4.2 Facility Monitoring Data

Throughout this comprehensive test program, detailed process information was collected continuously by the facility's process control computers and DAS. **Tables 4-1 and 4-2** provide summaries of process data for both test conditions conducted in the March to May 2010 time periods, including maximum and average values for key process variables recorded during all sampling run periods. **Table 4-3** provides similar information for the Condition 2 retest conducted in September 2010. Detailed one-minute process data summaries for all tests are included in **Appendix A**. Detailed information on the CMS performance evaluation conducted on all process instrumentation prior to the CPT (in accordance with Section 6.0 of the approved CPT Plan) is included in **Appendix B**.

Table 4-1 Process Operating Data Summary – Condition 1

Process Operating Parameters	Units	C1-R1		C1-R2		C1-R3		WTI CPT 2010 CONDITION 1 OVERALL AVERAGES	
	Date	31-Mar-10		1-Apr-10		1-Apr-10			
	Start	12:42		08:30		12:03			
	Stop	18:09		11:33		15:06			
		AVG	MAX	AVG	MAX	AVG	MAX	AVG	MAX
Kiln and SCC Parameters --									
Pumpable Waste Feed Rate	lb/hr	28,506	29,386	29,228	30,053	29,850	30,340	29,195	29,926
Total Waste Feed Rate	lb/hr	32,720	34,498	33,708	35,343	34,279	35,365	33,569	35,069
Kiln Temperature	°F	1,698	1,776	1,735	1,853	1,722	1,843	1,718	1,824
SCC Temperature	°F	1,754	1,843	1,748	1,820	1,740	1,841	1,747	1,835
Process Gas Flowrate	wet scfm	66,872	67,564	68,733	69,462	66,583	67,800	67,396	68,275
Ash Feed Rate	lb/hr	2,348	43,128	3,149	44,109	3,077	42,911	2,858	43,383
Chlorine Feed Rate	lb/hr	282	2,887	805	3,946	740	781	609	2,538
SVM Feed Rate	lb/hr	1.26	22.72	0.85	3.21	1.00	3.26	1.04	9.73
LVM Feed Rate	lb/hr	1.61	3.11	1.58	3.31	1.96	3.49	1.72	3.30
Pumpable LVM Feed Rate	lb/hr	1.55	1.70	1.52	1.96	1.89	2.16	1.65	1.94
Mercury Feed Rate	lb/hr	0.031	0.040	0.030	0.045	0.037	0.048	0.033	0.044
FGCS Parameters --									
ESP Inlet Temperature	°F	450	453	450	453	451	454	450	453
Carbon Flow - Location 2	lb/hr	Ex 4. Confidential Business Information							
Carbon Flow - Location 1	lb/hr	[redacted]							
ECIS Pressure - Location 2	psig	3.1	5.0	2.9	2.9	2.9	2.9	3.0	3.6
ECIS Pressure - Location 1	psig	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
Ring Jet Pressure Drop	in. w.c.	37.7	38.7	32.2	34.6	31.4	34.2	33.8	35.8
Scrubber Liquid Flow	gpm	2,001	2,123	2,033	2,163	2,041	2,171	2,025	2,152
Ring Jet Recirculation Flow	gpm	611	622	531	600	520	589	554	604
Ring Jet Blowdown	gpm	29.5	31.8	40.4	111.3	33.3	106.9	34.4	83.3
Ring Jet Sump Level	ft	2.0	2.0	2.0	2.1	2.2	2.6	2.1	2.2
Scrubber Liquid pH	pH units	8.0	8.5	8.1	10.9	8.1	11.5	8.1	10.3
Stack Gas Parameters --									
Oxygen Concentration	ppm(dry)	15.5	17.2	15.1	15.8	15.1	16.3	15.2	16.4
THC Concentration @ 7% O_2	ppm(dry)	2.60	9.90	0.08	0.21	0.03	0.21	0.90	3.44

Table 4-2 Process Operating Data Summary – Condition 2

Process Operating Parameters	Units	C2-R1		C2-R2		C2-R3		WTI CPT 2010 CONDITION 2 OVERALL AVERAGES	
	Date	11-May-10		11-May-10		11-May-10	12-May-10		
	Start	09:46		13:16		16:05	09:00		
	Stop	13:16		17:17		18:12	12:05		
		AVG	MAX	AVG	MAX	AVG	MAX	AVG	MAX
Kiln and SCC Parameters --									
Pumpable Waste Feed Rate	lb/hr	11,307	12,133	10,664	11,457	10,423	11,444	10,798	11,678
Total Waste Feed Rate	lb/hr	28,512	31,362	27,102	31,903	25,999	29,799	27,204	31,021
Kiln Temperature	°F	1,819	1,917	1,803	1,906	1,829	1,978	1,817	1,934
SCC Temperature	°F	1,852	1,977	1,825	1,934	1,835	1,991	1,837	1,967
Process Gas Flowrate	wet scfm	67,876	69,292	66,331	66,904	67,279	69,540	67,162	68,579
Ash Feed Rate	lb/hr	11,017	94,403	9,678	92,860	10,304	132,083	10,333	106,449
Chlorine Feed Rate	lb/hr	2,071	2,251	2,028	2,484	1,996	2,328	2,032	2,354
SVM Feed Rate	lb/hr	0.65	4.30	0.56	2.50	1.28	9.70	0.83	5.50
LVM Feed Rate	lb/hr	1.25	4.76	1.12	4.57	2.61	32.52	1.66	13.95
Pumpable LVM Feed Rate	lb/hr	0.91	1.28	0.80	1.22	0.77	1.16	0.83	1.22
Mercury Feed Rate	lb/hr	0.019	0.043	0.017	0.039	0.021	0.089	0.019	0.057
FGCS Parameters --									
ESP Inlet Temperature	°F	410	416	410	418	413	430	411	421
Carbon Flow - Location 2	lb/hr	Ex 4. Confidential Business Information							
Carbon Flow - Location 1	lb/hr								
ECIS Pressure - Location 2	psig	2.9	3.0	3.0	3.0	2.9	3.0	2.9	3.0
ECIS Pressure - Location 1	psig	3.1	3.1	3.1	3.1	2.9	3.1	3.0	3.1
Ring Jet Pressure Drop	in. w.c.	28.7	31.4	28.1	30.7	27.8	32.4	28.2	31.5
Scrubber Liquid Flow	gpm	1,250	1,300	1,239	1,298	1,290	1,362	1,260	1,320
Ring Jet Recirculation Flow	gpm	448	457	448	456	442	457	446	457
Ring Jet Blowdown	gpm	19.7	21.7	19.4	21.2	18.0	20.2	19.0	21.0
Ring Jet Sump Level	ft	1.7	1.8	1.7	1.8	1.7	1.8	1.7	1.8
Scrubber Liquid pH	pH units	7.8	11.1	7.7	11.3	7.3	11.0	7.6	11.1
Stack Gas Parameters --									
Oxygen Concentration	ppm(dry)	14.4	16.3	14.8	16.6	15.0	17.8	14.7	16.9
THC Concentration @ 7% O_2	ppm(dry)	2.76	5.81	1.26	4.73	0.25	1.33	1.42	3.96

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Table 4-3 Process Operating Data Summary – Condition 2 Retest

Process Operating Parameters	Units	C2RT-R1		C2RT-R2		C2RT-R3		WTI CPT 2010 CONDITION 2RT OVERALL AVERAGES	
	Date	15-Sep-10		15-Sep-10		15-Sep-10	16-Sep-10		
	Start	08:14		12:07		14:48	08:01		
	Stop	11:57		17:37		16:54	11:10		
		AVG	MAX	AVG	MAX	AVG	MAX	AVG	MAX
Kiln and SCC Parameters --									
Pumpable Waste Feed Rate	lb/hr	13,167	13,900	13,196	13,842	13,768	14,775	13,377	14,172
Total Waste Feed Rate	lb/hr	28,004	32,786	28,238	32,620	28,877	35,893	28,373	33,766
Kiln Temperature	°F	1,889	1,975	1,812	1,888	1,791	1,888	1,831	1,917
SCC Temperature	°F	2,080	2,155	1,980	2,092	1,950	2,040	2,003	2,096
Process Gas Flowrate	wet scfm	61,316	63,353	62,799	66,814	63,087	66,814	62,401	65,660
Ash Feed Rate	lb/hr	11,242	104,658	10,918	105,959	10,799	126,026	10,986	112,214
Chlorine Feed Rate	lb/hr	2,124	2,211	2,124	2,331	2,117	2,221	2,122	2,254
SVM Feed Rate	lb/hr	45.5	686.5	20.4	472.9	12.9	438.7	26.3	532.7
LVM Feed Rate	lb/hr	46.4	687.3	28.9	496.2	17.3	486.2	30.9	556.6
Pumpable LVM Feed Rate	lb/hr	1.53	1.80	1.52	2.15	1.51	2.15	1.52	2.03
Mercury Feed Rate	lb/hr	0.040	0.215	0.041	0.214	0.039	0.252	0.040	0.227
FGCS Parameters --									
ESP Inlet Temperature	°F	410	413	410	432	410	421	410	422
Carbon Flow - Location 2	lb/hr	Ex 4. Confidential Business Information							
Carbon Flow - Location 1	lb/hr								
ECIS Pressure - Location 2	psig	3.1	3.8	3.3	4.3	3.3	5.1	3.2	4.4
ECIS Pressure - Location 1	psig	3.3	4.2	2.9	3.3	3.2	3.8	3.1	3.8
Ring Jet Pressure Drop	in. w.c.	27.7	28.6	28.1	29.4	27.7	30.8	27.8	29.6
Scrubber Liquid Flow	gpm	1,306	1,334	1,325	1,455	1,311	1,454	1,314	1,414
Ring Jet Recirculation Flow	gpm	450	464	450	465	438	465	446	465
Ring Jet Blowdown	gpm	20.4	22.5	19.9	21.0	19.3	21.0	19.9	21.5
Ring Jet Sump Level	ft	1.6	1.8	1.7	1.8	1.7	1.8	1.7	1.8
Scrubber Liquid pH	pH units	7.7	10.3	7.4	11.2	7.6	10.3	7.6	10.6
Stack Gas Parameters --									
Oxygen Concentration	ppm(dry)	13.5	15.4	13.5	14.6	13.6	14.6	13.5	14.9
THC Concentration @ 7% O_2	ppm(dry)	0.01	0.03	0.51	2.15	0.07	0.32	0.20	0.83

4.3 Constituent Spiking

In order to demonstrate the required performance criteria for this program, it was necessary to fortify (spike) the incinerator feeds with organic and inorganic constituents. This section provides an overview of the selected constituents and relevant parameters pertaining to waste feed fortification. Demonstration of system destruction and removal efficiency (DRE) was accomplished by spiking one organic chemical at a known rate and determining the DRE during Test Condition 1. The principal organic hazardous constituent (POHC) used for the program was monochlorobenzene (MCB). The MCB material was provided by Triad Chemicals, LLC of Greensboro, NC and injected by Triad into