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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

1315 W. 4th Avenue • Kennewick, Washington 99336-6018 • (509) 735-7581

June 11, 2002

Ms. Laurie Kral
Office of Air Quality Program
United States Environmental Protection Agency, Region 10
1200 Sixth Avenue
Seattle, Washington 98101

Mr. Andy Ginsburg
Administrator, Air Quality Division
Oregon Department of Environmental Quality
811 SW Sixth Avenue
Portland, Oregon 97204

Mr. Russell Jim
Yakama Nation
P.O. Box 151
Toppenish, Washington 98948

Mr. Gary Burke, Chairman
Confederated Tribes of the Umatilla Indian Reservation
P.O. Box 638
Pendleton, Oregon 97801

Dear Ms. Kral, Messrs. Ginsburg, Jim and Burke:

Re: Issuance of Group Processing of Minor Modifications to the Hanford Site Title V Air Operating Permit (AOP)

The Washington State Department of Ecology (Ecology) formally issues the attached minor modification to the Hanford Site Air Operating Permit (AOP). This revision involves four previous applications of group processing of minor modifications to the AOP submitted by the Department of Energy-Richland Office (DOE) during December 6, 2001 to March 22, 2002.

This group processing of minor modifications consists of twenty-three approved Notice of Constructions (NOCs) issued by the Washington State Department of Health (Health) under Washington Administrative Code (WAC) 246-247. Ecology received the last of the four group

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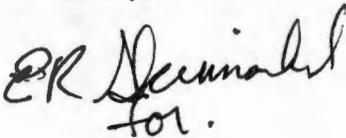


Ms. Kral, Messrs. Ginsburg, Jim and Burke
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processing applications from DOE on March 26, 2002, which prompted a notification to the Environmental Protection Agency (EPA) and the affected states on April 2, 2002, and subsequent permitting actions according to the timetable and requirements of AOP issuance in Washington Administrative Code (WAC) 173-401-725. In accordance with WAC 173-401-800 for public involvement, the public comment period started on April 10, 2002, and ended on May 10, 2002. No public comments were received by Ecology.

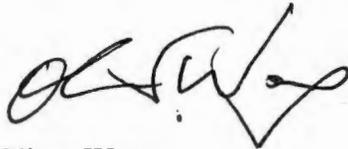
The enclosed attachment shall be inserted at the end of Attachment 2 of the AOP (Health License). The terms and conditions of this revision become effective immediately. If you have any questions regarding the issuance of these minor modifications, please contact Oliver Wang of my staff at (509) 736-3040.

Sincerely,



for.

Mike Wilson
Program Manager
Nuclear Waste Program



Oliver Wang
Professional Engineer
Nuclear Waste Program

MW:OW:nc
Attachment: Revision A

cc/attachment: Craig Lawrence
Washington State Department of Health
P.O. Box 47827
Olympia, Washington 98504-7827

Barry Curn
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Richland, Washington 99352

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Administrative Record: Hanford AOP

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cc: Joel Hebdon, Director
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Richland Operations Office
Richland, Washington 99352

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Douglas Hardesty
Office of Air Quality Program
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue
Seattle, Washington 98101

Permit Register-Washington State
Department of Ecology
P.O. Box 47600
Olympia, Washington 98504-7600

Ken Niles, OOE

Revision A

June 5, 2002

This revision includes 23 new Notice of Constructions (NOCs), and is issued as minor modification to the Hanford Site Air Operating Permit (AOP) according to WAC 173-401-725. The public comment period was from April 10, 2002 to May 10, 2002. There were no review comments received during the public involvement period. Revision A includes 228 pages (A-1 to A-228). The revised permitting conditions and requirements are in effect immediately.

References:

1. 02-RCA-085, "Application for Group Processing of Minor Modifications to the Hanford Site Title V Air Operating Permit (AOP)-Number 00-05-006," memo from Department of Energy to Ecology and Health on December 6, 2001.
2. 02-RCA-0188, "Application for Inclusion of Four Additional Approval Orders for Group Processing of Minor Modifications to the Hanford Site Title V Air Operating Permit (AOP) (Number 00-05-006)," memo from Department of Energy to Ecology and Health on February 21, 2002.
3. 02-RCA-0214, "Application for Inclusion of Two Additional Approval Orders for Group Processing of Minor Modifications to the Hanford Site Title V Air Operating Permit (AOP) (Number 00-05-006)," memo from Department of Energy to Ecology and Health on March 7, 2002.
4. 02-RCA-0238, "Application for Inclusion of Seven Additional Approval Orders for Group Processing of Minor Modifications to the Hanford Site Title V Air Operating Permit (Number 00-05-006)," memo from Department of Energy to Ecology and Health on March 22, 2002.
5. "EPA and Affected State Notification of Group Processing of Minor Modifications to the Hanford Site Title V Air Operating Permit (AOP)," memo from Ecology to EPA and Affected States on April 2, 2002.

Summary sheet of minor modifications

These minor modifications revise attachment 2 of the Hanford Air Operating Permit issued June 11th 2001.

1. **AIR 01-405**, dated 4/26/01, (NOC ID 23) Waste Receiving and Processing Facility (WRAP) 296-W-4 NOC revised February 6, 2001 and approved via AIR 01-405. This revision includes the recalculation of the MEI and the inclusion of **200 area diffuse/fugitive emissions**. *This revision has since been superceded and replaced by AIR 01-1001, which is also included in this minor modification package.*
2. **AIR 01-606**, dated 6/20/01, (NOC ID 5) NOC ID 379 Tank Waste Remediation System (TWRS) Vadose Zone Characterization, obsoleted upon receipt of Revision 2 received April 16, 2001, approved via AIR 01-606, June 21, 2001. NOC ID 5 issued to reflect the Conditions and Limitations of operation for this project. Includes emission units **Air Rotary Drilling**, and **Air Hammer Drilling**. *This revision has since been superceded and replaced by AIR 02-211, which is also included in this minor modification package.*
3. **AIR 01-710**, dated 7/18/01, (NOC ID 374) Vertical Calciner at the Plutonium Finishing Plant (PFP) 291-Z-1 NOC Revised the process description approved June 26, 2001. Current revision under approval letter AIR 01-710.
4. **AIR 01-711**, dated 7/26/01, (NOC ID 289) Canister Storage Building (CSB) Emission Unit 296-H-12. NOC Revised to provide inclusion of shipping port fuel from storage at T-plant and fuel from F and H Reactor Basins. Approval letter AIR 01-711, mailed on July 30, 2001.
5. **AIR 01-802**, dated 8/15/01, (NOC ID 443) Magnesium Hydroxide Precipitation Process at PFP Emission Unit 291-Z-1 NOC Revision approved July 25, 2001 replaced all previous conditions and limitations. *This revision has since been superceded and replaced by AIR 01-1102, which is also included in this minor modification package.*
6. **AIR 01-907**, dated 9/13/01, (NOC ID 229) Cold Vacuum Drying Facility (CDV Emission Unit) NOC Revised in the July 24, 2001 RTAM. Activity added to process description. *This revision has since been superceded and replaced by AIR 01-1206, which is also included in this minor modification package.*
7. **AIR 01-1001**, dated 10/01/01, (NOC ID 23) WRAP Emission Unit 296-W-4, and 200 Area diffuse/fugitive emissions. NOC Revised September 11, 2001 incorporated comments resolved during review of DOE/RL-2000-34, revision 0, and replaced all previous conditions of approval.
8. **AIR 01-1004**, dated 10/08/01, (NOC ID 450) PFP Emission Units 296-Z-5, Z-6 and Z-7 project W-460 Plutonium Stabilization and Handling NOC Application/Permit Revision submitted and approved at the October 2, 2001 RTAM. Revised the process description to include thermogravimetric analysis (TGA) and replaced all previous conditions and limitations.
9. **AIR 01-1006**, dated 10/09/01, (NOC ID 494) Chemical Sciences Laboratory (329 Building) Emission Unit EP -329-01-S. This 300 Area NOC was modified to include research activities using argon isotopes. This modification superceded and obsoletes the previous approval (NOC ID 64).
10. **AIR 01-1013**, dated 10/25/01, (NOC ID 209) Disposition of Plutonium Bearing Alloys at PFP Emission Unit 291-Z-1. NOC revised process description to include thermogravimetric analysis,

submitted and approved at October 9, 2001 RTAM. *This revision has since been superceded and replaced by AIR 02-203, which is also included in this minor modification package.*

11. **AIR 01-1102**, dated 11/08/01, (NOC ID 443) Magnesium Hydroxide Precipitation Process at PFP Emission Unit 291-Z-1 NOC Revision provided process description changes and replaced all previous conditions and limitations.
12. **AIR 01-1103**, dated 11/08/01, (NOC ID 451) Waste Sampling and Characterization Facility (WSCF) Emission Unit 296-W-01, 296-W-02 and 200 area diffuse/fugitive emissions. Inspection on 12/04/00 resulted in issuance of new Conditions and Limitations, on November 08, to reflect new format and standard conditions and limitations, and to specify certification requirements. *This approval letter was followed with corrected letter, AIR 01-1201, mailed on December 20, 2001 to provide an approval number and date approved and is also included in this minor modification package*
13. **AIR 01-1104**, dated 11/16/01, (NOC ID 500) 224-T Emission Unit 291-T-1, portable units Type-1, Type-2, Type-3, and 200 area diffuse/fugitive emissions. Facility Entering and Characterizing Process Cells NOC revision replaced all previous conditions and limitations.
14. **AIR 01-1107**, dated 11/16/01, (NOC ID 302) EP-325-01-S Radiochemical Processing Laboratory 325 Building Hazardous Waste Treatment Unit NOC Revision replaced all previous conditions of approval and provide condition changes/clarifications.
15. **AIR 01-1201**, dated 12/20/01, (NOC ID 451) Waste Sampling and Characterization Facility (WSCF) Emission Unit 296-W-01, 296-W-02 and 600 area diffuse/fugitive emissions. Corrected letter, AIR 01-1201, mailed on December 20, 2001 provided an approval number and date approved.
16. **AIR 01-1206**, dated 12/20/01, (NOC ID 229) CDV Emission Unit . Revision approved at the November 20, 2001 RTAM. New Condition/Limitation added to allow delay in leak testing of stack emissions sample line from December 2001 to January 2002.
17. **AIR 01-1017**, 11/5/01, (NOC ID 435) Tank Farms Restoration and Safe Operations, Project W-314 NOC approved revisions replaces all previous conditions of approval of AIR 00-310. Effects the Guzzler, Type 1, 2, 3, portables and 200 area diffuse emissions.
18. **AIR 01-1108**, 11/15/01, (NOC ID 484) AY tank farm Emission Unit 296-A-18, 241-AY-101 Annulus Primary Tank Wall Cleaning Activities original NOC approved November 15, 2001 via AIR 01-1108.
19. **AIR 02-203**, 2/13/02, (NOC ID 201) PFP 291-Z-1. Corrected letter and Conditions/Limitations to reflect correct revision number and approval date for NOC Revision Form (AIR 01-1013). The correct revision number is DOE/RL-96-79, Rev 0F and the NOC Revision Form approval date is September 5, 2001.
20. **AIR 02-206**, 2/13/02, (NOC ID 491) Radiochemical Processing Laboratory (325 Building). Notice of Construction modification submitted to incorporate a new process that increases the amount of thorium parent material to 30,000 kg. This approval replaced all previous conditions/limitations for this NOC.
21. **AIR 02-207**, 2/14/02, (NOC ID 254) Life Sciences Building – 1 (331 Building). NOC Modification, to update facility floor plan configurations, incorporate proposed research programs, and to incorporate new radionuclides. This approval replaced all previous Conditions/Limitations for this NOC.

22. **AIR 02-208, 2/22/02, (NOC ID 350) Effluent Treatment Facility (ETF).** Revision allows tanker certification testing. . This approval replaced all previous Conditions/Limitations for this NOC.
23. **AIR 02-211, 2/26/02, (NOC ID 5) (TWRS) Vadose Zone Characterization, emission units Air Rotary Drilling, and Air Hammer Drilling.** NOC Revision approved changed wording in the NOC. This approval replaced all previous Conditions/Limitations for this NOC.

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR

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JUN. - 3 2002

Department of Ecology
NWP Kennewick

**PROJECT TITLE: CONSTRUCTION AND OPERATION OF THE WASTE RECEIVING AND
PROCESSING (WRAP) FACILITY**

**Date Approved: 26-Apr-01
Emission Unit Name: 296-W-4**

This is a MAJOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: BARCT

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Description of Abatement Technology	Required Number of Units	Additional Description/Conditions
	HEPA	2	Redundant systems in parallel consisting of two banks each
	HEPA	2	Redundant systems in parallel consisting of two banks each
	Prefilter	1	Prefilter for each HEPA housing
	Fan	4	

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Regulatory Requirements	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Method 2 appendix A Method 114 appendix B 61.93(b)(2)(ii) ANSI N13.1	All radionuclides which could contribute 10% of the potential EDE.	Continuous, Collect samples biweekly at a minimum
Sampling Requirements: Continuous			

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

Original NOC (DOE/RL-93-15, Rev 0) approved September 7, 1993 via AIR 93-907.

Revised by RTAM on July 9, 1996, approval to change monitoring technology.

Revision form submitted and approved January 20, 1999 to more accurately reflect actual operations.

Revision form submitted and approved May 4, 1999 to more accurately reflect actual operations.

NOC revised (DOE/RL-2000-34, Rev. 0) February 6, 2001 and approved via AIR 01-405. This revision includes the recalculation of the MEI and the inclusion of diffuse/fugitive emissions.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 5.63E-02 mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to 1.13E+02 mrem/year to the Maximally Exposed Individual.

3) **This process is limited to:**

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.

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 be 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, 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.

In the LOW-LEVEL WASTE RESTRICTED 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.

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

Alpha 0	1.00E+04
Beta 0	1.50E+05

5) **These conditions and limitations must be proceduralized prior to starting the activities described in the Notice of Construction.**

Condition added by AIR 01-405.

6) **This approval, with its Conditions and Limitations, constitutes an amendment to the Department's Radioactive Air Emission License, and must be included in the next revision of the Hanford Air Operating Permit (WAC 246-247-060(1)(e) and (2)(c).**

Condition added by AIR 01-405.

7) **If this emission unit is not in compliance with the standards in WAC 245-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060-(2)(d)).**

Condition added by AIR 01-405.

8) **The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).**

Condition added by AIR 01-405.

9) **The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(10) and (11)).**

Condition added by AIR 01-405.

10) **The facility must be able to demonstrate workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).**

Condition added by AIR 01-405.

11) **The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13) and WAC 246-247-075(6)).**

Condition added by AIR 01-405.

12) **The department reserves the right to inspect and audit this emission unit during construction and operation-- including all activities, equipment, operations, documents, data, and other records related to compliance with WAC 246-247-080(1)).**

Condition added by AIR 01-405.

13) **The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards such as ANSI/ASME NQA-1-1988, ANSI/ASME NQA-2-1986, QAMS-004 and QAMS-005. (WAC 246-247-075(6)).**

Condition added by AIR 01-405.

- 14) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).

Condition added by AIR 01-405.

- 15) All reports and records must be kept and reported according to 40 CFR 61, Subpart H (WAC 246-247-080(2)).

Condition added by AIR 01-405.

- 16) All measured or calculated emissions must be reported annually (WAC 246-247-080(3)).

Condition added by AIR 01-405.

- 17) Any unexpected release of radioactivity, shutdown or other condition that if allowed to persist, would result in the emission of radionuclides in excess of any standards or limitation in the license, or that lasts more than four hours, must be reported to the department within 24 hours. Applicable standards (WAC 246-247-040) including unit specific emission limits, the offsite dose standard, BARCT or ALARACT, whichever is applicable, or any limitations included in the approval.

Condition added by AIR 01-405.

- 18) When this project is complete, or operations cease, the facility must notify the department via a report of closure, including whether or not any potential for airborne releases occurred (WAC 246-247-080(5)).

Condition added by AIR 01-405.

- 19) The facility shall make requested documents available in a timely manner for review. (WAC 246-247-080(10)).

Condition added by AIR 01-405.

- 20) The owner/operator must inform the Department of Health whenever the activity associated with this NOC or any of the conditions or limits contained in this approval are completed, abandoned, or otherwise made obsolete.

Condition added by AIR 01-405.

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR

**PROJECT TITLE: CONSTRUCTION AND OPERATION OF THE WASTE RECEIVING AND
PROCESSING (WRAP) FACILITY**

Date Approved: 26-Apr-01

Emission Unit Name: 200 AREA DIFFUSE/FUGITIVE

This is a MINOR, FUGITIVE, non-point source emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: **BARCT**

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Description of Abatement Technology	Required Number of Units	Additional Description/Conditions
			Abatement controls as required in the following Conditions and Limitations.

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Regulatory Requirements	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075[3]	Appendix B, Method 114	All radionuclides which could contribute 10% of the potential EDE.	

There are no sampling requirements.

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

Original NOC (DOE/RL-93-15, Rev 0) approved September 7, 1993 via AIR 93-907.

Revised by RTAM on July 9, 1996, approval to change monitoring technology.

Revision form submitted and approved January 20, 1999 to more accurately reflect actual operations.

Revision form submitted and approved May 4, 1999 to more accurately reflect actual operations.

NOC revised (DOE/RL-2000-34, Rev. 0) February 6, 2001 and approved via AIR 01-405. This revision includes the recalculation of the MEI and the inclusion of diffuse/fugitive emissions.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license

(WAC 246-247-060(5)).

- 2) The total abated emission limit for this Notice of Construction is limited to 5.63E-02 mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to 1.13E+02 mrem/year to the Maximally Exposed Individual.
- 3) **This process is limited to:**

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.

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 be 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, 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 replacing a damaged lid outside of a glovebox is allowed.

In the TRANSURANIC WASTE PROCESS LINE--

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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.

In the LOW-LEVEL WASTE RESTRICTED 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.

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

Alpha 0	1.71E+04
Beta 0	2.56E+05

- 5) Diffuse/Fugitive emissions associated with drum storage shall be monitored using the 200 Area near-field ambient air monitors. Any change to this near-field ambient monitoring program must be approved by the department.
Condition added by AIR 01-405.
- 6) The sampling frequency shall follow that of the ambient near-field program.
Condition added by AIR 01-405.
- 7) Single station composites of ambient near-field air samples shall be analyzed for radionuclide expected to stored and handled at the facility.
Condition added by AIR 01-405.
- 8) This approval, with its Conditions and Limitations, constitutes an amendment to the Department's Radioactive Air Emission License, and must be included in the next revision of the Hanford Air Operating Permit (WAC 246-247-060(1)(e) and (2)(c)).
Condition added by AIR 01-405.
- 9) If this emission unit is not in compliance with the standards in WAC 245-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060-(2)(d)).
Condition added by AIR 01-405.
- 10) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
Condition added by AIR 01-405.
- 11) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(10) and (11)).
Condition added by AIR 01-405.
- 12) The facility must be able to demonstrate workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).
Condition added by AIR 01-405.
- 13) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13) and WAC 246-247-075(6)).
Condition added by AIR 01-405.
- 14) The department reserves the right to inspect and audit this emission unit during construction and operation-- including all activities, equipment, operations, documents, data, and other records related to compliance with WAC 246-247-080(1)).
Condition added by AIR 01-405.

- 15) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards such as ANSI/ASME NQA-1-1988, ANSI/ASME NQA-2-1986, QAMS-004 and QAMS-005. (WAC 246-247-075(6)).
Condition added by AIR 01-405.
- 16) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
Condition added by AIR 01-405.
- 17) All reports and records must be kept and reported according to 40 CFR 61, Subpart H (WAC 246-247-080(2)).
Condition added by AIR 01-405.
- 18) All measured or calculated emissions must be reported annually (WAC 246-247-080(3)).
Condition added by AIR 01-405.
- 19) Any unexpected release of radioactivity, shutdown or other condition that if allowed to persist, would result in the emission of radionuclides in excess of any standards or limitation in the license, or that lasts more than four hours, must be reported to the department within 24 hours. Applicable standards (WAC 246-247-040) including unit specific emission limits, the offsite dose standard, BARCT or ALARACT, whichever is applicable, or any limitations included in the approval.
Condition added by AIR 01-405.
- 20) When this project is complete, or operations cease, the facility must notify the department via a report of closure, including whether or not any potential for airborne releases occurred (WAC 246-247-080(5)).
Condition added by AIR 01-405.
- 21) The facility shall make requested documents available in a timely manner for review. (WAC 246-247-080(10)).
Condition added by AIR 01-405.
- 22) The owner/operator must inform the Department of Health whenever the activity associated with this NOC or any of the conditions or limits contained in this approval are completed, abandoned, or otherwise made obsolete.
Condition added by AIR 01-405.

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR

**PROJECT TITLE: TANK WASTE REMEDIATION SYSTEM VADOSE ZONE
CHARACTERIZATION**

Date Approved: 20-Jun-01

Emission Unit Name: 200 AREA DIFFUSE/FUGITIVE

This is a MINOR, FUGITIVE, non-point source emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: BARCT

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
			Abatement controls as required in the following Conditions and Limitations.

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Regulatory Requirements	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075[3]	Appendix B, Method 114	All radionuclides which could contribute 10% of the potential EDE.	

There are no sampling requirements.

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

- 06/21/01 NOC ID 379 obsoleted upon receipt of "Tank Waste Remediation System Vadose Zone Characterization, Revision 2" (DOE/ORP-2000-05) received April 16, 2001, approved via AIR 01-606, June 20, 2001. NOC ID 5 issued to reflect the Conditions and Limitations of operation for this project.
- 03/12/01 NOC IDs 389, 409, 454, 455, 490 combined into NOC ID 379.
- 11/09/00 NOC Revision Form approved on November 9, 2000 and clarified via AIR 00-1104 on November 17, 2000.
- 06/21/00 Vadose Zone NOC Revision Form approved on June 21, 2000.
- 05/26/00 Tank Waste Remediation System Vadose Zone Characterization, Revision 1 (DOE/ORP-2000-05). Approved via AIR 00-515 on May 26, 2000.
- 05/11/00 Tank Waste Remediation System Vadose Zone Characterization, Revision 0 (DOE/ORP-2000-05). Approved via AIR 00-505.
- 11/01/99 NOC Revision Form approved on November 1, 1999.

08/23/99 NOC Revision Form approved on August 23, 1999.

07/14/99 Tank Waste Remediation System Vadose Zone Characterization (DOE/RL-99-34 submitted May 1999).
Approved by AIR 99-701.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 7.03E-02 mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to 7.03E-02 mrem/year to the Maximally Exposed Individual.
- 3) **This process is limited to:**
subsurface soil sampling within selected single-shell tank farms. Several methods of sampling and drilling techniques are approved, 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 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 various 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.

Other possible 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

Other 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 cm² for beta/gamma or 2,000 dpm/100 cm² 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 cm² for beta/gamma or 2,000 dpm/100 cm² 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 cm² for beta/gamma or 2,000 dpm/100 cm² 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 cm² for beta/gamma or 2,000 dpm/100 cm² for alpha and the casing is sleeved in plastic, no more than one foot 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 cm² for beta/gamma or 2,000 dpm/100 cm² 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 ft³ of soil may be excavated per year. Perform excavation using manual methods, backhoe, and/or the Guzzler.

4) **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

- 5) These Conditions and Limitations must be proceduralized prior to starting the activities described in the Notice of Construction.

Condition/Limitation added via AIR 99-701, July 7, 1999.

- 6) 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)).

Condition/Limitation added via AIR 99-701, July 7, 1999.

- 7) This NOC becomes obsolete on July 15, 2019.
Condition/Limitation added via AIR 99-701, July 7, 1999.
- 8) The facility shall notify the department at least seven days prior to any planned preoperational testing of the emission unit's emissions control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
Condition/Limitation added via AIR 99-701, July 7, 1999.
- 9) The department retains the right to conduct its own stack sampling, environmental monitoring or other testing, as required around this unit to assure compliance. If the department so decides, the facility must make provision for such testing (WAC 246-247-075(10) and (11)).
Condition/Limitation added via AIR 99-701, July 7, 1999.
- 10) The facility must be able to demonstrate the reliability and accuracy of emission data and other test results from this unit (WAC 246-247-075(13) and WAC 246-247-075(6)). The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards listed in, or equivalent to, those listed in the above cited regulation.
Condition/Limitation added via AIR 99-701, July 7, 1999.
- 11) If there is an unexpected release of radioactivity or if there is a shutdown or other condition that, if it were allowed to persist, would result in emissions of radionuclides in excess of any standards or limitations in the license or that lasts more than four hours, it must be reported to the department within 24 hours. Applicable standards (WAC 246-247-040) include unit specific emission limits, the offsite dose standard, BARCT or ALARACT, whichever is applicable, or any limitations included in this approval.
Condition/Limitation added via AIR 99-701, July 7, 1999.
- 12) The department reserves the right to inspect and audit this unit during construction and operation, including all activities, equipment, operations, documents, data, and other records related to compliance with the regulations (WAC 246-247-080 (1)).
Condition/Limitation added via AIR 99-701, July 7, 1999.
- 13) The facility shall make requested documents available in a timely manner for review (WAC 246-247-080(10)).

Condition/Limitation added via AIR 99-701, July 7, 1999.

- 14) When this project is completed, or operations cease, the facility shall notify the department via a report of closure, including whether or not any potential for airborne release occur (WAC 246-247-080(6)).
Condition/Limitation added via AIR 99-701, July 7, 1999.
- 15) All measured or calculated emissions must be reported annually in the Hanford Site Air Emissions Report (WAC 246-247-080(3)).
Condition/Limitation added via AIR 99-701, July 7, 1999.
- 16) All reports and records must be kept and reported according to 40 CFR 61, Subpart H. (WAC 246-247-080(2)).
Condition/Limitation added via AIR 99-701, July 7, 1999.
- 17) This unit must be fully accessible to Department of Health inspectors. If there are any specific training requirements or have restrictions or special requirements for entry, they must be given to the department when they are known to allow for unannounced inspections, as required by EPA (WAC 246-247-080(9)). At a minimum, for unannounced inspections, such requirements or restrictions must be told to inspectors that morning, with the opportunity for the inspectors to meet those requirements. For prior announced inspections, such notification must occur far enough in advance for the inspectors to have reasonable time to meet the requirements.
Condition/Limitation added via AIR 99-701, July 7, 1999.
- 18) Records must be readily (promptly) available for this unit. Those records must be maintained onsite, and must be retained for at least five years (WAC 246-247-080 (8)).
Condition/Limitation added via AIR 99-701, July 7, 1999.
- 19) The facility must maintain a log in an approved format for this activity or emission unit (WAC 246-247-080(7)).
Condition/Limitation added via AIR 99-701, July 7, 1999.
- 20) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
Condition/Limitation added via AIR 99-701, July 7, 1999.
- 21) 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 activity and casing removal. All periodic confirmatory samples will be collected and analyzed following EPA Method 114.
Condition/Limitation added via AIR 99-701, July 7, 1999.
- 22) The facility must be able to demonstrate that the workers associated with this emission unit are adequately trained in the use and maintenance of emission control and monitoring systems, and in the performance of associated test and emergency response procedures (WAC 246-247-075(12)).
Condition/Limitation added via AIR 99-701, July 7, 1999.
- 23) 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.
- 24) 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.

- 25) If the department finds that the emission unit described in this NOC is not in compliance with the standards in WAC 246-247-040 during construction or during operation the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060(2)(d)).
Condition/Limitation added via AIR 99-701, July 7, 1999.
- 26) 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).
- 27) Approval is given as an alternative to transfer the perched water directly from borehole to the tanker.
- 28) For various characterization options covered under this NOC, the maximum TEDE to the hypothetical off site MEI shall not exceed $7.03 \text{ E-}02$ mrem/year. The maximum TEDE to the MEI shall not exceed $5.7 \text{ E-}02$ mrem/year at the Energy Northwest location as determined by CAP88PC, Version 2 supplied as supporting documentation.
- 29) 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.
Condition/Limitation added via AIR 00-505 on May 11, 2000.
- 30) 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:
- HPT coverage will be performed as specified in the radiological permit.
 - 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.
 - For excavations in CA's, HCA's, SCA's, and URMA's, if beta-gamma activity greater than 1000 dpm/probe area ($5000 \text{ dpm}/100 \text{ cm}^2$) is identified, alpha surveys will also be performed.
 - Suppressants such as water, fixatives, covers, or windscreens will be used as necessary, including at the end of each shift or when sustained or predicted winds are >20 mph. Excavations are not allowed when sustained or predicted winds will be >20 mph.
 - 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.
Condition/Limitation added via AIR 00-505 on May 11, 2000.
- 31) 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.
Condition/Limitation added via AIR 00-505 on May 11, 2000.

- 32) Casing size reduction may also be by unthreading.
Condition/Limitation added via AIR 00-505 on May 11, 2000.
- 33) Drive Split Spoon Sampler will be included as a soil sampling technique.
Condition/Limitation added via AIR 00-505 on May 11, 2000.
- 34) 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.
Condition/Limitation added via AIR 00-505 on May 11, 2000.
- 35) 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.

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR

**PROJECT TITLE: TANK WASTE REMEDIATION SYSTEM VADOSE ZONE
CHARACTERIZATION**

Date Approved: 20-Jun-01

Emission Unit Name: AIR ROTARY DRILLING

This is a MINOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: **BARCT**

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
	HEPA	1	On the containment structure.
	HEPA	1	On the Air Rotary Exhaust.
	HEPA	1	To be used as a record filter on the Air Rotary Exhaust.

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Regulatory Requirements	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Appendix B, Method 114(3)	All radionuclides which could contribute 10% of the potential EDE.	The record filter is to be counted annually (either a destructive or non-destructive technique) using a gamma spectrometer calibrated to Cs-137.

Sampling Requirements: Destructive or non-destructive analysis of the record filter combined with field surveys.

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

- 06/21/01 NOC ID 379 obsoleted upon receipt of "Tank Waste Remediation System Vadose Zone Characterization, Revision 2" (DOE/ORP-2000-05) received April 16, 2001, approved via AIR 01-606, June 21, 2001. NOC ID 5 issued to reflect the Conditions and Limitations of operation for this project.
- 03/12/01 NOC IDs 389, 409, 454, 455, 490 combined into NOC ID 379.
- 11/09/00 NOC Revision Form approved on November 9, 2000 and clarified via AIR 00-1104 on November 17, 2000.
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- 05/26/00 Tank Waste Remediation System Vadose Zone Characterization, Revision 1 (DOE/ORP-2000-05). Approved via AIR 00-515 on May 26, 2000.
- 05/11/00 Tank Waste Remediation System Vadose Zone Characterization, Revision 0 (DOE/ORP-2000-05).

Approved via AIR 00-505.

11/01/99 NOC Revision Form approved on November 1, 1999.

08/23/99 NOC Revision Form approved on August 23, 1999.

07/14/99 Tank Waste Remediation System Vadose Zone Characterization (DOE/RL-99-34 submitted May 1999).
Approved by AIR 99-701.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to $7.03E-02$ mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to $7.03E-02$ mrem/year to the Maximally Exposed Individual.
- 3) **This process is limited to:**
subsurface soil sampling within selected single-shell tank farms. Several methods of sampling and drilling techniques are approved, 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 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 various 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.

Other possible 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

Other 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 cm² for beta/gamma or 2,000 dpm/100 cm² 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 cm² for beta/gamma or 2,000 dpm/100 cm² 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 cm² for beta/gamma or 2,000 dpm/100 cm² 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 cm² for beta/gamma or 2,000 dpm/100 cm² for alpha and the casing is sleeved in plastic, no more than one foot 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 cm² for beta/gamma or 2,000 dpm/100 cm² 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 ft³ of soil may be excavated per year. Perform excavation using manual methods, backhoe, and/or the Guzzler.

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

Ac	227	6.82E-09
Am	241	5.22E-04
Am	243	1.16E-08
C-	14	3.19E-06
Cm	242	4.08E-06
Cm	243	1.42E-07
Cm	244	1.32E-06
Co	60	1.45E-05
Cs	134	2.22E-07
Cs	137	2.77E-02
Eu	152	6.19E-06
Eu	154	1.30E-04
Eu	155	3.91E-04
H-	3	1.15E-05
I-	129	2.58E-07
Ni	59	7.69E-06
Ni	63	7.48E-04
Np	237	5.32E-08
Pa	231	7.08E-09
Pu	238	3.29E-05
Pu	239	3.00E-03
Pu	240	3.17E-04
Pu	241	1.87E-03
Pu	242	8.97E-09
Ra	226	5.53E-10
Ra	228	2.87E-08
Ru	106	2.56E-08
Sb	125	1.09E-05
Sm	151	2.79E-03
Sn	126	1.19E-06
Sr	90	3.10E-01
Tc	99	5.33E-05
Th	229	1.16E-09
Th	232	1.14E-09
U-	232	8.79E-08
U-	233	3.38E-07
U-	234	6.67E-06
U-	235	2.95E-07
U-	236	6.82E-08
U-	238	6.72E-06
Y-	90	3.10E-01
Zr	93	3.61E-06

5) These Conditions and Limitations must be proceduralized prior to starting the activities described in the Notice of Construction.

Condition/Limitation added via AIR 99-701, July 7, 1999.

- 6) This NOC becomes obsolete on July 15, 2019.

Condition/Limitation added via AIR 99-701, July 7, 1999.

- 7) The facility shall notify the department at least seven days prior to any planned preoperational testing of the emission unit's emissions control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-47-060(4)).

Condition/Limitation added via AIR 99-701, July 7, 1999.

- 8) The department retains the right to conduct its own stack sampling, environmental monitoring or other testing, as required around this unit to assure compliance. If the department so decides, the facility must make provision for such testing (WAC 246-247-075(10) and (11)).

Condition/Limitation added via AIR 99-701, July 7, 1999.

- 9) The facility must be able to demonstrate the reliability and accuracy of emission data and other test results from this unit (WAC 246-247-075(13) and WAC 246-247-075(6)). The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards listed in, or equivalent to, those listed in the above cited regulation.

Condition/Limitation added via AIR 99-701, July 7, 1999.

- 10) If there is an unexpected release of radioactivity or if there is a shutdown or other condition that, if it were allowed to persist, would result in emissions of radionuclides in excess of any standards or limitations in the license or that lasts more than four hours, it must be reported to the department within 24 hours. Applicable standards (WAC 246-247-040) include unit specific emission limits, the offsite dose standard, BARCT or ALARACT, whichever is applicable, or any limitations included in this approval.

Condition/Limitation added via AIR 99-701, July 7, 1999.

- 11) The department reserves the right to inspect and audit this unit during construction and operation, including all activities, equipment, operations, documents, data, and other records related to compliance with the regulations (WAC 246-247-080 (1)).

Condition/Limitation added via AIR 99-701, July 7, 1999.

- 12) The facility shall make requested documents available in a timely manner for review (WAC 246-247-080(10)).

Condition/Limitation added via AIR 99-701, July 7, 1999.

- 13) When this project is completed, or operations cease, the facility shall notify the department via a report of closure, including whether or not any potential for airborne release occur (WAC 246-247-080(6)).

Condition/Limitation added via AIR 99-701, July 7, 1999.

- 14) All measured or calculated emissions must be reported annually in the Hanford Site Air Emissions Report (WAC 246-247-080(3)).

Condition/Limitation added via AIR 99-701, July 7, 1999.

- 15) Periodic confirmatory sampling is required. For the air rotary type drilling this shall consist of a destructive or non-destructive analysis of the record filter combined with radiological field surveys during the work. The record HEPA type filter located downstream shall have a minimum efficiency of 90 percent for particulates with a median diameter of 0.3 microns as specified by the manufacturer. The radiological analyses from the soil samples will be averaged to determine the isotopic distribution of Strontium-90 (Sr-90), Cesium-137 (Cs-137), Plutonium-239 (Pu-239) and Americium (Am-241). The record filter will be counted using a gamma spectrometer calibrated to Cs-137. Counting will be done annually using either a destructive or non-destructive technique.

The soil sample isotope ratios will be applied to Cs-137 on the record filter to confirm low emissions.

In addition, the HEPA filter housing shall be field surveyed after the completion of each borehole to verify low emissions. Periodic confirmatory monitoring of the passive HEPA type filter will be accomplished by performing a field survey of the filter housing to confirm low emissions. The field survey of the passive HEPA type filter will be performed after the completion of each borehole. These methods of performing these "field surveys" shall be submitted to the department for approval (WAC 246-247-075(3)).

Condition/Limitation added via AIR 99-701, July 7, 1999.

- 16) All reports and records must be kept and reported according to 40 CFR 61, Subpart H (WAC 246-247-080(2)).

Condition/Limitation added via AIR 99-701, July 7, 1999.

- 17) This unit must be fully accessible to Department of Health inspectors. If there are any specific training requirements or have restrictions or special requirements for entry, they must be given to the department when they are known to allow for unannounced inspections, as required by EPA (WAC 246-247-080(9)). At a minimum, for unannounced inspections, such requirements or restrictions must be told to inspectors that morning, with the opportunity for the inspectors to meet those requirements. For prior announced inspections, such notification must occur far enough in advance for the inspectors to have reasonable time to meet the requirements.

Condition/Limitation added via AIR 99-701, July 7, 1999.

- 18) Records must be readily (promptly) available for this unit. Those records must be maintained onsite, and must be retained for at least five years (WAC 246-247-080(8)).

Condition/Limitation added via AIR 99-701, July 7, 1999.

- 19) The facility must maintain a log in an approved format for this activity or emission unit (WAC 246-247-080(7)).

Condition/Limitation added via AIR 99-701, July 7, 1999.

- 20) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).

Condition/Limitation added via AIR 99-701, July 7, 1999.

- 21) 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 activity and casing removal. All periodic confirmatory samples will be collected and analyzed following EPA Method 114.

Condition/Limitation added via AIR 99-701, July 7, 1999.

- 22) The facility must be able to demonstrate that the workers associated with this emission unit are adequately trained in the use and maintenance of emission control and monitoring systems, and in the performance of associated test and emergency response procedures (WAC 246-247-075(12)).

Condition/Limitation added via AIR 99-701, July 7, 1999.

- 23) If the department finds that the emission unit described in this NOC is not in compliance with the standards in WAC 246-247-040 during construction or during operation the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060(2)(d)).

Condition/Limitation added via AIR 99-701, July 7, 1999.

- 24) 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.

Condition/Limitation added via AIR 99-701, July 7, 1999.

- 25) Emissions from air rotary drilling activities shall be contained using an active ventilation system attached to the process equipment and a passive vent system attached to the process equipment containment structure. The active ventilation system shall have radioactive air emissions abated by one stage of high efficiency particulate air (HEPA) filter. The HEPA filter shall be tested to provide a minimum collection efficiency of 99.95 percent for particulates with a median diameter of 0.3 microns. The containment structure shall have a passive HEPA type filter that will provide high efficiency collection. The exhaust fan shall have a maximum average velocity of 0.85 cubic meters per second (1,800 cubic feet per minute) with a range of 0.6 to 1.2 cubic meters per second (1,200 to 2,400 cubic feet per minute) to maintain the ducting between the cyclone and the HEPA filter at atmospheric or less than atmospheric pressure. The drill rig shall be sealed to the casing so that particulates will be contained and routed to the process equipment (e.g., cyclone and torit) located inside the plastic containment structure. The flange on the well discharge head and on the inlet of the cyclone shall be double flanged to reduce the potential for an unabated release to the atmosphere. Additionally, the flexible line connecting the well discharge head and the cyclone shall be encased by another flexible line. The flexible encasement line and flanges shall also be vented to the cyclone. The plastic containment structure surrounding the process control equipment shall be fitted with one stage of HEPA type filtration. When the borehole has been completed and the process equipment is ready to be removed, equipment shall be broken down at the disconnect points and contaminated equipment openings shall be sealed or plugged to minimize the spread of contamination. All work related to disconnecting and moving the equipment shall be performed in accordance with TWRS as low as reasonably achievable control technology (ALARACT) demonstration number 12 or subsequent revision ALARACT "Demonstration for Packaging and Transportation of Equipment and Vehicles".

Condition/Limitation added via AIR 99-701, July 7, 1999.

- 26) APQ associated with the air rotary drilling shall be tracked and documented on an approved log and subtracted from the APQ listed for the emissions associated with diffuse and fugitive emissions.

Condition/Limitation added via AIR 99-701, July 7, 1999.

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR

**PROJECT TITLE: TANK WASTE REMEDIATION SYSTEM VADOSE ZONE
CHARACTERIZATION**

Date Approved: 20-Jun-01

Emission Unit Name: AIR HAMMER DRILLING

This is a MINOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: **BARCT**

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
	HEPA	1	The HEPA filter may or may not have an exhaust fan associated with it.

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Regulatory Requirements	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Appendix B, Method 114(3)	All radionuclides which could contribute 10% of the potential EDE.	

Sampling Requirements: For passive HEPA filter, perform field survey of the filter housing after each borehole.

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

- 06/21/01 NOC ID 379 obsoleted upon receipt of "Tank Waste Remediation System Vadose Zone Characterization, Revision 2" (DOE/ORP-2000-05) received April 16, 2001, approved via AIR 01-606, June 21, 2001. NOC ID 5 issued to reflect the Conditions and Limitations of operation for this project.
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- Cable Tool and Auger with a Split Spoon Core Barrel
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Cs	134	6.58E-05
Cs	137	8.23E+00
Eu	152	1.84E-03
Eu	154	3.86E-02
Eu	155	1.16E-01
H-	3	3.42E-03
I-	129	7.64E-05
Ni	59	2.28E-03
Ni	63	2.22E-01
Np	237	1.58E-05
Pa	231	2.10E-06
Pu	238	9.77E-03
Pu	239	8.91E-01
Pu	240	9.40E-02
Pu	241	5.56E-01
Pu	242	2.66E-06
Ra	226	1.64E-07
Ra	228	8.52E-06
Ru	106	7.60E-06
Sb	125	3.23E-03
Sm	151	8.29E-01
Sn	126	3.54E-04
Sr	90	9.19E+01
Tc	99	1.58E-02
Th	229	3.45E-07
Th	232	3.38E-07
U-	232	2.61E-05
U-	233	1.00E-04
U-	234	1.98E-03
U-	235	8.76E-05
U-	236	2.02E-05
U-	238	2.00E-03
Y-	90	9.19E+01
Zr	93	1.07E-03

5) These Conditions and Limitations must be proceduralized prior to starting the activities described in the Notice of Construction.

Condition/Limitation added via AIR 00-515, November 17, 2000.

6) This NOC becomes obsolete on July 15, 2019.

Condition/Limitation added via AIR 99-701, July 7, 1999.

7) The facility shall notify the department at least seven days prior to any planned preoperational testing of

the emission unit's emissions control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).

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- 14) All measured or calculated emissions must be reported annually in the Hanford Site Air Emissions Report (WAC 246-247-080(3)).

Condition/Limitation added via AIR 00-515, November 17, 2000.

- 15) All reports and records must be kept and reported according to 40 CFR 61, Subpart H (WAC 246-247-080(2)).

Condition/Limitation added via AIR 00-515, November 17, 2000.

- 16) This unit must be fully accessible to Department of Health inspectors. If there are any specific training requirements or have restrictions or special requirements for entry, they must be given to the department when they are known to allow for unannounced inspections, as required by EPA (WAC 246-247-080(9)). At a minimum, for unannounced inspections, such requirements or restrictions must be told to inspectors that morning, with the opportunity for the inspectors to meet those requirements. For prior announced inspections, such notification must occur far enough in advance for the inspectors to have reasonable time to meet the requirements.

Condition/Limitation added via AIR 00-515, November 17, 2000.

- 17) Records must be readily (promptly) available for this unit. Those records must be maintained onsite, and must be retained for at least five years (WAC 246-247-080(8)).

Condition/Limitation added via AIR 00-515, November 17, 2000.

- 18) The facility must maintain a log in an approved format for this activity or emission unit (WAC 246-247-080(7)).

Condition/Limitation added via AIR 00-515, November 17, 2000.

- 19) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).

Condition/Limitation added via AIR 00-515, November 17, 2000.

- 20) 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 3 ft 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 activity and casing removal. All periodic confirmatory samples will be collected and analyzed following EPA Method 114.

Condition/Limitation added via AIR 00-515, November 17, 2000.

- 21) The facility must be able to demonstrate that the workers associated with this emission unit are adequately trained in the use and maintenance of emission control and monitoring systems, and in the performance of associated test and emergency response procedures (WAC 246-247-075(12)).

Condition/Limitation added via AIR 00-515, November 17, 2000.

- 22) If the department finds that the emission unit described in this NOC is not in compliance with the standards in WAC 246-247-040 during construction or during operation the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060(2)(d)).

Condition/Limitation added via AIR 00-515, November 17, 2000.

- 23) Approval is given to use a downhole air hammer to drive a sampler while using a closed end probe.

Condition/Limitation added via AIR 00-515, November 17, 2000.

- 24) Operation of the passive or active ventilation unit during the operation of the air hammer shall be documented on an approved log.

Condition/Limitation added via AIR 00-515, November 17, 2000.

- 25) Emissions associated with the downhole air hammer will be routed to a passive or active ventilated HEPA filter. Pressure gauges will be installed on the emissions unit and will be monitored and recorded daily during operation of the downhole air hammer. Operation in the passive mode will not be allowed if the HEPA inlet pressure exceeds 20 inches water gauge and differential pressure exceeds 5.9 inches water gauge. Operation in the active ventilation mode will not be allowed if the HEPA inlet pressure exceeds 20 inches water gauge and differential pressure exceeds 5.9 inches water gauge. The flow shall not exceed the HEPA filter manufactures recommendation. Emissions from the drill rig shall be minimized using a double gasket seal and a chromed casing. This area shall be smear surveyed at the beginning and end of the work cycle and documented to determine adequacy of seal.

Condition/Limitation added via AIR 00-515, November 17, 2000.

- 26) Periodic confirmatory sampling is required. For the air hammer method, instead of air sampling near the HEPA as described in the NOC, this shall consist of a destructive or non-destructive analysis of the HEPA filter combined with radiological field surveys during the work. The HEPA type filter located downstream of the process equipment shall have a minimum efficiency of 99.95 percent for particulates with a median diameter of 0.3 microns as specified by the manufacturer. The radiological analyses from the soil samples will be averaged to determine the isotopic distribution of Strontium-90 (Sr-90), Cs-137, Plutonium-239 (Pu-239), and Americium (Am-241). The record filter will be counted using a gamma spectrometer calibrated to Cs-137. Counting will be done annually using either a destructive or non-destructive technique.

Condition/Limitation added via AIR 00-515, November 17, 2000.

- 27) The emission unit shall be inspected daily during operation and after any relocations. Line pressure tests will be performed on the line between the well head and the filter and/or fan prior to deploying the air hammer. Line pressure tests will be performed in accordance with ASME/ANSI N510.

Condition/Limitation added via AIR 00-515, November 17, 2000.

- 28) 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.

Condition/Limitation added via AIR 00-515, November 17, 2000.

- 29) APQ associated with the air hammer operation shall not exceed 195 curies. This shall be tracked and documented on an approved log and subtracted from the APQ listed for the emissions associated with diffuse and fugitive emissions.

Condition/Limitation added via AIR 00-515, November 17, 2000.

NOC Application/Permit Revision

NOTE: Any increase to abated or unabated PTE requires a full NOC modification

REASON FOR CHANGE

Submittal Date: 11-27-01

Submittal Type:

NOC Application Revision

New NOC Rev Number: _____

Condition Change/ Clarification

WDOH Condition Number: _____

AOP Condition Number: _____

ALARACT Revision

New ALARACT Rev Number: _____

PROJECT IDENTIFICATION

Project Title: Notice Of Construction For Tank Waste Remediation System Vadose Zone Characterization

Current NOC Application Number: DOE/ORP-2000-05, Rev 2

AEI ID Number (AOP Emission Unit Number(s)): 200 AREA DIFFUSE/FUGITIVE

Current WDOH Approval Letter Number(s): AIR 01-606

WDOH NOC ID Number: 5

DESCRIPTION OF CHANGE

Number of Attachments None

WDOH will provide a new approval letter containing any new or modified conditions that result from the following proposed change.

Proposed Change (provide original and proposed wording):

1. Current wording in Section 1.0, 3rd paragraph, last sentence
Under certain circumstances it may be prudent to complete these characterization boreholes as groundwater monitoring wells.

Change to read:

Under certain circumstances it may be prudent to complete these characterization boreholes as groundwater monitoring wells or to re-enter an existing monitoring well to determine whether that well is appropriate for remediation purposes.

2. Current wording in Section 6.0, 1st paragraph
To accomplish the goals of the vadose zone characterization program, there will be a need to perform subsurface sampling within selected single-shell tank farms identified in Table 1.
Subsurface sampling and drilling techniques will be performed using the guidance document contained in Attachment A.

Change to read:

To accomplish the goals of the vadose zone characterization program, there will be a need to perform subsurface sampling within selected single-shell tank farms identified in Table 1. This activity will include the drilling of new boreholes or the re-entry into existing monitoring wells to determine their appropriateness for remediation purposes. Subsurface sampling and drilling techniques will be performed using the guidance document contained in Attachment A.

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3. Current wording in Section 6.0, 2nd paragraph, 1st sentence
Up to ten equivalent boreholes may be drilled per year (consecutive 12-month period) by the methods described in this section of the NOC.

Change to read:

Up to ten equivalent boreholes may be drilled or re-entered per year (consecutive 12-month period) by the methods described in this section of the NOC.

4. Current wording in Section 6.0, 5th paragraph, 3rd bullet

- Traditional cable tool drilling from top to bottom — a core barrel that is driven into the soil by mechanical impact. The barrel is removed and emptied, and the casing is driven down by impact at surface. At selected depths, samples will be taken and these samples removed from the core barrel before the barrel is hit to dislodge soil into a drum.

Change to read:

- Traditional cable tool drilling from top to bottom — a core barrel that is driven into the soil by mechanical impact. The barrel is removed and emptied, and the casing is driven down by impact at surface unless this is a borehole re-entry and the casing already exists. At selected depths, samples may be taken and these samples removed from the core barrel before the barrel is hit to dislodge soil into a drum. Removal of sand backfill from an existing borehole for well development may be done using a lighter-duty cable actuated rig to deploy the well development tools.

5. Current wording in Section 7.0, 1st paragraph, 1st sentence

The annual possession quantity (APQ) was estimated based on drilling and closing 10 equivalent boreholes per year with the soil containing an average of 330 microcuries of Cs-137 per gram of soil.

Change to read:

The annual possession quantity (APQ) was estimated based on drilling or re-entering and closing 10 equivalent boreholes per year with the soil containing an average of 330 microcuries of Cs-137 per gram of soil.

6. Current wording in Section 7.0, 3rd paragraph, 1st and 2nd sentences

As shown in Attachment D, a maximum of 10 equivalent boreholes may be drilled per year. Each equivalent borehole will have a nominal top diameter of 10 in. for the first 50 ft and a nominal bottom diameter of 8 in. for the remaining 200 ft of boring (average depth is 250 ft).

Change to read:

As shown in Attachment D, a maximum of 10 equivalent boreholes may be drilled or re-entered per year. Each equivalent borehole that is drilled will have a nominal top diameter of about 10 in. for approximately the first 50 ft and a nominal bottom diameter of about 8 in. for approximately the remaining 200 ft of boring (average depth is 250 ft). Borehole diameters may vary depending upon subsurface soil conditions. For boreholes being re-entered, borehole diameters may also vary depending upon the subsurface soil conditions encountered when initially drilled.

7. Current wording in Section 7.0, 4th paragraph, 3rd sentence

The APQ of each isotope for drilling has been calculated using the average isotope ratios multiplied by 330 microcuries of Cs-137 (average) per gram of soil and the total weight of soil (based on an average density of 97.5 lb/ft³ for loose dry sand and gravel [Avallone and Baumeister]) and is provided in Attachment D.

Change to read:

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The APQ of each isotope for drilling or borehole re-entry has been calculated using the average isotope ratios multiplied by 330 microcuries of Cs-137 (average) per gram of soil and the total weight of soil (based on an average density of 97.5 lb/ft³ for loose dry sand and gravel [Avallone and Baumeister]) and is provided in Attachment D.

8. Current wording in Section 7.0, 6th paragraph, 1st sentence
 A summary of the total APQ associated with the installation and closure of 10 equivalent boreholes per year has been provided in Attachment D (4.38 E+04 curies per year).

Change to read:

A summary of the total APQ associated with the drilling, re-entry, and closure of 10 equivalent boreholes per year has been provided in Attachment D (4.38 E+04 curies per year).

9. Current wording in Section 10.0, 1st paragraph, 1st sentence
 Up to 10 equivalent boreholes may be drilled by the methods previously described in the NOC.

Change to read:

Up to 10 equivalent boreholes may be drilled or re-entered by the methods previously described in the NOC.

10. Current wording in Section 10.0, 8th paragraph, 3rd sentence
 If the limit is reached in fewer than 10 boreholes, no more boreholes may be drilled until the 12-consecutive-month period falls below the handling limit.

Change to read:

If the limit is reached in fewer than 10 boreholes, no more boreholes may be drilled or re-entered until the 12-consecutive-month period falls below the handling limit.

SIGNATURES

Handwritten: frow 11/25/01
 11-27-01

Reviewed by Contractor	Reviewed by RI/ORP	Approved by WDOH
<i>[Signature]</i> 11/27/01	<i>[Signature]</i> 11/27/01	<i>[Signature]</i>
<i>[Signature]</i> 11/27/01		
<i>[Signature]</i>		
Date: 11/27/01	Date: 11/27/01	Date: 11/28/01

FOR WDOH USE ONLY

Data Entry Completed By: _____ Date: _____

DEPARTMENT OF HEALTH
 RADIOACTIVE AIR EMISSIONS
 NOTICE OF CONSTRUCTION
 APPROVAL FOR

**PROJECT TITLE: CONSTRUCTION, INSTALLATION, OPERATION, AND REMOVAL OF A
 VERTICAL CALCINER TO STABILIZE PLUTONIUM AT PFP.**

**Date Approved: 18-Jul-01
 Emission Unit Name: 291-Z-1**

This is a MAJOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: **ALARACT**

ALARACT [WAC 246-247-040(4)]
 BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
(234-5Z Operations)	HEPA	2	2 Stages for process operations
236-Z Operations)	HEPA	2	2 Stages for process operations
(242-Z Operations)	HEPA	2	2 Stages for process operations
(all operations)	Fan	4	3 standby (7 total)

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Regulatory Requirements	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4) & WAC 246-247-75(2)	Alternative effluent flow rate not to exceed 290,000 cfm. Method 114 appendix B 61.93(b)(2)(ii) ANSI N13.1	All radionuclides which could contribute 10% of the potential EDE.	Continuous

Sampling Requirements: Continuous

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

11/08/1996 Original NOC, Vertical Calciner Operation at the Plutonium Finishing Plant (DOE/RL-96-62), approved on November 8, 1996 via AIR 96-1105.

06/26/2001 NOC Revision form to revise the process description approved June 26, 2001. Approval letter, AIR 01-710, mailed July 18, 2001.

06/20/1999 Three NOC Revision Forms approved on June 20, 1999 to provide process description changes.

CONDITIONS AND LIMITATIONS

- 1) The The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to $3.48E-02$ mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to $6.96E+01$ mrem/year to the Maximally Exposed Individual.
- 3) **This process is limited to:**
the design and operation of both the newly constructed and test calciners, and removal of the newly constructed calciner.

The newly constructed calciner will be assembled in a glovebox in the 234-5Z Building. The equipment will be sized to process one to two liters per hour of solution for concentrated feeds and three to four liters per hour for dilute feeds. The feed rate is variable to ensure the plutonium introduced into the vertical calciner has sufficient residence time to produce a suitable oxide.

The plutonium solutions will be slowly introduced into a stirred bed of previously generated product solids. This feed material will be slowly metered into the bottom of the vertical calciner. The feed rate will depend on the concentration of plutonium in the solution being processed. The feed will be roughly one to two liters per hour for concentrated feeds (>25 grams plutonium per liter) and three to four liters per hour for dilute feeds (<25 grams plutonium per liter).

The vertical calciner is a combination calciner and a two-micron offgas filter. Plutonium solutions are calcined in the lower unit and the vapors are filtered in the upper unit.

The calcination unit can be described as two concentric pipes. Calcination takes place in the annular space between these two pipes. As the liquid feed is introduced into the calciner, the feed rapidly evaporates in the hot powder bed, subsequently undergoing drying, denitration, and final heat treatment to a stable impure plutonium oxide powder.

Heat is supplied to the calcination unit by heaters wrapped around the outer pipe wall and inside the inner pipe wall. The heaters maintain the calciner temperature between 900 to 1050 C. These temperatures are considerably higher than required for decomposition of nitrate (130 to 225 C). The higher temperature serves to greatly reduce the plutonium reactivity, to promote complete formation of plutonium dioxide, and to facilitate a packageable plutonium product.

During calcination, the hot plutonium powder bed is stirred continuously by a U-shaped agitator that fits over the inner, capped pipe. The agitator speed affects both the particle size of the plutonium dioxide powder and the rate of heat transfer between the powder and the calciner wall.

During the thermal denitration, solutions containing alkaline metal nitrates (i.e., potassium nitrate) tend to become increasingly viscous and pasty before decomposition. These mastic-phase formations are undesirable, as these formations can form hard deposits on equipment surfaces and on particulate material through the reaction zone. Mastic formation is avoided by converting the feed solution to dry oxide as quickly as possible, or by removing the impurities through the ion exchange pretreatment process. The slow feed rate into the calciner will facilitate a rapid transition to oxide and avoid problems with the mastic phase for those solutions which do not undergo the pretreatment ion exchange

process. The plutonium oxide product is discharged into a product receiver as described in the following paragraphs.

The plutonium oxide is collected as it overflows through a slot in the inner pipe. The product powder consists of relatively large, uniform particles. The grinding action of the agitator prevents the oxide particles from becoming too large. The oxide proceeds down an overflow tube and into a product bed receiver vessel. The height of the overflow tube can be adjusted to control the bed volume within the calciner. When the product receiver vessel is full, the oxide will be bagged out of the glovebox. If the plutonium product does not meet requirements of the U.S. Department of Energy long-term storage standard 3013-94 (DOE 1994), it will be transferred to a muffle furnace capable of meeting the nominal 1,000 C firing temperature required by the standard. After thermal stabilization in the muffle furnace is completed, a sample of the oxide will be sent to the engineering laboratory to verify that the loss on ignition is <0.5 weight percent. Following this final verification, the plutonium product will be transferred to the PFP Complex vaults until a final plutonium disposition decision is made.

The calciner offgas stream consists of a mixture of air, water, nitric acid, oxides of nitrogen (NO_x), and a small component of organic impurities. Aqueous hydrochloric solutions run through the calciner will yield chloride in the offgas, which will be scrubbed out as sodium chloride. In addition, fine plutonium oxide powder could be entrained in the offgas stream. The offgas stream is run through two micron filters to remove the entrained oxide powder. The filters periodically are blown back with compressed air to knock particles from the filter back into the base of the calciner. The filters are blown back alternately so that one filter is always in operation. A vacuum applied to the filters draws off vapors that are run through a combined condenser and scrubber. This removes the majority of water and nitric acid in the offgas and any plutonium that might pass the filters. A basic scrubbing solution removes acid gases such as hydrogen chloride as well as nitrogen oxides. The nonreacted, noncombustible offgases remaining after the scrubber/chiller processing proceed through two existing stages of high-efficiency particulate air (HEPA) filtration before being released out the 291-Z-1 main stack. The offgases consist of water and air, with only trace amounts of NO_x. The resultant aqueous scrub solution consists of sodium hydroxide, water, sodium chloride, sodium nitrate, and sodium nitrite.

The newly constructed calciner will be dismantled and dispositioned at the end of its useful life. The newly constructed calciner shall be dismantled by unhooking and unbolting components of the prototype using standard industrial equipment (e.g., wrenches). As appropriate, sawing techniques would be used for disassembly and/or size reduction. Standard bag-out techniques would be used to remove the newly constructed calciner from the glovebox for disposition as waste

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

Am	241	2.14E+03
Pu	238	5.73E+02
Pu	239	1.95E+04
Pu	240	4.58E+03
Pu	241	9.95E+04

5) This approval, with its Conditions and Limitations, constitutes an amendment to the Department's Radioactive Air Emission License, and must be included in the next revision of the Hanford Air Operating Permit (WAC 246-247-060(1)(e) and (2))

6) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060-(2)(d))

- 7) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4))
- 8) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10))
- 9) The facility must be able to demonstrate workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12))
- 10) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13))
- 11) The department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter. The department may require a demonstration of ALARACT at any time (WAC 246-247-080(1))
- 12) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6))
- 13) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H (WAC 246-247-080(2))
- 14) Report all measured or calculated emissions annually (WAC 246-247-080(3))
- 15) Report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitations included in this approval (paragraph 5) (WAC 246-247-080(5))
- 16) When this project is complete, or operations cease, the facility must notify the department via a report of closure, including whether or not any potential for airborne releases occurred (WAC 246-247-080(6))
- 17) The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstration of a need-to-know (WAC 246-247-080(10))
- 18) The facility shall ensure all emission units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restrictions or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements (WAC 246-247-080(9))
- 19) The facility shall maintain readily retrievable storage areas for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8))
- 20) The owner/operator must inform the Department of Health whenever the activity associated with this NOC or any of the Conditions or Limitations contained in this approval are completed, abandoned, or

otherwise made obsolete

A-44

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
LICENSE AMENDMENT FOR

PROJECT TITLE: CANISTER STORAGE BUILDING, BUILDING 212-H

Date Approved: 27-Jul-01

Emission Unit Name: CSB

This is a MAJOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: BARCT

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
	HEPA	2	double stage, operates in parallel, one HEPA at a time and one in backup mode
	Fan	2	operates in parallel, one fan at a time and one in backup mode

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Regulatory Requirements	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93[b][4][i] & WAC 246-247-075[3]	Appendix B, Method 114(3)	All radionuclides which could contribute 10% of the potential EDE.	Count the record filter annually (either a destructive or non-destructive technique) using a gamma spectrometer calibrated to Cs-137.

There are no sampling requirements.

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

- 07/27/01 NOC Revision (HNF-7880) received May 30, 2001, to provide inclusion of shipping port fuel from storage at T-plant and fuel from F and H Reactor Basins. Approval letter AIR 01-711, mailed on July 30, 2001.
- 05/08/01 NOC Revision Form approved on May 8, 2001, to provide a condition change/clarification.
- 05/01/01 Combined NOC ID 208 into NOC ID 289.
- 12/01/01 NOC revision form submitted November 27, 2000. Approved via AIR 00-1201.
- 07/30/98 Original approval granted for phase II of construction of the Canister Storage Building via AIR 98-710 on July 30, 1998.
- 04/06/98 Approval to modify sampling system granted via letter AIR 98-401 dated April 6, 1998. (NOC ID 142)
- 01/11/96 Original approval granted for phase I of construction of the Canister Storage Building approved via AIR 96-103 on

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to $1.64E-02$ mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to $3.64E+01$ mrem/year to the Maximally Exposed Individual.
- 3) **This process is limited to:**

the use of the Canister Storage Building (CSB) for storage of spent nuclear fuel (SNF). The CSB shall consist of load-in/load-out areas, mechanical and electrical support areas, a multi-canister overpack (MCO) weld/sample station, and a subgrade vault storage area. The SNF shall be received in MCOs that shall be shipped in a cask.

The subgrade reinforced concrete vault area shall accommodate three equal-sized, below grade compartments with each compartment cooled by natural convection and having separate air inlet and exhaust plenums. Because there is physical separation from the SNF source term to the air space in this below grade vault, there is no control technology or emission monitoring of the exhaust from this area. The physical separation shall consist of the following barriers: MCO and storage tube.

Over the vault shall be a structural steel and metal sided building with heating and ventilation systems, and a material handling machine for use in the handling and movement of MCOs. The air space above the operating deck shall be at a negative pressure with respect to atmosphere during all MCO handling, storage, and monitoring operations. The exhaust from this portion of the building ventilation system shall be filtered by testable high-efficiency particulate air (HEPA) filters and sampled before exhausting through a separate building operating area stack. An operating deck shall separate the subgrade vault from the above grade level working area.

A continuous air emission monitoring system (CAEMS) shall be installed in the process exhaust stack.

There shall be no more than 226 penetration holes in the operating deck in each of the three compartments in the vaulted area. MCOs containing the SNF shall be stored in the 226 vertical steel storage tubes in the north vault (also known as vault 1). Vaults 2 and 3 shall be used for the storage of sealed/immobilized high-level waste.

The steel storage tubes shall prevent migration of radiological contamination and shall be inserted through existing penetrations and extend from the operating deck to the floor of the vault. Access to the interior of the tubes shall be through penetrations in the operating deck. Each tube shall contain no more than two MCOs and be equipped with a shield plug that shall be vented to the operating deck but which can also be isolated.

The function of the MCO shall be to confine, contain, and maintain the SNF in a critically safe array to ensure safe operations and to support processing the 105 K Basins SNF at the Cold Vacuum Drying Facility, processing the Shippingport PWR SNF at the T Plant, and transport to the CSB.

A cover cap shall be welded on top of the MCO covering the MCO shield plug. This shall be performed at the sample and weld station located in the CSB, thus hermetically sealing the SNF contained in the

MCO.

The sampling and weld station shall be located at the south end of the CSB operating area. This area shall consist of seven process pits, four feet in diameter and 19 feet 8 inches deep. Two of the pits shall be equipped for MCO gas sampling and for welding the cover caps on the MCOs. Weld inspection and helium leak checking of the seal weld shall also be accomplished here.

An exhaust enclosure shall be provided for confinement around the top of the MCO during sampling and welding. The function of the enclosure shall be to capture any potential airborne contamination. Airflow shall be into the enclosure. An exhaust duct shall run from the enclosure to a fan and through a testable HEPA filter that shall exhaust into the building ventilation exhaust system for the CSB operating area upstream of the building exhaust testable HEPA filters.

The tube vent and purge cart will house the storage tube purge system, which shall monitor and maintain an inert gas environment around any MCO placed in the overpack storage tubes and to monitor the atmosphere in any of the other storage tubes as required. The vent and purge cart may be driven to any of the 226 storage tubes.

The vent and purge cart equipment shall include inert gas supply cylinders, flexible steel hoses, an airtight sampling connection, a radioactive gas monitor, a hydrogen gas monitor and associated interlocks and alarms, a vacuum pump and its cooling unit, a HEPA filter, and an oxygen monitor and associated alarms.

The heating, ventilation, and air conditioning (HVAC) system shall provide contamination confinement and contamination control within the CSB. The HVAC system shall provide a controlled pressure gradient flow of air from outside the CSB inward through uncontaminated areas to potentially contaminated areas of the building and out through HEPA filters and a monitored exhaust.

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

Ag	110 m	2.14E-02
Ag	110	2.84E-04
Am	241	4.28E+05
Am	242	6.95E+02
Am	242 m	6.95E+02
Am	243	3.40E+02
Ba	137 m	1.29E+07
C-	14	8.13E+02
Cd	113 m	3.72E+03
Ce	144	9.14E+02
Cm	242	5.82E+02
Cm	243	1.40E+02
Cm	244	9.24E+03
Co	60	9.06E+03
Cs	134	1.59E+04
Cs	135	7.75E+01
Cs	137	1.36E+07
Eu	152	9.45E+02
Eu	154	1.07E+05
Eu	155	2.32E+05

Fe	55	2.41E+02
Gd	153	1.28E-04
H-	3	3.75E+04
I-	129	6.37E+00
In	113 m	2.14E-07
Kr	85	5.90E+05
Nb	93 m	2.47E+02
Nb	95	3.74E-12
Nb	95 m	1.25E-14
Ni	59	5.21E+02
Ni	63	5.55E+04
Np	237	5.72E+01
Np	239	2.20E+02
Pd	103	1.63E+01
Pm	147	4.62E+05
Pr	144 m	1.10E+01
Pr	144	9.03E+02
Pu	236	1.11E+05
Pu	238	1.40E+05
Pu	239	2.23E+05
Pu	240	1.26E+05
Pu	241	7.19E+06
Pu	242	5.49E+01
Rh	106	1.82E+03
Ru	106	1.82E+03
Sb	124	3.03E-18
Sb	125	3.35E+04
Sb	126	2.18E+01
Sb	126 m	1.56E+02
Se	79	8.62E+01
Sm	151	1.79E+05
Sn	113	2.14E-07
Sn	119 m	2.97E-01
Sn	121 m	7.96E+01
Sn	123	1.74E-05
Sn	126	1.56E+02
Sr	89	1.01E+07
Sr	90	1.03E+07
Tb	160	2.77E-15
Tc	99	2.89E+03
Te	125 m	8.18E+03
Te	127 m	9.69E-07
Te	129 m	0.00E+00
U-	234	8.74E+02
U-	235	3.37E+01
U-	236	1.27E+02

U-	238	6.96E+02
Y-	90	1.03E+07
Y-	91	2.23E-14
Zr	93	4.00E+02
Zr	95	1.69E-12

- 5) Report measured or calculated emissions annually (WAC 246-247-080(3)).
- 6) Nothing may be inferred that is not specifically described in the NOC.
- 7) The department must approve any deviation from required or recommended monitoring standards.
- 8) **This condition was obsoleted on 05/08/2001.** Continuous monitoring must be in place prior to operating. This will include continuous ambient air sampling for this project.
Obsoleted by NOC Revision Form approved on May 8, 2001 to clarify condition.
- 9) All Conditions and Limitations must be proceduralized prior to the implementation of this NOC.
- 10) The facility must be able to demonstrate the reliability and accuracy of emission data and other test results from the facility (WAC 246-247-075(13) and (WAC 246-247-075(6)). The facility must demonstrate that it has a quality assurance program compatible with applicable national standards listed in, or equivalent to, those listed in the above cited regulation.
- 11) The process for validating the process parameters with respect to storing the MCOs in a sealed configuration is approved, however, the total number of representative samples was not given to us. By telephone, it was indicated that the total number of MCOs tested should not exceed twelve. Twelve is the limit, unless a more specific number is negotiated with the department.
- 12) Report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist (or lasts more than four hours), would result in the emissions of radionuclides in excess of any standards or limitations in the license. (Note: Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitations included in the approval (paragraph 5)).
- 13) The NOC constitutes a contract between the department and the facility. Any changes must be approved by the department.
- 14) Ventilation systems used to control the release of particulate airborne radiological contamination from individual processes must include:
 1. MHM cask extract ventilation and HEPA exhaust system.
 2. Sampling/weld station ventilation and HEPA exhaust system.
 3. Overpack storage tube purge system.
 4. Temporary containment enclosure with HEPA exhaust system for contamination control.
 5. The building HEPA filters are still required.
 6. All controls must be ANSI N509/510 compliant.
- 15) OBSOLETE: If construction is not commenced within two years from the date of this letter, the approval is void.
- 16) Preoperational tests planned for this unit, requirement for notification at least seven days prior to such testing under (WAC 246-247-060(4)) will apply.
- 17) All records required by WAC 246-247 must be readily (promptly) retrievable, and must be stored onsite at the facility. All records shall be maintained for a minimum of five years (WAC 246-247-080(8)).
- 18) Report any problems that could affect the monitoring ventilation or controls of this facility to the

department.

- 19) The monitoring system must be ANSI N13.1 and ANSI N42.18 compliant.
- 20) Any deviation from the description of the modification or new construction, without approval of the department, may result in enforcement action under WAC 246-247-100.
- 21) The department reserves the right at any time to require the licensee to provide for split or collocated sampling of this emission unit (WAC 246-247-075(10)).
- 22) This approval, with its Conditions and Limitations, constitutes an amendment to the Department's Radioactive Air Emissions License, and must be included in the next revision of the Hanford Air Operating Permit (WAC 246-247-060(1)(e) and (2)(c)).
- 23) If the department finds that the emission unit described in this NOC is not in compliance with the standards in WAC 246-247-040 during construction and/or operation, the department will require modifications to bring it into compliance (WAC 246-247-060(2)(d)).
- 24) The department reserves the right to conduct an environmental surveillance program around this emission unit and to require the facility to conduct or modify its own environmental monitoring program (WAC 246-247-075(9)).
- 25) Continuous monitoring must be in place prior to operating. This will include continuous ambient air sampling for this project. The ambient air monitors shall be checked for operability at least once per week, and if an ambient air monitor is found not operating, the ambient air monitor shall be returned to service within seven working days from when it was found not operating. Notification to DOH per WAC 246-247-080(5) is required when an ambient air monitor is shut down for more than seven consecutive working days from time of discovery. At that time of discovery, operations involving the handling of spent nuclear fuel shall be suspended until the ambient monitor is returned to service.
Added by NOC Revision Form approved on May 8, 2001 to clarify condition.
- 26) The differential pressure shall be monitored and recorded daily during operational rounds to determine impacts due to moisture. If the differential pressures are outside of the designed operating range, the cause will be determined and the department will be notified within 24 hours.
Added by AIR 01-1201 on December 1, 2000.
- 27) Total system flow shall not exceed 9,000 CFM (allowing for the tolerances of the measuring devices).
Added by AIR 01-1201 on December 1, 2000.
- 28) DOE shall develop, and submit to WDOH for approval, criteria for an annual DOE inspection of this unit.
Added by AIR 01-1201 on December 1, 2000.
- 29) This annual inspection shall be reviewed and accepted by a Washington State Certified Professional Engineer working for DOE or its contractor.
Added by AIR 01-1201 on December 1, 2000.

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
LICENSE AMENDMENT FOR

**PROJECT TITLE: MAGNESIUM HYDROXIDE PRECIPITATION PROCESS AT THE
PLUTONIUM FINISHING PLANT**

**Date Approved: 15-Aug-01
Emission Unit Name: 291-Z-1**

This is a MAJOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: **ALARACT**

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
(234-5Z Operations)	HEPA	2	2 Stages for process operations
236-Z Operations)	HEPA	2	2 Stages for process operations
(242-Z Operations)	HEPA	2	2 Stages for process operations
(all operations)	Fan	4	3 standby (7 total)

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Regulatory Requirements	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4) & WAC 246-247-75(2)	Alternative effluent flow rate not to exceed 290,000 cfm. Method 114 appendix B 61.93(b)(2)(ii) ANSI N13.1	All radionuclides which could contribute 10% of the potential EDE.	Continuous

Sampling Requirements: Continuous

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

- 07/25/01 NOC Revision Form, DOE/RL-99-77, Rev. 0F, approved July 25, 2001 provided condition changes. Approval letter, AIR 01-802, mailed on August 15, 2001.
- 07/11/01 AIR 01-702 mailed July 11, 2001 to incorporate revision forms approved on March 6, 2001, May 3, 2001, and June 19, 2001.
- 06/19/01 NOC Revision Form submitted via RTAM, approved on June 19, 2001 to provide process description change.
- 05/03/01 NOC Revision Form submitted via RTAM, approved on May 3, 2001 to provide a minor description change.
- 03/06/01 NOC Revision Form approved on March 6, 2001 during RTAM to provide a minor description change and a clarification.

- 02/02/01 NOC ID 442 combined into NOC ID 443.
- 11/07/00 Incorporation of supplemental information for ventilation system, approved via AIR 00-1017 dated November 7, 2000.
- 09/29/00 NOC Revision Form approved on September 29, 2000 during RTAM to provide a minor description change.
- 09/09/00 NOC Revision Form approved on September 9, 2000 during RTAM to provide a minor description change.
- 08/25/00 Conditions and Limitations of AIR 00-402 were voided and replaced by AIR 00-801, August 25, 2000.
- 04/06/00 Conditions and Limitations of AIR 00-313 were voided by AIR 00-402, April 6, 2000.
- 03/23/00 Revised NOC was approved via AIR 00-313 on March 23, 2000.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 1.10E-01 mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to 2.20E+02 mrem/year to the Maximally Exposed Individual.
- 3) **This process is limited to:**
processing, stabilizing, and packaging, for interim storage, liquid nitrate solution. Stabilization of the solution shall be accomplished by the combination of a magnesium hydroxide and/or oxalate precipitation process and the existing muffle furnaces.

The magnesium hydroxide and/or oxalate precipitation process shall remove, by precipitation, plutonium contained in various nitric solutions. The nitric acid solutions shall be reacted by the addition of magnesium hydroxide and/or oxalic acid. A weak nitric acid stream shall dilute the existing solutions as necessary to optimize the plutonium recovery and generate feed solutions with an acid strength of approximately 3.0 Molar. The feed preparation activities will be performed in existing PFP facilities. The acid strength of the plutonium nitrate feed solutions, including those that do not require dilution will range from 0.3 Molar to 5.0 Molar.

The diluted solution shall be fed to three precipitation vessels where the magnesium hydroxide powder and/or oxalate acid will be added manually. The vessels shall be agitated, after magnesium hydroxide and/or oxalate acid addition, by sparging air up through the vessels by pulling a vacuum on the precipitation vessels.

After the reaction is complete, the precipitators shall be drained by gravity to an open pan filter where the plutonium solids are collected. The filtrate will be vacuumed into a phase separator for collection. The filtrate will be filtered further in the polishing filters before being pumped to temporary storage in the filtrate tanks. Filtrate with less than 3 grams per liter of plutonium will be disposed using existing PFP facilities. Out-of-specification material would be subject to recycle for plutonium recovery.

Plutonium solids will be transferred to an open metal container and heated on a hot plate to further dry the material within the glovebox. The plutonium will be cooled before being conveyed to the muffle furnaces. Dried plutonium solids may be placed in storage before subjecting to muffle furnace thermal stabilization. The dried solids would be placed manually into appropriate storage containers (e.g., poly

jars or other similar sized closed containers) and transferred to existing gloveboxes (i.e., HA-23S or HA-20MB) for potential interim storage. These gloveboxes will tie into the existing ventilation system exhausting through the 291-Z-1 stack.

At a later date, the containers may be retrieved from storage and returned to the precipitation glovebox for final stabilization. The materials then will be transferred into the vessels used for thermal stabilization (i.e., boats). The boats will be transferred to the muffle furnaces for final stabilization. The existing muffle furnaces shall be used to convert the dried plutonium hydroxide to plutonium powder.

Select solutions may be designated as waste. The equipment and enclosures for direct discard of waste plutonium solutions will be used in Room 185 of the 234-5Z building. Unique containers holding the dilute plutonium solutions will be brought from their storage location and analyzed for plutonium content using non-destructive analysis (NDA) equipment before bringing the containers into Room 185. The equipment in Room 185 will include a large tent to envelope plastic enclosures. The enclosures will be vented to the 234-5Z E3 ventilation system by connecting a vent hose from each plastic enclosure through a high-efficiency particulate air (HEPA)-type filter through a HEPA-type filtered vacuum cleaner that is exhausted to the existing E3 ventilation system. Airflow is provided through each plastic enclosure through HEPA-type filters. A large containment tent will be installed to enclose the plastic enclosure operation and provide occupational protection. The vacuum cleaner would maintain a negative pressure inside the enclosures with respect to the large tent. A blower connected to the tent would maintain a negative pressure inside the tent with respect to Room 185.

After pumping has been completed, the pump is turned off, and the transfer system appropriately isolated (e.g., the tubing could be cut just above each drum, and the tubing ends sealed; the drum lids would be bolted into place). In some cases, transferring the solution from two product containers into one receiving drum will be done. After pumping operations, the receiving drum is to be transferred to a storage area. The empty product containers are to be transferred for drum disposition (i.e., storage, reuse and/or discard). Each drum moved out of Room 185 will be analyzed for plutonium content using NDA equipment.

- 4) These Conditions and Limitations must be proceduralized prior to starting the activities described in the Notice of Construction.

Conditions and Limitations added by AIR 00-801, August 25, 2000.

- 5) This approval, with its Conditions and Limitations must be included in the next revision of the Hanford Air Operating Permit (WAC 246-247-060(1)(e) and (2)(c)), and will at that time, constitute a revision of the Radioactive Air Emissions License.

Conditions and Limitations added by AIR 00-801, August 25, 2000.

- 6) If the department finds that the emission unit described in this NOC is not in compliance with the standards in WAC 246-247-040 during construction (as described in the NOC or during operation) the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060(2)(d)).

Conditions and Limitations added by AIR 00-801, August 25, 2000.

- 7) The facility shall notify the department at least seven days prior to any planned preoperational testing of the emission unit's emission control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).

Conditions and Limitations added by AIR 00-801, August 25, 2000.

- 8) The department reserves the right to conduct its own stack sampling, environmental monitoring or other testing, as required around this unit to assure compliance. If the department so decides, the facility must

make provision for such testing (WAC 246-247-075(10)).

Conditions and Limitations added by AIR 00-801, August 25, 2000.

- 9) The facility must be able to demonstrate that the workers associated with this emission unit are adequately trained in the use and maintenance of emission control and monitoring systems, and in the performance of associated test and emergency response procedures (WAC 246-247-075(12)).
Conditions and Limitations added by AIR 00-801, August 25, 2000.
- 10) The facility must be able to demonstrate the reliability and accuracy of emission data and other test results from this unit (WAC 246-247-075(13) and WAC 246-247-075(6)). The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards listed in, or equivalent to, those listed in the above-cited regulation.
Conditions and Limitations added by AIR 00-801, August 25, 2000.
- 11) The department reserves the right to inspect and audit this unit during construction and operation. This includes all activities, equipment, operation procedures, documents, data, and other records related to compliance with the regulations (WAC 246-247-080(1)).
Conditions and Limitations added by AIR 00-801, August 25, 2000.
- 12) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
Conditions and Limitations added by AIR 00-801, August 25, 2000.
- 13) All reports and records must be kept and reported according to 40 CFR 61, Subpart H (WAC 246-247-080(2)).
Conditions and Limitations added by AIR 00-801, August 25, 2000.
- 14) Records must be readily (promptly) available for this unit. Those records must be maintained onsite, and must be retained for at least five years (WAC 246-247-080(8)).
Conditions and Limitations added by AIR 00-801, August 25, 2000.
- 15) All measured or calculated emissions must be reported annually (WAC 246-247-080(3)).
Conditions and Limitations added by AIR 00-801, August 25, 2000.
- 16) If there is an unexpected release of radioactivity or if there is a shutdown or other condition that, if it were allowed to persist, would result in emissions of radionuclides in excess of any Conditions or Limitations in the NOC or that lasts more than four hours, it must be reported to the department within 24 hours. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitations included in this approval (paragraph 5).
Conditions and Limitations added by AIR 00-801, August 25, 2000.
- 17) This unit must be fully accessible to Department of Health (DOH) inspectors. If there are any specific training requirements or have restrictions or special requirements for entry, they must be given to the department when they are known to allow for unannounced inspections, as required by EPA (WAC 246-247-080(9)). At a minimum, for unannounced inspections, such requirements or restrictions must be told to inspectors that morning, with the opportunity for the inspectors to meet those requirements. For prior announced inspections, such notification must occur far enough in advance for the inspectors to have reasonable time to meet the requirements.
Conditions and Limitations added by AIR 00-801, August 25, 2000.
- 18) The facility shall make requested documents available for timely manner for review (WAC 246-247-080(10)).
Conditions and Limitations added by AIR 00-801, August 25, 2000.
- 19) When this project is completed, or operations cease, the facility shall notify the department via a report of closure, and indicate whether or not any potential for airborne release occurred (WAC 246-247-

080(6)).

Conditions and Limitations added by AIR 00-801, August 25, 2000.

- 20) **This condition was obsoleted on 07/25/2001.** The work approved in this NOC is limited to those described activities associated with the construction and operation activities involving the magnesium hydroxide precipitation process of plutonium solutions in nitric acid solutions within the Plutonium Finishing Plant (PFP).

Conditions and Limitations added by AIR 00-801, August 25, 2000. Condition obsoleted by NOC revision forms dated May 3, 2001, June 19, 2001 and July 25, 2001.

- 21) **This condition was obsoleted on 07/25/2001.** Approved activities included in the process are the following: Stabilization by precipitation and use of the muffle furnaces; drying of the precipitated plutonium oxide (PuO₂); packaging of the dried PuO₂ for interim storage and disposal of the filtrate from the liquid nitrate solution using existing PFP processes.

Conditions and Limitations added by AIR 00-801, August 25, 2000. Condition obsoleted by NOC revision forms dated June 19, 2001 and July 25, 2001.

- 22) **This condition was obsoleted on 07/25/2001.** The concentration of the nitric acid make up feed solution used in the magnesium hydroxide process cannot exceed 3.0 Molar.

Conditions and Limitations added by AIR 00-801, August 25, 2000. Condition obsoleted by NOC revision form dated September 29, 2000.

- 23) The concentration of the nitric acid diluting solution used in the magnesium hydroxide process will average 0.35 Molar and be maintained within the safe operating parameters established for the process.

Conditions and Limitations added by AIR 00-801, August 25, 2000.

- 24) All operating Conditions and Limitations imposed by DOH in letter # AIR 96-1205, dated December 18, 1996, or stated in the Notice of Construction for the Muffle Furnaces must be observed.

Conditions and Limitations added by AIR 00-801, August 25, 2000.

- 25) **This condition was obsoleted on 07/25/2001.** Construction activities in Room 227 are limited to the installation of wall and ceiling mounts that will stabilize the glovebox during seismic activities. Decontamination activities in Room 227 must be less than 0.1 mrem/yr.

* The HEPA filtered vacuums used for decontamination activities in Room 227 must be approved in the list included in the Radioactive Air Emissions Notice of Construction for HEPA Filtered Vacuum Radioactive Air Emissions Units DOE-RL-97-50. This document is to be used as a guide for the use of HEPA filtered vacuum, prior to the time the room is connected to the ventilation system. All records must be maintained as required in the HEPA Filtered Vacuum Radioactive Air Emissions Units (DOE-RL-97-50) NOC.

Conditions and Limitations added by AIR 00-801, August 25, 2000.

Condition obsoleted July 25, 2001, activity completed.

- 26) **This condition was obsoleted on 07/05/2001.** Construction activities in Room 230C are limited to the following:

- * Decontaminate and/or stabilize any contaminated areas as necessary.
- * Install two new gloveboxes to house the process equipment. These include precipitators, phase separator, polishing filters. Filtering tanks and hotplates.
- * Anchor the two new glove boxes to the floor.
- * Install wall and ceiling mounts, as necessary, to secure the gloveboxes in case of seismic activity.
- * Install drain lines from the new gloveboxes to a clean section of an existing drain line.
- * Connect the two new gloveboxes to the existing E-4 ventilation header.
- * Route feed returns and spare lines that originate in Room 227 to the new gloveboxes.

- * Install a new conveyor transport to connect to the new gloveboxes.
- * Cut a hole, with dimensions approximating a four foot diameter semicircle, into the wall between Rooms 230C and 230B to allow access to a glovebox port.
- * Remove and relocate the electrical power conditioner.
- * Relocate the current safety shower and eye wash station.
- * Install a new electrical control panel.
- * Install a wash water tank and run lines to two new gloveboxes.

Conditions and Limitations added by AIR 00-801, August 25, 2000.

Condition obsoleted July 5, 2001, activity completed.

- 27) The maximum stack flow rate cannot exceed 137 cubic meters per second.
Conditions and Limitations added by AIR 00-801, August 25, 2000.
- 28) Testing of all HEPA filters described in the NOC will be performed annually.
Conditions and Limitations added by AIR 00-801, August 25, 2000.
- 29) The annual possession quantity for Plutonium (Pu) in nitric acid solutions cannot exceed 0.4 metric tons of Pu.
Conditions and Limitations added by AIR 00-801, August 25, 2000.
- 30) **This condition was obsoleted on 07/25/2001.** The air in rooms 227 and 230C will exhaust through the E-3 High Efficiency Particulate Air (HEPA) ventilation system. The E-3 ventilation system contains one stage of HEPA filtration with a minimum efficiency of 99.95 percent for particles with a medium diameter of 0.3 microns, before connecting with the E-4 ventilation system and exhausting through the 291-Z-1 stack.

The offgases in Rooms 227 and 230C used in the work associated with the MHPP will exhaust through the E-4 ventilation system. The E-4 ventilation system has two stages of HEPA filtration with a minimum efficiency of 99.95 percent for particles with a medium diameter of 0.3 microns. The E-4 ventilation system then passes through two additional stages of HEPA filtration, before connecting with the E-3 ventilation system and exhausting through the 291-Z-1 stack.

Conditions and Limitations added by AIR 00-801, August 25, 2000.

- 31) The monitoring system for the 291-Z-1 stack must remain compliant to all the NESHAPs requirements.
Conditions and Limitations added by AIR 00-801, August 25, 2000.
- 32) The muffle furnaces must connect into the E-4 ventilation system and be configured as described in the Muffle Furnace Notice of Construction (DOE/RL-96-79).
Conditions and Limitations added by AIR 00-801, August 25, 2000.
- 33) The maximum furnace temperature must not exceed approximately 1,000 degrees C.
Conditions and Limitations added by AIR 00-801, August 25, 2000.
- 34) All work on this project must be completed on or before October 1, 2010.
Conditions and Limitations added by AIR 00-801, August 25, 2000.
- 35) The work approved in this NOC is limited to those described activities associated with the construction and operation activities involving the magnesium hydroxide precipitation process, the oxalate precipitation process and the discard of plutonium in nitric acid solutions within the Plutonium Finishing Plant (PFP).
Conditions and Limitations added by AIR 01-802, August 15, 2001.
- 36) Approved activities include the following: Stabilization by precipitation and use of the muffle furnaces; drying of the precipitated plutonium oxide (PuO₂); packaging of the dried PuO₂ for interim storage and disposal of the filtrate from the liquid nitrate solution using existing PFP processes and solidification.

Conditions and Limitations added by AIR 01-802, August 15, 2001.

- 37) The concentration of the nitric acid make up feed solution used in the magnesium hydroxide process cannot exceed 5.0 Molar.

Conditions and Limitations added by AIR 01-802, August 15, 2001.

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
LICENSE AMENDMENT FOR

**PROJECT TITLE: CONSTRUCTION AND OPERATION OF THE COLD VACUUM DRYING
FACILITY (CVDF)**

Date Approved: 13-Sep-01

Emission Unit Name: COLD VACUUM DRYING

This is a MAJOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: **BARCT**

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
Process Bay Local Exhaust	Isolation Damper	2	
Process Bay Local Exhaust	Backdraft Damper	2	
Process Bay Recirculation	HEPA	5	
Process Bay Recirculation	Fan	5	
Process Bay General Exhaust	HEPA	1	Two Stage HEPA.
Process Bay General Exhaust	Prefilter	1	
Process Bay General Exhaust	Backdraft Damper	2	
Process Bay General Exhaust	Isolation Damper	2	
Process Bay General Exhaust	Fan	2	
Process Bay Local Exhaust	HEPA	1	Two stage HEPA.
Process Bay Local Exhaust	Fan	2	

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Regulatory Requirements	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Appendix B, Method 114	All radionuclides which could contribute 10% of the potential EDE.	Monthly Sample
Sampling Requirements: NESHAP Compliant, Meeting ANSI N13.1, 1999.			

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

- 07/27/01 NOC Revision Form approved at the July 24, 2001 RTAM. Activity added to process description. Approval letter AIR 01-907 mailed on September 13, 2001.
- 03/06/01 NOC Application/Permit Revision form approved March 6, 2001 during RTAM to change/clarify conditions. Approval letter, AIR 01-605 mailed June 19, 2001.
- 01/23/01 NOC Revision approved January 23, 2001, revised Section 6.4.1.
- 08/22/00 NOC Revision Form submitted on August 8, 2000 during RTAM and approved on August 22, 2000. This NOC Revision provided page changes to the NOC to reflect "as-built" conditions.
- 03/21/00 Revision approved on March 21, 2000, modified Section 12.0, Technology Standards.
- 08/05/99 Revision 1 approved on August 5, 1999 via AIR 99-804 changed the total offsite abated dose to the MEI.
- 06/19/97 The original NOC, Cold Vacuum Drying Facility Phase II (DOE/RL-96-110) was approved via corrected approval letter AIR 97-605 on June 19, 1997.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 4.95E-03 mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to 1.27E+01 mrem/year to the Maximally Exposed Individual.
- 3) **This process is limited to:**
the CVDF located to the west of the K Basins in the 100 K Area of the Hanford Site. The CVDF is limited to the following three adjoining radiological areas: the process bay area, the process support area, and the process water tank room. The process bay area shall contain four process bays and one bay used to off load water. Immediately adjacent and contiguous to the process bay area is the process support area, a steel-framed, two-story metal building that encloses the traffic corridor, process bay support rooms, and the second floor mechanical equipment room. Immediately adjacent to the process bay area on the north side is a single-story concrete and structural steel building that encloses the process water tank room.

Each operational process bay shall contain a process equipment skid, a safety-class helium system, a process hood, and a process bay recirculation heating, ventilation, and air conditioning (HVAC) system. Each process equipment skid shall contain a vacuum and purge system and a tempered water (annulus) system.

The CVDF interfaces with the 100 K Area, Hanford Site infrastructure services, and the Canister Storage Basin (CSB). The CVDF operation interfaces with K Basins operations by receiving cask-MCO packages for processing. Water removed from the MCO and water used for system flushes shall

be cleaned and transported by tanker truck for appropriate dispositioning. The CVDF also interfaces with the CSB operation when the cask-MCO packages are shipped to the CSB after the cold vacuum drying process has been completed.

The stack sample line shall be reconfigured in a manner to facilitate inspections and testing as required by ANSI N13.1-1999 (i.e. removable spool piece(s) and tees for installation of pressure gauges). During reconfiguration, there will be no stack sampling and no MCO processing within the facility.

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

Ag	110 m	1.07E-02
Ag	110 m	1.42E-04
Am	241	1.87E+05
Am	242 m	9.79E+01
Am	242 m	9.74E+01
Am	243	6.00E+01
Ba	137 m	6.24E+06
C-	14	3.46E+02
Cd	113 m	1.77E+03
Cd	115 m	0.00E+00
Ce	141	0.00E+00
Ce	144	4.57E+02
Cm	242	8.09E+01
Cm	244	7.19E+02
Co	60	1.98E+03
Cs	134	7.94E+03
Cs	135	3.87E+01
Cs	137	6.59E+06
Eu	152	4.72E+02
Eu	154	5.35E+04
Eu	155	1.10E+04
Fe	55	9.19E+02
Gd	153	6.39E-05
H-	3	1.83E+04
I-	129	3.18E+00
In	113 m	1.07E-07
Kr	85	2.95E+05
Nb	93 m	1.23E+02
Nb	95	1.87E-12
Nb	95	6.24E-15
Ni	59	2.05E+01
Ni	63	2.24E+03
Np	237	2.86E+01
Pd	107	8.14E+00
Pm	147	2.31E+05
Pm	148 m	0.00E+00
Pm	148 m	0.00E+00
Pr	143	0.00E+00

Pr	144	4.51E+02
Pr	144	5.50E+00
Pu	238	5.55E+04
Pu	239	1.09E+05
Pu	240	5.95E+04
Pu	241	3.34E+06
Pu	242	2.74E+01
Rh	103 m	0.00E+00
Rh	106	9.09E+02
Ru	103	0.00E+00
Ru	106	9.09E+02
Sb	124	1.51E-18
Sb	125	1.67E+04
Sb	126	7.79E+01
Sb	126	1.09E+01
Se	79	4.31E+01
Sm	151	8.79E+04
Sn	113	1.07E-07
Sn	119 m	1.48E-01
Sn	121 m	3.98E+01
Sn	123	8.69E-06
Sn	126	7.79E+01
Sr	89	0.00E+00
Sr	90	5.05E+06
Tb	160	1.38E-15
Tc	99	1.44E+03
Te	123	1.38E-11
Te	125 m	4.09E+03
Te	127 m	4.74E-07
Te	127 m	4.84E-07
Te	129 m	0.00E+00
Te	129 m	0.00E+00
U-	234	4.37E+02
U-	235	1.68E+01
U-	236	6.34E+01
U-	238	3.48E+02
Y-	90	5.05E+06
Y-	91	1.11E-14
Zr	93	2.00E+02
Zr	95	8.44E-13

5) The CVDF shall consist of up to four process bays in which SNF transport trailers can be housed while water is drained and vacuum/gas purge process dries SNF. It shall have a support area consisting of a control room, change rooms, and other functions.

Original Condition approved via AIR 97-605 on June 19, 1997.

6) All controls, as described in the amended NOC are required, and building HEPA filters meet

ASME/ANSI N509 and N510.

Original Condition approved via AIR 97-605 on June 19, 1997.

- 7) **This condition was obsoleted on 12/01/2000.** Prior to start-up of this facility (WAC 246-247-060)(4)), the department shall be notified.
The department was notified prior to operation of the facility.
- 8) The stack monitoring system must be continuous and NESHAPs compliant.
Original Condition approved via AIR 97-605 on June 19, 1997.
- 9) This approval, with its Conditions and Limitations, constitutes and amendment to the Department's Radioactive Air Emission License. This amendment must be included in the next revision of the Hanford Air Operating Permit (WAC 246-247-060(1)(e) and (2)(c)).
Added by Revision 1 approved on August 5, 1999 via AIR 99-804.
- 10) The facility shall notify the department at least seven days prior to any planned preoperational testing of the emission unit's emissions control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
Added by Revision 1 approved on August 5, 1999 via AIR 99-804.
- 11) Records must be readily (promptly) available for this unit. Those records must be maintained onsite, and must be retained for at least five years (WAC 246-247-080(8)).
Added by Revision 1 approved on August 5, 1999 via AIR 99-804.
- 12) All reports and records must be kept and reported according to 40 CFR 61, Subpart H (WAC 246-247-080(2)).
Added by Revision 1 approved on August 5, 1999 via AIR 99-804.
- 13) The facility shall make requested documents available in a timely manner for review (WAC 246-247-080(10)).
Added by Revision 1 approved on August 5, 1999 via AIR 99-804.
- 14) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting, requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with WAC 246-247-080(8)) and (WAC 246-247-080(6)).
Condition revised to incorporate new sunset language, August 30, 2001.
- 15) **This condition was obsoleted on 03/06/2001.** If there is an unexpected release of radioactivity or if there is a shutdown or other condition that, if it were allowed to persist, would result in emissions of radionuclides in excess of any standards or limitations in the license or that last more than four hours, it must be reported to the department within 24 hours. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitations included in the approval

(paragraph 5).

Added by Revision 1 approved on August 5, 1999 via AIR 99-804. Obsoleted on 03/06/2001 by NOC Application/Permit Revision form, AIR 01-605.

- 16) All measured or calculated emissions must be reported annually (WAC 246-247-080(3)).
Added by Revision 1 approved on August 5, 1999 via AIR 99-804.
- 17) This unit must be fully accessible to Department of Health inspectors. If there are any specific training requirements or have restrictions or special requirements for entry, they must be given to the department when they are known to allow for unannounced inspections, as required by EPA (WAC 246-247-080(9)). At a minimum, for unannounced inspections, such requirements or restrictions must be told to inspectors that morning, with the opportunity for the inspectors to meet those requirements. For prior announced inspections, such notification must occur far enough in advance for the inspectors to have reasonable time to meet the requirements.
Added by Revision 1 approved on August 5, 1999 via AIR 99-804.
- 18) The department reserves the right to inspect and audit this unit during construction and operation, including all activities, equipment, operations, documents, data, and other records related to compliance with the regulations (WAC 246-247-080(1)).
Added by Revision 1 approved on August 5, 1999 via AIR 99-804.
- 19) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
Added by Revision 1 approved on August 5, 1999 via AIR 99-804.
- 20) These conditions and limitations must be proceduralized prior to starting the activities described in the Notice of Construction.
Added by Revision 1 approved on August 5, 1999 via AIR 99-804.
- 21) The facility must be able to demonstrate the reliability and accuracy of emission data and other test results from this unit (WAC 246-247-075(13) and WAC 246-247-075(6)). The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards listed in, or equivalent to, those listed in, or equivalent to, those listed in the above cited regulation.
Added by Revision 1 approved on August 5, 1999 via AIR 99-804.
- 22) If the department finds that the emission unit described in this NOC, is not in compliance with the standards in WAC 245-247-040 during construction, as described in this NOC, or during operation, it reserves the right to require modifications to bring it into compliance (WAC 246-247-060(2)(d)).
Added by Revision 1 approved on August 5, 1999 via AIR 99-804.
- 23) The facility must be able to demonstrate that the workers associated with this emission unit are adequately trained in the use and maintenance of emission control and monitoring systems, and in the performance of associated test and emergency response procedures (WAC 246-247-075(12)).
Added by Revision 1 approved on August 5, 1999 via AIR 99-804.
- 24) Equipment and procedures for continuous monitoring shall conform to ANSI N13.1 (1999). The specific design must be approved by the department prior to installation. Any deviation from ANSI N13.1 must be approved by the department prior to construction (WAC 246-247-075(2)).
Added by Revision 1 approved on August 5, 1999 via AIR 99-804.
- 25) The department retains the right to conduct its own stack sampling, environmental monitoring or other testing, as required around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
Added by Revision 1 approved on August 5, 1999 via AIR 99-804.
- 26) Report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-

247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitations included in this approval (paragraph 5).

The following shut down of the CVDF emission control systems under circumstances specified are allowed and are excluded from the 24 hour reporting requirements:

- a) Shutdown of the process bay recirculation system when there is no MCO processing within that bay.
- b) Shutdown of the process bay local exhaust system when there is no MCO processing within that bay.
- c) Shutdown of the general exhaust system for no more than eight hours during which time there will be no MCO within the CVDF nor transfer of water from process water conditioning tank PWC-TK-4001 to a tanker truck for disposal nor opening of the process bay roll up doors.

Condition added by NOC Application/Permit Revision form submitted 03/06/2001, AIR 01-605.

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
LICENSE AMENDMENT FOR

**PROJECT TITLE: CONSTRUCTION AND OPERATION OF THE WASTE RECEIVING AND
PROCESSING (WRAP) FACILITY**

Date Approved: 01-Oct-01

Emission Unit Name: 200 AREA DIFFUSE/FUGITIVE

This is a MINOR, FUGITIVE, non-point source emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: **BARCT**

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
			Abatement controls as required in the following Conditions and Limitations.

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Regulatory Requirements	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075[3]	Appendix B, Method 114	All radionuclides which could contribute 10% of the potential EDE.	As listed in the following Conditions and Limitations.

Sampling Requirements: Existing near-facility monitoring stations.

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

- 09/11/01 NOC Revision (DOE/RL-2000-34, revision 1) received September 11, 2001 and approved via AIR 01-1001 on October 1, 2001. Incorporated comments resolved during review of DOE/RL-2000-34, revision 0.
- 04/26/01 NOC revised (DOE/RL-2000-34, Rev. 0) February 6, 2001 and approved via AIR 01-405. This revision includes the recalculation of the MEI and the inclusion of diffuse/fugitive emissions.
- 05/04/99 Revision form submitted and approved May 4, 1999 to more accurately reflect actual operations.
- 01/20/99 Revision form submitted and approved January 20, 1999 to more accurately reflect actual operations.
- 07/09/96 Revised by RTAM on July 9, 1996, approval to change monitoring technology.
- 09/07/93 Original NOC (DOE/RL-93-15, Rev 0) approved September 7, 1993 via AIR 93-907.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 5.63E-02 mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to 1.13E+02 mrem/year to the Maximally Exposed Individual.

3) **This process is limited to:**

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.

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 be 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, 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.

In the LOW-LEVEL WASTE RESTRICTED 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.

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

Alpha 0	1.71E+04
Beta 0	2.56E+05

5) Diffuse/Fugitive emissions associated with drum storage shall be monitored using the 200 Area near-field ambient air monitors. Any change to this near-field ambient monitoring program must be approved by the department.

Condition added by AIR 01-405.

6) The sampling frequency shall follow that of the ambient near-field program.

Condition added by AIR 01-405.

7) Single station composites of ambient near-field air samples shall be analyzed for radionuclide expected to stored and handled at the facility.

Condition added by AIR 01-405.

8) This approval, with its Conditions and Limitations, constitutes an amendment to the Department's Radioactive Air Emission License, and must be included in the next revision of the Hanford Air Operating Permit (WAC 246-247-060(1)(e) and (2)(c)).

Condition added by AIR 01-405.

9) If this emission unit is not in compliance with the standards in WAC 245-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060-(2)(d)).

Condition added by AIR 01-405.

10) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).

Condition added by AIR 01-405.

11) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(10) and (11)).

Condition added by AIR 01-405.

12) The facility must be able to demonstrate workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).

Condition added by AIR 01-405.

- 13) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13) and WAC 246-247-075(6)).
Condition added by AIR 01-405.
- 14) The department reserves the right to inspect and audit this emission unit during construction and operation-- including all activities, equipment, operations, documents, data, and other records related to compliance with WAC 246-247-080(1)).
Condition added by AIR 01-405.
- 15) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards such as ANSI/ASME NQA-1-1988, ANSI/ASME NQA-2-1986, QAMS-004 and QAMS-005. (WAC 246-247-075(6)).
Condition added by AIR 01-405.
- 16) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
Condition added by AIR 01-405.
- 17) All reports and records must be kept and reported according to 40 CFR 61, Subpart H (WAC 246-247-080(2)).
Condition added by AIR 01-405.
- 18) All measured or calculated emissions must be reported annually (WAC 246-247-080(3)).
Condition added by AIR 01-405.
- 19) Any unexpected release of radioactivity, shutdown or other condition that if allowed to persist, would result in the emission of radionuclides in excess of any standards or limitation in the license, or that lasts more than four hours, must be reported to the department within 24 hours. Applicable standards (WAC 246-247-040) including unit specific emission limits, the offsite dose standard, BARCT or ALARACT, whichever is applicable, or any limitations included in the approval.
Condition added by AIR 01-405.
- 20) When this project is complete, or operations cease, the facility must notify the department via a report of closure, including whether or not any potential for airborne releases occurred (WAC 246-247-080(5)).
Condition added by AIR 01-405.
- 21) The facility shall make requested documents available in a timely manner for review. (WAC 246-247-080(10)).
Condition added by AIR 01-405.
- 22) The owner/operator must inform the Department of Health whenever the activity associated with this NOC or any of the conditions or limits contained in this approval are completed, abandoned, or otherwise made obsolete.
Condition added by AIR 01-405.

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
LICENSE AMENDMENT FOR

**PROJECT TITLE: CONSTRUCTION AND OPERATION OF THE WASTE RECEIVING AND
PROCESSING (WRAP) FACILITY**

**Date Approved: 01-Oct-01
Emission Unit Name: 296-W-4**

This is a MAJOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: **BARCT**

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
	HEPA	2	Redundant systems in parallel consisting of two banks each
	HEPA	2	Redundant systems in parallel consisting of two banks each
	Prefilter	1	Prefilter for each HEPA housing
	Fan	4	

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Regulatory Requirements	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Method 2 appendix A Method 114 appendix B 61.93(b)(2)(ii) ANSI N13.1	All radionuclides which could contribute 10% of the potential EDE.	Continuous, Collect samples biweekly at a minimum
Sampling Requirements: Continuous			

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

- 09/11/01 NOC Revision (DOE/RL-2000-34, revision 1) received September 11, 2001 and approved via AIR 01-1001 on October 1, 2001. Incorporated comments resolved during review of DOE/RL-2000-34, revision 0.
- 04/26/01 NOC revised (DOE/RL-2000-34, Rev. 0) February 6, 2001 and approved via AIR 01-405. This revision includes the recalculation of the MEI and the inclusion of diffuse/fugitive emissions.
- 05/04/99 Revision form submitted and approved May 4, 1999 to more accurately reflect actual operations.
- 01/20/99 Revision form submitted and approved January 20, 1999 to more accurately reflect actual operations.
- 07/09/96 Revised by RTAM on July 9, 1996, approval to change monitoring technology.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to $5.63E-02$ mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to $1.13E+02$ mrem/year to the Maximally Exposed Individual.

3) **This process is limited to:**

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.

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 be 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, 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.

In the LOW-LEVEL WASTE RESTRICTED 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.

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

Alpha 0	1.00E+04
Beta 0	1.50E+05

5) These conditions and limitations must be proceduralized prior to starting the activities described in the Notice of Construction.

Condition added by AIR 01-405.

6) This approval, with its Conditions and Limitations, constitutes an amendment to the Department's Radioactive Air Emission License, and must be included in the next revision of the Hanford Air Operating Permit (WAC 246-247-060(1)(e) and (2)(c)).

Condition added by AIR 01-405.

7) If this emission unit is not in compliance with the standards in WAC 245-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060-(2)(d)).

Condition added by AIR 01-405.

8) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).

Condition added by AIR 01-405.

9) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(10) and (11)).

Condition added by AIR 01-405.

10) The facility must be able to demonstrate workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).

Condition added by AIR 01-405.

11) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13) and WAC 246-247-075(6)).

Condition added by AIR 01-405.

- 12) The department reserves the right to inspect and audit this emission unit during construction and operation-- including all activities, equipment, operations, documents, data, and other records related to compliance with WAC 246-247-080(1)).
Condition added by AIR 01-405.
- 13) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards such as ANSI/ASME NQA-1-1988, ANSI/ASME NQA-2-1986, QAMS-004 and QAMS-005. (WAC 246-247-075(6)).
Condition added by AIR 01-405.
- 14) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
Condition added by AIR 01-405.
- 15) All reports and records must be kept and reported according to 40 CFR 61, Subpart H (WAC 246-247-080(2)).
Condition added by AIR 01-405.
- 16) All measured or calculated emissions must be reported annually (WAC 246-247-080(3)).
Condition added by AIR 01-405.
- 17) Report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist (or lasts more than four hours), would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitations included in this approval (paragraph 5) (WAC 246-247-080(5)).
Condition added by AIR 01-405.
- 18) When this project is complete, or operations cease, the facility must notify the department via a report of closure, including whether or not any potential for airborne releases occurred (WAC 246-247-080(5)).
Condition added by AIR 01-405.
- 19) The facility shall make requested documents available in a timely manner for review. (WAC 246-247-080(10)).
Condition added by AIR 01-405.
- 20) The owner/operator must inform the Department of Health whenever the activity associated with this NOC or any of the conditions or limits contained in this approval are completed, abandoned, or otherwise made obsolete.
Condition added by AIR 01-405.

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
LICENSE AMENDMENT FOR

**PROJECT TITLE: PLUTONIUM FINISHING PLANT W-460 PLUTONIUM STABILIZATION
AND HANDLING**

**Date Approved: 08-Oct-01
Emission Unit Name: 296-Z-5**

This is a MINOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: ALARACT

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
	HEPA	2	2 parallel 2-stage HEPA filters of 4 banks each. Abatement credit taken for one HEPA filter.
	Fan	2	2 parallel flow paths with 2 fans in parallel

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

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

Sampling Requirements: Record Sample

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

- 10/08/01 DOE/RL-2000-42, Rev 2A, NOC Application/Permit Revision submitted and approved at the October 2, 2001 RTAM. Revised the process description to include thermogravimetric analysis (TGA). New Conditions/Limitations approved via AIR 01-1004 on October 08, 2001.
- 05/09/01 DOE/RL-2000-42, Rev 2, received on May 09, 2001 was approved via AIR 01-806 on August 21, 2001.
- 10/03/00 DOE/RL-2000-42, Rev 1, was received on October 03, 2000. Additional details regarding applicability of technology standards were requested. NOC was resubmitted on May 09, 2001.
- 06/06/00 NOC, DOE/RL-2000-42, Rev 0, received on June 06, 2000 was approved via AIR 00-709 on July 20, 2000.
- 03/06/00 NOC, DOE/RL-2000-23, Rev 0, was received March 06, 2000. USDOE provided a withdrawal to this NOC on May 11, 2000.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 4.52E-04 mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to 1.67E+03 mrem/year to the Maximally Exposed Individual.
- 3) **This process is limited to:**
stabilizing and/or repackaging plutonium, uranium, oxide, and metal for long term storage in the method described below. Within the 2736Z Building, existing vault storage cubicles may be modified to accommodate larger, long term storage canisters as described below.

Activities associated with the 296-Z-7 Emission Unit.

Americium, plutonium, and uranium oxides will be stabilized by heating the material in an oven to a temperature of greater than 950°C for a minimum of two hours.

In-line monitoring equipment will be provided for determining the moisture/volatile content of the material processed. An alternative method will exist to use thermogravimetric mass spectrometer analysis. The material will be considered thermally stabilized when there is less than 0.5 percent loss on ignition (LOI). Representative samples of 100 percent of the packages will be subjected to LOI testing (glovebox GB-642D). The LOI process will verify dryness and suitability for packaging. The LOI process will heat a sample taken from each material batch. The sample will be weighed and placed into a muffle furnace where the sample will undergo a heating cycle similar to the stabilization process. After the heating cycle is completed, the sample will be weighed again and the beginning and ending weights compared. If the beginning and ending weights differ by less than 0.5 percent, the material will go to final packaging in the BTS Module. If the difference in weights is greater than 0.5 percent, the material will be sent back through the stabilization process until the LOI result is less than 0.5 percent. The furnaces will be heated electrically. The purge gas in the LOI furnace will be nominally 1 scfm of air. The operating temperature of the offgas will be approximately 1,150°C to 1,200°C. The offgas will be discharged directly to the glovebox where the offgas will mix with approximately 13°C nitrogen atmosphere in the LOI glovebox.

Thermogravimetric analysis (TGA) is an analytical tool that is similar to LOI, and may be used as an alternative method to determine moisture content of samples (gram quantities) of stabilized plutonium-bearing materials. Existing gloveboxes in the 2736-ZB Building may be configured to accommodate TGA instrumentation supporting moisture determinations related to the aforementioned 3013 Standard requirements (current version in effect at the time of testing). Minor modification activities include removal of unnecessary equipment and purge gas hookup (air, nitrogen, argon). Gaseous effluents from TGA operations will be routed to the existing ventilation system in 2736-BZ Building, which passes through two stages of HEPA filtration before discharge to the environment via the 297-Z-7 stack.

Another alternative method (to LOI) for determining the moisture content of the processed material is approved and may be implemented in the future. The method, supercritical fluid extraction (SFE), involves placing representative samples of stabilized material from a batch into porous sample cells in a glovebox. Supercritical carbon dioxide (CO₂, approximately 100°C and 3,000 pounds per square inch) is passed through the sample, solubilizing water in the sample. The solubilized water is carried in the

fluid stream to a spectrometer for water detection and quantification. The measured fluid stream, composed of CO₂ and water, is released into the glovebox atmosphere. In normal operation, it is expected the SFE effluent would be only CO₂.

-Stabilization Module. The Stabilization Module consists of the material preparation area, furnace area, and the product fill area. In the material preparation area, canned items containing plutonium-bearing materials can be received, measured for accountability, and placed into a furnace tray (or boat) for insertion into a furnace in the furnace area. The module may also provide a waste pathway to dispose of the waste cans and plastic. In the furnaces, the material in the boats will be heated to greater than 950°Centigrade (C) for at least 2 hours, as specified in U.S. Department of Energy Standard 3013 (DOE-STD-3013, Criteria for Safe Storage of Plutonium Metals and Oxides). The material will be cooled, placed in a convenience can, sampled to verify dryness, and inserted into the Bagless Transfer System (BTS) Module.

-BTS Module. In the BTS Module, the filled convenience cans can be received from the Stabilization Module and placed into an inner can. The inner can head space can then be backfilled with helium. A plug will be welded to the inner wall of the container, and the middle of the weld would be cut (maintaining glovebox confinement at all times).

-Inner Can Leak Test Module. The Inner Can Leak Test Module will receive an inner welded container [bagless transfer container (BTC)]. Operations in this module will verify the BTC meets or exceeds the leak tightness requirements of DOE Standard 3013.

Activities associated with the 296-Z-5 Emission Unit.

Activities in 2736-ZB consist of continued operations historically associated with repackaging of special nuclear materials (SNM), shipping and receiving of SNM, non-destructive assay, and office space. The following are activities being conducted under this NOC.

-Outer Can Weld Module. The Outer Can Weld Module will receive a leak-checked BTC. The BTC will be placed in an outer container. The outer can head space will then be backfilled with helium, and an outer container lid will be welded onto the container in accordance with the requirements of DOE Standard 3013.

-Outer Can Leak Test Module. The Outer Can Leak Test Module will receive an outer welded container (3013 package) and operations in this module will verify that the package meets or exceeds the leak tightness requirements of 3013.

-NDA Laboratory Modification Module. The Nondestructive Analysis (NDA) Laboratory will receive the 3013 package and will analyze the 3013 package for isotopic distribution, heat load, and container baseline.

Activities associated with the 296-Z-6 Emission Unit.

-Vault Modification Module. The secure vault storage locations in the 2736Z Building will be modified to accommodate the 3013 packages. These packages will be sealed, offering no additional potential-to-emit (PTE). No modifications to the existing 2736-Z Building ventilation system, exhausting through minor stack 296-Z-6, will be made. A new chiller will be installed on the 2736Z Building roof to assist

in cooling the current supply air temperature. The cooling coil will be placed in the current (exterior) air supply ductwork with no change in the supply air flow rate or route, or in the 296-Z-6 radioactive airborne emissions. Additionally, a vault heating, ventilation, and air conditioning (HVAC) supply isolation damper will be installed on the supply air to minimize unfiltered release of effluent from the building via backflow out the HVAC supply system.

Activities associated with the 296-Z-5 and Z-7 Emission Units.

-Infrastructure Modification Module. Project W-460 will modify existing infrastructure support systems. Capacities of ventilation systems will be verified and enhanced if necessary. Configuration of the systems will be modified, if necessary, to provide appropriate separation of PFP and process enclosure ventilation. New systems will be installed if no system currently exists, but only if such systems do not effect potential to emit or current control capabilities of the effluent control system. Addition is planned of a new major exhaust stack 296-Z-7 and associated compliant monitoring equipment. Equipment pads for a nitrogen system and a gas bottle storage area will be installed.

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

Am	241	3.50E+04
Pu	239	1.00E+05
U-	233	1.10E+04

5) **This condition was obsoleted on 06/13/2001.** The annual possession quantities for all construction activities associated with the 296-Z-5 stack are limited to 1.2 E-5 curies for all radionuclides combined. The 296-Z-5 stack must remain operational during all construction activities.

Condition added by AIR 01-806.

6) The 2736-ZB building will exhaust out of the existing 296-Z-5 stack through two stages of individually testable HEPA filters. They will have a minimum efficiency of 99.95% for particulate with a median diameter of 0.3 microns.

Condition added by AIR 01-806.

7) Functional test differential pressure magnehelic gauges associated with 296-Z-5 HEPA filters annually.

Condition added by AIR 01-806.

8) These Conditions and Limitations must be documented in an established procedure prior to starting activities granted by this approval (WAC 246-247-040-(5) and 246-247-060-(5)).

Condition added by AIR 01-806.

9) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).

Condition added by AIR 01-806.

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

Condition added by AIR 01-806.

11) The facility shall notify the department seven days in advance of any planned pre-operational testing of

the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).

Condition added by AIR 01-806.

- 12) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).
Condition added by AIR 01-806.
- 13) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
Condition added by AIR 01-806.
- 14) The facility must be able to demonstrate workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).
Condition added by AIR 01-806.
- 15) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13)).
Condition added by AIR 01-806.
- 16) The Department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter (WAC 246-247-080(1)).
Condition added by AIR 01-806.
- 17) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
Condition added by AIR 01-806.
- 18) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H. (WAC 246-247-080(2)).
Condition added by AIR 01-806.
- 19) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).
Condition added by AIR 01-806.
- 20) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060-(2)(d)).
Condition added by AIR 01-806.
- 21) **This condition was obsoleted on 10/03/2001.** When this project is complete, or operations cease, the facility must notify the department via a report of closure, including whether or not any potential for airborne releases occurred (WAC 246-247-080(6)).
Condition added by AIR 01-806.

Replaced by condition issued in AIR 01-1004, October 08, 2001

- 22) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).
Condition added by AIR 01-806.
- 23) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event

the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).

Condition added by AIR 01-806.

- 24) The unabated TEDE to the hypothetical MEI is $2.9E-2$ millirem/year from the 296-Z-5 emission unit. The abated TEDE to the hypothetical MEI is $1.5E-5$ millirem/year from the 296-Z-5 emission unit (giving abatement credit for one HEPA filter).

Condition added by AIR 01-806.

- 25) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting, requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)). (WAC 246-247-080(6)).

Condition added by AIR 01-1004.

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
LICENSE AMENDMENT FOR

**PROJECT TITLE: PLUTONIUM FINISHING PLANT W-460 PLUTONIUM STABILIZATION
AND HANDLING**

**Date Approved: 08-Oct-01
Emission Unit Name: 296-Z-6**

This is a MINOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: ALARACT

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
	HEPA	2	two banks of 2-stage filters. Abatement credit given for one HEPA.
	Fan	1	

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

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

Sampling Requirements: Record Sample

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

- 10/??/01 DOE/RL-2000-42, Rev 2A, NOC Application/Permit Revision submitted and approved at the October 2, 2001 RTAM. Revised the process description to include thermogravimetric analysis (TGA). New Conditions/Limitations approved via AIR 01-1004 on October 08, 2001.
- 05/09/01 DOE/RL-2000-42, Rev 2, received on May 09, 2001 was approved via AIR 01-806 on August 21, 2001.
- 10/03/00 DOE/RL-2000-42, Rev 1, was received on October 03, 2000. Additional details regarding applicability of technology standards were requested. NOC was resubmitted on May 09, 2001.
- 06/06/00 NOC, DOE/RL-2000-42, Rev 0, received on June 06, 2000 was approved via AIR 00-709 on July 20, 2000.
- 03/06/00 NOC, DOE/RL-2000-23, Rev 0, was received March 06, 2000. USDOE provided a withdrawal to this NOC on May 11, 2000.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 4.52E-04 mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to 1.67E+03 mrem/year to the Maximally Exposed Individual.
- 3) **This process is limited to:**
stabilizing and/or repackaging plutonium, uranium, oxide, and metal for long term storage in the method described below. Within the 2736Z Building, existing vault storage cubicles may be modified to accommodate larger, long term storage canisters as described below.

Activities associated with the 296-Z-7 Emission Unit.

Americium, plutonium, and uranium oxides will be stabilized by heating the material in an oven to a temperature of greater than 950°C for a minimum of two hours.

In-line monitoring equipment will be provided for determining the moisture/volatile content of the material processed. An alternative method will exist to use thermogravimetric mass spectrometer analysis. The material will be considered thermally stabilized when there is less than 0.5 percent loss on ignition (LOI). Representative samples of 100 percent of the packages will be subjected to LOI testing (glovebox GB-642D). The LOI process will verify dryness and suitability for packaging. The LOI process will heat a sample taken from each material batch. The sample will be weighed and placed into a muffle furnace where the sample will undergo a heating cycle similar to the stabilization process. After the heating cycle is completed, the sample will be weighed again and the beginning and ending weights compared. If the beginning and ending weights differ by less than 0.5 percent, the material will go to final packaging in the BTS Module. If the difference in weights is greater than 0.5 percent, the material will be sent back through the stabilization process until the LOI result is less than 0.5 percent. The furnaces will be heated electrically. The purge gas in the LOI furnace will be nominally 1 scfm of air. The operating temperature of the offgas will be approximately 1,150°C to 1,200°C. The offgas will be discharged directly to the glovebox where the offgas will mix with approximately 13°C nitrogen atmosphere in the LOI glovebox.

Thermogravimetric analysis (TGA) is an analytical tool that is similar to LOI, and may be used as an alternative method to determine moisture content of samples (gram quantities) of stabilized plutonium-bearing materials. Existing gloveboxes in the 2736-ZB Building may be configured to accommodate TGA instrumentation supporting moisture determinations related to the aforementioned 3013 Standard requirements (current version in effect at the time of testing). Minor modification activities include removal of unnecessary equipment and purge gas hookup (air, nitrogen, argon). Gaseous effluents from TGA operations will be routed to the existing ventilation system in 2736-BZ Building, which passes through two stages of HEPA filtration before discharge to the environment via the 297-Z-7 stack.

Another alternative method (to LOI) for determining the moisture content of the processed material is approved and may be implemented in the future. The method, supercritical fluid extraction (SFE), involves placing representative samples of stabilized material from a batch into porous sample cells in a glovebox. Supercritical carbon dioxide (CO₂, approximately 100°C and 3,000 pounds per square inch) is passed through the sample, solubilizing water in the sample. The solubilized water is carried in the

fluid stream to a spectrometer for water detection and quantification. The measured fluid stream, composed of CO₂ and water, is released into the glovebox atmosphere. In normal operation, it is expected the SFE effluent would be only CO₂.

-Stabilization Module. The Stabilization Module consists of the material preparation area, furnace area, and the product fill area. In the material preparation area, canned items containing plutonium-bearing materials can be received, measured for accountability, and placed into a furnace tray (or boat) for insertion into a furnace in the furnace area. The module may also provide a waste pathway to dispose of the waste cans and plastic. In the furnaces, the material in the boats will be heated to greater than 950°Centigrade (C) for at least 2 hours, as specified in U.S. Department of Energy Standard 3013 (DOE-STD-3013, Criteria for Safe Storage of Plutonium Metals and Oxides). The material will be cooled, placed in a convenience can, sampled to verify dryness, and inserted into the Bagless Transfer System (BTS) Module.

-BTS Module. In the BTS Module, the filled convenience cans can be received from the Stabilization Module and placed into an inner can. The inner can head space can then be backfilled with helium. A plug will be welded to the inner wall of the container, and the middle of the weld would be cut (maintaining glovebox confinement at all times).

-Inner Can Leak Test Module. The Inner Can Leak Test Module will receive an inner welded container [bagless transfer container (BTC)]. Operations in this module will verify the BTC meets or exceeds the leak tightness requirements of DOE Standard 3013.

Activities associated with the 296-Z-5 Emission Unit.

Activities in 2736-ZB consist of continued operations historically associated with repackaging of special nuclear materials (SNM), shipping and receiving of SNM, non-destructive assay, and office space. The following are activities being conducted under this NOC.

-Outer Can Weld Module. The Outer Can Weld Module will receive a leak-checked BTC. The BTC will be placed in an outer container. The outer can head space will then be backfilled with helium, and an outer container lid will be welded onto the container in accordance with the requirements of DOE Standard 3013.

-Outer Can Leak Test Module. The Outer Can Leak Test Module will receive an outer welded container (3013 package) and operations in this module will verify that the package meets or exceeds the leak tightness requirements of 3013.

-NDA Laboratory Modification Module. The Nondestructive Analysis (NDA) Laboratory will receive the 3013 package and will analyze the 3013 package for isotopic distribution, heat load, and container baseline.

Activities associated with the 296-Z-6 Emission Unit.

-Vault Modification Module. The secure vault storage locations in the 2736Z Building will be modified to accommodate the 3013 packages. These packages will be sealed, offering no additional potential-to-emit (PTE). No modifications to the existing 2736-Z Building ventilation system, exhausting through minor stack 296-Z-6, will be made. A new chiller will be installed on the 2736Z Building roof to assist

in cooling the current supply air temperature. The cooling coil will be placed in the current (exterior) air supply ductwork with no change in the supply air flow rate or route, or in the 296-Z-6 radioactive airborne emissions. Additionally, a vault heating, ventilation, and air conditioning (HVAC) supply isolation damper will be installed on the supply air to minimize unfiltered release of effluent from the building via backflow out the HVAC supply system.

Activities associated with the 296-Z-5 and Z-7 Emission Units.

-Infrastructure Modification Module. Project W-460 will modify existing infrastructure support systems. Capacities of ventilation systems will be verified and enhanced if necessary. Configuration of the systems will be modified, if necessary, to provide appropriate separation of PFP and process enclosure ventilation. New systems will be installed if no system currently exists, but only if such systems do not effect potential to emit or current control capabilities of the effluent control system. Addition is planned of a new major exhaust stack 296-Z-7 and associated compliant monitoring equipment. Equipment pads for a nitrogen system and a gas bottle storage area will be installed.

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

Am	241	8.05E+04
Pu	239	2.30E+05
U-	233	2.53E+04

- 5) An approved modification for the 2736-Z Building is the replacement of the current shelving for new larger units to store the new 3013 compliant cans. The new 3013 cans (considered sealed sources) are approved for long-term storage in the 2736-Z Building. A new chiller will be installed on the 2736-Z Building roof to assist in cooling the current supply air temperature. The cooling coil will be placed in the current (exterior) air supply ductwork with no change in the supply air flow rate or route, or in the 296-Z-6 radioactive airborne emissions. Additionally, a vault HVAC supply isolation damper will be installed on the supply air to prevent unfiltered release of plutonium from the building via backflow out the HVAC supply system.

Condition added by AIR 01-806.

- 6) All differential pressure magnehelic gauges associated with 296-Z-6 HEPA filters must be functionally tested annually.

Condition added by AIR 01-806.

- 7) These Conditions and Limitations must be documented in an established procedure prior to starting activities granted by this approval (WAC 246-247-040-(5)) and 246-247-060-(5)).

Condition added by AIR 01-806.

- 8) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060(2)(d)).

Condition added by AIR 01-806.

- 9) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).

Condition added by AIR 01-806.

- 10) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).

Condition added by AIR 01-806.

- 11) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
Condition added by AIR 01-806.
- 12) The facility must be able to demonstrate workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).
Condition added by AIR 01-806.
- 13) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13)).
Condition added by AIR 01-806.
- 14) The department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter (WAC 246-247-080(1)).
Condition added by AIR 01-806.
- 15) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
Condition added by AIR 01-806.
- 16) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H. (WAC 246-247-080(2)).
Condition added by AIR 01-806.
- 17) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).
Condition added by AIR 01-806.
- 18) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).
Condition added by AIR 01-806.
- 19) **This condition was obsoleted on 10/03/2001.** When this project is complete, or operations cease, the facility must notify the department via a report of closure, including whether or not any potential for airborne releases occurred (WAC 246-247-080(6)).
Condition added by AIR 01-806.

Replaced by condition issued in AIR 01-1004 October 08, 2001
- 20) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).
Condition added by AIR 01-806.
- 21) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced

inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).

Condition added by AIR 01-806.

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

Condition added by AIR 01-806.

- 23) The unabated TEDE to the hypothetical MEI is $5.43E-2$ millirem/year from the 296-Z-6 emission unit. The abated TEDE to the hypothetical MEI is $2.72E-05$ millirem/year from the 296-Z-6 emission unit (giving abatement credit for one HEPA filter).

Condition added by AIR 01-806.

- 24) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting, requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)). (WAC 246-247-080(6))

Condition added by AIR 01-1004.

DEPARTMENT OF HEALTH
 RADIOACTIVE AIR EMISSIONS
 LICENSE AMENDMENT FOR

PROJECT TITLE: PLUTONIUM FINISHING PLANT W-460 PLUTONIUM STABILIZATION AND HANDLING

Date Approved: 08-Oct-01
Emission Unit Name: 296-Z-7

This is a MAJOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: None

ALARACT [WAC 246-247-040(4)]
 BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
	HEPA	2	2 dual stage units in parallel. Abatement credit given for 2 HEPAs.
	Fan	2	2 stage units in parallel.

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Regulatory Requirements	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075[3]	Appendix B, Method 114	All radionuclides which could contribute 10% of the potential EDE.	Continuous, collect samples biweekly at a minimum

Sampling Requirements: Continuous

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

- 10/??/01 DOE/RL-2000-42, Rev 2A, NOC Application/Permit Revision submitted and approved at the October 2, 2001 RTAM. Revised the process description to include thermogravimetric analysis (TGA). New Conditions/Limitations approved via AIR 01-1004 on October 08, 2001.
- 05/09/01 DOE/RL-2000-42, Rev 2, received on May 09, 2001 was approved via AIR 01-806 on August 21, 2001.
- 10/03/00 DOE/RL-2000-42, Rev 1, was received on October 03, 2000. Additional details regarding applicability of technology standards were requested. NOC was resubmitted on May 09, 2001.
- 06/06/00 NOC, DOE/RL-2000-42, Rev 0, received on June 06, 2000 was approved via AIR 00-709 on July 20, 2000.
- 03/06/00 NOC, DOE/RL-2000-23, Rev 0, was received March 06, 2000. USDOE provided a withdrawal to this NOC on May 11, 2000.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 4.52E-04 mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to 1.67E+03 mrem/year to the Maximally Exposed Individual.
- 3) **This process is limited to:**
stabilizing and/or repackaging plutonium, uranium, oxide, and metal for long term storage in the method described below. Within the 2736Z Building, existing vault storage cubicles may be modified to accommodate larger, long term storage canisters as described below.

Activities associated with the 296-Z-7 Emission Unit.

Americium, plutonium, and uranium oxides will be stabilized by heating the material in an oven to a temperature of greater than 950°C for a minimum of two hours.

In-line monitoring equipment will be provided for determining the moisture/volatile content of the material processed. An alternative method will exist to use thermogravimetric mass spectrometer analysis. The material will be considered thermally stabilized when there is less than 0.5 percent loss on ignition (LOI). Representative samples of 100 percent of the packages will be subjected to LOI testing (glovebox GB-642D). The LOI process will verify dryness and suitability for packaging. The LOI process will heat a sample taken from each material batch. The sample will be weighed and placed into a muffle furnace where the sample will undergo a heating cycle similar to the stabilization process. After the heating cycle is completed, the sample will be weighed again and the beginning and ending weights compared. If the beginning and ending weights differ by less than 0.5 percent, the material will go to final packaging in the BTS Module. If the difference in weights is greater than 0.5 percent, the material will be sent back through the stabilization process until the LOI result is less than 0.5 percent. The furnaces will be heated electrically. The purge gas in the LOI furnace will be nominally 1 scfm of air. The operating temperature of the offgas will be approximately 1,150°C to 1,200°C. The offgas will be discharged directly to the glovebox where the offgas will mix with approximately 13°C nitrogen atmosphere in the LOI glovebox.

Thermogravimetric analysis (TGA) is an analytical tool that is similar to LOI, and may be used as an alternative method to determine moisture content of samples (gram quantities) of stabilized plutonium-bearing materials. Existing gloveboxes in the 2736-ZB Building may be configured to accommodate TGA instrumentation supporting moisture determinations related to the aforementioned 3013 Standard requirements (current version in effect at the time of testing). Minor modification activities include removal of unnecessary equipment and purge gas hookup (air, nitrogen, argon). Gaseous effluents from TGA operations will be routed to the existing ventilation system in 2736-BZ Building, which passes through two stages of HEPA filtration before discharge to the environment via the 297-Z-7 stack.

Another alternative method (to LOI) for determining the moisture content of the processed material is approved and may be implemented in the future. The method, supercritical fluid extraction (SFE), involves placing representative samples of stabilized material from a batch into porous sample cells in a glovebox. Supercritical carbon dioxide (CO₂, approximately 100°C and 3,000 pounds per square inch) is passed through the sample, solubilizing water in the sample. The solubilized water is carried in the

fluid stream to a spectrometer for water detection and quantification. The measured fluid stream, composed of CO₂ and water, is released into the glovebox atmosphere. In normal operation, it is expected the SFE effluent would be only CO₂.

-Stabilization Module. The Stabilization Module consists of the material preparation area, furnace area, and the product fill area. In the material preparation area, canned items containing plutonium-bearing materials can be received, measured for accountability, and placed into a furnace tray (or boat) for insertion into a furnace in the furnace area. The module may also provide a waste pathway to dispose of the waste cans and plastic. In the furnaces, the material in the boats will be heated to greater than 950°Centigrade (C) for at least 2 hours, as specified in U.S. Department of Energy Standard 3013 (DOE-STD-3013, Criteria for Safe Storage of Plutonium Metals and Oxides). The material will be cooled, placed in a convenience can, sampled to verify dryness, and inserted into the Bagless Transfer System (BTS) Module.

-BTS Module. In the BTS Module, the filled convenience cans can be received from the Stabilization Module and placed into an inner can. The inner can head space can then be backfilled with helium. A plug will be welded to the inner wall of the container, and the middle of the weld would be cut (maintaining glovebox confinement at all times).

-Inner Can Leak Test Module. The Inner Can Leak Test Module will receive an inner welded container [bagless transfer container (BTC)]. Operations in this module will verify the BTC meets or exceeds the leak tightness requirements of DOE Standard 3013.

Activities associated with the 296-Z-5 Emission Unit.

Activities in 2736-ZB consist of continued operations historically associated with repackaging of special nuclear materials (SNM), shipping and receiving of SNM, non-destructive assay, and office space. The following are activities being conducted under this NOC.

-Outer Can Weld Module. The Outer Can Weld Module will receive a leak-checked BTC. The BTC will be placed in an outer container. The outer can head space will then be backfilled with helium, and an outer container lid will be welded onto the container in accordance with the requirements of DOE Standard 3013.

-Outer Can Leak Test Module. The Outer Can Leak Test Module will receive an outer welded container (3013 package) and operations in this module will verify that the package meets or exceeds the leak tightness requirements of 3013.

-NDA Laboratory Modification Module. The Nondestructive Analysis (NDA) Laboratory will receive the 3013 package and will analyze the 3013 package for isotopic distribution, heat load, and container baseline.

Activities associated with the 296-Z-6 Emission Unit.

-Vault Modification Module. The secure vault storage locations in the 2736Z Building will be modified to accommodate the 3013 packages. These packages will be sealed, offering no additional potential-to-emit (PTE). No modifications to the existing 2736-Z Building ventilation system, exhausting through minor stack 296-Z-6, will be made. A new chiller will be installed on the 2736Z Building roof to assist

in cooling the current supply air temperature. The cooling coil will be placed in the current (exterior) air supply ductwork with no change in the supply air flow rate or route, or in the 296-Z-6 radioactive airborne emissions. Additionally, a vault heating, ventilation, and air conditioning (HVAC) supply isolation damper will be installed on the supply air to minimize unfiltered release of effluent from the building via backflow out the HVAC supply system.

Activities associated with the 296-Z-5 and Z-7 Emission Units.

-Infrastructure Modification Module. Project W-460 will modify existing infrastructure support systems. Capacities of ventilation systems will be verified and enhanced if necessary. Configuration of the systems will be modified, if necessary, to provide appropriate separation of PFP and process enclosure ventilation. New systems will be installed if no system currently exists, but only if such systems do not effect potential to emit or current control capabilities of the effluent control system. Addition is planned of a new major exhaust stack 296-Z-7 and associated compliant monitoring equipment. Equipment pads for a nitrogen system and a gas bottle storage area will be installed.

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

Am	241	3.50E+04
Pu	239	1.00E+05
U-	233	1.10E+04

5) These Conditions and Limitations must be documented in an established procedure prior to starting activities granted by this approval (WAC 246-247-040(5)) and (WAC 246-247-060(5)).

Condition added by AIR 01-806.

6) **This condition was obsoleted on 06/13/2001.** This approval with its Conditions and Limitations must be included in the next revision of the Hanford Air Operating Permit (WAC 246-247-060(1)(e) and (2)(c)), and will at that time, constitute a revision of the Radioactive Air Emissions License.

Condition obsoleted by Air Operating Permit issuance.

7) If the department finds that the emission unit described in this NOC is not in compliance with the standards in WAC 246-247-040 during construction or during operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060(2)(d)).

Condition added by AIR 01-806.

8) The facility shall notify the department at least seven days prior to any planned preoperational testing of the emission unit's emissions control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).

Condition added by AIR 01-806.

9) The department reserves the right to conduct its own stack sampling, environmental monitoring or other testing, as required around this unit to assure compliance. The facility must make provisions for such testing during construction. The department intends to split occasional stack samples on 296-Z-7 (WAC 246-247-075(10)).

Condition added by AIR 01-806.

10) The facility must be able to demonstrate that the workers associated with this emission unit are adequately trained in the use and maintenance of emission control and monitoring systems, and in the performance of associated test and emergency response procedures (WAC 246-247-075(12)).

Condition added by AIR 01-806.

11) The facility must be able to demonstrate the reliability and accuracy of emission data and other test results from this unit (WAC 246-247-075(13)) and (WAC 246-247-075(6)). The facility must be able

to demonstrate that it has a quality assurance program compatible with applicable national standards listed in, or equivalent to, those listed in the above-cited regulation.

Condition added by AIR 01-806.

- 12) The department reserves the right to inspect and audit this unit during construction and operation, including all activities, equipment, operations, documents, data, and other records related to compliance with the regulations (WAC 246-247-080(1)). Periodic inspections will occur.

Condition added by AIR 01-806.

- 13) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).

Condition added by AIR 01-806.

- 14) All reports and records must be kept and reported according to 40 CFR 61, Subpart H (WAC 246-247-080(2)).

Condition added by AIR 01-806.

- 15) All measured or calculated emissions must be reported annually (WAC 246-247-080(3)).

Condition added by AIR 01-806.

- 16) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).

Condition added by AIR 01-806.

- 17) Records must be readily (promptly) available for this unit. Those records must be maintained onsite, and must be retained for at least five years (WAC 246-247-080(8)).

Condition added by AIR 01-806.

- 18) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).

Condition added by AIR 01-806.

- 19) The facility shall make requested documents available in a timely manner for review (WAC 246-247-080(10)).

Condition added by AIR 01-806.

- 20) When this project is completed, or operations cease, the facility shall notify the department via a report of closure, and indicate whether or not any potential for airborne release occurred (WAC 246-247-080(6)).

Condition added by AIR 01-806.

- 21) The materials to be stabilized and or repackaged under Project W-460 are limited to the plutonium and uranium oxides and metals that are already stored in Plutonium Finishing Plant (PFP) complex.

Condition added by AIR 01-806.

- 22) **This condition was obsoleted on 06/13/2001.** Activities approved under this NOC are those associated with the construction and operation of activities involving the stabilization and repackaging

of plutonium in 2736-ZB Building and the construction of a new major exhaust stack to be built and operated in the 2736-ZB Building to handle the effluents associated with these processes.

Condition added by AIR 01-806.

- 23) If the design of the ventilation system differs from that submitted in this NOC or the activities described in this project change, the project must obtain additional approval from DOH prior to commencement of construction.

Condition added by AIR 01-806.

- 24) The new stack 296-Z-7 must be compliant to all the technology standards listed in (WAC 246-247-110(18)). This information must be made available to DOH upon request. Inspections will verify full compliance. If there are any deviations from these standards, prior approval must be obtained from the department.

Condition added by AIR 01-806.

- 25) The new stack 296-Z-7 must be compliant to all the requirements of ANSI N13.1 (1999). Prior to installation, the department must approve the specific design if it deviates from the design submitted in this NOC. All required technical specifications shall be documented as required in the ANSI N13.1 and submitted to DOH upon request.

Condition added by AIR 01-806.

- 26) The stack monitoring system shall consist of two shrouded probes located in the exhaust stream within the stack at an elevation of approximately 25 feet above grade. Each probe will have a sample line to deliver the sample stream to the stack monitoring equipment located at the base of the stack. One sample line will be connected to a continuous alpha monitor and the other line dedicated to the record air filter. The sample flow will be proportional to the stack flow. A stack mass flow sensor will be located near the shrouded probes. Inspection and test ports shall be provided. The design must include the ability for the department to split stack samples.

Condition added by AIR 01-806.

- 27) The alpha stack monitor shall have fail and high radiation alarms. These alarms are tied into an annunciator panel that will be used to notify operations of off normal conditions requiring immediate corrective actions. Sample pumps located downstream from the alpha monitor and the record sampler in the pump skid will draw representative samples from the stack stream. Exhausts from the pumps will return to the stack above the sample location.

Condition added by AIR 01-806.

- 28) Deposition losses in the sample lines must be evaluated. The results must be documented and issued in a report submitted to DOH after 12 months of operation.

Condition added by AIR 01-806.

- 29) Sampling for stack 296-Z-7 shall operate in a continuous mode.

Condition added by AIR 01-806.

- 30) Radioisotopes to be encountered during construction, stabilization and packaging activities include the following: uranium-235, uranium-238, plutonium-238, plutonium-239, plutonium-240, plutonium-241, plutonium-242, americium-241 and americium-243.

Condition added by AIR 01-806.

- 31) The unabated TEDE to the hypothetical MEI is 1,670 millirem/year from the 296-Z-7 emission unit. The abated TEDE to the hypothetical MEI is $4.1E-4$ millirem/year from the 296-Z-7 emission unit.

Condition added by AIR 01-806.

- 32) The total annual possession quantities are limited to the following: total plutonium isotopes - 1.6 metric tons/year, total uranium isotopes - 1.1 tons/year, and total americium isotopes - 0.01 metric tons/year.

Condition added by AIR 01-806.

- 33) Soil excavation to support Project W-460 activities requires that a survey of the soil be performed every linear and vertical foot before and during excavation. Contaminated soil that is used as backfill must result in activity less than 50 cpm (counts per minutes) alpha or 500,000 cpm beta/gamma. These surveys must be recorded. These records must be made available to DOH upon request.

Condition added by AIR 01-806.

- 34) During soil excavation, if the contamination levels exceed 140 dpm alpha or 50,000 dpm beta/gamma, work must stop and DOH must be notified within twenty-four hours. DOH may request that an estimation of the dose due the excavation activities be calculated.

Condition added by AIR 01-806.

- 35) Contaminated soils must be separated from the piles of clean soil during excavation. The movement of contaminated soil will be controlled using fixatives, water and covers.

Condition added by AIR 01-806.

- 36) If contamination is more extensive than the prescribed limits, the spread of contamination must be controlled during the backfilling of soil. Minimal water shall be applied using a hand sprayer to control dust.

Condition added by AIR 01-806.

- 37) If contamination is present on the soil surface, the soil will either be removed and containerized, or covered with clean fill soil. After backfilling of the excavation site, where radiologically contaminated soil is used as backfill, the surface soil will be surveyed to verify no contamination is on the soil surface.

Condition added by AIR 01-806.

- 38) The area will be radiologically posted both during and after completion of the Project W-460, if appropriate.

Condition added by AIR 01-806.

- 39) The loss on ignition (LOI) purge gas flow rate will be 1 cfm of air or inert gas. The offgas temperature will range from 1,150 C to 1,200 C. The offgas is discharged directly into the glovebox. There it will mix with the approximately 13 C nitrogen atmosphere in the LOI glovebox.

Condition added by AIR 01-806.

- 40) Supercritical fluid extraction (SFE) is also approved for the testing of oxide purity. The measured fluid stream of CO₂ and water are exhausted into the glovebox atmosphere.

Condition added by AIR 01-806.

- 41) The temperature of the offgas must be below 80 C prior to passing through dual stage testable HEPA filters. After exiting the HEPA filters, the offgas exits through the new stack 296-Z-7. The temperatures of the offgas must be established during operation to insure they are not exceeded. The documentation of the temperature must be available to DOH upon request.

Condition added by AIR 01-806.

- 42) The dual stage of HEPA filters shall be able to be individually tested with minimum efficiency of 99.95%.

Condition added by AIR 01-806.

- 43) Procedures must be developed to leak test and to check for contamination on the outside of the welded containers prior to transporting them to various designated areas of the project. Appropriate staff must be trained on these procedures prior to the start of the project. These procedures will be available for DOH review upon request.

Condition added by AIR 01-806.

- 44) Operational activities in Room 642 are limited to equipment testing, routine maintenance, material bag-in and bag-out, sampling, heating of materials in the four muffle furnaces, packaging, inner can welding, leak testing, and decontamination . The containers may only be opened in that area and ventilated through the 296-Z-7 stack.
Condition added by AIR 01-806.
- 45) **This condition was obsoleted on 06/13/2001.** The exhaust from the material bagout and preparation areas must each pass through a HEPA filter upon exiting the glove box. Prior to joining the main line, the exhaust must pass through to a HEPA filter prior to connecting with the Room 642 exhaust filter and then to the dual stage HEPA filter and exiting through stack 296-Z-7. All HEPA filters must be tested.
- 46) The product fill glove box located in Room 642 must be exhausted through a HEPA type filter before connecting to the Room 642 exhaust HEPA filter.
Condition added by AIR 01-806.
- 47) The maximum design life of this project is not to exceed 20 years. All work must be completed by October 1, 2021.
Condition added by AIR 01-806.
- 48) **This condition was obsoleted on 06/13/2001.** Gloveboxes must have two exhaust systems, including a normal and an emergency system. Inside of each glove box, the normal exhaust system must have a roughing filter and fire screen. Outside of the glovebox, the normal exhaust system must be connected to a testable high efficiency particulate air (HEPA) filter.
- 49) The Department of Health requires that a particle size distribution study be conducted for 296-Z-7 emission unit after 12 months of full operation.
Condition added by AIR 01-806.
- 50) The emergency exhaust line does not have any fire screens or filters. The normal and emergency lines are combined and routed to the process exhaust HEPA filter system. Prior to passing through dual stage testable HEPA filters, the offgas temperature must be below 80 C.
Condition added by AIR 01-806.
- 51) All differential pressure magnehelic gauges associated with 296-Z-7 HEPA filters must be functionally tested annually.
Condition added by AIR 01-806.
- 52) In these Conditions and Limitations, all filters designated as HEPA filters must be testable to a minimum of 99.95% efficiency.
Condition added by AIR 01-806.
- 53) All HEPA filters must be tested annually for efficiency.
Condition added by AIR 01-806.
- 54) All filters (HEPA and HEPA-type) must have differential pressure gauges to demonstrate that they are operating as designed. Alternative methods to demonstrate efficiency must be approved by the department.
Condition added by AIR 01-806.
- 55) Unless otherwise indicated below, all sections of ANSI N509 are required for the controls associated with the new 296-Z-7 emission unit.

The following sections of N509 are considered to be not applicable to this emission unit because the systems covered are not included in the design or comply with the AG-1 standard rather than N509:

- Section 3 (habitability systems).
- Section 4.1c (iodine controls), d (demisters), e (heaters), and f (postfilters).
- Section 4.2 c (reactor requirement for pressure-time transients).
- Section 4.2 f (entrained liquid mass flow rate).
- Section 4.2 k (structural loadings).
- Section 4.2 q (adsorbers).
- Section 4.2 r (heaters).
- Section 4.3 (adsorber requirement).
- Section 4.6.5.2 (reactor containment structures).
- Section 4.6.5.4a (de-energizing power to fans, which there is no provision for).
- Section 4.6.5.4b (de-energizing power to fans, which there is no provision for).
- Section 4.7.1c (HEPA housings in contaminated areas).
- Section 4.7.2a and b (habitability).
- Section 4.9.2b and c (local alarms and local controls, which are not present in system).
- Section 4.10 (adsorbers).
- Section 4.11.2 (adsorbers).
- Section 4.11.6, 8, and 9 (fire suppression systems, which are not installed).
- Section 4.12 (treatment system insulation).
- Section 4.13b (adsorbers).
- Section 4.14.3 (test pressures that are not equal to operating static pressure- this system has equal pressures).
- Section 5.2.1, 5.2.2, 5.2.3.1, 5.2.3.2, 5.2.3.3, 5.2.4, 5.2.5.1, and 5.2.5.2 (adsorbers).
- Section 5.4, 5.4.1 and 5.4.2 (moisture separators, which are not present).
- Section 5.5, 5.5.1, 5.5.2, 5.5.3, and 5.5.4 (heaters).
- Section 5.6.2 b (lighting, which is not present).
- Section 5.6.2 e (flanged connections).
- Section 5.6.2 f (flexible connections between filter housings).
- Section 5.6.4.5 (engineered safety feature systems built of galvanized steel).
- Section 5.6.5.1 (non-permanent sampling manifolds).
- Section 5.6.5.1 (for air cleaning systems with no inlet or outlet ducts).
- Section 5.8.2 (for engineered safety feature fan systems).
- Section 5.8.3 (for installing motors onsite).
- Section 5.9.3.1, 5.9.3.2, 5.9.5, 5.9.6, 5.9.7.1, 5.9.7.2, 5.9.8, 5.9.9, 5.9.10, and 5.9.11 (air cleaning unit dampers- this system uses butterfly valves).
- Section 5.10.7 (coatings on ductwork).

Condition added by AIR 01-806.

56) The butterfly dampers that are not applicable to ANSI N509 must meet the AG-I Criteria:

- Section 5.9.5 .
- Section 5.9.6 .
- Section 5.9.7.1.
- Section 5.9.8.
- Section 5.9.9.
- Section 5.9.10.
- Section 5.9.11.

Condition added by AIR 01-806.

57) The following requirements, listed as "open" in the Notice of Construction, must be fully compliant before the 296-Z-7 system becomes operational and before any processing may begin. Documentation of compliance must be provided to WDOH prior to startup.

- Section 4.6.5.4a. Backdraft dampers must meet positive pressure requirements.
- Section 4.9.3a, b and c . Instrumentation and mountings must be qualified to this standard.
- Section 5.3.3. Report on pre and post filter dimensions, compliance with UL900 and ASHRAE 52, materials of construction etc. must be provided.
- Section 5.6.3. Drawings of clamping devices for HEPA filters must be submitted to DOE.
- Section 5.6.5.2. Documentation of visual inspections of HEPA filter housings must be provided.
- Section 5.6.5.3. HEPA filter housing welds must be shop tested with magnetic particles or liquid penetrates.
- Section 5.6.5.4. All filter housings must be shop tested before shipment to Hanford. Documentation must be provided.
- Section 5.6.5.5. Airflow distribution testing must be performed prior to shipment on filter housings HEP-14,-15,-16, and-17.
- Section 5.6.5.6. Air-aerosol mixing uniformity tests must be performed in the shop as required by N510 for HEP-14, 15,-16,-17.
- Section 5.7.5. Calculations and descriptions of fan qualification tests must be furnished.
- Section 5.10.8.1 and 5.10.8.2. All ductwork must be pressure tested.
- Section 7.3. All documentation of welds must be completed.
- Section 7.4 As-builts must confirm installation requirements are met and documentation provided.
- Section 8.1. ALL components must be demonstrated to have been procured through a NQA-1 program.
- Section 8.2. Vendor drawings and approval data must be provided.

Condition added by AIR 01-806.

- 58) The following requirements, listed as OPEN in the Notice of Construction, are test-dependent. That is, system testing requires drawing outside air into Room 642 (in the 2736-ZB Building) and through the 296-Z-7 exhaust train to complete the testing and close these items. A small potential for in-leakage from the remainder of the 2736-ZB into Room 642 exists.

Section 5.10.9. Balancing must be completed of the air treatment system.

Balancing the ventilation system requires simultaneous operation of all components upstream of the exhaust fans. The components include the nitrogen generator, the supply fan system, and the exhaust system to establish the correct differential pressures for the airlock, the 642 Room, and each of the gloveboxes.

Section 7.2. Installation must be performed in strict adherence to the layout drawings.

Installation of equipment has been performed in strict adherence to the layout drawings, and any deviations have been approved by the responsible engineer. As Section 7.2 requires, the "As-Built" drawings will reflect those design changes. The "As-Built" drawings will be documented upon completion of testing.

Section 9. Documentation of acceptance tests must be provided.

Acceptance testing includes HEPA filter efficiency testing, glovebox balancing, and room/building ventilation balancing. Upon completion of these tests, the documentation shall be made available to the department.

The following limitations must be implemented during testing activities conducted to close the items listed above and will not result in an increased potential-to-emit or airborne releases from the 296-Z-5

system to the environment. These shall be documented and be made available for department review.

1. The 296-Z-5 stack must be operational during all 296-Z-7 system testing. All 296-Z-7 system testing will cease immediately upon loss of 296-Z-5 operation and the department notified within 24 hours.
 2. 2736-ZB Building constant air monitors will operate per approved procedures during 296-Z-7 system testing.
 3. The new 296-Z-7 HEPA filters will be in place and efficiency-tested as part of acceptance testing.
Condition added by AIR 01-806.
- 59) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting, requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)). (WAC 246-247-080(6)).

Condition added by AIR 01-1004.

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
LICENSE AMENDMENT FOR

PROJECT TITLE: RESEARCH AT THE 329 FACILITY

Date Approved: 09-Oct-01

Emission Unit Name: EP-329-01-S

This is a MINOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: **ALARACT**

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
	HEPA	2	In series, (System includes up to 5 banks of 2 stages of HEPA filters in series, minimum of 1 bank of 2 testable filters in use)
	Fan	2	2 in parallel, 1 Standby (3 total)

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

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

Sampling Requirements: Record Sample

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

- 10/09/01 Notice of Construction for Research Activities in the Chemical Sciences Laboratory (329 Building) was modified to include research activities using argon isotopes. This modification superceded and obsoleted the previous approval (NOC ID 64). The modification was approved via AIR 01-1006 dated October 09, 2001.
- 02/24/95 Notice of Construction for the renovation of the Chemical Sciences Laboratory (329 Building) approved via AIR 95-205 dated Feruary 24, 1995 (NOC ID 64).

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 9.40E-05 mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to 8.00E-03 mrem/year to the Maximally Exposed Individual.

3) **This process is limited to:**

laboratory processes conducted in the 329 facility. The processes allowed to be conducted in the 329 Facility are outlined below.

Current Laboratory Processes

Research activities currently in the 329 Building are conducted in support of the Hanford environmental mission and other key DOE missions of national and international importance. Research activities are performed on both radioactive and non-radioactive samples.

The following research processes are allowed in the 329 Building:

- Development of special purpose radiation detection and sampling systems,
- Development of electronics and software to enhance gamma and neutron detector performance,
- Gamma detection equipment is used for radioisotope quantification that may involve chemical separations,
- Solid, liquid, and gas samples (both radioactive and non-radioactive) are analyzed in specialized laboratories,
- Wet chemistry techniques and the operation of specialized analytical instrumentation such as mass spectrometers, organic mass spectrometers, and the inductively coupled plasma spectrometers,
- Separations and analyses of radionuclides,
- Preparation of radioactive standards (solid, liquid, and gas).

Argon Project

It is allowed to fabricate and develop gas ionization detectors testing against known quantities of argon gas for comparisons against modeling simulations.

The gas ionization detectors will be set up inside a hood in the 329 Facility that exhausts through emission point EP-329-01-S. An argon gas mixture will be connected to the detection system. The argon would be vented from the test apparatus, through the hood, and finally through the building's main stack. The radionuclides that will be utilized in these studies are Ar-37, Ar-39, and Ar-41.

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

Ac	227	3.85E-05
Ag	110 m	3.00E-05
Al	26	5.00E-04
Am	241	2.10E-02
Am	243	2.31E-05
Ar	37	6.00E-05
Ar	39	6.00E-07
Ar	41	6.00E-05
Au	195	5.00E-04
Ba	133	8.00E-04
Bi	207	1.00E-03
C-	14	2.00E-03
Cd	109	1.08E-05
Ce	144	2.00E-04
Cf	252	7.00E-05

Cl	36		6.01E-04
Cm	243		1.00E-04
Cm	244		9.90E-04
Co	57		4.00E-01
Co	60		2.20E-05
Cs	134		6.20E-03
Cs	137		2.20E-03
Eu	152		4.00E-03
Eu	154		1.00E-03
Eu	155		9.00E-04
Fe	55		1.00E+01
Fe	59		5.00E-02
H-	3		2.00E-01
I-	125		5.00E-04
I-	129		3.00E-06
I-	131		2.00E-05
Ir	192		1.00E-03
Kr	85	m	5.00E-03
Mn	54		4.00E-03
Na	22		8.00E-03
Nb	93	m	8.06E+00
Nb	94		1.00E-05
Nb	95		5.20E-03
Ni	59		3.00E+02
Ni	63		2.00E-03
Np	235		5.00E-04
Np	237		1.37E-03
Np	239		5.00E-01
P-	32		5.00E-02
Pb	210		1.16E-06
Pb	212		5.00E-02
Pm	147		1.00E-03
Pu	236		3.00E-07
Pu	238		5.20E-07
Pu	239		8.77E-07
Pu	241		1.00E-05
Pu	242		6.58E-08
Pu	244		8.00E-08
Ra	224		1.00E-03
Ra	226		2.00E-05
Ra	228		4.00E-06
Rn	222		5.00E-03
Ru	106		6.00E-05
Sb	125		1.08E-03
Sc	46		5.00E-03
Se	75		5.00E-04

A-100

Sm	151	5.00E+01
Sr	85	5.00E-04
Sr	90	1.53E-02
Tc	95 m	5.00E-04
Tc	97	8.00E-05
Tc	99	2.00E-03
Th	228	2.00E-07
Th	229	1.16E-06
Th	230	2.20E-05
Th	232	1.86E-03
Tl	204	5.00E-04
Tm	171	5.00E-04
U-	232	2.40E-05
U-	233	1.75E-06
U-	234	4.00E-07
U-	235	6.50E-05
U-	238	1.66E-02
Xe	131 m	3.00E-03
Xe	133	2.00E-05
Xe	133 m	2.00E-05
Xe	135	1.00E-05
Zn	65	8.00E-04
Zr	95	5.00E+01

- 5) These Conditions and Limitations must be documented in an established procedure prior to starting activities granted by this approval (WAC 246-247-040(5)) and 246-247-060(5)).
Conditions and Limitations added via AIR 01-1006.
- 6) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060-(2)(d)).
Conditions and Limitations added via AIR 01-1006..
- 7) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
Conditions and Limitations added via AIR 01-1006..
- 8) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).
Conditions and Limitations added via AIR 01-1006.
- 9) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
Conditions and Limitations added via AIR 01-1006.
- 10) The facility must be able to demonstrate workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).
Conditions and Limitations added via AIR 01-1006..

- 11) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13)).
Conditions and Limitations added via AIR 01-1006.
- 12) The department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter (WAC 246-247-080(1)).
Conditions and Limitations added via AIR 01-1006.
- 13) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
Conditions and Limitations added via AIR 01-1006.
- 14) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H (WAC 246-247-080(2)).
Conditions and Limitations added via AIR 01-1006.
- 15) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).
Conditions and Limitations added via AIR 01-1006.
- 16) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).
Conditions and Limitations added via AIR 01-1006.
- 17) Prior to permanent shut down of an emission unit or completion of an activity the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown, and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting requirements, no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)). (WAC 246-247-080(6))

Conditions and Limitations added via AIR 01-1006.

- 18) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).
Conditions and Limitations added via AIR 01-1006.
- 19) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced

inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).

Conditions and Limitations added via AIR 01-1006.

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

Conditions and Limitations added via AIR 01-1006.

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
LICENSE AMENDMENT FOR

**PROJECT TITLE: DISPOSITION OF SELECT PLUTONIUM-BEARING ALLOYS AT THE
PLUTONIUM FINISHING PLANT (PFP)**

**Date Approved: 25-Oct-01
Emission Unit Name: 291-Z-1**

This is a MAJOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: **ALARACT**

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
(234-5Z Operations)	HEPA	2	2 Stages for process operations
236-Z Operations)	HEPA	2	2 Stages for process operations
(242-Z Operations)	HEPA	2	2 Stages for process operations
(all operations)	Fan	4	3 standby (7 total)

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Regulatory Requirements	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4) & WAC 246-247-75(2)	Alternative effluent flow rate not to exceed 290,000 cfm. Method 114 appendix B 61.93(b)(2)(ii) ANSI N13.1	All radionuclides which could contribute 10% of the potential EDE.	Continuous

Sampling Requirements: Continuous

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

- 10/25/01 New Conditions/Limitations sent via AIR 01-1013 on October 26, 2001. NOC Revision Form, DOE/RL-96-79, Rev. 0E, revised process description to include thermogravimetric analysis, submitted and approved at October 9, 2001.
- 07/12/01 New Conditions/Limitations sent via AIR 01-703 approved July 12, 2001.
- 03/06/01 NOC Revision Form revised process description, submitted by RTAM March 6, 2001, was approved March 6, 2001.
- 09/26/00 NOC Revision Form revised process description approved on September 26, 2000.
- 06/15/00 NOC Revision Form revised process description, submitted by RTAM June 6, 2000, was approved June 15, 2000.
- 03/27/00 NOC Revision Form revised process description, submitted by RTAM March 21, 2000, was approved March 27, 2000.

- 09/01/98 NOC Revision Form revised process descriptions, submitted by RTAM August 18, 1998, was approved September 1, 1998.
- 12/18/96 Original NOC was approved by AIR 96-1205, December 18, 1996.
- 08/08/95 Original activity was approved by RTAM on August 8, 1995.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 2.40E-03 mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to 4.80E+02 mrem/year to the Maximally Exposed Individual.

3) **This process is limited to:**

the use of muffle furnaces to thermally stabilize plutonium residues. This is limited to the thermal stabilization process involving placing the material for stabilization into one of the muffle furnaces and ramping the temperature to a final temperature of approximately 1,000 C. The furnace is held at this temperature for a period of time and then ramped down.

The muffle furnace offgas stream is allowed to consist of a mixture of air and water (from natural humidity) and a small amount of entrained plutonium oxide. Particulates greater than 0.2 micron shall be removed by ceramic filters. Residual contamination removed from the offgas stream shall be filtered by either a high-efficiency particulate air (HEPA) process filter or the furnace offgas filter prior to the duct work. The offgas discharges through two existing stages of HEPA filtration before being released out the 291-Z-1 main stack.

Plutonium metal or alloys not requiring thermal treatment are allowed to be transferred to existing glovebox(es) and repackaged for long term storage. Select plutonium-bearing alloys suitable for discard are allowed to be transferred directly to a pipe overpack container (POC). The POC may be staged at PFP or the Central Waste Complex pending transport to the Waste Isolation Pilot Plant.

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

Am	241	7.41E+01
Pu	238	2.32E+01
Pu	239	9.07E+01
Pu	240	4.20E+01
Pu	241	2.43E+03
U-	234	6.77E-02
U-	235	5.19E-04
U-	236	1.90E-03
U-	238	2.75E-04

- 5) These Conditions and Limitations must be proceduralized prior to starting activities granted by this approval.

Conditions and Limitations added by AIR 01-703 on July 12, 2001.

- 6) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance

(WAC 246-247-060-(2)(d)).

Conditions and Limitations added by AIR 01-703 on July 12, 2001.

- 7) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
Conditions and Limitations added by AIR 01-703 on July 12, 2001.
- 8) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).
Conditions and Limitations added by AIR 01-703 on July 12, 2001.
- 9) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
Conditions and Limitations added by AIR 01-703 on July 12, 2001.
- 10) The facility must be able to demonstrate workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).
Conditions and Limitations added by AIR 01-703 on July 12, 2001.
- 11) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13)).
Conditions and Limitations added by AIR 01-703 on July 12, 2001.
- 12) The department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter (WAC 246-247-080(1)).
Conditions and Limitations added by AIR 01-703 on July 12, 2001.
- 13) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
Conditions and Limitations added by AIR 01-703 on July 12, 2001.
- 14) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H (WAC 246-247-080(2)).
Conditions and Limitations added by AIR 01-703 on July 12, 2001.
- 15) Report all measured or calculated emissions annually (WAC 246-247-080(3)).
Conditions and Limitations added by AIR 01-703 on July 12, 2001.
- 16) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).
Conditions and Limitations added by AIR 01-703 on July 12, 2001.
- 17) **This condition was obsoleted on 10/03/2001.** When this project is complete, or operations cease, the facility must notify the department via a report of closure, including whether or not any potential for airborne releases occurred (WAC 246-247-080(6)).
Conditions and Limitations added by AIR 01-703 on July 12, 2001. Condition replaced by new Sunset Condition.

Replaced by condition added by AIR 01-1013, October 25, 2001.
- 18) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and

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

Conditions and Limitations added by AIR 01-703 on July 12, 2001.

- 19) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).

Conditions and Limitations added by AIR 01-703 on July 12, 2001.

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

Conditions and Limitations added by AIR 01-703 on July 12, 2001.

- 21) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting, requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)).
(WAC 246-247-080(6))

Condition added by AIR 01-1013.

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
LICENSE AMENDMENT FOR

**PROJECT TITLE: MAGNESIUM HYDROXIDE PRECIPITATION PROCESS AT THE
PLUTONIUM FINISHING PLANT**

**Date Approved: 08-Nov-01
Emission Unit Name: 291-Z-1**

This is a MAJOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: ALARACT

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
(234-5Z Operations)	HEPA	2	2 Stages for process operations
236-Z Operations)	HEPA	2	2 Stages for process operations
(242-Z Operations)	HEPA	2	2 Stages for process operations
(all operations)	Fan	4	3 standby (7 total)

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Regulatory Requirements	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4) & WAC 246-247-75(2)	Alternative effluent flow rate not to exceed 290,000 cfm. Method 114 appendix B 61.93(b)(2)(ii) ANSI N13.1	All radionuclides which could contribute 10% of the potential EDE.	Continuous

Sampling Requirements: Continuous

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

- 10/31/01 NOC Revision Form, DOE/RL-99-77, Rev. 0G, approved October 31, 2001 provided process description changes. Approval letter, AIR 01-1102, mailed on November 08, 2001.
- 07/25/01 NOC Revision Form, DOE/RL-99-77, Rev. 0F, approved July 25, 2001 provided condition changes. Approval letter, AIR 01-802, mailed on August 15, 2001.
- 07/11/01 AIR 01-702 mailed July 11, 2001 to incorporate revision forms approved on March 6, 2001, May 3, 2001, and June 19, 2001.
- 06/19/01 NOC Revision Form submitted via RTAM, approved on June 19, 2001 to provide process description change.
- 05/03/01 NOC Revision Form submitted via RTAM, approved on May 3, 2001 to provide a minor description change.

- 03/06/01 NOC Revision Form approved on March 6, 2001 during RTAM to provide a minor description change and a clarification.
- 02/02/01 NOC ID 442 combined into NOC ID 443.
- 11/07/00 Incorporation of supplemental information for ventilation system, approved via AIR 00-1017 dated November 7, 2000.
- 09/29/00 NOC Revision Form approved on September 29, 2000 during RTAM to provide a minor description change.
- 09/09/00 NOC Revision Form approved on September 9, 2000 during RTAM to provide a minor description change.
- 08/25/00 Conditions and Limitations of AIR 00-402 were voided and replaced by AIR 00-801, August 25, 2000.
- 04/06/00 Conditions and Limitations of AIR 00-313 were voided by AIR 00-402, April 6, 2000.
- 03/23/00 Revised NOC was approved via AIR 00-313 on March 23, 2000.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 1.10E-01 mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to 2.20E+02 mrem/year to the Maximally Exposed Individual.
- 3) **This process is limited to:**
processing, stabilizing, and packaging, for interim storage, liquid nitrate solution. Stabilization of the solution shall be accomplished by the combination of a magnesium hydroxide and/or oxalate precipitation process and the existing muffle furnaces.

The magnesium hydroxide and/or oxalate precipitation process shall remove, by precipitation, plutonium contained in various nitric solutions. The nitric acid solutions shall be reacted by the addition of magnesium hydroxide and/or oxalic acid. A weak nitric acid stream shall dilute the existing solutions as necessary to optimize the plutonium recovery and generate feed solutions with an acid strength of approximately 3.0 Molar. The feed preparation activities will be performed in existing PFP facilities. The acid strength of the plutonium nitrate feed solutions, including those that do not require dilution will range from 0.3 Molar to 5.0 Molar.

The diluted solution shall be fed to three precipitation vessels where the magnesium hydroxide powder and/or oxalate acid will be added manually. The vessels shall be agitated, after magnesium hydroxide and/or oxalate acid addition, by sparging air up through the vessels by pulling a vacuum on the precipitation vessels.

After the reaction is complete, the precipitators shall be drained by gravity to an open pan filter where the plutonium solids are collected. The filtrate will be vacuumed into a phase separator for collection. The filtrate will be filtered further in the polishing filters before being pumped to temporary storage in the filtrate tanks. Filtrate with less than 3 grams per liter of plutonium will be disposed using existing PFP facilities. Out-of-specification material would be subject to recycle for plutonium recovery.

Plutonium solids will be transferred to an open metal container and heated on a hot plate to further dry the material within the glovebox. The plutonium will be cooled before being conveyed to the muffle

furnaces. Dried plutonium solids may be placed in storage before subjecting to muffle furnace thermal stabilization. The dried solids would be placed manually into appropriate storage containers (e.g., poly jars or other similar sized closed containers) and transferred to existing gloveboxes (i.e., HA-23S or HA-20MB) for potential interim storage. These gloveboxes will tie into the existing ventilation system exhausting through the 291-Z-1 stack.

At a later date, the containers may be retrieved from storage and returned to the precipitation glovebox for final stabilization. The materials then will be transferred into the vessels used for thermal stabilization (i.e., boats). The boats will be transferred to the muffle furnaces for final stabilization. The existing muffle furnaces shall be used to convert the dried plutonium hydroxide to plutonium powder.

Select solutions may be designated as waste. The equipment and enclosures for direct discard of waste plutonium solutions will be used in Room 185 of the 234-5Z building. Unique containers holding the dilute plutonium solutions will be brought from their storage location and analyzed for plutonium content using non-destructive analysis (NDA) equipment before bringing the containers into Room 185. The equipment in Room 185 will include a large tent to envelope plastic enclosures. The enclosures will be vented to the 234-5Z E3 ventilation system by connecting a vent hose from each plastic enclosure through a high-efficiency particulate air (HEPA)-type filter through a HEPA-type filtered vacuum cleaner that is exhausted to the existing E3 ventilation system. Airflow is provided through each plastic enclosure through HEPA-type filters. A large containment tent will be installed to enclose the plastic enclosure operation and provide occupational protection. The vacuum cleaner would maintain a negative pressure inside the enclosures with respect to the large tent. A blower connected to the tent would maintain a negative pressure inside the tent with respect to Room 185.

After pumping has been completed, the pump is turned off, and the transfer system appropriately isolated (e.g., the tubing could be cut just above each drum, and the tubing ends sealed; the drum lids would be bolted into place). In some cases, transferring the solution from two product containers into one receiving drum will be done. After pumping operations, the receiving drum is to be transferred to a storage area. The empty product containers are to be transferred for drum disposition (i.e., storage, reuse and/or discard). Each drum moved out of Room 185 will be analyzed for plutonium content using NDA equipment.

Direct discard also could be conducted in Room 227 in the 234-5Z Building. The process in Room 227 will be the same as that described in Room 185. Solution transfers would be conducted such that radiological contamination would be directed through the 227-T hood exhaust, which is routed to the atmosphere through the existing E-4 ventilation system (room air in Room 227 exhausts through the E-3 ventilation system).

- 4) These Conditions and Limitations must be proceduralized prior to starting the activities described in the Notice of Construction.

Conditions and Limitations added by AIR 00-801, August 25, 2000.

- 5) This approval, with its Conditions and Limitations must be included in the next revision of the Hanford Air Operating Permit (WAC 246-247-060(1)(e) and (2)(c)), and will at that time, constitute a revision of the Radioactive Air Emissions License.

Conditions and Limitations added by AIR 00-801, August 25, 2000.

- 6) If the department finds that the emission unit described in this NOC is not in compliance with the standards in WAC 246-247-040 during construction (as described in the NOC or during operation) the department reserves the right to require modifications to bring it into compliance (WAC 246-247-

060(2)(d)).

Conditions and Limitations added by AIR 00-801, August 25, 2000.

- 7) The facility shall notify the department at least seven days prior to any planned preoperational testing of the emission unit's emission control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
Conditions and Limitations added by AIR 00-801, August 25, 2000.
- 8) The department reserves the right to conduct its own stack sampling, environmental monitoring or other testing, as required around this unit to assure compliance. If the department so decides, the facility must make provision for such testing (WAC 246-247-075(10)).
Conditions and Limitations added by AIR 00-801, August 25, 2000.
- 9) The facility must be able to demonstrate that the workers associated with this emission unit are adequately trained in the use and maintenance of emission control and monitoring systems, and in the performance of associated test and emergency response procedures (WAC 246-247-075(12)).
Conditions and Limitations added by AIR 00-801, August 25, 2000.
- 10) The facility must be able to demonstrate the reliability and accuracy of emission data and other test results from this unit (WAC 246-247-075(13) and WAC 246-247-075(6)). The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards listed in, or equivalent to, those listed in the above-cited regulation.
Conditions and Limitations added by AIR 00-801, August 25, 2000.
- 11) The department reserves the right to inspect and audit this unit during construction and operation. This includes all activities, equipment, operation procedures, documents, data, and other records related to compliance with the regulations (WAC 246-247-080(1)).
Conditions and Limitations added by AIR 00-801, August 25, 2000.
- 12) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
Conditions and Limitations added by AIR 00-801, August 25, 2000.
- 13) All reports and records must be kept and reported according to 40 CFR 61, Subpart H (WAC 246-247-080(2)).
Conditions and Limitations added by AIR 00-801, August 25, 2000.
- 14) Records must be readily (promptly) available for this unit. Those records must be maintained onsite, and must be retained for at least five years (WAC 246-247-080(8)).
Conditions and Limitations added by AIR 00-801, August 25, 2000.
- 15) All measured or calculated emissions must be reported annually (WAC 246-247-080(3)).
Conditions and Limitations added by AIR 00-801, August 25, 2000.
- 16) If there is an unexpected release of radioactivity or if there is a shutdown or other condition that, if it were allowed to persist, would result in emissions of radionuclides in excess of any Conditions or Limitations in the NOC or that lasts more than four hours, it must be reported to the department within 24 hours. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitations included in this approval (paragraph 5).
Conditions and Limitations added by AIR 00-801, August 25, 2000.
- 17) This unit must be fully accessible to Department of Health (DOH) inspectors. If there are any specific training requirements or have restrictions or special requirements for entry, they must be given to the department when they are known to allow for unannounced inspections, as required by EPA (WAC 246-247-080(9)). At a minimum, for unannounced inspections, such requirements or restrictions must be told to inspectors that morning, with the opportunity for the inspectors to meet those requirements. For

prior announced inspections, such notification must occur far enough in advance for the inspectors to have reasonable time to meet the requirements.

Conditions and Limitations added by AIR 00-801, August 25, 2000.

- 18) The facility shall make requested documents available for timely manner for review (WAC 246-247-080(10)).
Conditions and Limitations added by AIR 00-801, August 25, 2000.
- 19) When this project is completed, or operations cease, the facility shall notify the department via a report of closure, and indicate whether or not any potential for airborne release occurred (WAC 246-247-080(6)).
Conditions and Limitations added by AIR 00-801, August 25, 2000.
- 20) **This condition was obsoleted on 07/25/2001.** The work approved in this NOC is limited to those described activities associated with the construction and operation activities involving the magnesium hydroxide precipitation process of plutonium solutions in nitric acid solutions within the Plutonium Finishing Plant (PFP).
Conditions and Limitations added by AIR 00-801, August 25, 2000. Condition obsoleted by NOC revision forms dated May 3, 2001, June 19, 2001 and July 25, 2001.
- 21) **This condition was obsoleted on 07/25/2001.** Approved activities included in the process are the following: Stabilization by precipitation and use of the muffle furnaces; drying of the precipitated plutonium oxide (PuO₂); packaging of the dried PuO₂ for interim storage and disposal of the filtrate from the liquid nitrate solution using existing PFP processes.
Conditions and Limitations added by AIR 00-801, August 25, 2000. Condition obsoleted by NOC revision forms dated June 19, 2001 and July 25, 2001.
- 22) **This condition was obsoleted on 07/25/2001.** The concentration of the nitric acid make up feed solution used in the magnesium hydroxide process cannot exceed 3.0 Molar.
Conditions and Limitations added by AIR 00-801, August 25, 2000. Condition obsoleted by NOC revision form dated September 29, 2000.
- 23) The concentration of the nitric acid diluting solution used in the magnesium hydroxide process will average 0.35 Molar and be maintained within the safe operating parameters established for the process.
Conditions and Limitations added by AIR 00-801, August 25, 2000.
- 24) All operating Conditions and Limitations imposed by DOH in letter # AIR 96-1205, dated December 18, 1996, or stated in the Notice of Construction for the Muffle Furnaces must be observed.
Conditions and Limitations added by AIR 00-801, August 25, 2000.
- 25) **This condition was obsoleted on 07/25/2001.** Construction activities in Room 227 are limited to the installation of wall and ceiling mounts that will stabilize the glovebox during seismic activities. Decontamination activities in Room 227 must be less than 0.1 mrem/yr.
- * The HEPA filtered vacuums used for decontamination activities in Room 227 must be approved in the list included in the Radioactive Air Emissions Notice of Construction for HEPA Filtered Vacuum Radioactive Air Emissions Units DOE-RL-97-50. This document is to be used as a guide for the use of HEPA filtered vacuum, prior to the time the room is connected to the ventilation system. All records must be maintained as required in the HEPA Filtered Vacuum Radioactive Air Emissions Units (DOE-RL-97-50) NOC.
Conditions and Limitations added by AIR 00-801, August 25, 2000.
Condition obsoleted July 25, 2001, activity completed.
- 26) **This condition was obsoleted on 07/05/2001.** Construction activities in Room 230C are limited to the following:

- * Decontaminate and/or stabilize any contaminated areas as necessary.
- * Install two new gloveboxes to house the process equipment. These include precipitators, phase separator, polishing filters. Filtering tanks and hotplates.
- * Anchor the two new glove boxes to the floor.
- * Install wall and ceiling mounts, as necessary, to secure the gloveboxes in case of seismic activity.
- * Install drain lines from the new gloveboxes to a clean section of an existing drain line.
- * Connect the two new gloveboxes to the existing E-4 ventilation header.
- * Route feed returns and spare lines that originate in Room 227 to the new gloveboxes.
- * Install a new conveyor transport to connect to the new gloveboxes.
- * Cut a hole, with dimensions approximating a four foot diameter semicircle, into the wall between Rooms 230C and 230B to allow access to a glovebox port.
- * Remove and relocate the electrical power conditioner.
- * Relocate the current safety shower and eye wash station.
- * Install a new electrical control panel.
- * Install a wash water tank and run lines to two new gloveboxes.

Conditions and Limitations added by AIR 00-801, August 25, 2000.

Condition obsoleted July 5, 2001, activity completed.

- 27) The maximum stack flow rate cannot exceed 137 cubic meters per second.

Conditions and Limitations added by AIR 00-801, August 25, 2000.

- 28) Testing of all HEPA filters described in the NOC will be performed annually.

Conditions and Limitations added by AIR 00-801, August 25, 2000.

- 29) The annual possession quantity for Plutonium (Pu) in nitric acid solutions cannot exceed 0.4 metric tons of Pu.

Conditions and Limitations added by AIR 00-801, August 25, 2000.

- 30) **This condition was obsoleted on 07/25/2001.** The air in rooms 227 and 230C will exhaust through the E-3 High Efficiency Particulate Air (HEPA) ventilation system. The E-3 ventilation system contains one stage of HEPA filtration with a minimum efficiency of 99.95 percent for particles with a medium diameter of 0.3 microns, before connecting with the E-4 ventilation system and exhausting through the 291-Z-1 stack.

The offgases in Rooms 227 and 230C used in the work associated with the MHPP will exhaust through the E-4 ventilation system. The E-4 ventilation system has two stages of HEPA filtration with a minimum efficiency of 99.95 percent for particles with a medium diameter of 0.3 microns. The E-4 ventilation system then passes through two additional stages of HEPA filtration, before connecting with the E-3 ventilation system and exhausting through the 291-Z-1 stack.

Conditions and Limitations added by AIR 00-801, August 25, 2000.

- 31) The monitoring system for the 291-Z-1 stack must remain compliant to all the NESHAPs requirements.

Conditions and Limitations added by AIR 00-801, August 25, 2000.

- 32) The muffle furnaces must connect into the E-4 ventilation system and be configured as described in the Muffle Furnace Notice of Construction (DOE/RL-96-79).

Conditions and Limitations added by AIR 00-801, August 25, 2000.

- 33) The maximum furnace temperature must not exceed approximately 1,000 degrees C.

Conditions and Limitations added by AIR 00-801, August 25, 2000.

- 34) All work on this project must be completed on or before October 1, 2010.

Conditions and Limitations added by AIR 00-801, August 25, 2000.

- 35) The work approved in this NOC is limited to those described activities associated with the construction and operation activities involving the magnesium hydroxide precipitation process, the oxalate precipitation process and the discard of plutonium in nitric acid solutions within the Plutonium Finishing Plant (PFP).

Conditions and Limitations added by AIR 01-802, August 15, 2001.

- 36) Approved activities include the following: Stabilization by precipitation and use of the muffle furnaces; drying of the precipitated plutonium oxide (PuO₂); packaging of the dried PuO₂ for interim storage and disposal of the filtrate from the liquid nitrate solution using existing PFP processes and solidification.

Conditions and Limitations added by AIR 01-802, August 15, 2001.

- 37) The concentration of the nitric acid make up feed solution used in the magnesium hydroxide process cannot exceed 5.0 Molar.

Conditions and Limitations added by AIR 01-802, August 15, 2001.

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
LICENSE AMENDMENT FOR

**PROJECT TITLE: USE OF PORTABLE TANKS AND REVISED SOURCE TERM DESCRIPTION
AT WASTE SAMPLING AND CHARACTERIZATION FACILITY (WSCF)**

Date Approved: Not Approved

Emission Unit Name: 696-W-1

This is a MINOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: **BARCT**

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

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

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

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

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

- 11/08/01 Inspection on 12/04/00 resulted in issuance of new Conditions and Limitations, on November 08, 2001 via AIR 01-1103 to reflect new format and standard Conditions and Limitations, and to specify certification requirements.
- 08/10/00 NOC (DOE/RL-2000-04, Revision 0) received June 12, 2000 to update the description of the WSCF facilities and provide more flexible emissions limits. Approved on August 10, 2000 via AIR 00-802.
- 03/11/99 NOC Revision Form approved on March 11, 1999 to eliminate sample acceptance criterion.
- 01/19/99 Six NOC Revision Forms approved on January 19, 1999, to revise various process descriptions.
- 06/11/90 Original NOC approved on June 11, 1990 via EPS 90-275.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to $2.80E-03$ mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to $1.40E-02$ mrem/year to the Maximally Exposed Individual.
- 3) **This process is limited to:**
WSCF providing analytical services to support chemical and radiological analyses conducted on a variety of solid, liquid, and vapor media.

WSCF consists of the following:

- * Analytical Laboratory Building (696-W-1) - Solid, liquid, and vapor samples contaminated with low levels of radioactive material are processed, on a bench-scale basis, in fume hoods or other controlled air spaces in the building. Evaporation and wet chemistry also are used to prepare samples for analysis. Low-level waste drums are filled inside the laboratory building and transferred either to the solid waste storage building (described as follows) or other approved facilities on the Hanford Site, or the low-level waste drums are moved to various locations with WSCF.
- * Radiochemistry Laboratory (696-W-2) - This is a below grade counting room in the Analytical Laboratory Building with a separately controlled airspace within the building.
- * Environmental Data/Computer Center (6270) - This is a non-radiological building and will not be addressed further.
- * Environmental Sample Archive Building (6267) - This building provides for controlled storage, indexing, categorizing and retrieval of low-level contaminated samples. Storage is provided for up to 2,500 samples requiring refrigerated storage and up to 11,500 samples requiring ambient storage. This building also provides for temporary storage of unvented drums or other low-level waste, packaged in accordance with applicable laboratory procedures. Less than 100 low-level waste packages are stored at any one time.
- * Mobile Laboratory Storage Facility (6269) - This structure houses up to five mobile laboratories and provides protection from adverse weather conditions for the instrumentation and computers inside the mobile laboratories. This area contains calibration laboratory instrumentation used in the mobile laboratories, and a sample preparation area for adding chemical buffers and preservatives to sample containers. This building provides temporary storage of drums, or other waste packages contained with low-levels of radioactive material. Less than 100 low-level waste packages are stored at any one time.
- * Solid Waste Storage Building (6265A) - This open-sided building shall provide for temporary storage of drums or other low-level waste packages. Less than 100 low-level waste packages are stored at any one time and will not be addressed further in this license, as these are unvented drums.
- * Contaminated Liquid Waste Retention Vault (6266) - Consists of two 3,785-liter polyethylene tanks contained in a common concrete vault. The tanks are designed to receive low-level inorganic and radiologically contaminated liquid waste or sample excess from the analytical laboratory. The liquid routinely is transferred to an approved disposal facility on the Hanford Site using the portable tanker

described as follows. This building also provides temporary storage of drums, or other waste packages contaminated with low-levels of radioactive material. Less than 100 low-level waste packages are stored at any one time.

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

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

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

Alpha0	3.30E-01
B/G 0	6.80E+00

- 5) These Conditions and Limitations must be proceduralized and these procedures maintained for the lifetime of the facility.
- 6) If the department finds that the emission unit described in this NOC is not in compliance with the standards in WAC 246-247-040 during operation (as described in the NOC) it reserves the right to require modifications to bring it into compliance (WAC 246-247-060(2)(d)).
- 7) The facility shall notify the department at least seven days prior to any planned preoperational testing of the emission unit's emissions control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
- 8) The U.S. DOE shall monitor this emission unit as follows: 696-W-1 emission units shall be monitored periodically. The periodic sampling shall consist of a sample of stack effluent being withdrawn a minimum of two weeks per quarter.
- 9) The department reserves the right to conduct its own environmental monitoring or other testing, as required around this unit to assure compliance. If the department so decides, the facility must make provision for such testing (WAC 246-247-075(10)).
- 10) The facility must be able to demonstrate that the workers associated with these emission units are adequately trained in the use and maintenance of emission control and monitoring systems, and in the performance of associated test and emergency response procedures (WAC 246-247-075(12)).
- 11) The facility must be able to demonstrate the reliability and accuracy of emission data and other test results from these units (WAC 246-247-075(13)) and (WAC 246-247-075(6)). The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards listed in, or equivalent to, those listed in the above-cited regulation.
- 12) The department reserves the right to inspect and audit this unit during construction and operation including all activities, equipment, operations, documents, data, and other records related to compliance with the regulations (WAC 246-247-080(1)). Periodic inspections will occur.
- 13) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 14) All reports and records must be kept and reported according to 40 CFR 61, Subpart H (WAC 246-247-080(2)).
- 15) All measured or calculated emissions must be reported annually (WAC 246-247-080(3)).

- 16) If there is an unexpected release of radioactivity or if there is a shutdown or other condition that, if it were allowed to persist, would result in emissions of radionuclides in excess of any standards or limitations in the license or that lasts more than four hours, it must be reported to the department within 24 hours. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitations included in this approval (paragraph 5).
- 17) When this project is completed, or operations cease, the facility shall notify the department via a report of closure, and indicate whether or not any potential for airborne release occurred (WAC 246-247-080(6)).
- 18) Records must be readily (promptly) available for these units. These records must be maintained onsite, and must be retained for at least five years (WAC 246-247-080(8)).
- 19) This unit must be fully accessible to Department of Health inspectors. If there are any specific training requirements or restrictions or special requirements for entry, they must be given to the department when they are known to allow for unannounced inspections, as required by EPA (WAC 246-247-080(9)). At a minimum, for unannounced inspections, such requirements or restrictions must be told to inspectors that morning, with the opportunity for the inspectors to meet those requirements. For prior announced inspections, such notification must occur far enough in advance for the inspectors to have reasonable time to meet the requirements.
- 20) The facility shall make requested documents available in a timely manner for review (WAC 246-247-080(10)).
- 21) The annual possession quantity of plutonium and strontium are considered conservative and noted that these radionuclides representative types of alpha and beta radiation that this facility expects to handle. The facility needs to verify annually that plutonium and strontium are the most conservative radionuclides this facility handles.
- 22) The radiological control technology requirements are as follows:
 - * 696-W-1 stack operates a pre-filter and a HEPA filter before entering the exhaust stack. When the ventilation system exits the analytical laboratory building and divides into two legs, each leg shall consist of a damper, a pre-filter, a HEPA filter bank (4x3), a damper, and a fan. The pre-filter housing is designed for ease of filter change without increased dust loading on the HEPA filters. Two exhaust fans are installed and operate in parallel under normal power.

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
LICENSE AMENDMENT FOR

**PROJECT TITLE: USE OF PORTABLE TANKS AND REVISED SOURCE TERM DESCRIPTION
AT WASTE SAMPLING AND CHARACTERIZATION FACILITY (WSCF)**

Date Approved: Not Approved

Emission Unit Name: 696-W-2

This is a MINOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: **BARCT**

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

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

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

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

Sampling Requirements: Record Sample

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

- 11/08/01 Inspection on 12/04/00 resulted in issuance of new Conditions and Limitations, on November 08, 2001 via AIR 01-1103 to reflect new format and standard Conditions and Limitations, and to specify certification requirements.
- 08/10/00 NOC (DOE/RL-2000-04, Revision 0) received June 12, 2000 to update the description of the WSCF facilities and provide more flexible emissions limits. Approved on August 10, 2000 via AIR 00-802.
- 03/11/99 NOC Revision Form approved on March 11, 1999 to eliminate sample acceptance criterion.
- 01/19/99 Six NOC Revision Forms approved on January 19, 1999, to revise various process descriptions.
- 06/11/90 Original NOC approved on June 11, 1990 via EPS 90-275.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 2.80E-03 mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to 1.40E-02 mrem/year to the Maximally Exposed Individual.
- 3) **This process is limited to:**
WSCF providing analytical services to support chemical and radiological analyses conducted on a variety of solid, liquid, and vapor media.

WSCF consists of the following:

- * Analytical Laboratory Building (696-W-1) - Solid, liquid, and vapor samples contaminated with low levels of radioactive material are processed, on a bench-scale basis, in fume hoods or other controlled air spaces in the building. Evaporation and wet chemistry also are used to prepare samples for analysis. Low-level waste drums are filled inside the laboratory building and transferred either to the solid waste storage building (described as follows) or other approved facilities on the Hanford Site, or the low-level waste drums are moved to various locations with WSCF.
- * Radiochemistry Laboratory (696-W-2) - This is a below grade counting room in the Analytical Laboratory Building with a separately controlled airspace within the building.
- * Environmental Data/Computer Center (6270) - This is a non-radiological building and will not be addressed further.
- * Environmental Sample Archive Building (6267) - This building provides for controlled storage, indexing, categorizing and retrieval of low-level contaminated samples. Storage is provided for up to 2,500 samples requiring refrigerated storage and up to 11,500 samples requiring ambient storage. This building also provides for temporary storage of unvented drums or other low-level waste, packaged in accordance with applicable laboratory procedures. Less than 100 low-level waste packages are stored at any one time.
- * Mobile Laboratory Storage Facility (6269) - This structure houses up to five mobile laboratories and provides protection from adverse weather conditions for the instrumentation and computers inside the mobile laboratories. This area contains calibration laboratory instrumentation used in the mobile laboratories, and a sample preparation area for adding chemical buffers and preservatives to sample containers. This building provides temporary storage of drums, or other waste packages contained with low-levels of radioactive material. Less than 100 low-level waste packages are stored at any one time.
- * Solid Waste Storage Building (6265A) - This open-sided building shall provide for temporary storage of drums or other low-level waste packages. Less than 100 low-level waste packages are stored at any one time and will not be addressed further in this license, as these are unvented drums.
- * Contaminated Liquid Waste Retention Vault (6266) - Consists of two 3,785-liter polyethylene tanks contained in a common concrete vault. The tanks are designed to receive low-level inorganic and radiologically contaminated liquid waste or sample excess from the analytical laboratory. The liquid routinely is transferred to an approved disposal facility on the Hanford Site using the portable tanker

described as follows. This building also provides temporary storage of drums, or other waste packages contaminated with low-levels of radioactive material. Less than 100 low-level waste packages are stored at any one time.

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

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

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

Alpha0	3.30E-01
B/G 0	6.80E+00

- 5) If the department finds that the emission unit described in this NOC is not in compliance with the standards in WAC 246-247-040 during operation (as described in the NOC) it reserves the right to require modifications to bring it into compliance (WAC 246-247-060(2)(d)).
- 6) The facility shall notify the department at least seven days prior to any planned preoperational testing of the emission unit's emissions control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
- 7) The U.S. DOE shall monitor this emission unit as follows: 696-W-2 emission units shall be monitored periodically. The periodic sampling shall consist of a sample being drawn a minimum of two weeks per quarter.
- 8) The department reserves the right to conduct its own environmental monitoring or other testing, as required around this unit to assure compliance. If the department so decides, the facility must make provision for such testing (WAC 246-247-075(10)).
- 9) The facility must be able to demonstrate that the workers associated with these emission units are adequately trained in the use and maintenance of emission control and monitoring systems, and in the performance of associated test and emergency response procedures (WAC 246-247-075(12)).
- 10) The facility must be able to demonstrate the reliability and accuracy of emission data and other test results from these units (WAC 246-247-075(13)) and (WAC 246-247-075(6)). The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards listed in, or equivalent to, those listed in the above-cited regulation.
- 11) The department reserves the right to inspect and audit this unit during construction and operation including all activities, equipment, operations, documents, data, and other records related to compliance with the regulations (WAC 246-247-080(1)). Periodic inspections will occur.
- 12) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 13) All reports and records must be kept and reported according to 40 CFR 61, Subpart H (WAC 246-247-080(2)).
- 14) All measured or calculated emissions must be reported annually (WAC 246-247-080(3)).
- 15) If there is an unexpected release of radioactivity or if there is a shutdown or other condition that, if it were allowed to persist, would result in emissions of radionuclides in excess of any standards or

limitations in the license or that lasts more than four hours, it must be reported to the department within 24 hours. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitations included in this approval (paragraph 5).

- 16) When this project is completed, or operations cease, the facility shall notify the department via a report of closure, and indicate whether or not any potential for airborne release occurred (WAC 246-247-080(6)).
- 17) Records must be readily (promptly) available for these units. These records must be maintained onsite, and must be retained for at least five years (WAC 246-247-080(8)).
- 18) This unit must be fully accessible to Department of Health inspectors. If there are any specific training requirements or have restrictions or special requirements for entry, they must be given to the department when they are known to allow for unannounced inspections, as required by EPA (WAC 246-247-080(9)). At a minimum, for unannounced inspections, such requirements or restrictions must be told to inspectors that morning, with the opportunity for the inspectors to meet those requirements. For prior announced inspections, such notification must occur far enough in advance for the inspectors to have reasonable time to meet the requirements.
- 19) The facility shall make requested documents available in a timely manner for review (WAC 246-247-080(10)).
- 20) The radiological control technology requirements are as follows:
 - * 696-W-2 stack operates a ventilation system that splits into two legs. Each leg of the parallel system must consist of a damper, a pre-filter, a HEPA filter bank (4x3), and a damper. The installed filtration system provides a minimum of 99.95% collection efficiency. After the air passes through the parallel system, the legs join together and pass through the fan. The airflow is divided into two paths, with approximately 10% of the airflow exhausting directly to the stack, and the other approximately 90% of flow recycling back into the building. The damper and fan regulate the flow.
- 21) The annual possession quantity of plutonium and strontium are considered conservative and noted that these radionuclides representative types of alpha and beta radiation that this facility expects to handle. The facility needs to verify annually that plutonium and strontium are the most conservative radionuclides this facility handles.
- 22) These Conditions and Limitations must be proceduralized and these procedures maintained for the lifetime of the facility.

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
LICENSE AMENDMENT FOR

**PROJECT TITLE: USE OF PORTABLE TANKS AND REVISED SOURCE TERM DESCRIPTION
AT WASTE SAMPLING AND CHARACTERIZATION FACILITY (WSCF)**

Date Approved: Not Approved

Emission Unit Name: 600 AREA DIFFUSE EMISSIONS

This is a MINOR, FUGITIVE, non-point source emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: **BARCT**

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
			Abatement controls as required in the following Conditions and Limitations.

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Regulatory Requirements	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075[3]	Appendix B, Method 114	All radionuclides which could contribute 10% of the potential EDE.	As listed in the following Conditions and Limitations.

Sampling Requirements: Existing near-facility monitoring stations.

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

- 11/08/01 Inspection on 12/04/00 resulted in issuance of new Conditions and Limitations, on November 08, 2001 via AIR 01-1103 to reflect new format and standard Conditions and Limitations, and to specify certification requirements.
- 08/10/00 NOC (DOE/RL-2000-04, Revision 0) received June 12, 2000 to update the description of the WSCF facilities and provide more flexible emissions limits. Approved on August 10, 2000 via AIR 00-802.
- 03/11/99 NOC Revision Form approved on March 11, 1999 to eliminate sample acceptance criterion.
- 01/19/99 Six NOC Revision Forms approved on January 19, 1999, to revise various process descriptions.
- 06/11/90 Original NOC approved on June 11, 1990 via EPS 90-275.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).

2) The total abated emission limit for this Notice of Construction is limited to $2.80E-03$ mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to $1.40E-02$ mrem/year to the Maximally Exposed Individual.

3) **This process is limited to:**

WSCF providing analytical services to support chemical and radiological analyses conducted on a variety of solid, liquid, and vapor media.

WSCF consists of the following:

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

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

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

* Environmental Sample Archive Building (6267) - This building provides for controlled storage, indexing, categorizing and retrieval of low-level contaminated samples. Storage is provided for up to 2,500 samples requiring refrigerated storage and up to 11,500 samples requiring ambient storage. This building also provides for temporary storage of unvented drums or other low-level waste, packaged in accordance with applicable laboratory procedures. Less than 100 low-level waste packages are stored at any one time.

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

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

* Contaminated Liquid Waste Retention Vault (6266) - Consists of two 3,785-liter polyethylene tanks contained in a common concrete vault. The tanks are designed to receive low-level inorganic and radiologically contaminated liquid waste or sample excess from the analytical laboratory. The liquid routinely is transferred to an approved disposal facility on the Hanford Site using the portable tanker described as follows. This building also provides temporary storage of drums, or other waste packages contaminated with low-levels of radioactive material. Less than 100 low-level waste packages are stored at any one time.

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

further.

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

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

Alpha0	1.02E+00
B/G 0	2.11E+01

- 5) These Conditions and Limitations must be proceduralized and these procedures maintained for the lifetime of the facility.
- 6) If the department finds that the emission unit described in this NOC is not in compliance with the standards in WAC 246-247-040 during operation (as described in the NOC) it reserves the right to require modifications to bring it into compliance (WAC 246-247-060(2)(d)).
- 7) The facility shall notify the department at least seven days prior to any planned preoperational testing of the emission unit's emissions control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
- 8) The U.S. DOE shall monitor this emission units as follows:
- Periodic radiological surveys of swipes or surfaces associated with 6265A, 6269, 6267, and 6266 must be conducted to verify compliance.
- 9) The department reserves the right to conduct its own environmental monitoring or other testing, as required around this unit to assure compliance. If the department so decides, the facility must make provision for such testing (WAC 246-247-075(10)).
- 10) The facility must be able to demonstrate that the workers associated with these emission units are adequately trained in the use and maintenance of emission control and monitoring systems, and in the performance of associated test and emergency response procedures (WAC 246-247-075(12)).
- 11) The facility must be able to demonstrate the reliability and accuracy of emission data and other test results from these units (WAC 246-247-075(13)) and (WAC 246-247-075(6)). The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards listed in, or equivalent to, those listed in the above-cited regulation.
- 12) The department reserves the right to inspect and audit this unit during construction and operation including all activities, equipment, operations, documents, data, and other records related to compliance with the regulations (WAC 246-247-080(1)). Periodic inspections will occur.
- 13) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 14) All reports and records must be kept and reported according to 40 CFR 61, Subpart H (WAC 246-247-080(2)).
- 15) All measured or calculated emissions must be reported annually (WAC 246-247-080(3)).
- 16) If there is an unexpected release of radioactivity or if there is a shutdown or other condition that, if it were allowed to persist, would result in emissions of radionuclides in excess of any standards or limitations in the license or that lasts more than four hours, it must be reported to the department within 24 hours. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5),

the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitations included in this approval (paragraph 5).

- 17) When this project is completed, or operations cease, the facility shall notify the department via a report of closure, and indicate whether or not any potential for airborne release occurred (WAC 246-247-080(6)).
- 18) The facility must maintain a log, in a format approved by the department, for the surveys and smears.
- 19) Records must be readily (promptly) available for these units. These records must be maintained onsite, and must be retained for at least five years (WAC 246-247-080(8)).
- 20) This unit must be fully accessible to Department of Health inspectors. If there are any specific training requirements or have restrictions or special requirements for entry, they must be given to the department when they are known to allow for unannounced inspections, as required by EPA (WAC 246-247-080(9)). At a minimum, for unannounced inspections, such requirements or restrictions must be told to inspectors that morning, with the opportunity for the inspectors to meet those requirements. For prior announced inspections, such notification must occur far enough in advance for the inspectors to have reasonable time to meet the requirements.
- 21) The facility shall make requested documents available in a timely manner for review (WAC 246-247-080(10)).
- 22) The radiological control technology requirements are as follows:
 - * 6267 will control emissions by the structure itself, with no containment efficiency provided by the ventilation system. Packaging of the archived samples and monitored storage of closed (unvented) drums and approved low-level waste packages, combined with minimization of any indoor contamination in accordance with established radiation control procedures, provides for effective control of potential fugitive emissions.
 - * 6269 will control emissions based on the design of the mobile laboratories, combined with minimization of any indoor contamination, in accordance with established radiation control procedures.
 - * 6265A will control emissions by controlling the waste packages. Minimize the external contamination in accordance with established radiation control procedures.
 - * 6266 will control emissions by having a passive vent HEPA type high efficiency filter on each tank.
 - * Portable tanker used for wastewater transport will control emissions by passively venting.
- 23) The annual possession quantity (APQ) shall not exceed the following limits for the associated facilities:
 - * Environmental sample archive building (6267) APQ is limited to 0.33 Ci/yr total Alpha and 6.8 Ci/yr total Beta/Gamma.
 - * Mobile laboratory storage facility (6269) APQ is limited to 0.03 Ci/yr total Alpha and 0.68 Ci/yr total Beta/Gamma.
 - * Contaminated liquid waste retention vault (6266) APQ is limited to 0.33 Ci/yr total Alpha and 6.8 Ci/yr total Beta/Gamma.
 - * Portable tanker used for wastewater transport APQ is limited to 0.33 Ci/yr total Alpha and 6.8 Ci/yr total Beta/Gamma.

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
LICENSE AMENDMENT FOR

**PROJECT TITLE: ENTERING AND CHARACTERIZING OF THE 224-T FACILITY PROCESS
CELLS**

**Date Approved: 16-Nov-01
Emission Unit Name: 291-T-1**

This is a MINOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: **ALARACT**

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
	Prefilter	1	
	HEPA	2	In series
	Fan	3	2 in series, 2 parallel (two fans operate while the third fan is a backup)

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Regulatory Requirements	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93[b][4][i] & WAC 246-247-075[3]	Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	Particulates shall be continuously sampled and analyzed every two-weeks for gross alpha and gross beta, composited on a quarterly basis and analyzed isotopically.

Sampling Requirements: Record Sample

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

- 11/16/01 Conditions and Limitations, AIR 01-1104, mailed on November 16, 2001 for revision forms approved July 2, 2001 and September 18, 2001.
- 09/18/01 NOC Revision Form (DOE/RL-2001-19, Revision 1B) approved September 18, 2001 to provide process description change.
- 07/02/01 NOC Revision form (DOE/RL-2001-19, Revision 1A) approved July 2, 2001 to provide process and condition changes.
- 06/11/01 NOC (DOE/RL-2001-19, Revision 0) approved on June 11, 2001 via AIR 01-602.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 1.25E-02 mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to 1.25E-02 mrem/year to the Maximally Exposed Individual.
- 3) **This process is limited to:**
entering the 224-T Facility to determine the condition and contents of the facility's cells, tanks, and vessels.

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) exhaustor to provide air flow and contamination control in the containment tent. The exhaustor 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 exhaustor. The Type I PTRAEU shall be used in accordance with the conditions, controls, monitoring requirements and limitations of (PTRAEU), Revision 2, approval letter AIR 99-1102, dated November 4, 1999, or latest revision.

The following characterization activities are allowed in the cells and/or containment tent:

- a. Establishing radiological conditions/map (i.e., dose rates, smearable and fixed contamination, and airborne concentrations);
- b. Nondestructive data analyses (NDA) measurements of equipment;
- c. Collection of liquid and solid samples from open vessels, trenches, or sumps;
- d. Collection of ultrasonic data on vessels and piping;
- e. Taking photographs;
- f. Performing visual inspections;
- g. Removing flanges to collect samples from inside equipment or piping;
- h. 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;
- i. Minor decontamination activities such as wiping down, applying fixatives or sealants, etc., performed in the cell or in the containment tent. 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; and
- j. Size reduction and packaging and containerizing of incidental, loose equipment or waste found in the cell for removal and/or disposal.

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.

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.

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

Alpha 0	2.46E+01
Beta 0	5.84E+00

- 5) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060-(2)(d)).
- 6) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
- 7) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
- 8) The facility must be able to demonstrate workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).
- 9) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13)).
- 10) The department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter (WAC 246-247-080(1)).
- 11) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).
- 12) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 13) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H (WAC 246-247-080(2)).
- 14) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).
- 15) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).
- 16) **This condition was obsoleted on 11/9/01.** When this project is complete, or operations cease, the facility must notify the department via a report of closure, including whether or not any potential for airborne releases occurred (WAC 246-247-080(6)).
Condition replaced by new standard condition.
- 17) The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).
- 18) All work covered by this NOC must be completed by December 31, 2005.

- 19) These conditions and limitations must be proceduralized prior to starting activities granted by this approval.
- 20) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).
- 21) No more than two cells shall be entered at one time. The containment tent shall be operated in such a manner that no air will be drawn from a cell into the containment tent when the cell door is open. The Type I PTRAEU ventilating the containment tent for a cell shall be turned on only when the cell entrance is closed or otherwise blocked to provide isolation from the process cell.
- 22) The dose to the maximally exposed member of the public from unabated emissions from sampling and characterization activities covered by this NOC shall not exceed $8.31E-03$ mrem/year from the 291-T-1 emission point.
- 23) HPT coverage shall be provided during all cell entries and excavation activities.
- 24) Before starting work on removing flanges or cutting pipe, removable contamination in the affected area shall be reduced to ALARA. Measures such as expandable foam, fixatives, or glovebags applied on or around a pipe cut shall also be considered to help fix contamination.
- 25) If a HEPA filtered vacuum radioactive air emission unit (HEPA VAC) is used, the conditions, controls, monitoring requirements, and limitations of the HEPA VAC, Revision 2, approval letter AIR 99-1103, dated November 4, 1999, shall be required; or the latest approved version.
- 26) The existing emissions controls at the 291-T-1 stack shall be used to abate characterization releases with the potential to challenge those controls. The 291-T-1 stack controls shall consist of a prefilter and two stages of (HEPA) filters. The HEPA filters shall be tested in place annually to verify a minimum control efficiency of 99.95 percent.
- 27) Sampling and characterization activities shall observe the following limitations:
 - a) Total volume of samples from vessels shall not exceed 50 liters per year; sample volume shall be tracked in a log; specific approval for the format of this log shall be obtained from the WDOH prior to commencement of sampling activities.
 - b) Total surface area of sample coupons collected from vessels shall not exceed 0.2 m^2 per year; sample coupon surface area shall be tracked in a log; specific approval for the format of this log shall be obtained from the WDOH prior to commencement of sampling activities.
 - c) Total volume of samples from pipes shall not exceed ten liters per year; sample volume shall be tracked in a log; specific approval for the format of this log shall be obtained from the WDOH prior to commencement of sampling activities.
 - d) Total length of pipe sections sampled shall not exceed ten meters per year; pipe section sample length shall be tracked in a log in an approved format; specific approval for the format of this log shall be obtained from the WDOH prior to commencement of sampling activities.
- 28) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).

- 29) Periodic confirmatory monitoring (PCM) for the potential emissions from the 291-T-1 stack shall consist of the current sample collection routine in use for the 291-T-1 emission unit as follows:

The record sampler for the 291-T-1 stack shall be operated continuously, and particulate sample air filters shall be collected biweekly. The biweekly samples shall be analyzed for gross alpha/beta activity and composited quarterly for specific isotopic analysis (strontium-90, cesium-137, europium-154, plutonium-238, plutonium-239/240, and americium-241). Emissions from this activity shall be reported as part of the T-Plant stack emissions data.

- 30) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting, requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)).
(WAC 246-247-080(6))

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
LICENSE AMENDMENT FOR

**PROJECT TITLE: ENTERING AND CHARACTERIZING OF THE 224-T FACILITY PROCESS
CELLS**

Date Approved: 16-Nov-01

Emission Unit Name: TYPE-1, TYPE-2, TYPE-3

This is a MINOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: **BARCT**

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
	HEPA	1	Type-1
	HEPA	1	Type-2 and Type-3
	Charcoal filter	1	Type-2 and Type-3

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Regulatory Requirements	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075[3]	Appendix B, Method 114	GROSS ALPHA/BETA	Annual, unless specified by the NOC.

Sampling Requirements: One of the following methods may be chosen for actual emissions reporting: nondestructive assay, record sampler, or continuous air monitoring, whichever is more appropriate.

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

- 11/16/01 Conditions and Limitations, AIR 01-1104, mailed on November 16, 2001 for revision forms approved July 2, 2001 and September 18, 2001.
- 09/18/01 NOC Revision Form (DOE/RL-2001-19, Revision 1B) approved September 18, 2001 to provide process description change.
- 07/02/01 NOC Revision form (DOE/RL-2001-19, Revision 1A) approved July 2, 2001 to provide process and condition changes.
- 06/11/01 NOC (DOE/RL-2001-19, Revision 0) approved on June 11, 2001 via AIR 01-602.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).

- 2) The total abated emission limit for this Notice of Construction is limited to 1.25E-02 mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to 1.25E-02 mrem/year to the Maximally Exposed Individual.
- 3) **This process is limited to:**
entering the 224-T Facility to determine the condition and contents of the facility's cells, tanks, and vessels.

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) exhaustor to provide air flow and contamination control in the containment tent. The exhaustor 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 exhaustor. The Type I PTRAEU shall be used in accordance with the conditions, controls, monitoring requirements and limitations of (PTRAEU), Revision 2, approval letter AIR 99-1102, dated November 4, 1999, or latest revision.

The following characterization activities are allowed in the cells and/or containment tent:

- a. Establishing radiological conditions/map (i.e., dose rates, smearable and fixed contamination, and airborne concentrations);
- b. Nondestructive data analyses (NDA) measurements of equipment;
- c. Collection of liquid and solid samples from open vessels, trenches, or sumps;
- d. Collection of ultrasonic data on vessels and piping;
- e. Taking photographs;
- f. Performing visual inspections;
- g. Removing flanges to collect samples from inside equipment or piping;
- h. 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;
- i. Minor decontamination activities such as wiping down, applying fixatives or sealants, etc., performed in the cell or in the containment tent. 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; and
- j. Size reduction and packaging and containerizing of incidental, loose equipment or waste found in the cell for removal and/or disposal.

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.

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.

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

Alpha0	9.86E-02
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- 5) These Conditions and Limitations must be proceduralized prior to starting activities granted by this approval.
- 6) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060-(2)(d)).
- 7) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
- 8) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).
- 9) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
- 10) The facility must be able to demonstrate workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).
- 11) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13)).
- 12) The department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter (WAC 246-247-080(1)).
- 13) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 14) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H (WAC 246-247-080(2)).
- 15) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).
- 16) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).
- 17) **This condition was obsoleted on 11/9/01.** When this project is complete, or operations cease, the facility must notify the department via a report of closure, including whether or not any potential for airborne releases occurred (WAC 246-247-080(6)).
Condition replaced by new standard condition.
- 18) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).
- 19) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or

requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).

- 20) The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).
- 21) The dose to the maximally exposed member of the public from unabated emissions associated with this NOC and exhausted by the PTRAEU shall not exceed $1.12E-03$ mrem/year. For the purposes of dose estimation, gross beta air concentrations associated with this emission point shall be conservatively assumed to consist entirely of Sr-90. Gross alpha air concentrations associated with this emission point shall be conservatively assumed to consist entirely of Pu-239.
- 22) If a Portable/Temporary Radioactive Air Emission Unit (PTRAEU) is used, the conditions, controls, monitoring requirements and limitations of (PTRAEU), Revision 2, approval letter AIR 99-1102, dated November 4, 1999, shall be required, or the latest approved version.
- 23) HPT coverage shall be provided during all cell entries and excavation activities.
- 24) Characterization activities shall be stopped if general surface contamination levels in the containment tent reach $40,000$ dpm/ 100 cm^2 alpha or $2,000,000$ dpm/ 100 cm^2 beta/gamma or if general air concentration levels in the containment tent reach $2.0 E-9$ microcuries/milliliter alpha or $2.0 E-6$ microcuries/milliliter beta/gamma. In this event the Department of Health shall be notified of existing conditions and work stoppage. Following such a work stoppage, activities in the process cells shall not continue until a review of the work and encountered conditions has been performed and a determination made, in concurrence with the Department of Health, that no threat to the environment exists, or proper controls have been put in place to mitigate any further threat.
- 25) If a HEPA filtered vacuum radioactive air emission unit (HEPA VAC) is used, the conditions, controls, monitoring requirements, and limitations of the HEPA VAC, Revision 2, approval letter AIR 99-1103, dated November 4, 1999, shall be required; or the latest approved version.
- 26) Periodic confirmatory measurements (PCM) for emissions from the containment tent shall be performed and shall consist of the radiological surveys and CAM readings/log papers from the containment tent. Compliance shall be demonstrated by showing that actual emissions are inherently less than the estimated emissions, which are based and calculated from the same contamination levels.

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.

- 27) All work covered by this NOC must be completed by December 31, 2005.
- 28) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting, requirements which are no longer

applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)).
(WAC 246-247-080(6))

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
LICENSE AMENDMENT FOR

**PROJECT TITLE: ENTERING AND CHARACTERIZING OF THE 224-T FACILITY PROCESS
CELLS**

Date Approved: 16-Nov-01

Emission Unit Name: 200 AREA DIFFUSE/FUGITIVE

This is a MINOR, FUGITIVE, non-point source emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: **BARCT**

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
			Abatement controls as required in the following Conditions and Limitations.

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Regulatory Requirements	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075[3]	Appendix B, Method 114	All radionuclides which could contribute 10% of the potential EDE.	As listed in the following Conditions and Limitations.

Sampling Requirements: Existing near-facility monitoring stations.

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

- 11/16/01 Conditions and Limitations, AIR 01-1104, mailed on November 16, 2001 for revision forms approved July 2, 2001 and September 18, 2001.
- 09/18/01 NOC Revision Form (DOE/RL-2001-19, Revision 1B) approved September 18, 2001 to provide process description change.
- 07/02/01 NOC Revision form (DOE/RL-2001-19, Revision 1A) approved July 2, 2001 to provide process and condition changes.
- 06/11/01 NOC (DOE/RL-2001-19, Revision 0) approved on June 11, 2001 via AIR 01-602.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 1.25E-02 mrem/year to the

Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to 1.25E-02 mrem/year to the Maximally Exposed Individual.

3) **This process is limited to:**

entering the 224-T Facility to determine the condition and contents of the facility's cells, tanks, and vessels.

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) exhaustor to provide air flow and contamination control in the containment tent. The exhaustor 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 exhaustor. The Type I PTRAEU shall be used in accordance with the conditions, controls, monitoring requirements and limitations of (PTRAEU), Revision 2, approval letter AIR 99-1102, dated November 4, 1999, or latest revision.

The following characterization activities are allowed in the cells and/or containment tent:

- a. Establishing radiological conditions/map (i.e., dose rates, smearable and fixed contamination, and airborne concentrations);
- b. Nondestructive data analyses (NDA) measurements of equipment;
- c. Collection of liquid and solid samples from open vessels, trenches, or sumps;
- d. Collection of ultrasonic data on vessels and piping;
- e. Taking photographs;
- f. Performing visual inspections;
- g. Removing flanges to collect samples from inside equipment or piping;
- h. 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;
- i. Minor decontamination activities such as wiping down, applying fixatives or sealants, etc., performed in the cell or in the containment tent. 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; and
- j. Size reduction and packaging and containerizing of incidental, loose equipment or waste found in the cell for removal and/or disposal.

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.

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.

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

Alpha 0	1.78E-01
Beta 0	5.49E-02

- 5) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060-(2)(d)).
- 6) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
- 7) The facility must be able to demonstrate workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).
- 8) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
- 9) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13)).
- 10) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).
- 11) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).
- 12) **This condition was obsoleted on 11/9/01.** When this project is complete, or operations cease, the facility must notify the department via a report of closure, including whether or not any potential for airborne releases occurred (WAC 246-247-080(6)).
Condition replaced by new standard condition.
- 13) The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).
- 14) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).
- 15) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).
- 16) All work covered by this NOC must be completed by December 31, 2005.
- 17) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 18) 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.

- 19) These conditions and limitations must be proceduralized prior to starting activities granted by this approval.
- 20) If a Portable/Temporary Radioactive Air Emission Unit (PTRAEU) is used, the conditions, controls, monitoring requirements and limitations of (PTRAEU), Revision 2, approval letter AIR 99-1102, dated November 4, 1999, shall be required, or the latest approved version.
- 21) HPT coverage shall be provided during all cell entries and excavation activities.
- 22) 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.
- 23) After backfilling, the soil surface radiological contamination levels shall be verified to be less than 5,000 dpm/100 cm² beta/gamma and less than 100 dpm/100 cm² 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.
- 24) If a HEPA filtered vacuum radioactive air emission unit (HEPA VAC) is used, the conditions, controls, monitoring requirements, and limitations of the HEPA VAC, Revision 2, approval letter AIR 99-1103, dated November 4, 1999, shall be required; or the latest approved version.
- 25) Total volume of contaminated soil disturbed in excavation for installation of containment tents shall not exceed two cubic meters.
- 26) 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.

- 27) In addition to PCM, diffuse/fugitive emissions shall be monitored using the 200 West Area near-field ambient air monitors. Sample collection and analysis shall follow that of the near field monitoring program. Analytical results shall be reported in the Annual Air Emissions Report. Any change which moves, adds, or deletes monitoring stations in this near-field ambient monitoring program must be approved by the department.
- 28) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).
- 29) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or

completion, to meet any monitoring, record keeping, and reporting, requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)).
(WAC 246-247-080(6))

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DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
LICENSE AMENDMENT FOR

PROJECT TITLE: 325 BUILDING HAZARDOUS WASTE TREATMENT UNIT (HWTU)

Date Approved: 16-Nov-01

Emission Unit Name: EP-325-01-S

This is a MAJOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: **ALARACT**

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
	HEPA	2	2 in series
	Fan	3	4 in parallel

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Regulatory Requirements	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4) & WAC 246-247-75(2)	Method 2 Appendix A; Appendix B, Method 114	All radionuclides which could contribute 10% of the potential EDE.	Particulates are continuously sampled and analyzed every two-weeks for gross alpha and gross beta, composited on a semi-annual basis and analyzed isotopically. Tritium samples are analyzed on a monthly basis.

Sampling Requirements: Continuous particulate using filter and tritium using silica gel.

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

11/16/01 NOC Revision form submitted and approved October 16, 2001, to provide condition changes/clarifications. Conditions/Limitations issued via AIR 01-1107 on November 16, 2001.

09/15/98 Original NOC approved via AIR 98-909 dated September 15, 1998.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 1.10E-01 mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to 1.10E+01 mrem/year to the Maximally Exposed Individual.

3) **This process is limited to:**

operation of the Hazardous Waste Treatment Unit (HWTU). The HWTU consists of Rooms 520 and 528. The Shielded Analytical Laboratory (SAL) consists of Rooms 200, 201, and 203. The waste compactor is located in Room 43. In the HWTU/SAL, hazardous materials and radioactive mixed waste will be stored, dispensed, used, handled, packaged in drums, and treated using various small bench-scale treatment processes.

Approved waste treatment processes used in the HWTU/SAL include pH adjustment, ion exchange, carbon absorption, venting of gas cylinders, using polymer beads or mineral absorbents; such as clays, chemical oxidation, chemical precipitation, chemical reduction, waste concentration by evaporation, neutralization, filtration, solvent extraction, catalytic destruction, and grout encapsulation (cementation).

The other activities approved for this NOC are the following operations:

Radiochemical Processing - basic and applied research for the development of technologies that provide solutions for environmental and industrial problems. Research emphasis is the characterization of radiochemical and spent-fuel samples using analytical and metallurgical capabilities, and determining fluid and thermal behavior of waste processes and engineering systems.

Analytical Chemistry - provides quantitative gas analyses, isotopic analyses of elements, volume calibrations, and special gas standard mixtures. Typical operations include analytical weighing, sample dissolution, sample dilution, and aliquoting, digestion, distillation, titrimetric analysis, solvent extraction, and ion exchange separations.

Environmental Management Services - provides evaluation and implementation of compliant methods for waste treatment, storage and disposal. Technical staff are allowed to conduct research and development of various treatment processes and implementing the processes in waste management operations.

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

Am	241	5.20E-01
Am	242 m	1.42E-03
Am	243	6.70E-04
Ba	137 m	4.90E+01
Ba	140	6.00E+02
C-	14	1.00E-04
Ce	144	1.00E+02
Cm	242	2.00E-03
Cm	243	9.70E-04
Cm	244	1.03E+00
Co	60	2.80E+02
Cs	134	4.20E+01
Cs	137	6.50E+02
Eu	152	9.70E-04
Eu	154	2.00E+02
Eu	155	9.40E+02
Fe	55	5.40E+03
H-	3	1.00E+02

I-	129	4.10E-06
Kr	85	1.00E+02
La	140	1.60E+01
Mn	54	8.80E+02
Nb	95	9.60E+02
Np	237	7.00E-01
Pm	147	1.00E+03
Pr	144	1.60E+01
Pu	238	6.20E-01
Pu	239	5.20E-01
Pu	241	3.54E+00
Ra	226	1.20E+01
Ru	106	1.00E+02
Sb	125	1.20E+03
Se	79	2.84E-05
Sm	151	1.80E-02
Sr	90	1.60E+02
Ta	182	1.25E+00
Tc	99	5.86E-03
Te	125 m	4.92E-03
Th	228	1.00E+00
Th	232	1.00E-01
U-	233	2.00E-01
U-	235	4.20E+00
U-	238	4.20E+00
Zn	65	2.40E+02
Zr	95	7.00E+02

5) These Conditions and Limitations must be documented in an established procedure prior to starting activities granted by this approval (WAC 246-247-040(5) and 246-247-060(5)).

6) **This condition was obsoleted on 10/16/2001.** Hazardous materials and radioactive mixed wastes will be stored, dispensed used, handled, packaged in drums and treated, using various small bench-scale treatment processes in the HWTU/SAL.

Original condition approved via AIR 98-909 dated September 15, 1998.

Replaced by standard condition.

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

8) **This condition was obsoleted on 10/16/2001.** Radioactive air emissions are limited to the concentrations listed in the NOC.

Original condition approved via AIR 98-909 dated September 15, 1998.

Replaced by standard condition.

9) The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The

facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).

- 10) All waste resulting from activities in the 325 Building HWTU/SAL operations must be disposed of in accordance with prescribed PNNL Procedures.
- 11) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).
- 12) **This condition was obsoleted on 10/16/2001.** Monitoring of emission point EP-325-01-S will not change. Stack particulate emission samples will be analyzed for alpha and beta activity, and specific isotopes as required. Analytical methodology for stack samples shall comply with 40 CFR 61 Appendix B, Method 114. An isokinetic sampling probe mounted in the exhaust stack will be used to collect the particulate samples.

Original condition approved via AIR 98-909 dated September 15, 1998.

Replaced by new format of Conditions/Limitations report.

- 13) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).
- 14) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 15) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
- 16) The waste compactor must remain HEPA filtered and exhausted through the main stack. It is only to be used for low-level dry materials, such as gloves, wipes, and step off pad waste as described in the NOC. Take wipes of the small compactor drawer after each compactor cycle. A log of these wipes must be maintained and available for an inspectors review.
- 17) **This condition was obsoleted on 10/16/2001.** Approved waste treatment processes used in the HWTU/SAL include pH adjustment, ion exchange, carbon absorption, using polymer beads or mineral absorbents; such as clays, chemical oxidation, chemical precipitation, chemical reduction, waste concentration by evaporation, neutralization, filtration, solvent extraction, catalytic destruction, and grout encapsulation (cementation) as described in the NOC.

Original condition approved via AIR 98-909 dated September 15, 1998.

Condition changed to reflect new standard condition wording via AIR 01-1107 dated November 16, 2001.

- 18) **This condition was obsoleted on 10/16/2001.** Activities of the Radiochemical Processing Analytical Chemistry and Environmental Management groups in the 325 Building are limited to those described in the NOC.

Original condition approved via AIR 98-909 dated September 15, 1998.

Obsoleted by NOC Application/Permit Revision form approved November 16, 2001, via AIR 01-1107.

- 19) The department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter (WAC 246-247-080(1)).

- 20) Equipment and procedures for continuous monitoring shall conform to ANSI N13.1. The specific design must be approved by the department prior to installation. Any deviation from ANSI N13.1 must be approved by the department prior to construction (WAC 246-247-075(2)).
- 21) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).
- 22) **This condition was obsoleted on 10/16/2001.** The additional 325 Building emissions must be as a result of waste treatment activities in the waste compactor in Room 43, Hazardous Waste Treatment Unit (HWTU) in Rooms 520 and 528, and the Shielded Analytical Laboratory (SAL) in Rooms 200, 201, and 203 (Hot Cells) of the 325 Building as described in the NOC.
Original condition approved via AIR 98-909 dated September 15, 1998.
Replaced by standard condition.
- 23) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).
- 24) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H (WAC 246-247-080(2)).
- 25) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13)).
- 26) **This condition was obsoleted on 10/16/2001.** This approval, with its Conditions and Limitations, constitutes and amendment to the Department's Radioactive Air Emission License. This amendment must be included in the next revision of the Hanford Air Operating Permit (WAC 246-247-060(1)(e) and (2)(c)).
Original condition approved via AIR 98-909 dated September 15, 1998.
Condition obsoleted by issuance of the Hanford Air Operating Permit.
- 27) The facility must be able to demonstrate workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).
- 28) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting, requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)). (WAC 246-247-080(6))

- 29) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction

or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060-(2)(d)).

- 30) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
LICENSE AMENDMENT FOR

**PROJECT TITLE: USE OF PORTABLE TANKS AND REVISED SOURCE TERM DESCRIPTION
AT WASTE SAMPLING AND CHARACTERIZATION FACILITY (WSCF)**

**Date Approved: 19-Dec-01
Emission Unit Name: 696-W-1**

This is a MINOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: BARCT

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

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

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

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

Sampling Requirements: Record Sample

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

- 12/19/01 Corrected letter, AIR 01-1201, mailed on December 20, 2001 to provide an approval number and date approved.
- 11/08/01 Inspection on 12/04/00 resulted in issuance of new Conditions and Limitations, on November 08, 2001 via AIR 01-1103 to reflect new format and standard Conditions and Limitations, and to specify certification requirements.
- 08/10/00 NOC (DOE/RL-2000-04, Revision 0) received June 12, 2000 to update the description of the WSCF facilities and provide more flexible emissions limits. Approved on August 10, 2000 via AIR 00-802.
- 03/11/99 NOC Revision Form approved on March 11, 1999 to eliminate sample acceptance criterion.
- 01/19/99 Six NOC Revision Forms approved on January 19, 1999, to revise various process descriptions.
- 06/11/90 Original NOC approved on June 11, 1990 via EPS 90-275.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to $2.80E-03$ mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to $1.40E-02$ mrem/year to the Maximally Exposed Individual.
- 3) **This process is limited to:**
WSCF providing analytical services to support chemical and radiological analyses conducted on a variety of solid, liquid, and vapor media.

WSCF consists of the following:

- * Analytical Laboratory Building (696-W-1) - Solid, liquid, and vapor samples contaminated with low levels of radioactive material are processed, on a bench-scale basis, in fume hoods or other controlled air spaces in the building. Evaporation and wet chemistry also are used to prepare samples for analysis. Low-level waste drums are filled inside the laboratory building and transferred either to the solid waste storage building (described as follows) or other approved facilities on the Hanford Site, or the low-level waste drums are moved to various locations with WSCF.
- * Radiochemistry Laboratory (696-W-2) - This is a below grade counting room in the Analytical Laboratory Building with a separately controlled airspace within the building.
- * Environmental Data/Computer Center (6270) - This is a non-radiological building and will not be addressed further.
- * Environmental Sample Archive Building (6267) - This building provides for controlled storage, indexing, categorizing and retrieval of low-level contaminated samples. Storage is provided for up to 2,500 samples requiring refrigerated storage and up to 11,500 samples requiring ambient storage. This building also provides for temporary storage of unvented drums or other low-level waste, packaged in accordance with applicable laboratory procedures. Less than 100 low-level waste packages are stored at any one time.
- * Mobile Laboratory Storage Facility (6269) - This structure houses up to five mobile laboratories and provides protection from adverse weather conditions for the instrumentation and computers inside the mobile laboratories. This area contains calibration laboratory instrumentation used in the mobile laboratories, and a sample preparation area for adding chemical buffers and preservatives to sample containers. This building provides temporary storage of drums, or other waste packages contained with low-levels of radioactive material. Less than 100 low-level waste packages are stored at any one time.
- * Solid Waste Storage Building (6265A) - This open-sided building shall provide for temporary storage of drums or other low-level waste packages. Less than 100 low-level waste packages are stored at any one time and will not be addressed further in this license, as these are unvented drums.
- * Contaminated Liquid Waste Retention Vault (6266) - Consists of two 3,785-liter polyethylene tanks contained in a common concrete vault. The tanks are designed to receive low-level inorganic and radiologically contaminated liquid waste or sample excess from the analytical laboratory. The liquid routinely is transferred to an approved disposal facility on the Hanford Site using the portable tanker

described as follows. This building also provides temporary storage of drums, or other waste packages contaminated with low-levels of radioactive material. Less than 100 low-level waste packages are stored at any one time.

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

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

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

Alpha 0	3.30E-01
B/G 0	6.80E+00

- 5) These Conditions and Limitations must be proceduralized and these procedures maintained for the lifetime of the facility.
- 6) If the department finds that the emission unit described in this NOC is not in compliance with the standards in WAC 246-247-040 during operation (as described in the NOC) it reserves the right to require modifications to bring it into compliance (WAC 246-247-060(2)(d)).
- 7) The facility shall notify the department at least seven days prior to any planned preoperational testing of the emission unit's emissions control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
- 8) The U.S. DOE shall monitor this emission unit as follows: 696-W-1 emission units shall be monitored periodically. The periodic sampling shall consist of a sample of stack effluent being withdrawn a minimum of two weeks per quarter.
- 9) The department reserves the right to conduct its own environmental monitoring or other testing, as required around this unit to assure compliance. If the department so decides, the facility must make provision for such testing (WAC 246-247-075(10)).
- 10) The facility must be able to demonstrate that the workers associated with these emission units are adequately trained in the use and maintenance of emission control and monitoring systems, and in the performance of associated test and emergency response procedures (WAC 246-247-075(12)).
- 11) The facility must be able to demonstrate the reliability and accuracy of emission data and other test results from these units (WAC 246-247-075(13)) and (WAC 246-247-075(6)). The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards listed in, or equivalent to, those listed in the above-cited regulation.
- 12) The department reserves the right to inspect and audit this unit during construction and operation including all activities, equipment, operations, documents, data, and other records related to compliance with the regulations (WAC 246-247-080(1)). Periodic inspections will occur.
- 13) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 14) All reports and records must be kept and reported according to 40 CFR 61, Subpart H (WAC 246-247-080(2)).
- 15) All measured or calculated emissions must be reported annually (WAC 246-247-080(3)).

- 16) If there is an unexpected release of radioactivity or if there is a shutdown or other condition that, if it were allowed to persist, would result in emissions of radionuclides in excess of any standards or limitations in the license or that lasts more than four hours, it must be reported to the department within 24 hours. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitations included in this approval (paragraph 5).
- 17) When this project is completed, or operations cease, the facility shall notify the department via a report of closure, and indicate whether or not any potential for airborne release occurred (WAC 246-247-080(6)).
- 18) Records must be readily (promptly) available for these units. These records must be maintained onsite, and must be retained for at least five years (WAC 246-247-080(8)).
- 19) This unit must be fully accessible to Department of Health inspectors. If there are any specific training requirements or restrictions or special requirements for entry, they must be given to the department when they are known to allow for unannounced inspections, as required by EPA (WAC 246-247-080(9)). At a minimum, for unannounced inspections, such requirements or restrictions must be told to inspectors that morning, with the opportunity for the inspectors to meet those requirements. For prior announced inspections, such notification must occur far enough in advance for the inspectors to have reasonable time to meet the requirements.
- 20) The facility shall make requested documents available in a timely manner for review (WAC 246-247-080(10)).
- 21) The annual possession quantity of plutonium and strontium are considered conservative and noted that these radionuclides representative types of alpha and beta radiation that this facility expects to handle. The facility needs to verify annually that plutonium and strontium are the most conservative radionuclides this facility handles.
- 22) The radiological control technology requirements are as follows:

* 696-W-1 stack operates a pre-filter and a HEPA filter before entering the exhaust stack. When the ventilation system exits the analytical laboratory building and divides into two legs, each leg shall consist of a damper, a pre-filter, a HEPA filter bank (4x3), a damper, and a fan. The pre-filter housing is designed for ease of filter change without increased dust loading on the HEPA filters. Two exhaust fans are installed and operate in parallel under normal power.

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
LICENSE AMENDMENT FOR

**PROJECT TITLE: USE OF PORTABLE TANKS AND REVISED SOURCE TERM DESCRIPTION
AT WASTE SAMPLING AND CHARACTERIZATION FACILITY (WSCF)**

**Date Approved: 19-Dec-01
Emission Unit Name: 696-W-2**

This is a MINOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: BARCT

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

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

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

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

Sampling Requirements: Record Sample

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

- 12/19/01 Corrected letter, AIR 01-1201, mailed on December 20, 2001 to provide an approval number and date approved.
- 11/08/01 Inspection on 12/04/00 resulted in issuance of new Conditions and Limitations, on November 08, 2001 via AIR 01-1103 to reflect new format and standard Conditions and Limitations, and to specify certification requirements.
- 08/10/00 NOC (DOE/RL-2000-04, Revision 0) received June 12, 2000 to update the description of the WSCF facilities and provide more flexible emissions limits. Approved on August 10, 2000 via AIR 00-802.
- 03/11/99 NOC Revision Form approved on March 11, 1999 to eliminate sample acceptance criterion.
- 01/19/99 Six NOC Revision Forms approved on January 19, 1999, to revise various process descriptions.
- 06/11/90 Original NOC approved on June 11, 1990 via EPS 90-275.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to $2.80E-03$ mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to $1.40E-02$ mrem/year to the Maximally Exposed Individual.
- 3) **This process is limited to:**
WSCF providing analytical services to support chemical and radiological analyses conducted on a variety of solid, liquid, and vapor media.

WSCF consists of the following:

- * Analytical Laboratory Building (696-W-1) - Solid, liquid, and vapor samples contaminated with low levels of radioactive material are processed, on a bench-scale basis, in fume hoods or other controlled air spaces in the building. Evaporation and wet chemistry also are used to prepare samples for analysis. Low-level waste drums are filled inside the laboratory building and transferred either to the solid waste storage building (described as follows) or other approved facilities on the Hanford Site, or the low-level waste drums are moved to various locations with WSCF.
- * Radiochemistry Laboratory (696-W-2) - This is a below grade counting room in the Analytical Laboratory Building with a separately controlled airspace within the building.
- * Environmental Data/Computer Center (6270) - This is a non-radiological building and will not be addressed further.
- * Environmental Sample Archive Building (6267) - This building provides for controlled storage, indexing, categorizing and retrieval of low-level contaminated samples. Storage is provided for up to 2,500 samples requiring refrigerated storage and up to 11,500 samples requiring ambient storage. This building also provides for temporary storage of unvented drums or other low-level waste, packaged in accordance with applicable laboratory procedures. Less than 100 low-level waste packages are stored at any one time.
- * Mobile Laboratory Storage Facility (6269) - This structure houses up to five mobile laboratories and provides protection from adverse weather conditions for the instrumentation and computers inside the mobile laboratories. This area contains calibration laboratory instrumentation used in the mobile laboratories, and a sample preparation area for adding chemical buffers and preservatives to sample containers. This building provides temporary storage of drums, or other waste packages contained with low-levels of radioactive material. Less than 100 low-level waste packages are stored at any one time.
- * Solid Waste Storage Building (6265A) - This open-sided building shall provide for temporary storage of drums or other low-level waste packages. Less than 100 low-level waste packages are stored at any one time and will not be addressed further in this license, as these are unvented drums.
- * Contaminated Liquid Waste Retention Vault (6266) - Consists of two 3,785-liter polyethylene tanks contained in a common concrete vault. The tanks are designed to receive low-level inorganic and radiologically contaminated liquid waste or sample excess from the analytical laboratory. The liquid routinely is transferred to an approved disposal facility on the Hanford Site using the portable tanker

described as follows. This building also provides temporary storage of drums, or other waste packages contaminated with low-levels of radioactive material. Less than 100 low-level waste packages are stored at any one time.

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

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

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

Alpha 0	3.30E-01
B/G 0	6.80E+00

- 5) If the department finds that the emission unit described in this NOC is not in compliance with the standards in WAC 246-247-040 during operation (as described in the NOC) it reserves the right to require modifications to bring it into compliance (WAC 246-247-060(2)(d)).
- 6) The facility shall notify the department at least seven days prior to any planned preoperational testing of the emission unit's emissions control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
- 7) The U.S. DOE shall monitor this emission unit as follows: 696-W-2 emission units shall be monitored periodically. The periodic sampling shall consist of a sample being drawn a minimum of two weeks per quarter.
- 8) The department reserves the right to conduct its own environmental monitoring or other testing, as required around this unit to assure compliance. If the department so decides, the facility must make provision for such testing (WAC 246-247-075(10)).
- 9) The facility must be able to demonstrate that the workers associated with these emission units are adequately trained in the use and maintenance of emission control and monitoring systems, and in the performance of associated test and emergency response procedures (WAC 246-247-075(12)).
- 10) The facility must be able to demonstrate the reliability and accuracy of emission data and other test results from these units (WAC 246-247-075(13)) and (WAC 246-247-075(6)). The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards listed in, or equivalent to, those listed in the above-cited regulation.
- 11) The department reserves the right to inspect and audit this unit during construction and operation including all activities, equipment, operations, documents, data, and other records related to compliance with the regulations (WAC 246-247-080(1)). Periodic inspections will occur.
- 12) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 13) All reports and records must be kept and reported according to 40 CFR 61, Subpart H (WAC 246-247-080(2)).
- 14) All measured or calculated emissions must be reported annually (WAC 246-247-080(3)).
- 15) If there is an unexpected release of radioactivity or if there is a shutdown or other condition that, if it were allowed to persist, would result in emissions of radionuclides in excess of any standards or

limitations in the license or that lasts more than four hours, it must be reported to the department within 24 hours. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitations included in this approval (paragraph 5).

- 16) When this project is completed, or operations cease, the facility shall notify the department via a report of closure, and indicate whether or not any potential for airborne release occurred (WAC 246-247-080(6)).
- 17) Records must be readily (promptly) available for these units. These records must be maintained onsite, and must be retained for at least five years (WAC 246-247-080(8)).
- 18) This unit must be fully accessible to Department of Health inspectors. If there are any specific training requirements or have restrictions or special requirements for entry, they must be given to the department when they are known to allow for unannounced inspections, as required by EPA (WAC 246-247-080(9)). At a minimum, for unannounced inspections, such requirements or restrictions must be told to inspectors that morning, with the opportunity for the inspectors to meet those requirements. For prior announced inspections, such notification must occur far enough in advance for the inspectors to have reasonable time to meet the requirements.
- 19) The facility shall make requested documents available in a timely manner for review (WAC 246-247-080(10)).
- 20) The radiological control technology requirements are as follows:
 - * 696-W-2 stack operates a ventilation system that splits into two legs. Each leg of the parallel system must consist of a damper, a pre-filter, a HEPA filter bank (4x3), and a damper. The installed filtration system provides a minimum of 99.95% collection efficiency. After the air passes through the parallel system, the legs join together and pass through the fan. The airflow is divided into two paths, with approximately 10% of the airflow exhausting directly to the stack, and the other approximately 90% of flow recycling back into the building. The damper and fan regulate the flow.
- 21) The annual possession quantity of plutonium and strontium are considered conservative and noted that these radionuclides representative types of alpha and beta radiation that this facility expects to handle. The facility needs to verify annually that plutonium and strontium are the most conservative radionuclides this facility handles.
- 22) These Conditions and Limitations must be proceduralized and these procedures maintained for the lifetime of the facility.

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
LICENSE AMENDMENT FOR

**PROJECT TITLE: USE OF PORTABLE TANKS AND REVISED SOURCE TERM DESCRIPTION
AT WASTE SAMPLING AND CHARACTERIZATION FACILITY (WSCF)**

Date Approved: 19-Dec-01

Emission Unit Name: 600 AREA DIFFUSE EMISSIONS

This is a MINOR, FUGITIVE, non-point source emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: BARCT

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
			Abatement controls as required in the following Conditions and Limitations.

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Regulatory Requirements	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075[3]	Appendix B, Method 114	All radionuclides which could contribute 10% of the potential EDE.	As listed in the following Conditions and Limitations.

Sampling Requirements: Existing near-facility monitoring stations.

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

- 12/19/01 Corrected letter, AIR 01-1201, mailed on December 20, 2001 to provide an approval number and date approved.
- 11/08/01 Inspection on 12/04/00 resulted in issuance of new Conditions and Limitations, on November 08, 2001 via AIR 01-1103 to reflect new format and standard Conditions and Limitations, and to specify certification requirements.
- 08/10/00 NOC (DOE/RL-2000-04, Revision 0) received June 12, 2000 to update the description of the WSCF facilities and provide more flexible emissions limits. Approved on August 10, 2000 via AIR 00-802.
- 03/11/99 NOC Revision Form approved on March 11, 1999 to eliminate sample acceptance criterion.
- 01/19/99 Six NOC Revision Forms approved on January 19, 1999, to revise various process descriptions.
- 06/11/90 Original NOC approved on June 11, 1990 via EPS 90-275.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 2.80E-03 mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to 1.40E-02 mrem/year to the Maximally Exposed Individual.
- 3) **This process is limited to:**
WSCF providing analytical services to support chemical and radiological analyses conducted on a variety of solid, liquid, and vapor media.

WSCF consists of the following:

- * Analytical Laboratory Building (696-W-1) - Solid, liquid, and vapor samples contaminated with low levels of radioactive material are processed, on a bench-scale basis, in fume hoods or other controlled air spaces in the building. Evaporation and wet chemistry also are used to prepare samples for analysis. Low-level waste drums are filled inside the laboratory building and transferred either to the solid waste storage building (described as follows) or other approved facilities on the Hanford Site, or the low-level waste drums are moved to various locations with WSCF.
- * Radiochemistry Laboratory (696-W-2) - This is a below grade counting room in the Analytical Laboratory Building with a separately controlled airspace within the building.
- * Environmental Data/Computer Center (6270) - This is a non-radiological building and will not be addressed further.
- * Environmental Sample Archive Building (6267) - This building provides for controlled storage, indexing, categorizing and retrieval of low-level contaminated samples. Storage is provided for up to 2,500 samples requiring refrigerated storage and up to 11,500 samples requiring ambient storage. This building also provides for temporary storage of unvented drums or other low-level waste, packaged in accordance with applicable laboratory procedures. Less than 100 low-level waste packages are stored at any one time.
- * Mobile Laboratory Storage Facility (6269) - This structure houses up to five mobile laboratories and provides protection from adverse weather conditions for the instrumentation and computers inside the mobile laboratories. This area contains calibration laboratory instrumentation used in the mobile laboratories, and a sample preparation area for adding chemical buffers and preservatives to sample containers. This building provides temporary storage of drums, or other waste packages contained with low-levels of radioactive material. Less than 100 low-level waste packages are stored at any one time.
- * Solid Waste Storage Building (6265A) - This open-sided building shall provide for temporary storage of drums or other low-level waste packages. Less than 100 low-level waste packages are stored at any one time and will not be addressed further in this license, as these are unvented drums.
- * Contaminated Liquid Waste Retention Vault (6266) - Consists of two 3,785-liter polyethylene tanks contained in a common concrete vault. The tanks are designed to receive low-level inorganic and radiologically contaminated liquid waste or sample excess from the analytical laboratory. The liquid routinely is transferred to an approved disposal facility on the Hanford Site using the portable tanker

described as follows. This building also provides temporary storage of drums, or other waste packages contaminated with low-levels of radioactive material. Less than 100 low-level waste packages are stored at any one time.

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

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

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

Alpha 0	1.02E+00
B/G 0	2.11E+01

- 5) These Conditions and Limitations must be proceduralized and these procedures maintained for the lifetime of the facility.
- 6) If the department finds that the emission unit described in this NOC is not in compliance with the standards in WAC 246-247-040 during operation (as described in the NOC) it reserves the right to require modifications to bring it into compliance (WAC 246-247-060(2)(d)).
- 7) The facility shall notify the department at least seven days prior to any planned preoperational testing of the emission unit's emissions control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
- 8) The U.S. DOE shall monitor this emission units as follows:

Periodic radiological surveys of swipes or surfaces associated with 6265A, 6269, 6267, and 6266 must be conducted to verify compliance.

- 9) The department reserves the right to conduct its own environmental monitoring or other testing, as required around this unit to assure compliance. If the department so decides, the facility must make provision for such testing (WAC 246-247-075(10)).
- 10) The facility must be able to demonstrate that the workers associated with these emission units are adequately trained in the use and maintenance of emission control and monitoring systems, and in the performance of associated test and emergency response procedures (WAC 246-247-075(12)).
- 11) The facility must be able to demonstrate the reliability and accuracy of emission data and other test results from these units (WAC 246-247-075(13)) and (WAC 246-247-075(6)). The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards listed in, or equivalent to, those listed in the above-cited regulation.
- 12) The department reserves the right to inspect and audit this unit during construction and operation including all activities, equipment, operations, documents, data, and other records related to compliance with the regulations (WAC 246-247-080(1)). Periodic inspections will occur.
- 13) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 14) All reports and records must be kept and reported according to 40 CFR 61, Subpart H (WAC 246-247-080(2)).

- 15) All measured or calculated emissions must be reported annually (WAC 246-247-080(3)).
- 16) If there is an unexpected release of radioactivity or if there is a shutdown or other condition that, if it were allowed to persist, would result in emissions of radionuclides in excess of any standards or limitations in the license or that lasts more than four hours, it must be reported to the department within 24 hours. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitations included in this approval (paragraph 5).
- 17) When this project is completed, or operations cease, the facility shall notify the department via a report of closure, and indicate whether or not any potential for airborne release occurred (WAC 246-247-080(6)).
- 18) The facility must maintain a log, in a format approved by the department, for the surveys and smears.
- 19) Records must be readily (promptly) available for these units. These records must be maintained onsite, and must be retained for at least five years (WAC 246-247-080(8)).
- 20) This unit must be fully accessible to Department of Health inspectors. If there are any specific training requirements or have restrictions or special requirements for entry, they must be given to the department when they are known to allow for unannounced inspections, as required by EPA (WAC 246-247-080(9)). At a minimum, for unannounced inspections, such requirements or restrictions must be told to inspectors that morning, with the opportunity for the inspectors to meet those requirements. For prior announced inspections, such notification must occur far enough in advance for the inspectors to have reasonable time to meet the requirements.
- 21) The facility shall make requested documents available in a timely manner for review (WAC 246-247-080(10)).
- 22) The radiological control technology requirements are as follows:
 - * 6267 will control emissions by the structure itself, with no containment efficiency provided by the ventilation system. Packaging of the archived samples and monitored storage of closed (unvented) drums and approved low-level waste packages, combined with minimization of any indoor contamination in accordance with established radiation control procedures, provides for effective control of potential fugitive emissions.
 - * 6269 will control emissions based on the design of the mobile laboratories, combined with minimization of any indoor contamination, in accordance with established radiation control procedures.
 - * 6265A will control emissions by controlling the waste packages. Minimize the external contamination in accordance with established radiation control procedures.
 - * 6266 will control emissions by having a passive vent HEPA type high efficiency filter on each tank.
 - * Portable tanker used for wastewater transport will control emissions by passively venting.
- 23) The annual possession quantity (APQ) shall not exceed the following limits for the associated facilities:
 - * Environmental sample archive building (6267) APQ is limited to 0.33 Ci/yr total Alpha and 6.8 Ci/yr total Beta/Gamma.
 - * Mobile laboratory storage facility (6269) APQ is limited to 0.03 Ci/yr total Alpha and 0.68 Ci/yr total Beta/Gamma.

* Contaminated liquid waste retention vault (6266) APQ is limited to 0.33 Ci/yr total Alpha and 6.8 Ci/yr total Beta/Gamma.

* Portable tanker used for wastewater transport APQ is limited to 0.33 Ci/yr total Alpha and 6.8 Ci/yr total Beta/Gamma.

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
LICENSE AMENDMENT FOR

**PROJECT TITLE: CONSTRUCTION AND OPERATION OF THE COLD VACUUM DRYING
FACILITY (CVDF)**

Date Approved: 20-Dec-01

Emission Unit Name: COLD VACUUM DRYING

This is a MAJOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: **BARCT**

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
Process Bay Local Exhaust	Isolation Damper	2	
Process Bay Local Exhaust	Backdraft Damper	2	
Process Bay Recirculation	HEPA	4	
Process Bay Recirculation	Fan	4	
Process Bay General Exhaust	HEPA	1	Two Stage HEPA.
Process Bay General Exhaust	Prefilter	1	
Process Bay General Exhaust	Backdraft Damper	2	
Process Bay General Exhaust	Isolation Damper	2	
Process Bay General Exhaust	Fan	2	
Process Bay Local Exhaust	HEPA	1	Two stage HEPA.
Process Bay Local Exhaust	Fan	2	

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Regulatory Requirements	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Appendix B, Method 114	All radionuclides which could contribute 10% of the potential EDE.	Monthly Sample

Sampling Requirements: NESHAP Compliant, Meeting ANSI N13.1, 1999.

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

- 11/20/01 NOC Revision Form approved at the November 20, 2001 RTAM. New Condition/Limitation added to allow delay in leak testing of stack emissions sample line from December 2001 to January 2002. Approval letter AIR 01-1206 mailed on December 20, 2001.
- 07/27/01 NOC Revision Form approved at the July 24, 2001 RTAM. Activity added to process description. Approval letter AIR 01-907 mailed on September 13, 2001.
- 03/06/01 NOC Application/Permit Revision form approved March 6, 2001 during RTAM to change/clarify conditions. Approval letter, AIR 01-605 mailed June 19, 2001.
- 01/23/01 NOC Revision approved January 23, 2001, revised Section 6.4.1.
- 08/22/00 NOC Revision Form submitted on August 8, 2000 during RTAM and approved on August 22, 2000. This NOC Revision provided page changes to the NOC to reflect "as-built" conditions.
- 03/21/00 Revision approved on March 21, 2000, modified Section 12.0, Technology Standards.
- 08/05/99 Revision 1 approved on August 5, 1999 via AIR 99-804 changed the total offsite abated dose to the MEI.
- 06/19/97 The original NOC, Cold Vacuum Drying Facility Phase II (DOE/RL-96-110) was approved via corrected approval letter AIR 97-605 on June 19, 1997.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 4.95E-03 mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to 1.27E+01 mrem/year to the Maximally Exposed Individual.
- 3) **This process is limited to:**
the CVDF located to the west of the K Basins in the 100 K Area of the Hanford Site. The CVDF is limited to the following three adjoining radiological areas: the process bay area, the process support area, and the process water tank room. The process bay area shall contain four process bays and one bay used to off load water. Immediately adjacent and contiguous to the process bay area is the process support area, a steel-framed, two-story metal building that encloses the traffic corridor, process bay support rooms, and the second floor mechanical equipment room. Immediately adjacent to the process bay area on the north side is a single-story concrete and structural steel building that encloses the process water tank room.

Each operational process bay shall contain a process equipment skid, a safety-class helium system, a process hood, and a process bay recirculation heating, ventilation, and air conditioning (HVAC) system. Each process equipment skid shall contain a vacuum and purge system and a tempered water (annulus) system.

The CVDF interfaces with the 100 K Area, Hanford Site infrastructure services, and the Canister Storage Basin (CSB). The CVDF operation interfaces with K Basins operations by receiving cask-MCO packages for processing. Water removed from the MCO and water used for system flushes shall be cleaned and transported by tanker truck for appropriate dispositioning. The CVDF also interfaces with the CSB operation when the cask-MCO packages are shipped to the CSB after the cold vacuum drying process has been completed.

The stack sample line shall be reconfigured in a manner to facilitate inspections and testing as required by ANSI N13.1-1999 (i.e. removable spool piece(s) and tees for installation of pressure gauges). During reconfiguration, there will be no stack sampling and no MCO processing within the facility.

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

Ag	110 m	1.07E-02
Ag	110	1.42E-04
Am	241	1.87E+05
Am	242 m	9.79E+01
Am	242 m	9.74E+01
Am	243	6.00E+01
Ba	137 m	6.24E+06
C-	14	3.46E+02
Cd	113 m	1.77E+03
Cd	115 m	0.00E+00
Ce	141	0.00E+00
Ce	144	4.57E+02
Cm	242	8.09E+01
Cm	244	7.19E+02
Co	60	1.98E+03
Cs	134	7.94E+03
Cs	135	3.87E+01
Cs	137	6.59E+06
Eu	152	4.72E+02
Eu	154	5.35E+04
Eu	155	1.10E+04
Fe	55	9.19E+02
Gd	153	6.39E-05
H-	3	1.83E+04
I-	129	3.18E+00
In	113 m	1.07E-07
Kr	85	2.95E+05
Nb	93 m	1.23E+02
Nb	95	1.87E-12
Nb	95 m	6.24E-15
Ni	59	2.05E+01
Ni	63	2.24E+03
Np	237	2.86E+01
Pd	107	8.14E+00

Pm	147		2.31E+05
Pm	148	m	0.00E+00
Pm	148	m	0.00E+00
Pr	143		0.00E+00
Pr	144		4.51E+02
Pr	144	m	5.50E+00
Pu	238		5.55E+04
Pu	239		1.09E+05
Pu	240		5.95E+04
Pu	241		3.34E+06
Pu	242		2.74E+01
Rh	103	m	0.00E+00
Rh	106		9.09E+02
Ru	103		0.00E+00
Ru	106		9.09E+02
Sb	124		1.51E-18
Sb	125		1.67E+04
Sb	126	m	7.79E+01
Sb	126		1.09E+01
Se	79		4.31E+01
Sm	151		8.79E+04
Sn	113		1.07E-07
Sn	119	m	1.48E-01
Sn	121	m	3.98E+01
Sn	123		8.69E-06
Sn	126		7.79E+01
Sr	89		0.00E+00
Sr	90		5.05E+06
Tb	160		1.38E-15
Tc	99		1.44E+03
Te	123		1.38E-11
Te	125	m	4.09E+03
Te	127		4.74E-07
Te	127	m	4.84E-07
Te	129	m	0.00E+00
Te	129		0.00E+00
U-	234		4.37E+02
U-	235		1.68E+01
U-	236		6.34E+01
U-	238		3.48E+02
Y-	90		5.05E+06
Y-	91		1.11E-14
Zr	93		2.00E+02
Zr	95		8.44E-13

5) The CVDF shall consist of up to four process bays in which SNF transport trailers can be housed while

water is drained and vacuum/gas purge process dries SNF. It shall have a support area consisting of a control room, change rooms, and other functions.

- 6) All controls, as described in the amended NOC are required, and building HEPA filters meet ASME AG-1.
- 7) **This condition was obsoleted on 12/01/2000.** Prior to start-up of this facility (WAC 246-247-060(4)), the department shall be notified.
The department was notified prior to operation of the facility.
- 8) The stack monitoring system must be continuous and NESHAPs compliant.
- 9) This approval, with its Conditions and Limitations, constitutes an amendment to the Department's Radioactive Air Emission License. This amendment must be included in the next revision of the Hanford Air Operating Permit (WAC 246-247-060(1)(e) and (2)(c)).
- 10) The facility shall notify the department at least seven days prior to any planned preoperational testing of the emission unit's emissions control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
- 11) Records must be readily (promptly) available for this unit. Those records must be maintained onsite, and must be retained for at least five years (WAC 246-247-080(8)).
- 12) All reports and records must be kept and reported according to 40 CFR 61, Subpart H (WAC 246-247-080(2)).
- 13) The facility shall make requested documents available in a timely manner for review (WAC 246-247-080(10)).
- 14) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting, requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with WAC 246-247-080(8). (WAC 246-247-080(6)).

- 15) **This condition was obsoleted on 03/06/2001.** If there is an unexpected release of radioactivity or if there is a shutdown or other condition that, if it were allowed to persist, would result in emissions of radionuclides in excess of any standards or limitations in the license or that last more than four hours, it must be reported to the department within 24 hours. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitations included in the approval (paragraph 5).

Added by Revision 1 approved on August 5, 1999 via AIR 99-804. Obsoleted on March 6, 2001 by NOC Application/Permit Revision form, AIR 01-605.

- 16) All measured or calculated emissions must be reported annually (WAC 246-247-080(3)).

- 17) This unit must be fully accessible to Department of Health inspectors. If there are any specific training requirements or have restrictions or special requirements for entry, they must be given to the department when they are known to allow for unannounced inspections, as required by EPA (WAC 246-247-080(9)). At a minimum, for unannounced inspections, such requirements or restrictions must be told to inspectors that morning, with the opportunity for the inspectors to meet those requirements. For prior announced inspections, such notification must occur far enough in advance for the inspectors to have reasonable time to meet the requirements.
- 18) The department reserves the right to inspect and audit this unit during construction and operation, including all activities, equipment, operations, documents, data, and other records related to compliance with the regulations (WAC 246-247-080(1)).
- 19) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 20) These conditions and limitations must be proceduralized prior to starting the activities described in the Notice of Construction.
- 21) The facility must be able to demonstrate the reliability and accuracy of emission data and other test results from this unit (WAC 246-247-075(13) and WAC 246-247-075(6)). The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards listed in, or equivalent to, those listed in, or equivalent to, those listed in the above cited regulation.
- 22) If the department finds that the emission unit described in this NOC, is not in compliance with the standards in WAC 245-247-040 during construction, as described in this NOC, or during operation, it reserves the right to require modifications to bring it into compliance (WAC 246-247-060(2)(d)).
- 23) The facility must be able to demonstrate that the workers associated with this emission unit are adequately trained in the use and maintenance of emission control and monitoring systems, and in the performance of associated test and emergency response procedures (WAC 246-247-075(12)).
- 24) Equipment and procedures for continuous monitoring shall conform to ANSI N13.1 (1999). The specific design must be approved by the department prior to installation. Any deviation from ANSI N13.1 must be approved by the department prior to construction (WAC 246-247-075(2)).
- 25) The department retains the right to conduct its own stack sampling, environmental monitoring or other testing, as required around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
- 26) Report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitations included in this approval (paragraph 5).

The following shut down of the CVDF emission control systems under circumstances specified are allowed and are excluded from the 24 hour reporting requirements:

- a) Shutdown of the process bay recirculation system when there is no MCO processing within that bay.
 - b) Shutdown of the process bay local exhaust system when there is no MCO processing within that bay.
 - c) Shutdown of the general exhaust system for no more than eight hours during which time there will be no MCO within the CVDF nor transfer of water from process water conditioning tank PWC-TK-4001 to a tanker truck for disposal nor opening of the process bay roll up doors.
- 27) The first annual leak testing of the stack emissions sample line is allowed to be deferred until January 2002 to allow installation of an access port in the stack. Future annual leak test shall be based on this

new test date.

A-167

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
LICENSE AMENDMENT FOR

PROJECT TITLE: TANK FARM RESTORATION AND SAFE STORAGE

Date Approved: 05-Nov-01

Emission Unit Name: TYPE-1, TYPE-2, TYPE-3

This is a MINOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: BARCT

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
	HEPA	1	Type-1
	HEPA	1	Type-2 and Type-3
	Charcoal filter	1	Type-2 and Type-3

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Regulatory Requirements	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075[3]	Appendix B, Method 114	GROSS ALPHA/BETA	Annual, unless specified by the NOC.

Sampling Requirements: One of the following methods may be chosen for actual emissions reporting: nondestructive assay, record sampler, or continuous air monitoring, whichever is more appropriate.

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

- 11/02/01 Conditions and Limitations, AIR 01-1017, mailed on November 05, 2001 to incorporate NOC approved revisions dated October 3, 2001 and May 2, 2001. AIR 01-1017 replaces all previous conditions of approval of AIR 00-310.
- 10/03/01 NOC Revision Form revised Annual Possession Quantity values for soil excavation, was approved October 3, 2001.
- 05/02/01 NOC Revision Form revised condition number 25 of AIR 00-310, was approved May 2, 2001.
- 11/02/00 NOC Revision Form, Revision 5, was approved November 2, 2000 to revise process description.
- 03/22/00 NOC Revision Form, Revision 4, was approved March 22, 2000 via AIR 00-310 to document general revisions of the Notice of Construction. AIR 00-310 replaces all previous conditions of approval of AIR 98-302, AIR 99-404 and AIR 00-104.
- 01/13/00 NOC Revision Form, Revision 3, was approved January 13, 2000 via AIR 00-104 to document general revisions of the Notice of Construction.

- 11/16/99 NOC revision form, Revision 2, approved November 16, 1999 to revise process description.
- 04/18/99 NOC revision, Revision 1, was approved April 19, 1999 via AIR 99-404 to document general revisions of the Notice of Construction.
- 04/06/99 Original approval was clarified via signed Meeting Minutes on April 6, 1999.
- 06/22/98 Original approval was clarified via signed Meeting Minutes on June 22, 1998
- 06/04/98 Original approval was clarified via signed Meeting Minutes on June 4, 1998.
- 04/17/98 Original approval was clarified via signed Meeting Minutes on April 17, 1998.
- 03/16/98 Original approval was clarified via signed Telecon Meeting Minutes dated March 18, 1998.
- 03/05/98 Original activity was approved via AIR 98-302, dated March 5, 1998.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 1.15E-02 mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to 1.15E-02 mrem/year to the Maximally Exposed Individual.
- 3) **This process is limited to:**
 excavation for support of the replacement of existing transfer lines with compliant transfer lines. Excavation will also be performed to support the construction of a new pit. Minor excavations will be performed to support pit coring and replacement of wall nozzles in valve and pump pits to accommodate the new transfer lines.

Existing cross-site transfer lines will be cut and small sections removed to support the replacement of existing transfer lines with new compliant transfer lines. Additionally, other piping cuts may be made on existing transfer lines or risers because they interfere with the installation of the new pipelines or a new AN valve pit. Remaining sections of the existing transfer lines will be left in place.

Pit activities will be comprised of decontamination, applying protective coatings, and replacing wall nozzles, leak detectors, cover blocks, pipe stub-outs, and jumpers.

A new valve pit will be constructed adjacent to the AZ Tank Farm.

Construction of the new AN valve pit will connect an extension of the cross-site transfer line to Tank AN-104. Connection of the new pit piping to the tank riser, and other similar connections if necessary will be performed via bolted or welded flange.

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

Am	241	8.59E-04
Co	60	5.32E-04
Cs	137	6.31E+00
Eu	152	9.76E-03
Eu	154	1.66E-02
Pu	238	4.76E-04

Pu	239	3.73E-03
Pu	240	5.91E-04
Pu	241	2.54E-02
Pu	242	3.45E-08
Sr	90	3.54E+01
U-	233	1.43E+00
Y-	90	3.54E+01

- 5) The controls and monitoring requirements listed in the NOC and this approval shall assure adequate measures are in place for the safe operation of the emission unit.
- 6) The department reserves the right to conduct an environmental surveillance program around the emission unit and to require the facility to conduct or modify its own environmental monitoring program (WAC 246-247-075(9)).
- 7) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting, requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)). (WAC 246-247-080(6))

- 8) The Annual Possession Quantity (APQ) for pipe cuts must be tracked using a WDOH approved log. The log must contain the date the cut was performed, contamination levels associated with the pipe being cut, using the same methodology as outlined in Attachment 1 "Potential to Emit Cutting Transfer Lines", and the mrem/yr to the MEI associated with that pipe cut (WAC 246-247-080(7)).
- 9) This project must be included in the next revision of the Air Operating Permit if active at the time (WAC 246-247-060(1)(e)).
- 10) The NOC constitutes a contract between the department and the facility. Any changes must be approved by the department.
- 11) Any deviation from required or recommended monitoring standards must be approved by the department. The NOC makes a commitment on what standards (required or recommended) will be followed. At that point, the commitment is binding
- 12) This approval to commence construction is valid for only two years from the date of approval. If construction is not commenced within two years of approval, the approval is void.
- 13) An ALARACT demonstration may be required at any time by the department WAC 246-247-130.
- 14) Any spread of contamination via the air pathway must be reported to the department within 24 hours (WAC 246-247-075(9)).
- 15) Pit work will be comprised of decontamination, applying protective coatings, and replacing wall

nozzles, leak detectors, cover blocks, pipe stub-outs and jumpers. Additional pit activities will include coring to allow installation of new equipment and piping and to allow access to pit equipment. Pit work will also include repair and removal of cracked material to allow application of grouting material.

- 16) The project shall be fully accessible to department inspectors (WAC 246-247-080(9)).
- 17) Any deviation from the description of the modification or new construction without approval of the department, may result in enforcement action under WAC 246-247-100.
- 18) Containment for the cutting of transfer lines will be HEPA filtered and in sealed glove bags or other containment. HEPA filters used on passively ventilated glovebags or containments will be surveyed once per day. HEPA filters used on powered ventilation will comply with the requirements of the Portable/Temporary Radioactive Air Emission Units NOC (DOE/RL-96-75).
- 19) Expandable foam may be used in cutting of transfer lines, but is not required.
- 20) Nothing may be inferred that is not specifically described in this NOC (WAC 246-247-060 and 110).
- 21) No radionuclides other than those listed in the NOC may be emitted in any detectable concentrations (WAC 246-247-110(10)(11)(12)).
- 22) Pit work will include removal of cracked material that will be performed using manual and power tools. This work will be conducted inside a fully enclosed containment tent with a HEPA filtered exhauster operated in accordance with the PTRAEU NOC
- 23) All records required by WAC 246-247 must be retrievable within 24 hours of the request, and must be stored onsite at the facility. All records shall be maintained for a minimum of five years (WAC 246-247-080(8)).
- 24) Pit coring activities will be performed in accordance with the containment requirements established in the HNF-IP-0842 "Containment Guidelines Matrix".
- 25) The facility shall notify the department at least seven days prior to any planned preoperational testing (cold or hot) monitoring or containment system involved in this project. The department reserves the right to observe any such testing (WAC 246-247-060(4)). Notification may be by phone, electronic mail or written correspondence.
- 26) The department reserves the right at any time to require the licensee to provide for split or collocated sampling of this project (WAC 246-247-075(10)).
- 27) The emission limit for this project may not exceed $1.15E-02$ mrem/yr. TEDE to the MEI (WAC 246-247-040(5)). All logs, and documentation associated with this NOC and other referenced NOCs (PTREAU NOC, A-Tank Farm Guzzler NOC, and Categorical Guzzler NOC) must be maintained for review and assure that the APQ and emission limit of $1.15E-02$ mrem/yr. TEDE to the MEI are not exceeded for Project W-314.
- 28) For cover block removal a "bull pen" will be utilized. A vertical splashguard will be established around the pit and will be maintained less than 50,000 dpm/100 cm² beta-gamma and 20 dpm/100 cm² alpha. The removable contamination within the pit is decontaminated/fixed to an average of less than 100,000 dpm/100 cm² beta-gamma and 2000 dpm/100 cm² alpha or an approved fixative has been reapplied to pit surfaces. Fixative will matrix the contamination to ensure minimization of potential airborne contamination.

For the removal of jumpers an open top greenhouse ventilated with an HEPA filtered exhauster will be utilized for containment. The exhauster will be operated in accordance with the PTRAEU NOC. A suction elephant trunk may be extended into the valve pit. When an elephant trunk is extended into a pit it should be maintained at least two feet above the pit floor. As jumpers are removed from the valve

pit they will be drained of any liquid while still within the valve pit. Draining will be accomplished by titling the jumper and allowing any liquid present to flow to the pit floor and floor drain. The ends of the jumpers will then be wrapped in plastic and placed in disposal boxes while inside the containment.

A continuous air sample will be taken during pit work evolution. Work will be placed in a safe condition and stopped if the results of the net field count indicate that the work place air sample has exceeded 0.1 of the Derived Air Concentration (DAC) at which time WDOH will be notified. Work will remain suspended until this air sample and potential cause has been evaluated by the Radiological Controls and Environmental. An air sample outside of a radiological area will be taken at approximately the same time and volume and can be used as a background sample to subtract activity resulting from radon and its progeny from the workplace sample.

During pit work when contamination levels exceed 100,000 dpm/100 cm² and the fixative is disturbed or not in place, containment shall consist of a fully enclosed certified containment tent with an operating HEPA filtered exhaust. The exhauster will be operated in accordance with the PTAEU NOC.

DEPARTMENT OF HEALTH
 RADIOACTIVE AIR EMISSIONS
 LICENSE AMENDMENT FOR

PROJECT TITLE: TANK FARM RESTORATION AND SAFE STORAGE

Date Approved: 05-Nov-01

Emission Unit Name: GUZZLER

This is a MINOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: **ALARACT**

ALARACT [WAC 246-247-040(4)]
 BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
	Collection Tank and Plate Separator	1	
	Cyclone Separator	1	Baghouse with 72 bags each.
	Micro-strainer Device	1	
	HEPA	3	Three in-place tested HEPA filters in parallel.

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Regulatory Requirements	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075[3]	Appendix D, Method 114(3)	All radionuclides which could contribute 10% of the potential EDE.	When the HEPA filters are replaced and annually screening the HEPA filtration system.

Sampling Requirements: Radiation surveys and to include but not limited to NDA testing of the HEPA filters and screening the HEPA filtration system using gamma spectroscopy.

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

- 11/02/01 Conditions and Limitations, AIR 01-1017, mailed on November 05, 2001 to incorporate NOC approved revisions dated October 3, 2001 and May 2, 2001. AIR 01-1017 replaces all previous conditions of approval of AIR 00-310.
- 10/03/01 NOC Revision Form revised Annual Possession Quantity values for soil excavation, was approved October 3, 2001.
- 05/02/01 NOC Revision Form revised condition number 25 of AIR 00-310, was approved May 2, 2001.
- 11/02/00 NOC Revision Form, Revision 5, was approved November 2, 2000 to revise process description.
- 03/22/00 NOC Revision Form, Revision 4, was approved March 22, 2000 via AIR 00-310 to document general revisions of the Notice of Construction. AIR 00-310 replaces all previous conditions of approval of AIR 98-302, AIR 99-404

and AIR 00-104.

- 01/13/00 NOC Revision Form, Revision 3, was approved January 13, 2000 via AIR 00-104 to document general revisions of the Notice of Construction.
- 11/16/99 NOC revision form, Revision 2, approved November 16, 1999 to revise process description.
- 04/18/99 NOC revision, Revision 1, was approved April 19, 1999 via AIR 99-404 to document general revisions of the Notice of Construction.
- 04/06/99 Original approval was clarified via signed Meeting Minutes on April 6, 1999.
- 06/22/98 Original approval was clarified via signed Meeting Minutes on June 22, 1998
- 06/04/98 Original approval was clarified via signed Meeting Minutes on June 4, 1998.
- 04/17/98 Original approval was clarified via signed Meeting Minutes on April 17, 1998.
- 03/16/98 Original approval was clarified via signed Telecon Meeting Minutes dated March 18, 1998.
- 03/05/98 Original activity was approved via AIR 98-302, dated March 5, 1998.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 1.15E-02 mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to 1.15E-02 mrem/year to the Maximally Exposed Individual.
- 3) **This process is limited to:**
excavation for support of the replacement of existing transfer lines with compliant transfer lines. Excavation will also be performed to support the construction of a new pit. Minor excavations will be performed to support pit coring and replacement of wall nozzles in valve and pump pits to accommodate the new transfer lines.

Existing cross-site transfer lines will be cut and small sections removed to support the replacement of existing transfer lines with new compliant transfer lines. Additionally, other piping cuts may be made on existing transfer lines or risers because they interfere with the installation of the new pipelines or a new AN valve pit. Remaining sections of the existing transfer lines will be left in place.

Pit activities will be comprised of decontamination, applying protective coatings, and replacing wall nozzles, leak detectors, cover blocks, pipe stub-outs, and jumpers.

A new valve pit will be constructed adjacent to the AZ Tank Farm.

Construction of the new AN valve pit will connect an extension of the cross-site transfer line to Tank AN-104. Connection of the new pit piping to the tank riser, and other similar connections if necessary will be performed via bolted or welded flange.

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

Am	241	1.58E-01
Sr	90	7.87E+00

- 5) The controls and monitoring requirements listed in the NOC and this approval shall assure adequate measures are in place for the safe operation of the emission unit.
- 6) The department reserves the right to conduct an environmental surveillance program around the emission unit and to require the facility to conduct or modify its own environmental monitoring program (WAC 246-247-075(9)).
- 7) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting, requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)). (WAC 246-247-080(6))

- 8) This project must be included in the next revision of the Air Operating Permit if active at the time (WAC 246-247-060(1)(e))
- 9) The NOC constitutes a contract between the department and the facility. Any changes must be approved by the department.
- 10) Any deviation from required or recommended monitoring standards must be approved by the department. The NOC makes a commitment on what standards (required or recommended) will be followed. At the point, the commitment is binding.
- 11) This approval to commence construction is valid for only two years from the date of approval. If construction is not commenced within two years of approval, the approval is void.
- 12) An ALARACT demonstration may be required at any time by the department WAC 246-247-130.
- 13) Any spread of contamination via the air pathway must be reported to the department within 24 hours (WAC 246-247-075(9)).
- 14) The use of the Guzzler is approved for excavation work associated with the W-314 Project provided the total PTE for the project of $1.15E-02$ mrem/yr. TEDE to the MEI is not exceeded. The emission from the Guzzler must be tracked using a WDOH approved operations log. The log shall include soil contamination levels, total amount of soil excavated, and the calculated potential dose to the MEI from those emissions using a release fraction of one. The Guzzler will be operated in accordance with the Tank Farm A Complex NOC and the associated conditions provided by WDOH in the December 23, 1997 shortform approval, or subsequent revisions. Guzzler use in other Farms will be performed in accordance with the December 18, 1998 WDOH approved Categorical Guzzler NOC, AIR 98-1215, or subsequent revisions.
- 15) Excavated areas will be backfilled with the original soil or soil that is less contaminated than excavated soil.
- 16) The project shall be fully accessible to department inspectors (WAC 246-247-080(9)).
- 17) Any deviation from the description of the modification or new construction without approval of the

department, may result in enforcement action under WAC 246-247-100.

- 18) The emission limit for this project may not exceed $1.15E-02$ mrem/yr. TEDE to the MEI (WAC 246-247-040(5)). All logs, and documentation associated with this NOC and other referenced NOCs (PTREAU NOC, A-Tank Farm Guzzler NOC, and Categorical Guzzler NOC) must be maintained for review and assure that the APQ and emission limit of $1.15E-02$ mrem/yr. TEDE to the MEI are not exceeded for Project W-314.
- 19) Vibratory roller compactors may not be used on contaminated soil, due to the high possibility of soil resuspension (WAC 246-247-040(4)).
- 20) Nothing may be inferred that is not specifically described in this NOC (WAC 246-247-060 and 110).
- 21) Excavation work north of the 241-AX-103 and 101 Tanks is close to the 216-A-39 Crib, which may be a source of extra contamination in the vicinity. Extra care should be taken in that area.
- 22) No radionuclides other than those listed in the NOC may be emitted in any detectable concentrations (WAC 246-247-110(10)(11)(12)).
- 23) The facility must be able to demonstrate the reliability and accuracy of emission data and other test results from this unit (WAC 246-247-075(13)). The emission data must be reported in the Hanford Site Annual Air Emission Report
- 24) All records required by WAC 246-247 must be retrievable within 24 hours of the request, and must be stored onsite at the facility. All records shall be maintained for a minimum of five years (WAC 246-247-080(8)).
- 25) The facility shall notify the department at least seven days prior to any planned preoperational testing (cold or hot) monitoring or containment system involved in this project. The department reserves the right to observe any such testing (WAC 246-247-060(4)). Notification may be by phone, electronic mail or written correspondence.
- 26) The department reserves the right at any time to require the licensee to provide for split or collocated sampling of this project (WAC 246-247-075(10)).

DEPARTMENT OF HEALTH
 RADIOACTIVE AIR EMISSIONS
 LICENSE AMENDMENT FOR

PROJECT TITLE: TANK FARM RESTORATION AND SAFE STORAGE

Date Approved: 05-Nov-01

Emission Unit Name: 200 AREA DIFFUSE/FUGITIVE

This is a MINOR, FUGITIVE, non-point source emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: **BARCT**

ALARACT [WAC 246-247-040(4)]
 BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
			Abatement controls as required in the following Conditions and Limitations.

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Regulatory Requirements	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075[3]	Appendix B, Method 114	All radionuclides which could contribute 10% of the potential EDE.	As listed in the following Conditions and Limitations.

Sampling Requirements: Existing near-facility monitoring stations.

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

- 11/02/01 Conditions and Limitations, AIR 01-1017, mailed on November 05, 2001 to incorporate NOC approved revisions dated October 3, 2001 and May 2, 2001. AIR 01-1017 replaces all previous conditions of approval of AIR 00-310.
- 10/03/01 NOC Revision Form revised Annual Possession Quantity values for soil excavation, was approved October 3, 2001.
- 05/02/01 NOC Revision Form revised condition number 25 of AIR 00-310, was approved May 2, 2001.
- 11/02/00 NOC Revision Form, Revision 5, was approved November 2, 2000 to revise process description.
- 03/22/00 NOC Revision Form, Revision 4, was approved March 22, 2000 via AIR 00-310 to document general revisions of the Notice of Construction. AIR 00-310 replaces all previous conditions of approval of AIR 98-302, AIR 99-404 and AIR 00-104.
- 01/13/00 NOC Revision Form, Revision 3, was approved January 13, 2000 via AIR 00-104 to document general revisions of the Notice of Construction.
- 11/16/99 NOC revision form, Revision 2, approved November 16, 1999 to revise process description.
- 04/18/99 NOC revision, Revision 1, was approved April 19, 1999 via AIR 99-404 to document general revisions of the

Notice of Construction.

- 04/06/99 Original approval was clarified via signed Meeting Minutes on April 6, 1999.
- 06/22/98 Original approval was clarified via signed Meeting Minutes on June 22, 1998
- 06/04/98 Original approval was clarified via signed Meeting Minutes on June 4, 1998.
- 04/17/98 Original approval was clarified via signed Meeting Minutes on April 17, 1998.
- 03/16/98 Original approval was clarified via signed Telecon Meeting Minutes dated March 18, 1998.
- 03/05/98 Original activity was approved via AIR 98-302, dated March 5, 1998.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 1.15E-02 mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to 1.15E-02 mrem/year to the Maximally Exposed Individual.
- 3) **This process is limited to:**
excavation for support of the replacement of existing transfer lines with compliant transfer lines. Excavation will also be performed to support the construction of a new pit. Minor excavations will be performed to support pit coring and replacement of wall nozzles in valve and pump pits to accommodate the new transfer lines.

Existing cross-site transfer lines will be cut and small sections removed to support the replacement of existing transfer lines with new compliant transfer lines. Additionally, other piping cuts may be made on existing transfer lines or risers because they interfere with the installation of the new pipelines or a new AN valve pit. Remaining sections of the existing transfer lines will be left in place.

Pit activities will be comprised of decontamination, applying protective coatings, and replacing wall nozzles, leak detectors, cover blocks, pipe stub-outs, and jumpers.

A new valve pit will be constructed adjacent to the AZ Tank Farm.

Construction of the new AN valve pit will connect an extension of the cross-site transfer line to Tank AN-104. Connection of the new pit piping to the tank riser, and other similar connections if necessary will be performed via bolted or welded flange.

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

Am	241	1.02E-03
Co	60	5.32E-04
Cs	137	6.31E+00
Eu	152	9.76E-03
Eu	154	1.66E-02
Pu	238	4.76E-04
Pu	239	3.73E-03
Pu	240	5.91E-04

Pu	241	2.54E-02
Pu	242	3.45E-08
Sr	90	3.55E+01
U-	233	1.43E+00
Y-	90	3.54E+01

- 5) The controls and monitoring requirements listed in the NOC and this approval shall assure adequate measures are in place for the safe operation of the emission unit.
- 6) The department reserves the right to conduct an environmental surveillance program around the emission unit and to require the facility to conduct or modify its own environmental monitoring program (WAC 246-247-075(9)).
- 7) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting, requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)). (WAC 246-247-080(6))

- 8) The Annual Possession Quantity (APQ) for pipe cuts must be tracked using a WDOH approved log. The log must contain the date the cut was performed, contamination levels associated with the pipe being cut, using the same methodology as outlined in Attachment 1 "Potential to Emit Cutting Transfer Lines", and the mrem/yr. to the MEI associated with that pipe cut (WAC 246-247-080(7)).
- 9) This project must be included in the next revision of the Air Operating Permit if active at the time (WAC 246-247-060(1)(e)).
- 10) The NOC constitutes a contract between the department and the facility. Any changes must be approved by the department.
- 11) **This condition was obsoleted on 5/2/01.** A wind speed restriction of 20 miles per hour will be applied to all excavation of radioactive material. This criterion applies to sustained wind speed as determined by the Hanford Meteorological Station.
Obsoleted via NOC Application/Permit Revision Form approved 5/2/2001. (AIR 01-1017)
- 12) Any deviation from required or recommended monitoring standards must be approved by the department. The NOC makes a commitment on what standards (required or recommended) will be followed. At that point, the commitment is binding.
- 13) The emissions from the continued operation of the new AN and AZ pits will be limited to 5.38E-04 mrem/yr, these emissions will be monitoring by the near field monitoring stations.
- 14) This approval to commence construction is valid for only two years from the date of approval. If construction is not commenced within two years of approval, the approval is void.
- 15) An ALARACT demonstration may be required at any time by the department WAC 246-247-130.

- 16) Any spread of contamination via the air pathway must be reported to the department within 24 hours (WAC 246-247-075(9)).
- 17) The APQ for soil excavation must be tracked using a WDOH approved log. The log must contain the date of the excavation, the contamination levels of the soil, amount of soil excavated, and the mrem/yr. to the MEI associated with that excavation (WAC 246-247-080(7)).
- 18) Pit work will be comprised of decontamination, applying protective coatings, and replacing wall nozzles, leak detectors, cover blocks, pipe stub-outs and jumpers. Additional pit activities will include coring to allow installation of new equipment and piping and to allow access to pit equipment. Pit work will also include repair and removal of cracked material to allow application of grouting material.
- 19) The use of the Guzzler is approved for excavation work associated with the W-314 Project provided the total PTE for the project of $1.15E-02$ mrem/yr. TEDE to the MEI is not exceeded. The emission from the Guzzler must be tracked using a WDOH approved operations log. The log shall include soil contamination levels, total amount of soil excavated, and the calculated potential dose to the MEI from those emissions using a release fraction of one. The Guzzler will be operated in accordance with the Tank Farm A Complex NOC and the associated conditions provided by WDOH in the December 23, 1997 shortform approval, or subsequent revision. Guzzler use in other Farms will be performed in accordance with the December 18, 1998 WDOH approved Categorical Guzzler letter NOC, AIR 98-1215, or subsequent revision.
- 20) Excavated areas will be backfilled with the original soil or soil that is less contaminated than excavated soil.
- 21) The project shall be fully accessible to department inspectors (WAC 246-247-080(9)).
- 22) Any deviation from the description of the modification or new construction without approval of the department, may result in enforcement action under WAC 246-247-100.
- 23) The emission limit for this project may not exceed $1.15E-02$ mrem/yr. TEDE to the MEI (WAC 246-247-040(5)). All logs, and documentation associated with this NOC and other referenced NOCs (PTREAU NOC, A-Tank Farm Guzzler NOC, and Categorical Guzzler NOC) must be maintained for review and assure that the APQ and emission limit of $1.15E-02$ mrem/yr. TEDE to the MEI are not exceeded for Project W-314.
- 24) Vibratory roller compactors may not be used on contaminated soil, due to the high possibility of soil resuspension (WAC 246-247-040(4)).
- 25) Expandable foam may be used in cutting of transfer lines, but is not required.
- 26) Containment for the cutting of transfer lines will be HEPA filtered and in sealed glove bags or other containment HEPA filters used on passively ventilated glovebags or containments will be surveyed once per day. HEPA filters used on powered ventilation will comply with the requirements of the Portable/Temporary Radioactive Air Emission Units NOC (DOE/RL-96-75).
- 27) Nothing may be inferred that is not specifically described in this NOC (WAC 246-247-060 and 110).
- 28) Soil will be wetted prior to and during excavation using the backhoe, jackhammer or rototool. During manual excavation soil will be wetted upon excavation if it is not naturally damp.
- 29) Excavation work north of the 241-AX-103 and 101 Tanks is close to the 216-A-39 Crib, which may be a source of extra contamination in the vicinity. Extra care should be taken in that area.
- 30) No radionuclides other than those listed in the NOC may be emitted in any detectable concentrations (WAC 246-247-110(10)(11)(12)).
- 31) The facility must be able to demonstrate the reliability and accuracy of emission data and other test

results from this unit (WAC 246-247-075(13)). The emission data must be reported in the Hanford Site Annual Air Emission Report

- 32) Pit work will include removal of cracked material and will be performed using manual and power tools. This work will be conducted inside a fully enclosed containment tent with a HEPA filtered exhauster operated in accordance with the PTRAEU NOC
- 33) All records required by WAC 246-247 must be retrievable within 24 hours of the request, and must be stored onsite at the facility. All records shall be maintained for a minimum of five years (WAC 246-247-080(8)).
- 34) During excavation, using a backhoe, jackhammer, rototool, or manual devices soil will be placed in a container or on the ground for a screening survey.

The screening levels will be as follows:

* Excavation activities will be stopped if evenly distributed (i.e. non-speck) contamination detection readings are greater than 100,000 dpm/100 cm² beta-gamma, or 35 dpm/100 cm² alpha above background. Background for alpha will be determined in a known clean area nearby. Excavation will not continue until a review of the work and encountered conditions have been performed and it has been confirmed with the Department of Health that no threat to the environment exists, and proper controls (i.e. removal and disposal, water, fixative, covers, etc.) have been put into place.

* Screening survey for alpha contamination will not be performed unless the beta-gamma survey is greater than 100,000 dpm/100 cm² above naturally occurring background.

* If hot specks are detected during the screening surveys, the specks will be removed and containerized in drums for disposal before the excavation is allowed to continue, unless located in the bottom of the trench. In the bottom of the trench, the specks may be covered with clean fill.

* Screening surveys for beta-gamma contamination will be conducted using a GM/P-11 probe. Screening surveys for alpha contamination will be conducted using a PAM.

- 35) Pit coring activities will be performed in accordance with the containment requirements established in the HNF-IP-0842 "Containment Guidelines Matrix".
- 36) The facility shall notify the department at least seven days prior to any planned preoperational testing (cold or hot) monitoring or containment system involved in this project. The department reserves the right to observe any such testing (WAC 246-247-060(4)). Notification may be by phone, electronic mail or written correspondence.
- 37) A HEPA vacuum may be used to assist in the removal of debris during repair of cracked concrete and concrete coatings. The HEPA vacuum must only be operated in a fully enclosed containment tent, which is being ventilated by a HEPA filtered powered exhaust, in accordance with the PTRAEU NOC. Any other use of a HEPA vacuum must receive prior approval from WDOH
- 38) For cover block removal a "bull pen" will be utilized. A vertical splashguard will be established around the pit and will be maintained less than 50,000 dpm/100 cm² beta-gamma and 20 dpm/100 cm² alpha. The removable contamination within the pit is decontaminated/fixated to an average of less than 100,000 dpm/100 cm² beta-gamma and 2000 dpm/100 cm² alpha or an approved fixative has been reapplied to pit surfaces. Fixative will matrix the contamination to ensure minimization of potential airborne contamination.

For the removal of jumpers an open top greenhouse ventilated with an HEPA filtered exhauster will be

utilized for containment. The exhauster will be operated in accordance with the PTRAEU NOC. A suction elephant trunk may be extended into the valve pit. When an elephant trunk is extended into a pit it should be maintained at least two feet above the pit floor. As jumpers are removed from the valve pit they will be drained of any liquid while still within the valve pit. Draining will be accomplished by titling the jumper and allowing any liquid present to flow to the pit floor and floor drain. The ends of the jumpers will then be wrapped in plastic and placed in disposal boxes while inside the containment.

A continuous air sample will be taken during pit work evolution. Work will be placed in a safe condition and stopped if the results of the net field count indicate that the work place air sample has exceeded 0.1 of the Derived Air Concentration (DAC) at which time WDOH will be notified. Work will remain suspended until this air sample and potential cause has been evaluated by the Radiological Controls and Environmental. An air sample outside of a radiological area will be taken at approximately the same time and volume and can be used as a background sample to subtract activity resulting from radon and its progeny from the workplace sample.

During pit work when contamination levels exceed 100,000 dpm/100 cm² and the fixative is disturbed or not in place, containment shall consist of a fully enclosed certified containment tent with an operating HEPA filtered exhaust. The exhauster will be operated in accordance with the PTRAEU NOC.

- 39) The department reserves the right at any time to require the licensee to provide for split or collocated sampling of this project (WAC 246-247-075(10)).
- 40) Excavation work north of the 241-AX-103 and 101 Tanks is close to the 216-A-39 Crib, which may be a source of extra contamination in the vicinity. Extra care should be taken in that area.
- 41) Excavation of radioactive material will be done in accordance with ALARACT 5, TWRS Demonstration for Soil Excavation (Using Hand Tools).
- 42) The APQ for Transfer Line Cuts is as follows:

Pu-238	2.59E-04 Ci
Pu-239/240	1.10E-03 Ci
Cs-137	5.62E+00 Ci
Sr-90	3.35E+01 Ci
Y-90	3.35E+01 Ci
U-233	1.43E-00 Ci
Am-241	8.45E-04 Ci

- 43) The APQ for Pit Work is as follows:

Co-60	5.32E-04 Ci
Sr-90	1.91E+00 Ci
Y-90	1.91E+00 Ci
Cs-137	6.86E-01 Ci
Eu-152	9.76E-03 Ci
Eu-154	1.66E-02 Ci
Pu-238	2.17E-04 Ci
Pu-239	2.63E-03 Ci
Pu-240	5.91E-04 Ci
Pu-241	2.54E-02 Ci
Am-241	1.40E-05 Ci
Pu-242	3.45E-08 Ci

44) The APQ for soil excavation is as follows:

Sr-90 7.87E+00 Ci/yr

Am-241 1.58E-01 Ci/yr

45) Diffuse/Fugitive emissions shall be monitored using the 200 Area near-field ambient air monitors. Sample collection and analysis shall follow that of the near field monitoring program. Analytical results shall be reported in the Annual Air Emissions Report. Any change to this near-field ambient monitoring program must be approved by the department.

NOC Application/Permit Revision

NOTE: Any increase to abated or unabated PTE requires a full NOC modification

REASON FOR CHANGE

Submittal Date: 11/15/01

Submittal Type:

NOC Application Revision

Condition Change/ Clarification

WDOH Condition Number: _____

AOP Condition Number: _____

ALARACT Revision

Report of Closure

New ALARACT Rev Number: _____

PROJECT IDENTIFICATION

Project Title: Tank Farms Restoration and Safe Operation

Current NOC Application Number: DOE/ORP 99-04

AEI ID Number (AOP Emission Unit Number(s)): 200E J-NONPOINT 003

Current WDOH Approval Letter Number(s): AIR 01-1017

WDOH NOC ID Number: 441 435

DESCRIPTION OF CHANGE

Number of Attachments 0

WDOH will provide a new approval letter containing any new or modified conditions that result from the following proposed change.

Proposed Change (provide original and proposed wording):

In attachment 3 to Revision 4 of this Notice of Construction, under the heading AN VALVE PIT UPGRADES:

Current wording:

- Repair protective coatings, as required, to pits 241-AN-A & 241-AN-B. Decontamination will be performed before the application of new coatings.
- Replace wall nozzles, leak detectors, jumpers, pipe stub-outs, and cover blocks in pits 241-AN-A & 241-AN-B.

Proposed wording:

- Repair protective coatings, as required, to pits 241-AN-A, 241-AN-B, 241-AN-03A, 241-AN-06A, 241-AN-05A, 241-AN-02A, & 241-AN-07A. Decontamination will be performed before the application of new coatings.
- Replace wall nozzles, leak detectors, jumpers, pipe stub-outs, and cover blocks in pits 241-AN-A, 241-AN-B, 241-AN-03A, 241-AN-06A, 241-AN-05A, 241-AN-02A, & 241-AN-07A

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Email AND Fax completed form to Joy Redman (360) 236-2255
Once Approved Email AND Fax form to AOP Team (509) 372-2828

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11/26/01 MON 13:49 FAX 3760175

Report of Closure

Number of Attachments 0

WAC 246-247-080(6) Indicate whether, despite cessation of operations, there is still a potential for radioactive air emissions and a need for an active or passive ventilation system with emission control and/or monitoring devices. If decommissioning is planned and will constitute a modification, a NOC is required, as applicable, in accordance with WAC 246-247-060.

If monitoring, reporting or record keeping, are being relaxed, propose alternatives and give justification.

A new set of conditions and limitations will follow in a letter.

SIGNATURES

Reviewed by Contractor	Reviewed by RL/ORP	Approved by WDOH
<i>Dr. Gulesh</i>	<i>DW Brown</i>	<i>P John Mantel</i>
<i>11-13-01</i>		
<i>For K.S. Tolletson</i>		
<i>For W. To Dixon</i>		
Date: <i>11-14-01</i>	Date: <i>11-14-01</i>	Date: <i>11-26-2001</i>

Per
Telecom

FOR WDOH USE ONLY

Data Entry Completed By: _____ Date: _____

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DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
LICENSE AMENDMENT FOR

PROJECT TITLE: 241-AY-101 ANNULUS PRIMARY TANK WALL CLEANING ACTIVITIES

Date Approved: 15-Nov-01

Emission Unit Name: 296-A-18

This is a MINOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: ALARACT

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
	HEPA	2	In series
	Fan	1	Annulus exhauster AY 101, intermittent operations.
	Heater	1	

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Regulatory Requirements	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93[b][4][i] & WAC 246-247-075[3]	Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	4 week sample/ year
Sampling Requirements: Record Sample			

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

11/15/01 Original NOC (01-EMD-018) approved November 15, 2001 via AIR 01-1108.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 1.56E-09 mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to 3.12E-06 mrem/year to the Maximally Exposed Individual.
- 3) **This process is limited to:**
the removal and collection of corrosion product debris from the exterior of the primary tank wall within the double-shell tank 241-AY-101 annulus area. The wall cleaning system will remove corrosion

product and concrete splatter from initial tank construction that is affixed to the primary tank. The cleaning system will expose clean base metal as required to accommodate performance of visual inspection and nondestructive testing.

The remote wall cleaning mechanism will consist of a high-pressure water spray. The water spray head will be mounted in shroud and the water and debris will be channeled into a collection vessel. The remote wall cleaning system will be inserted into the annulus through risers and will employ a crawler that is attached to the tank wall by means of vacuum suction.

The vacuum suction shall serve to collect the debris and wastewater generated during the wall cleaning operations. The debris, wastewater, and exhaust associated with the vacuum suction are channeled out of the annulus to a mobile tank via pumping. The debris and wastewater will be collected in the tank. The vacuum suction exhaust air will be directed back into the annulus, and will be exhausted by the 296-A-18 emission unit.

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

Alpha0	7.00E-05
Beta 0	2.99E-02

- 5) These Conditions and Limitations must be documented in an established procedure prior to starting activities granted by this approval (WAC 246-247-040(5) and 246-247-060(5)).
- 6) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060(2)(d)).
- 7) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
- 8) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).
- 9) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
- 10) The facility must be able to demonstrate workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).
- 11) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13)).
- 12) The department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter (WAC 246-247-080(1)).
- 13) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 14) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H (WAC 246-247-080(2)).
- 15) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).
- 16) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the

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emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).

- 17) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting, requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)). (WAC 246-247-080(6))

- 18) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).
- 19) The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).
- 20) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).
- 21) The current sampling probe must be qualified to show that it collects an adequate sample. The qualification documentation shall be provided to WDOH for review and approval.
- 22) Diffuse/Fugitive emissions shall be monitored using the 200 Area near-field ambient air monitors. Sample collection and analysis shall follow that of the near field monitoring program. Analytical results shall be reported in the Annual Air Emissions Report. Any change to this near-field ambient monitoring program must be approved by the department.
- 23) Prior to initial operation a leak check will be performed on the ductwork leading from the vacuum suction exhaust back to the 241-AY-101 annulus. After the initial leak check a visual inspection shall be performed weekly to look for cracks and deformities in the ductwork. The results of the visual inspections shall be documented on a WDOH approved log.
- 24) The emission unit monitoring system shall have the following activities performed:

Annually starting within one year of this approval:

- a. A functional/calibration check of monitoring system instrumentation shall be performed.
- b. Checks to ensure the tightness of all fittings and connections.
- c. Visual inspections for physical damage of the sampling system.
- d. USDOE shall provide to WDOH for review copies of the procedures used to perform the above activities.

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
LICENSE AMENDMENT FOR

**PROJECT TITLE: DISPOSITION OF SELECT PLUTONIUM-BEARING ALLOYS AT THE
PLUTONIUM FINISHING PLANT (PFP)**

Date Approved: 13-Feb-02

Emission Unit Name: 291-Z-1

This is a MAJOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: ALARACT

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
(234-5Z Operations)	HEPA	2	2 Stages for process operations
236-Z Operations)	HEPA	2	2 Stages for process operations
(242-Z Operations)	HEPA	2	2 Stages for process operations
(all operations)	Fan	4	3 standby (7 total)

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Regulatory Requirements	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4) & WAC 246-247-75(2)	Alternative effluent flow rate not to exceed 290,000 cfm. Method 114 appendix B 61.93(b)(2)(ii) ANSI N13.1	All radionuclides which could contribute 10% of the potential EDE.	Continuous

Sampling Requirements: Continuous

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

- 02/13/02 Corrected letter and Conditions/Limitations mailed on February 13, 2002 via AIR 02-203, to reflect correct revision number and approval date for NOC Revision Form (AIR 01-1013). The correct revision number is DOE/RL-96-79, Rev 0F and the NOC Revision Form approval date is September 5, 2001.
- 10/25/01 New Conditions/Limitations sent via AIR 01-1013 on October 26, 2001. NOC Revision Form, DOE/RL-96-79, Rev. 0E, revised process description to include thermogravimetric analysis, submitted and approved at October 9, 2001.
- 07/12/01 New Conditions/Limitations sent via AIR 01-703 approved July 12, 2001.
- 03/06/01 NOC Revision Form revised process description, submitted by RTAM March 6, 2001, was approved March 6, 2001.
- 09/26/00 NOC Revision Form revised process description approved on September 26, 2000.

- 06/15/00 NOC Revision Form revised process description, submitted by RTAM June 6, 2000, was approved June 15, 2000.
- 03/27/00 NOC Revision Form revised process description, submitted by RTAM March 21, 2000, was approved March 27, 2000.
- 09/01/98 NOC Revision Form revised process descriptions, submitted by RTAM August 18, 1998, was approved September 1, 1998.
- 12/18/96 Original NOC was approved by AIR 96-1205, December 18, 1996.
- 08/08/95 Original activity was approved by RTAM on August 8, 1995.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 2.40E-03 mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to 4.80E+02 mrem/year to the Maximally Exposed Individual.
- 3) **This process is limited to:**
the use of muffle furnaces to thermally stabilize plutonium residues. This is limited to the thermal stabilization process involving placing the material for stabilization into one of the muffle furnaces and ramping the temperature to a final temperature of approximately 1,000 C. The furnace is held at this temperature for a period of time and then ramped down.

The muffle furnace offgas stream is allowed to consist of a mixture of air and water (from natural humidity) and a small amount of entrained plutonium oxide. Particulates greater than 0.2 micron shall be removed by ceramic filters. Residual contamination removed from the offgas stream shall be filtered by either a high-efficiency particulate air (HEPA) process filter or the furnace offgas filter prior to the duct work. The offgas discharges through two existing stages of HEPA filtration before being released out the 291-Z-1 main stack.

Plutonium metal or alloys not requiring thermal treatment are allowed to be transferred to existing glovebox(es) and repackaged for long term storage. Select plutonium-bearing alloys suitable for discard are allowed to be transferred directly to a pipe overpack container (POC). The POC may be staged at PFP or the Central Waste Complex pending transport to the Waste Isolation Pilot Plant.

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

Am	241	7.41E+01
Pu	238	2.32E+01
Pu	239	9.07E+01
Pu	240	4.20E+01
Pu	241	2.43E+03
U-	234	6.77E-02
U-	235	5.19E-04
U-	236	1.90E-03
U-	238	2.75E-04

- 5) These Conditions and Limitations must be proceduralized prior to starting activities granted by this approval.

- 6) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060-(2)(d)).
- 7) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
- 8) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).
- 9) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
- 10) The facility must be able to demonstrate workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).
- 11) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13)).
- 12) The department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter (WAC 246-247-080(1)).
- 13) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 14) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H (WAC 246-247-080(2)).
- 15) Report all measured or calculated emissions annually (WAC 246-247-080(3)).
- 16) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).
- 17) **This condition was obsoleted on 10/3/01.** When this project is complete, or operations cease, the facility must notify the department via a report of closure, including whether or not any potential for airborne releases occurred (WAC 246-247-080(6)).
Conditions and Limitations added by AIR 01-703 on July 12, 2001. Condition replaced by new Sunset Condition.
Replaced by condition added by AIR 01-1013, October 25, 2001.
- 18) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).
- 19) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for

- inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).
- 20) The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).
- 21) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)).
(WAC 246-247-080(6))

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
LICENSE AMENDMENT FOR

**PROJECT TITLE: MEDICAL ISOTOPE RESEARCH USING TH-232 IN THE
RADIOCHEMICAL PROCESSING LABORATORY (325 BUILDING)**

Date Approved: 12-Feb-02

Emission Unit Name: EP-325-01-S

This is a MAJOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: ALARACT

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
	HEPA	2	2 in series
	Fan	3	4 in parallel (3 operational, 1 backup)

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Regulatory Requirements	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4) & WAC 246-247-75(2)	Method 2 Appendix A; Appendix B, Method 114	All radionuclides which could contribute 10% of the potential EDE.	Particulates are continuously sampled and analyzed every two-weeks for gross alpha and gross beta, composited on a semi-annual basis and analyzed isotopically. Tritium samples are analyzed on a monthly basis.

Sampling Requirements: Continuous particulate using filter and tritium using silica gel.

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

- 12/14/01 Notice of Construction modification submitted to incorporate a new process that increases the amount of thorium parent material to 30,000 kg. Approval letter, AIR 02-206 mailed on February 13, 2002 replaced all previous Conditions/Limitations for this NOC.
- 07/24/01 NOC revision approved at the July 24, 2001 RTAM to provide a condition change. Approval letter, AIR 01-803 mailed on August 23, 2001.
- 09/25/00 NOC Short Form approved September 25, 2000.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license

(WAC 246-247-060(5)).

- 2) The total abated emission limit for this Notice of Construction is limited to 8.46E-01 mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to 1.12E+01 mrem/year to the Maximally Exposed Individual.
- 3) **This process is limited to:**
the Radiochemical Processing Laboratory (RPL) performing radiochemistry research, radioanalytical services, radiochemical process development and mixed-waste treatment activities. Work performed within the RPL involves the use of non-radioactive materials and radioactive materials ranging in amounts from picogram to kilogram quantities of fissionable materials and up to megacurie quantities of other radionuclides.

For this project, Th-232 parent material will be present in the facility as either an oxide [ThO₂] or a nitrate [Th(NO₃)₄]. The parent material is to be maintained in shipping containers, with sub-samples being periodically removed for performing laboratory testing. During the tests the parent material may be subjected to processes (e.g., grinding or suspension in solution) to maximize the recovery of the desired isotopes. The preparation of the parent material and the capture process is to be performed in Room 510.

The prepared materials will then be loaded into a containment vessel and the vessel is sealed. A transport line will be tapped into the lid of the containment vessel. The Rn-220 gas that is generated during batch processing exits the vessel through this transport line to a radon recovery system that is located inside of a laboratory hood in Room 510. The daughter products that result from the decay of Rn-220 are captured by the recovery system, and this system exhausts to a laboratory fume hood that is part of the RPL radiological exhaust system. The exhaust exits the facility through the RPL main stack (EP-325-01-S).

The radionuclides associated with this project are:

Th-232 in the parent material, and
Daughter products resulting from the decay of Th-232 (in order): Ra-228, Ac-228, Th-228, Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Po-212, Tl-208, and Pb-208 (stable isotope).

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

Ac	228	3.30E+00
Bi	212	3.30E+00
Pb	212	3.30E+00
Po	212	3.30E+00
Po	216	3.30E+00
Ra	224	3.30E+00
Ra	228	3.30E+00
Rn	220	2.19E+03
Th	228	3.30E+00
Th	232	3.30E+00
Tl	208	3.30E+00

- 5) These Conditions and Limitations must be documented in an established procedure prior to starting activities granted by this approval (WAC 246-247-040(5) and 246-247-060(5)).
- 6) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction

or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060-(2)(d)).

- 7) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
- 8) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).
- 9) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
- 10) The facility must be able to demonstrate workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).
- 11) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13)).
- 12) The Department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter (WAC 246-247-080(1)).
- 13) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 14) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H. (WAC 246-247-080(2)).
- 15) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).
- 16) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).
- 17) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with WAC 246-247-080 (8). (WAC 246-247-080 (6))

- 18) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter.

The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).

- 19) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).
- 20) The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).
- 21) **This condition was obsoleted on 12/14/01.** This activity shall be completed by December 31, 2001.
Condition/Limitation added via AIR 01-803.
- 22) This activity shall be completed by the end of October 2005.
- 23) The objective of this project is to capture the progeny nuclides that result from the decay of Th-232. The Rn-220 gas that is generated during the process will be routed through a recovery system that is located inside of a hood in Room 510. As the Rn-220 (gaseous form) decays (55 second half-life), the resulting daughter products will be collected in the recovery system. The recovery system shall be capable of collecting in excess of 80% of the Rn-220 that is generated.
- 24) Before initiation of processing under this NOC, the Rn-220 monitor shall be operational. The exhaust sample will be measured by a Rn-220 monitor collected using the same isokinetic probe that is used to collect the record particulate sample. The radon monitor shall be installed downstream of the record particulate sample, measuring the sample stream that has already been pre-filtered by the record particulate sample.
- 25) The emission unit monitoring system shall have the following activities performed:

Within two years of this approval, and annually thereafter:

- a. A visual check of nozzle position and orientation as well as measurements of nozzle openings;
- b. Checks to ensure the tightness of all fittings and connections as well as a leak test of the entire sampling system; and
- c. Visual inspections for corrosion, physical damage, or dust loading of the probe, sample lines, and monitoring system equipment.

Annually starting within one year of this approval:

- d. A functional/calibration check of monitoring system instrumentation shall be performed; and
 - e. USDOE shall provide to WDOH for review copies of the procedures used to perform the above activities.
- 26) Procedures for Rn-220 monitoring shall be forwarded to the department for review.

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
LICENSE AMENDMENT FOR

PROJECT TITLE: LIFE SCIENCES LABORATORY-1 (331 BUILDING)

Date Approved: 14-Feb-02

Emission Unit Name: EP-331-01-V

This is a MAJOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: ALARACT

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
Room 302	Fan	2	in parallel (fan common to glove box and hoods)
Rooms 101-107 fume hood/chambers	HEPA	1	
Rooms 100-107 glove boxes	HEPA	2	In series
3rd floor fume hood	HEPA	1	
Inhalation suite (glove boxes & fume hoods)	HEPA	2	In series
Room 302	HEPA	1	
Third Floor Change Rm	HEPA	1	

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Regulatory Requirements	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4) & WAC 246-247-075(2)	Appendix B, Method 114(3)	All radionuclides which could contribute 10% of the potential EDE.	Continuous

Sampling Requirements: Continuous

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

01/23/02 NOC Modification, Life Sciences Laboratory - 1 (331 Building), to update facility floor plan configurations, incorporate proposed research programs, and to incorporate new radionuclides. Received January 23, 2002. Approval letter, AIR 02-207 mailed on February 14, 2002 replaced all previous Conditions/Limitations for this NOC.

01/21/98 Original NOC, Modifications to the Life Sciences Laboratory (331 Building) 300 Area, approved on January 21, 1998 via AIR 98-108.

03/12/96 Received approval to remove a HEPA filter bank from the 331 building exhaust via RTAM.

CONDITIONS AND LIMITATIONS

1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).

2) The total abated emission limit for this Notice of Construction is limited to $8.07E-02$ mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to $7.13E+00$ mrem/year to the Maximally Exposed Individual.

3) **This process is limited to:**

research activities conducted in the 331 Building support the Hanford environmental mission and other key DOE missions of national and international importance. Research activities are performed on both radioactive and non-radioactive samples. Laboratory processes are conducted "continuously" (i.e., year-round, during normal business hours). The following processes are allowed in the 331 Building:

Study of the health effects of chemical and radiation exposure on animals and in cells grown in culture.

Examining the uptake and transformation effects of radionuclides in soils, plants, animals and microorganisms.

Molecular level studies using radioactive tracer materials in biological and non-biologic systems.

Subsurface microbiology including the physiology and ecology of subsurface microorganisms, degradation of organic contaminants and bioremediation, enzymatic reduction of metals, and biogeochemical cycling of nutrients.

Investigation of macromolecular structure and dynamics: modeling of radiation (or chemically) damaged DNA; study the effects of tumor formation and biological systems; study of materials that concentrate or detoxify pollutants from the environment.

Development of instrumentation and analytical methods.

Characterizing and monitoring aquatic and terrestrial ecosystems through the development and deployment of new technologies and methods.

Researching impacts of water use practices on fisheries and wildlife and the response of aquatic ecosystems to engineered structures and to natural and man-induced stresses.

Research to promote the understanding of the chemical and biological processes that govern the mobility and degradation of a range of inorganic, radionuclide and organic contaminants in soils, sediments, and ground water systems.

Measurements of exposures to physical, radiological, and chemical agents.

Developing technology for the separation, purification, production, and delivery of medically useful

isotopes.

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

Am	241	4.51E-01
Am	243	1.86E-01
Ba	133	1.00E-02
C-	14	7.74E-01
Ca	45	2.00E-01
Cd	109	2.00E-01
Cm	248	4.20E-05
Co	57	2.00E-01
Co	60	2.00E-01
Cr	51	2.00E-01
Cs	137	2.25E-01
Eu	152	1.20E-01
Fe	55	2.00E-01
Fe	59	2.00E-01
H-	3	1.26E+01
I-	125	1.00E+00
I-	131	5.01E-01
Mn	54	2.00E-01
Ni	63	2.00E-01
Np	237	3.67E-01
P-	32	1.00E+01
P-	33	2.00E-01
Pu	238	1.71E+00
Pu	239	6.29E-01
Pu	240	1.03E-01
Pu	241	1.69E+00
Pu	242	4.59E-02
S-	35	1.52E+02
Sr	85	1.20E-01
Sr	90	1.00E+02
Tc	99	9.27E+02
Tc	99 m	2.00E+01
Th	232	9.81E-01
U-	235	1.87E-01
U-	238	1.15E+00
Y-	90	3.50E+01
Zn	65	2.00E-01

5) Emission unit EP 331-01-V must use an isokinetic sampling probe with design specifications meeting ANSI N 13.1.

6) Stack emissions will be sampled for particulate matter containing alpha and beta activity using methods prescribed within Environmental Protection Agency Methods A-4 and B-4, and analyzed for gross alpha and gross beta activity, and specific radionuclides, as required.

- 7) These Conditions and Limitations must be documented in an established procedure prior to starting activities granted by this approval (WAC 246-247-040(5) and 246-247-060(5)).
- 8) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060-(2)(d)).
- 9) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
- 10) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).
- 11) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
- 12) The facility must be able to demonstrate workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).
- 13) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13)).
- 14) The Department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter (WAC 246-247-080(1)).
- 15) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 16) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H. (WAC 246-247-080(2)).
- 17) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).
- 18) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).
- 19) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with WAC 246-247-080 (8).

(WAC 246-247-080 (6))

- 20) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).
- 21) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).
- 22) The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).
- 23) The emission unit monitoring system shall have the following activities performed:

Within two years of this approval, and annually thereafter:

- a. A visual check of nozzle position and orientation as well as measurements of nozzle openings;
- b. Checks to ensure the tightness of all fittings and connections as well as a leak test of the entire sampling system; and
- c. Visual inspections for corrosion, physical damage, or dust loading of the probe, sample lines, and monitoring system equipment.

Annually starting within one year of this approval:

- d. A functional/calibration check of monitoring system instrumentation shall be performed; and
- e. USDOE shall provide to WDOH for review copies of the procedures used to perform the above activities.

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
LICENSE AMENDMENT FOR

**PROJECT TITLE: ADDITION OF 200 AREA EFFLUENT TREATMENT FACILITY (ETF)
LOAD-IN STATION FILTER SKID**

Date Approved: 22-Feb-02

Emission Unit Name: ETF LOAD-IN STATION FILTER SKID

This is a MINOR, FUGITIVE, non-point source emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: None

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
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Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Regulatory Requirements	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Hanford Site Near-Facility Environmental Monitoring Ambient Moni program		During operation of filter skid.

Sampling Requirements: Monitors N498, N499, N972, and N999

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

12/18/2001 Revision form submitted and approved to allow tanker certification testing. Conditions and Limitations, AIR 02-208, mailed on February 22, 2002 to reflect new standard conditions.

03/31/1999 Original NOC approved via short form dated March 31, 1999.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 1.49E-03 mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to 1.49E-03 mrem/year to the Maximally Exposed Individual.
- 3) **This process is limited to:**
adding a new and distinct point of emission to the ETF Load-In Station. The distinct point of emission, located outdoors, will not result in an increase in the overall emissions from the ETF including the ETF

Load-In Station. The 200 Area ETF was designed and constructed to be a flexible wastewater treatment facility, and to provide the Hanford Site with the capability to treat wastewater generated during the restoration of the site. The ETF treatment systems were designed to process a wide variety of low-level radioactive wastewater which also contain chemical constituents of concern. As well as the tanker-truck-receipts at the ETF Load-In Station, closed containers have also been approved for receipt as a feed source. To increase the flexibility of the facility for receiving wastewaters, it is allowed to modify the ETF Load-In Station to add a filtration system to allow the filtration of wastewater as it is received from tanker trucks and closed containers. The filtration unit, a filter skid containing three filters and associated piping assembled as a single unit in a frame to provide ease of installation, represents a new emission point for radionuclides. Emissions may occur during filter skid installation and subsequent filter change-outs. Because the proposed unit would be added as a separate point of emissions at the ETF, the ETF treatment train and emissions control monitoring equipment is not considered to be part of this modification.

Waste solutions are received at the Load-In Station and transferred to either Liquid Effluent Retention Facility (LERF) or ETF. The proposed ETF Load-In Station filtration system consists of three filter housings, each designed to hold either bag or cartridge filters for filtration of liquids. The filter housings can be operated in series or in parallel, with normal operation expected to be two housings operated in series. Typical filter rating is 5 microns, although different filter ratings may be used depending on the characteristics of the waste being received. The capability to filter sump discharges prior to storage at the Load-in Station is also provided.

Each filter housing contains about 10 gallons of wastewater and waste solids. When solids buildup causes differential pressure across a filter housing to become excessive, the enclosed filters are replaced. The filtration system is shut down, the system is vented 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 filters are removed to a container for disposal. After filter change-out, the sump is emptied to the Load-In Station, LERF or ETF

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

Cs	137	3.89E+01
Sr	90	9.87E+01

- 5) **This condition was obsoleted on 1/30/02.** Periodic confirmatory measurements to verify low emission shall use the Hanford Site Near-Facility Environmental Monitoring program.
Original Condition/Limitation added via short form approval dated March 31, 1999.
- 6) Implement administrative controls based on a liquid sample analysis from the feed stream to allow no more than 824 curies pass through the filtration system in one year.
- 7) These Conditions and Limitations must be documented in an established procedure prior to starting activities granted by this approval (WAC 246-247-040-(5) and 246-247-060-(5)).
- 8) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060-(2)(d)).
- 9) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
- 10) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).

- 11) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
- 12) The facility must be able to demonstrate workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).
- 13) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13)).
- 14) The Department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter (WAC 246-247-080(1)).
- 15) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 16) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H. (WAC 246-247-080(2)).
- 17) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).
- 18) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).
- 19) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting, requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with WAC 246-247-080 (8). (WAC 246-247-080 (6))

- 20) The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).
- 21) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced

inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).

- 22) Diffuse/Fugitive emissions shall be monitored using the 200 Area near-field ambient air monitors. Sample collection and analysis shall follow that of the near field monitoring program. Analytical results shall be reported in the Annual Air Emissions Report. Any change to this near-field ambient monitoring program must be approved by the department.
- 23) A single, comprehensive Notice of Construction for the ETF facility (LERF Basins, ETF Facility, and ETF Load-In Station Filter Skid) shall be filed with the department within one year of this approval.

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
LICENSE AMENDMENT FOR

**PROJECT TITLE: TANK WASTE REMEDIATION SYSTEM VADOSE ZONE
CHARACTERIZATION**

Date Approved: 26-Feb-02

Emission Unit Name: 200 AREA DIFFUSE/FUGITIVE

This is a MINOR, FUGITIVE, non-point source emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: **BARCT**

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
			Abatement controls as required in the following Conditions and Limitations.

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Regulatory Requirements	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
WAC 246-247-075[3]	Appendix B, Method 114	All radionuclides which could contribute 10% of the potential EDE.	As listed in the following Conditions and Limitations.

Sampling Requirements: Existing near-facility monitoring stations.

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

- 11/27/01 NOC Revision approved November 27, 2001 to change wording in the NOC. Conditions and Limitations, AIR 02-211, mailed on February 26, 2002.
- 06/21/01 NOC ID 379 obsoleted upon receipt of "Tank Waste Remediation System Vadose Zone Characterization, Revision 2" (DOE/ORP-2000-05) received April 16, 2001, approved via AIR 01-606, June 21, 2001. NOC ID 5 issued to reflect the Conditions and Limitations of operation for this project.
- 03/12/01 NOC IDs 389, 409, 454, 455, 490 combined into NOC ID 379.
- 11/09/00 NOC Revision Form approved on November 9, 2000 and clarified via AIR 00-1104 on November 17, 2000.
- 06/21/00 Vadose Zone NOC Revision Form approved on June 21, 2000.
- 05/26/00 Tank Waste Remediation System Vadose Zone Characterization, Revision 1 (DOE/ORP-2000-05). Approved via AIR 00-515 on May 26, 2000.
- 05/11/00 Tank Waste Remediation System Vadose Zone Characterization, Revision 0 (DOE/ORP-2000-05). Approved via AIR 00-505.

11/01/99 NOC Revision Form approved on November 1, 1999.

08/23/99 NOC Revision Form approved on August 23, 1999.

07/14/99 Tank Waste Remediation System Vadose Zone Characterization (DOE/RL-99-34 submitted May 1999).
Approved by AIR 99-701.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 7.03E-02 mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to 7.03E-02 mrem/year to the Maximally Exposed Individual.
- 3) **This process is limited to:**
subsurface soil sampling within selected single-shell tank farms. Several methods of sampling and drilling techniques are approved, 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 various 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.

Other possible 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

Other 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 cm² for beta/gamma or 2,000 dpm/100 cm² 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 cm² for beta/gamma or 2,000 dpm/100 cm² 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 cm² for beta/gamma or 2,000 dpm/100 cm² 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 cm² for beta/gamma or 2,000 dpm/100 cm² 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 cm² for beta/gamma or 2,000 dpm/100 cm² 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 ft³ of soil may be excavated per year. Perform excavation using manual methods, backhoe, and/or the Guzzler.

4) 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

- 5) These Conditions and Limitations must be proceduralized prior to starting the activities described in the Notice of Construction.
- 6) 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)).

- 7) This NOC becomes obsolete on July 15, 2019.
- 8) The facility shall notify the department at least seven days prior to any planned preoperational testing of the emission unit's emissions control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
- 9) The department retains the right to conduct its own stack sampling, environmental monitoring or other testing, as required around this unit to assure compliance. If the department so decides, the facility must make provision for such testing (WAC 246-247-075(10) and (11)).
- 10) The facility must be able to demonstrate the reliability and accuracy of emission data and other test results from this unit (WAC 246-247-075(13) and WAC 246-247-075(6)). The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards listed in, or equivalent to, those listed in the above cited regulation.
- 11) If there is an unexpected release of radioactivity or if there is a shutdown or other condition that, if it were allowed to persist, would result in emissions of radionuclides in excess of any standards or limitations in the license or that lasts more than four hours, it must be reported to the department within 24 hours. Applicable standards (WAC 246-247-040) include unit specific emission limits, the offsite dose standard, BARCT or ALARACT, whichever is applicable, or any limitations included in this approval.
- 12) The department reserves the right to inspect and audit this unit during construction and operation, including all activities, equipment, operations, documents, data, and other records related to compliance with the regulations (WAC 246-247-080 (1)).
- 13) The facility shall make requested documents available in a timely manner for review (WAC 246-247-080(10)).
- 14) **This condition was obsoleted on 2/25/02.** When this project is completed, or operations cease, the facility shall notify the department via a report of closure, including whether or not any potential for airborne release occur (WAC 246-247-080(6)).
Condition/Limitation added via AIR 99-701, July 7, 1999. Obsoleted to reflect current sunset language via AIR 02-211.
- 15) All measured or calculated emissions must be reported annually in the Hanford Site Air Emissions

Report (WAC 246-247-080(3)).

- 16) All reports and records must be kept and reported according to 40 CFR 61, Subpart H. (WAC 246-247-080(2)).
- 17) This unit must be fully accessible to Department of Health inspectors. If there are any specific training requirements or have restrictions or special requirements for entry, they must be given to the department when they are known to allow for unannounced inspections, as required by EPA (WAC 246-247-080(9)). At a minimum, for unannounced inspections, such requirements or restrictions must be told to inspectors that morning, with the opportunity for the inspectors to meet those requirements. For prior announced inspections, such notification must occur far enough in advance for the inspectors to have reasonable time to meet the requirements.
- 18) Records must be readily (promptly) available for this unit. Those records must be maintained onsite, and must be retained for at least five years (WAC 246-247-080 (8)).
- 19) The facility must maintain a log in an approved format for this activity or emission unit (WAC 246-247-080(7)).
- 20) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 21) 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.
- 22) The facility must be able to demonstrate that the workers associated with this emission unit are adequately trained in the use and maintenance of emission control and monitoring systems, and in the performance of associated test and emergency response procedures (WAC 246-247-075(12)).
- 23) 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.
- 24) 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.
- 25) If the department finds that the emission unit described in this NOC is not in compliance with the standards in WAC 246-247-040 during construction or during operation the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060(2)(d)).
- 26) 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).
- 27) Approval is given as an alternative to transfer the perched water directly from borehole to the tanker.
- 28) 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.

- 29) 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.
- 30) 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 cm²) 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 cm²) of contamination reading greater than or equal to 1,000,000 dpm/probe size beta-gamma and/or greater than or equal to 490 dpm/probe size alpha.
- 31) 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.
- 32) Casing size reduction may also be by unthreading.
- 33) Drive Split Spoon Sampler will be included as a soil sampling technique.
- 34) 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.
- 35) 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.

- 36) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting, requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with WAC 246-247-080 (8).
(WAC 246-247-080 (6))

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
LICENSE AMENDMENT FOR

**PROJECT TITLE: TANK WASTE REMEDIATION SYSTEM VADOSE ZONE
CHARACTERIZATION**

Date Approved: 26-Feb-02

Emission Unit Name: AIR ROTARY DRILLING

This is a MINOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: BARCT

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
	HEPA	1	On the containment structure.
	HEPA	1	On the Air Rotary Exhaust.
	HEPA	1	To be used as a record filter on the Air Rotary Exhaust.

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Regulatory Requirements	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Appendix B, Method 114(3)	All radionuclides which could contribute 10% of the potential EDE.	The record filter is to be counted annually (either a destructive or non-destructive technique) using a gamma spectrometer calibrated to Cs-137.

Sampling Requirements: Destructive or non-destructive analysis of the record filter combined with field surveys.

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

- 11/27/01 NOC Revision approved November 27, 2001 to change wording in the NOC. Conditions and Limitations, AIR 02-211, mailed on February 26, 2002.
- 06/21/01 NOC ID 379 obsoleted upon receipt of "Tank Waste Remediation System Vadose Zone Characterization, Revision 2" (DOE/ORP-2000-05) received April 16, 2001, approved via AIR 01-606, June 21, 2001. NOC ID 5 issued to reflect the Conditions and Limitations of operation for this project.
- 03/12/01 NOC IDs 389, 409, 454, 455, 490 combined into NOC ID 379.
- 11/09/00 NOC Revision Form approved on November 9, 2000 and clarified via AIR 00-1104 on November 17, 2000.
- 06/21/00 Vadose Zone NOC Revision Form approved on June 21, 2000.
- 05/26/00 Tank Waste Remediation System Vadose Zone Characterization, Revision 1 (DOE/ORP-2000-05).

Approved via AIR 00-515 on May 26, 2000.

- 05/11/00 Tank Waste Remediation System Vadose Zone Characterization, Revision 0 (DOE/ORP-2000-05).
Approved via AIR 00-505.
- 11/01/99 NOC Revision Form approved on November 1, 1999.
- 08/23/99 NOC Revision Form approved on August 23, 1999.
- 07/14/99 Tank Waste Remediation System Vadose Zone Characterization (DOE/RL-99-34 submitted May 1999).
Approved by AIR 99-701.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 7.03E-02 mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to 7.03E-02 mrem/year to the Maximally Exposed Individual.
- 3) This process is limited to:
subsurface soil sampling within selected single-shell tank farms. Several methods of sampling and drilling techniques are approved, 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 various 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.

Other possible 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

Other 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 cm² for beta/gamma or 2,000 dpm/100 cm² 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 cm² for beta/gamma or 2,000 dpm/100 cm² 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 cm² for beta/gamma or 2,000 dpm/100 cm² 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 cm² for beta/gamma or 2,000 dpm/100 cm² 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 cm² for beta/gamma or 2,000 dpm/100 cm² 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 ft³ of soil may be excavated per year. Perform excavation using manual

methods, backhoe, and/or the Guzzler.

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

Ac	227	6.82E-09
Am	241	5.22E-04
Am	243	1.16E-08
C-	14	3.19E-06
Cm	242	4.08E-06
Cm	243	1.42E-07
Cm	244	1.32E-06
Co	60	1.45E-05
Cs	134	2.22E-07
Cs	137	2.77E-02
Eu	152	6.19E-06
Eu	154	1.30E-04
Eu	155	3.91E-04
H-	3	1.15E-05
I-	129	2.58E-07
Ni	59	7.69E-06
Ni	63	7.48E-04
Np	237	5.32E-08
Pa	231	7.08E-09
Pu	238	3.29E-05
Pu	239	3.00E-03
Pu	240	3.17E-04
Pu	241	1.87E-03
Pu	242	8.97E-09
Ra	226	5.53E-10
Ra	228	2.87E-08
Ru	106	2.56E-08
Sb	125	1.09E-05
Sm	151	2.79E-03
Sn	126	1.19E-06
Sr	90	3.10E-01
Tc	99	5.33E-05
Th	229	1.16E-09
Th	232	1.14E-09
U-	232	8.79E-08
U-	233	3.38E-07
U-	234	6.67E-06
U-	235	2.95E-07
U-	236	6.82E-08
U-	238	6.72E-06
Y-	90	3.10E-01
Zr	93	3.61E-06

5) These Conditions and Limitations must be proceduralized prior to starting the activities described in the

Notice of Construction.

- 6) This NOC becomes obsolete on July 15, 2019.
- 7) The facility shall notify the department at least seven days prior to any planned preoperational testing of the emission unit's emissions control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-47-060(4)).
- 8) The department retains the right to conduct its own stack sampling, environmental monitoring or other testing, as required around this unit to assure compliance. If the department so decides, the facility must make provision for such testing (WAC 246-247-075(10) and (11)).
- 9) The facility must be able to demonstrate the reliability and accuracy of emission data and other test results from this unit (WAC 246-247-075(13) and WAC 246-247-075(6)). The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards listed in, or equivalent to, those listed in the above cited regulation.
- 10) If there is an unexpected release of radioactivity or if there is a shutdown or other condition that, if it were allowed to persist, would result in emissions of radionuclides in excess of any standards or limitations in the license or that lasts more than four hours, it must be reported to the department within 24 hours. Applicable standards (WAC 246-247-040) include unit specific emission limits, the offsite dose standard, BARCT or ALARACT, whichever is applicable, or any limitations included in this approval.
- 11) The department reserves the right to inspect and audit this unit during construction and operation, including all activities, equipment, operations, documents, data, and other records related to compliance with the regulations (WAC 246-247-080 (1)).
- 12) The facility shall make requested documents available in a timely manner for review (WAC 246-247-080(10)).
- 13) **This condition was obsoleted on 2/25/02.** When this project is completed, or operations cease, the facility shall notify the department via a report of closure, including whether or not any potential for airborne release occur (WAC 246-247-080(6)).
Condition/Limitation added via AIR 99-701, July 7, 1999. Obsoleted to reflect current sunset language via AIR 02-211.
- 14) All measured or calculated emissions must be reported annually in the Hanford Site Air Emissions Report (WAC 246-247-080(3)).
- 15) Periodic confirmatory sampling is required. For the air rotary type drilling this shall consist of a destructive or non-destructive analysis of the record filter combined with radiological field surveys during the work. The record HEPA type filter located downstream shall have a minimum efficiency of 90 percent for particulates with a median diameter of 0.3 microns as specified by the manufacturer. The radiological analyses from the soil samples will be averaged to determine the isotopic distribution of Strontium-90 (Sr-90), Cesium-137 (Cs-137), Plutonium-239 (Pu-239) and Americium (Am-241). The record filter will be counted using a gamma spectrometer calibrated to Cs-137. Counting will be done annually using either a destructive or non-destructive technique.

The soil sample isotope ratios will be applied to Cs-137 on the record filter to confirm low emissions. In addition, the HEPA filter housing shall be field surveyed after the completion of each borehole or re-entry to verify low emissions. Periodic confirmatory monitoring of the passive HEPA type filter will be accomplished by performing a field survey of the filter housing to confirm low emissions. The field survey of the passive HEPA type filter will be performed after the completion of each borehole or re-entry. These methods of performing these "field surveys" shall be submitted to the department for approval (WAC 246-247-075(3)).

- 16) All reports and records must be kept and reported according to 40 CFR 61, Subpart H (WAC 246-247-080(2)).
- 17) This unit must be fully accessible to Department of Health inspectors. If there are any specific training requirements or have restrictions or special requirements for entry, they must be given to the department when they are known to allow for unannounced inspections, as required by EPA (WAC 246-247-080(9)). At a minimum, for unannounced inspections, such requirements or restrictions must be told to inspectors that morning, with the opportunity for the inspectors to meet those requirements. For prior announced inspections, such notification must occur far enough in advance for the inspectors to have reasonable time to meet the requirements.
- 18) Records must be readily (promptly) available for this unit. Those records must be maintained onsite, and must be retained for at least five years (WAC 246-247-080(8)).
- 19) The facility must maintain a log in an approved format for this activity or emission unit (WAC 246-247-080(7)).
- 20) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 21) 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 activity and casing removal. All periodic confirmatory samples will be collected and analyzed following EPA Method 114.
- 22) The facility must be able to demonstrate that the workers associated with this emission unit are adequately trained in the use and maintenance of emission control and monitoring systems, and in the performance of associated test and emergency response procedures (WAC 246-247-075(12)).
- 23) If the department finds that the emission unit described in this NOC is not in compliance with the standards in WAC 246-247-040 during construction or during operation the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060(2)(d)).
- 24) For various characterization options covered under this NOC, the maximum TEDE to the hypothetical off site MEI shall not exceed $7.03 \text{ E-}02$ mrem/year. The maximum TEDE to the MEI shall not exceed $5.7 \text{ E-}02$ mrem/year at the Energy Northwest location as determined by CAP88PC, Version 2 supplied as supporting documentation.
- 25) Emissions from air rotary drilling activities shall be contained using an active ventilation system attached to the process equipment and a passive vent system attached to the process equipment containment structure. The active ventilation system shall have radioactive air emissions abated by one stage of high efficiency particulate air (HEPA) filter. The HEPA filter shall be tested to provide a minimum collection efficiency of 99.95 percent for particulates with a median diameter of 0.3 microns. The containment structure shall have a passive HEPA type filter that will provide high efficiency collection. The exhaust fan shall have a maximum average velocity of 0.85 cubic meters per second (1,800 cubic feet per minute) with a range of 0.6 to 1.2 cubic meters per second (1,200 to 2,400 cubic feet per minute) to maintain the ducting between the cyclone and the HEPA filter at atmospheric or less than atmospheric pressure. The drill rig shall be sealed to the casing so that particulates will be contained and routed to the process equipment (e.g., cyclone and torit) located inside the plastic containment structure. The flange on the well discharge head and on the inlet of the cyclone shall be double flanged to reduce the potential for an unabated release to the atmosphere. Additionally, the flexible line connecting the well discharge head and the cyclone shall be encased by another flexible line. The flexible encasement line and flanges shall also be vented to the cyclone. The plastic

containment structure surrounding the process control equipment shall be fitted with one stage of HEPA type filtration. When the borehole or re-entry has been completed and the process equipment is ready to be removed, equipment shall be broken down at the disconnect points and contaminated equipment openings shall be sealed or plugged to minimize the spread of contamination. All work related to disconnecting and moving the equipment shall be performed in accordance with TWRS as low as reasonably achievable control technology (ALARACT) demonstration number 12 or subsequent revision ALARACT "Demonstration for Packaging and Transportation of Equipment and Vehicles".

- 26) APQ associated with the air rotary drilling shall be tracked and documented on an approved log and subtracted from the APQ listed for the emissions associated with diffuse and fugitive emissions.
- 27) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting, requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with WAC 246-247-080 (8).
(WAC 246-247-080 (6))

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
LICENSE AMENDMENT FOR

**PROJECT TITLE: TANK WASTE REMEDIATION SYSTEM VADOSE ZONE
CHARACTERIZATION**

Date Approved: 26-Feb-02

Emission Unit Name: AIR HAMMER DRILLING

This is a MINOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: **BARCT**

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
	HEPA	1	The HEPA filter may or may not have an exhaust fan associated with it.

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Regulatory Requirements	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Appendix B, Method 114(3)	All radionuclides which could contribute 10% of the potential EDE.	

Sampling Requirements: For passive HEPA filter, perform field survey of the filter housing after each borehole.

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

- 11/27/01 NOC Revision approved November 27, 2001 to change wording in the NOC. Conditions and Limitations, AIR 02-211, mailed on February 26, 2002.
- 06/21/01 NOC ID 379 obsoleted upon receipt of "Tank Waste Remediation System Vadose Zone Characterization, Revision 2" (DOE/ORP-2000-05) received April 16, 2001, approved via AIR 01-606, June 21, 2001. NOC ID 5 issued to reflect the Conditions and Limitations of operation for this project.
- 03/12/01 NOC IDs 389, 409, 454, 455, 490 combined into NOC ID 379.
- 11/09/00 NOC Revision Form approved on November 9, 2000 and clarified via AIR 00-1104 on November 17, 2000.
- 06/21/00 Vadose Zone NOC Revision Form approved on June 21, 2000.
- 05/26/00 Tank Waste Remediation System Vadose Zone Characterization, Revision 1 (DOE/ORP-2000-05). Approved via AIR 00-515 on May 26, 2000.
- 05/11/00 Tank Waste Remediation System Vadose Zone Characterization, Revision 0 (DOE/ORP-2000-05). Approved via AIR 00-505.

11/01/99 NOC Revision Form approved on November 1, 1999.

08/23/99 NOC Revision Form approved on August 23, 1999.

07/14/99 Tank Waste Remediation System Vadose Zone Characterization (DOE/RL-99-34 submitted May 1999).
Approved by AIR 99-701.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to $7.03E-02$ mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to $7.03E-02$ mrem/year to the Maximally Exposed Individual.
- 3) **This process is limited to:**
subsurface soil sampling within selected single-shell tank farms. Several methods of sampling and drilling techniques are approved, 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 various 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.

Other possible 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

Other 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 cm² for beta/gamma or 2,000 dpm/100 cm² 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 cm² for beta/gamma or 2,000 dpm/100 cm² 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 cm² for beta/gamma or 2,000 dpm/100 cm² 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 cm² for beta/gamma or 2,000 dpm/100 cm² for alpha and the casing is sleeved in plastic, no more than one foot 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 cm² for beta/gamma or 2,000 dpm/100 cm² 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 ft³ of soil may be excavated per year. Perform excavation using manual methods, backhoe, and/or the Guzzler.

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

Ac	227	2.02E-06
Am	241	1.55E-01
Am	243	3.45E-06
C-	14	9.47E-04
Cm	242	1.21E-03
Cm	243	4.22E-05
Cm	244	3.93E-04
Co	60	4.30E-03
Cs	134	6.58E-05
Cs	137	8.23E+00
Eu	152	1.84E-03
Eu	154	3.86E-02
Eu	155	1.16E-01
H-	3	3.42E-03
I-	129	7.64E-05
Ni	59	2.28E-03
Ni	63	2.22E-01
Np	237	1.58E-05
Pa	231	2.10E-06
Pu	238	9.77E-03
Pu	239	8.91E-01
Pu	240	9.40E-02
Pu	241	5.56E-01
Pu	242	2.66E-06
Ra	226	1.64E-07
Ra	228	8.52E-06
Ru	106	7.60E-06
Sb	125	3.23E-03
Sm	151	8.29E-01
Sn	126	3.54E-04
Sr	90	9.19E+01
Tc	99	1.58E-02
Th	229	3.45E-07
Th	232	3.38E-07
U-	232	2.61E-05
U-	233	1.00E-04
U-	234	1.98E-03
U-	235	8.76E-05
U-	236	2.02E-05
U-	238	2.00E-03
Y-	90	9.19E+01
Zr	93	1.07E-03

5) These Conditions and Limitations must be proceduralized prior to starting the activities described in the Notice of Construction.

6) This NOC becomes obsolete on July 15, 2019.

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- 7) The facility shall notify the department at least seven days prior to any planned preoperational testing of the emission unit's emissions control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
- 8) The department retains the right to conduct its own stack sampling, environmental monitoring or other testing, as required around this unit to assure compliance. If the department so decides, the facility must make provision for such testing (WAC 246-247-075(10) and (11)).
- 9) The facility must be able to demonstrate the reliability and accuracy of emission data and other test results from this unit (WAC 246-247-075(13) and WAC 246-247-075(6)). The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards listed in, or equivalent to, those listed in the above cited regulation.
- 10) If there is an unexpected release of radioactivity or if there is a shutdown or other condition that, if it were allowed to persist, would result in emissions of radionuclides in excess of any standards or limitations in the license or that lasts more than four hours, it must be reported to the department within 24 hours. Applicable standards (WAC 246-247-040) include unit specific emission limits, the offsite dose standard, BARCT or ALARACT, whichever is applicable, or any limitations included in this approval.
- 11) The department reserves the right to inspect and audit this unit during construction and operation, including all activities, equipment, operations, documents, data, and other records related to compliance with the regulations (WAC 246-247-080(1)).
- 12) The facility shall make requested documents available in a timely manner for review (WAC 246-247-080(10)).
- 13) **This condition was obsoleted on 2/25/02.** When this project is completed, or operations cease, the facility shall notify the department via a report of closure, including whether or not any potential for airborne release occur (WAC 246-247-080(6)).
Condition/Limitation added via AIR 00-515, November 17, 2000. Obsoleted to reflect current sunset language via AIR 02-211.
- 14) All measured or calculated emissions must be reported annually in the Hanford Site Air Emissions Report (WAC 246-247-080(3)).
- 15) All reports and records must be kept and reported according to 40 CFR 61, Subpart H (WAC 246-247-080(2)).
- 16) This unit must be fully accessible to Department of Health inspectors. If there are any specific training requirements or have restrictions or special requirements for entry, they must be given to the department when they are known to allow for unannounced inspections, as required by EPA (WAC 246-247-080(9)). At a minimum, for unannounced inspections, such requirements or restrictions must be told to inspectors that morning, with the opportunity for the inspectors to meet those requirements. For prior announced inspections, such notification must occur far enough in advance for the inspectors to have reasonable time to meet the requirements.
- 17) Records must be readily (promptly) available for this unit. Those records must be maintained onsite, and must be retained for at least five years (WAC 246-247-080(8)).
- 18) The facility must maintain a log in an approved format for this activity or emission unit (WAC 246-247-080(7)).
- 19) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 20) 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 3 ft 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 activity and casing removal. All periodic confirmatory samples will be collected and analyzed following EPA Method 114.

- 21) The facility must be able to demonstrate that the workers associated with this emission unit are adequately trained in the use and maintenance of emission control and monitoring systems, and in the performance of associated test and emergency response procedures (WAC 246-247-075(12)).
- 22) If the department finds that the emission unit described in this NOC is not in compliance with the standards in WAC 246-247-040 during construction or during operation the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060(2)(d)).
- 23) Approval is given to use a downhole air hammer to drive a sampler while using a closed end probe.
- 24) Operation of the passive or active ventilation unit during the operation of the air hammer shall be documented on an approved log.
- 25) Emissions associated with the downhole air hammer will be routed to a passive or active ventilated HEPA filter. Pressure gauges will be installed on the emissions unit and will be monitored and recorded daily during operation of the downhole air hammer. Operation in the passive mode will not be allowed if the HEPA inlet pressure exceeds 20 inches water gauge and differential pressure exceeds 5.9 inches water gauge. Operation in the active ventilation mode will not be allowed if the HEPA inlet pressure exceeds 20 inches water gauge and differential pressure exceeds 5.9 inches water gauge. The flow shall not exceed the HEPA filter manufactures recommendation. Emissions from the drill rig shall be minimized using a double gasket seal and a chromed casing. This area shall be smear surveyed at the beginning and end of the work cycle and documented to determine adequacy of seal.
- 26) Periodic confirmatory sampling is required. For the air hammer method, instead of air sampling near the HEPA as described in the NOC, this shall consist of a destructive or non-destructive analysis of the HEPA filter combined with radiological field surveys during the work. The HEPA type filter located downstream of the process equipment shall have a minimum efficiency of 99.95 percent for particulates with a median diameter of 0.3 microns as specified by the manufacturer. The radiological analyses from the soil samples will be averaged to determine the isotopic distribution of Strontium-90 (Sr-90), Cs-137, Plutonium-239 (Pu-239), and Americium (Am-241). The record filter will be counted using a gamma spectrometer calibrated to Cs-137. Counting will be done annually using either a destructive or non-destructive technique.
- 27) The emission unit shall be inspected daily during operation and after any relocations. Line pressure tests will be performed on the line between the well head and the filter and/or fan prior to deploying the air hammer. Line pressure tests will be performed in accordance with ASME/ANSI N510.
- 28) For various characterization options covered under this NOC, the maximum TEDE to the hypothetical off site MEI shall not exceed $7.03 \text{ E-}02$ mrem/year. The maximum TEDE to the MEI shall not exceed $5.7 \text{ E-}02$ mrem/year at the Energy Northwest location as determined by CAP88PC, Version 2 supplied as supporting documentation.
- 29) APQ associated with the air hammer operation shall not exceed 195 curies. This shall be tracked and documented on an approved log and subtracted from the APQ listed for the emissions associated with diffuse and fugitive emissions.
- 30) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or

monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting, requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with WAC 246-247-080 (8).
(WAC 246-247-080 (6))