or as necessary to prevent airborne dust particles.

- Contaminated soil containing >500,000 dpm per probe area beta-gamma or >200 dpm/probe area alpha will be containerized or covered with clean fill if it is to be left for greater than 48 hours.

k. If hot specks are detected during the radiological surveys, the specks will be removed and contained before the activity is allowed to continue unless located in the bottom of the trench after excavation has been completed. Specks found in the bottom of the completed trench may be covered with fill. A hot speck will be defined as a very small amount (i.e., less than or equal to 100 cm2) of contamination reading greater than or equal to 1,000,000 dpm/probe size beta-gamma and/or greater than or equal to 490 dpm/probe size alpha.

l. If soil contamination (not to include hot specks) exceeds 20 mrad/hr , (open window reading), work will be stopped in the area exceeding this criterion, Environmental and Radcon notified, and adequacy of controls will be reassessed. WDOH will be notified. Work may continue when approved by Environmental and Radcon with WDOH concurrence.

3. <u>Monitoring</u>

a. At a minimum, pre and post-job contamination surveys shall be made.

b. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual.

4. <u>Records/Documentation</u>

a. Work Package

b. Radiological Work Permit

c. Radiological survey report(s)

5. <u>Emission Pathway</u>

a. Existing passive (diffuse/fugitive)

6. <u>Facility Description</u>

a. All Tank Farm facilities

ALARACT 06.1

TANK FARM ALARACT DEMONSTRATION FOR PIT ACCESS

1. **Description of Activity**

This ALARACT demonstration applies to all pits, caissons, and filter pits which have the potential for exposing tank waste to the pit environment, except 241-ER-152, 241-S-151, 241-UX-154, 241-TX-154, 244-CR Vault DCRT, 244-A Lift Station DCRT, and 244-TX DCRT which must follow an approved Notice of Construction.
If the work activities are such that they can be performed without removal of the pit covers, the controls listed in this ALARACT demonstration do not apply. Instead, the work shall be performed using appropriate controls from the latest revision of HNF-5183, "Tank Farms Radiological Control Manual" and the latest revision of TFC-ESHQ-RP_RWP_C-02, "Radiological Containment". Activities which may be conducted in this manner include pit videos/boroscopes, filling seal loops, valve handle change-out, pit wash-downs, fixative application, radiological surveys, remote operation of pit drains, leak detector troubleshooting or change-out, pit drain leak rate tests, core drilling cover blocks and removal or insertion of gas sampling lines. Any activity not included in the list must be approved by WDOH on a case-by-case basis.
Pits that do not have the potential for exposing tank waste to the pit environment do not require implementation of ALARACT controls for entry. Examples include flush pits, service pits, annulus pump pits and leak detection pits. These pits shall be accessed using appropriate controls from the latest revision of HNF-5183, "Tank Farms Radiological Control Manual" and the latest revision of TFC-ESHQ-RP_RWP-C-02, "Radiological Containment".

PREPARATION WORK:

- A pre-job survey is performed on the exterior surface of the pit and the surrounding area.

- A splashguard (monitorable surface) is installed around the pit.

- Before the pit covers are removed, an approved fixative may be applied inside the pit or the pit may be decontaminated. These processes are generally performed through an access port. If there is no access port(s), the pit covers are raised and suspended to provide access. A radiological survey is performed, and/or fixative may be applied inside the pit. The pit covers are then removed when necessary to perform work inside the pit. With the pit covers off, additional decontamination activities may include the use of chemicals, peel and strip paints, water, or manual scrub brushes.

- A temporary or permanent cover is installed over the pit if ever left unattended.

- After all activities in the pit are completed, the pit covers are reinstalled and the splashguard is removed.

Laydown area:
If work is not feasible to be performed in a pit, equipment may be removed from the pit and placed in an adjacent laydown area. The laydown area will border the pit and be monitored for contamination. Examples for when a laydown area may be used include wrapping equipment (e.g. jumpers, valves, pumps, sump pumps, cover blocks, cover plates), replacing equipment (e.g. gaskets, leak detectors, valves, funnels, piping, jumpers), and other repairs on equipment.

2. **Controls**

a. Follow ALARACT demonstration for "Riser Preparation/Opening" (ALARACT 1).

b. Follow ALARACT demonstration for "Packaging and Transportation of Waste" (ALARACT 4).

c. The pit covers are lifted and contained if the removable contamination level is greater than 50,000 dpm/100cm2 beta-gamma and 70 dpm/100cm2 alpha and moved to a storage area.

d. Uniformly distributed removable contamination levels within the pit are decontaminated to less than 100,000 dpm/100cm2 beta-gamma and 2,000 dpm/100cm2 alpha by washing or applying an approved fixative. If a high pressure (up to 3,000 psi) or low pressure (approximately 125 psi) whirly is installed, it is done through an opening (if one exists) in the pit covers and the pit is washed down. An approved fixative will be applied to pit surfaces if contamination levels exceed the limits stated above or as needed.

Note: The fixative will matrix the contamination to ensure minimization of potential airborne contamination.

e. Swipes will be taken on the splashguard surface facing the interior of the pit and the laydown area. Splash guards and laydown area are to be maintained below 50,000 dpm/100cm2 beta-gamma and 70 dpm/100cm2 alpha.

f. Use a splashguard extending to the edge of the pit. The splashguard will be taped or sealed to the edge of the pit. If it is not feasible to seal the splashguard to the edge of the pit, an additional rail will be installed at the base of the handrail and the splashguard will be taped or sealed to that bottom rail. This rail will be as close as possible to the pit edge. A ground cover is then placed around the edge of the pit and extends under the bottom rail. Alternative configurations for splashguards are listed below in f.(a).

f.(a). Alternative configurations for the splashguard include:

1. For above ground pits, the pit wall may be used as the splashguard and the groundcover will be secured to the top of the pit wall and draped over the exterior side of the pit wall and on the ground around the pit.

2. For above ground pits, the splashguard may extend from the inside of the pit wall in addition to being draped over the outside of the pit wall.

3. For pits that are partially above grade, an alternative is to use a combination of pit wall and railing to support the splashguard.

4. In cases where a weather enclosure is placed around the pit, the interior of the weather enclosure may be used as the splashguard.

5. A single or double gate may be placed in the splashguard to allow pit access.

6. If a laydown area is used the area will be covered by plastic to form a base layer and enclosed within a splash guard. A layer of matting will then be used to protect the base or barrier layer.

Note: Additional layers of plastic may be placed on top of the matting to wrap equipment when needed.

The splash guard and plastic would control the spread of any contamination outside the laydown/wrapping area and the matting will ensure that the base plastic layer remains intact. The laydown area may be located next to the pit with a single splash guard around both areas. Single or double gates may be placed in the splashguard for access purposes.

g. If sustained wind speeds are >25 mph, then do not open pits.

h. A local wind speed device may be utilized in lieu of Hanford Meteorological Station readings, if local wind speed readings are taken in an unobstructed location representative of the work area.

i. If a local wind speed device is used to measure wind speeds, then the use of the local wind speed device and the measured wind speed readings must be documented in the Work Record.

j. HPT coverage will be performed as specified in the Radiological Work Permit.

k. Use approved Containment Selection Guide, Attachment A, found in the latest revision of TFC-ESHQ RP_RWP_C-02, Radiological Containment.

l. Active ventilation may be utilized in accordance with the PTRAEU NOC.

m. Core drilling through a pit cover (cover block or cover plate) shall be performed in accordance with contamination controls as specified in the latest revision of HNF-5183, Tank Farms Radiological Control Manual and the latest revision of TFC-ESHQ-RP_RWP_C-02, Radiological Containment and below:

1. Verify fixed and removable contamination is less than 5,000 dpm/100cm2 beta-gamma and less than 70 dpm/100cm2 alpha in the area to be core drilled or decontaminate to below these levels utilizing non-vigorous hand methods (wiping or scraping) in areas to be core drilled.

2. If decontamination is unsuccessful, cover the area to be core drilled with fixative or tape (tape must be substantial, such as duct tape) minimizing the potential of airborne during the initial drilling.

3. Ensure drill bit is kept wet during core drilling.

4. Verify fixed and removable contamination is maintained less than 5,000 dpm/100cm2 beta-gamma and less than 70 dpm/100 cm2 alpha during and after core drilling.

n. Radiologically contaminated material with removable contamination greater than 50,000 dpm/100cm2 beta-gamma and greater than 70 dpm/100cm2 alpha left in the laydown area must be wrapped if left unattended.

o. The pit covers are lifted and contained if the removable contamination level is greater than 50,000 dpm/100cm2 beta-gamma and 70 dpm/100cm2 alpha and moved to a storage area.

p. A temporary or permanent cover is placed over the pit if the pit is ever left unattended.

3. <u>Monitoring</u>

a. At a minimum, pre and post-job contamination surveys (smears) shall be taken.

b. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual.

4. **Records/Documentation**
   a. Work Package

   b. Radiological Work Permit

   c. Radiological survey report(s)

5. **Emission Pathway**
   a. Existing passive non-point source.

6. **Facility Description**
   a. This ALARACT demonstration applies to all Tank Farm pits except 241-ER-152, 241-S-151, 241-UX 154, 241-TX-154, 244-CR Vault DCRT, 244-A Lift Station DCRT, and 244-TX DCRT.

ALARACT 07.1

TANK FARM ALARACT DEMONSTRATION FOR TANK WASTE GRAB SAMPLING

1. Description of Activity

Grab sampling is used to obtain small volume samples of tank waste materials. Individual samples are typically <1 liter, but multiple samples can be taken from the tank. The sampled material consists of liquid, sludge's, and solids. Grab sampling techniques are suitable for relatively soft waste. If the waste material is too thick or hard, other sampling techniques (such as core sampling) may be required.

Grab samples are acquired through tank risers. A riser is prepared for grab sampling by first installing a riser adapter called a top hat. The top hat acts as a temporary seal for the open riser to minimize open riser time. The next step is to install a glove bag over the tank riser.

The sampling assembly consists of a sample device suspended on a wire cable. The most commonly used sample devices are a bottle in a weighted bottle holder, and a finger sampler. The bottle is used when the waste material is primarily liquid, while the finger sampler is used to sample relatively solid material.

The sample assembly is placed into the glovebag, the glovebag is closed and the riser is opened. The sample device is lowered with a winch, the waste sample collected, and retrieved from the tank. If the collected sample is a bottle, the bottled is capped, bagged and placed into a shielded container. If the sample is collected in a finger sampler, the waste is transferred to a secondary container, bagged and placed into the shielded container. If a glovebag is used, the sample assembly is placed in the glovebag. The glovebag is closed and the riser is opened. If a glovebox is used, the sample assembly is contained in the glovebox. If the sample is collected in a clam shell sampler, it is clipped, removed from the sampler body, transferred to a secondary container, bagged, and placed into the shielded container.

When sampling is finished, the glove bag is collapsed, venting air through a small HEPA type filter, and all contaminated sampling equipment contained inside is disposed as waste. If a glovebox is used, the glovebox is decontaminated, as necessary, and stored for future sampling evolutions. Air from the glovebox is vented through a "paint can" HEPA filter.

A small percentage of grab-sampling jobs are performed on top of a tank riser without a glovebag. An example would be raising a saltwell pump (accessed from within a pit) and sampling between the pump legs and the saltwell screen. Such sample jobs are controlled through work planning utilizing the Containment Selection Guide, Attachment A, from the latest revision of TFC-ESHQ-RP_RWP-C-02, Radiological Containment.

2. Controls

a. Follow ALARACT demonstration for "Riser Preparation/Opening" (ALARACT 1).

b. Follow ALARACT demonstration for "Packaging and Transportation of Waste" (ALARACT 4).

c. Follow ALARACT demonstration for "Pit Access (ALARACT 6), if applicable.

d. HPT coverage will be performed as specified in the Radiological Work Permit.

e. If sustained wind speeds are >25 mph, then do not initiate sampling.

f. A local wind speed device may be utilized in lieu of Hanford Meteorological Station readings, if local wind speed readings are taken in an unobstructed location representative of the work area.

g. If a local wind speed device is used to measure wind speeds, then the use of the local wind speed device and the measured wind speed readings must be documented in the Work Record.

h. Use riser adapter to minimize open riser time.

i. Samples contained prior to placement in a shielded container.

j. Sample contained when in shipping cask.

k. Contain contaminated equipment.

l. Use approved Containment Selection Guide, Attachment A, from the latest revision of TFC-ESHQ-RP_RWP-C-02, Radiological Containment.

3. <u>Monitoring</u>

a. At a minimum, pre and post-job contamination surveys (smears) shall be taken.

b. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual.

4. <u>Records/Documentation</u>

a. Work Package

b. Radiological Work Permit

c. Radiological survey report(s)

5. <u>Emission Pathway</u>

a. Existing, active or passive point source.

6. <u>Facility Description</u>

a. All Tank Farm SST's, DST's and miscellaneous tanks.

ALARACT 08.1

TANK FARM ALARACT DEMONSTRATION FOR VAPOR SAMPLING

1. **Description of Activity**

Vapor Samples are acquired through risers or other accessible ports such as Standard Hydrogen Monitoring Systems (SHMS) ports, flush ports, or test ports. There are two methods to collect vapor samples from waste tanks: grab sampling (with SUMMA canisters), and In-Situ Vapor Sampling (ISVS or Type IV) equipment. SUMMA is an evacuated container. Other equivalent evacuated containers may be used in its place.

SUMMA VAPOR SAMPLING

SUMMA sampling equipment consists of a riser adapter (not used for drill string vapor samples), sample tubing, and SUMMA canisters.

To begin SUMMA sampling through a tank riser, the riser is opened and the riser adapter is installed. The riser adapter contains sampling tubes that extend above the top of the riser and continue down into the tank headspace. The sampling tubes are fitted with isolation valves. An installed riser adapter with the sample tube valve closed isolates the tank vapor space from the ambient environment. To sample through a port, the port is opened, a tube is inserted, and an adapter or fitting is installed as appropriate.

In the first step, the sampling tube is purged using portable industrial hygiene instruments and the headspace vapor is drawn into the tube. A tank headspace sample is collected by attaching a SUMMA canister to the top end of a sampling tube and opening the valve. The SUMMA canister, an evacuated container, allows the tank headspace gas to be pulled into the container. The self-contained sample canister is shipped to a laboratory for analysis.

When vapor sampling is finished, the riser adapter/tubing assembly is removed, surveyed by an HPT, and placed into containment sleeving if found contaminated. If a riser is used, a cap or flange is then installed.

TYPE IV VAPOR SAMPLING

The second method of vapor sampling is the In-Situ Vapor sampling (ISVS or Type IV sampling) method. Contrasting SUMMA grab sampling, ISVS sample media is directly exposed to tank vapor gases by placement in the tank headspace. The ISVS sampling equipment consists of a riser adapter, an air pump mounted on a handcart, a manifold for connecting sample tubing, tube bundle assembly, which has a sampling head containing the sample, and the sample media.

The sampling begins by opening a tank riser designated for sampling; installing the riser adapter; inserting the plastic sleeved sample tubes (with the sampling head/media attached) into the riser to the required sampling depth; attaching the sample tubes to the air pump handcart; sampling for a period of time; removal of the sample lines and sample media; removal of the riser adapter and closing the riser; packaging the samples for shipment to a laboratory; and packaging waste for eventual disposal.

2. **Controls**

a. Follow ALARACT demonstration for “Riser Preparation/Opening” (ALARACT 1).

b. Follow ALARACT demonstration for “Packaging and Transportation of Waste” (ALARACT 4).

c. HPT coverage will be performed as specified in the Radiological work permit.

d. Minimize open riser and port time.

e. Verify passive or active HEPA filtration on tanks.

f. HEPA-type filtration in sample line.

g. Contain contaminated equipment.

h. Sample contained when in shipping container.

3. <u>Monitoring</u>

a. At a minimum, pre and post-job contamination surveys (smears) shall be taken.

b. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual.

4. <u>Records/Documentation</u>

a. Work Package

b. Radiological Work Permit

c. Radiological survey report(s)

5. <u>Emission Pathway</u>

a. Existing, active or passive point source.

6. <u>Facility Description</u>

a. All Tank Farm SST’s, DST’s and miscellaneous tanks.

ALARACT 10.1

TANK FARM ALARACT DEMONSTRATION FOR WATER LANCING

1. **Description of Activity**

Water lancing the waste in an underground storage tank is performed to determine the depth of the tank from the riser location and to prepare for equipment installation, such as salt well screens, jet pump assemblies and liquid observation wells.

There are three types of water lances:

a. A long pipe approximately 7.62 cm in diameter with a single nozzle at the end. This design uses hot water (supplied by a truck) at low pressure, approximately 1034 kilopascals (150 psi). Use of this design may require the lance to be raised and lowered into the waste multiple times so that a large enough hole can be formed in the waste to accommodate the equipment to be installed in the hole.

b. A pipe approximately 28 cm in diameter with multiple nozzles on the bottom to facilitate waste penetration. It is designed to create a large hole with one insertion of the lance into the waste. This design operates at a pressure of approximately 20,685 kilopascals (3000 psi).

c. A pipe approximately 7.62 cm in diameter with multiple nozzles on the bottom to facilitate waste penetration. It is designed to create a large hole with one insertion of the lance into the waste. This design operates at a pressure of approximately 20,685 kilopascals (3000 psi).

In each case, a hose from a water truck is connected to the top end of the water lance. The water lance is inserted into a tank riser which has a water spray ring mounted within the riser. Additionally, a plastic sleeve is staged and tied off at the top of the lance for deployment during lance retrieval. During insertion of the water lance, air emissions are controlled by the use of the water spray ring. The water spray ring sprays water in the annulus between the outside diameter of the water lance and the inside diameter of the riser. The water lance is lowered until it penetrates the solid portions of the waste that need to be broken up to allow insertion of the saltwell screen or other equipment. The water lance withdrawal steps are the reverse of the insertion sequence. The water spray ring is used to wash radioactive tank waste from the outside of the water lance. At the completion of the activity the pit or riser will be closed.

Contingency plans within the scope of this ALARACT demonstration are:

a. Removing the lance from the tank for further decontamination by washing, wiping or brushing. The activities will be conducted in accordance with the latest revision of TFC-ESHQ-RP_RWP_C-02, Radiological Containment.

b. Replacement of contaminated parts if they cannot be adequately decontaminated as noted in (a) above. This activity will be conducted in accordance with the latest revision of TFC-ESHQ-RP_RWP_C-02, Radiological Containment.

2. **Controls**

a. Follow ALARACT demonstration for “Riser Preparation/Opening” (ALARACT 1).

b. Follow ALARACT demonstration for “Packaging and Transportation of Waste” (ALARACT 4).

c. Follow ALARACT demonstration for "Pit Access" (ALARACT 6), if applicable.

d. Follow ALARACT demonstration for "Packaging and Transportation of Equipment" (ALARACT 12).

e. Follow ALARACT demonstration for “Installation, Operation, and Removal of Tank Equipment” (ALARACT 13).

f. During insertion and removal, radiological control is achieved by spraying the annulus between the lance outside diameter and riser inside diameter with water.

g. Wiping of the lance may take place immediately above the riser and below the plastic sleeving.

h. Washing is repeated until there is no appreciable dose reduction.

i. Verify passive or active HEPA filtration on tanks.

j. Follow the latest revision of TFC-ESHQ-RP_RWP_C-02, Radiological Containment.

k. HPT coverage will be performed as specified in the Radiological Work Permit.

3. <u>Monitoring</u>

a. At a minimum, pre and post-job contamination surveys (smears) shall be taken.

b. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual.

4. <u>Records/Documentation</u>

a. Work Package

b. Radiological Work Permit

c. Radiological survey report(s)

5. <u>Emission Pathway</u>

a. Existing, active or passive point source.

6. <u>Facility Description</u>

a. All Tank Farm SST’s, DST’s and miscellaneous tanks.

ALARACT 11.1

TANK FARM ALARACT DEMONSTRATION FOR WASTE TRANSFERS

1. **Description of Activity**

   Wastes are transferred to, from, and within actively ventilated tank farm storage facilities (i.e. double-shell and single-shell tanks), chemical processing facilities, receiver vaults, mobile tanks, and evaporators. Transfers are made through a network of existing or to be installed above or below ground pipelines, and operating equipment. Transfers also utilize the existing network of controls or transfer structures (currently in use, or constructed under a Notice of Construction) such as diversion boxes, valve pits, double contained receiver tanks, and diverter stations. Jet, submersible, or transfer pumps are used to transfer waste at flow rates up to 300 gallons (1,132 liters) per minute. The pit covers are reinstalled on the pits before starting any waste transfer operation. Occasionally, water is added to a tank or transfer system to prevent or remove plugs. Other techniques to free blockages include chemical flushing, pressurization, temporary jumpers, hydraulic scouring, and the use of heat tracing. Flow rates and pressures used are determined by engineering evaluations.

2. **Controls**

   a. Verify HEPA filtration on sending/receiving tanks.

   b. Follow ALARACT demonstration for "Riser Preparation/Opening" (ALARACT 1).

   c. Follow ALARACT demonstration for "Packaging and Transportation of Waste" (ALARACT 4).

   d. Follow ALARACT demonstration for "Pit Access" (ALARACT 6).

   e. Follow ALARACT demonstration for "Packaging and Transportation of Equipment and Vehicles" (ALARACT 12).

   f. Follow ALARACT demonstration for "Installation and Removal of Equipment from Tanks" (ALARACT 13).

   g. Follow ALARACT demonstration for "Pit Work" (ALARACT 14).

3. **Monitoring**

   a. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual.

   b. Radiological surveys of the work area as required by the work package and/or procedure.

   c. Post job surveys.

4. **Records/Documentation**

   a. Flow rate and pressure engineering evaluations

   b. Work package and/or procedures

   c. Radiological Work Permit

d. Radiological survey report(s)

5. **Emission Pathway**
   a. Existing active Tank Farm passive point sources or fugitive non-point source.

6. **Facility Description**
   a. All Tank Farm SST's, DST's and miscellaneous tanks.

ALARACT 12.1

TANK FARM ALARACT DEMONSTRATION FOR PACKAGING AND TRANSPORTATION OF EQUIPMENT AND VEHICLES

1. **Description of Activity**

   Equipment and vehicles that become contaminated during work activities are reused when possible. If the equipment or vehicle is to be reused or stored in a contamination area, the removable activity levels on the surface of the item, or the outer-most container, must be in accordance with the latest revision of HNF-5183, "Tank Farms Radiological Control Manual".

2. **Controls**

   a. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual.

3. **Monitoring**

   a. At a minimum, pre and post-job contamination surveys (smears) shall be taken.

   b. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual.

4. **Records/Documentation**

   a. Radiological Work Permit

   b. Radiological survey report(s)

5. **Emission Pathway**

   a. Fugitive/diffuse source

6. **Facility Description**

   a. All Tank Farm facilities

ALARACT 13.1

TANK FARM ALARACT DEMONSTRATION FOR INSTALLATION, OPERATION, AND REMOVAL OF TANK EQUIPMENT

1. **Description of Activity**

Equipment may be installed, operated, and removed from tanks (actively and passively ventilated). This ALARACT also applies to installation of expanding foam or other types of material added to a cascade or transfer line to plug the line and preclude waste or water movement necessary for interim isolation of a tank.

This ALARACT demonstration does not provide approval for sluicing and operation of mixer pumps, or lancing.

Equipment is lowered into and removed from tanks either manually or remotely (e.g. using a crane). Once the equipment is installed, mating surfaces of the equipment and riser are sealed.

Equipment will be removed in accordance with the latest revision of TFC-ESHQ-RP_RWP-C-02, Radiological Containment.

2. **Controls**

a. Follow ALARACT demonstration for "Riser Preparation/Opening" (ALARACT 1).

b. Follow ALARACT demonstration for "Packaging and Transportation of Waste" (ALARACT 4).

c. Follow ALARACT demonstration for "Pit Access" (ALARACT 6).

d. Follow ALARACT demonstration for "Water Lancing" (ALARACT 10).

e. Follow ALARACT demonstration for "Packaging and Transportation of Equipment and Vehicles" (ALARACT 12).

f. Follow ALARACT demonstration for "Size Reduction of Waste Equipment for Disposal" (ALARACT 15).

g. Equipment is decontaminated or contained when removed from tanks when >50,000 dpm/100cm2 beta gamma and/or >70 dpm/100cm2 alpha.

h. Swipes will be taken to determine that surface of the item or the outermost surface of the container are maintained <50,000 dpm/100cm2 beta-gamma and/or <70 dpm/100cm2 alpha.

i. HPT coverage will be performed as specified in the Radiological Work Permit.

j. If sustained wind speeds are >25 mph, do not install or remove equipment.

k. A local wind speed measurement device may be utilized in lieu of Hanford Meteorological Station readings, if local wind speed readings are taken in unobstructed location representative of the work area.

l. If a local wind speed device is used to measure wind speeds, then the use of the local wind speed device and measured wind speed readings must be documented in the Work Record.

m. Follow the latest revision of TFC-ESHQ-RP_RWP_C-02, Radiological Containment.

3. <u>Monitoring</u>

a. At a minimum, pre and post-job contamination surveys (smears) shall be taken.

b. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual.

4. <u>Records/Documentation</u>

a. Work Package

b. Radiological Work Permit

c. Radiological survey report(s)

5. <u>Emission Pathway</u>

a. Active or passive, point sources and fugitive source.

6. <u>Facility Description</u>

a. All Tank Farm facilities.

ALARACT 14.1

TANK FARM ALARACT DEMONSTRATION FOR PIT WORK

1. **Description of Activity**

This ALARACT demonstration applies to all pits, caissons, and filter pits which have the potential for exposing tank waste to the pit environment, except 241-ER-152, 241-S-151, 241-UX-154, 241-TX-154, 244-CR Vault DCRT, 244-A Lift Station DCRT, and 244-TX DCRT which must follow an approved Notice of Construction.

Specific activities performed in pits include:

- Installing pit leak detectors.
- Unplugging drains.
- "Clean-out snake" for transfer lines.
- Working on equipment.
- Housekeeping/waste removal activities.
- Jumper Work
  - o When possible the affected lines are flushed prior to breaching the system.
- Equipment size reduction
  - o Cut by low velocity cutting tools (e.g. hydraulic shears, portable band saw, reciprocating saw, hand tools) within the pit.
- Pressure Testing Lines
  - o A pressure test assembly is installed on the line to be tested in one pit. A blank with a drain is installed on the other end of the line in a separate pit.

2. **Controls**

a. Follow ALARACT demonstration for "Riser Preparation/Opening" (ALARACT 1).

b. Follow ALARACT demonstration for "Packaging and Transportation of Waste" (ALARACT 4).

c. Follow ALARACT demonstration for "Pit Access" (ALARACT 6).

d. Follow ALARACT demonstration for "Packaging and Transportation of Equipment and Vehicles" (ALARACT 12).

e. Follow ALARACT demonstration for "Installation, Operation, and Removal of Tank Equipment" (ALARACT 13).

f. Temporary and/or permanent covers will be placed over pits during pressure test(s).

g. A temporary or permanent cover is placed over the pit when unattended.

h. Splashguards and laydown areas shall be installed and maintained as specified in ALARACT 6.

i. Swipes of splashguards and laydown areas will be taken as specified in ALARACT 6.

j. Uniformly distributed removable contamination levels within the pit are decontaminated to less than 100,000 dpm/100cm2 beta-gamma and 2,000 dpm/100cm2 alpha by washing or applying an approved fixative. An approved fixative will be applied to pit surfaces if contamination levels exceed the limits stated above or as needed.

NOTE: The fixative will matrix the contamination to ensure minimization of potential airborne contamination.

k. If a used jumper is to be removed from the pit, it is drained or plugged and a fixative is applied.

l. Equipment will be decontaminated or contained if removable contamination is greater than 50,000 dpm/100cm2 beta-gamma and/or 70 dpm/100cm2 alpha, except for equipment to be placed directly into a grout box or laydown area.

m. Groundcover shall be placed over the path from the pit or laydown area to the waste box if the equipment is uncontained. In this instance, waste boxes are to be placed as close as feasible to the pit.

n. Equipment moved between the pit, waste box, or laydown area shall either be moved through a gate or kept as low as possible when clearing any obstacles between areas.

o. If sustained wind speeds are >25 mph, then pit work will not be performed.

p. A local wind speed measurement device may be utilized in lieu of Hanford Meteorological Station readings, if local wind speed readings are taken in unobstructed location representative of the work area.

q. If a local wind speed device is used to measure wind speeds, then the use of the local wind speed device and measured wind speed readings must be documented in the Work Record.

r. HPT coverage will be performed as specified in the Radiological Work Permit.

3. <u>Monitoring</u>

a. At a minimum, pre and post-job contamination surveys (smears) shall be taken.

b. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual.

4. <u>Records/Documentation</u>

a. Work Package

b. Radiological Work Permit

c. Radiological survey report(s)

5. <u>Emission Pathway</u>

a. Existing passive non-point source.

6. Facility Description

a. This ALARACT demonstration applies to all Tank Farm pits except 241-ER-152, 241-S-151, 241-UX 154, 241-TX-154, 244-CR Vault DCRT, 244-A Lift Station DCRT, and 244-TX DCRT.

ALARACT 15.1

TANK FARM ALARACT DEMONSTRATION FOR SIZE REDUCTION OF WASTE EQUIPMENT FOR DISPOSAL

1. **Description of Activity**

   Size reducing, cutting or disassembling contaminated material and equipment is done for more economical waste packaging. Containment devices are employed as applicable per the latest revision of TFC-ESHQ-RP_RWP-C-02, "Radiological Containment". The process is limited to mechanical cutting techniques such as low speed and high speed sawing, snipping, shearing, as well as hot work such as cutting torches. The process will also include bending, crimping, and compaction to preclude the need for cutting operations.

   Examples of items cut up or disassembled for waste disposal during facility operations include long-length contaminated equipment (i.e. waste tank level instrumentation, thermocouple trees, specific gravity probes, observation ports, hose and piping), waste sampling equipment (i.e. drill strings or augers), pumps, compressors, and deactivated exhausters with associated ductwork. This includes replacement and disposal of flexible ventilation ductwork located upstream of HEPA filtration.

2. **Controls**

   a. Follow ALARACT demonstration for "Packaging and Transportation of Waste" (ALARACT 4).

   b. Equipment with removable contamination will be contained per the Containment Selection Guide, Attachment A, from the latest revision of TFC-ESHQ-RP_RWP-C-02, Radiological Containment or decontaminated.

   c. HPT coverage as specified in the Radiological Work Permit.

3. **Monitoring**

   a. At a minimum, pre and post-job contamination surveys (smears) shall be taken.

   b. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual.

4. **Records/Documentation**

   a. Radiological Work Permit

   b. Radiological survey report(s)

5. **Emission Pathway**

   a. Active or passive, point sources and fugitive source.

6. **Facility Description**

   a. All Tank Farm Facilities

ALARACT 16.1

TANK FARM ALARACT DEMONSTRATION FOR WORK ON POTENTIALLY CONTAMINATED VENTILATION SYSTEM COMPONENTS

1. **Description of Activity**

   Scope will include work on potentially contaminated ventilation system components. This may include repair or replacement of ductwork, dampers, valves, recirculation fans, flexible boots, heaters, instrumentation, or other ventilation system components. Work may also involve opening the ventilation system to take measurements, testing, or sampling in the ventilation system. The process will be performed using mechanical techniques such as unbolting, drilling, snipping, shearing, cutting, abrading, or low and high-speed sawing, as well as hot work such as cutting torches. Other activities may include installation of instrumentation, test ports, or sample ports. Containment devices are employed as applicable per the Containment Selection Guide, Attachment A, from the latest revision of TFC-ESHQ-RP_RWP_C-02, "Radiological Containment".

2. **Controls**

   a. If exhaust systems are replaced under the "replacement-in-kind" provisions of WAC 246-247 utilizing this ALARACT demonstration, then the abatement controls of the new system must be equivalent or better than those of the system that is replaced. The operational flow rate of the new system may not exceed that of the replaced system.

   b. Follow ALARACT demonstration for "Packaging and Transportation of Waste" (ALARACT 4).

   c. Work with removable contamination will be contained per the Containment Selection Guide, Attachment A, from the latest revision of TFC-ESHQ-RP_RWP-C-02, Radiological Containment.

   d. HPT coverage as specified in the Radiological Work Permit.

3. **Monitoring**

   a. At a minimum, pre and post-job contamination surveys (smears) shall be taken.

   b. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual.

4. **Records/Documentation**

   a. Radiological Work Permit

   b. Radiological survey report(s)

5. **Emission Pathway**

   a. Active and passive, point sources and fugitive source.

6. **Facility Description**

   a. All Tank Farm Facilities

ALARACT 18

ENVIRONMENTAL RESTORATION PROGRAM
ALARACT DEMONSTRATION FOR DRILLING

1. Description of Activity

Drilling, outside of the Tank Farms fence line, is conducted to meet multiple needs on the Hanford Site. These include, but are not limited to, the installation of groundwater monitoring wells, extraction wells, injection wells, vadose zone characterization, aquifer/river sampling tubes, etc. The drilling methods currently used include cable tool, sonic, air rotary, diesel hammer direct push, and mud rotary technologies as described in Appendix 1. In some cases, more than one method (e.g. air rotary and cable tool) may be used to complete a boring. All drilling and well decommissioning activities are conducted in compliance with WAC 173-160.

The drilling process generates wastes, such as soil cuttings, purge water, decontamination fluids and other wastes that are managed in accordance with applicable regulations and contractor procedures. Soil and/or groundwater samples may be taken during the drilling process. Upon reaching the desired total depth, some borings are completed as groundwater monitoring wells. Groundwater wells and borings that have no further intended purpose are decommissioned.

The drilling and sampling equipment is cleaned between borings to prevent cross contamination. Equipment cleaning techniques for push technologies include wiping/scrubbing with clean paper towels and/or rags, and may be followed by a 3 bucket wash. These methods are used to remove smearable contamination prior to transporting the equipment to another location. These methods are also used for the other drilling techniques. High temperature and pressure (180 °F and 1000 psi) washing at a decontamination pad is necessary as a final cleaning step for some drilling equipment.

Abrasive decontamination methods are sometimes needed to remove small isolated areas of fixed contamination after all smearable contamination has been eliminated. It may consist of scrubbing the contaminated area with a wire brush (or other mechanical means) using an approved cleaner, or removing a thin layer of metal using a metal file and/or sandpaper.

The following is a description of drilling techniques that may be utilized in areas outside the Tank Farms fence line.

Cable Tool Drilling:

A temporary drive casing and cuttings drive barrel is driven into the soil by mechanical means at ground surface. The outer drive casing prevents caving of the formations penetrated as the hole is advanced. Once filled, the barrel is withdrawn to the surface and the cuttings are emptied from the barrel into an appropriate waste container, or to ground surface, depending on environmental and health risk determination. “Hard tool” cable tool drilling is used in difficult to penetrate formations. In this case, water is added to form a slurry at the bottom of the hole to facilitate cuttings removal by means of a wireline bailer. With either method, if contamination levels of concern are present, the cuttings are placed in a containment drum for appropriate disposal. This process is repeated until the drive casing reaches the desired depth. The inner barrel is then withdrawn, and the drive casing is incrementally pulled back to the surface as well completion components are installed, or plug back materials are placed if the hole is decommissioned.

Sonic Drilling:

This drilling method consists of a drive casing and may include an inner cuttings barrel system. A vibration is induced in the drive casing system and it is mechanically pushed into the formation. As the system advances, formation materials are compressed as the tool advances. If sampling is desired, an inner sample barrel can be installed to capture a sample of the material penetrated. Excess material is compressed outside the drive casing. The drive casing/inner barrel assembly is advanced incrementally to obtain a sample, the inner barrel is withdrawn, and the cuttings are contained or discarded, as described above. This process is repeated until the drive casing reaches the desired depth. Boring completion or decommissioning is similar to the cable tool method.

Direct Push Technologies:

Push technology is conducted on the Hanford site using cone penetrometers, Geoprobes™ , and hand driving techniques. The Geoprobe and cone penetrometers utilize hydraulics to push small diameter rods (1" to 3") into the formation by using the weight of the heavy truck as resistance. The system minimizes contaminant exposure since there are no drill cuttings or exhaust air as the hole is advanced. An instrumented real-time sensor can be used on the cone penetrometer to obtain formation parameters as it is being pushed, and a detachable (pull-back) shoe can be opened to obtain formation or groundwater samples by means of a retrievable inner wire-line tool. Limited geophysical logging can also be conducted in these holes using very small diameter tools compatible with steel casing. Hand driving for aquifer tube installation uses sledges, portable jackhammers, etc., to mechanically drive ~1" diameter rods to very shallow depths (<30 ft). A miniature screen with attached polyethylene tubing is placed in the hand driven holes prior to withdrawing the rod. The Geoprobe is sometimes used to support aquifer tube installations, and sonic technology can be used to assist small diameter cone penetrometer rod penetration.

Air Rotary Drilling:

This drilling method consists of a dual-wall casing, assembly consisting of an outer drive casing and an inner rotary drill stem and bit assembly. The outer drive casing is driven from ground surface, or hydraulically pushed down, as the inner rotary assembly advances into the formation. Air is injected through the inner drill stem/bit and flushes the cuttings up the drive casing/drill stem annulus. Cuttings are handled as above. Advancing the boring is generally continuous since cuttings are removed as the boring is advanced. Water may be added to the air stream to assist in lifting the cuttings and to minimize dust emissions. Return air is put through cyclone separators to remove solids and minimize dust. This process is repeated until the drive casing reaches the desired depth. Boring completion or decommissioning is similar to the cable tool method.

Diesel Hammer Drilling:

The drive casing in this drilling method is advanced using a diesel hammer technique. Drill cuttings are removed using an inner core barrel on a wire-line system. Cuttings are handled as above. This process is repeated until the drive casing reaches the desired depth. Boring completion or decommissioning is similar to the cable tool method.

Mud Rotary Drilling:

Mud rotary drilling is a drilling method that involves the continuous circulation of fluids (commonly referred to a drilling mud) in the borehole as the drill bit is advanced. There are two methods where

drilling fluids are used: 1) direct rotary and 2) reverse circulation rotary. With either method, the drilling mud is circulated from the surface to the bottom of the borehole and into a pit collection system at the surface. The drilling method itself involves the rotation of a bit attached to a drill string with downward applied weight or pressure to advance the borehole. The method is similar to Air Rotary drilling discussed above, except that a fluid is circulated instead of air. The essential functions of a drilling mud are to:

1) Lift the formation cuttings from the bottom of the hole to the surface and carry them to a settling tank.
2) Seal the borehole wall to reduce mud loss to the formation.
3) Cool and clean the drilling bit.
4) Lubricate the drilling bit, bearings, mud pump and drill pipe.
5) Allow drill cuttings to be easily removed through solids control.
6) Clean the bottom of the hole.
7) Aid in formation evaluation.
8) Aid in formation stability.

The drilling mud requires constant monitoring and conditioning to ensure required mud properties are maintained to meet the above functions.

The drilling mud and drill cuttings are disposed of as appropriate either in an approved disposal facility, or to ground surface, depending on environmental and health risk determination. Borehole completion or decommissioning is similar to the cable tool method.

2. <u>Controls</u>

a. Contractor radiological, waste management, sampling, decontamination, drilling, decommissioning, transportation, and health and safety procedures are followed.

b. A Radiological Risk Assessment is conducted prior to, and for, each prospective drilling location. A Radiological Risk Assessment Checklist is completed, and a Hanford Site Excavation Permit is completed and approved. A Radiological Work
Permit (RWP) is completed for all High Risk intervals to be drilled.

c. A ranking system is used at each drilling location (and the intervals within, as appropriate) of Low, Medium, or High Risk. It is important to note that different depth intervals may have different risk levels in the same well. Controls are upgraded and downgraded according to the interval exposed during the drilling process.

d. Controls are based on risk level and the site-specific drilling location.

High Risk borings (e.g., those located in a crib, pond or ditch) are drilled using methods that have the least potential for air releases (i.e., not air rotary). The equipment is wiped clean as it is brought out of the boring. Core barrel samples are contained in plastic sleeves and the bottom tied off. The sleeves and drill cuttings are placed into appropriate containers for analysis and/or disposal. Continuous radiological control technician (RCT) coverage is provided for the duration of the High Risk drilling. The RWP identifies radiological conditions, establishes worker protection and monitoring requirements, and contains specific approvals for radiological work activities. When characterizing highly contaminated waste sites a HEPA ventilated glove bag or enclosure is used to obtain samples of the cuttings.

Medium Risk borings (e.g., those located within 50 feet of a crib, pond or ditch) are evaluated on a case-by-case basis and controls depend on site-specific factors. In most cases, the boring is drilled in a

conservative manner using methods that have the least potential for air releases (i.e., not air rotary). Continuous RCT coverage is provided. If radioactivity is detected, the work is immediately stopped, and the boring is upgraded to High Risk with appropriate controls in place prior to proceeding.

Low Risk borings (balance of the Hanford site) may be drilled with any of the methods described in Appendix 1. If using air rotary techniques, water may be added to minimize dust and assist in cuttings removal. RCT surveys are conducted either every morning or afternoon to verify the absence of contamination. If radioactivity is detected, the work is immediately stopped, and the boring is upgraded to High Risk with appropriate controls in place prior to proceeding.

Drilling equipment is checked for contamination prior to moving it to a new location. Smearable contamination is removed by the manual methods discussed earlier. It is sometimes necessary to apply a fixative or to wrap the area to prevent the spread of contamination that is not easily washed or wiped off. High temperature and pressure (180 °F and 1000 psi) washing is necessary as a final cleaning step for some drilling equipment.

3. <u>Monitoring</u>

Air monitoring is required for drilling in High Risk intervals. Existing near-facility air monitoring stations will be utilized when possible. If existing near-facility air monitoring stations do not provide adequate coverage for the predominate wind direction, additional monitoring will be conducted.

4. <u>Records/Documentation</u>

a. Radiological Work Permit, if applicable.

b. Analytical results from the near-facility air monitoring station.

c. Notify the WDOH of all drilling locations prior to initiating field activities and in the event that unanticipated contamination is encountered.

5. <u>Emission Pathway</u>

a. Potential fugitive emissions

6. <u>Facility Description</u>

a. Hanford Site outside of the Tank Farms fence line

ALARACT 26.1

DISPOSAL BY BURNING OF POTENTIALLY CONTAMINATED TUMBLEWEEDS

1. **Description of Activity**

   Windblown collections of tumbleweeds along fence lines, buildings, and other locations must be removed for purposes involving safety and security. Due to the volume and makeup of these collections, the only reasonable option for large-scale disposal is collection followed by controlled burning outdoors.

   Some burns are conducted near the collection point while others are conducted in designated central locations which receive compacted, shredded, or pitched loads of the weeds during various times of the year. Due to their being an opportunistic invader species with deep roots, there are very infrequent occasions where the weeds may grow in areas with contaminated soil, and uptake low levels of radioactive contamination. This ALARACT demonstration provides the description of radiological controls and monitoring that will be performed in taking reasonable precautions during disposal of the weeds by open burning.

2. **Controls**

   If collected in areas, which may reasonably provide some potential for incurring contaminated windblown tumbleweeds, collection of the windblown weeds includes radiological, field surveys using hand held instruments. The surveys are conducted in accordance with approved site radiological control procedures. Handling may involve loading for transport, compacting, shredding, piling for disposal, or other manual methods.

   Any detected contamination will be removed prior to burning.

   The burning will not occur in any area posted as containing radioactive contamination.

   The burning will be conducted in accordance with the current approved Hanford Site prescribed fire burn plan, and with constant job coverage by Hanford Fire personnel and equipment.

   Note: If radioactive contamination is found after the burn, DOH will be notified.

3. **Monitoring**

   Monitoring will consist of the radiological field surveys conducted as part of the activities described above.

4. **Records/Documentation**

   Tumbleweeds collected from areas with a reasonable potential for contamination are surveyed using hand held instruments. The surveys are conducted in accordance with approved site radiological control procedures.

   Surveys are documented on Radiological Survey Reports, reviewed, and retained according to Department of Energy requirements.

5. **Emission Pathway**

   Emission from the proposed burn will be a diffuse emission.

6. **Facility Description**

The Waste Information Data System site 200-W BP (also known as 200-W Burning Pit, Pit 34) is the primary burn location. However, as noted in Section 1, tumbleweed burning can also occur at other locations where tumbleweeds are collected.

ALARACT 28.1

SHUTDOWN OF STACK SYSTEM(s) (Maintenance and Incidental)

1. **Description of Activity**

The listed facilities are currently under Surveillance and Maintenance (S&M) status, meaning active processing has ceased with radioactive feed materials no longer brought in. Surveillances and maintenance activities are performed in these facilities including, but not limited to minor activities such as exterior and interior inspections; checking for door security, for any unauthorized building intrusions, and for structural integrity; water intrusion cleanup; waste handling/removal; maintaining radiological airborne control zones; animal or insect intrusion abatement; maintaining operating systems and building integrity, eliminating utilities when possible; identifying and reducing hazards; and housekeeping. The primary ventilation systems and associated record sampling systems operate at each facility as described in the Hanford Site Air Operating Permit.

At certain times to support these various S&M activities, or related to maintenance or replacement-in-kind, any one of these primary ventilation systems may be shut down for a period up to or exceeding two days (48 consecutive hours) duration.

The three ventilation systems which may be shut down are: 332 REDOX, 402 B-Plant, 369 PUREX.

2. **Controls**

It was agreed that an As Low As Reasonably Achievable Control Technology (ALARACT) demonstration is appropriate to address control and monitoring of potential radioactive air emissions during these extended periods of shutdown exceeding two days.

During periods of pre-planned shutdown of less than two days duration, no additional monitoring or controls are required under the ALARACT. During shutdown periods exceeding two days, the following controls will be implemented:

Inform the Washington Department of Health (WDOH) by telecon or email at the start of each use of this ALARACT action or as soon as it is realized that the systems will be shutdown for more than two days.

To provide assurance that containment of airborne contamination is maintained during the subject periods of shutdown,
Contractor Radiological Control Technicians (RCTs) will perform daily (during normal work days I.e., not weekends or holidays) radiological swipe
surveys on a representative few normally accessible outer facility doors. If an increase in removable (smearable) contamination is detected at any of
these locations during the period of shutdown, notify the WDOH and describe containment measures to be taken.

During the subject periods of shutdown, to avoid situations which might encourage increased diffuse or fugitive emissions, no activities will be
conducted inside the facility except those approved for unfiltered containment in accordance with established Radiological Control criteria.

If the fans are not restarted within the scheduled time discussed with WDOH, WDOH will be contacted, and continued monitoring and/or airborne controls will be discussed.

3. **Monitoring**

It was agreed that an As Low As Reasonably Achievable Control Technology (ALARACT) demonstration is appropriate to address control and monitoring of potential radioactive air emissions during these extended periods of shutdown.

4. **Records/Documentation**

5. **Emission Pathway**

6. **Facility Description**

ALARACT 29.1

242-A EVAPORATOR MAINTENANCE FACILITY SHUTDOWNS

1. **Description of Activity**

   Scope will include planned maintenance facility shutdowns at 242-A Evaporator where electrical power to both 296-A-21 and 296-A-22 stacks are de-energized for greater than 24 hours.

   The process of planned maintenance outages and facility upgrades that require de-energizing both the building stack (296-A-21) and vessel vent (296-A-22) for facility upgrades or maintenance will be performed. Building process areas will have the interior doors sealed with tape to help minimize diffuse and fugitive emissions to facility personnel and the outside ambient atmosphere pursuant to meeting WAC 246-247-130 to meet ALARACT compliance demonstration requirements. If entry to process areas is required then radiological controls will be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual to minimize both time and provide controls for diffuse and fugitive emissions. No facility operational (double shell tank liquid minimization) activities will be performed during the time that neither the 296-A-21 and 296-A-22 stacks are not operating. Radiological containment practices and devices will be employed as applicable per the Containment Selection Guide Attachment A, from the latest revision of TFC-ESHQ-RP_RWP-C-02, Radiological Containment.

2. **Controls**

   a. Work with removable contamination will be contained per the Containment Selection Guide, Attachment A, from the latest revision of TFC-ESHQ-RP_RWP-C-02, Radiological Containment.

   b. HPT coverage as specified in the Radiological Work Permit.

3. **Monitoring**

   a. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual.

4. **Records/Documentation**

   a. Radiological Work Permit

   b. Radiological survey report(s)

5. **Emission Pathway**

   a. Active and passive, point sources and fugitive sources.

6. **Facility Description**

   a. The 242-A Evaporator Facility stacks 296-A-21 and 296-A-22.

ALARACT 30.1

TANK FARM ALARACT DEMONSTRATION FOR STACK EXTENSION AND PASSIVE EMISSION POINT VENTURI

1. **Description of Activity**

This work is for passively ventilated tank that have a breather filter for filtration that require a stack extension to aid chemical vapors in the work space. These filter attachments will be attached, bolted, flanges attached, and welds applied to raise the stack exit height. There is no plan to change the existing breather filter housings other than modification of the downstream and upstream piping simply to aid placement of the stack extension.

The process will be performed using mechanical techniques such as unbolting, drilling, snipping, shearing, cutting, grinding, abrading, or low and high speed sawing, as well as hot works such as cutting torches or welding. Other activities may include installation of instrumentation, test ports, or sample ports. Containment devices are employed as applicable per the Containment Selection Guide, Attachment A, found in the latest revision or TFC-ESHQ-RP-RWP-C-02, Radiological Containment.

If exhaust systems are replaced under the "replacement-in-kind" provision of WAC 246-247 utilizing this ALARACT demonstration, then the abatement controls of the new system must be equivalent or better than those of the system that is replaced.

2. **Controls**

a. Follow ALARACT Demonstration for "Packaging and Transportation of Waste" (ALARACT 4).

b. Follow ALARACT Demonstration for “Size Reduction of Waste Equipment for Disposal” (ALARACT 15).

c. Follow Tank Farm ALARACT Demonstration for “Work on Potentially Contaminated Ventilation System Components” (ALARACT 16).

d. Work with removable contamination will be contained per the latest revision of the Containment Selection Guide, Attachment A found in the latest revision or TFC-ESHQ-RP-RWP-C-02, Radiological Containment.

e. HPT coverage as specified in the Radiological Work Permit.

3. **Monitoring**

a. Radiological monitoring shall be in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual.

b. At a minimum pre and post-job surveys (smears) shall be taken.

4. **Records/Documentation**

a. Radiological Work Permit

b. Radiological Survey Report(s)

5. **Emission Pathway**
   a. Active and passive, point sources and fugitive sources.

6. **Facility Description**
   a. All Tank Farm facilities

Enclosure 4 Air Monitoring Stations

Enclosure 4 Air Monitoring Stations

Table 4-1 Air Monitoring Stations Subject to FF-01 Section 5.0 (as applicable)
(Monitors listed by EDP code, if appropriate, or other identifying indicator)

200W Area	200E Area	100 Areas	600 Area	300 Area	400 Area	Off-Site Dose Calculations
*N155 *N161 *N165 *N168 *N200 *N304 *N433 *N441 *N442 *N449 *N456 *N457 *N550 *N551 *N554 *N555 *N956 *N963 *N964 *N965 *N966 *N974 *N975 *N987 *N994 +200W SE (N901)	*N019 *N158 *N480 *N481 *N498 *N499 *N532 *N559 *N957 *N967 *N968 *N969 *N970 *N972 *N973 *N976 *N977 *N978 *N984 *N985 *N999 +200E SE (N920) +S of 200E (N929) +B Pond (N924)	*N476 *N534 *N535 *N575 *N576 *N577 +100K Area (N900)	*N981	*N130 +300 NE (N902) +300 South Gate (N903) +300 Trench (N904) +300 Water Intake (N905) +300 South West (N918)	+400 E N910 +400 N N911	#Ringold Met Tower (N933) #W End of Fir Road (N934) #Dogwood Met Tower (N935) #Byers Landing (N936) #Battelle Complex (N937) #Horn Rapids Substation (N938) #Prosser Barricade (N939) #Wahluke Slope (N941) #Basin City School (N943) #Leslie Groves-Richland (N944) #Pasco (N945) #Kennewick (N946)

*** Current near-facility monitoring (NFM) network stations**
+ Far field monitoring stations that are utilized to serve NFM purposes
 # monitoring stations used to support annual off-site dose compliance calculations

<u>Clarifications</u>

- "Near-facility" monitoring stations are primarily used as one method for periodic confirmatory measurement (PCM) of potential diffuse/fugitive emissions from nearby Hanford Site sources. Other specified monitoring stations are used to support the off-site dose calculations for demonstrating compliance with the 10 mrem/year standard.

- Specific references to “near facility,” “near field” or similar in the FF-01 (including within individual emission unit licenses) are limited to the stations listed in Table 4-1 or official correspondence updating Table 4-1, excluding those stations identified as being used for annual off-site dose calculations.
- Air monitors used exclusively for CERCLA compliance purposes are not subject to FF-01 requirements.
- For cost-efficiency, Hanford Site air monitors subject to FF-01 Section 5.0 are sometimes utilized for multiple purposes. The operational aspects unrelated to FF-01 compliance will be conducted in a manner that does not prevent the air monitors from operating in compliance with the FF-01 requirements.

Other Air Monitors

The following monitors are recognized as being operated as part of the Public Safety and Resource Protection (PSRP) program for purposes of compliance with DOE orders and are not used to monitor specific sources of radioactive air emissions. The department will be notified when the locations of these monitors change.

Table 4-2 Air Monitoring stations NOT Subject to FF-01 Section 5.0

200W Area	200E Area	100 Areas	600 Area	Perimeter
Army Loop Camp (N930) 200 Tel. Exchange (N931) SW of B/C Crib (N932)		100 N-1325 Crib (N926) 100 D Area (N927) 100F Met Tower (N921)	Hanford Town Site (N922) Gable Mt. (N928) Wye Barricade (N906)	Rattlesnake Springs (N940) S End Vernita Bridge (N942) #Yakima Barricade (N907)