



**Westinghouse**

Westinghouse Electric Company LLC  
Nuclear Fuel  
Columbia Fuel Site  
5801 Bluff Road  
Hopkins, South Carolina 29061  
USA

Document Control Desk, Director  
Office of Nuclear Material Safety and Safeguards  
U. S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

Direct tel: 803-647-1000

Subject: SNM-1107/70-1151  
NRC Semi-annual Discharge Report  
January - June 2013

Our ref: LTR-RAC-13-44

September 11, 2013

Dear Sir:

The following report fulfills regulatory requirements as listed in 10 CFR 40.65 and 10 CFR 70.59 "Effluent Monitoring Requirements." For the six-month period January 1, 2013 through June 30, 2013, the following quantities of radionuclides were released to the unrestricted area by the Westinghouse Electric Company's Columbia, South Carolina Nuclear Fuel Plant:

A. Gaseous	253.0	uCi	Uranium (Analyzed as gross alpha)
B. Liquid Effluent	3,153.6	uCi	U-234
	111.3	uCi	U-235
	445.2	uCi	U-238
	3,174.1	uCi	Tc-99

Gaseous effluent results were obtained from point source gross alpha analysis of stack gas effluent, and the individual radionuclide activity composition (84.8% U-234, 3.3% U-235, and 11.9% U-238) is inferred from the calculated average enrichment. A detailed summary report by stack is provided as Attachment "A."

Liquid effluent values were obtained by analysis of composite proportional samples prior to discharge to the Congaree River and basing the activity on the calculated average enrichment. All liquid discharges are pumped through a single discharge line to the Congaree River. A detailed summary liquid discharge report is provided as Attachment "B."

Also, to meet the requested dosage information outlined in Regulatory Guide 4.16, section 6.1, the internal Westinghouse letter LTR-EHS-13-60 entitled "Assessment of Public Dose from Liquid and Gaseous Effluents for First Half 2013" has been provided as Attachment "C."

Sincerely,

Carl Snyder, Manager Nuclear Criticality Safety and Environmental Engineering

cc: USNRC, Region II  
245 Peachtree Center Ave, NE, Suite 1200  
Atlanta, Georgia 30303-1257

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NMSSO!

# SEMI ANNUAL AVERAGE STACK EFFLUENT REPORT

Westinghouse Electric Company Nuclear Fuel, Columbia 01/01/2013 to 06/30/2013

SAMPLING STATION	LOCATION DESCRIPTION	GRS ALPHA CONCTR uCi/ml	QUANTITY RELEASED uCi URANIUM	ERROR	LLD. uCi/ml	FLOW RATE METERS/SEC	DERIVED ISOTOPIC CONCENTRATION uCi/ml			DERIVED ISOTOPIC DISCHARGE uCi			sum 1st
							U234	U235	U238	U234	U235	U238	
1201	FURNACE EX LINE 1	8.00E-14	3.44	+/-	8.00E-14	2.78	6.80E-14	2.40E-15	9.60E-15	2.92	0.1	0.41	3.43
1202	FURNACE EX LINE 2	8.01E-14	3.44	+/-	8.00E-14	2.78	6.80E-14	2.40E-15	9.61E-15	2.92	0.1	0.41	3.43
1203	FURNACE EX LINE 3	8.00E-14	3.44	+/-	8.00E-14	2.78	6.80E-14	2.40E-15	9.60E-15	2.92	0.1	0.41	3.43
1204	FURNACE EX LINE 4	8.00E-14	3.44	+/-	8.00E-14	2.78	6.80E-14	2.40E-15	9.60E-15	2.92	0.1	0.41	3.43
1205	FURNACE EX LINE 5	8.00E-14	3.44	+/-	8.00E-14	2.78	6.80E-14	2.40E-15	9.60E-15	2.92	0.1	0.41	3.43
1206	NEW DECON ROOM	1.83E-13	4.64	+/-	8.00E-14	1.64	1.56E-13	5.50E-15	2.20E-14	3.95	0.14	0.56	4.65
1207	MET LAB EXHAUST	1.45E-13	1.25	+/-	8.00E-14	0.56	1.24E-13	4.36E-15	1.74E-14	1.06	0.04	0.15	1.25
1208	INCINERATOR EX	1.83E-13	5.33	+/-	8.00E-14	1.89	1.55E-13	5.48E-15	2.19E-14	4.53	0.16	0.64	5.33
1209	SUPPL INCIN EX	2.06E-13	3.01	+/-	8.00E-14	0.94	1.75E-13	6.18E-15	2.47E-14	2.56	0.09	0.36	3.01
1210	CONV 1-A EX	9.60E-14	6.19	+/-	8.00E-14	4.17	8.16E-14	2.88E-15	1.15E-14	5.26	0.19	0.74	6.19
1211	CONV 1-B EX	2.18E-13	0	+/-	8.00E-14	4.17	1.85E-13	6.54E-15	2.62E-14	0	0	0	0
1212	S1030 A	9.31E-13	103.64	+/-	8.00E-14	7.56	7.91E-13	2.79E-14	1.12E-13	88.09	3.11	12.44	103.64
1213	S1030 B	2.39E-13	1.33	+/-	8.00E-14	7.56	2.03E-13	7.17E-15	2.87E-14	1.13	0.04	0.16	1.33
1216	MAINT ENCL EX 4-B	5.29E-13	0	+/-	8.00E-14	3.89	4.50E-13	1.59E-14	6.35E-14	0	0	0	0
1217	CONV ENCL EX 4-C	1.14E-13	6.83	+/-	8.00E-14	3.89	9.66E-14	3.41E-15	1.36E-14	5.81	0.2	0.82	6.83
1218	CONV ENCL EX 4-D	2.29E-13	0	+/-	8.00E-14	3.89	1.95E-13	6.87E-15	2.75E-14	0	0	0	0
1219	CONV EMERG EX 4E	2.47E-13	0.71	+/-	8.00E-14	3.89	2.10E-13	7.41E-15	2.96E-14	0.6	0.02	0.08	0.7
1220	CHEM LAB FILT EX	8.62E-14	7.4	+/-	8.00E-14	5.56	7.32E-14	2.58E-15	1.03E-14	6.29	0.22	0.89	7.4
1221	DECON ROOM EX	9.56E-14	2.09	+/-	8.00E-14	1.42	8.13E-14	2.87E-15	1.15E-14	1.78	0.06	0.25	2.09
1222	CALC COMB GAS LN 1	2.27E-13	0.57	+/-	8.00E-14	0.16	1.93E-13	6.80E-15	2.72E-14	0.49	0.02	0.07	0.58
1223	CALC COMB GAS LN 2	1.41E-13	0.36	+/-	8.00E-14	0.16	1.19E-13	4.22E-15	1.69E-14	0.3	0.01	0.04	0.35
1224	CALC COMB GAS LN 3	1.57E-13	0.4	+/-	8.00E-14	0.16	1.33E-13	4.70E-15	1.88E-14	0.34	0.01	0.05	0.4
1225	CALC COMB GAS LN 4	1.24E-13	0.31	+/-	8.00E-14	0.16	1.05E-13	3.72E-15	1.49E-14	0.27	0.01	0.04	0.32
1226	CALC COMB GAS LN 5	1.89E-13	0.48	+/-	8.00E-14	0.16	1.60E-13	5.66E-15	2.26E-14	0.41	0.01	0.06	0.48
1227	CHEM LAB EX #2	2.76E-13	2.49	+/-	8.00E-14	0.58	2.35E-13	8.29E-15	3.31E-14	2.12	0.07	0.3	2.49
1228	CHEM LAB EX #3	1.24E-13	0.61	+/-	8.00E-14	0.64	1.06E-13	3.73E-15	1.49E-14	0.52	0.02	0.07	0.61
1229	HP LAB EX	8.45E-14	0.76	+/-	8.00E-14	0.58	7.18E-14	2.53E-15	1.01E-14	0.65	0.02	0.09	0.76
1230	DEV LAB EX #1	1.82E-13	2.66	+/-	8.00E-14	0.94	1.55E-13	5.46E-15	2.18E-14	2.26	0.08	0.32	2.66
1231	DEV LAB EX #2	2.69E-13	3.92	+/-	8.00E-14	0.94	2.28E-13	8.06E-15	3.22E-14	3.33	0.12	0.47	3.92
1232	PELLET COMBINED EX	8.80E-14	6.43	+/-	8.00E-14	4.72	7.48E-14	2.64E-15	1.06E-14	5.46	0.19	0.77	6.42
1233	SOLVENT EXT N EX	8.38E-14	3.7	+/-	8.00E-14	3.33	7.13E-14	2.52E-15	1.01E-14	3.15	0.11	0.44	3.7
1234	SOLVENT EXT S EX	2.44E-13	1.8	+/-	8.00E-14	3.33	2.07E-13	7.32E-15	2.93E-14	1.53	0.05	0.22	1.8
1236	MAP COMBINED	1.95E-13	0	+/-	8.00E-14	2.78	1.65E-13	5.84E-15	2.34E-14	0	0	0	0
1237	ABF HOOD TORIT EX	1.19E-13	2.61	+/-	8.00E-14	1.42	1.01E-13	3.58E-15	1.43E-14	2.22	0.08	0.31	2.61
1238	IFBA EXHAUST	8.08E-14	5.9	+/-	8.00E-14	4.72	6.87E-14	2.43E-15	9.70E-15	5.02	0.18	0.71	5.91
1239	MAINT WELD EX	2.07E-13	3.02	+/-	8.00E-14	0.94	1.76E-13	6.20E-15	2.48E-14	2.57	0.09	0.36	3.02
1240	AC-3	8.19E-14	4.78	+/-	8.00E-14	3.78	6.96E-14	2.46E-15	9.83E-15	4.07	0.14	0.57	4.78
1241	PELLET LINE 6	8.20E-14	3.52	+/-	8.00E-14	2.78	6.97E-14	2.46E-15	9.84E-15	3	0.11	0.42	3.53
1242	AC-5	8.87E-14	5.18	+/-	8.00E-14	3.78	7.54E-14	2.66E-15	1.06E-14	4.4	0.16	0.62	5.18
1243	AC-8	8.09E-14	4.73	+/-	8.00E-14	3.78	6.88E-14	2.43E-15	9.71E-15	4.02	0.14	0.57	4.73
1244	AMMON FUME SCR 1008A	9.31E-14	2.72	+/-	8.00E-14	1.89	7.91E-14	2.79E-15	1.12E-14	2.31	0.08	0.33	2.72
1245	AMMON FUME SCR 1008B	1.55E-13	0	+/-	8.00E-14	1.89	1.32E-13	4.65E-15	1.86E-14	0	0	0	0
1246	AC-4	8.55E-14	5.14	+/-	8.00E-14	3.89	7.27E-14	2.56E-15	1.03E-14	4.37	0.15	0.62	5.14
1247	HOT OIL RM EX	2.15E-13	12.91	+/-	8.00E-14	3.89	1.83E-13	6.44E-15	2.58E-14	10.98	0.39	1.55	12.92
1248	ERBIA FURNACE EX	8.25E-14	10.42	+/-	8.00E-14	8.17	7.02E-14	2.48E-15	9.90E-15	8.86	0.31	1.25	10.42
1249	ERBIA SCRUBBER EX	8.07E-14	5.41	+/-	8.00E-14	4.33	6.86E-14	2.42E-15	9.68E-15	4.6	0.16	0.65	5.41
1250	ERBIA CHANGE ROOM	8.63E-14	2.54	+/-	8.00E-14	1.9	7.34E-14	2.59E-15	1.04E-14	2.16	0.08	0.3	2.54

Total

ATTACHMENT A

Total derived isotopic release

215 7.56 30.3 252.97

6.65E-12 2.35E-13 9.39E-13

Jan-Jun 13

sum iso U uCi/mL

7.82E-12

**ATTACHMENT "B"**  
**LIQUID EFFLUENT DISCHARGES**  
**FIRST HALF 2013**

- A. Report Period: January 1, 2013 through June 30, 2013  
 B. Sample Location: Composite Sampler at Waste Treatment, prior to discharge to Congaree River  
 C. Total Liquid Flow: 7.156 E+07 liters  
 D. Sample Collection: Effluent Composite Sampler

Radioisotope	Concentration	LLD, uCi/mL	Quantity Released, uCi
	uCi/mL      Error		
U-234	44.1 E-09 +/- 3.48 E-09	6.00 E-10	3,153.6
U-235	1.56 E-09 +/- 0.80 E-09	6.00 E-10	111.3
U-238	6.22 E-09 +/- 1.33 E-09	6.00E-10	445.2
Tc-99	44.4 E-09 +/- 114 E-09	6.00E-10	3,174.1
Total			6,884.3

Note:

- Liquid effluent composites were analyzed by alpha spectroscopy, and significant quantities of U-236 were not detected using this method.
- Tc-99 is not reported for gaseous effluents, as significant quantities of Tc-99 were not detected during benchmark testing of gaseous emissions.