



February 28, 2017  
YRS:17:003

U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk (03-H8)  
Director, Office of Nuclear Material  
Safety and Safeguards  
One White Flint North  
11555 Rockville Pike  
Rockville, Maryland 20852-2738

**License SNM-1227**  
**Docket 70-1257**

**Subject: Required Reporting of Effluents per 10 CFR 70.59**

As required by 10 CFR 70.59, AREVA Inc. is reporting discharges of radioactive materials in the effluents from its nuclear fuels fabrication plant on Horn Rapids Road in Richland, Washington for the period from July 1 through December 31, 2016.  
If there are any questions, please contact me at (509) 375-8355.

Very truly yours,

A handwritten signature in black ink, appearing to read 'Y. R. Sakach', written over a horizontal line.

Y. R. Sakach  
Radiation Protection  
Attachments

cc: N. A. Pitoniak, U.S. Nuclear Regulatory Commission, Region II  
P. J. Martell, State of Washington Department of Health  
C. Haney, U.S. Nuclear Regulatory Commission, Region II  
D. B. Jansen, Director, Office of Radiation Protection (WDOH)

IE48  
NMSS20

**AREVA INC.**

2101 Horn Rapids Road, Richland WA 99354  
Tel.: 509 375 8100 - www.aveva.com

Gaseous Effluent July 1 – December, 2016				
Stack	Average Concentration (µCi/ml)	Estimated Average MDC (µCi/ml)*	Quantity (µCi alpha)	Flow (m <sup>3</sup> )
Low Enriched Uranium based on alpha				
K03	5.35E-16	2.93E-17	0.13	2.39E+08
K06	3.98E-16	6.94E-17	0.04	1.01E+08
K21	2.26E-15	1.46E-16	0.11	4.78E+07
K25	2.81E-16	2.56E-16	0.01	2.74E+07
K31	5.67E-16	1.15E-16**	0.14	2.44E+08
K37	7.08E-16	6.68E-17	0.07	1.05E+08
K42	6.41E-16	1.70E-16	0.03	4.12E+07
K46	6.44E-16	6.76E-17	0.07	1.03E+08
K47	2.78E-15	1.02E-15	0.02	6.88E+06
K49	5.69E-16	10.5E-16	0.04	6.66E+07
K50	Not Operating	0.00E+00	0.00	0.00E+00
K52	5.81E-16	1.57E-16	0.03	4.46E+07
K55	Not Operating	0.00E+00	0.00	0.00E+00
K56	9.22E-16	1.56E-15	0.00	4.48E+06
K58	3.18E-16	6.27E-17	0.04	1.12E+08
K60	8.50E-16	6.12E-17	0.10	1.14E+08
K62	6.57E-16	1.84E-17	0.25	3.81E+08
K65	4.43E-16	4.72E-16	0.01	1.48E+07
K67	7.51E-16	8.94E-16	0.01	7.82E+06
K69	4.66E-16	2.27E-16	0.01	3.08E+07
K72	9.92E-16	3.26E-17	0.21	2.14E+08
K75	5.15E-16	9.37E-16	0.00	7.47E+06
<b>TOTAL</b>			<b>1.30</b>	

\* Estimated average minimum detectable concentrations for 7-day sampling.

\*\* There are several sampled effluent streams discharged via this stack, MDC listed is the highest of any sampled effluent stream

Gaseous Effluent July 1- December 31, 2016				
Stack	Average Concentration (µCi/ml)	Average MDC (µCi/ml)*	Quantity (µCi beta)**	Flow (m <sup>3</sup> )
Mixed Fission and Activation Corrosion Products- Based upon Gross Beta results				
K52	4.89E-15	7.58E-18	0.22	4.60E+07
<b>TOTAL</b>			<b>0.22</b>	

\* Estimated average minimum detectable concentration for 7-day sampling. Principal isotopes (by activity) are estimated to be Co-60 (~66%), Mn-54 (~20%), and Sb-125 (~9%).

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Stack	Average Concentration (μCi/ml)*	Average MDC (μCi/ml)*	Quantity (μCi)	Flow (m <sup>3</sup> )
Radionuclide: Rn-220				
K03	1.99E-08	---	4.74E+06	2.39E+08
K31	2.85E-09	---	6.94E+05	2.44E+08
K37	0.00E+00	---	0.00E+00	1.05E+08
K50	Not Operating	---	0.00E+00	0.00E+00
K56	0.00E+00	---	0.00E+00	4.48E+06
K72	5.32E+09	---	1.14E+06	2.14E+08
K75	0.00E+00	---	0.00E+00	7.47E+06
<b>TOTAL</b>			<b>6.58E+06</b>	

\* Radon concentrations are determined by e-perms, which rely on changes in voltage; not counting instruments.

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Liquid Effluent* July 1 - December 13, 2016				
Constituent	Concentration ( $\mu\text{Ci/ml}$ )	LLD ( $\mu\text{Ci/ml}$ )	Quantity (Ci)	Liquid Volume ( $\text{m}^3$ )
Soluble U	3.17E-08	***	0.0010	3.26E+04
Insoluble U**	7.50E-09	***	0.0020	
Tc-99	7.67E-07	***	0.0250	
Total Ci			0.0280	

Combined liquid effluent released to City of Richland sewer system.

- The average concentration of insoluble uranium for the 6-month period was less than 50 ppb.
- \*\*\* These constituents are analyzed chemically via Inductively Coupled Plasma/Mass Spectroscopy (ICP/MS) as opposed to radiation counting. Laboratory detection limits for uranium and Tc-99 are generally 1 ppb and 5 ppt, respectively

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