LB# 3596

AIR 13-306
NOC 881

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

March 8, 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), your application is hereby approved as negotiated according to the enclosed License for:

License to Operate the 222-S Laboratory (Replaced NOC ID 831) (NOC 881; EU 254)

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.

This license approval replaces and obsoletes:

License to Operate the 222-S Laboratory (NOC 831; EU 254)

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

Sincerely,

for

P. John Martell, Manager
Radioactive Air Emissions Section

Enclosure: Applicable Portion of License

cc: (see next page)

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 Killoy, 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
Randy Utley, WDOH
Jeff Voogd, WRPS
Stephen Weil, USDOE-RL
Davis Zhen, EPA
Environmental Portal
RAES Tracking: Line 589; NOC 831; EU 254

Emission Unit ID: 254

200W S-296S021-001

296-S-21

This is a MAJOR, ACTIVELY ventilated emission unit.

222-S LABORATORY

Emission Unit Information

Stack Height: 68.00 ft. 20.73 m. Stack Diameter 5.50 ft. 1.68 m.

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

Average Stack ExhaustVelocity: 63.16 ft/second. 19.25 m/second.

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

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

Zone or Area	Abatement Technology	Required # of Units	Additional Description
	HEPA	3	In series for both the primary and backup exhaust systems (222-S Lab Hot Cells)
	HEPA	1	For both primary and backup exhaust systems (222-S Lab Complex)
	Fan	3	Primary exhaust operated in parallel, serves both hot cell addtion & main lab.
	Fan	1	Backup exhaust operates independently or in parallel with primary exhaust

Monitoring Requirements

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

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	40 CFR 61, Appendix B Method 114	Sr-90, Cs-137 and Pu-239	Continuous

Sampling Requirements Record Sample

Additional Requirements

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

Operational Status This emission unit is a laboratory building/facility exhauster that is used to ventilate building and facility operations such as but not limited to contaminated rooms, hot cells, glove boxes, and hoods, that support tank farm waste characterization activities, research and development, environmental sample analysis, and Hanford operations and remediation projects. The exhauster can be used to support current surveillance, maintenance activities, operations, decontamination, and cleanup activities within the building/facility. The emission unit is a laboratory building/facility exhauster ventilation system that operates continuously.

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

Project Title	Approval #	Date Approved	NOC_ID
License to Operate the 222-S Laboratory (Replaced NOC ID 831)	AIR 13-306	3/8/2013	881

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

1) The total abated emission limit for this Notice of Construction is limited to 1.02E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 3.00E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

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

The 222-S Laboratory was built in the early 1950's to provide analytical services, first for the reduction and oxidation (REDOX) process, and later for several programs and plant operations. In 1994 Project W-041H, Environmental Hot Cell Expansion, provided the hot cell facility, an addition ot the east end of the 222-S Laboratory that includes the 11A hot cells and associated fume hoods. The increased hot cell capacity was required to support an increased demand for analytical services.

The 222-S Laboratory primarily receives, processes, and stores samples from various projects and packages samples for shipment to other onsite and offsite laboratories. The 222-S Laboratory is also used for sample analysis, testing, and process development. The majority of samples are from the single-shell tanks (SST) and double-shell tanks (DST) in the tank farm system with a few samples coming from other facilities such as the 242-A Evaporator, K Basins Project, Plutonium Finishing Plant (PFP), and the 219-S Waste Handling Facility. All SST and DST samples and most other samples are received through the 11A hot cell.

The 222-S Laboratory is also used for waste management activities, such as waste transfers to the 219-S Waste Handling Facility and other activities supporting laboratory and other Hanford Site operations. The 222-S Laboratory manages waste generated at 222-S Laboratory and small amounts of radioactive waste not generated as the 222-S Laboratory (i.e., for short-term storage or transfer to the 219-S Tank System).

The 222-S Laboratory undergoes operation and maintenance activities that occur in the radioactive portion of the facility and contribute to emissions through the 296-S-21 stack. Nonanalytical portions of the facility that exhaust through the 296-S-21 stack are the basement, tunnels, and other miscellaneous sources (e.g., vented storage cabinets).

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

Ac - 227 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Am - 241 6.76E+01 Identified as contributing greater than 0.1 mrem/yr to the MEI, greater than 10% of the potential TEDE to the MEI, and greater than 25% of the TEDE to the MEI after controls.	Am - 243 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Ba - 137 m Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	C - 14 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cd - 113 m Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Cm - 242 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cm - 243 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cm - 244 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Co - 60 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cs - 134 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Cs - 137 3.16E+03 Identified as contributing greater than 0.1 mrem/yr to the MEI, greater than 10% of the potential TEDE to the MEI, and greater than 25% of the TEDE to the MEI after controls.
Eu - 152 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Eu - 154 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Eu - 155 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
H - 3 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	I - 129 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Nb - 93 m Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Ni - 59 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Ni - 63 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Np - 237 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Pa - 231 Contributes less than 0.1 mrem/yr to		

the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 238 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 239 6.85E+01 Identified as contributing greater than 0.1 mrem/yr to the MEI, greater than 10% of the potential TEDE to the MEI, and greater than 25% of the TEDE to the MEI after controls.
Pu - 240 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 241 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Pu - 242 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Ra - 226 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Ra - 228 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Ru - 106 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Sb - 125 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Se - 79 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Sm - 151 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Sn - 126 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Sr - 90 9.00E+03 Identified as contributing greater than 0.1 mrem/yr to the MEI	Tc - 99 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Th - 229 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Th - 232 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	U - 232 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
U - 233 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	U - 234 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	U - 235 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
U - 236 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	U - 238 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.	Y - 90 Contributes less than 0.1 mrem/yr to the MEI and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.
Zr - 93 Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

4) HEPA Filters for the S-21 exhauster will meet the requirements of HNF-S-0477 and/or HNF-S-0552 which assure equivalency to ASME AG-1: Code on Nuclear Air and Gas Treatment.

5) Air sampling will be conducted in accordance with ANSI/HPS N13.1-1999: Sampling and Monitoring Releases of Airborne Radioactive Substances from the Stacks and Ducts of Nuclear Facilities.

6) Quality Assurance program will meet the requrements of 40 CFR 61, Appendix B, Method 114.