

Enclosure 7 to
LTR-RAC-20-94
Date: December 18, 2020

Enclosure 7

Response to Request for Additional Information
Facility Wide Criteria and TAP Model

Table 1
Permitted Emission Sources - Stack Parameters

Westinghouse Electric Company LLC
Columbia Fuel Fabrication Facility
Hopkins, South Carolina

Permit Unit ID	Source Description	Stack ID No.	UTM Easting	UTM Northing	Stack Height (ft)	Temperature (°F)	Stack Velocity (fps)	Modeled Velocity (fps)	Stack Diameter (ft)	Horizontal / Vertical Discharge	Rain Cap (YES/NO)
01	2.51 MMBtu/hr Industrial Incinerator	6A	507413	3749074	58	170	61	61	0.83	Vertical	NO
02	24.5 MMBtu/hr Cleaver Brooks Boiler	S22	507420.3	3748990	25	322	27.38	27.38	2.0	Vertical	NO
03	24.5 MMBtu/hr Cleaver Brooks Boiler	S23	507429.1	3748987	25	322	27.38	27.38	2.0	Vertical	NO
09	Calciner #1 - 0.57 MMBtu/hr	C1	507478	3749056	38.3	400	6.4	0.003281	1.0	Vertical	YES
10	Calciner #2 - 0.57 MMBtu/hr	C2	507485	3749054	38.3	400	6.4	0.003281	1.0	Vertical	YES
11	Calciner #3 - 0.57 MMBtu/hr	C3	507490	3749053	38.3	400	6.4	0.003281	1.0	Vertical	YES
12	Calciner #4 - 0.57 MMBtu/hr	C4	507505	3749048	38.3	400	6.4	0.003281	1.0	Vertical	YES
13	Calciner #5 - 0.57 MMBtu/hr	C5	507456	3749062	38.3	400	6.4	0.003281	1.0	Vertical	YES
14	S-1030 Process Scrubber	S-1030	507480	3749056	64	86.7	25.45	25.45	3.5	Vertical	NO
15,16	S-2A/2B Process Scrubber	S-2A/2B	507455	3749061	48	122	25.3	0.003281	2.5	Horizontal	NO
17	S-1008 Process Scrubber	S-1008	507453	3749049	51	107	31.14	0.003281	1.5	Horizontal	NO
18	S-1190 Process Scrubber	S-1190	507410	3748977	46	57.3	32.90	32.90	2.0	Vertical	NO
19	S-4025 Plating Process Scrubber	S-4025	507490	3749211	46	62.0	58.34	58.34	2.33	Vertical	NO
20	S-958 Process Scrubber	S-958	507397	3749099	55.5	119	51.05	51.05	2.0	Vertical	NO

- NOTES:**
- 1) Incinerator - temperature, velocity, and diameter taken from DHEC BAQ Modeling Summary Sheet, June 19, 2018. UTM coordinates and height provided by Westinghouse.
 - 2) Two New Boilers - stack parameters taken from BEEST modeling file created by AECOM and submitted with construction permit application for two new boilers.
 - 3) Calciners - stack parameters except height taken from DHEC BAQ Modeling Summary. Height taken from Westinghouse Plant Ventilation System document.
 - 4) All Scrubber Stacks - velocity and temperature data taken from CleanAir Engineering March 2019 stack test report. Heights taken from data provided by Westinghouse Plant Ventilation System or confirmed by Westinghouse
 - 5) All Stacks - discharge direction and rain cap information provided by Westinghouse.
 - 6) Only stacks highlighted on table are required to be modeled based on current emission estimates.
 - 7) S-958 Scrubber exhaust parameters after modifications to optimize atmospheric dispersion.

Table 2
Modeled Pollutant Emissions Rates

Westinghouse Electric Company LLC
Columbia Fuel Fabrication Facility
Hopkins, South Carolina

Equipment Description	Stack ID No.	PM ₁₀ /PM _{2.5} (lbs/hr)	SO ₂ (lbs/hr)	CO (lbs/hr)	NO ₂ (lbs/hr)	Lead (lbs/hr)	Antimony (lbs/hr)	Arsenic (lbs/hr)	7440-41-7 Beryllium (lbs/hr)	7440-43-9 Cadmium (lbs/hr)	Chromium (lbs/hr)	Cobalt (lbs/hr)	Manganese (lbs/hr)	7440-02-0 Nickel (lbs/hr)	7723-14-0 Phosphorus (lbs/hr)	Selenium (lbs/hr)	Mercury (lbs/hr)	Dioxins/Furans (lbs/hr)	127-18-4 Perchloroethylene (lbs/hr)	7664-39-3 HF (lbs/hr)	7697-37-2 HNO ₃ (lbs/hr)	7647-01-0 HCl (lbs/hr)	7664-93-9 H ₂ SO ₄ (lbs/hr)
2.51 MMBtu/hr Industrial Incinerator	6A	0.88	0.63	2.50	0.75	6.53E-05		1.06E-06		6.78E-06	7.50E-06			1.29E-05			5.50E-04	1.56E-08	0.85			5.28E-02	
24.5 MMBtu/hr Cleaver Brooks Boiler	S22	0.555	0.034	0.458	2.683	2.12E-05			-	-				-	-					-	-		-
24.5 MMBtu/hr Cleaver Brooks Boiler	S23	0.555	0.034	0.458	2.683	2.12E-05			-	-				-	-					-	-		-
Calciner #1 0.57 MMBtu/hr	C1	4.25E-03	3.35E-04	0.05	0.06	2.79E-07																	
Calciner #2 0.57 MMBtu/hr	C2	4.25E-03	3.35E-04	0.05	0.06	2.79E-07																	
Calciner #3 0.57 MMBtu/hr	C3	4.25E-03	3.35E-04	0.05	0.06	2.79E-07																	
Calciner #4 0.57 MMBtu/hr	C4	4.25E-03	3.35E-04	0.05	0.06	2.79E-07																	
Calciner #5 0.57 MMBtu/hr	C5	4.25E-03	3.35E-04	0.05	0.06	2.79E-07																	
S-1030 Process Scrubber	S-1030				-				-	-				-	-					0.010	0.050		-
S-2A/2B Process Scrubber	S-2A/2B				-				-	-				-	-					0.003	0.007		-
S-1008 Process Scrubber	S-1008				-				-	-				-	-					0.0015	0.0045		-
S-1190 Process Scrubber	S-1190				-				-	-				-	-					0.0045	0.011		-
S-4025 Plating Process Scrubber	S-4025				-		1.58E-05	1.65E-05	3.62E-06	4.67E-04	5.45E-05	1.49E-05	9.50E-05	7.15E-04	2.66E-03	3.13E-04				0.0465	0.327	3.75E-02	0.1425
S-958 Process Scrubber	S-958				3.52				-	-				-	-					0.004	0.187		-

Table 3
Comparison of Air Dispersion Modeling Results with
South Carolina Standard No. 2

Westinghouse Electric Company LLC
Columbia Fuel Fabrication Facility
Hopkins, South Carolina

Pollutant	Averaging Period	Modeled Concentration (µg/m3)	Background Concentration (µg/m3)	Total Concentration (µg/m3)	Allowable Concentration (µg/m3)	Facility in Compliance? (YES/NO)
PM ₁₀	24 Hour	3.11	42	45.1	150	YES
PM _{2.5}	24 Hour	2.13	16.1	18.2	35	YES
	Annual	0.52	8.1	8.6	12	YES
SO ₂	1 Hour	11.76	9.7	21.5	196	YES
	3 Hour	7.17	8.1	15.3	1,300	YES
NO ₂	1 Hour	99.62	69.6	169.2	188	YES
	Annual	2.60	7.7	10.3	100	YES
CO	1 Hour	60.3	1,259.5	1,319.8	40,000	YES
	8 Hour	21.7	950.4	972.1	10,000	YES
Lead	3 Month	0.00008	0.00	0.00008	0.15	YES

Background concentration data provided on DHEC BAQ website from the following monitoring stations:

- PM10 Cayce City Hall (2013-2015 data)
- PM2.5 Parklane (2015-2017 data)
- SO2 Parklane (2015-2017 data)
- NO2 Sandhill (2015-2017 data)
- CO Parklane (2015-2017 data)
- Lead Parklane (2014-2016 data)

Table 4
Comparison of Air Dispersion Modeling Results with
South Carolina Standard No. 8

Westinghouse Electric Company LLC
Columbia Fuel Fabrication Facility
Hopkins, South Carolina

Pollutant	Averaging Period	Modeled Concentration (µg/m3)	Allowable Concentration (µg/m3)	Facility in Compliance? (YES/NO)
Antimony	24 Hour	0.00005	2.50	YES
Arsenic	24 Hour	0.00006	1.00	YES
Beryllium	24 Hour	0.00001	0.01	YES
Cadmium	24 Hour	0.00155	0.25	YES
Chromium	24 Hour	0.00019	2.50	YES
Cobalt	24 Hour	0.00005	0.25	YES
Manganese	24 Hour	0.00031	25.00	YES
Nickel	24 Hour	0.00238	0.50	YES
Phosphorus	24 Hour	0.00879	0.50	YES
Selenium	24 Hour	0.00103	1.00	YES
HG	24 Hour	0.00127	0.25	YES
Dioxins/Furans	24 Hour	0.00000	0.00	YES
Perchloroethylene	24 Hour	1.965	3350.00	YES
HF	24 Hour	0.184	2.05	YES
HNO3	24 Hour	1.33	125.00	YES
HCl	24 Hour	0.1934	175.00	YES
H ₂ SO ₄	24 Hour	0.471	10.00	YES