Enclosure 2 to Hanford Site Air Operating Permit, Revision B Issuance

Off Permit Changes

This Enclosure contains:

- A Change History summarizing these Off Permit Changes
- Off Permit Changes
    - AOP Attachment 2, replacing 5 pages containing the Emission Unit Specific License List of Contents (five sheets).
    - AOP Attachment 2, replacing Emission Unit Specific Licenses as detailed in the Change History (123 sheets)

AOP Attachment 2, incorporating these changes, is provided in Enclosure 4.

Changes History for July 2, 2007							
Title	**Type of Change**	**Category**	**ID/NAME**	**Date Changed in License**	**Date of license approval**	**Approval Number**	**Action for AOP**
EU Specific List of Contents	Update			1-Jun-07	5/18/2007	AIR 07-505	Replace Emission Unit Specific License List of Contents (Follows Page 62 "**Enclosure 1 Emission Unit Specific License**")
241-S-102	Revision	NOC 694	EU 57	1-Jun-07	5/18/2007	AIR 07-505	Replace all of EU 57
241-S-102	Revision	NOC 694	EU 58	1-Jun-07	5/18/2007	AIR 07-505	Replace all of EU 58
241-S-102	Revision	NOC 694	EU 134	1-Jun-07	5/18/2007	AIR 07-505	Replace all of EU 134
Sitewide Vented Container Storage	Revision	NOC 641	EU 448 Vented Containers	2-Jul-07	7/2/2007	AIR 07-701	Replace all of EU 448
241-S-102	Revision	NOC 694	EU 486 200 Area Diffuse/Fugitive	1-Jun-07	5/18/2007	AIR 07-505	Replace all of EU 486
Diffuse/Fugitive	New Approval	Emission Unit	EU 1185 - 361 Building (NOC ID 657)	1-Jun-07	5/16/2007	AIR 07-503	Insert new emission unit 1185 after EU 1183

Emission Unit Specific License List of Contents

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	Each radionuclide that could contribute greater than 10% of the potential TEDE	Continuous

Sampling Requirements Record sample collected biweekly

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 or continuously.

This Emission Unit has 3 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Installation and Operation of Waste Retrieval Systems in Single-Shell Tank (SST) 241-S-112	AIR 06-1041	10/5/2006	686

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-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 7.51E+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 Salt Cake Dissolution Retrieval Demonstration Project in SST 241-S-112 uses water that is introduced in a controlled fashion to dissolve and mobilize solids in the tank. The resulting solution is then pumped and transferred to the Double-Shell Tank (DST) system. A portable exhauster will provide active ventilation for some dissolution activities and all waste transfer activities until structural safety considerations force shutdown, at which time passive ventilation shall be used.

The following activities will be performed :

Pit

a. Opening the 241-S-112 Condenser Pit to remove the old cover plate and install a new cover plate to allow for the connection of a HEPA filter to the exhauster trunk for a portable exhauster.
b. Enter 241-S-C Valve Pit to disconnect the existing 241-S-112 HIHTL.
c. Enter the 241-S-109 Valve Pit to remove the existing HIHTL that is no longer needed.
d. Accessing the 241-S-112A Central Pump Pit to:
   - Install an instrument manifold,
   - Install a transfer pump, and
   - Replacement of the existing HIHTL that is not needed for this project with a new HIHTL.
e. Enter the 241-S-A Valve Pit to:
   - Connect the hose-in-hose transfer line (HIHTL) from the 241-S-112 Tank to the DST receiver tank, and
   - Install the leak detection hardware.

Pit work shall be performed in accordance with ALARACT 6 "TWRS ALARACT Demonstration for Pit Access" and ALARACT 14 "TWRS ALARACT Demonstration for Pit Work".

Soil Excavation

a. Excavation of soil inside the tank farm for the installation of an electrical and instrumentation conduit to monitor transfer progress.
b. Excavation of soil outside the tank farm for conduit and transformer installation.
c. Excavation of soil inside the tank farm for installation of a new raw water header installed between the 241-SY Tank Farm and the 241-S Tank Farm to the 241-S-112 Tank.
d. Installation of a HIHTL to convey waste from Tank 241-S-112 to the DST transfer system.

Soil excavation shall be performed in accordance with ALARACT 5 "TWRS ALARACT Demonstration for Soil Excavation (using hand tools)".

In-Tank Equipment

a: Installation of various motor controlled spray devices into (3) risers near the outside perimeter of the tank and an automatic indexing spray device will be installed on a centrally located riser.
b. Remove Liquid Observation Well (LOW).
c. Installation of Stilwell (Level Monitoring Device protection).

Work shall be performed in accordance with ALARACT 1 "TWRS ALARACT Demonstration for Riser Preparation/Opening" and ALARACT 13 "TWRS ALARACT Demonstration for Installation, Operation and Removal of Tank Equipment".

Water Addition/ Dilution

- Installation of a new heat traced and insulated raw water line installed between the 241-S Tank Farm and the 241-SY Tank Farm to the water distribution skid on top of Tank 241-S-112.

Water addition and dilution for salt-cake dissolution shall use portable exhausters for active ventilation when water addition flow rate is above 80 gallons per minute, at less than 80 gallons per minute salt cake dissolution shall use either a breather HEPA filter for passive ventilation, or active ventilation.

Waste Transfer

- Installation of a progressive cavity pump and supporting equipment to recover and transport waste from Tank 241-S-112 to the DST System.

Waste transfer activities shall use portable exhausters for active ventilation until structural safety considerations force shutdown, at which time passive ventilation shall be used.
The major components of the exhauster are; stack, glycol heaters, 1 pre-filter, 2 HEPA filters, 1 exhaust fan, sampling system and a demister which is determined to be optional.

Other

- Removal of the Standard Hydrogen Monitoring Probe.

The completion of tank retrieval may also be aided by a Remote Water Lance (RWL) that is a high pressure water device, or hydrolaser. The system will consist of both ex-tank and in-tank components. The ex-tank components will be comprised of; high pressure water skid, operating controls, cables and hoses. The in-tank components will be comprised of; umbilical, in-tank vehicle, high pressure nozzle(s).

The high pressure water skid 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 6 to 15 gpm. The operating controls will be located in a control trailer outside of the farm fence. The cables and hoses will connect the hydraulically powered in-tank vehicle with the ex-tank controls and water skid via the umbilical. The in-tank vehicle will house one to four high pressure water nozzles. The RWL will be operated with the nozzle end submerged to avoid aerosols in the tank. A rupture disc will be used to prevent reaching pressures above 37,000 psig.

The in-tank vehicle, with umbilical, will be deployed through a 12 inch riser in tank 241-S-112 and will weigh on the order of 1,000 pounds plus the weight of the umbilical. A crane will be used to lower the vehicle and the full length of umbilical down into the tank. After the in-tank vehicle and umbilical are in the tank, a cover, with gasket, will be bolted to the riser flange to seal the riser opening. The equipment will be operated outside the tank farm fence.

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

Ac - 227	6.12E-03	Am - 241	7.24E+01	Am - 243	7.60E+01
Ba - 137 m	2.14E+05	C - 14	3.59E+01	Cd - 109	2.26E+02
Cm - 242	1.14E-02	Cm - 243	5.63E-01	Cm - 244	1.35E+01
Co - 60	6.47E+01	Cs - 134	5.68E-01	Cs - 137	2.26E+05
Eu - 152	1.02E+01	Eu - 154	2.05E+02	Eu - 155	1.96E+02
H - 3	3.08E+02	I - 129	8.43E-01	Nb - 93 m	5.09E+01
Ni - 59	1.08E+01	Ni - 63	9.97E+02	Np - 237	1.56E+00
Pa - 231	1.59E-02	Pu - 238	8.10E+00	Pu - 239	6.08E+01
Pu - 240	9.36E+00	Pu - 241	5.78E+01	Pu - 242	4.16E-04
Ra - 226	5.98E-04	Ra - 228	8.46E-02	Ru - 106	1.84E-04
Sb - 125	1.01E+02	Se - 79	1.73E+00	Sm - 151	4.27E+04
Sn - 126	7.73E+00	Sr - 90	1.07E+05	Tc - 99	2.47E+02
Th - 229	4.50E-03	Th - 232	1.35E-03	U - 232	2.78E-01
U - 233	7.11E+00	U - 234	4.65E+00	U - 235	2.01E-02
U - 236	2.51E-02	U - 238	4.52E-01	Y - 90	1.07E+05
Zr - 93	6.26E+01				

4) Equipment removal and monitoring (pre and post-job surveys) shall be performed in accordance with ALARACT 13; equipment disposition shall be performed in accordance with ALARACT 4 and 15.

5) Radiological monitoring shall be performed in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual.

6) The Annual Possession Quantity and potential-to-emit to the MEI shall be tracked on a WDOH approved log.

7) The differential pressure across the demister, prefilter, primary HEPA filter, and secondary HEPA filter shall be monitored, recorded and tracked twice a shift during operation of the hydrolaser.

8) The dose rate on the prefilter, primary HEPA filter, and secondary HEPA filter shall be monitored, recorded, and tracked twice a shift during operation of the hydrolaser.

9) 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%.

10) The operation of the hydrolaser may occur with the nozzle assemblies above or below the waste surface depending on the mobilization effort desired.

11) Monitor and record the digital readout on the CAM unit one per shift during hydrolaser operation.

12) After two weeks of operation of the hydrolaser, provide WDOH with:
    a. The differential pressure readings across the demister, prefilter, primary HEPA filter, and secondary HEPA filter.
    b. Dose rate readings on the prefilter, primary HEPA filter, and secondary HEPA filter.
    c. Digital readout from the CAM.

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 1.80E-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 8.40E+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 salt cake dissolution activity associated with 241-S-102 shall include the following: pit work, soil excavation, in-tank equipment installation/removal, water dilution, and waste transfers.

Pit Work (Diffuse and Fugitive):

- Open the 241-S-102B Distributor pit and cut flange in riser with hold saw or plasma cutter, to install instrumentation manifold and new progressive cavity transfer pump (ALARACT 1, 6, 12, 13, 14);
- Open the two 241-S-102 Condenser pits to replace two existing cover plates with new cover plates. Connect the passive breather filter assembly and connect the trunk of the portable exhauster (ALARACT 4, 6, 14);
- Open the 241-S-A Valve pit, and connect the HIHTL from the 241-S-102 tank to the DST system (ALARACT 6, 14).

Soil Excavation (Diffuse and Fugitive):

- Excavate trenches for tie-in of instrumentation and power systems (ALARACT 5);
- Excavate for HIHTL placement from 241-S-102 to 241-S-A Valve pit (ALARACT 5).

Other Equipment Installation/Removal (Diffuse and Fugitive):

- Install motor controlled spray devices in three risers near the outside perimeter of tank 241-S-102 (ALARACT 1, 13);
- Install automatic spray indexing device in a central riser (ALARACT 1, 13);
- Remove motor controlled and automatic spray indexing devices if necessary (ALARACT 1, 13);
- Place water distribution skid and connect to the raw water header between 241-SY and 241-S tank farms. Connect water distribution skid to spray devices.
- Remove standard hydrogen monitoring system vapor probe (ALARACT 4, 15, 13);
- Place and hook up exhauster and exhauster system;
- Remove unused flammable gas cabinet (per Tank Farm Radcon Control Manual, HNF 5183);
- Place Field Instrument Electrical Skid and connect associated cabling;
- Install stilling well for Enraf Liquid Indicating Transmitter (ALARACT 1, 13);
- Install camera monitoring system (ALARACT 1,13);
- Remove Liquid Observation Well if necessary (ALARACT 1, 13).

Water Dilution and Waste Transfer:

- Water shall be sprayed onto the surface of the in-tank salt cake to dissolve the cake;
- A Remote Water Lance (RWL) may be used at pressures not to exceed 37,000 psig at a flow rate of 6 to 15 gallons per minute. The RWL will be operated with the nozzle submerged.
- A High Pressure Mixer (HPW) may be used at pressures not to exceed 37,000 psig at at flow rate of 4 to 18 gallons per minute.

- The new progressive cavity pump and HIHTL shall be used to transfer waste from tank 241-S-102 to the DST (ALARACT 11);
- Operation and maintenance of the portable exhauster(s).

Waste Transfer (S102):

- The new progressive cavity pump and HIHTL shall be used to transfer waste from tank 241-S-102 to the DST (ALARACT 11).

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 water 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 system 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 the 6 to 15 gpm for the RWL. The operating controls will be located in a control trailer outside of the tank farm fence. The cables and hoses will connect hydraulically powered in-tank vehicles with ex-tank controls and water skid via the umbilical. The HPM consists of an adjustable height pipe with tow 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 vebicle will house one to four high pressure water nozzles. The RWL will be operated with the nozzle and submerged to avoid aerosols in the tank. A rupture disc will be rised to prevent reaching pressures above 37,000 pig.

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

Ac - 227	1.34E-03	Am - 241	1.23E+02	Am - 243	4.20E-03
Ba - 137 m	2.41E+05	C - 14	4.78E+01	Cd - 113 m	6.95E+01
Cm - 242	3.02E-01	Cm - 243	2.41E-02	Cm - 244	2.17E-01
Co - 60	1.76E+01	Cs - 134	3.54E-01	Cs - 137	2.55E+05
Eu - 152	3.50E+00	Eu - 154	2.46E+02	Eu - 155	2.70E+02
H - 3	2.09E+02	I - 129	6.81E-01	Nb - 93 m	1.39E+01
Ni - 59	3.00E+00	Ni - 63	2.75E+02	Np - 237	1.30E+00
Pa - 231	4.82E-03	Pu - 238	2.96E+00	Pu - 239	1.15E+02
Pu - 240	1.90E+01	Pu - 241	1.49E+02	Pu - 242	1.14E-03
Ra - 226	2.47E-04	Ra - 228	8.89E-02	Ru - 106	5.74E-05
Sb - 125	3.18E+01	Se - 79	3.88E-01	Sm - 151	1.30E+04
Sn - 126	2.35E+00	Sr - 90	9.29E+04	Tc - 99	2.17E+02
Th - 229	2.20E-03	Th - 232	9.50E-03	U - 232	1.42E+00
U - 233	5.83E+00	U - 234	1.81E+00	U - 235	7.35E-02
U - 236	5.63E-02	U - 238	1.65E+00	Y - 90	9.29E+04
Zr - 93	1.90E+01				

4) Monthly checks shall be performed on the exhaust duct to ensure there is no degradation of the ductwork or leakage at the connection points [WAC 246-247-040(5), -060(5)].

5) The Annual Possession Quantity and Potential-to-Emit to the MEI shall be logged and retained [WAC 246-247-040(5), -060(5)].

6) The portable exhauster shall operate continuously when water is being added to the tank via the spray devices. If

structural safety considerations force shutdown of the active ventilation system, WDOH shall be notified prior to shutdown of active ventilation. Passive breather filter ventilation may be used when there is no dilution water delivery via the spray devices [WAC 246-247-040(5), -060(5)].

7) The heater shall have an automatic trip set point below 200 degrees F. [WAC 246-247-040(5), -060(5)]

8) The emission unit monitoring system shall have the following activities performed:[WAC 246-247-040(5)]

a. Inspect pitot tube systems for leaks, at least annually.
b. Inspect nozzles for alignment, presence of deposits, damage to sharp-edged nozzles, or other potentially degrading factors (corrosion, physical damage, etc) at least annually.
c. Check transport lines and if visible deposits are present perform cleaning, at least annually.
d. Checks to ensure the tightness of all fittings and connections as well as a leak test of the sample system, at least annually.
e. Check the response of stack flow rate monitoring and control system at least quarterly.
f. A functional/calibration check of monitoring system instrumentation shall be performed at least annually.

[WAC 246-247-040(5), -060(5)]

9) 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 246-247-040(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 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, not to exceed 1200 psi, 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.

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) 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 inservice 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.

5) All ductwork connections shall have a radiological survey performed monthly to ensure ductwork connections are not degrading.

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

7) All receiver tanks (including waste retrieval process tanks for tank TRU retrieval (stagging) 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.

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

9) During waste retrieval operations liquid shall be introduced through sluicing and saltcake dissolution nozzles at a pressure not to exceed 1200 psig, and the nozzle shall be at least five inches from the waste surface.

10) 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%.

11) 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.

12) 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.

13) The annual possession quantity shall be tracked on a WDOH approved log.

14) The differential pressure readings for the pre-filters and both stages of HEPA filters shall be monitored, recorded and trended daily. Action levels shall be developed and provided to WDOH for when actions will be taken to assure the pre-filters and HEPA filters will be operated within their design parameters.

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

Emission Unit ID: 58

200 W-296P044-001

296-P-44

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	Each radionuclide that could contribute greater than 10% of the potential TEDE	Continuous

Sampling Requirements Record sample collected biweekly

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 or continuously.

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

Project Title	Approval #	Date Approved	NOC_ID
241-S-102 Installation and Operation of Waste Retrieval Systems	AIR 07-505	5/18/2007	694

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 1.80E-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 8.40E+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 salt cake dissolution activity associated with 241-S-102 shall include the following: pit work, soil excavation, in-tank equipment installation/removal, water dilution, and waste transfers.

Pit Work (Diffuse and Fugitive):

- Open the 241-S-102B Distributor pit and cut flange in riser with hold saw or plasma cutter,

to install instrumentation manifold and new progressive cavity transfer pump (ALARACT 1, 6, 12, 13, 14);
- Open the two 241-S-102 Condenser pits to replace two existing cover plates with new cover plates. Connect the passive breather filter assembly and connect the trunk of the portable exhauster (ALARACT 4, 6, 14);
- Open the 241-S-A Valve pit, and connect the HIHTL from the 241-S-102 tank to the DST system (ALARACT 6, 14).

Soil Excavation (Diffuse and Fugitive):

- Excavate trenches for tie-in of instrumentation and power systems (ALARACT 5);
- Excavate for HIHTL placement from 241-S-102 to 241-S-A Valve pit (ALARACT 5).

Other Equipment Installation/Removal (Diffuse and Fugitive):

- Install motor controlled spray devices in three risers near the outside perimeter of tank 241-S-102 (ALARACT 1, 13);
- Install automatic spray indexing device in a central riser (ALARACT 1, 13);
- Remove motor controlled and automatic spray indexing devices if necessary (ALARACT 1, 13);
- Place water distribution skid and connect to the raw water header between 241-SY and 241-S tank farms. Connect water distribution skid to spray devices.
- Remove standard hydrogen monitoring system vapor probe (ALARACT 4, 15, 13);
- Place and hook up exhauster and exhauster system;
- Remove unused flammable gas cabinet (per Tank Farm Radcon Control Manual, HNF 5183);
- Place Field Instrument Electrical Skid and connect associated cabling;
- Install stilling well for Enraf Liquid Indicating Transmitter (ALARACT 1, 13);
- Install camera monitoring system (ALARACT 1,13);
- Remove Liquid Observation Well if necessary (ALARACT 1, 13).

Water Dilution and Waste Transfer:

- Water shall be sprayed onto the surface of the in-tank salt cake to dissolve the cake;
- A Remote Water Lance (RWL) may be used at pressures not to exceed 37,000 psig at a flow rate of 6 to 15 gallons per minute. The RWL will be operated with the nozzle submerged.
- A High Pressure Mixer (HPW) may be used at pressures not to exceed 37,000 psig at at flow rate of 4 to 18 gallons per minute.
- The new progressive cavity pump and HIHTL shall be used to transfer waste from tank 241-S-102 to the DST (ALARACT 11);
- Operation and maintenance of the portable exhauster(s).

Waste Transfer (S102):

- The new progressive cavity pump and HIHTL shall be used to transfer waste from tank 241-S-102 to the DST (ALARACT 11).

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 water 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 system 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 the 6 to

15 gpm for the RWL. The operating controls will be located in a control trailer outside of the tank farm fence. The cables and hoses will connect hydraulically powered in-tank vehicles with ex-tank controls and water skid via the umbilical. The HPM consists of an adjustable height pipe with tow 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 vebicle will house one to four high pressure water nozzles. The RWL will be operated with the nozzle and submerged to avoid aerosols in the tank. A rupture disc will be rised to prevent reaching pressures above 37,000 pig.

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

Ac - 227	1.34E-03	Am - 241	1.23E+02	Am - 243	4.20E-03
Ba - 137 m	2.41E+05	C - 14	4.78E+01	Cd - 113 m	6.95E+01
Cm - 242	3.02E-01	Cm - 243	2.41E-02	Cm - 244	2.17E-01
Co - 60	1.76E+01	Cs - 134	3.54E-01	Cs - 137	2.55E+05
Eu - 152	3.50E+00	Eu - 154	2.46E+02	Eu - 155	2.70E+02
H - 3	2.09E+02	I - 129	6.81E-01	Nb - 93 m	1.39E+01
Ni - 59	3.00E+00	Ni - 63	2.75E+02	Np - 237	1.30E+00
Pa - 231	4.82E-03	Pu - 238	2.96E+00	Pu - 239	1.15E+02
Pu - 240	1.90E+01	Pu - 241	1.49E+02	Pu - 242	1.14E-03
Ra - 226	2.47E-04	Ra - 228	8.89E-02	Ru - 106	5.74E-05
Sb - 125	3.18E+01	Se - 79	3.88E-01	Sm - 151	1.30E+04
Sn - 126	2.35E+00	Sr - 90	9.29E+04	Tc - 99	2.17E+02
Th - 229	2.20E-03	Th - 232	9.50E-03	U - 232	1.42E+00
U - 233	5.83E+00	U - 234	1.81E+00	U - 235	7.35E-02
U - 236	5.63E-02	U - 238	1.65E+00	Y - 90	9.29E+04
Zr - 93	1.90E+01				

4) Monthly checks shall be performed on the exhaust duct to ensure there is no degradation of the ductwork or leakage at the connection points [WAC 246-247-040(5), -060(5)]].

5) Once the portable exhauster system is connected to tank 241-S-102, 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), -060(5)].

6) The Annual Possession Quantity and Potential-to-Emit to the MEI shall be logged and retained [WAC 246-247-040(5), -060(5)].

7) The portable exhauster shall operate continuously when water is being added to the tank via the spray devices. If structural safety considerations force shutdown of the active ventilation system, WDOH shall be notified prior to shutdown of active ventilation. Passive breather filter ventilation may be used when there is no dilution water delivery via the spray devices [WAC 246-247-040(5), -060(5)].

8) The heater shall have an automatic trip set point below 200 degrees F. [WAC 246-247-040(5), -060(5)]

9) The emission unit monitoring system shall have the following activities performed:

a. Inspect pitot tube systems for leaks, at least annually.
b. Inspect nozzles for alignment, presence of deposits, damage to sharp-edged nozzles, or other potentially degrading factors (corrosion, physical damage, etc) at least annually.
c. Check transport lines and if visible deposits are present perform cleaning, at least annually.
d. Checks to ensure the tightness of all fittings and connections as well as a leak test of the sample system, at least annually.
e. Check the response of stack flow rate monitoring and control system at least quarterly.
g. A functional/calibration check of monitoring system instrumentation shall be performed at least annually.

[WAC 246-247-040(5), -060(5)]

10) 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 246-247-040(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 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, not to exceed 1200 psi, 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.

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) 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 inservice 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.

5) All ductwork connections shall have a radiological survey performed monthly to ensure ductwork connections are not degrading.

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

7) All receiver tanks (including waste retrieval process tanks for tank TRU retrieval (stagging) 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.

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

9) During waste retrieval operations liquid shall be introduced through sluicing and saltcake dissolution nozzles at a pressure not to exceed 1200 psig, and the nozzle shall be at least five inches from the waste surface.

10) 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%.

11) 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.

12) 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.

13) The annual possession quantity shall be tracked on a WDOH approved log.

14) The differential pressure readings for the pre-filters and both stages of HEPA filters shall be monitored, recorded and trended daily. Action levels shall be developed and provided to WDOH for when actions will be taken to assure the pre-filters and HEPA filters will be operated within their design parameters.

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

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: 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: 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)		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.

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

Project Title	Approval #	Date Approved	NOC_ID
241-S-102 Installation and Operation of Waste Retrieval Systems	AIR 07-505	5/18/2007	694

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 1.80E-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 8.40E+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 salt cake dissolution activity associated with 241-S-102 shall include the following: pit work, soil excavation, in-tank equipment installation/removal, water dilution, and waste transfers.

Pit Work (Diffuse and Fugitive):

- Open the 241-S-102B Distributor pit and cut flange in riser with hold saw or plasma cutter,

to install instrumentation manifold and new progressive cavity transfer pump (ALARACT 1, 6, 12, 13, 14);
- Open the two 241-S-102 Condenser pits to replace two existing cover plates with new cover plates. Connect the passive breather filter assembly and connect the trunk of the portable exhauster (ALARACT 4, 6, 14);
- Open the 241-S-A Valve pit, and connect the HIHTL from the 241-S-102 tank to the DST system (ALARACT 6, 14).

Soil Excavation (Diffuse and Fugitive):

- Excavate trenches for tie-in of instrumentation and power systems (ALARACT 5);
- Excavate for HIHTL placement from 241-S-102 to 241-S-A Valve pit (ALARACT 5).

Other Equipment Installation/Removal (Diffuse and Fugitive):

- Install motor controlled spray devices in three risers near the outside perimeter of tank 241-S-102 (ALARACT 1, 13);
- Install automatic spray indexing device in a central riser (ALARACT 1, 13);
- Remove motor controlled and automatic spray indexing devices if necessary (ALARACT 1, 13);
- Place water distribution skid and connect to the raw water header between 241-SY and 241-S tank farms. Connect water distribution skid to spray devices.
- Remove standard hydrogen monitoring system vapor probe (ALARACT 4, 15, 13);
- Place and hook up exhauster and exhauster system;
- Remove unused flammable gas cabinet (per Tank Farm Radcon Control Manual, HNF 5183);
- Place Field Instrument Electrical Skid and connect associated cabling;
- Install stilling well for Enraf Liquid Indicating Transmitter (ALARACT 1, 13);
- Install camera monitoring system (ALARACT 1,13);
- Remove Liquid Observation Well if necessary (ALARACT 1, 13).

Water Dilution and Waste Transfer:

- Water shall be sprayed onto the surface of the in-tank salt cake to dissolve the cake;
- A Remote Water Lance (RWL) may be used at pressures not to exceed 37,000 psig at a flow rate of 6 to 15 gallons per minute. The RWL will be operated with the nozzle submerged.
- A High Pressure Mixer (HPW) may be used at pressures not to exceed 37,000 psig at at flow rate of 4 to 18 gallons per minute.
- The new progressive cavity pump and HIHTL shall be used to transfer waste from tank 241-S-102 to the DST (ALARACT 11);
- Operation and maintenance of the portable exhauster(s).

Waste Transfer (S102):

- The new progressive cavity pump and HIHTL shall be used to transfer waste from tank 241-S-102 to the DST (ALARACT 11).

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 water 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 system 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 the 6 to

15 gpm for the RWL. The operating controls will be located in a control trailer outside of the tank farm fence. The cables and hoses will connect hydraulically powered in-tank vehicles with ex-tank controls and water skid via the umbilical. The HPM consists of an adjustable height pipe with tow 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 vebicle will house one to four high pressure water nozzles. The RWL will be operated with the nozzle and submerged to avoid aerosols in the tank. A rupture disc will be rised to prevent reaching pressures above 37,000 pig.

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

Am - 241	1.79E-03	Cs - 137	1.49E-05	Sr - 90	1.96E-03

4) The total abated emission limit for S102 (passive ventilation mode) under this Notice of Construction is limited to 3.0 E-04 to the Maximally Exposed Individual. The total unabated emission limit on the Potential-to-Emit for S102 (passive ventilation mode) under this Notice of Construction is limited to 3.0 E-02 mrem/year to the Maximally Exposed Individual [WAC 246-247-040(5), -060(5)].

5) Radiological monitoring shall be performed in accordance with the latest revision of HNF-5183, Tank Farms Radiological Control Manual. [WAC 246-247-040(5), -060(5)]

6) The tank shall be ventilated through the passive breather filter (consisting of a single HEPA filter) only when no water is being added to the tank via the spray devices. If structural safety considerations force shutdown of the active ventilation system, WDOH shall be notified prior to resumption of spray water addition. [WAC 246-247-040(5), -060(5)]

7) 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 246-247-040(5), -060(5)]

Emission Unit ID: 448

Hanford Sitewide Vented Containers

Vented Containers

This is a MINOR, PASSIVELY ventilated emission unit.

PTRAEU

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)	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 notifiy 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: 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
Tank Waste Remediation System Vadose Zone Characterization	AIR 06-1003	10/5/2006	635

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, use of the closed end probe and the cone penetrometer, 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. 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 with 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.

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 5.63E-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.

At the WRAP FACILITY--
Examining, assaying, characterizing, treating, verifying, and repackaging solid radioactive material and mixed waste to enable treatment, storage, or disposal of 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 millirem per hour. CH containers are defined as packages having surface dose rates of less than 200 millirem per hour. Remote-handled (RH) containers (i.e., containers where the external surface dose rate is equal to or greater than 200 millirem per hour) also are processed and stored at WRAP in accordance with the approved safety analysis.

At SHIPPING AND RECEIVING (200 Area Diffuse/Fugitive Emissions)--
Containers delivered to and transferred/shipped from the shipping and receiving shall be unloaded, visually inspected, bar code labeled, and radiologically surveyed with information pertaining to each container entered into the data management system.

Following visual inspection, transfer incoming drums to the NDE/NDA area for further characterization using the process described for the NDE/NDA below.

Once characterized, verified, and/or certified, the certified TRU waste must be loaded into a transuranic package transporter (TRUPACT-2) shipping cask for shipment to the Waste Isolation Pilot Plant (WIPP) in New Mexico. Verified LLW shall be transferred for disposal onsite. Mixed waste must be moved to an offsite treatment or permitted storage facility, or to an onsite treatment, disposal, and/or storage unit. Radioactive material that fails verification shall be returned to the generator, processed to correct the problem, or sent to another facility for further reprocessing.

During NONDESTRUCTIVE EXAMINATION/NONDESTRUCTIVE ASSAY SYSTEMS
(200 Area Diffuse/Fugitive Emissions)--
The NDE/NDA shall used to examine and to certify LLW, LLMW, TRU, and TRU mixed waste container contents without opening the containers.

In the PROCESS AREA (296-W-4 Emission Unit)--
The process area consists of four glovebox lines: a TRU waste process glovebox, a TRU waste restricted waste management (RWM) glovebox, a LLW process glovebox (with supercompaction capability that also can be used for TRU waste processing), and a LLW RWM glovebox. The following is allowed in the process gloveboxes: drums opened, contents sorted and sampled, if necessary, noncompliant items removed and transferred to the RWM gloveboxes, and remaining compliant waste repackaged into new drums.

Incoming drums generally shall be opened in gloveboxes. However, loosening of a lid or replace a damaged lid outside of a glovebox is allowed.

In the TRANSURANIC WASTE PROCESS LINE--
The TRU waste process glovebox line consists of stainless steel modular gloveboxes bolted together in a linear configuration. Windows shall be gasketed and bolted to the glovebox wall, and gloveports shall be fitted to the glovebox wall and windows to accept push-through type gloves. Glovebox ventilation shall be the once-through type. Air shall be drawn from the process room, through a nontestable high-efficiency process filter, and into the glovebox. The air shall be exhausted from the glovebox through another nontestable high-efficiency process

filter to the combined glovebox exhaust system.

Process operations shall be performed inside of the gloveboxes by using the gloves and/or remote controlled manipulators. Drums shall be loaded into the glovebox through airlock and sealed-type entry systems.

In the TRANSURANIC WASTE RESTRICTED WASTE MANAGEMENT LINE--
The TRU waste RWM glovebox line consists of stainless steel. Window, gloveport, ventilation, and manipulator features shall comply to those described for the TRU waste process line glovebox. Glovebox ventilation shall be the once-through type. Air shall be drawn from the process room, through a nontestable high-efficiency process filter, and into the glovebox. The air shall be exhausted from the glovebox through another nontestable high-efficiency process filter to the combined glovebox exhaust system.

The treatment and repackaging operations that occur in the TRU waste RWM glovebox is limited to the following.

Aerosol cans are depressurized and drained. The drained liquids are treated within the gloveboxes or retained in containers, which are sent to storage outside of the WRAP Facility. Vapors from the aerosol cans shall pass through a series of demisters for removal of entrained liquids, and shall be vented to the glovebox exhaust.

Miscellaneous inorganic liquids shall be sampled for characterization, neutralized if required, and solidified using stabilizing additives.

Miscellaneous organic liquids shall be sampled for characterization, treated within the gloveboxes or repackaged for transfer to storage facilities pending future treatment.

Corrosive materials shall be neutralized. After neutralization, the materials shall be solidified or loaded out for storage or treatment outside the WRAP Facility.

Other treatment such as mercury amalgamation, stabilization of heavy metals, and macroencapsulation are allowed to be performed.

Radioactive material shall be repackaged to meet acceptance criteria of the receiving facility.

Radioactive material is sampled.

The empty aerosol cans and other treated LLW packages will be loaded into new drums and routed to the LLW process glovebox for compaction or loaded out of the RWM glovebox for storage, disposal, or additional treatment.

In the LOW-LEVEL WASTE PROCESS LINE--
The LLW process glovebox line consists of stainless steel modular gloveboxes bolted together in a linear configuration. Glovebox ventilation shall be of the once-through type. Air shall be drawn from the process room, through a nontestable high-efficiency process filter, and into the glovebox. The air shall be exhausted from the glovebox through another nontestable high-efficiency process filter to the combined glovebox exhaust system.

Drums shall enter the glovebox through an airlock entry system. Noncompliant items shall be bar code labeled and transferred to the LLW RWM glovebox using a reusable transfer system. Compliant waste shall be compacted and repackaged into new drums.

The LLW process glovebox will be modified to support CH-TRU processing, and include the capability for supercompaction. A one-trip drum exit port will be installed on the LLW glovebox. An improved drum tipper will be used to enable sorting capability, and a commercial non-destructive assay system for glovebox material balance control will be installed.

In the LOW-LEVEL WASTE RESTRUCTED WASTE MANAGEMENT PROCESS LINE--

The operations in the LLW RWM process line is limited those as described for the operations in the TRU waste RWM line.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 1.13E+02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	3.41E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

License PTE limit bounds 3.41E-05 Ci/yr 241Am and release fraction of 2E-09 (AIR 99-1006). Any radionuclide on the chart of the nuclides could be encountered during WRAP fugitive emissions 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 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	5.11E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(e)

License PTE limit bounds 5.11E-04 90Sr and release fraction of 2E-09 (AIR 99-1006). Any radionuclide on the chart of the nuclides could be encountered during WRAP fugitive emissions 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 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 notifiy 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.

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

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notifiy 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 2.40E-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 proposed activities involve transitioning the PFP Complex to a state of low-risk, low-cost, long-term surveillance and maintenance pending final disposition. All work would be performed in accordance with the approved radiological control procedures and as low as reasonably achievable (ALARA) program requirements as implemented by the project radiological control manual, as amended. These requirements would be carried out through the activity work packages and associated radiological work permits.

This activity includes deactivation of buildings and also includes deactivation of systems no longer necessary once stabilization and storage activities and planned legacy hold-up removal have been concluded; removal/disposition of equipment/components; contamination characterization and reduction/mitigation; packaging plutonium holdup material meeting waste acceptance criteria; maintaining and operating muffle furnaces, as needed, for removed plutonium holdup material; and demolition of radiologically contaminated, non-process ancillary buildings.

This activity also includes deactivation activities or activities to prepare and place a facility in a safe and stable condition to minimize the long-term cost of a surveillance and maintenance program while being protective of personnel, the public, and the environment until demolition of former processing and material storage buildings occurs. Deactivation activities would include those actions foreseeably necessary for implementation of the proposed action, such as associated transportation activities, waste removal and disposal, and award of grants and contracts. Specific actions could include the following work involving the potential for radioactive contamination:

- Draining and/or de-energizing systems as appropriate.
- Stabilizing contaminated areas (e.g., with fixatives, sealants, paint).
- Stabilizing or removing gloveboxes, process equipment, tanks, piping, fume hoods, and support equipment.
- Removing fencing and paved parking areas adjacent to facilities.
- Installing alternate environmental monitoring, surveillance, and safety components (e.g., lighting, fencing) if required.
- Removing/packaging radioactive (including equipment calibration sources and laboratory standards) and hazardous materials and waste, including stabilization and/or removal of asbestos, and removal, cleanup, and disposition of polychlorinated biphenyls and other regulated materials and transportation to existing waste management facilities.
- Removing equipment and system components.
- Size-reducing process equipment for disposal as waste.
- Performing physical or chemical treatment processes (e.g., neutralization, solidification, filtering) to render a material less hazardous or to reduce the volume (such processes will not increase the potential release rates)..
- Decontamination to support the excess of surplus equipment.
- Removing excess combustible material.
- Disconnecting utilities, piping, and communication service systems (if the systems are not necessary to maintain required environmental monitoring or building safety systems), including associated excavation.
- Ensuring adequate freeze and heat protection.
- Stabilizing, reducing, combining, or removing waste materials at outdoor locations within the PFP Complex (such processes will not increase the potential release rates provided in this NOC).
- Sealing cracks, gratings, and openings to the building exterior, and repairing roofs.
- Conducting general housekeeping activities (e.g., vacuuming, sweeping, dusting) in areas where radiological contamination is not anticipated (e.g., radiological buffer area) but could be encountered.
- Removing or reducing radioactive or hazardous contamination from facilities and equipment by washing,

heating, chemical or electrochemical action, mechanical cleaning, or other similar techniques.
- Removing residual plutonium holdup material, which might remain throughout the PFP Complex after stabilization activities described in the PFP EIS have been completed; packaging residual plutonium holdup meeting waste acceptance criteria for shipment to an onsite waste management facility, or thermally stabilizing material in muffle furnace operations and packaging for storage in existing PFP Complex vaults.
- Designing and executing changes to utility service systems and/or utility structures necessary to place a facility in surveillance and maintenance, pending demolition.
- Conducting final process operations to stabilize or eliminate residual operational materials or effluents, such as final process runs; cleaning of vessels, valve pits and pipe trenches; installation and operation of small evaporators; flushing piping systems; removal or replacement of filters; and other similar closeout actions.
- Demolishing non-process ancillary buildings.
- Deactivation activities will require actions to provide for continued routine maintenance, repair, and replacement-in-kind of operating portions of PFP.

Other actions include:
- Remove residual plutonium from gloveboxes, filterboxes, equipment, piping, ductwork, and the building surfaces and package for disposition to onsite or offsite disposal facilities.
- Remove internal equipment from gloveboxes and building equipment/system components and package for disposition to onsite or offsite disposal facilities.
- Decontaminate gloveboxes, filterboxes, ductwork, and equipment to less than transuranic levels if possible.
- Remove gloveboxes, filterboxes, ductwork, and equipment and package for disposition to onsite or offsite disposal facilities.
- Decontaminate or fix contamination on building interior and exterior.
- Disconnect utilities and services not necessary for monitoring.
- Perform radiological and chemical characterization in preparation for dismantlement.

In preparation for the proposed transition activities, housekeeping, assays, preventive maintenance, minor decontamination, and reactivation of glovebox access ports would occur.

See additional process description 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 8.90E+02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Am - 241	1.74E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 238/239	1.90E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 240	5.20E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 241	1.50E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	Co - 60	Cs - 137	Np - 237	Pu - 238/239
Pu - 240	Pu - 241	Pu - 242	Sr - 90	U - 233
U - 234	U - 235	U - 236	U - 237	U - 238

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notifiy 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) 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 methods for 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. General technologies/techniques include heating, crushing, size reducing, and cutting. These could involve laboratory analyses and nondestructive assay; chemical cleaning, brushing, washing, scrubbing, vacuum cleaning, and abrasive jetting; using nibblers, shears, circular saws; potentially a remote-operated laser; and other similar methods. It is expected that should new technology become available, such technology would be evaluated for application in the PFP deactivation activities, and could be used if no increase in the potential-to-emit described in this NOC would result.

5) 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 PFP deactivation activities include the following:
- Size reduction of equipment will be by mechanical means and may be accomplished by compaction, disassembling by use of wrenches, nibblers, shears, cutters, grinders, saws, or other similar methods. This equipment may be manually, hydraulically, pneumatically or electrically powered.
- Decontamination methods include: Scraping, sweeping, chemical cleaning, brushing, washing, scrubbing, scabbling, grinding, vacuum cleaning, strippable coatings, washing using wet rags, spraying, abrasive jetting, low pressure and high pressure wash using water and/or chemicals cleaners, use of fixatives and/or physical removal of contamination by use of mechanical means such as 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 a fixative or placing the material in containers, bags and/or wrapping in plastic sheeting, utilizing adhesive tape, heat sealing or mechanical closure to prevent release of radiological contamination.
- Miscellaneous mechanical processes that could be used to support the proposed activity could include threading of piping, use of hot taps on piping, capping and plugging piping using threaded pipe components and 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, installation of hose and tubing connectors, compression fittings, installation and removal of pumps, agitators and process control filters.

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.

Excavation will take place in the PFP Complex to support site stabilization, isolating/blanking utilities, fence removal/installation/relocation, and soil sampling/cleanup. 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. Contaminated soil removed and covered during excavation activities would remain covered until replaced 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 categorical NOCs for sitewide use of the guzzler, a portable temporary radioactive air emissions unit (PTRAEU) exhauster, or HEPA filtered vacuum radioactive air emission unit could be used.
Wastes generated during deactivation would be packaged appropriately. Waste would be generated/packaged throughout the PFP Complex (i.e., in structures with registered stacks, in non-HEPA filtered structures, or outdoors), resulting in filtered releases and/or diffuse and fugitive emissions. Wastes could be placed in various containers such as plastic bags, metal drums, and standard waste boxes. These wastes could be transferred to other locations within the PFP Complex for interim storage and/or repackaging before subsequent transport to approved locations/facilities pending final disposition.

If necessary, personnel decontamination activities would be conducted in the decontamination trailer (DOE/RL-2003-42).

7) The total abated emission limit for the diffuse/fugitive due to general activities is limited to 4.8E-04 mrem/year to the

Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the potential-to-emit for this emission unit is limited to 4.8E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

8) The total abated emission limit for the diffuse/fugitive due to the decontamination trailer is limited to 4.5E-06 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-to-Emit for this emission unit is limited to 4.5E-06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

9) The total abated emission limit for the diffuse/fugitive due to fuel de-inventory is limited to 7.0E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the potential-to-emit for this emission unit is limited to 7.0E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

10) Decontamination Trailers

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 activity is approved to provide decontamination of personnel who have been contaminated with radioactive material. Initial decontamination activities would take place at the location of discovery. If additional decontamination is warranted, personnel would be transferred to the decontamination trailer.

Decontamination activities allowed to be performed at the decontamination trailer include the removal and packaging of contaminated clothing and isolation/removal of skin contamination.

- Before transport of personnel to the decontamination trailer, appropriate measures shall be taken to contain potentially dispersible contamination. To the extent practicable, contaminated clothing would be removed and disposed. Any remaining contamination would be isolated by bagging, taping, or other appropriate means.

- Inside the trailer, any additional contaminated coverings (e.g., coveralls, modesty clothing) would be removed, as appropriate, and packaged (e.g., plastic bags) for disposition. Various means to reduce/remove skin contamination would be used as appropriate. For small areas of contamination, scrubbing with soap and water or chemical cleaner would be used. For gross contamination, shower(s) would be used, followed by scrubbing(s).

All potentially radiological contaminated liquid shall be collected and contained in a catch tank located beneath the decontamination trailer.

The general chemical and physical processes associated with decontamination activities in the decontamination trailer consist of the following:

- On the identification of the need for additional decontamination of personnel, affected individuals would be escorted to the decontamination trailer.
- As appropriate, contaminated clothing, coverings, and/or articles would be removed, packaged, and dispositioned in accordance with the applicable facility waste handling procedures.
- Personnel decontamination processes might include various methods or combinations of cleaning agents and/or chemicals. For example: soap and water; premoistened toweletts, 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 would be transferred from the decontaminated liquid holding tanks and containerized (e.g., packaged in absorbents in drums or placed in drums and carboys) and transported to existing facilities on the Hanford Site for disposal.
- Periodic maintenance inspections of the decontamination trailer are allowed to be performed without containment or portable exhausters.

The decontamination trailers vent directly to the atmosphere. As many as two additional decontamination trailers may be installed to support PFP deactivation.

11) Fuel De-Inventory

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.

PFP will repackage fuel assemblies and/or fuel pins into storage and/or transport containers for staging at PFP. These containers would be loaded via crane operations onto trucks for transport either to storage onsite or to appropriate offsite facilities pending final disposition. Fuel assemblies and/or fuel pins could be mechanically handled by transferring directly to containers (emissions would be considered as diffuse and fugitive if work conducted in locale providing potential for unfiltered emissions). Fuel pins could be transferred to glovebox(es) (emissions discharging through the 291-Z-1 or 296-Z-7 stacks) where they would be size reduced (using bolt cutters or equivalent means) and placed into a container. The pins/containers could be subjected to NDA at any point(s) during repackaging activities.

Minor alterations (e.g., removing interior walls, installation of temporary scaffolding) to the 234-5Z Building would be necessary to support fuel de-inventory operations.

12) Air movers fitted with HEPA-like filters or HEPA Vacs that are used in a manner where the effluent is exhausted to an approved filtered and monitored air space (existing stack or PTRAEU) are not considered as separate emissions units nor as contributing separate release factors so far as estimating PTE for the existing stack or PTRAEU .

13) Air movers fitted with HEPA filters (testable) or HEPA Vacs that are used in a manner where the effluent is exhausted to an occupied air space (1) within the same structure comprising a fugitive emission unit, (2) confined by an effectively closed structure, and (3) has air monitored for personnel protection to assure radioactive airborne contamination within the air space is maintained within standard air purifying respirator (APR) mask protection limits (per 8-hour shift), are not considered separate emission units. Work space air monitoring will withdraw samples as near to the workers as possible without interference with workforce.

14) The assumed PTE is based on a relatively large source term (i.e., assumes one percent of inventory available for diffuse and fugitive emissions). The factor of 100 is addressed for each category of abatement practices or devices as described below.

- Radiological control practices for highly contaminated items or equipment (e.g. glovebox) would involve either wrapping and/or the application of a fixative (e.g., spraying the internals of the glovebox).
- In the case of wrapped items, operational experience with bag-out of highly-contaminated equipment at PFP has demonstrated an abatement factor of well above 100.
- In the case of application of fixatives, particulate material at PFP has been demonstrated to become agglomerated; thus reducing the potential to be released. Operational experience at has shown that applying fixatives provides an abatement factor of well above 100.
- The application of air movers or vacuum devices not under existing NOCs (i.e., guzzler, PTRAEU, or HEPA filtered vacuum radioactive air emission units) would involve use of high-efficiency or HEPA-type filtration as a minimum. This assures the abatement factor of 100 is conservative for these devices.

15) 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.

STABILIZATION/DEACTIVATION/DEMOLITION ACTIVITIES

All work will be performed in accordance with the approved radiological control methods and as low as reasonably achievable (ALARA) program requirements. These requirements shall be carried out through the activity work packages and associated radiological work permits.

Roofs and walls of the permanent buildings and structures will be removed to slab with the foundation remaining. Utilities will be isolated where required and will involve a minimal amount of excavation. As appropriate, connex boxes and existing materials in lay down areas will be recycled, reused, or disposed.

Demolition methods will be selected based on the structural elements to be demolished, remaining radionuclide contamination, location, and integrity of the structures. Demolition methods could include use of an excavator with a hoe-ram, a hydraulic shear with steel shear jaws, concrete pulverizer/breaker jaws, cutters, or mechanical/power saws. Heavy equipment could be used to demolish permanent structures. Heavy equipment such as a track-mounted excavator with bucket and thumb attachment could be used to demolish the walls and roofs of the structures. As

appropriate, dust suppressants shall be used.

Once the structure is brought completely to the ground, heavy equipment such as a front-end loader and the excavator can be used to load the debris into disposal transport trucks (e.g., roll on/roll off boxes or dump trucks). Potentially, disturbed areas would be leveled and stabilized.

If used during these activities, the sitewide Guzzler(tm), a portable temporary radioactive air emissions unit (PTRAEU) exhauster, or high-efficiency particulate air (HEPA) filtered vacuum radioactive air emission unit would be used in accordance with the latest revisions of the NOCs ["Categorical Notice of Construction for use of the Guzzler Vacuum Excavation System for Radiologically Limited Activities on the Hanford Site" or 'Guzzler NOC', DOE/RL-96-75 and DOE/RL-97-50 respectively].

Minor amounts of excavation might take place in the vicinity of the permanent structures to support site stabilization and isolating/blanking utilities. Access to underground piping and cable would be gained by use of an excavator. Manual digging methods with shovels, picks, and rakes also could be used. Contaminated soil removed during excavation activities will be covered until replaced into the hole or otherwise dispositioned.

Excavation activities will be monitored and evaluated. The sitewide Guzzler could be used when evidence of low levels of soil contamination is provided. Backfill will be made with the original material removed or brought in 'clean' soil.

16) The following controls shall be used during the stabilization/deactivation/demolition activities.

1. Health physics technician (HPT) coverage would be provided, as necessary, during all deactivation and excavation activities.

2. Ventilation systems, for the structures that exhaust through registered stacks with HEPA filtration, would be operational during transition activities as practicable. An exception includes shutting down a ventilation system for a short period of time to allow fogging operations or sampling.

3. The existing monitoring systems for the registered stacks would be operational during transition activities.

4. 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 and covered during excavation activities would remain covered until replaced into the excavation or otherwise dispositioned.

5. After leveling, the soil surface radiological contamination levels would be verified to be acceptable per Radiological Control organization guidelines. If contamination is present above identified levels, the soil would be removed and containerized for disposal or covered or fixed to provide containment of the contamination, consistent with radiological work procedures in effect at the time.

6. As appropriate, before starting deactivation activities (such as isolating utilities and piping or dismantling the exhaust system), removable contamination in the affected area(s) would be reduced to ALARA. Measures such as decontamination solutions, expandable foam, fixatives, or glovebags also could be used to help reduce the spread of contamination.

7. If a guzzler, PTRAEU, or HEPA filtered vacuum radioactive air emission unit is used, controls as described in the sitewide guzzler NOC, DOE/RL-96-75 or DOE/RL-97-50, as amended and licensed, would be followed.

8. Field surveys during excavation would identify localized areas of contamination. If contamination levels over 2,000 dpm alpha/100 cm2 [i.e., a ‘hot spot’ (of a few square meters or less) of high alpha surface contamination area] are exceeded, additional surveys would be conducted on the perimeter of the ‘hot spot’ to verify the localized nature. A separate evaluation of the activity against the assumptions of this NOC would be documented to file prior to the activity being performed to ensure overall approved contamination levels are not exceeded.

9. The controls specified in the applicable RWP for the decontamination operations will be considered ALARACT for the decontamination trailer activities.

17) The expected frequency of personnel contamination requiring the use of the decontamination trailer is estimated to be less than 10 times per year. DOH shall be notified if that number is exceeded in any calendar year.

18) All personnel decontamination operations activities shall be conducted under the auspices of radiological control technicians.

19) Radiological surveys during personnel decontamination operations (e.g., smears and hand-held radiation monitoring measurements on the interior/exterior of the decontamination trailer) are also approved as periodic confirmatory measurement (PCM) for this activity. Survey data shall be maintained as part of the air emissions record and will be available for inspection upon request.

20) For purging activities, use of a stand alone vacuum pump fitted with a Nuc-Fil metal HEPA filter is allowed, with the control that the filter flow through the system is limited not to exceed the filter rating. Confirmatory measurement of low emissions will be based on radiological technician field survey of either the down stream side of the HEPA filter or at the outlet of the vacuum pump.

21) 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.

Security enhancement program activities include those actions foreseeably necessary for implementation of the proposed action, such as associated transportation activities, waste removal and disposal, and award of grants and contracts. Specific actions include the following work involving the potential for radioactive contamination:

-Excavations, inside and outside the PFP protected area (PA) to support installation of utilities and security-related devices and structures (e.g., barricades, patrol offices) and relocation of displaced activities. Security enhancement program will require some excavation in areas of potential belowgrade or surface contamination. In addition to excavations for building and structure foundations, it is estimated that approximately 5,000 linear feet of belowgrade ducting will be installed, a portion of the water line will require replacement, and connections to sewer and water lines will be required.

-Modifications to existing structures (e.g., moving walls, doors, railing, security monitoring equipment, electrical equipment upgrades) and/or construction of new buildings (non-radioactive).

-Continued operations at 2736-Z/ZB Buildings for 3013-container packaging systems monitoring and maintenance.

No modifications to the existing abatement equipment associated with registered stacks are allowed.

22) The total abated emission limit for the Diffuse/Fugitive due to security enhancement program excavation activities is limited to 9.6E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the potential-to-emit for this emission unit is limited to 9.6E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

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 notifiy 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.

Project Title	Approval #	Date Approved	NOC_ID
Excavation Activities for the Building of Temporary Construction Facilities and the Main Facilities for the River Protection Project-Waste Treatment Plant (RPP-WTP)	AIR 06-1032	10/5/2006	672

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-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 3.80E-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 excavation activities associated with the building of temporary construction facilities and the main facilities for the River Protection Project-Waste Treatment Plant (RPP-WTP).

Excavation and general grading will be performed for the WTP site, including excavation for the mat foundations, for the four main process facilities: Pretreatment (PT), high-level waste (HLW), low-activity waste (LAW), and LAW pretreatment plant (LPP) areas, including installation of sheet piles, where applicable.

The excavation is limited to the removal of the dune sand, subsurface soil, and excavation to the desired elevation for the founding of structures and slope of the finished site layout. Over excavation is allowed to remove the dune sand if it is found at the exposed subgrade elevation. Excavated soil removed beyond the required footing elevation will be replaced with compacted structural fill, to the required footing elevation.

Conventional methods such as the use of large excavators, scrapers, dozers, backhoes, front-end loaders, or manual digging with shovels or the "clean" guzzler will be used.

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

Alpha - 0	2.19E+00	Beta - 0	9.44E+01

4) After the excavation, containerizing, and removal, of any contaminated soil, the area will be backfilled with clean soil. After backfilling, the area shall be surveyed to verify that radiological contamination levels on the soil surface are less than 5,000 dpm/100 cm2 beta-gamma and less than 100 dpm/100 cm2 alpha. If contamination is present on the surface above these levels, it will be removed and containerized for disposal or covered or fixed to provide containment of the contamination.

Dust shall be controlled by water spraying or other approved methods. The active excavation faces that are exposed for periods of less than 24 hours shall receive dust control measures during excavation operations such as spray applications of water. Excavated areas, and/or stockpiles that will be inactive for periods of greater than 24 hours shall receive dust control measures other than water alone, such as surficial suppressants, or penetrating crusting agents.

5) Excavation activities are allowed to continue if hot specks or "specky" contamination is encountered as long as:

a. The specky contamination estimate is included in the approved emissions log; and
b. The emissions contribution from the specky contamination does not put the total logged emissions estimate over the allowed Annual Possession Quantity. It shall be assumed that hot specks are very small volumes of contamination. The specks shall be removed as they are encountered and containerized for disposal.

6) Excavation activities will be stopped if evenly distributed contamination with detection readings greater than 500,000 dpm/100 cm2 beta-gamma, or greater than 200 dpm/100 cm2 above background alpha is encountered. Excavation will not continue until:

a. A review of the work and encountered conditions has been performed and a plan for managing equipment and personnel in these "contaminated areas" has been addressed.

b. It has been determined that no threat to worker safety or the environment exists.
c. Proper controls (i.e., removal and disposal, water, fixatives, covers, and so on) have been put in place to mitigate any further threat.
d. The sustained wind speed is predicted to be less than 20 miles per hour.
e. The extent of soil contaminated has been fully identified by stakes or other markings and the estimated soil volume contaminated has been logged into the field log book.
f. And the WDOH has been contacted and briefed of the situation.

7) Excavation activities will cease and WDOH shall be contacted if the total soil volume estimated to be contaminated from the field log reaches 4,000 cubic yards. A modification will then be made to the NOC to account for the increased contamination prior to restarting the excavation activities. WDOH shall be notified if more than 443,700 cubic yards of surface dune sand and soil need to be excavated for the WTP facilities using conventional excavation equipment.

8) For the reporting requirements of (WAC 246-247-080(3)), all results of the contamination surveys, emissions estimate logs, and the near field monitoring results must be kept on file as confirmation of low emissions and shall be reported annually in the Hanford Site Air Emissions Report. All periodic confirmatory air samples (PCM) will be collected and analyzed following EPA Method 114.

9) If contaminated soil is detected during routine surveys, controls such as water, fixatives, covers, or windscreens will then be applied, as determined by the Health Physics organization. Spoil piles containing contaminated soil will be segregated from the clean soil. Containerizing spoils for disposal may also be performed. A general radiological work permit shall implement these controls.

10) Periodic Confirmatory Measurements. As the potential unabated offsite dose associated with this activity is calculated to be less than 0.1 mrem/year, in accordance with 40 CFR 61, Subpart H, periodic confirmatory measurements (PCM) shall be made to verify emissions. For this activity the estimated emission levels are too low to measure using conventional stack sampling methods so the PCM shall consist of the following measurement methods:

* Radiological soil contamination surveys shall be used to verify compliance administratively, as the performed surveys shall limit activities to those with a potential-to-emit below the maximum threshold contamination work levels. As the emission estimates are based and calculated from the maximum threshold contamination levels and the maximum volume of contaminated soil, the true emissions shall inherently be below the estimated emissions.

* In the event that soil contamination is discovered during radiological soil surveys, the use of the near field monitoring grid shall consist of the existing 200 East Area near field monitors; an existing PNNL 200 East Area ambient monitor (east of WTP construction area); and the new ambient monitor (near an existing power pole north of WTP construction area).

* Any change to the location of the ambient air monitors must be approved by WDOH.

* In the event that soil contamination is discovered during radiological soil surveys, operation of the two ambient air monitors shall be required during excavation activities. Both WTP ambient air monitors shall run on a 24-hour basis if soil contamination is discovered. WDOH shall be notified within 24 hours if contamination is encountered prior to the WTP ambient air monitors running on the 24-hour basis. WDOH shall be notified when the WTP ambient air monitors are running on the 24-hour basis.

11) The facility must maintain a log in an approved format for this activity to track the total volume of contaminated soil (to ensure that the contaminated soil volumes in conjunction with their respective contamination levels do not exceed the approved estimated potential-to-emit). 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. The emissions log format approval is required prior to startup.

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 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.

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 2.55E-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 4.67E+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 following actions:

Step 1:

- Fix and/or remove contamination and blown in soil/debris in the 241-C-06B heel pit in accordance with ALARACT 4, ALARACT 6, ALARACT 14, and ALARACT 15.
- If necessary, a HEPA vacuum will be used in accordance with the sitewide NOC.
- Remove a heel pit pump out of riser R-13 in the 241-C-06B heel pit in accordance with ALARACT 1, ALARACT 4, ALARACT 6, ALARACT 13, ALARACT 14, ALARACT 15, and ALARACT 16.
- Place conduit in a trench in accordance with ALARACT 5.
- Remove a thermoucouple out of riser R-14 in accordance with ALARACT 1, ALARACT 4, ALARACT 6, ALARACT 13, ALARACT 14, ALARACT 15, and ALARACT 16.
- Install slurry pump for the sluicing operation in riser R-9, R-13 or R-14 in accordance with ALARACT 1, ALARACT 4, ALARACT 6, ALARACT 13, ALARACT 14, ALARACT 15 and ALARACT 16.

Step 2:

- Fix and/or remove any contamination and blown in soil/debris in the 241-C-06C sluice pit in accordance with ALARACT 4, ALARACT 6, ALARACT 14 and ALARACT 15.
- If necessary, a HEPA vacuum will be used per the sitewide NOC.
- Remove the old sluicer and install new sluicer equipment in the R-3 riser, if needed, in accordance with ALARACT 1, ALARACT 4, ALARACT 6, ALARACT 13, ALARACT 14, ALARACT 15 and ALARACT 16.

Step 3:

- Fix and/or remove any contamination and blown in soil/debris in the 241-C-06A pump pit in accordance with ALARACT 4, ALRACT 6, ALARACT 14 and ALARACT 15.
- If necessary, a HEPA vacuum will be used per the sitewide NOC.
- Remove the failed pump equipment out of R-9 and R-6 riser used for prior sluicing operation. in accordance with ALARACT 1, ALARACT 4, ALARACT 6, ALARACT 13, ALARACT 14, ALARACT 15 and ALARACT 16.
- Install new sluicer equipment in the R-6, R-7, R-5 or R-9 riser, if needed, with ALARACT 1, ALARACT 4, ALARACT 6, ALARACT 13, ALARACT 14, ALARACT 15 and ALARACT 16, or use the existing project W-320 sluicing nozzle.
- Place an in-tank closed circuit television camera or television monitoring system in riser R-1, R-7, R-8 and R-14 in accordance with ALARACT 1, ALARACT 4, ALARACT 6, ALARACT 13, ALARACT 14, ALARACT 15 and ALARACT 16.
- Install a new sluicer nozzle in R-7 or R-8 and remove an additional thermocouple in accordance with ALARACT 1, ALARACT 4, ALARACT 6, ALARACT 13, ALARACT 14, ALARACT 15 and ALARACT 16.

Step 4:

- Pump out remaining free liquid in the tank to the DST system through a pump installed in either riser R-9, R-13 or R-14 under passive ventilation in accordance with ALARACT 11.

Step 5: (applies only to the 296-P-47 emission unit)

- Sluice and pump the solids that become a slurry into the DST system using raw water (or recirculated 241-C-106 water) as the sluicing agent. This activity shall only be performed during operation of the 296-P-47 portable exhauster. The emission unit shall be sampled continuously with a shrouded probe. The sample location, shrouded probe assembly, transport line and sample collection shall be qualified in accordance with the requirements of ANSI N13.1-1999.

Step 6:

- After sluicing an "in tank vehicle" (ITV) could be used, if necessary, to collect the remaining tank contents to be slurried through the sluicing pump to bring the tank contents down to <360 cubic feet in volume. This activity shall only be performed during operation of the 296-P-45 portable exhauster. The ITV shall be installed through a riser in accordance with ALARACT 1 and ALARACT 13. The ITV will be used to push the remaining tank material into the center of the tank to be pumped. The ITV shall not move faster than 2 mph. If big chunks of sludge need to be broken, the tracks or plow blade could be used to break up the material so it can be pumped. The "water cannon" on the ITV shall not be used in tank 241-C-106. Upon removal of the tank the ITV shall be decontaminated with in the tank using ultrasonic decontamination and then go through a spray ring.

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

Ac - 227	2.31E-03	Am - 241	2.25E+02	Am - 243	2.20E-03
Ba - 137 m	1.66E+04	C - 14	5.73E-02	Cd - 113 m	1.00E+00
Cm - 242	3.56E-01	Cm - 243	2.81E-02	Cm - 244	6.03E-01
Co - 60	1.40E+00	Cs - 134	7.07E-02	Cs - 137	1.75E+04
Eu - 152	3.28E+00	Eu - 154	2.67E+02	Eu - 155	1.89E+02
H - 3	1.55E+00	I - 129	1.70E-02	Nb - 93 m	1.28E+01
Ni - 59	6.53E+00	Ni - 63	6.08E+02	Np - 237	2.62E-01
Pa - 231	3.37E-03	Pu - 238	3.50E+00	Pu - 239	7.56E+01
Pu - 240	1.54E+01	Pu - 241	1.85E+02	Pu - 242	1.65E-03
Ra - 226	4.10E-04	Ra - 228	3.15E-05	Ru - 106	1.69E-05
Sb - 125	2.83E+00	Se - 79	2.88E-01	Sm - 151	1.19E+04
Sn - 126	2.14E+00	Sr - 90	2.82E+05	Tc - 99	3.14E+00
Th - 229	2.43E-05	Th - 232	2.54E-03	U - 232	5.30E-04
U - 233	2.18E-03	U - 234	4.31E-02	U - 235	1.84E-03
U - 236	7.66E-04	U - 238	4.40E-02	Y - 90	2.82E+05
Zr - 93	1.44E+01				

4) A WDOH approved log shall be used to track total days of liquid pumping under passive ventilation, and shall not exceed 60 days.

5) Periodic confirmatory measurements of the breather filter shall be a monthly smear taken on the downstream side of the breather filter, during sluicing operations. Any positive results above background shall be reported to the WDOH.

6) Prior to pump of liquid from 241-C-106 the breather filter shall be verified to be valved open.

7) The Breather Filter shall be tested annually in-place with a minimum efficiency of 99.95% in accordance with requirements ASME N510 Section 10.

8) Total soil excavated shall not exceed 5000 cubic feet.

9) WDOH approved logs shall be used to track the Annual Possession Quantities for Equipment Removal and the abated offsite dose shall not exceed 6.3E-03 mrem/year.

10) WDOH approved logs shall be used to track the Annual Possession Quantities for Pit Cover Removal and the abated offsite dose shall not exceed 5.96E-06 mrem/year.

11) WDOH approved logs shall be used to track the Annual Possession Quantities for Soil Excavation and the abated offsite dose shall not exceed 1.69E-03 mrem/year.

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.

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.

A fixative shall be applied either 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 to local areas 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.

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 Guzzler excavations in contamination areas will be performed in accordance with the December 18, 1998, WDOH approved Site Wide Guzzler NOC (Air 98-1215), or the most current NOC approved for Guzzler use. Excavation of contaminated soils using heavy equipment shall follow the requirement of Site Wide Guzzler NOC.

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 3.90E-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 7.51E+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 Salt Cake Dissolution Retrieval Demonstration Project in SST 241-S-112 uses water that is introduced in a controlled fashion to dissolve and mobilize solids in the tank. The resulting solution is then pumped and transferred to the Double-Shell Tank (DST) system. A portable exhauster will provide active ventilation for some dissolution activities and all waste transfer activities until structural safety considerations force shutdown, at which time passive ventilation shall be used.

The following activities will be performed :

Pit

a. Opening the 241-S-112 Condenser Pit to remove the old cover plate and install a new cover plate to allow for the connection of a HEPA filter to the exhauster trunk for a portable exhauster.
b. Enter 241-S-C Valve Pit to disconnect the existing 241-S-112 HIHTL.
c. Enter the 241-S-109 Valve Pit to remove the existing HIHTL that is no longer needed.
d. Accessing the 241-S-112A Central Pump Pit to:
   - Install an instrument manifold,
   - Install a transfer pump, and
   - Replacement of the existing HIHTL that is not needed for this project with a new HIHTL.
e. Enter the 241-S-A Valve Pit to:
   - Connect the hose-in-hose transfer line (HIHTL) from the 241-S-112 Tank to the DST receiver tank, and
   - Install the leak detection hardware.

Pit work shall be performed in accordance with ALARACT 6 "TWRS ALARACT Demonstration for Pit Access" and ALARACT 14 "TWRS ALARACT Demonstration for Pit Work".

Soil Excavation

a. Excavation of soil inside the tank farm for the installation of an electrical and instrumentation conduit to monitor transfer progress.
b. Excavation of soil outside the tank farm for conduit and transformer installation.
c. Excavation of soil inside the tank farm for installation of a new raw water header installed between the 241-SY Tank Farm and the 241-S Tank Farm to the 241-S-112 Tank.
d. Installation of a HIHTL to convey waste from Tank 241-S-112 to the DST transfer system.

Soil excavation shall be performed in accordance with ALARACT 5 "TWRS ALARACT Demonstration for Soil Excavation (using hand tools)".

In-Tank Equipment

a: Installation of various motor controlled spray devices into (3) risers near the outside

perimeter of the tank and an automatic indexing spray device will be installed on a centrally located riser.

b. Remove Liquid Observation Well (LOW).
c. Installation of Stilwell (Level Monitoring Device protection).

Work shall be performed in accordance with ALARACT 1 "TWRS ALARACT Demonstration for Riser Preparation/Opening" and ALARACT 13 "TWRS ALARACT Demonstration for Installation, Operation and Removal of Tank Equipment".

Water Addition/ Dilution

- Installation of a new heat traced and insulated raw water line installed between the 241-S Tank Farm and the 241-SY Tank Farm to the water distribution skid on top of Tank 241-S-112.

Water addition and dilution for salt-cake dissolution shall use portable exhausters for active ventilation when water addition flow rate is above 80 gallons per minute, at less than 80 gallons per minute salt cake dissolution shall use either a breather HEPA filter for passive ventilation, or active ventilation.

Waste Transfer

- Installation of a progressive cavity pump and supporting equipment to recover and transport waste from Tank 241-S-112 to the DST System.

Waste transfer activities shall use portable exhausters for active ventilation until structural safety considerations force shutdown, at which time passive ventilation shall be used.
The major components of the exhauster are; stack, glycol heaters, 1 pre-filter, 2 HEPA filters, 1 exhaust fan, sampling system and a demister which is determined to be optional.

Other

- Removal of the Standard Hydrogen Monitoring Probe.

The completion of tank retrieval may also be aided by a Remote Water Lance (RWL) that is a high pressure water device, or hydrolaser. The system will consist of both ex-tank and in-tank components. The ex-tank components will be comprised of; high pressure water skid, operating controls, cables and hoses. The in-tank components will be comprised of; umbilical, in-tank vehicle, high pressure nozzle(s).

The high pressure water skid 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 6 to 15 gpm. The operating controls will be located in a control trailer outside of the farm fence. The cables and hoses will connect the hydraulically powered in-tank vehicle with the ex-tank controls and water skid via the umbilical. The in-tank vehicle will house one to four high pressure water nozzles. The RWL will be operated with the nozzle end submerged to avoid aerosols in the tank. A rupture disc will be used to prevent reaching pressures above 37,000 psig.

The in-tank vehicle, with umbilical, will be deployed through a 12 inch riser in tank 241-S-112 and will weigh on the order of 1,000 pounds plus the weight of the umbilical. A crane will be used to lower the vehicle and the full length of umbilical down into the tank. After the in-tank vehicle and umbilical are in the tank, a cover, with gasket, will be bolted to the riser flange to seal the riser opening. The equipment will be operated outside the tank farm fence.

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

Alpha - 0	2.68E-02	Beta - 0	2.60E-01	Cs - 139	1.45E-05

4) Equipment removal and monitoring (pre and post-job surveys) shall be performed in accordance with ALARACT 13;

equipment disposition shall be performed in accordance with ALARACT 4 and 15.

5) Pit work and monitoring (pre and post-job surveys) shall be performed in accordance with ALARACT 6 and 14; packaging and transportation of waste shall be performed in accordance with ALARACT 14.

6) Soil excavation activities and monitoring (pre and post-job surveys) shall be performed in accordance with ALARACT 5. Not more than 2000 cubic feet of soil shall be removed. The disturbed soil shall not leave the 241-S Tank Farm area.

7) The Annual Possession Quantity and potential-to-emit to the MEI 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 5.90E-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 5.90E-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.

Performing the following modifications to bring select portions of the DST system into conformance with regulatory, safety, and contractual requirements.

The modifications shall be accomplished by performing the following activities:

241-AZ-151 CATCH TANK BYPASS

A new RCRA-compliant condensate distribution system for condensate generated from the existing 241-AZ-702 ventilation system. 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 a 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, 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.

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. A HEPA filter will also be installed above grade. This filter will be connected to the 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 shall 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 shall 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 piping, pumps, valves, instrumentation, and controls. Operator access shall be provided as required (e.g., access ladder, hatch or door in system cover, mid-level grating to support operator). Distribution valves shall be located to provide the ability to use remote valve actuators if required. Freeze protection for the piping, pumps, and valves shall 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 shall be rerouted to the 241-AY tanks and also to the 241-AZ tanks. In addition, the 241-AZ-801A floor drain shall be isolated.

241-AN AND 241-AW CLEAN OUT BOX TRANSFER LINE MODIFICATIONS

Sixteen Clean Out Boxes (COBs) have been identified on transfer lines. These COBs shall have access ports cut into the non-contaminated 12 inch vertical stand pipe, the primary pipes and encasements shall be cut and caps welded in place; and the upper portion of the structure cut off, isolated, and disposed in accordance with ALARACT 15, "Demonstration for Size Reduction of Waste Equipment for Disposal" and ALARACT 4,

"Demonstration for Packaging and Transportation of Waste". This modification will entail approximately 100 one-inch pipe cuts, 20 two-inch pipe cuts, and 10 three-inch pipe cuts. The primary transfer lines and encasement pipes shall be capped on the branch section and welded to the COB structure.

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 a 1/4 inch thick rolled steel plate and mounted on a 12-inch vertical stand pipe. The vertical stand pipe extends about four feet below grade to the slurry transfer line. A concrete anchor block supports the COB, encasement, and transfer pipe.

The sixteen 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

SY TRANSFER LINE MODIFICATIONS

The following transfer lines, SL-177, SN-277, SN-285, SL-180, SN-280, and SN-286 shall be removed, cut into sections, and disposed of in accordance with ALARACT 15 "TWRS ALARACT Demonstration for Size Reduction of Waste Equipment for Disposal", and ALARACT 4, "TWRS ALARACT Demonstration For Packaging and Transportation of Waste". Pit walls shall be core drilled as needed to accommodate the new pipe-in-pipe RCRA compliant configuration.

Pipe trenches shall be excavated to remove and install the new transfer lines. Excavation shall be accomplished with the guzzler and hand digging.

204-AR TRANSFER LINE MODIFICATION

Waste transfer line LIQW-702 shall 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 shall be approximately 10' x 10' x 6'. Demolition of 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 be required for access.

The new encasement section shall be open-ended, upstream of the exterior wall seal plate. The obsolete air purge connection to the existing encasement shall be removed.

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

Ac - 227	1.41E-07	Am - 241	1.82E-01	Am - 243	1.72E-06
Ba - 137 m	4.27E+01	C - 14	1.64E-04	Cd - 113 m	5.09E-03
Cm - 242	3.50E-03	Cm - 243	6.62E-06	Cm - 244	1.11E-04
Co - 60	2.52E-03	Cs - 134	1.30E-04	Cs - 137	4.53E+01
Eu - 152	2.36E-04	Eu - 154	1.02E-02	Eu - 155	1.20E-02
H - 3	1.07E-02	I - 129	3.05E-05	Nb - 93 m	9.15E-04
Ni - 59	5.45E-05	Ni - 63	5.30E-03	Np - 237	1.03E-03
Pa - 231	3.45E-07	Pu - 238	2.98E-04	Pu - 239	4.23E-03
Pu - 240	9.67E-04	Pu - 241	1.93E-02	Pu - 242	1.13E-07

Ra - 226	1.27E-08	Ra - 228	6.84E-06	Ru - 106	4.32E-09
Sb - 125	2.36E-03	Se - 79	1.23E-04	Sm - 151	9.39E-01
Sn - 126	1.70E-04	Sr - 90	1.43E+01	Tc - 99	3.49E-02
Th - 229	2.02E-07	Th - 232	9.02E-07	U - 232	2.18E-05
U - 233	8.95E-05	U - 234	8.06E-05	U - 235	3.11E-06
U - 236	5.81E-06	U - 238	5.92E-05	Y - 90	6.33E+00
Zr - 93	9.61E-04				

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) Guzzler excavation shall be performed in accordance with the latest approved revision of the WDOH approved Guzzler NOC).

7) Required cuts of contaminated piping shall be made inside a glove bag. To perform pipe cuts of contaminated piping without a glove bag piping shall be surveyed/smeared to verify removable contamination levels are equal to or less than 10,000 dpm/100 square centimeters beta/gamma and 200 dpm/100 square centimeters alpha.

8) The Annual Possession Quantity shall be tracked on a WDOH approved 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.

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. 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 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	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	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 notifiy 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.

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 1.80E-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 8.40E+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 salt cake dissolution activity associated with 241-S-102 shall include the following: pit work, soil excavation, in-tank equipment installation/removal, water dilution, and waste transfers.

Pit Work (Diffuse and Fugitive):

- Open the 241-S-102B Distributor pit and cut flange in riser with hold saw or plasma cutter, to install instrumentation manifold and new progressive cavity transfer pump (ALARACT 1, 6, 12, 13, 14);
- Open the two 241-S-102 Condenser pits to replace two existing cover plates with new cover plates. Connect the passive breather filter assembly and connect the trunk of the portable exhauster (ALARACT 4, 6, 14);
- Open the 241-S-A Valve pit, and connect the HIHTL from the 241-S-102 tank to the DST system (ALARACT 6, 14).

Soil Excavation (Diffuse and Fugitive):

- Excavate trenches for tie-in of instrumentation and power systems (ALARACT 5);
- Excavate for HIHTL placement from 241-S-102 to 241-S-A Valve pit (ALARACT 5).

Other Equipment Installation/Removal (Diffuse and Fugitive):

- Install motor controlled spray devices in three risers near the outside perimeter of tank 241-S-102 (ALARACT 1, 13);
- Install automatic spray indexing device in a central riser (ALARACT 1, 13);
- Remove motor controlled and automatic spray indexing devices if necessary (ALARACT 1, 13);
- Place water distribution skid and connect to the raw water header between 241-SY and 241-S tank farms. Connect water distribution skid to spray devices.
- Remove standard hydrogen monitoring system vapor probe (ALARACT 4, 15, 13);
- Place and hook up exhauster and exhauster system;
- Remove unused flammable gas cabinet (per Tank Farm Radcon Control Manual, HNF 5183);
- Place Field Instrument Electrical Skid and connect associated cabling;
- Install stilling well for Enraf Liquid Indicating Transmitter (ALARACT 1, 13);
- Install camera monitoring system (ALARACT 1,13);
- Remove Liquid Observation Well if necessary (ALARACT 1, 13).

Water Dilution and Waste Transfer:

- Water shall be sprayed onto the surface of the in-tank salt cake to dissolve the cake;
- A Remote Water Lance (RWL) may be used at pressures not to exceed 37,000 psig at a flow rate of 6 to 15 gallons per minute. The RWL will be operated with the nozzle submerged.
- A High Pressure Mixer (HPW) may be used at pressures not to exceed 37,000 psig at at flow rate of 4 to 18 gallons per minute.

- The new progressive cavity pump and HIHTL shall be used to transfer waste from tank 241-S-102 to the DST (ALARACT 11);
- Operation and maintenance of the portable exhauster(s).

Waste Transfer (S102):

- The new progressive cavity pump and HIHTL shall be used to transfer waste from tank 241-S-102 to the DST (ALARACT 11).

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 water 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 system 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 the 6 to 15 gpm for the RWL. The operating controls will be located in a control trailer outside of the tank farm fence. The cables and hoses will connect hydraulically powered in-tank vehicles with ex-tank controls and water skid via the umbilical. The HPM consists of an adjustable height pipe with tow 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 vebicle will house one to four high pressure water nozzles. The RWL will be operated with the nozzle and submerged to avoid aerosols in the tank. A rupture disc will be rised to prevent reaching pressures above 37,000 pig.

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

Am - 241	2.53E-02	Sr - 90	2.51E-01

4) ALARACTs 1, 4, 5, 6, 11, 12, 13, 14, 15, and 16 shall be used. [WAC 246-247-040(5), -060(5)]

5) Containments shall be used in removing the hydrogen probe, the motor controlled spray devices, and the automatic spray indexing devices from the tank [WAC 246-247-040(5), -060(5)].

6) Radiological monitoring of all pit openings and pit work shall be performed and documented to ensure that maximum pit surface/pit contents contamination levels remain on average below those assumed in NOC release estimates for these activities:

1.0 E+05 dpm/100 sq. cm. Beta/Gamma
20 dpm/100 sq. cm. Alpha

No more than 10 pit openings shall occur. These shall be tracked and documented. The total surface area of pits opened plus the surface area of pit contents shall not exceed 5,000 square feet.

[WAC 246-247-040(5), -060(5)]

7) Radiological monitoring of all soil excavation work shall be performed and documented to ensure releases remain within releases estimated in the NOC. Soil volume excavated shall be tracked and documented and shall not exceed 1,000 cubic feet. Soil shall be monitored per ALARACT 5. Contamination levels for excavation shall remain on average equal to or less than:

8.0 E -04 dpm/100 sq. cm. Beta
2.0 E+02 dpm/100 sq. cm. Alpha

[WAC 246-247-040(5), -060(5)]

8) The total diffuse and fugitive abated emission limit for this Notice of Construction is limited to 4.32E-04 mrem/year

to the Maximally Exposed Individual. The total unabated diffuse and fugitive emission limit for this Notice of Construction is limited to 4.32E-04 mrem/year to the Maximally Exposed Individual [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 1.66E-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 1.66E-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.

   1. Upon identification of the need of additional decontamination activities in the individuals would be escorted to the nearest decontamination trailer.

   2. As appropriate, contaminated clothing, coverings, and/or articles would 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.

   3. 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.

   4. Spent decontamination solutions would 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.

   5. 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

4) The proposed 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).

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.

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-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 2.18E+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 activities listed below are approved for the C-200 Series Waste Retrieval effort:

Retrieval Activities (Stack):

i. Operation of the new portable exhauster and ventilation system.
ii. Retrieve wastes from C-201, C-202, C-203, and C-204 using the AMS to vacuum wastes to the central vessel skid.
iii. Pump waste from central vessel skid to the double shell tank system using OGT lines

Diffuse and Fugitive:

a. Proposed Actions for Tanks C-201 through C-204:

i. Remove the thermocouple trees from the top of the pump pit (no pit access is necessary) using ALARACTs 13, 14, and 15.
ii. Access pump pit to remove pump in C-204 (no removal of sluice eductors will be performed)(using ALARACTs 1, 4, 6, 13, 14 and 15) and gerneral access may be needed for the other pump pits and have been calculated in a pit access potential-to-emit.
iii. Remove the breather filters and reinstall with an inlet filter on each tank.
iv. Lift the ventilation hatchway cover (condenser pit hatchway) which is 1/4-inch steel thinkness and may be potentially attached to an old fiberglass filter assembly (using ALARACTs 1, 4, 6, 13, 14 and 15 as guidance for contamination level and controls) which will be withdrawn in a large sleeve (fully enclosed) from the pit, lifted, pig-tailed, and sealed. The filter will not be exposed to the environment while lifting. The filter will then be placed in a mixed waste disposal box and will not be left out in the environment. Smearable contamination levels on the outside of the bag will not exceed 50,000 dpm beta/gamma and 20 dpm alpha.
v. Remove condenser pit filter assembly and replace tank breather filter with a Y-duct assembly (ALARACTs 1, 4, 12, 15, and 16)
vi. Remove liquid level reels and thermocouple trees, 1 each per tank (ALARACTs 1, 4, 6, 12, 13, 14, and 15)
vii. Remove sluice eductor pump from Tank C-204, if necessary (ALARACTs 1, 4, 6, 12, 13, 14, and 15)

b. Tank Equipment Installations:

i. AMS with connected hydraulic power pack, one per tank (ALARACTs 1, 4, 6, 12, 13, and 14)
ii. Install ventilation inlet filter assembly to existing inlet filter on each tank. (using ALARACTs 13 and 16).
iii. Remove the ventilation hatchway (condenser pit) cover with the presumed attached fiberglass filter using a crane and lifting hook and placed immediately into a mixed waste disposal box. ALARACT 13 controls will be used for contamination guidance and controls (less than 50,000 dpm beta/gamma and 20 dpm alpha).
iv. The asbestos gasket for the ventilation hatchway (condenser pit) if present will be removed using fixative while a bag is in place over the ventilation hatchway (condenser pit). The plastic will be slowly removed to minimize hatchway access while concurrently a new ventilation hatchway cover (condenser pit) will be slid onto the pit access next to the plastic and rebolted to the pit. ALARACT 13 controls will be used for contamination

guidance and controls (less than 50,000 dpm beta/gamma and 20 dpm alpha). The ventilation hatchway will have a connection so that the 296-P-48 exhauster will be connected when active retrieval occurs.

v. A single set of return and suction lines shall be placed at each tank to the central skid vacuum vessel during retrieval. After each tank is retrieved a small amount of water will be flushed through the line and checked for smearable contamination and dose readings by a Health Physics Technician to ensure minimal contamination is in place in the line. A valve will be closed at the tank surface manifold box, the end of each hose wrapped in plastic, and then moved to the next tank for retrieval. Contamination remaining in the lines when moved has been accounted for by inlcuding all of the current tank contents in the total retrieval potential-to-emit calculations.

vi. Ventilation exhaust ducting, one per tank (ALARACTs 1, 4, 12, and 16)

vi. Closed circuit TV s, one per tank (ALARACT 1, 4, 12, 13, and 16)

vii. Master camera control system skid, and connects to in-tank cameras (ALARACT 6, 13, and 16)

viii. Central vessel skid, connect to individual AMS units, connect to the double shell tank via OGT lines (using hand digging or Guzzler, latest approved revision) (ALARACT 1, 4, 5, 6, 13, and 14)

ix. Pump skid with connected hydraulic power pack, and OGT lines (ALARACT 1, 4, 6, 12, 13, and 14)

x. Vacuum skid with connected hydraulic power pack (ALARACT 1, 4, 6, 12, 13, and 14)

xi. Portable exhauster skid, connect via HVAC ducting to individual tank ventilation exhaust ducts (ALARACTs 1, 4, 6, 12, 13, and 14)

xii. Electrical cable and electric supply to hydraulic power packs, vessel skid, pump skid, vacuum skid, portable exhauster skid, inlet filter, in-tank cameras, and generator, control instrumentation (ALARACT 5)

xiii. Air compressor and associated air supply lines to AMS, vessel skid, vacuum skid (ALARACT 5)

xiv. Instrumentation control room, water distribution sled, instrument electrical skid, diesel generator

c. Remove tank equipment installed under this NOC for maintenance, repair, disposal, or re-use for future tank retrievals. (ALARACTs 1, 4, 6, 12, 13, 14, 15 and 16)

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

Ac - 227	4.84E-06	Am - 241	4.17E-01	Am - 243	4.67E-06
Ba - 137 m	1.41E+00	C - 14	3.80E-05	Cd - 113 m	1.36E-03
Cm - 242	3.03E-04	Cm - 243	1.45E-05	Cm - 244	6.39E-06
Co - 60	1.59E-05	Cs - 134	1.41E-08	Cs - 137	1.49E+00
Eu - 152	7.67E-03	Eu - 154	3.62E-03	Eu - 155	2.69E-01
H - 3	1.86E-05	I - 129	5.19E-07	Nb - 93 m	6.53E-04
Ni - 59	1.42E-02	Ni - 63	1.33E+00	Np - 237	8.11E-07
Pa - 231	1.64E-07	Pu - 238	1.29E-02	Pu - 239	5.76E-01
Pu - 240	9.49E-02	Pu - 241	7.03E-01	Pu - 242	4.85E-06
Ra - 226	1.23E-06	Ra - 228	3.37E-12	Ru - 106	2.58E-09
Sb - 125	2.67E-05	Se - 79	1.67E-05	Sm - 151	5.91E-01
Sn - 126	1.06E-04	Sr - 90	3.50E+01	Tc - 99	2.67E-04
Th - 229	1.26E-09	Th - 232	9.06E-15	U - 232	1.98E-10
U - 233	7.54E-12	U - 234	7.15E-06	U - 235	3.15E-07
U - 236	8.27E-08	U - 238	7.20E-06	Y - 90	7.83E+00
Zr - 93	7.35E-04				

4) A health physics technician shall be present during all condenser pit filter removal activities. Any contamination levels or dose rate readings exceeding the radiation work permit limits shall be notified to WDOH.

5) A work place air sampler shall be in operation during all condenser pit filter removal activities. The air sampler shall

be placed in the downwind direction.

6) ALARACTs 1, 4, 5, 6, 12, 13, 14, 15, and 16 shall be used.[WAC 246-247-040(5)].

7) One liquid level reel per tank, one thermocouple assembly per tank, one condenser pit filter per tank, and a sluice pump in 241-C-204, may be removed. If the total adherent waste volume basis used in the supporting calculations for equipment removal is not exceeded, other equipment removals may be performed as noted in Condition 3, Item c. [WAC 246-247-040(5)].

8) Prior to moving the HIHTL the lines shall be flushed and checked by a health physics technician to ensure minimal contamination. The valve on the tank manifold box shall be closed and the end of the line shall be wrapped in plastic, then removed from the manifold. The HIHTL will then be hooked up to the next tank.

9) Radiological monitoring of all pit openings and pit work shall be performed and documented to ensure that maximum pit surface/pit contents contamination levels remain on average below those assumed in NOC release estimates for these activities:

(a) 241-C-200 Series Tanks: 1 E+06 dpm Beta/Gamma, 1400 dpm alpha
(b) Tank 241-AY-101: 8.5 E+05 dpm Beta/Gamma, 20 dpm alpha

No more than 16 C-200 series pit openings shall occur, and no more than four AY-101 pit openings shall occur. These shall be tracked and documented. The total surface area of C-200 Series pits opened plus the surface area of pit contents shall not exceed that used in the NOC support calculations. The total surface area of double-shell tank pits opened plus the surface area of pit contents shall not exceed that used in the NOC support calculations [WAC 246-247-040(5)].

10) Radiological monitoring of all soil excavation work shall be performed and documented to ensure releases remain within releases estimated in the NOC. Soil volume excavated shall be tracked and documented and shall not exceed 8,500 cubic feet. Soil shall be monitored per ALARACT 5. Contamination levels for excavation shall remain on average equal to or less than 1 E+06 dpm beta and 20 dpm alpha [WAC 246-247-040(5)].

11) Soil excavation performed using the Guzzler shall conform to approval conditions and limitations of the latest approved revision to the Guzzler NOC [WAC 246-247-040(5)].

12) The Annual Possession Quantity shall be tracked on a WDOH approved log.

13) The condenser pit filter shall be withdrawn into a fully enclosed plastic sleeving. Once removed, the sleeve enclosing the filter shall be pigtailed, sealed, and disposed of within a mixed waste disposal box. The filter shall not be exposed to the environment. The condenser pit filter removal activities shall use ALARACTS 1, 4, 6, 13, 14, and 15 as guidance for contamination levels and controls.

14) The total diffuse and fugitive abated emission limit for this Notice of Construction is limited to 1.61E-02 mrem/year to the Maximally Exposed Individual, comprised of 6.76E-03 mrem/year offsite and 9.37E-03 mrem/year onsite. The total unabated diffuse and fugitive emission limit for this Notice of Construction is limited to 1.61E-02 mrem/yr to the Maximally Exposed Individual, comprised of 6.76E-03 mrem/year offsite and 9.37E-03 mrem/year onsite (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 notifiy 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 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. This covers the following activities as 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 poser and instrument cables and other utility tie-ins and/or upgrades
- New above ground pits
- Jumpers
- Off riser sampling system

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 fo 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, such as those 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 ranging in diameter from four inches to 42 inches. Riser will be installed by first removing soil down to the concrete tank dome surface using hand digging and/or using the guzzler. 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.

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. Clean soil piles may be moved from one place to another within the tank farm with heavy equipment (i.e. backhoe, front loader). The soil will be used to fill the trenches after the hose and the conduits are installed.

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) During penetration of the tank dome, core drilling activities will take place within plastic sleeving. When the cylinder core is removed it shall remain contained within the plastic sleeving, and plastic sleeving shall remain over the existing hole in the tank dome until the new riser is installed.

5) 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.

6) Soil excavation activities shall be performed in accordance with the requirements of TWRS ALARACT Demonstration 5 "Demonstration for soil excavation (using hand tools)".

7) The Annual Possession Quantity for pit entries, equipment removal activities, soil excavation, and Guzzler operation shall be tracked on a WDOH approved log.

8) 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.

9) The Department shall be notified, within 7 days, of when an existing breather filter is replaced by a Flanders 40 cfm radial filter.

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, not to exceed 1200 psi, 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.

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) 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) During waste retrieval operations liquid shall be introduced through sluicing and saltcake dissolution nozzles at a pressure not to exceed 1200 psig, and the nozzle shall be at least five inches from the waste surface.

6) 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.

7) 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.

8) 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".

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 5.50E-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 7.35E+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.

Liquid salt-solution received at the Demonstration Bulk Vitrification System (DBVS) from the 241-S-109 Single Shell Tank will be mixed with appropriate glass formers and excess water will be removed from the mixture. The mixture will be transported and distributed into a refractory-lined waste container, where electrodes, penetrating the waste mixture, will vitrify the waste via resistive heating. Preparation of the DBVS site could require excavation of up to 5,445 cubic feet of radioactively contaminated soil.

After completion of the vitrification process, soil and sand will be added to sufficiently fill the void container volume. The waste and waste container will undergo cooling, sampling, and external decontamination. The waste container with final vitrified waste will be allowed to cool, and will be stored at the Test and Demonstration Facility awaiting transfer to an approved storage facility or transferred to an approved onsite low-level burial ground.

The DBVS RD&D program will be operated in two phases. The Phase 1 DBVS will consist of treatment of up to three container loads, each incorporating up to 1135 L (300 gallons) of tank waste. Simulants (i.e., materials similar in chemical composition to tank waste) will be added to the waste load along with the glass formers to create a container load (including insulation materials) up to 54.4 m3 (1920 ft3). The containers will be stored at the Test and Demonstration Facility and ultimately be transferred to the IDF or another permitted disposal facility.

The goal of Phase 2 is to optimize the DBVS performance and operation for full-scale use. Phase 2 will consist of treatment of up to 50 (including containers from Phase I) container loads of waste totaling up to 1,355,500 L (300,000 gallons) of tank waste. Tank waste, process additives, and process control parameters will be varied to establish optimum operating process parameters or envelopes. It is anticipated that one container load of material will be vitrified weekly over one operating year.

The DBVS will receive Low Activity Waste (LAW) from Tank 241-S-109 into tanks for process feed, storage, and sampling. The tank capacities for the DBVS waste receipt are 18,000 gallons, and will be used in the production of up to 50 containers. The waste receipt tanks will be vented through the Off Gas Treatment System (OGTS). The 1,000 gallon staging tank used for receipt of waste for up to 3 batches will be passively ventilated through a HEPA filter.

Process Additives

The DBVS will receive soil, glass additives, container refractory sand, and other material necessary to the vitrification process. Soil will be used to form the matrix for the vitrification process. Vitrification aids such as graphite, boron, and zirconium can be used to initiate melting and increase glass performance (waste retention).

Waste Feed Preparation

Prior to starting the vitrification process, the waste feed material will be mixed with soil and additives and dried to approximately two percent moisture content. The mixer/dryer will be heated by steam from an onsite boiler. The dry material transfer system will be equipped with weigh stations to control the amount of material being added to the mixer/dryer. The design capacity of the mixer/dryer is 2,640 gallons (10,000 L) and the nominal cycle time is between six and eight hours. During the mixing/drying cycle the unit will be operated under a vacuum.

Vitrification Container Preparation

The waste containers will be a steel box approximately 10 feet high by 8 feet wide and 24 feet long. Prior to waste being added to the container the box will be lined with insulating board, sand, and a layer of castable refractory which will face the waste material. A layer of melt-initiating graphite and soil will be placed over the castable refractory in the bottom of the container. A steel lid with attached electrodes will be sealed to the box, using bolted flanges and a refractory gasket, prior to waste being added. The lid contains several ports for waste material addition, electrode connections, venting, sampling, and introduction of post-vitrification materials. All connections to the lid will be mechanically sealed. In addition the waste transfer connections will be equipped with shutoff valves to prevent spillage of material as the chute is attached to and removed from the port. Each connection port will be equipped with secondary containment and spilled material recovery provisions during material transfer, melting and cool down. The container-filling operation is performed under negative pressure and exhausted out the vent port to the OGTS.

In-Container Vitrification

The waste mixture from the mixer/dryer will be placed into the vitrification container through ports in the sealed box lid. Electrical power will be applied to the electrodes, vitrifying the container contents via resistive heating. Ambient air, filtered through a HEPA filter, is injected to cool the vitrification offgases and provide thermal protection for the sintered metal filters. Both "bottom-up" and "top-down" melting can be conducted during testing. Top-down melting is conducted by applying power to the electrodes only after all waste materials and process additives have been placed in the container. Bottom-up melting begins melting with a shallow layer of material in the container and continues as more material is added until the desired depth of melt is obtained.

Post-Vitrification Container Handling

After vitrification has been completed the container connection to the OGTS will be maintained, and clean fill materials will be added to fill cavities around the electrodes and cover the top of the vitrified waste to minimize headspace in the container. Sampling of the vitrified waste, radiation surveying, and external decontamination can be conducted after initial cooling has been completed. Sampling of the melt will be conducted as required by a coring process through a port in the side of the container. Temporary storage of up to 50 treated waste containers will be located at the Test and Demonstration Facility.

Offgas Treatment System

The offgas treatment for the DBVS operations will include the following:
Particulate and gaseous emissions from waste receipt;
Particulate emissions from process additive receipt, storage, and transfer;
Particulate and gaseous emissions from mixer/dryer;
Particulate and gaseous emissions from waste container filling and vitrification;
Particulate emissions from waste container topoff after vitrification.

Mixer/Dryer Offgass emissions will be partially treated for moisture removal using a glycol-cooled condenser and mist eliminator prior to being routed to the OGTS downstream of the venturi scrubber.

The Offgas Treatment System shall consist of two sintered metal filters in series, a quencher, venturi scrubber, and mist eliminator system. Dilute sodium hydroxide will be injected in both the quencher and venturi scrubber to reduce hydrogen chloride and other acid gas emissions. Scrubber offgases will pass through an additional condenser and mist eliminator, with drainage from those units routed to the scrubber recycle tanks. An offgas heater, two banks of HEPA filters (in series), and a carbon filter will follow the mist eliminator. A polishing filter will be installed downstream of the carbon filter. Based on results from Phase l a larger selective catalytic reduction unit can be added or an additional SCR unit added in series. An optional packed tower scrubber may be used.

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

Ac - 227	1.40E-03	Alpha - 0	6.87E-02	Am - 241	4.82E+00
Am - 243	1.37E-04	B/G - 0	4.24E+00	Ba - 137 m	2.23E+04

C - 14	3.76E+01	Cd - 113 m	8.88E+01	Cm - 242	9.18E-03
Cm - 243	7.16E-04	Cm - 244	7.16E-03	Co - 60	2.10E+01
Cs - 134	2.09E-01	Cs - 137	2.36E+04	Eu - 152	3.96E+00
Eu - 154	9.65E+01	Eu - 155	7.95E+01	H - 3	1.09E+02
I - 129	3.47E-01	Nb - 93 m	1.80E+01	Ni - 59	4.20E+00
Ni - 63	3.89E+02	Np - 237	6.69E-01	Pa - 231	6.25E-03
Pu - 238	1.48E-01	Pu - 239	7.26E+00	Pu - 240	1.11E+00
Pu - 241	6.91E+00	Pu - 242	4.90E-05	Ra - 226	2.25E-04
Ra - 228	6.78E-02	Ru - 106	7.24E-05	Sb - 125	3.98E+01
Se - 79	5.02E-01	Sm - 151	1.68E+04	Sn - 126	3.04E+00
Sr - 90	8.70E+03	Tc - 99	1.80E+02	Th - 229	1.77E-03
Th - 232	6.60E-03	U - 232	1.03E-02	U - 233	4.21E-02
U - 234	3.73E-02	U - 235	1.56E-03	U - 236	9.91E-04
U - 238	3.54E-02	Y - 90	8.70E+03	Zr - 93	2.46E+01

4) All filled waste containers maintained in waste container storage area shall have an installed NucFil HEPA filter (or equivalent), with a manufacturer certified removal efficiency of 99.97%.

5) Excavation of contaminated soil shall follow the requirements of ALARACT Demonstration 5, "Demonstration for Soil Excavation (Using Hand Tools)". Mechanical excavation using earth moving equipment is allowable and will follow controls equivalent to ALARACT 5. If underground equipment requires removal, the requirements of ALARACT 15 "Demonstration for Size Reduction of Waste Equipment for Disposal", shall be followed. WDOH shall be notified when equipment requiring removal is encountered.

6) The annual possession quantity for contaminated soil shall be tracked on a WDOH approved excavation 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 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 notifiy 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))

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 2.10E+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 3.57E+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-AZ-101, 241-AZ-102, 241-AY-101, and 241-AY-102 and associated equipment shall be modified to allow for installation of waste retrieval systems and equipment, 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 riser 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 feet in length.

New 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 be capable of providing approximately 140 gallons per minute of pH adjusted water.

• New pit coverblocks.

• New water/diluent piping to and from the process pits.

• New 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).

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 the NOC.

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 6,000 cubic yards, per farm, could be excavated. Backfill will be made with the original removed soil or non-contaminated 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 non-contaminated 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.

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 square centimeters (cm2) beta gamma and 200 dpm/100cm2 alpha.

Welding might be necessary to join various pieces of equipment. If welding is necessary, welding will commence once removable contamination levels in the weld area are reduced to ALARA. The goal will be to achieve 1,000 dpm/100 cm2 beta gamma and 20 dpm/100 cm2 alpha or less.

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.

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 100, 14-inch diameter holes for AZ Farm and 10, 14-inch 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.

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 has been completed.

Core drilling could 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.

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.

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

Ac - 227	2.54E-07	Am - 241	2.56E+00	Am - 243	1.17E-03
Ba - 137 m	6.41E+00	C - 14	1.59E-04	Cd - 113 m	1.84E-03
Cm - 242	1.65E-02	Cm - 243	1.56E-04	Cm - 244	3.41E-02
Co - 60	4.32E-02	Cs - 134	1.02E-03	Cs - 137	3.07E+01
Eu - 152	3.44E-02	Eu - 154	8.30E-01	Eu - 155	3.96E-01
H - 3	1.52E-03	I - 129	1.56E-05	Nb - 93 m	9.23E-03
Ni - 59	4.46E-03	Ni - 63	4.11E-01	Np - 237	5.99E-04
Pa - 231	4.12E-06	Pu - 238	9.93E-03	Pu - 239	1.88E-01
Pu - 240	4.78E-02	Pu - 241	4.57E-01	Pu - 242	4.52E-06
Ra - 226	1.15E-04	Ra - 228	7.87E-06	Ru - 106	5.59E-05
Sb - 125	2.11E-02	Se - 79	3.33E-05	Sm - 151	2.65E+01
Sn - 126	2.65E-03	Sr - 90	6.54E+02	Tc - 99	5.64E-03
Th - 229	1.04E-05	Th - 232	4.76E-06	U - 232	3.16E-07
U - 233	9.99E-06	U - 234	2.21E-04	U - 235	2.66E-06
U - 236	6.92E-07				

		U - 238	1.52E-05	Y - 90	6.28E+02
Zr - 93	1.70E-02				

4) All pit access work shall be performed in accordance with TWRS ALARACT Demonstration 6, ALARACT Demonstration for Pit Access and TWRS ALARACT Demonstration 14, TWRS ALARACT Demonstration for Pit Work.

5) In-tank equipment removal and installation shall be performed in accordance with TWRS ALARACT Demonstration 13, TWRS ALARACT Demonstration for Installation, Operation, and Removal of Tank Equipment.

6) Pipe cuts shall be performed in glove bag when levels of removable contamination in the cut area are greater than 10,000 disintegrations per minute per 100 square centimeters beta/gamma and 200 disintegrations per minute per 100 square centimeters alpha.

7) Pipe cuts shall be performed using a sawzall or tri-tool or equivalent.

8) Soil shall be excavated in accordance with the requirements of ALARACT Demonstration 5, TWRS ALARACT Demonstration for Soil Excavation (Using Hand Tools).

9) The number of pit entries will either be limited to 10 or the total radionuclide content of all pit entries shall be less than the Annual Possession Quantity, and shall be tracked on a WDOH approved log.

10) The Annual Possession Quantity shall be tracked on a WDOH approved log.

11) The average surface contamination within the 241-AZ-101 and 241-AZ-102 pump pits shall be limited to less than 1,000,000 dpm/100 square centimeters beta/gamma and 700,000 dpm/100 square centimeters alpha. This shall be tracked on a WDOH approved log.

12) When welding is performed removable contamination levels in the weld area shall be reduced to less than 1,000 disintegrations per minute per 100 centimeters squared beta/gamma and 20 disintegrations per minute per 100 centimeters squared alpha. The number of welds and associated contaminations levels shall be tracked on a WDOH approved log.

13) Work within glove bags shall stop if sustained wind speeds exceed 30 miles per hour.

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 notifiy 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 3.44E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

2) Excavation and Retrieval of Containers (drums or boxes)
Work will be performed in accordance with as low as reasonably achievable (ALARA).

The specific steps or approach to uncovering the containers will vary according to the configuration of the trench to be uncovered, the proximity of nearby trenches or fences, the designated location of the spoils pile, the planned extent of the soil removal, and other similar considerations.

Work to be performed within the V notched trenches is similar to the ongoing TRU retrieval project, but much of it may be performed within a weather resistant structure(s) that will be relocatable 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. The use of a weather resistant enclosure could allow a more effective recovery from events involving degraded containers and potential contamination spreads.

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 minimize emissions.

The most efficient methodology for removing the uncontaminated overburden from the containers will include the maximum use of conventional methods such as backhoes, front end loaders, mechanical brooms (boom mounted), or manual digging with shovels and similar hand tools. Hand tools predominantly may be used to excavate contaminated soil. High efficiency particulate air (HEPA) filtered vacuums may be used for soil excavation, and spot contamination in accordance with the HEPA filtered vacuum unit (HVU) NOC (DOE/RL 97 50, as amended). Within the V Notched trenches, it is more likely that the use of a 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 Guzzler® will be performed under the NOC applicable to the unit.

Excavation activities will be controlled closely. When the quantity of soil removed with heavy equipment has reached the logical end, hand tools, light equipment, or HVUs may be used to complete the soil removal operations and to access and remove the plastic and plywood materials (to be set aside for reuse or disposal) covering the containers.

The exposed containers will be visually inspected and surveyed for contamination. Abnormal drum conditions will be managed as follows: Contaminated containers will be decontaminated or overpacked as needed. Bulging or potentially pressurized containers will be vented. 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 in another trench also could occur. All containers will be inspected to verify integrity. The container inspection will consist of a visual examination to determine if there are significant 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.

Overpacking containers with minor defects (pinholes, corrosion) is routinely performed at the LLBG and CWC. Precautions will be provided to safely retrieve containers of questionable integrity. It is expected that 10 to 100 percent of the newly retrieved containers will require overpacking or some other form of confinement. Breached and heavily corroded containers will usually be overpacked before being relocated. However, if a breached or heavily corroded container can provide adequate confinement, it may be relocated to

an area for overpacking. The overpacked containers will be managed according to the LLW (including mixed waste) or TRU waste designation (TRU containers are those with TRU content greater than 100 nCi/g), established by records or assay.

After a container is inspected visually and the structural integrity established, the container, if unvented, will be staged for venting, or moved to another TSD unit for venting. Retrieved TRU waste containers in their staged configuration at the LLBG will be inspected for outwardly visible signs of corrosion or degradation (overpacking as needed).

Venting of Containers
All work will be performed in accordance with the applicable operating procedures, radiological control procedures, radiological work permit (RWPs) and ALARA requirements.

Experience at other DOE sites has shown a potential for flammable gases to be present in some containers. Therefore all containers will be evaluated and vented if needed even if not specifically designated as TRU containers.

The vent filters will continue to be installed in designated containers via one of the drum venting systems that ensures 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 MDVS, Catagorical DVS, or other venting methods (with prior approval of WDOH).

MDVS (Mobile Drum Venting System)
The MDVS is enclosed in a trailer containing system equipment allowing an operator to sample and/or vent the drum and install a NucFil® filter or equivalent. Potential emissions from MDVS operations are point source emissions. Bulging or potentially pressurized drums may be overpacked, placed in restraints and then vented.

The MDVS trailer may be equipped with a HEPA vacuum system to prevent contamination from exiting through any incidental gaps and to clean room air in the event of airborne contamination. These emissions will be accounted for with the sitewide HEPA Vacuum NOC. The system could be automatically activated when the continuous air monitor (CAM) alarms or it could be manually activated. The CAM and/or air sample results will be used to verify the PTE is within the limits of the sitewide HEPA vacuum NOC.

Dart System
The Dart System is a portable unit that clamps directly onto a drum, using a pneumatic driver remotely activated by wire or radio transmitter. This system penetrates the drum lid with minimal risk of contamination release to install a NucFil® filter with an aluminum bronze housing to prevent the possibility of sparking. Potential emissions from these operations will be considered diffuse and fugitive.

Catagorical DVS2 (Drum Venting System 2)
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 for diffusion.

Glove bags may be used to contain potential contamination. A portable HEPA vacuum with variable speed is connected to the HEPA filter 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. Glovebags will also have ports to check for contamination or hazardous gases.

As many as three venting assemblies will be installed in a weather enclosure such as a Conex box. Connections for the third assembly may be used with the TRU Retrieval Drum Restraint in the event of a bulged or high DE-Ci drum.

Other Venting Methods

The venting of other containers, the majority being fiberglass reinforced plywood (FRP) boxes but could also be metal containers - hereafter referred to collectively as boxes, located in CWC and the LLBG may be done. 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® filter or equivalent into 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 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 escape from the box during the drilling operation. In the event contamination is encountered during filter installation, a HEPA vacuum would be connected for use only after the filter is installed. The HEPA vacuum would be subject to the sitewide HEPA vacuum NOC.

After the steel plate and glove bag are in place personnel will drill a pilot hole in the box, monitor for the presence of contamination and hazardous gases, and install a Nucfil® filter or equivalent. A time weighted release of 60 minutes per box is allowed for drilling and filter installation. 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 manufactured by STATICO ™ or equivalent will be used to decay electrostatic build up in the fiberglass during drilling.

A second type of vent system for FRP boxes may be used that is similar to the portable DVS 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 manufactured by STATICO™ or an equivalent will be used to decay electrostatic build up in the fiberglass 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® a HEPA vacuum would be connected for use only after the Nucfil® is installed. The HEPA vacuum would be subject to the sitewide HEPA vacuum NOC.

3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 9.01E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha - 0	2.81E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Alpha release rate based on Am-241. Release rate for excavation of soil (notification level). See condition 19.			
Alpha - 0	3.00E-05	Solid	WAC 246-247-030(21)(e)
Release rate based on Am-241. Release rate for staging/handling vented containers. See Condition 5.			
Alpha - 0	1.43E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Alpha release rate based on Am-241. Release rate for installation of Nucfil filters using the Dart System. See Condition 4.			
Alpha - 0	1.00E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Alpha release rate based on Am-241. Release rate for excavation of soil (contamination detected). See condition 19.			
Alpha - 0	2.01E-05	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Alpha release rate based on Am-241. Release rate for excavation of soil (Higher contamination level, controls required). See condition 19.			
B/G - 0	2.14E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Beta/Gamma release rate based on Cs-137. Release rate for installation of Nucfil filters using the Dart System. See condition 4.			
B/G - 0	4.50E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Release rate based on Cs-137. Release rate for staging/handling vented containers. See Condition 5.			
B/G - 0	6.64E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Beta/Gamma release rate based on Cs-137. Release rate for excavation of soil (contamination detected). See condition 19.			
B/G - 0	1.33E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Beta/Gamma release rate based on Cs-137. Release rate for excavation of soil (Higher contamination level, controls required). See condition 19.			

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 notifiy 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 maximum of 1,000 containers/yr are approved to have installation of NucFil filters using the Dart System. The potential unabated release rate from using the Dart System for installation of NucFil filters is 1.4 E-4 Ci/yr americium-241 and 2.1 E-3 Ci/yr cesium-137 and is based on a release fraction of 1.0E-3 and a pressure release time of 1 hour. All of the emissions from a pressurized container are routed through the HEPA-type NucFil filter (certified 99.97% removal efficiency); therefore, the abated release rate is 4.8 E-8 Ci/yr americium-241 and 7.1 E-7 Ci/yr cesium-137. These alternative release fractions are approved for this emission unit. Emissions will be tracked as DE-Ci. An average of 53 DE-Ci is assumed with a maximum of 1.27 E-03 DE-Ci/yr unabated released from the staging and handling of vented containers.

5) A maximum of 12,000 vented containers of waste (including containers that are not designated as TRU waste, and those could be retrieved with vents in place) are approved to be retrieved per year. Once vented, the containers are allowed to be staged with the other retrieved containers for further handling, resulting in the staging/storage of a maximum of 12,000 vented containers per year at the LLBG. Using an release fraction of 2.00 E-09 for fugitive emissions from vented containers (as used in the WRAP NOC, DOE/RL-2000-34), the potential unabated release rate from the staging of vented containers is 3.0 E-05 Ci/yr alpha (americium-241) and 4.5 E-04 Ci/yr beta (cesium-137). These alternative release fractions are approved for this emission unit. Emissions will be tracked as DE-Ci. An average of 53 DE-Ci is assumed with a maximum of 1.27 E-03 DE-Ci/yr unabated released from the staging and handling of vented containers.

6) Additional monitoring for the diffuse and fugitive emissions will consist of radiological surveys from the soil excavation activities.

7) Both alpha and beta/gamma surveys shall be performed for all removable contamination surveys and for soil surveys (direct reading). 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.

8) Dust controls such as water, fixatives, covers, or windscreens will be applied, as determined by the Radiological Control organization.

9) Excavation activities will be stopped if contamination (other than spot contamination) with detection readings greater than 500,000 dpm/100 cm2 beta/gamma or greater than 28,000 dpm/100 cm2 alpha is encountered.

   Excavation will not continue at that excavation site (but may proceed at other sites) until an internal review of the work and encountered conditions has been performed and an internal determination has been made that no threat to personnel safety or the environment exists, or until proper controls (i.e., removal and disposal, water, fixatives, or covers) have been put in place to mitigate any further potential for emissions; and the WDOH has been contacted and briefed of the situation.

10) For bulk transfer of contaminated soils, a backhoe or front-end loader may only be used when the surface of the material is wetted during the transfer process.

11) Health physics technician (HPT) coverage will be provided during the excavation activities, continuously when in close proximity to containers.

12) It is recognized that other radionuclides may be present in very limited quantities.

13) Manual methods or HVU will be used to excavate soil in close proximity to containers (after overburden is removed).

14) Operational limits for TRU retrieval (contamination levels) will be established in the activity work packages and associated RWPs. Fixatives or other controls will be employed if contamination levels (other than spot contamination) exceed 100,000 disintegrations per minute per 100 square centimeters (dpm/100 cm2) beta/gamma or exceed 2,000 dpm/100 cm2 alpha.

15) Spoil piles containing contaminated soil will be segregated from the clean soil and 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 >20 mph. Containerizing spoils for disposal may be performed.

16) The department shall be notified 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 when using the dart system (an example of a "failure" would be where the Dart is used in a thin or corroded spot where the dart punches a hole through the lid).

17) The potential unabated release rate from manual excavation is based on a release fraction of 1.0E-3.

18) The process for handling of abnormal containers as described in the application is approved as meeting ALARACT, and this process and associated records and procedures will be subject to inspection upon request by the department.

19) 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.

TRU Waste Retrieval

Encountering contamination is expected during excavation; therefore, to determine a potential to emit if contamination is encountered, the administrative control points for contamination, as monitored by standard radiological field instrumentation, will be used to bound emissions based on current efficiencies of typical SWSD field contamination instruments. To determine the corresponding soil concentration in picocuries per grams of individual radionuclides, conversion factors, as developed in Soil Contamination Standards for Protection of Personnel (HNF 2418) 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 and the alpha contributing radionuclides were assumed to be represented by americium 241 (predominant alpha contributing radionuclide in the soil is unknown; therefore, assumption of americium 241 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 from manual excavation, using a release fraction of 1.0 E-3.

The potential unabated dose rate from manual excavation is 2.79 E-03 mrem/year. No credit is taken for abatement; therefore, the abated emissions are assumed as the unabated emissions. Although fixatives and similar controls would 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.

20) 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.

Venting of Containers

All work shall be performed in accordance with the applicable radiological control procedures and ALARA requirements. These requirements are carried out through the procedures, activity work packages, and associated RWPs.

The vent filters will be installed in designated containers by using the Drum Venting System (DVS) and/or Dart System that ensures 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 with a filter assembly fitted with a short hollow drill bit (using DVS) or puncturing the lid with a filter dart (using Dart system). Either method will result in emissions being routed through a filter during the venting process.

Most drums slated for venting will be vented with the DVS, consisting of a trailer with a chamber allowing an operator to sample the drum and install a NucFil ® filter. Potential emissions from these operations are point source emissions.

Bulging or potentially pressurized drums will be evaluated to determine best method and location to vent (Dart-in place, Dart-relocate, or move to the DVS). The Dart System is a portable unit that straps directly onto a drum, using a pneumatic driver remotely activated by wire or radio transmitter. This system penetrates the drum lid to install a NucFil ® filter with an aluminum bronze housing to prevent the possibility of sparking. Potential emissions from these operations will be considered diffuse and fugitive. The same Dart System will be used to install sample ports, consisting of a closure set screw covering a septum for withdrawing a sample for HSGS, in containers with existing vents at the LLBG, CWC, WRAP, or T Plant Complex, without creating a new pathway for potential emissions.

21) WDOH will be notified per WAC 246-247-080(5) 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.

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	Radioxenon	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

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	AIR 07-503	5/16/2007	657

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-12 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 to evaluate xenon gas found in the atmosphere. Releases will occur inside the building after being routed through the sample system and collected in a sample archive bottle. Any remaining radioxenon 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 calibration gas will be used to confirm operability of the instrument. The SAUNA is a xenon collection and analysis system. Radioxenon 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 2.00E-12 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Xe - 122	1.00E-12	Gas	WAC 246-247-030(21)(a)
Xe - 123	1.00E-12	Gas	WAC 246-247-030(21)(a)
Xe - 125	1.00E-12	Gas	WAC 246-247-030(21)(a)

Xe - 127	1.00E-12	Gas	WAC 246-247-030(21)(a)
Xe - 131 m	2.50E-08	Gas	WAC 246-247-030(21)(a)
Xe - 133	1.00E-12	Gas	WAC 246-247-030(21)(a)
Xe - 133 m	1.00E-12	Gas	WAC 246-247-030(21)(a)
Xe - 135	2.50E-08	Gas	WAC 246-247-030(21)(a)
Xe - 135 m	1.00E-12	Gas	WAC 246-247-030(21)(a)
Xe - 137	1.00E-12	Gas	WAC 246-247-030(21)(a)
Xe - 138	1.00E-12	Gas	WAC 246-247-030(21)(a)

The radioactive isotopes identified for this emission unit are (no quantities specified):

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 notifiy 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)]