



Westinghouse Electric Company LLC
Nuclear Fuel
Columbia Fuel Site
P.O. Drawer R
Columbia, South Carolina 29250
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

Our ref: LTR-RAC-11-53

Subject: SNM-1107/70-1151
NRC Semi-annual Discharge Report
January – June 2011

August 29, 2011

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, 2011 through June 30, 2011, 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	172.2 uCi Uranium (Analyzed as gross alpha)
B. Liquid Effluent	2561.9 uCi U-234
	90.4 uCi U-235
	361.7 uCi U-238
	7279.6 uCi Tc-99

Gaseous effluent results were obtained from point source gross alpha analysis of stack gas effluent, and the individual radionuclide activity composition (85.0% U-234, 3.0% U-235, and 12.0% 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-11-79 entitled "Assessment of Public Dose from Liquid and Gaseous Effluents for First Half 2011" has been provided as Attachment "C."

Sincerely,

A handwritten signature in black ink, reading 'Marc Rosser'.

Marc A. Rosser, Manager
Environment, Health and Safety

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

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NM5501

SEMI ANNUAL AVERAGE STACK EFFLUENT REPORT
Westinghouse Electric Company Nuclear Fuel, Columbia 01/01/2011 to 06/30/2011

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		
							U234	U235	U238	U234	U235	U238
1201	FURNACE EX LINE 1	9.24E-14	3.99	+/-	8.00E-14	2.78	7.85E-14	2.77E-15	1.11E-14	3.39	0.12	0.48
1202	FURNACE EX LINE 2	8.69E-14	3.75	+/-	8.00E-14	2.78	7.38E-14	2.61E-15	1.04E-14	3.19	0.11	0.45
1203	FURNACE EX LINE 3	9.67E-14	4.18	+/-	8.00E-14	2.78	8.22E-14	2.90E-15	1.16E-14	3.55	0.13	0.5
1204	FURNACE EX LINE 4	9.09E-14	3.93	+/-	8.00E-14	2.78	7.72E-14	2.73E-15	1.09E-14	3.34	0.12	0.47
1205	FURNACE EX LINE 5	1.08E-13	4.64	+/-	8.00E-14	2.78	9.14E-14	3.23E-15	1.29E-14	3.95	0.14	0.56
1206	NEW DECON ROOM	1.09E-13	2.78	+/-	8.00E-14	1.64	9.26E-14	3.27E-15	1.31E-14	2.36	0.08	0.33
1207	MET LAB EXHAUST	2.55E-13	2.2	+/-	8.00E-14	0.56	2.17E-13	7.65E-15	3.06E-14	1.87	0.07	0.26
1208	INCINERATOR EX	4.52E-13	13.29	+/-	8.00E-14	1.89	3.85E-13	1.36E-14	5.43E-14	11.3	0.4	1.59
1209	SUPPL INCIN EX	1.28E-13	1.88	+/-	8.00E-14	0.94	1.09E-13	3.84E-15	1.54E-14	1.6	0.06	0.23
1210	CONV 1-A EX	1.20E-13	7.77	+/-	8.00E-14	4.17	1.02E-13	3.60E-15	1.44E-14	6.6	0.23	0.93
1211	CONV 1-B EX	3.17E-13	0	+/-	8.00E-14	4.17	2.70E-13	9.52E-15	3.81E-14	0	0	0
1212	S1030 A	1.18E-13	13.19	+/-	8.00E-14	7.56	1.00E-13	3.54E-15	1.41E-14	11.21	0.4	1.58
1213	S1030 B	3.09E-13	1.73	+/-	8.00E-14	7.56	2.63E-13	9.28E-15	3.71E-14	1.47	0.05	0.21
1216	MAINT ENCL EX 4-B	5.98E-13	0	+/-	8.00E-14	3.89	5.08E-13	1.79E-14	7.18E-14	0	0	0
1217	CONV ENCL EX 4-C	1.10E-13	6.66	+/-	8.00E-14	3.89	9.36E-14	3.30E-15	1.32E-14	5.66	0.2	0.8
1218	CONV ENCL EX 4-D	2.95E-13	0	+/-	8.00E-14	3.89	2.50E-13	8.84E-15	3.54E-14	0	0	0
1219	CONV EMERG EX 4E	3.45E-13	0.99	+/-	8.00E-14	3.89	2.93E-13	1.03E-14	4.14E-14	0.84	0.03	0.12
1220	CHEM LAB FILT EX	8.88E-14	7.68	+/-	8.00E-14	5.56	7.55E-14	2.67E-15	1.07E-14	6.53	0.23	0.92
1221	DECON ROOM EX	9.98E-14	2.2	+/-	8.00E-14	1.42	8.48E-14	2.99E-15	1.20E-14	1.87	0.07	0.26
1222	CALC COMB GAS LN 1	2.08E-13	0.53	+/-	8.00E-14	0.16	1.77E-13	6.24E-15	2.50E-14	0.45	0.02	0.06
1223	CALC COMB GAS LN 2	1.15E-13	0.29	+/-	8.00E-14	0.16	9.75E-14	3.44E-15	1.38E-14	0.25	0.01	0.04
1224	CALC COMB GAS LN 3	1.46E-13	0.37	+/-	8.00E-14	0.16	1.24E-13	4.38E-15	1.75E-14	0.32	0.01	0.04
1225	CALC COMB GAS LN 4	1.25E-13	0.32	+/-	8.00E-14	0.16	1.06E-13	3.75E-15	1.50E-14	0.27	0.01	0.04
1226	CALC COMB GAS LN 5	4.49E-13	1.14	+/-	8.00E-14	0.16	3.81E-13	1.35E-14	5.38E-14	0.97	0.03	0.14
1227	CHEM LAB EX #2	2.02E-13	1.83	+/-	8.00E-14	0.58	1.72E-13	6.06E-15	2.42E-14	1.56	0.05	0.22
1228	CHEM LAB EX #3	8.38E-14	0.42	+/-	8.00E-14	0.64	7.12E-14	2.51E-15	1.01E-14	0.35	0.01	0.05
1229	HP LAB EX	8.98E-14	0.81	+/-	8.00E-14	0.58	7.63E-14	2.69E-15	1.08E-14	0.69	0.02	0.1
1230	DEV LAB EX #1	2.32E-13	3.41	+/-	8.00E-14	0.94	1.97E-13	6.96E-15	2.78E-14	2.9	0.1	0.41
1231	DEV LAB EX #2	2.82E-13	4.15	+/-	8.00E-14	0.94	2.40E-13	8.47E-15	3.39E-14	3.52	0.12	0.5
1232	PELLET COMBINED EX	8.37E-14	6.15	+/-	8.00E-14	4.72	7.12E-14	2.51E-15	1.00E-14	5.23	0.18	0.74
1233	SOLVENT EXT N EX	8.68E-14	3.86	+/-	8.00E-14	3.33	7.38E-14	2.60E-15	1.04E-14	3.28	0.12	0.46
1234	SOLVENT EXT S EX	2.95E-13	2.19	+/-	8.00E-14	3.33	2.51E-13	8.85E-15	3.54E-14	1.86	0.07	0.26
1236	MAP COMBINED	1.95E-13	0	+/-	8.00E-14	2.78	1.66E-13	5.86E-15	2.34E-14	0	0	0
1237	ABF HOOD TORIT EX	1.05E-13	2.31	+/-	8.00E-14	1.42	8.91E-14	3.14E-15	1.26E-14	1.96	0.07	0.28
1238	IFBA EXHAUST	8.01E-14	5.89	+/-	8.00E-14	4.72	6.81E-14	2.40E-15	9.62E-15	5	0.18	0.71
1239	MAINT WELD EX	2.39E-13	3.51	+/-	8.00E-14	0.94	2.03E-13	7.18E-15	2.87E-14	2.99	0.11	0.42
1240	AC-3	8.22E-14	4.83	+/-	8.00E-14	3.78	6.99E-14	2.47E-15	9.87E-15	4.11	0.14	0.58
1241	PELLET LINE 6	8.97E-14	3.87	+/-	8.00E-14	2.78	7.62E-14	2.69E-15	1.08E-14	3.29	0.12	0.46
1242	AC-5	8.04E-14	4.73	+/-	8.00E-14	3.78	6.84E-14	2.41E-15	9.65E-15	4.02	0.14	0.57
1243	AC-8	8.39E-14	4.93	+/-	8.00E-14	3.78	7.13E-14	2.52E-15	1.01E-14	4.19	0.15	0.59
1244	AMMON FUME SCR 1008A	1.09E-13	3.21	+/-	8.00E-14	1.89	9.30E-14	3.28E-15	1.31E-14	2.73	0.1	0.39
1245	AMMON FUME SCR 1008B	1.87E-13	0	+/-	8.00E-14	1.89	1.59E-13	5.60E-15	2.24E-14	0	0	0
1246	AC-4	1.10E-13	6.67	+/-	8.00E-14	3.89	9.37E-14	3.31E-15	1.32E-14	5.67	0.2	0.8
1247	HOT OIL RM EX	1.29E-13	7.8	+/-	8.00E-14	3.89	1.10E-13	3.87E-15	1.55E-14	6.63	0.23	0.94
1248	ERBIA FURNACE EX	8.00E-14	10.16	+/-	8.00E-14	8.17	6.80E-14	2.40E-15	9.60E-15	8.64	0.3	1.22
1249	ERBIA SCRUBBER EX	8.00E-14	5.39	+/-	8.00E-14	4.33	6.80E-14	2.40E-15	9.60E-15	4.58	0.16	0.65
1250	ERBIA CHANGE ROOM	8.60E-14	2.54	+/-	8.00E-14	1.9	7.31E-14	2.53E-15	1.03E-14	2.16	0.08	0.31

ATTACHMENT A

Total derived isotopic release

146 5.17 20.7 172.19

Total

ATTACHMENT "B"
LIQUID EFFLUENT DISCHARGES
FIRST HALF 2011

- A. Report Period: January 1, 2011 through June 30, 2011
 B. Sample Location: Composite Sampler at Waste Treatment, prior to discharge to Congaree River
 C. Total Liquid Flow: 6.211 E+07 liters
 D. Sample Collection: Effluent Composite Sampler

Radioisotope	Concentration	LLD, uCi/mL	Quantity Released, uCi
	uCi/mL Error		
U-234	41.2 E-09+/-3.55 E-09	6.00 E-10	2561.9
U-235	1.46 E-09+/-0.81 E-09	6.00 E-10	90.4
U-238	5.82 E-09+/-1.36 E-09	6.00E-10	361.7
Tc-99	117 E-09+/-128 E-09	6.00E-10	7279.6
Total			10293.6

Note:

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



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Cc: Marc Rosser, Gerry Couture, Elle Binns

Date August 25, 2011

Subject: Assessment of Public Dose from Liquid and Gaseous Effluents for First Half 2011

Effluents released from plant operations are monitored to determine the quantities of radio nuclides discharged into the environment. In order to assess the radiological impacts, the accumulated activities are normally summarized on an annual basis and input into dose models developed by the NRC/EPA to estimate commitment rates from the following pathways:

- Air Effluents by Direct Inhalation
- Liquid Effluents by Ingestion of Potable Water
- Liquid Effluents by Ingestion of Fish
- Liquid Effluents by Irradiation from Shoreline Deposits

We are now providing an estimate of public dose both semi-annually and annually. Since all of our current computer codes and formulas are based on an annual assessment, we determined it would be more appropriate to use a ratio of activities to dose from 2010 applied to the measured release activities in 2011 to calculate the public dose for the first half of 2011. The annual dose calculation will be determined and reported in the same manner as the entire year value for 2010. There were no significant changes in our process, compounds, or release points between 2010 and the first half of 2011.

The total activities measured and /or estimated for calendar year 2010 were:

- 411.2 μ Ci of Uranium released as gaseous effluent resulted in a public dose of
Whole Body 0.160 mrem/yr Bone 5.65E-03 mrem/yr , Lung 1.49 mrem/yr
- 8.1 mCi of Uranium and 19.2 mCi of Technetium released in liquid effluent resulted in a public dose of
Whole Body 7.95E-05 mrem/yr Bone 3.03E-03 mrem/yr , Lung 0 mrem/yr

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The activities measured for the first half of calendar year 2011 were:

172.2 μ Ci of Uranium released as gaseous effluent
3.014 mCi of Uranium released in liquid effluent
7.28 mCi of Technetium released in liquid effluent

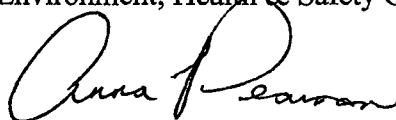
The dose values are summarized in the table below resulting in a maximum whole body dose of 0.067 mRem and a lung dose of 0.624 mRem for the first half of 2011. These doses are well below both 12.5 mrem (1/2 of the 25 mrem annual dose limit) as well as the 5 mrem ALARA limit (1/2 of 10 mrem annual ALARA limit).

Results			
Pathways	Total Body (mRem/6 months)	Organ Dose (mRem/6 months)	Organ Dose (mRem/6 months)
		Bone	Lung
Air Effluents			
Direct inhalation*	0.067	2.37E-03	0.624
Liquid Effluents			
Potable Water	7.49E-05	1.09E-03	
Aquatic Food (Fish)	4.64E-06	6.27E-05	
Shoreline Deposit	2.32E-09		
Total (mRem/6 months)	0.067	3.52E-03	0.624

* Assumes 80 % residence time



Dan Colwell
Manager, RSO
Environment, Health & Safety Operations



Technical Review by Anna Pearson
Assistant RSO, Principle Engineer
Environment, Health & Safety Operations