

AIR 13-401
NOC 877

STATE OF WASHINGTON
DEPARTMENT OF HEALTH
OFFICE OF RADIATION PROTECTION
309 Bradley Blvd., Suite 201 • Richland, Washington 99352
TDD Relay Service: 1-800-833-6388

April 15, 2013

Mr. Kevin W. Smith, Manager
United States Department of Energy
Office of River Protection
P.O. Box 450, MSIN: H6-60
Richland, Washington 99352

Dear Mr. Smith:

Pursuant to Chapter 246-247 of the Washington Administrative Code (WAC), the modification of Emission Unit (EU) 218 was approved on April 9, 2013, as negotiated, according to the enclosed License for:

Operation of 296-A-19 Annulus Exhauster AY-102 (NOC 877; EU 218)

The conditions, controls, monitoring requirements, and limitations of this License must be observed in order for you to be in compliance with chapter 246-247 WAC. Failure to meet any provision of this License may result in the revocation of approval, the issuance of Notices of Violation, or other enforcement actions under WAC 246-247-100.

If you have any questions regarding this approval, please contact Ernest McCormick at (509) 946-0624.

Sincerely,

A handwritten signature in black ink that reads "John Martell".

John Martell, Manager
Radioactive Air Emissions Section

Enclosure: Applicable Portion of License (NOC 877; EU 218)

cc: (see next page)

April 15, 2013

Page 2 of 2

cc: Robert Anderson, MSA
Matthew Barnett, PNNL
John Bates, CHPRC
Tom Beam, MSA
Lee Bostic, BNI
Dennis Bowser, USDOE-ORP
Jack Donnelly, WRPS
Dennis Faulk, EPA
Phil Gent, Ecology
Robert Haggard, BNI
Dale Jackson, USDOE-RL
Steven Killooy, WRPS
Ernest McCormick, WDOH
Felix Miera, WRPS
Valarie Peery, Ecology
Michael Peloquin, WRPS
Lucinda Penn, WRPS
Crystal Rau, Ecology
John Schmidt, WDOH
Maria Skorska, Ecology
Jeff Voogd, WRPS
Stephen Weil, USDOE-RL
Davis Zhen, EPA
Environmental Portal
RAES Tracking: Line 525; Resp. to IM# 7,613; NOC 877; EU 218

Emission Unit ID: 218

200E P-296A019-001

296-A-19

This is a MAJOR, ACTIVELY ventilated emission unit.

241-AY Tank Farm

Emission Unit Information

Stack Height: 12.90 ft. 3.93 m. Stack Diameter 1.25 ft. 0.38 m.

Average Stack Effluent Temperature: 83 degrees Fahrenheit. 28 degrees Celsius.

Average Stack Exhaust Velocity: 52.30 ft/second. 15.94 m/second.

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

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

| Zone or Area | Abatement Technology | Required # of Units | Additional Description |
|--------------|----------------------|---------------------|------------------------|
| | HEPA | 2 | In Series |
| | Fan | 1 | Annulus Exhauster |
| | Heater | Non-Operational | |

Monitoring Requirements

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

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

Sampling Requirements Record Sample

Additional Requirements

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

Operational Status This emission unit is a DST annulus exhauster used to support tank farm operations and ventilates the annulus of DST 241-AY-102. The tank stores radioactive waste until the waste is retrieved, treated, and properly disposed under the applicable federal and state regulations and/or permits. The annulus is the space between the inner wall and outer wall of the tank, and is used for leak detection. The emission unit operates intermittently.

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

| Project Title | Approval # | Date Approved | NOC_ID |
|--|------------|---------------|--------|
| Operation of 296-A-19 Annulus Exhauster AY-102 | AIR 13-401 | 4/9/2013 | 877 |

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

- 1) The total abated emission limit for this Notice of Construction is limited to 3.84E-01 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 7.67E+02 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).
- 2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

This emission unit is a DST annulus exhauster used to support tank farm operations and ventilates the annulus of DST 241-AY-102. The tank annulus is located between the 75-ft diameter primary tank and the 80-ft diameter secondary liner resulting in a nominal 2.5-ft wide annular space wrapping around the entire circumference of the primary tank. Several penetrations, or risers, of various sizes exist at the top of the secondary liner, which allows access into the annulus space. This access is used for a variety of activities, including but not limited to visual inspection cameras, sampling, ultrasonic testing crawlers, emergency pumps, and leak detection instruments. The annulus provides secondary containment when the primary tank fails and also provides the ability to cool the primary tank to reduce thermal stresses. The emission unit operates intermittently. The annulus ventilation systems minimize potential corrosion due to condensation by removing moisture through evaporation. The ventilation air accelerates the evaporation rate by circulating outside air through the annulus. The ventilation air

also dilutes and removes any flammable gas generated within the annulus if there is waste in the annulus.

The Tank 241-AY-102 annulus ventilation system's exhaust fan draws outside air into an intake consisting of a damper and two pre-filters configured in series. Currently, the air is routed to the air distribution ring centered under the primary tank floor. The air flows from the air distribution ring through the air distribution slots in the refractory to the annulus. Exhaust air from the tank annulus is drawn out through underground ducts. The ducts merge aboveground to form a common vent header. For leak-detection purposes, a vacuum pump extracts an air sample from the header located upstream of the exhaust HEPA filters and feeds this air sample to a CAM. The header connects to the exhaust train where tank annulus exhaust air continues through two banks of HEPA filters configured in series. Filtered air exits the annulus ventilation system through an exhaust fan and stack and is released to the environment. The stack is fitted with a record sampler system that samples the air stream for radioactive particulates.

WORK WITHIN ANNULUS:

The 241-AY-102 Double shell tank annular space is known to have low levels of radioactive contamination. Work evolutions in the AY-102 Annulus include operating and removing equipment, and sample collection of unknown materials by mechanical methods. Equipment installation and removal will be performed in accordance with ALARACT Demonstration 13, TWRS ALARACT Demonstration for Installation, Operation, and Removal of Tank Equipment. Removed long-length equipment will either be packaged in long-length contaminated equipment disposal containers or size reduced for disposal in accordance with ALARACT Demonstration 15, Tank Farm ALARACT Demonstration for Size Reduction of Waste Equipment for Disposal. Additional activities include those activities necessary to mitigate potential waste which has entered the annulus from the primary tank 241-AY-102. The overall PTE from the AY-102 will not be increased due to the migration of tank waste into the annular space. However, a small portion of the total emissions will travel through the annular stack; i.e. the 296-A-19 stack.

If needed or chosen for use during these activities, a portable/temporary radioactive air emission unit, and a HEPA filtered vacuum radioactive air emission unit may be used in accordance with the latest revisions of their NOCs (DOE/RL-96-75 and DOE/RL-97-50, respectively).

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

| | | | | | |
|------------|----------|----------|----------|------------|----------|
| Ac - 227 | 9.30E-03 | Am - 241 | 5.10E+03 | Am - 243 | 2.80E+00 |
| Ba - 137 m | 6.80E+05 | C - 14 | 9.40E-01 | Cd - 113 m | 5.00E+01 |
| Cm - 242 | 5.70E+00 | Cm - 243 | 2.20E+00 | Cm - 244 | 5.10E+01 |
| Co - 60 | 8.00E+01 | Cs - 134 | 4.20E+01 | Cs - 137 | 6.80E+05 |
| Eu - 152 | 6.60E+01 | Eu - 154 | 6.60E+03 | Eu - 155 | 2.70E+03 |
| H - 3 | 1.50E+01 | I - 129 | 5.00E-01 | Nb - 93 m | 4.70E+01 |
| Ni - 59 | 2.50E+01 | Ni - 63 | 2.30E+03 | Np - 237 | 3.90E+00 |
| Pa - 231 | 7.90E-02 | Pu - 238 | 6.30E+01 | Pu - 239 | 1.60E+03 |
| Pu - 240 | 3.80E+02 | Pu - 241 | 2.70E+03 | Pu - 242 | 2.50E-02 |
| Ra - 226 | 9.10E-05 | Ra - 228 | 4.40E-02 | Ru - 106 | 6.10E-04 |
| Sb - 125 | 3.40E+01 | Se - 79 | 4.40E-01 | Sm - 151 | 8.30E+04 |
| Sn - 126 | 1.70E+01 | Sr - 90 | 4.70E+06 | Tc - 99 | 1.90E+02 |
| Th - 229 | 3.80E-05 | | | | |

| | | | | | |
|---------|----------|----------|----------|---------|----------|
| | | Th - 232 | 5.40E-02 | U - 232 | 2.70E-03 |
| U - 233 | 2.00E-01 | U - 234 | 7.40E-01 | U - 235 | 3.10E-02 |
| U - 236 | 2.30E-02 | U - 238 | 6.90E-01 | Y - 90 | 4.70E+06 |
| Zr - 93 | 5.70E+01 | | | | |

4) MONITORING -Evaluation schedule requirement

A plan to evaluate the sampling system and continuous air monitoring systems to meet the sampling requirements for ANSI N13.1 1999 will be required by June 30, 2013. The plan will require the following, with dates of completion:

- A review of the current sampling system efficiencies.
- Development of technical basis documentation.
- Evaluation of the current system.
- Determination of system design needs.
- Determination of completion dates for system changes, if needed.

(WAC 246-247-060(5), 246-247-075(3)).

5) MONITORING DURING OPERATIONS

Record sampling for the 241-AY-102 annulus will be obtained through use of the existing EU 218 (296-A-19) stack sampling system. The samples will be analyzed, at a minimum, for Sr-90, Cs-137, and Am-241. While in operation, the 296-A-19 record sampler instrumentation will be calibrated annually in accordance with approved procedures, and system inspections will be performed daily to ensure instrumentation is operating within specified parameters (WAC 246-247-060(5)).

6) WDOH NOTIFICATION

WDOH will be notified when the initial inspection to meet 40 CFR 61 App. B Method 114 (4.7), Maintenance and Inspection requirements have been completed. The deadline for this activity will be July 15, 2013 (WAC 246-247-075(2), WAC 246-247-060(5)).