EVALUATION OF MERCURY EMISSIONS FROM COAL-FIRED FACILITIES WITH SCR AND FGD SYSTEMS

Topical Report No. 10 (Plant 4)

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ABSTRACT

CONSOL Energy Inc., Research & Development (CONSOL), with support from the U.S. Department of Energy, National Energy Technology Laboratory (DOE) and the Electric Power Research Institute (EPRI), is evaluating the effects of selective catalytic reduction (SCR) on mercury (Hg) capture in coal-fired plants equipped with an electrostatic precipitator (ESP) - wet flue gas desulfurization (FGD) combination or a spray dyer absorber – fabric filter (SDA-FF) combination. In this program CONSOL is determining mercury speciation and removal at 10 coal-fired facilities. The principal purpose of this work is to develop a better understanding of the potential mercury removal "co-benefits" achieved by NOx, and SO_2 control technologies. It is expected that this data will provide the basis for fundamental scientific insights into the nature of mercury chemistry in flue gas, the catalytic effect of SCR systems on mercury speciation and the efficacy of different FGD technologies for mercury capture. Ultimately, this insight could help to design and operate SCR and FGD systems to maximize mercury removal.

The objectives are 1) to evaluate the effect of SCR on mercury capture in the ESP-FGD and SDA-FF combinations at coal-fired power plants, 2) evaluate the effect of SCR catalyst degradation on mercury capture; 3) evaluate the effect of low load operation on mercury capture in an SCR-FGD system, and 4) collect data that could provide the basis for fundamental scientific insights into the nature of mercury chemistry in flue gas, the catalytic effect of SCR systems on mercury speciation and the efficacy of different FGD technologies for mercury capture.

This document, the tenth in a series of topical reports, describes the results and analysis of mercury sampling performed on two 468 MW units burning bituminous coal containing 1.3–1.7% sulfur. Unit 2 is equipped with an SCR, ESP, and wet FGD to control NO_x, particulate, and SO_2 emissions, respectively. Unit 1 is similar to Unit 2, except that Unit 1 has no SCR for NOx control. Four sampling tests were performed on both units in January 2005; flue gas mercury speciation and concentrations were determined at the economizer outlet, air heater outlet (ESP inlet), ESP outlet (FGD inlet), and at the stack (FGD outlet) using the Ontario Hydro method. Process samples for material balances were collected with the flue gas measurements.

The results show that the SCR increased the oxidation of the mercury at the air heater outlet. At the exit of the air heater, a greater percentage of the mercury was in the oxidized and particulate forms on the unit equipped with an SCR compared to the unit without an SCR (97.4% vs 91%). This higher level of oxidation resulted in higher mercury removals in the scrubber. Total mercury removal averaged 97% on the unit with the SCR, and 87% on the unit without the SCR.

The average mercury mass balance closure was 84% on Unit 1 and 103% on Unit 2.

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LIST OF ABBREVIATIONS

acfm	-	actual cubic feet per minute (wet)
am	-	morning
Btu	-	heating value in British Thermal Units
Ca/S	-	calcium-sulfur ratio
cfm	-	cubic feet per minute
CO_2	-	carbon dioxide
CONSOL R&D	-	CONSOL Energy Inc., Research and Development
CVAA	-	cold vapor atomic absorption
DI	-	deionized water
DOE	-	U.S. Department of Energy
dscf	-	dry standard cubic feet
dscfm	-	dry standard cubic feet per minute
EPA	-	U.S. Environmental Protection Agency
EPRI	-	Electric Power Research Institute
ESP	-	electrostatic precipitator
FGD	-	flue gas desulphurization
ft	-	feet
ft^2	-	square feet
ft^3	-	cubic feet
gm	-	grams
gpm	-	gallons per minute
gr	-	grains
HCl	-	hydrochloric acid
Hg	-	mercury
Hg^{part}	-	mercury in particulate form
Hg^{total}	-	total mercury in particulate, oxidized, and elemental forms
Hg^{++}	-	mercury in oxidized form
Hg^{o}	-	mercury in elemental form
HNO_3	-	nitric acid
H_2O	-	water
H_2O_2	-	hydrogen peroxide
hr	-	hour
ICP-AES	-	inductively coupled plasma-atomic emission spectrometer
in	-	inch
KCl	-	potassium chloride
$KMnO_4$	-	potassium permanganate
L	-	liter
lb	-	pound
m	-	meter
m^3	-	cubic meter
ME	-	mist eliminator
mg	-	milligram, 10^{-3} gram

LIST OF ABBREVIATIONS (continued)

min	-	minute
mL	-	milliliter
M	-	molar, mol/L
MM	-	million
mol	-	mole
ng	-	nanogram, 10^{-9} gram
N_2	-	molecular nitrogen
NIST	-	National Institute of Standards and Technology
NO	-	nitric oxide
NO_2	-	nitrogen dioxide
O_2	-	molecular oxygen
O_3	-	ozone
pm	-	afternoon
PM	-	particulate matter
ppb	-	parts per billion (10^9)
ppm	-	parts per million
ppmv	-	parts per million by volume
PRSD	-	percent relative standard deviation
QA	-	quality assurance
QC	-	quality control
rpm	-	revolutions per minute
scf	-	standard cubic feet (68EF and 29.92"Hg)
scfm	-	standard cubic feet per minute
SRM	-	Standard Reference Material
temp	-	temperature
tph	-	tons per hour
TBtu	-	trillion (10^{12}) British thermal unit
wt	-	weight
v	-	volts
vs	-	versus
° F	-	temperature in degrees Fahrenheit
<	-	less than
>	-	more than
µg	-	microgram, 10^{-6} gram

INTRODUCTION

CONSOL Energy Inc. Research and Development (CONSOL R&D) is determining mercury speciation and removal at 10 coal-fired facilities with SCR/FGD combinations (Table 1). CONSOL R&D conducted flue gas mercury (Hg) measurements on Units 1 and 2 at Plant 4 in January 2005. The two units are similar except that Unit 2 is equipped with a selective catalytic reduction (SCR) unit for NOx control. The tests were performed under U. S. Department of Energy (DOE) Cooperative Agreement No. DE-FC26-02NT41589, and the Electric Power Research Institute (EPRI) Agreement No. EP-P13687/C6820. The test program on each unit consisted of four sets of measurements across the combustion emission control system that consists of the SCR (Unit 2 only), electrostatic precipitator (ESP), and flue gas desulfurization (FGD) systems.

The mercury measurements were made using the Ontario-Hydro Flue Gas Hg Speciation Method. The testing conducted by CONSOL R&D is documented in this report.

Table 1. Coal-fired facilities in program

Site #	MW	Air Pollution Control Devices	Coal	Ozone Unit
1	330	SCR / Spray Dryer / Baghouse	Bit	year round
2	245	SCR / Spray Dryer / Baghouse	Bit	year round
3	508	SCR / ESP/ Limestone FGD, inhibited oxidation	Bit	Yes
4 Unit 1	468	ESP/ Limestone FGD, natural oxidation	Bit	(1)
4 Unit 2	468	SCR / ESP/ Limestone FGD, natural oxidation	Bit	year round
5 Unit 1	1,300	SCR / ESP/ Limestone FGD, in-situ oxidation	Bit	Yes
5 Unit 2	1,300	ESP/ Limestone FGD, in-situ oxidation	Bit	(1)
6 (2)	544	SCR / ESP/ Limestone FGD, ex-situ oxidation	Bit	Yes
7 (2)	566	SCR / ESP/ Limestone FGD, ex-situ oxidation	Bit	Yes
8	684	SCR / ESP / Lime FGD, ex-situ oxidation	Bit	Yes
9	640	SCR / ESP/ Lime FGD, inhibited oxidation	Bit	Yes
10	1,300	SCR / ESP/ Lime FGD, inhibited oxidation	Bit	Yes

(1) SCR was not installed when tests were conducted.
(2) Tests were also conducted during non-ozone seasons while flue gases bypassed SCR.

HOST UTILITY DESCRIPTION[1]

Plant 4 is a 936 MW pulverized bituminous coal-fired generation facility operating two units. The plant typically burns bituminous coal containing less than 2.5% sulfur. Both units are equipped with ESP and limestone-based wet FGD to control the emissions of

[1] Per facility's Title V permit.

particulate matter and sulfur dioxide (SO_2). The FGDs are natural oxidation systems equipped with adipic acid feed to assist in SO_2 removal and are designed for 90% reduction. Unit 2 is equipped with a Siemens plate-type SCR; anhydrous ammonia is injected in front of the SCR catalyst beds to react with NOx. The SCR unit is operated year-round.

Each unit is a dry-bottom wall-fired boiler with a nominal design heat input of 4,286 MM Btu per hour. Particulate matter is removed by a six-field, cold-side ESP. The ESP has 24 ash hoppers arranged in six rows of four hoppers each, one row per ESP field. The limestone-based wet FGD system has three 50%-capacity scrubber modules; only two modules are in service at any one time. The scrubber sludge is dewatered using gravity-settling type thickeners and vacuum filters and stabilized by mixing the solids with flyash and lime. The stabilized solids are landfilled. The scrubbed flue gas exits through a 550-ft stack.

MERCURY SAMPLING RESULTS

I. Test Matrix

Each set of mercury measurements consisted of a total of four tests over three days. The test matrix is shown in Table 2. A total of 16 flue gas mercury measurements were conducted at four locations (economizer outlet, air heater outlet, FGD inlet, and stack) on each unit. The two units were tested in separate weeks. The Ontario Hydro Method (ASTM Method D-6784-02) was used to perform the measurements. Mercury measurements were performed with a net sampling time of 120 minutes. Details of sampling conditions are provided later in this report.

To calculate the material balance, CONSOL R&D and plant personnel obtained process samples (coal, coal mill rejects, bottom ash, ESP ash, limestone slurry, FGD slurry, and FGD makeup/mist eliminator wash water) simultaneously during the gas sampling periods. CONSOL R&D performed all the sample laboratory analyses; no analysis was sub-contracted out. Detailed results of analyses are included in this report.

Table 2. Sampling test matrix

Date	Activity	Flue Gas Sampling				Process Sampling						
		Economizer Outlet	Air Heater Outlet	FGD Inlet	Stack	Coal	Coal Mill Rejects	Bottom Ash	Limestone Slurry	ESP Ash	FGD Slurry	FGD Makeup + ME Wash Water
18-Jan	Setup on Unit 1	---	---	---	---	---	---	---	---	---	---	---
19-Jan	Test 1	X	X	X	X	X	X	X	X	X	X	---
20-Jan	Test 2	X	X	X	X	X	---	X	X	X	X	---
	Test 3	X	X	X	X		---		X	X	X	X
21-Jan	Test 4, Move to Unit 2	X	X	X	X	X	---	---	X	X	X	X
Week-end	None	---	---	---	---	---	---	---	---	---	---	---
24-Jan	Setup on Unit 2, Test 1	X	X	X	X	X	X	---	X	X	X	X
25-Jan	Test 2	X	X	X	X	X	X	X	X	X	X	X
	Test 3	X	X	X	X		X		X	X	X	X
26-Jan	Test 4	X	X	X	X	X	X	X	X	X	X	X
27-Jan	Pack, Demobilize	---	---	---	---	---	---	---	---	---	---	---

II. Flue Gas Mercury Sampling Results

Figures 1 and 2 show the mercury speciation for the four tests conducted at each location on Units 1 (no SCR) and 2 (with SCR), respectively. All tests were conducted isokinetically. A complete listing of mercury analyses is in Appendix C. The results at each location are discussed in the following sections. The associated tables list the measured Ontario Hydro sampling train concentrations and the mercury throughput for the respective location with the concentrations applied to the stack flow rate corrected to the locations' oxygen concentration. Adjusting the mercury throughput to the stack flow rate is more accurate as this is the only location where flow could be measured accurately.

A. Economizer Outlet

Four mercury measurements were conducted at the economizer outlet (air heater inlet on Unit 1 and SCR inlet on Unit 2) on both units. Table 3 summarizes the results, which show that about 99% of the mercury was in the gas phase and about 1% of the mercury was in the particulate form (Hg^{part}). The high percentage of gas phase mercury is expected due to the gas temperature (673-714°F) at this location. About forty percent of the total mercury was in the elemental form (Hg^0) at both units.

Table 3. Flue gas mercury speciation at the Economizer Outlet

Date	Test No.	Hg Concentration, µg/m^3 (dry std conditions)				Hg Flow, mg/sec			
		Hg^{part}	Hg^{++}	Hg^{0}	Hg^{total}	Hg^{part}	Hg^{++}	Hg^{0}	Hg^{total}
1/19	Unit 1, Test 1	0.061	4.82	4.50	9.37	0.025	1.98	1.85	3.85
1/20	Unit 1, Test 2	0.073	4.97	3.36	8.41	0.031	2.07	1.40	3.49
1/20	Unit 1, Test 3	0.073	4.85	2.97	7.89	0.031	2.06	1.26	3.35
1/21	Unit 1, Test 4	0.096	3.57	1.58	5.25	0.041	1.53	0.68	2.25
Average		0.076	4.55	3.10	7.73	0.032	1.91	1.30	3.24
Standard Deviation		0.014	0.66	1.20	1.76	0.007	0.26	0.48	0.69
PRSD		19%	14%	39%	23%	21%	13%	37%	21%
Date	**Test No.**	**Hg Concentration, µg/m^3 (dry std conditions)**				**Hg Flow, mg/sec**			
		Hg^{part}	Hg^{++}	Hg^{0}	Hg^{total}	Hg^{part}	Hg^{++}	Hg^{0}	Hg^{total}
1/24	Unit 2, Test 1	0.079	5.76	4.58	10.4	0.033	2.42	1.92	4.38
1/25	Unit 2, Test 2	0.074	6.11	4.55	10.7	0.032	2.63	1.96	4.62
1/25	Unit 2, Test 3	0.082	5.96	3.23	9.28	0.034	2.50	1.36	3.89
1/26	Unit 2, Test 4	0.106	4.57	3.84	8.52	0.046	2.00	1.68	3.72
Average		0.085	5.60	4.05	9.74	0.036	2.39	1.73	4.15
Standard Deviation		0.014	0.70	0.64	1.03	0.007	0.27	0.28	0.42
PRSD		17%	12%	16%	11%	19%	11%	16%	10%

B. Air heater outlet

Four mercury measurements were conducted at the air heater outlet location in on both units. Table 4 summarizes the results. The majority (87-96%) of the mercury was vapor-phase Hg^{++}. On both units, a substantial portion of the elemental mercury was oxidized in the air heater or SCR/air heater combination. Compared to about 40% elemental mercury at the economizer outlet, only 9% was elemental at Unit 1's air heater outlet and only 2.6% was elemental at Unit 2's air heater outlet. The results also show that the SCR-air heater combination on Unit 2 oxidized more mercury than the air

heater (with no SCR) on Unit 1. The elemental mercury reduction from the economizer exit to the air heater exit was 77% on Unit 1 (1.30 to 0.30 mg/sec) and 95% on Unit 2 (1.73 to 0.09 mg/sec).

Table 4. Flue gas mercury speciation at the air heater outlet

Date	Test No.	Hg Concentration, µg/m^3 (dry std conditions)				Hg Flow, mg/sec			
		Hg^{part}	Hg^{++}	Hg^{0}	Hg^{total}	Hg^{part}	Hg^{++}	Hg^{0}	Hg^{total}
1/19	Unit 1, Test 1	0.63	5.65	0.23	6.52	0.28	2.56	0.11	2.95
1/20	Unit 1, Test 2	0.05	6.88	0.90	7.83	0.01	3.18	0.41	3.61
1/20	Unit 1, Test 3	0.17	6.55	1.05	7.77	0.08	3.04	0.49	3.61
1/21	Unit 1, Test 4	0.13	4.62	0.38	5.12	0.06	2.18	0.18	2.41
Average		0.24	5.93	0.64	6.81	0.11	2.74	0.30	3.15
Standard Deviation		0.26	1.01	0.39	1.28	0.12	0.46	0.18	0.58
PRSD		108%	17%	62%	19%	106%	17%	62%	18%
Date	**Test No.**	**Hg Concentration, µg/m^3 (dry std conditions)**				**Hg Flow, mg/sec**			
		Hg^{part}	Hg^{++}	Hg^{0}	Hg^{total}	Hg^{part}	Hg^{++}	Hg^{0}	Hg^{total}
1/24	Unit 2, Test 1	0.27	6.97	0.19	7.43	0.12	3.20	0.09	3.41
1/25	Unit 2, Test 2	1.25	6.31	0.19	7.75	0.58	2.92	0.09	3.59
1/25	Unit 2, Test 3	0.62	6.57	0.24	7.42	0.29	3.07	0.11	3.47
1/26	Unit 2, Test 4	1.56	5.25	0.14	6.95	0.73	2.44	0.06	3.22
Average		0.92	6.27	0.19	7.39	0.43	2.91	0.09	3.42
Standard Deviation		0.59	0.74	0.04	0.33	0.27	0.34	0.02	0.15
PRSD		64%	12%	23%	4%	64%	12%	23%	4%

C. FGD inlet

Four mercury measurements were conducted at the FGD inlet location at both units. Table 5 summarizes the results. In both units, nearly 100% of the flue gas mercury was in the gaseous phase because this location is downstream of the ESP. On Unit 1, 93%

of the mercury entering the scrubber was in the oxidized form, while 98% was in the oxidized form entering Unit 2's scrubber.

Table 5. Flue gas mercury speciation at the FGD inlet

Date	Test No.	Hg Concentration, µg/m^3 (dry std conditions)				Hg Flow, mg/sec			
		Hg^{part}	Hg^{++}	Hg^{0}	Hg^{total}	Hg^{part}	Hg^{++}	Hg^{0}	Hg^{total}
1/19	Unit 1, Test 1	2.63×10^{-3}	6.25	0.38	6.63	1.27×10^{-3}	3.03	0.18	3.21
1/20	Unit 1, Test 2	2.56×10^{-3}	6.52	0.27	6.79	1.22×10^{-3}	3.11	0.13	3.24
1/20	Unit 1, Test 3	2.71×10^{-3}	7.46	0.37	7.83	1.32×10^{-3}	3.63	0.18	3.81
1/21	Unit 1, Test 4	2.52×10^{-3}	3.43	0.46	3.90	1.23×10^{-3}	1.67	0.23	1.90
Average		2.60×10^{-3}	5.92	0.37	6.29	1.26×10^{-3}	2.86	0.18	3.04
Standard Deviation		8.29×10^{-5}	1.73	0.08	1.68	4.55×10^{-5}	0.83	0.04	0.81
PRSD		3%	29%	22%	27%	4%	29%	23%	27%
Date	**Test No.**	**Hg Concentration, µg/m^3 (dry std conditions)**				**Hg Flow, mg/sec**			
		Hg^{part}	Hg^{++}	Hg^{0}	Hg^{total}	Hg^{part}	Hg^{++}	Hg^{0}	Hg^{total}
1/24	Unit 2, Test 1	2.88×10^{-3}	7.18	0.13	7.31	1.37×10^{-3}	3.40	0.061	3.47
1/25	Unit 2, Test 2	3.14×10^{-3}	7.91	0.13	8.05	1.49×10^{-3}	3.76	0.064	3.83
1/25	Unit 2, Test 3	3.22×10^{-3}	7.85	0.13	7.98	1.54×10^{-3}	3.74	0.060	3.81
1/26	Unit 2, Test 4	3.10×10^{-3}	6.35	0.15	6.50	1.50×10^{-3}	3.06	0.070	3.13
Average		3.09×10^{-3}	7.32	0.13	7.46	1.47×10^{-3}	3.49	0.064	3.56
Standard Deviation		1.45×10^{-4}	0.73	0.01	0.72	7.34×10^{-5}	0.33	0.004	0.33
PRSD		5%	10%	7%	10%	5%	9%	7%	9%

D. Stack

Four mercury measurements were conducted at the stack on both units. Table 6 summarizes the results. On Unit 1, elemental mercury increased by 83%, from 0.18 mg/sec at the FGD inlet to 0.33 mg/sec at the stack. On Unit 2, the elemental mercury was essentially the same, 0.06 at the FGD inlet and 0.07 at the stack. An increase of

Hg^0 across wet scrubbers has been observed by CONSOL R&D at many other plants[2,3]. It is not clear why an increase did not occur in Unit 2's scrubber.

Table 6. Flue gas mercury speciation at the stack

Date	Test No.	Hg Concentration, µg/m³ (dry std conditions)				Hg Flow, mg/sec			
		Hg^{part}	Hg^{++}	Hg^0	Hg^{total}	Hg^{part}	Hg^{++}	Hg^0	Hg^{total}
1/19	Unit 1, Test 1	2.26×10^{-3}	0.45	0.32	0.77	1.11×10^{-3}	0.22	0.16	0.38
1/20	Unit 1, Test 2	2.24×10^{-3}	0.35	0.80	1.16	1.11×10^{-3}	0.17	0.40	0.57
1/20	Unit 1, Test 3	2.24×10^{-3}	0.32	1.06	1.39	1.11×10^{-3}	0.16	0.52	0.69
1/21	Unit 1, Test 4	2.21×10^{-3}	0.26	0.52	0.79	1.10×10^{-3}	0.13	0.26	0.39
Average		2.24×10^{-3}	0.35	0.68	1.03	1.11×10^{-3}	0.17	0.33	0.51
Standard Deviation		2.44×10^{-5}	0.08	0.33	0.30	4.79×10^{-6}	0.04	0.16	0.15
PRSD		1%	23%	48%	29%	0.4%	22%	48%	29%
Date	**Test No.**	**Hg Concentration, µg/m³ (dry std conditions)**				**Hg Flow, mg/sec**			
		Hg^{part}	Hg^{++}	Hg^0	Hg^{total}	Hg^{part}	Hg^{++}	Hg^0	Hg^{total}
1/24	Unit 2, Test 1	2.30×10^{-3}	0.21	0.16	0.38	1.11×10^{-3}	0.101	0.079	0.18
1/25	Unit 2, Test 2	2.29×10^{-3}	0.35	0.16	0.52	1.11×10^{-3}	0.172	0.077	0.25
1/25	Unit 2, Test 3	2.26×10^{-3}	0.12	0.14	0.25	1.11×10^{-3}	0.056	0.067	0.12
1/26	Unit 2, Test 4	2.23×10^{-3}	0.16	0.10	0.27	1.10×10^{-3}	0.079	0.051	0.13
Average		2.27×10^{-3}	0.21	0.14	0.35	1.11×10^{-3}	0.102	0.069	0.17
Standard Deviation		3.21×10^{-5}	0.10	0.03	0.12	7.03×10^{-6}	0.050	0.013	0.06
PRSD		1%	50%	19%	34%	0.6%	49%	19%	34%

[2] DeVito, M. S., Withum, J. A., and Statnick, R. M., "Flue Gas Measurements from Coal-Fired Boilers Equipped with Wet Scrubbers," Int. J. of Environ. Pollution 17 (1/2), 2002, p. 126-142

[3] Evaluation of Mercury Emissions from Coal-Fired Facilities with SCR and FGD Systems - Topical Report Nos. 1, and 4 through 9, U.S. DOE Cooperative Agreement DE-FC26-02NT41589

III. SCR/FGD System Hg Removal

Table 7 summarizes the flue gas mercury removal across the SCR/FGD system for the two units. In Unit 2 (with SCR), the air heater outlet-to-stack mercury removal ranged from 93 to 96% and the average was 95.0%. The coal-to-stack mercury removal ranged from 96 to 98% and the average coal-to-stack mercury removal was 97.1%. In Unit 1 (no SCR), the air heater outlet-to-stack mercury removal ranged from 81 to 87% and the average was 84.0%. The coal-to-stack mercury removal ranged from 85 to 90% and the average coal-to-stack mercury removal was 87.1%.

Table 7. Flue gas mercury removal

Date	Test No.	System Mercury Reduction					
		Ontario Hydro Results, mg Hg^{total} /sec			Coal Feed Based Reduction, mg Hg^{total} /sec		
		Air Heater Outlet	Stack Emissions	% Reduction	Coal Feed	Stack Emissions	% Reduction
1/19	Unit 1, Test 1	2.95	0.38	87	3.85	0.38	90
1/20	Unit 1, Test 2	3.61	0.57	84	4.54	0.57	87
1/20	Unit 1, Test 3	3.61	0.69	81	4.50	0.69	85
1/21	Unit 1, Test 4	2.41	0.39	84	2.79	0.39	86
	Average	3.15	0.51	84.0	3.92	0.51	87.1
	Standard Deviation	0.58	0.15	2.5	0.81	0.15	2.3
	PRSD	18%	29%	3%	21%	29%	3%
Date	**Test No.**	**System Mercury Reduction**					
		Ontario Hydro Results, mg Hg^{total} /sec			**Coal Feed Based Reduction, mg Hg^{total} /sec**		
		Air Heater Outlet	Stack Emissions	% Reduction	Coal Feed	Stack Emissions	% Reduction
1/24	Unit 2, Test 1	3.41	0.18	95	5.87	0.18	97
1/25	Unit 2, Test 2	3.59	0.25	93	6.70	0.25	96
1/25	Unit 2, Test 3	3.47	0.12	96	6.67	0.12	98
1/26	Unit 2, Test 4	3.22	0.13	96	4.60	0.13	97
	Average	3.42	0.17	95.0	5.96	0.17	97.1
	Standard Deviation	0.15	0.06	1.5	0.99	0.06	0.8
	PRSD	4%	34%	1.6%	17%	34%	0.8%

IV. Mercury Material Balance

An important criterion to gauge the overall quality of the tests is to conduct a mercury mass balance to account for the mercury entering and leaving the plant during the tests. The mercury material balance closure is the total mercury output from the plant divided by the total mercury input (expressed as %). The total mercury input is the sum of the amounts of mercury entering the system from coal, limestone slurry, and FGD make-up water. The total mercury output is the sum of the amounts of mercury leaving the system via coal mill rejects, boiler bottom ash, ESP hopper ash, FGD slurry, and stack flue gas.

Tables 8 and 9 summarize the mercury material balance closures for the tests conducted at Units 1 and 2, respectively. The mercury material balance closures ranged from 72% to 104% on Unit 1 and between 93 and 109% on Unit 2. The material balance closures for mercury for all individual tests are within our QA/QC criterion of 70-130% for a single test. The average material balance closure was 84% on Unit 1 and 103% on Unit 2, which are within our QA/QC criterion of 80-120% for multiple tests. The measurements, calculations, and assumptions for calculating the material balances are described later in this report.

Table 8. Mercury material balance closure, Unit 1 (no SCR)

Test No.	1	2	3	4
Total Hg Input (mg/sec)	3.91	4.60	4.55	2.87
Total Hg Output (mg/sec)	3.15	3.31	3.61	2.96
Hg Material Balance Closure (output / input)	81%	72%	79%	104%
Average Hg Material Balance Closure (%)	**84%±13%**			

Table 9. Mercury material balance closure, Unit 2 (with SCR)

Test No.	1	2	3	4
Total Hg Input (mg/sec)	3.36	3.89	3.84	4.00
Total Hg Output (mg/sec)	3.67	4.08	4.10	3.70
Hg Material Balance Closure (output / input)	109%	105%	107%	93%
Average Hg Material Balance Closure (%)	**103%±7%**			

V. SCR/Non-SCR Test Comparison

At the inlet to the ESP and at the inlet to the FGD, the percentage of flue gas elemental mercury was lower in the SCR-equipped unit compared to the non-SCR unit. This is important because these two pollution control devices are efficient at removing particulate and oxidized mercury, but not elemental mercury. Table 10 compares the average mercury speciation of the flue gas in the air heater outlet (ESP inlet) duct and in the ESP outlet (FGD inlet) duct for both units.

Table 10. Comparisons of Average Flue Gas Mercury Speciation, SCR Unit vs. Non-SCR Unit, at the Air Heater Outlet and at the FGD Inlet

Mercury Species	Percent of Total Mercury at the Air Heater Outlet (ESP Inlet)		Percent of Total Mercury at the ESP Outlet (FGD Inlet)	
	Unit 1 (with no SCR)	Unit 2 (with SCR)	Unit 1 (with no SCR)	Unit 2 (with SCR)
Hg^{part}	3%	12%	0%	0%
Hg^{++}	87%	85%	94%	98%
Hg^{0}	10%	3%	6%	2%

Mercury removal in Unit 2's FGD scrubber was different from that of Unit 1. Table 11 shows that 94-97% of the oxidized mercury exiting the ESP was removed in the FGD scrubber in both units. However, the amount of elemental mercury increased across the scrubber, and the increase was greater in Unit 1 than in Unit 2; an increase in elemental mercury in wet scrubbers has been observed in tests at other plants in this program[3]. The reason for the greater effect in the Unit 1 scrubber compared to the Unit 2 scrubber is not clear; scrubber sulfite concentration is believed to play a role but this has not been verified. Scrubber sulfite concentration was not measured in this test program.

Table 11. Comparison of Average Mercury Reductions Across the FGD Scrubber

Mercury Species	Unit 1 (with no SCR)			Unit 2 (with SCR)		
	FGD Inlet, mg Hg/sec	Stack, mg Hg/sec	Reduction Across FGD Scrubber	FGD Inlet, mg Hg/sec	Stack, mg Hg/sec	Reduction Across FGD Scrubber
Hg^{part}	<0.002	<0.002	--	<0.002	<0.002	--
Hg^{++}	2.86	0.17	94%	3.49	0.10	97%
Hg^{0}	0.18	0.33	-83%	0.064	0.069	-8%
Total Hg	3.04	0.51	83%	3.56	0.17	95%

EXPERIMENTAL AND SAMPLING METHODS

CONSOL R&D performed flue gas mercury determinations using the Ontario-Hydro sampling method. As a quality assurance/quality control (QA/QC) measure, samples of

the coal, bottom ash, FGD slurry, limestone slurry, and ESP ash, were taken to determine a mercury balance across the system.

I. Flue Gas Sampling Locations and Sampling Points

Four sampling locations, the economizer outlet, air heater outlet (upstream of the ESP), FGD inlet, and stack outlet, were tested. Figure 3 is a flow schematic indicating the sampling locations at these units.

At each unit, flue gas exits the economizer through two ducts (designated Ducts A and B) and passes through the SCR, air heater, ESP, and FGD, before it combines to form a single flue tube at the stack. All sampling at points leading to the stack was conducted in Duct A of each unit. Individual sampling locations are detailed in the following sections.

A. Economizer outlet

On each unit, the economizer outlet consists of two horizontal, rectangular ducts, measuring 14.5 feet deep by 25 wide at the sampling plane. Eight sample ports are spaced across the top of each duct.

Preliminary pitot surveys indicated that the gas flow was straight, not cyclonic or swirling. The flue gas was sampled through the middle test port at a single point in each duct, 60 minutes per duct for each test. Parametric readings were recorded every ten minutes. Total test duration was 120 minutes. Mercury measurements were conducted with the sampling nozzle oriented parallel to and directly into the flow.

Four mercury measurements were performed isokinetically at the economizer outlet on each unit. The sample train was prepared in EPA Method 17 configuration using an in-stack 19 mm x 90 mm quartz-fiber thimble filter. The filter apparatus was attached to a heated probe that was connected to the impinger train with a flexible heated Teflon sample line. Figure 4 is a photograph of the mercury sampling train at the economizer outlet.

B. Air heater outlet

On each unit, the air heater outlet duct consists of four horizontal ducts, each approximately 11 feet 8 inches deep and 11 feet 8 inches wide. Six test ports are located across the top of each duct. Preliminary pitot surveys indicated that the gas flow was parallel to the duct walls.

The flue gas was sampled through the middle test port at a single point in each duct, 30 minutes per duct for each test. Total test durations were 120 minutes with parametric readings recorded every ten minutes. Mercury measurements were conducted with the sampling nozzle oriented parallel to and directly into the flow.

Four mercury measurements were performed isokinetically at the air heater outlet on each unit. The sample train was prepared in EPA Method 17 configuration using an in-stack 19 mm x 90 mm quartz-fiber thimble filter. The filter apparatus was attached to a heated probe that was connected to the impinger train with a flexible heated Teflon

sample line. Figure 5 is a photograph of the mercury sampling train at the air heater outlet location.

C. FGD inlet

The FGD inlet at each unit consists of two horizontal ducts leading from the ID fans to the scrubbers. A single test port was available in each duct, downstream of the induced draft fan. A single point near the center of each duct was sampled, 60 minutes per duct, for each test. A preliminary pitot survey indicated that the gas flow was parallel to the duct walls at this point.

Parametric readings were recorded every ten minutes for each test period, which was 120 minutes net sampling time. Mercury measurements were conducted isokinetically with the sampling nozzle oriented parallel to and directly into the flow.

Four mercury measurements were performed at the FGD inlet on each unit. The sample train was prepared in EPA Method 17 configuration using an in-stack 47-mm quartz-fiber disc filter. The filter apparatus was attached to a heated probe that was connected to the impinger train with a flexible heated Teflon sample line. Figure 6 is a photograph of the mercury sampling train on the FGD inlet location.

D. Stack

Both stacks are approximately 19 feet in diameter. On each stack, three points were sampled in each of four sample access ports for a total of 12 traverse points. Each point was sampled for a period of 10 minutes resulting in 120-minute tests.

Preliminary pitot surveys indicated that the gas flow was axial. Mercury measurements were conducted with the nozzle oriented horizontally, directly into the flow. Four measurements were performed isokinetically at this location on each unit. A standard EPA Method 5 sample train configuration was utilized for this location. Figure 7 is a photograph of the mercury sampling train on the stack location.

II. Flue Gas Mercury Measurements

Flue gas mercury measurements were conducted using the Ontario-Hydro mercury speciation train. A schematic of the sampling train is shown in Figure 8.

The flue gas was extracted from the duct and pulled through a heated glass-lined probe and quartz filter. Total particulate matter mass loading was calculated from the solids collected prior to and on the filter. Probe temperatures were set at 325 ± 25 °F at the SCR inlet and outlet, the air heater outlet and the FGD inlet. Probe and filter temperatures were maintained at 250 ± 25 °F at the stack. Where particle loading is high, the probe and filter are maintained as close as practical to the flue gas temperature.

Mercury collected prior to and on the filter is assumed to be Hg^{part}. The flue gas exits the quartz filter and passes through a series of chilled impingers. The first three impingers are filled with 100 mL of a 1M-potassium chloride (KCl) solution. It is assumed that these impingers capture Hg^{++} in the flue gas. The next impinger is filled

with 100 mL of a 5% nitric acid and 10% hydrogen peroxide (H_2O_2) solution. The purpose of this impinger is to remove SO_2 from the flue gas to preserve the oxidizing strength of the two downstream impingers with acidic potassium permanganate ($KMnO_4$) solution. Mercury collected in this impinger is assumed to be Hg^0. The next two impingers are filled with 100 mL of an acidic $KMnO_4$ solution. It is assumed that these impingers capture Hg^0. The next impinger is blank to catch any excess moisture. The gas exits the impinger train through a silica gel-filled impinger that removes the moisture from the flue gas. The mercury species collected by the Ontario-Hydro sampling train component are listed in Table 12.

Table 12. Mercury speciation by train component

Train Component	Species Measured
Probe & Nozzle Rinse	Hg^{part}
Quartz Filter	Hg^{part}
KCl Impingers	Hg^{++}
HNO_3/H_2O_2 Impinger	Hg^0
$KMnO_4$ Impingers	Hg^0
HCl Rinse of $KMnO_4$ Impingers	Hg^0

The absorbing solutions were made fresh daily. The impingers were charged and the sampling components were transported to the required locations. The sampling trains were assembled, pre-heated, and checked for pitot and sample line leaks as detailed in EPA Methods 2 and 5, respectively. After passing the leak-check procedure, the sampling probes were inserted into their respective ducts, in-stack filters were allowed to heat to stack temperature, and sampling was initiated. Leak checks were also performed during port changes.

Oxygen readings were monitored at the outlet of the sampling train using a Teledyne Model Max 5 portable analyzer (electrochemical O_2 sensor). At the completion of the sampling period, the sample trains were checked for leaks, purged for 10 min, and then disassembled. The components were transported back to the lab trailer for recovery. The mercury concentration of the individual impinger solutions was determined by cold vapor atomic absorption (CVAA) as specified in the methodology. The concentration of mercury on the solids was determined by acid digestion followed by CVAA.

The amount of mercury collected in the impinger solutions was determined as outlined in EPA Method 29 and the Ontario-Hydro Draft Method. An aliquot of the impinger solution was acidified and the mercury is determined using cold vapor-atomic absorption spectroscopy. The atomic absorption spectrometer was calibrated with commercial mercury standard. The calibration was verified using NIST Standard

Reference Materials (SRM) 1641D and 1633b. The calibration was reassessed periodically by analyzing a quality control standard. The instrument was recalibrated as required. Each sample matrix was analyzed as a set and an individual calibration curve was used for each set. Depending on sample type, selected samples were spiked with 2, 5, 10, or 15 ng/ml (ppb) of mercury and reanalyzed. Spike recovery must be within ±30% or the sample is diluted and reanalyzed. Selected samples were analyzed in duplicate. The duplicates must be within ±30% or the analyses are repeated.

Where sufficient solids were collected, particulate mercury was analyzed using a 0.5-1.0 gm ash sample with the direct combustion method (ASTM Method D6722). In cases where the particulate catch was low (primarily stack filters), the entire filter sample was digested with aqua-regia in pressure vessels prior to analysis by CVAA.

III. Coal Sampling and Analysis

A. Coal samples

Plant personnel collected coal samples from coal being fed to the top of the coal bunkers. The samples were collected between midnight and 6:00 am the morning of each test day. This lead time was required because of the 6-12 hour residence time in the coal bunkers before the coal reaches the burners. Listed in Table 13 are the coal samples collected.

Table 13. List of coal samples

Unit 1 Test No.	1	2 & 3	4
Sample Date	1/19/2005	1/20/2005	1/21/2005
Sample I.D.	COAL-U1T1	COAL-U1T2T3	COAL-U1T4
Unit 2 Test No.	1	2 & 3	4
Sample Date	1/24/2005	1/25/2005	1/26/2005
Sample I.D.	COAL-U2T1	COAL-U2T2T3	COAL-U2T4

B. Results of analyses of coal samples

Coal samples were analyzed using a direct mercury analyzer following the procedures prescribed in ASTM Method D6722. Detailed analyses of the coal samples collected in each test are presented in Appendix D and the results are summarized in Tables 14 and 15. The mercury measured in the Unit 1coal samples ranged from 0.066 to 0.110 ppm and in the Unit 2 coal samples ranged from 0.080 to 0.095 ppm.

Table 14. Coal sample analyses – Unit 1 samples

Sample I.D.	Coal-U1T1	Coal-U1T2T3	Coal-U1T4
Sample Date	01/19/2005	01/20/2005	01/21/2005
Test No.	1	2 & 3	4
Analytical No.	20050682	20050683	20050684
Residual moisture, as det'd (%)	2.00	1.89	1.37
Volatile matter (%, dry)	38.08	38.40	37.32
Ash (%, dry)	7.77	8.24	11.85
Total carbon (%, dry)	77.74	77.01	74.83
Fixed carbon (%, dry)	54.15	53.36	50.83
Hydrogen (%, dry)	4.63	4.81	4.65
Nitrogen (%, dry)	1.56	1.61	1.58
Total sulfur (%, dry)	1.39	1.45	1.19
Oxygen (%, dry), by diff.	6.77	6.74	5.74
HHV (Btu/lb, dry)	13,683	13,686	13,205
HHV (Btu/lb, MAF)	14,836	14,915	14,980
Chlorine (%, dry)	0.144	0.143	0.157
Hg (ppm, as det'd)	0.091	0.110	0.066
Major Ash Elements (%, dry)			
SiO_2	50.01	50.46	54.52
Al_2O_3	27.77	26.57	26.87
TiO_2	1.29	1.34	1.09
Fe_2O_3	12.63	12.73	9.17
CaO	1.73	1.69	1.50
MgO	1.00	0.98	1.17
Na_2O	0.55	0.53	0.63
K_2O	2.28	2.29	2.90
P_2O_5	0.18	0.25	0.11
SO_3	1.68	1.62	1.24

Table 15. Coal sample analyses – Unit 2 samples

Sample Description	As-fired Coal		
Sample I.D.	Coal-U2T1	Coal-U2T2T3	Coal-U2T4
Test No.	1	2 & 3	4
Test Date	01/24/2005	01/25/2005	01/26/2005
Analytical No.	20050685	20050686	20050687
Moisture, as det'd (%)	1.83	1.49	1.61
VM (%, dry)	38.57	36.26	35.46
Ash (%, dry)	8.40	8.69	8.28
Total Carbon (%, dry)	77.39	76.66	77.44
Fixed Carbon (%, dry)	53.03	55.05	56.26
Hydrogen (%, dry)	4.72	4.67	4.77
Nitrogen (%, dry)	1.52	1.46	1.53
Total Sulfur (%, dry)	1.66	1.59	1.38
Oxygen (%, dry), by diff.	6.17	6.80	6.45
HHV (Btu/lb, dry)	13,764	13,663	13,761
HHV (Btu/lb, MAF)	15,026	14,963	15,003
Chlorine (%, dry)	0.141	0.135	0.151
Hg (ppm, as det'd)	0.080	0.090	0.095
Major Ash Elements (%, dry)			
SiO_2	49.70	51.13	50.50
Al_2O_3	24.10	23.98	28.16
TiO_2	1.15	1.05	1.41
Fe_2O_3	16.77	15.05	11.76
CaO	1.68	2.81	1.58
MgO	1.16	0.72	0.95
Na_2O	0.57	0.65	0.53
K_2O	2.58	1.86	2.35
P_2O_5	0.22	0.35	0.47
SO_3	1.52	1.54	1.39
UND	0.55	0.86	0.90

IV. Process Sample Collection and Analysis

CONSOL R&D and plant personnel collected samples of coal mill rejects, boiler bottom ash, ESP hopper ash, limestone slurry, FGD slurry, and FGD makeup water. CONSOL R&D analyzed the samples using a direct mercury analyzer and following prescribed in the procedures of ASTM Method D6722. Detailed results of the analyses of those process samples are presented in Appendix D.

A. Coal Mill Rejects

Plant operators collected coal mill reject samples during the first test on Unit 1 and all of the tests on Unit 2. Although the mercury content of these samples is high (0.4 to 3.0 ppm) the contribution to the overall mercury balance is insignificant, since the flow rate is only about 0.5% of the coal flow rate.

Table 16. Coal mill reject sample analyses – both units

Sample I.D.	Rejects U1T1	Rejects U2T1	Rejects U2T2	Rejects U2T3	Rejects U2T4
Sample Date	01/19/2005	01/24/2005	01/25/2005	01/25/2005	01/26/2005
Test No.	1	1	2	3	4
Analytical No.	20050688	20050689	20050690	20050691	20050692
Residual moisture, as det'd (%)	1.50	0.82	0.68	0.44	0.48
Volatile matter (%, dry)	35.77	28.78	30.88	26.31	26.69
Ash (%, dry)	14.88	39.74	46.20	58.31	52.38
Total carbon (%, dry)	69.43	46.83	39.74	24.51	32.41
Fixed carbon (%, dry)	49.35	31.48	22.92	15.38	20.93
Hydrogen (%, dry)	4.25	2.82	2.37	1.45	1.95
Nitrogen (%, dry)	1.32	0.81	0.66	0.38	0.53
Total sulfur (%, dry)	3.20	6.07	8.74	17.98	14.97
Oxygen (%, dry), by diff.	6.84	3.66	2.23	2.66	2.28
HHV (Btu/lb, dry)	12,413	8,456	6,899	4,502	5,954
HHV (Btu/lb, MAF)	14,583	14,033	12,823	10,799	12,503
Chlorine (%, dry)	0.085	0.074	0.060	0.040	0.040
Hg (ppm, as det'd)	0.426	0.783	2.330	2.630	3.000
Major Ash Elements (%, dry)					
SiO_2	45.98	45.27	28.75	25.07	23.91
Al_2O_3	22.24	17.97	11.82	6.85	6.99
TiO_2	1.22	0.88	0.46	0.33	0.40
Fe_2O_3	21.31	24.07	40.41	52.03	49.64
CaO	2.18	4.66	8.41	7.45	7.58
MgO	0.81	0.85	0.89	0.68	0.50
Na_2O	0.48	0.28	0.21	0.17	0.13
K_2O	1.63	1.03	0.81	0.72	0.59
P_2O_5	0.35	0.22	0.13	0.04	0.04
SO_3	1.62	3.81	8.17	7.95	8.54

B. Boiler Bottom ash

Plant personnel and CONSOL personnel collected bottom ash samples at the end of the first two test days on Unit 1 (samples U1T1 and U1T2T3) and the last two test days on Unit 2 (samples U2T2T3 and U2T4). Listed in Table 17 are the results of analyses of the bottom ash samples.

Table 17. Results of analyses of bottom ash samples

Sample I.D.	BTMASH-U1T1	BTMASH-U1T2T3	BTMASH-U2T2T3	BTMASH-U2T4
Test No.	1	2	2 & 3	4
Sample Date	01/19/2005	01/20/2005	01/25/2005	01/26/2005
Sampling Time	16:30-16:40	16:30	16:00-16:30	11:15-11:45
Analytical No.	20050693	20050694	20050697	20050698
Residual moisture, as det'd (%)	0.01	0.01	0.10	0.01
Ash (%, dry)	99.73	99.99	98.16	99.03
Total carbon (%, dry)	0.39	0.20	1.93	1.12
Total sulfur (%, dry)	0.02	0.00	0.32	0.10
Chlorine (%, dry)	0.025	0.027	0.035	0.048
Hg (ppm, as det'd)	0.011	0.011	0.074	0.017
Major Ash Elements (%, dry)				
SiO_2	51.91	52.37	51.02	52.96
Al_2O_3	25.87	25.86	24.66	26.12
TiO_2	1.36	1.38	1.33	1.44
Fe_2O_3	13.81	14.13	14.96	12.62
CaO	1.45	1.47	1.35	1.45
MgO	0.89	0.90	0.92	0.91
Na_2O	0.48	0.47	0.46	0.47
K_2O	2.18	2.19	2.23	2.25
P_2O_5	0.14	0.16	0.22	0.30
SO_3	0.04	0.01	0.80	0.24
UND	1.87	1.06	2.05	1.24

C. Limestone slurry

The plant's FGD operators collected a limestone slurry sample of approximately 500 mL during each test. Upon arrival at CONSOL R&D's analytical labs, the limestone slurry samples were filtered to generate a filtrate and a solid residue (i.e., filter cake). The air-dried solids and the filtrates were analyzed separately. Listed in Table 18 and 19 are the results of analyses of the limestone slurry solids samples. The mercury content of the solids of the limestone slurry samples ranged from 0.038 to 0.068 ppm. Listed in Table 20 and 21 are the results of analyses of the limestone slurry filtrate samples. The mercury in all of

the limestone filtrate samples was below the detection limit of 1.0 µg/L (1.0 ppb) for all but one sample (test 2 on Unit 2), which contained 1.3 µg/L.

Table 18. Results of analyses of limestone slurry solids samples – Unit 1

Sample I.D.	LS U1T1	LS U1T2	LS U1T3	LS U1T4
Test No.	1	2	3	4
Sample Date	01/19/2005	01/20/2005	01/20/2005	01/21/2005
Sampling Time	9:35	9:45	13:45	9:15
Analytical No.	20050699	20050700	20050701	20050702
% Solids in original sample	20.3	28.5	21.0	22.0
Density of original sample (g/mL)	1.08			
Residual moisture, as det'd (%)	0.60	0.60	0.73	0.76
Ash (%, dry)	56.69	56.52	56.76	56.92
Total carbon (%, dry)	11.67	11.34	11.58	11.55
Chlorine (%, dry)	0.05	0.07	0.04	0.11
Hg (ppm, as det'd)	0.044	0.045	0.038	0.063
Major Ash Elements (%, as det'd)				
SiO_2	1.49	1.45	1.17	1.76
Al_2O_3	0.15	0.22	0.16	0.18
TiO_2	0.01	0.01	0.01	0.01
Fe_2O_3	0.14	0.17	0.18	0.18
CaO	53.60	53.39	53.23	53.58
MgO	1.15	1.31	1.47	1.51
Na_2O	0.06	0.08	0.06	0.05
K_2O	0.03	0.07	0.02	0.03
P_2O_5	0.08	0.10	0.09	0.10
SO_3	0.29	0.26	0.24	0.34
UND	43.00	42.94	43.37	42.26

Table 19. Results of analyses of limestone slurry solids samples – Unit 2

Sample I.D.	LS U2T1	LS U2T2	LS U2T3	LS U2T4
Test No.	1	2	3	4
Sample Date	01/24/2005	01/25/2005	01/25/2005	01/26/2005
Sampling Time				
Analytical No.	20050703	20050704	20050705	20050706
% Solids in original sample	14.0	17.2	15.4	13.5
Density of original sample (g/mL)				1.055
Residual moisture, as det'd (%)	0.40	0.49	0.52	0.37
Ash (%, dry)	56.84	56.95	56.93	57.02
Total carbon (%, dry)	11.69	11.27	11.62	11.65
Chlorine (%, dry)	0.07	0.11	0.08	0.08
Hg (ppm, as det'd)	0.063	0.068	0.060	0.048
Major Ash Elements (%, as det'd)				
SiO_2	1.49	1.67	1.62	1.70
Al_2O_3	0.09	0.11	0.12	0.08
TiO_2	0.00	0.00	0.01	0.00
Fe_2O_3	0.11	0.11	0.13	0.09
CaO	54.88	55.01	55.15	55.01
MgO	0.78	0.91	0.95	0.70
Na_2O	0.04	0.05	0.04	0.03
K_2O	0.02	0.01	0.00	0.02
P_2O_5	0.06	0.09	0.08	0.07
SO_3	0.20	0.25	0.25	0.21
UND	42.23	41.79	41.65	42.09

Table 20. Results of analyses of limestone slurry filtrate samples – Unit 1

Sample ID	LS U1T1	LS U1T2	LS U1T3	LS U1T4
Test No.	1	2	3	4
Sample Date	01/19/2005	01/20/2005	01/20/2005	01/21/2005
Analytical No.	20050784	20050785	20050786	20050787
Hardness (ppm), calc'd	2,445	1,657	1,259	1,716
Al (µg/mL)	< 1.25	< 1.25	< 1.25	< 1.25
Ca (µg/mL)	462	441	334	395
Total Iron (µg/mL)	< 1.25	< 1.25	< 1.25	< 1.25
Mg (µg/mL)	313	135	103	177
Mn (µg/mL)	< 1.25	< 1.25	< 1.25	< 1.25
K (µg/mL)	90.4	73.5	54.1	71.0
P (µg/mL)	1.74	2.00	2.04	2.34
Si (µg/mL)	1.72	1.51	< 1.25	< 1.25
Na (µg/mL)	629	466	382	479
Cr (µg/mL)	< 1.25	< 1.25	< 1.25	< 1.25
Ammonia as NH_3 (µg/mL)	< 10	< 10	< 10	< 10
NO_3 as N (µg/mL)	0.11	< 0.02	< 0.02	0.07
Cl (µg/mL)	2,150	1,475	1,225	1,575
SO_4 (µg/mL)	787	594	460	608
Hg (µg/L)	< 1.0	< 1.0	< 1.0	< 1.0

Table 21. Results of analyses of limestone slurry filtrate samples – Unit 2

Sample ID	LS U2T1	LS U2T2	LS U2T3	LS U2T4
Test No.	1	2	3	4
Test Date	01/24/2005	01/25/2005	01/25/2005	01/26/2005
Analytical No.	20050788	20050789	20050790	20050791
Hardness (ppm), calc'd	3,692	3,668	3,515	3,969
Al (µg/mL)	< 1.25	< 1.25	< 1.25	< 1.25
Ca (µg/mL)	652	659	611	698
Total Iron (µg/mL)	2.30	< 1.25	< 1.25	< 1.25
Mg (µg/mL)	500	490	483	540
Mn (µg/mL)	< 1.25	< 1.25	< 1.25	< 1.25
K (µg/mL)	117.80	118.30	114.30	128.96
P (µg/mL)	1.39	2.08	3.51	2.47
Si (µg/mL)	4.87	3.73	3.48	5.53
Na (µg/mL)	844	836	824	914
Cr (µg/mL)	< 1.25	< 1.25	< 1.25	< 1.25
Ammonia as NH_3 (µg/mL)	< 10	< 10	< 10	<10
NO_3 as N (µg/mL)	3.32	< 0.02	0.07	4.17
Cl (µg/mL)	3,100	2,975	3,000	3,350
SO_4 (µg/mL)	1,085	1,109	1,104	1,202
Hg (µg/L)	< 1.0	1.3	< 1.0	< 1.0

D. ESP hopper ash

CONSOL personnel collected ESP ash samples, with assistance from the plant boiler operator. There is one ESP for each unit. Each ESP is divided into six fields and there are four ash hoppers in each field. One set of six field hoppers is shown in Figure 9. About 10 lb of ash was collected using an ash sampling bucket which was lowered into the fly ash silo immediately after a row of field hoppers was "dumped" to the silo. The procedure for sampling during a test is as follows. The plant operators dumped the hoppers prior to the start of a test. About 30 minutes after the start of a test, the operators would dump the first field hoppers to the silo and a sample would be collected (sample "F1"). After the sample was collected, the operators would dump the second field, and a sample was again collected (sample "F2"). This procedure was repeated for each field until samples from all six fields were collected. At the end of the test day, each sample was double-bagged in one-gallon plastic bags and labeled. Listed in Tables 22-25 are the results of analyses of the ESP ash samples collected during the

tests on Unit 1. ESP ash from only three of the six fields were sampled during Test 2 (Table 23) due to time limitations prior to the start of Test 3; for all other tests, ESP ash from all six fields were sampled. The mercury measured in the samples ranged from 0.098 to 0.217 ppm. Listed in Tables 26-29 are the results of analyses of the ESP ash samples collected during the tests on Unit 2. The mercury measured in the samples ranged from 0.179 to 0.271 ppm.

In tests conducted at other plants, CONSOL R&D has observed that the mercury content in the ESP ash samples tend to correlate with the carbon content in the samples. In Unit 1, the carbon content and the mercury content were correlated, with an R^2 of 0.76 for the linear regression line between ESP ash carbon concentration and mercury concentration, as shown in Figure 10. In the tests on Unit 2, however, the correlation was not very strong. Figure 11 shows an R^2 of only 0.22 for the linear regression line between ESP ash carbon concentration and mercury concentration.

Table 22. Results of analyses of ESP hopper ash samples – Unit 1, Test 1

Sample I.D.	ESP Ash U1T1F1	ESP Ash U1T1F2	ESP Ash U1T1F3	ESP Ash U1T1F4	ESP Ash U1T1F5	ESP Ash U1T1F6
Electric Field No.	1	2	3	4	5	6
Test No.	1					
Test Date	01/19/2005					
Sampling Time	11:30-11:45	12:00-12:10	12:20-12:45	13:30-14:00	14:25-14:30	14:05-14:15
Analytical No.	20050723	20050724	20050725	20050726	20050727	20050728
Residual Moisture (%)	0.21	0.23	0.24	0.25	0.19	0.22
Ash (%, dry)	94.32	94.90	94.73	95.38	95.36	95.38
Carbon (%, dry)	4.98	4.36	4.71	4.09	4.04	4.17
Total S (%, dry)	0.19	0.20	0.17	0.20	0.18	0.19
Chlorine (%, dry)	0.002	0.002	0.002	0.003	0.003	0.003
Hg (ppm, as det'd)	0.204	0.210	0.217	0.186	0.185	0.188
Major Ash Elements (%, dry)						
SiO_2	48.79	48.94	50.95	49.97	49.83	50.50
Al_2O_3	26.85	26.79	26.86	26.94	26.53	26.80
TiO_2	1.40	1.42	1.49	1.46	1.44	1.46
Fe_2O_3	11.56	11.43	9.87	11.05	11.03	11.21
CaO	1.57	1.61	1.68	1.66	1.63	1.64
MgO	0.95	0.95	0.95	0.97	0.95	0.96
Na_2O	0.51	0.52	0.49	0.53	0.51	0.52
K_2O	2.38	2.37	2.31	2.37	2.33	2.34
P_2O_5	0.23	0.24	0.36	0.29	0.26	0.25
SO_3	0.48	0.51	0.43	0.50	0.46	0.48
UND	5.28	5.22	4.61	4.26	5.03	3.84

Table 23. Results of analyses of ESP hopper ash samples – Unit 1, Test 2

Sample I.D.	ESP Ash U1T2F1	ESP Ash U1T2F2	ESP Ash U1T2F3
Electric Field No.	1	2	3
Test No.	2		
Test Date	01/20/2005		
Sampling Time	09:40-09:45	10:00-10:05	10:20-10:25
Analytical No.	20050729	20050730	20050731
Residual Moisture (%)	0.19	0.13	0.18
Ash (%, dry)	95.96	95.79	95.82
Carbon (%, dry)	3.66	3.82	3.74
Total S (%, dry)	0.19	0.18	0.19
Chlorine (%, dry)	0.002	0.003	0.003
Hg (ppm, as det'd)	0.162	0.166	0.098
Major Ash Elements (%, dry)			
SiO_2	49.82	49.23	50.03
Al_2O_3	26.35	25.79	26.61
TiO_2	1.43	1.42	1.45
Fe_2O_3	12.23	12.02	12.04
CaO	1.59	1.52	1.60
MgO	0.94	0.90	0.94
Na_2O	0.51	0.50	0.52
K_2O	2.25	2.22	2.31
P_2O_5	0.23	0.21	0.20
SO_3	0.46	0.46	0.47
UND	4.19	5.73	3.83

Table 24. Results of analyses of ESP hopper ash samples – Unit 1, Test 3

Sample I.D.	ESP Ash U1T3F1	ESP Ash U1T3F2	ESP Ash U1T3F3	ESP Ash U1T3F4	ESP Ash U1T3F5	ESP Ash U1T3F6
Electric Field No.	1	2	3	4	5	6
Test No.	3					
Test Date	01/20/2005					
Sampling Time	14:00-14:05	14:20-14:25	14:40-14:45	14:55-15:00	15:15-15:20	15:30-15:35
Analytical No.	20050732	20050733	20050734	20050735	20050736	20050737
Residual Moisture (%)	0.16	0.09	0.12	0.07	0.07	0.12
Ash (%, dry)	96.22	96.17	96.12	96.14	96.05	95.93
Carbon (%, dry)	3.27	3.30	3.47	3.33	3.48	3.61
Total S (%, dry)	0.17	0.16	0.16	0.17	0.17	0.18
Chlorine (%, dry)	0.002	0.003	0.003	0.002	0.003	0.003
Hg (ppm, as det'd)	0.143	0.151	0.156	0.147	0.160	0.157
Major Ash Elements (%, dry)						
SiO_2	50.79	50.15	49.86	49.83	49.67	49.46
Al_2O_3	26.42	26.16	26.06	26.00	25.92	25.85
TiO_2	1.47	1.45	1.45	1.46	1.45	1.46
Fe_2O_3	11.53	11.77	11.76	11.70	11.70	11.72
CaO	1.66	1.62	1.61	1.61	1.61	1.62
MgO	0.96	0.94	0.94	0.94	0.93	0.93
Na_2O	0.52	0.50	0.49	0.49	0.49	0.48
K_2O	2.30	2.25	2.26	2.25	2.25	2.21
P_2O_5	0.24	0.23	0.25	0.23	0.22	0.22
SO_3	0.43	0.41	0.41	0.42	0.43	0.45
UND	3.68	4.52	4.91	5.07	5.33	5.60

Table 25. Results of analyses of ESP hopper ash samples – Unit 1, Test 4

Sample I.D.	ESP Ash U1T4F1	ESP Ash U1T4F2	ESP Ash U1T4F3	ESP Ash U1T4F4	ESP Ash U1T4F5	ESP Ash U1T4F6
Electric Field No.	1	2	3	4	5	6
Test No.	4					
Test Date	01/21/2005					
Sampling Time	09:20-09:25	09:40-09:45	10:00-10:05	10:20-10:25	10:40-10:45	11:00-11:05
Analytical No.	20050738	20050739	20050740	20050741	20050742	20050743
Residual Moisture (%)	0.11	0.11	0.14	0.05	0.05	0.13
Ash (%, dry)	96.43	96.47	96.62	96.45	96.49	96.54
Carbon (%, dry)	3.14	3.04	2.99	2.98	3.13	2.97
Total S (%, dry)	0.18	0.18	0.18	0.18	0.16	0.18
Chlorine (%, dry)	0.003	0.003	0.004	0.004	0.003	0.003
Hg (ppm, as det'd)	0.115	0.120	0.118	0.119	0.116	0.118
Major Ash Elements (%, dry)						
SiO_2	52.31	52.00	51.53	52.02	51.64	51.70
Al_2O_3	25.63	25.38	25.39	25.71	25.21	25.68
TiO_2	1.44	1.45	1.45	1.46	1.45	1.47
Fe_2O_3	10.16	10.56	10.27	10.40	10.55	10.38
CaO	1.50	1.54	1.53	1.53	1.54	1.57
MgO	0.97	0.97	0.96	0.98	0.97	0.97
Na_2O	0.55	0.53	0.53	0.54	0.52	0.53
K_2O	2.41	2.35	2.36	2.39	2.32	2.38
P_2O_5	0.15	0.15	0.17	0.18	0.16	0.19
SO_3	0.44	0.44	0.44	0.45	0.39	0.46
UND	4.44	4.63	5.37	4.34	5.25	4.67

Table 26. Results of analyses of ESP hopper ash samples – Unit 2, Test 1

Sample I.D.	ESP Ash U2T1F1	ESP Ash U2T1F2	ESP Ash U2T1F3	ESP Ash U2T1F4	ESP Ash U2T1F5	ESP Ash U2T1F6
Electric Field No.	1	2	3	4	5	6
Test No.	1					
Test Date	01/24/2005					
Sampling Time	13:54	14:00	14:16	14:26	14:36	14:50
Analytical No.	20050744	20050745	20050746	20050747	20050748	20050749
Residual Moisture (%)	0.17	0.17	0.21	0.15	0.15	0.04
Ash (%, dry)	93.03	93.15	93.06	93.06	93.15	93.03
Carbon (%, dry)	6.01	5.99	6.21	6.08	6.25	6.18
Total S (%, dry)	0.24	0.24	0.24	0.26	0.26	0.25
Chlorine (%, dry)	0.003	0.003	0.004	0.004	0.003	0.004
Hg (ppm, as det'd)	0.247	0.239	0.246	0.179	0.240	0.230
Major Ash Elements (%, dry)						
SiO_2	49.86	49.30	49.63	49.65	49.92	49.65
Al_2O_3	24.01	23.89	23.91	24.08	24.55	24.47
TiO_2	1.40	1.39	1.39	1.32	1.33	1.33
Fe_2O_3	10.71	10.69	10.77	10.46	10.73	10.75
CaO	1.51	1.52	1.51	1.50	1.51	1.50
MgO	0.95	0.94	0.95	0.94	0.95	0.94
Na_2O	0.49	0.49	0.50	0.53	0.53	0.52
K_2O	2.25	2.25	2.28	2.29	2.32	2.29
P_2O_5	0.21	0.21	0.19	0.21	0.21	0.20
SO_3	0.61	0.59	0.61	0.66	0.65	0.62
UND	8.00	8.73	8.26	8.36	7.30	7.73

Table 27. Results of analyses of ESP hopper ash samples – Unit 2, Test 2

Sample I.D.	ESP Ash U2T1F1	ESP Ash U2T1F2	ESP Ash U2T1F3	ESP Ash U2T1F4	ESP Ash U2T1F5	ESP Ash U2T1F6
Electric Field No.	1	2	3	4	5	6
Test No.	2					
Test Date	01/25/2005					
Sampling Time	10:23	10:44	10:59	11:12	11:23	11:37
Analytical No.	20050750	20050751	20050752	20050753	20050754	20050755
Residual Moisture (%)	0.09	0.09	0.09	0.09	0.05	0.17
Ash (%, dry)	92.84	92.81	92.82	92.86	92.86	92.86
Carbon (%, dry)	6.40	6.36	6.31	6.12	6.24	6.49
Total S (%, dry)	0.26	0.27	0.28	0.26	0.25	0.25
Chlorine (%, dry)	0.002	0.002	0.002	0.004	0.002	0.002
Hg (ppm, as det'd)	0.246	0.268	0.268	0.262	0.251	0.245
Major Ash Elements (%, dry)						
SiO_2	46.66	48.96	48.76	48.64	48.43	48.92
Al_2O_3	23.67	24.50	24.42	24.33	24.23	24.30
TiO_2	1.28	1.34	1.34	1.33	1.33	1.34
Fe_2O_3	10.88	11.68	11.48	11.41	11.55	11.51
CaO	1.42	1.49	1.49	1.49	1.49	1.49
MgO	0.94	0.96	0.96	0.96	0.96	0.95
Na_2O	0.49	0.51	0.51	0.50	0.49	0.50
K_2O	2.24	2.30	2.31	2.29	2.29	2.30
P_2O_5	0.23	0.24	0.23	0.23	0.23	0.22
SO_3	0.64	0.67	0.69	0.64	0.63	0.63
UND	11.55	7.35	7.81	8.18	8.37	7.84

Table 28. Results of analyses of ESP hopper ash samples – Unit 2, Test 3

Sample I.D.	ESP Ash U2T3F1	ESP Ash U2T3F2	ESP Ash U2T3F3	ESP Ash U2T3F4	ESP Ash U2T3F5	ESP Ash U2T3F6
Electric Field No.	1	2	3	4	5	6
Test No.	3					
Test Date	01/25/2005					
Sampling Time	14:35	14:49	14:59	15:10	15:24	15:35
Analytical No.	20050756	20050757	20050758	20050759	20050760	20050761
Residual Moisture (%)	0.15	0.11	0.15	0.13	0.11	0.11
Ash (%, dry)	92.67	92.68	92.66	92.68	92.61	92.67
Carbon (%, dry)	6.49	6.44	6.43	6.50	6.49	6.47
Total S (%, dry)	0.26	0.26	0.26	0.26	0.25	0.26
Chlorine (%, dry)	0.003	0.002	0.002	0.003	0.003	0.003
Hg (ppm, as det'd)	0.257	0.258	0.249	0.263	0.271	0.266
Major Ash Elements (%, dry)						
SiO_2	48.95	48.89	49.39	49.25	48.72	48.88
Al_2O_3	24.42	24.30	24.89	24.64	24.36	24.50
TiO_2	1.34	1.33	1.36	1.35	1.34	1.34
Fe_2O_3	11.33	11.45	11.17	11.33	11.37	11.40
CaO	1.49	1.49	1.50	1.47	1.46	1.47
MgO	0.95	0.96	0.97	0.95	0.95	0.96
Na_2O	0.50	0.49	0.51	0.51	0.49	0.51
K_2O	2.29	2.28	2.35	2.31	2.31	2.34
P_2O_5	0.24	0.24	0.25	0.24	0.24	0.24
SO_3	0.64	0.66	0.65	0.66	0.62	0.64
UND	7.85	7.91	6.96	7.29	8.14	7.72

Table 29. Results of analyses of ESP hopper ash samples – Unit 2, Test 4

Sample I.D.	ESP Ash U2T4F1	ESP Ash U2T4F2	ESP Ash U2T4F3	ESP Ash U2T4F4	ESP Ash U2T4F5	ESP Ash U2T4F6
Electric Field No.	1	2	3	4	5	6
Test No.	4					
Test Date	01/26/2005					
Sampling Time	10:15	10:02	10:27	10:37	10:47	10:58
Analytical No.	20050762	20050763	20050764	20050765	20050766	20050767
Residual Moisture (%)	0.09	0.12	0.15	0.09	0.22	0.18
Ash (%, dry)	92.95	92.96	92.96	92.98	93.02	93.02
Carbon (%, dry)	6.09	6.10	6.03	5.97	5.90	6.03
Total S (%, dry)	0.25	0.25	0.25	0.24	0.25	0.25
Chlorine (%, dry)	0.003	0.002	0.003	0.003	0.003	0.003
Hg (ppm, as det'd)	0.253	0.248	0.245	0.238	0.246	0.240
Major Ash Elements (%, dry)						
SiO_2	49.21	48.58	50.16	49.57	49.82	50.09
Al_2O_3	25.14	25.52	25.45	25.16	25.61	25.63
TiO_2	1.40	1.40	1.41	1.38	1.41	1.41
Fe_2O_3	10.38	10.45	10.43	10.30	10.25	10.41
CaO	1.48	1.46	1.48	1.46	1.47	1.46
MgO	0.92	0.93	0.93	0.92	0.93	0.94
Na_2O	0.49	0.52	0.52	0.53	0.53	0.53
K_2O	2.28	2.38	2.33	2.35	2.39	2.38
P_2O_5	0.29	0.31	0.29	0.30	0.30	0.30
SO_3	0.62	0.63	0.63	0.61	0.62	0.62
UND	7.79	6.82	6.37	7.42	6.66	6.23

E. FGD slurry

Each unit has two scrubber modules in operation at all times. On Unit 1, modules A and B were in use; on Unit 2, modules A and C were in use. The scrubber blowdown from each module was sampled once during each test by CONSOL personnel.

Upon arrival at CONSOL R&D's analytical lab, each slurry sample was filtered to generate a filtrate and a solid residue (i.e., filter cake) samples. The air-dried solids and the filtrates were analyzed separately. Listed in Tables 30 and 31 are the results of analyses of the FGD slurry solids samples. Listed in Tables 32 and 33 are the results of analyses of the limestone slurry filtrate samples.

Table 30. Results of analyses of FGD slurry solids samples – Unit 1 tests

Sample I.D.	U1T1 FGDS-1A	U1T1 FGDS-1B	U1T2 FGDS-1A	U1T2 FGDS-1B	U1T3 FGDS-1A	U1T3 FGDS-1B	U1T4 FGDS-1A	U1T4 FGDS-1B
FGD Module	A	B	A	B	A	B	A	B
Test No.	1		2		3		4	
Sample Date	01/19/2005	01/19/2005	01/20/2005	01/20/2005	01/20/2005	01/20/2005	01/21/2005	01/21/2005
Sample Time	13:05	13:05	11:00	11:05	15:45	15:50	11:20	11:25
Analytical No.	20050707	20050708	20050709	20050710	20050711	20050712	20050713	20050714
% Solids in original sample	13.0	11.1	12.9	7.4	12.8	7.0	13.1	6.9
Density of original sample (g/mL)	1.115	1.098	1.113	1.070	1.117	1.070	1.120	1.074
Residual moisture, as det'd (%)	4.47	4.12	4.03	5.32	4.03	5.46	4.06	5.83
Ash (%, dry)	99.92	90.24	103.14	91.54	99.81	92.24	99.3	93.02
Total carbon (%, dry)	0.62	2.85	0.84	2.39	0.68	2.31	0.78	2.06
Chlorine (%, dry)	0.60	0.35	0.63	0.36	0.61	0.40	0.56	0.48
Hg (ppm, as det'd)	0.827	0.609	0.871	0.712	0.908	0.744	0.888	0.744
Major Ash Elements (%, as det'd)								
SiO_2	0.74	0.79	0.87	0.73	0.77	0.74	0.86	0.77
Al_2O_3	0.11	0.08	0.14	0.08	0.12	0.10	0.14	0.10
TiO_2	0	0.01	0.01	0	0.01	0.01	0.01	0.01
Fe_2O_3	0.10	0.11	0.13	0.11	0.12	0.12	0.13	0.12
CaO	41.53	43.80	42.15	43.20	40.64	41.98	41.77	41.64
MgO	0.34	0.33	0.36	0.31	0.40	0.34	0.33	0.31
Na_2O	0.24	0.16	0.25	0.16	0.30	0.20	0.23	0.19
K_2O	0.06	0.04	0.06	0.03	0.07	0.05	0.06	0.06
P_2O_5	0.03	0.04	0.02	0.04	0.03	0.05	0.05	0.04
SO_3	50.18	41.13	49.68	41.41	49.37	41.79	49.64	43.23

Table 31. Results of analyses of FGD slurry solids samples – Unit 2 tests

Sample I.D.	U2T1 FGDS-2A	U2T1 FGDS-2C	U2T2 FGDS-2A	U2T2 FGDS-2C	U2T3 FGDS-2A	U2T3 FGDS-2C	U2T4 FGDS-2A	U2T4 FGDS-2C
FGD Module	A	C	A	C	A	C	A	C
Test No.	1		2		3		4	
Test Date	01/24/2005		01/25/2005		01/25/2005		01/26/2005	
Sampling Time	12:53	12:58	10:11	10:16	14:02	14:07	09:38	9:40
Analytical No.	20050715	20050716	20050717	20050718	20050719	20050720	20050721	20050722
% Solids of original sample	9.5	10.9	10.1	11.0	9.6	10.5	8.4	9.4
Density of original sample (g/mL)	1.077	1.098	1.088	1.084	1.093	1.084		1.090
Residual moisture (%)	4.52	6.12	4.60	3.42	2.51	2.69	2.95	3.25
Ash (%, dry)	96.99	99.90	95.23	97.80	94.29	97.56	97.50	97.70
Carbon (%, dry)	1.32	0.62	1.83	0.63	1.69	0.66	0.79	0.59
Chlorine (%, dry)	0.54	0.62	0.48	0.63	0.62	0.59	0.64	0.64
Hg (ppm, as det'd)	0.607	0.562	0.592	0.562	0.639	0.575	0.592	0.616
Major Ash Elements (%, as det'd)								
SiO_2	0.99	1.27	1.27	1.15	1.24	1.18	1.19	1.18
Al_2O_3	0.06	0.12	0.07	0.06	0.06	0.07	0.07	0.05
TiO_2	0	0.01	0	0	0	0	0	0
Fe_2O_3	0.05	0.08	0.07	0.05	0.06	0.07	0.06	0.05
CaO	41.87	40.12	43.37	40.81	42.21	41.34	40.71	40.23
MgO	0.29	0.33	0.40	0.29	0.31	0.33	0.31	0.33
Na_2O	0.22	0.30	0.29	0.24	0.22	0.26	0.26	0.28
K_2O	0.04	0.07	0.05	0.04	0.03	0.03	0.05	0.04
P_2O_5	0.02	0	0.03	0.01	0	0.01	0.01	0.01
SO_3	46.67	50.62	45.43	51.29	46.15	51.73	49.97	51.01

Table 32. Results of analyses of FGD slurry filtrate samples – Unit 1 tests

Sample ID	U1T1 FGDS-1A	U1T1 FGDS-1B	U1T2 FGDS-1A	U1T2 FGDS-1B	U1T3 FGDS-1A	U1T3 FGDS-1B	U1T4 FGDS-1A	U1T4 FGDS-1B
FGD Module	1A	1B	1A	1B	1A	1B	1A	1B
Test No.	1		2		3		4	
Sample Date	01/19/2005	01/19/2005	01/20/2005	01/20/2005	01/20/2005	01/20/2005	01/21/2005	01/21/2005
Sample Time	13:05	13:05	11:00	11:05	15:45	15:50	11:20	11:25
Analytical No.	20050792	20050793	20050794	20050795	20050796	20050797	20050798	20050799
Hardness (ppm), calc'd	28,422	19,861	25,108	20,044	26,800	18,612	24,696	18,202
Al (µg/mL)	< 1.25	13.9	< 1.25	15.6	< 1.25	14.2	< 1.25	14.3
Ca (µg/mL)	3,910	2,981	3,447	3,044	3,673	2,834	3,390	2,768
Total Iron (µg/mL)	1.42	3.99	< 1.25	4.53	2.29	4.17	2.14	3.63
Mg (µg/mL)	4,526	3,012	4,003	3,018	4,279	2,798	3,937	2,738
Mn (µg/mL)	6.36	6.58	5.87	6.63	6.42	6.17	6.03	6.47
K (µg/mL)	754	506	659	505	698	472	640	454
P (µg/mL)	103.3	52.9	49.4	11.7	55.8	11.0	32.1	22.3
Si (µg/mL)	27.2	50.4	25.0	56.4	27.3	53.8	23.6	52.0
Na (µg/mL)	5,021	3,336	4,384	3,380	4,635	3,175	4,259	3,038
Cr (µg/mL)	< 1.25	< 1.25	< 1.25	< 1.25	< 1.25	< 1.25	< 1.25	< 1.25
Ammonia as NH_3 (µg/mL)	< 10	< 10	< 10	10	10	< 10	< 10	10
NO_3 as N (µg/mL)	44.0	99.5	13.8	97.5	11.2	84.2	4.26	82.5
Cl (µg/mL)	32,500	24,000	34,500	21,500	33,500	22,500	33,500	20,500
SO_4 (µg/mL)	4,060	3,937	3,618	4,479	3,795	4,231	3,474	3,615
Hg (µg/L)	4.0	4.5	4.8	5.7	2.7	3.6	4.0	4.2

Table 33. Results of analyses of FGD slurry filtrate samples – Unit 2 tests

Sample ID	U2T1 FGDS-2A	U2T1 FGDS-2C	U2T2 FGDS-2A	U2T2 FGDS-2C	U2T3 FGDS-2A	U2T3 FGDS-2C	U2T4 FGDS-2A	U2T4 FGDS-2C
FGD Module	2A	2C	2A	2C	2A	2C	2A	2C
Test No.	1		2		3		4	
Test Date	01/24/2005		01/25/2005		01/25/2005		01/26/2005	
Sampling Time	12:53	12:58	10:11	10:16	14:02	14:07	09:38	9:40
Analytical No.	20050800	20050801	20050802	20050803	20050804	20050805	20050806	20050807
Hardness (ppm), calc'd	24,046	25,433	21,932	29,657	20,779	27,984	26,578	23,891
Al (µg/mL)	< 1.25	< 1.25	< 1.25	< 1.25	< 1.25	< 1.25	< 1.25	< 1.25
Ca (µg/mL)	3,640	3,796	3,313	4,367	3,123	4,145	3,928	3,542
Total Iron (µg/mL)	1.98	< 1.25	1.69	< 1.25	< 1.25	< 1.25	1.61	< 1.25
Mg (µg/mL)	3,628	3,870	3,313	4,548	3,148	4,277	4,067	3,650
Mn (µg/mL)	5.30	5.73	4.64	6.91	4.37	6.42	5.68	5.60
K (µg/mL)	668	707	611	837	587	784	753	682
P (µg/mL)	48.9	51.4	52.6	86.8	58.7	68.4	63.3	63.0
Si (µg/mL)	30.0	29.5	26.3	35.7	24.7	32.3	34.0	29.1
Na (µg/mL)	4,447	4,685	4,098	5,651	4,001	5,252	5,122	4,585
Cr (µg/mL)	< 1.25	< 1.25	< 1.25	< 1.25	< 1.25	< 1.25	< 1.25	< 1.25
Ammonia as NH_3 (µg/mL)	10	10	< 10	< 10	< 10	10	< 10	10
NO_3 as N (µg/mL)	44.7	45.8	46.3	44.3	32.8	35.0	44.3	38.0
Cl (µg/mL)	29,500	33,000	27,500	31,000	24,500	30,500	29,000	35,000
SO_4 (µg/mL)	2,882	2,897	2,673	3,336	2,566	3,150	3,218	2,788
Hg (µg/L)	< 1.0	1.9	1.3	< 1.0	1.3	1.0	1.0	1.3

F. FGD makeup water

FGD makeup water and mist eliminator wash water came from the thickener overflow. CONSOL R&D personnel collected an FGD makeup water sample of about 250 mL during each test. Listed in Tables 34 and 35 are the results of analyses of the makeup water samples. The concentration of mercury detected in these samples was below the detection limit of 1.0 μg/L.

Table 34. Results of analyses of FGD makeup water samples – Unit 1

Sample ID	FGD Makeup-U1T1	FGD Makeup-U1T2	FGD Makeup-U1T3	FGD Makeup-U1T4
Test No.	1	2	3	4
Sample Date	01/19/2005	01/20/2005	01/20/2005	01/21/2005
Sample Time	13:00	11:00	15:40	11:15
Analytical No.	20050808	20050809	20050810	20050811
Hardness (ppm), calc'd	5,091	4,585	4,483	3,781
Al (μg/mL)	0.09	0.11	< 0.05	0.06
Ca (μg/mL)	917	829	811	695
Total Iron (μg/mL)	0.10	0.13	0.07	0.08
Mg (μg/mL)	679	610	596	496
Mn (μg/mL)	0.86	0.73	0.70	0.53
K (μg/mL)	199	170	165	154
P (μg/mL)	3.42	3.76	3.82	3.68
SiO_2 (μg/mL)	8.01	9.92	9.62	9.05
Na (μg/mL)	1,141	1,070	1,041	1,005
Cr (μg/mL)	< 0.05	< 0.05	< 0.05	< 0.05
Ammonia as NH_3 (μg/mL)	< 10	< 10	< 10	< 10
NO_3 as N (μg/mL)	3.2	8.1	9.8	10.1
Cl (μg/mL)	4,500	3,950	3,900	3,250
SO_4 (μg/mL)	1,853	1,763	1,722	1,650
Hg (μg/L)	< 1.0	< 1.0	< 1.0	< 1.0

Table 35 Results of analyses of FGD makeup water samples – Unit 2

Sample ID	FGD Makeup-U2T1	FGD Makeup-U2T2	FGD Makeup-U2T3	FGD Makeup-U2T4
Test No.	1	2	3	4
Sample Date	01/24/2005	01/25/2005	01/25/2005	01/26/2005
Sample Time	11:45	9:17	13:30	9:00
Analytical No.	20050812	20050813	20050814	20050815
Hardness (ppm), calc'd	17,567	20,040	16,641	13,801
Al (µg/mL)	< 0.53	< 0.53	0.81	< 0.53
Ca (µg/mL)	2,798	3,174	2,694	2,225
Total Iron (µg/mL)	0.64	0.94	0.97	0.77
Mg (µg/mL)	2,566	2,938	2,405	1,999
Mn (µg/mL)	3.55	4.14	3.52	2.93
K (µg/mL)	490	550	453	392
P (µg/mL)	55.1	47.1	35.3	35.9
SiO_2 (µg/mL)	29.8	33.4	28.1	23.1
Na (µg/mL)	3,260	3,643	3,007	2,649
Cr (µg/mL)	< 0.53	< 0.53	< 0.53	< 0.53
Ammonia as NH_3 (µg/mL)	< 10	10	10	< 10
NO_3 as N (µg/mL)	< 0.02	< 0.02	< 0.02	< 0.02
Cl (µg/mL)	19,500	21,000	17,000	15,500
SO_4 (µg/mL)	3,034	3,292	2,898	2,533
Hg (µg/L)	< 1.0	< 1.0	< 1.0	< 1.0

QUALITY ASSURANCE/QUALITY CONTROL

The sampling and analysis QA/QC procedures are described below.

- Personnel specifically trained and experienced in power plant sampling methods, including the Ontario-Hydro mercury sampling method, conducted all sampling,
- The sampling equipment was maintained and calibrated as required,
- Consistent sample preparation and recovery procedures were used,
- Samples were logged and tracked under the direction of sample team Group Leader,
- Individual calibration curves were developed for each sample matrix,

- NIST Standard Reference Material (SRM) and lab QC samples were analyzed to verify calibration curves,
- Duplicates of selected samples were analyzed to assure repeatability,
- Analyses of selected "spiked" samples were analyzed to assure sample recovery, and
- Interim data were reviewed to assure sample completeness.

All samples were obtained using the procedures described in EPA Method 5 and the Ontario-Hydro mercury speciation draft method. Data were recorded on standard forms, which are included in Appendix A. The field data were reduced using standard "in-house" spreadsheets. Copies of the summary sheets are included in Appendix A. To assure consistency, all of the Ontario-Hydro train components were prepared and recovered under the supervision of a senior technician experienced in the Ontario-Hydro mercury speciation lab techniques. Copies of the recovery sheets are included in Appendix C.

The Ontario-Hydro sampling train analysis consisted of eight sub-samples. Each sub-sample analysis consisted of developing a calibration curve (absorbance versus mercury concentration in solution), checks of field and lab blanks, calibration checks against SRM and lab standards, selected duplicates and selected sample spikes. The laboratory summaries for each of these runs are contained in Appendix C.

A total of 346 individual Ontario-Hydro mercury determinations were completed, including 30 blank samples, 71 NIST SRM or lab QC checks, 35 sample spikes, and 34 duplicate analyses.

I. Blank Samples

A total of 30 blank liquid samples (14 reagent blanks and 4 sets of field impinger blanks) were analyzed. All of the blanks were below the detection limit (<0.2 ng/mL for all samples except $KMnO_4$ acid rinse, which is <1.0 ng/mL). Consequently, in this report, blank concentrations were not subtracted from any mercury determination.

II. NIST Standard Reference Material Checks

Seventy-one NIST SRM checks were conducted throughout the mercury determinations. Two standards were used in the determinations as detailed in Table 36.

Table 36. NIST SRM analyses

NIST SRM	Standard Value (ng/mL)	Sample Fraction	Samples Analyzed	Average Result (ng/mL)	Percent of Standard	Standard Deviation (ng/mL)	Percent Relative Standard Deviation
1641D	8.0	Ontario Hydro Liquids	57	8.07	100.9	0.24	3.0
		Ontario Hydro Filters	8	8.23	102.8	0.046	0.6
1633b	141.0	Ontario Hydro Filters	6	145	102.6	12.9	8.9

III. Spike Sample Recoveries

A total of 35 samples were spiked with a 2 or 10 µg/L mercury standard and then re-analyzed to determine the percent spike recovery. The result of this QA/QC procedure was an average spike recovery of 91.8% recovery with a ±6.1% standard deviation.

IV. Duplicate Analyses

A total of 34 duplicate analyses were conducted periodically throughout the mercury determinations. The result of this QA/QC procedure was an average mercury determination that was within 6.6% of the original mercury determination, with a ±9.0% standard deviation.

V. Flue Gas Mercury Concentration Detection Limits

For liquid samples, the flue gas mercury concentration was calculated using the following equation:

$$Hg\left[\mu g / m^3\right] = \frac{\left(C_{imp}\ x V_{imp}\right)}{\left(V_{gas}\ x 1000\right)}$$

where: C_{imp} = Mercury concentration of impinger solution [ng/mL (ppb)]
V_{imp} = Liquid volume of impinger solution [mL]
V_{gas} = Flue gas sample volume [dry standard m^3]
1000= Conversion factor [1000 ng per µg]

The flue gas mercury detection limit is reduced when the flue gas sample volume is increased or liquid volume of impinger solution is decreased. The CVAA is calibrated between 0 and 20 ng/mL. Over this range, the calibration curve between absorbance and concentration is linear. The lowest concentration standard used to develop the calibration curve is 0.500 ng/mL. In addition, the detection limit of the liquid CVAA

analysis was 0.2 ng/mL for all samples except $KMnO_4$ acid rinse, which is 1.0 ng/mL. The prescribed sampling and recovery procedures result in final liquid volumes varying between 64 and 698 mL. The volume of flue gas collected varied between 1.083 and 2.228 dscm. The sampling variables result in sample-specific flue gas detection limit. The flue gas mercury detection limit for each sample matrix is listed in Table 37. Depending on the matrix, the flue gas mercury detection limit ranged from 0.1 to 0.6 $\mu g/m^3$.

Table 37. Flue gas mercury detection limits

Matrix	Maximum Liquid Volume (mL)	Minimum Gas Volume (dscm)	Flue Gas Detection Limit ($\mu g/m^3$)
Probe Rinse	227	1.083	0.04
KCl Impinger	698	1.083	0.13
HNO_3/H_2O_2 Impingers	183	1.083	0.03
$KMnO_4$ Impingers	250	1.083	0.05
HCl Rinse	100	1.083	0.09

VI. Mercury Material Balance Closure

One important criterion to gauge the overall quality of the tests is to conduct a mass balance to account for the mercury entering and leaving the plant during the time of the tests. The total mercury input is the sum of the mass flow rates of mercury entering the unit from coal, limestone slurry, and FGD makeup water. The total mercury output is the sum of the mass flow rates of mercury leaving the unit through the coal mill rejects, boiler bottom ash, ESP hopper ash, FGD slurry, and stack flue gas. Tables 38 and 39 summarize the results of the mercury material balance closure calculations. For the four tests conducted on Unit 1, the calculated mercury material balance closures ranged from 72% to 104% with an average of 84%. For the four tests conducted on Unit 2, the calculated mercury material balance closures ranged from 93% to 109% with an average of 103%. The mercury material balance closures for all individual tests are within the QA/QC criterion of 70-130% for a single test. The average mercury material balance closures of 84% and 103% are within the QA/QC criterion of 80-120% for multiple tests.

Table 38. Summary of material balance closure for mercury, Unit 1.

Test No.	1	2	3	4
Hg input from Coal (mg/sec)	3.84	4.52	4.48	2.78
Hg input limestone slurry (mg/sec)	0.06	0.06	0.05	0.07
Hg input from FGD makeup water (mg/sec)	0.01	0.01	0.01	0.01
Total Hg Input (mg/sec)	3.91	4.60	4.55	2.87
Hg output via Coal Mill Rejects (mg/sec)	0.18	0.18	0.17	0.18
Hg output via Bottom Ash (mg/sec)	0.01	0.01	0.01	0.14
Hg output via ESP Hopper Ash (mg/sec)	0.78	0.43	0.39	0.46
Hg output via FGD Slurry Solids (mg/sec)	1.73	2.00	2.27	1.70
Hg output via FGD Slurry Filtrate *mg/sec)	0.07	0.13	0.08	0.08
Hg output via stack gas (mg/sec)	0.38	0.57	0.69	0.39
Total Hg Output (mg/sec)	3.15	3.31	3.61	2.96
Hg Material Balance Closure (output / input)	81%	72%	79%	104%
Average Hg Material Balance Closure (%)	**84 ± 13 %**			

Table 39. Summary of material balance closure for mercury, Unit 2.

Test No.	1	2	3	4
Hg input from Coal (mg/sec)	3.23	3.74	3.72	3.91
Hg input limestone slurry (mg/sec)	0.12	0.13	0.10	0.07
Hg input from FGD makeup water (mg/sec)	0.01	0.01	0.01	0.02
Total Hg Input (mg/sec)	3.36	3.89	3.84	4.00
Hg output via Coal Mill Rejects	0.16	0.48	0.54	0.61
Hg output via Bottom Ash (mg/sec)	0.03	0.05	0.05	0.01
Estimated Hg output via ESP Hopper Ash (mg/sec)	0.68	0.73	0.75	0.70
Hg output via FGD Slurry Solids (mg/sec)	2.55	2.52	2.59	2.21
Hg output via FGD Slurry Filtrate *mg/sec)	0.07	0.05	0.04	0.04
Hg output via stack gas (mg/sec)	0.18	0.25	0.12	0.13
Total Hg Output (mg/sec)	3.67	4.08	4.10	3.70
Hg Material Balance Closure (output / input)	109%	105%	107%	93%
Average Hg Material Balance Closure (%)	**103 ± 7 %**			

HEAT INPUT-BASED MERCURY EMISSION

The heat input based mercury emission rates were calculated by using the Ontario-Hydro data and the heat input to the boiler, and the results are summarized in Table 51. The mercury emissions ranged from 1.70 to 2.27 Ib/TBtu with an average emission rate of 1.77 Ib/TBtu during the ozone season tests. The mercury emissions ranged from 2.01 to 3.11 Ib/TBtu with an average emission rate of 2.34 Ib/TBtu during the ozone season tests.

Table 40. Heat input-based mercury emission

Unit 1 Test No.	**1**	**2**	**3**	**4**
Stack Hg Flow [mg/sec]	0.38	0.57	0.69	0.39
Stack Hg Flow [Ib/hr]	3.01×10^{-3}	4.54×10^{-3}	5.44×10^{-3}	3.14×10^{-3}
Heat Input (MM Btu/Hr)	4,490	4,370	4,330	4,350
Stack Hg Emissions (Ib/TBtu)	0.67	1.04	1.26	0.72
Average Stack Hg Emissions (Ib/TBtu)	**0.92**			
Unit 2 Test No.	**1**	**2**	**3**	**4**
Stack Hg Flow [mg/sec]	0.18	0.25	0.12	0.13
Stack Hg Flow [Ib/hr]	1.44×10^{-3}	1.99×10^{-3}	9.89×10^{-4}	1.04×10^{-3}
Heat Input (MM Btu/Hr)	4,320	4,440	4,420	4,420
Stack Hg Emissions (Ib/TBtu)	0.33	0.45	0.22	0.24
Average Stack Hg Emissions (Ib/TBtu)	**0.31**			

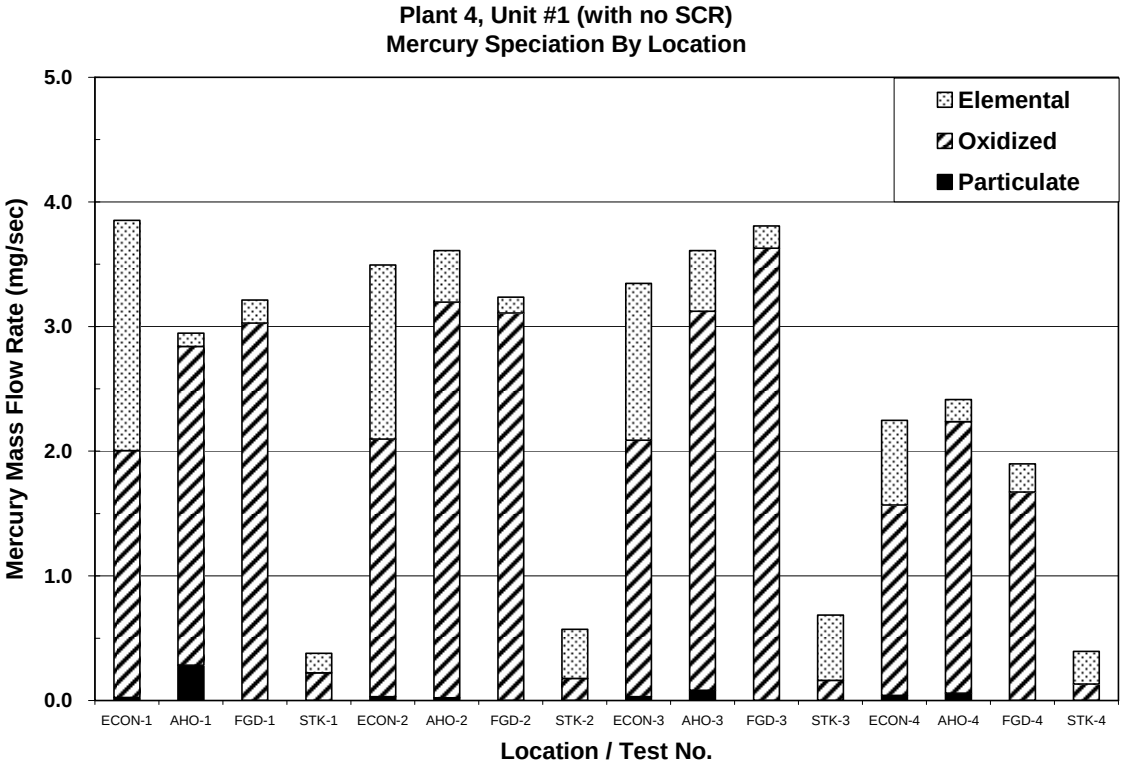

Figure 1. Mercury speciation by location, Unit 1 (with no SCR)

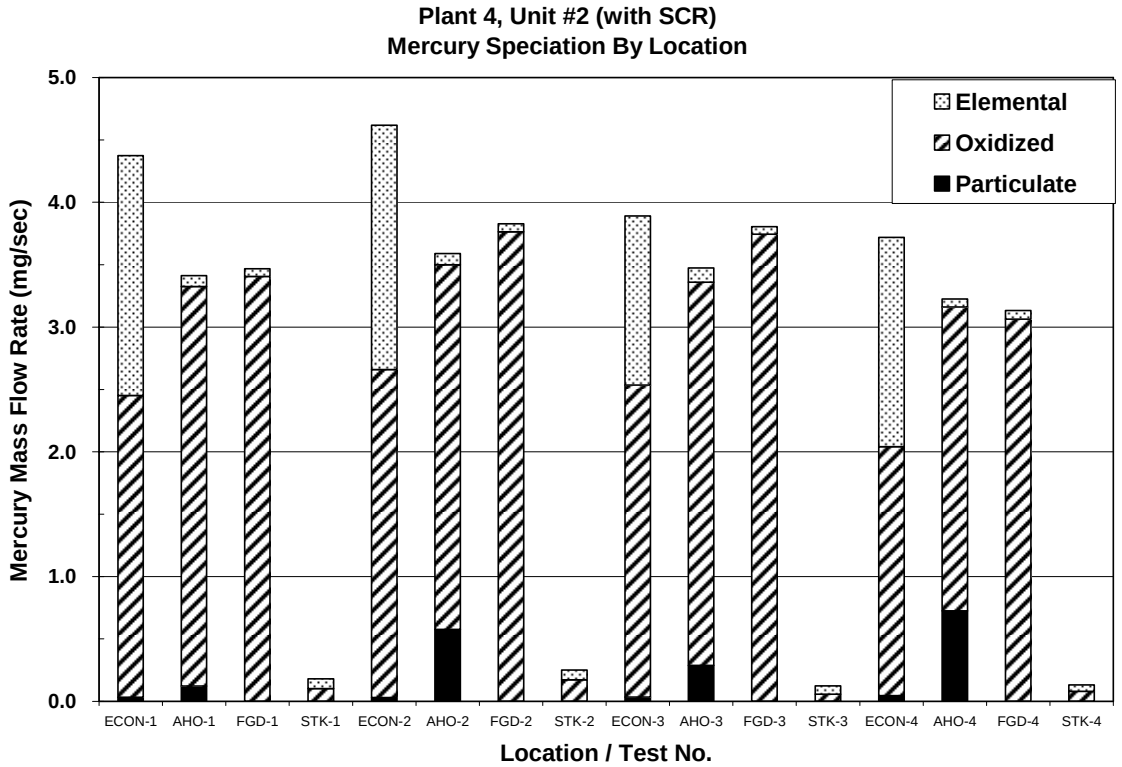

Figure 2. Mercury speciation by location, Unit 2 (with SCR)

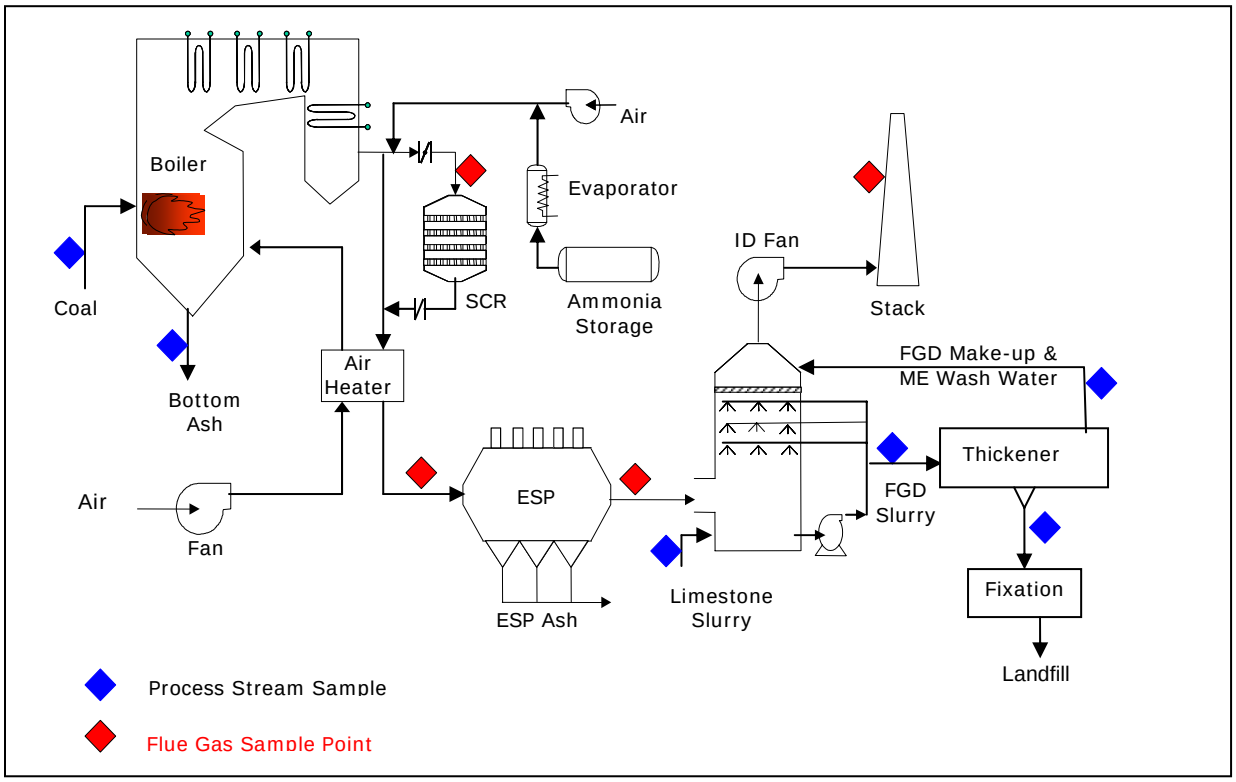

Figure 3. Process flow schematic and sampling locations

Figure 4. Economizer outlet probe and sampling train

Figure 5. ESP inlet (air heater outlet) probe and sampling train

Figure 6. FGD inlet probe (in background), sampling train, and meter box

Figure 7. Stack sampling port

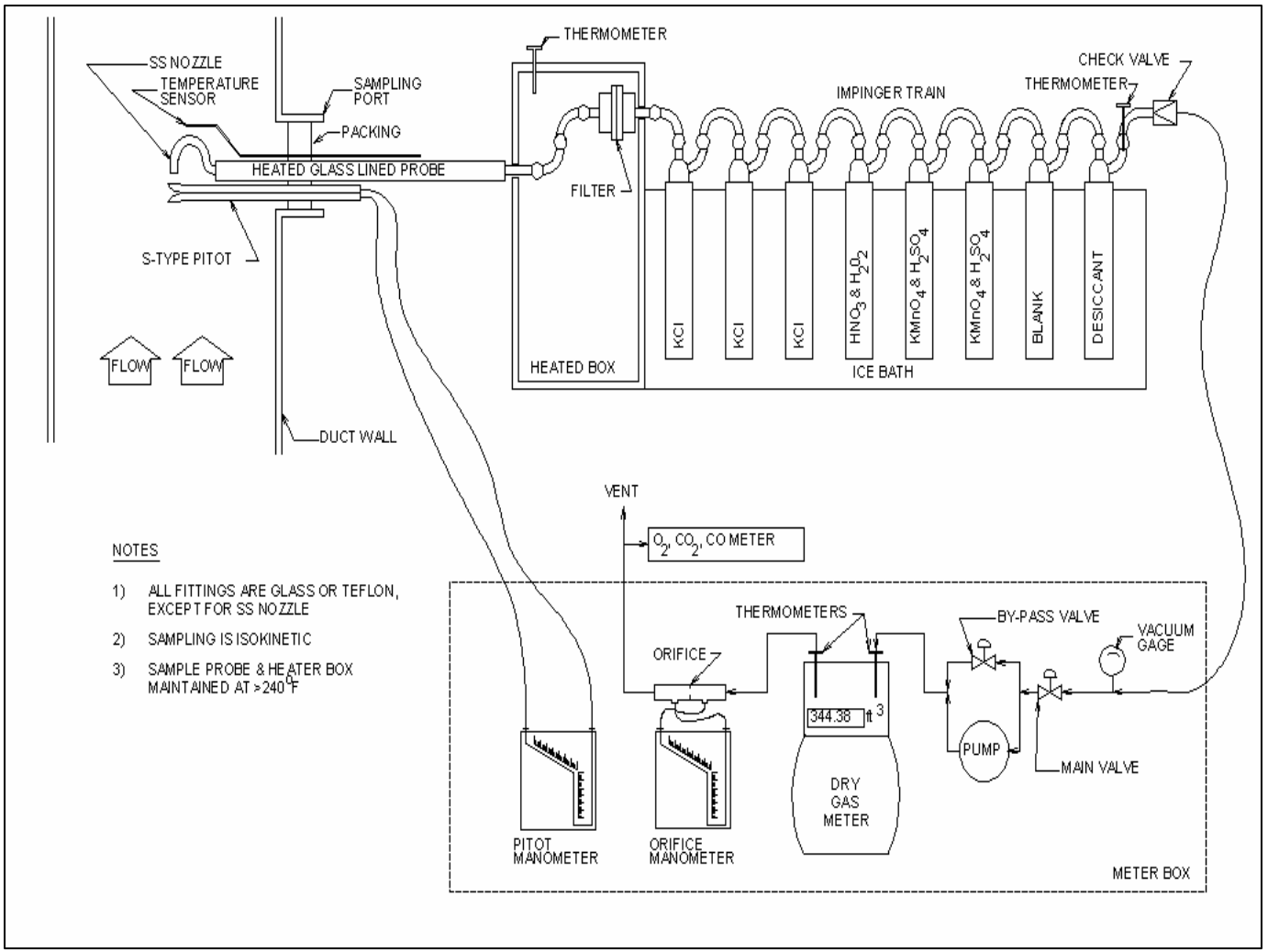

Figure 8. Ontario-Hydro sampling train schematic

Figure 9. ESP ash hoppers, showing pipes used for transferring ash to the silo

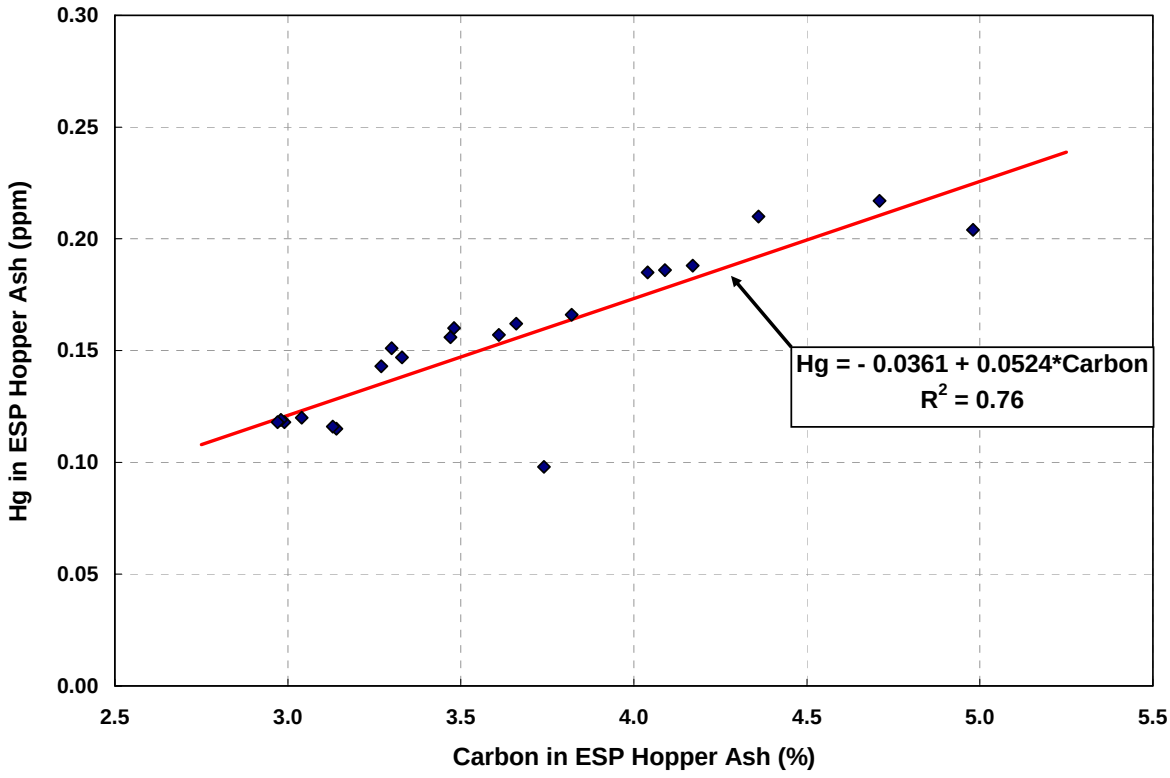

Figure 10. ESP ash mercury vs. Carbon plot, Unit 1

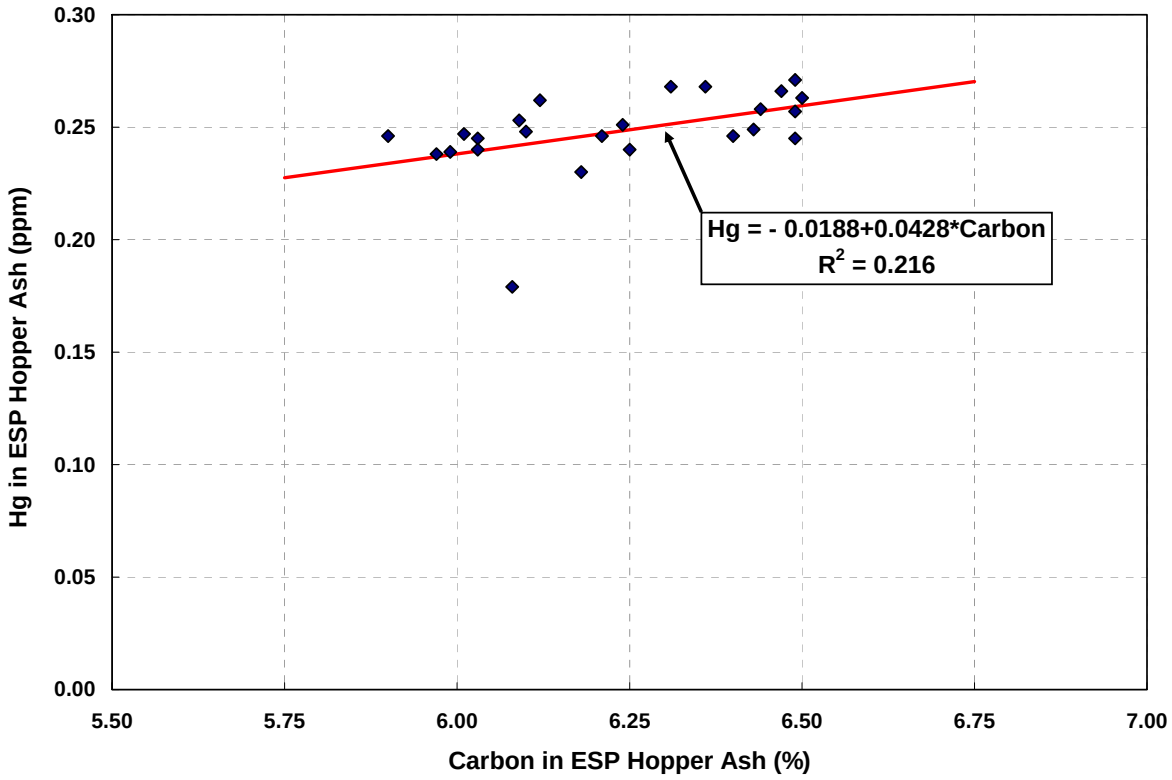

Figure 11. ESP ash mercury vs. Carbon plot, Unit 2

APPENDIX A

Mercury Sampling Data

- Field Data Sheets
- Mercury Measurement Data Sheets

ONTARIO HYDRO Hg SAMPLING AND SPECIATION FIELD DATA SHEET

TEST ID	ECON-1
PLANT	SCR/FGD Plant 4
LOCATION	Economizer Outlet
DATE	11/9/05
OPERATOR(S)	GLC/ST
AMBIENT TEMP [°F]	90
BAR. PRESS. [" Hg]	29.96

METER BOX	N-1
PITOT TUBE DESC	E-15
PROBE LENGTH [ft]	
NOZZLE ID [inch]	3/16D 0.191
%H_2O (Assumed)	8
FILTER ID	1
K FACTOR	0.632

CAL. DATA: delta H	1.976	Comments: * Discovered slight kink in one pitot tube @ ~1145. AP's @ 1130 & 1140 may be low.	
Y	0.981	* Suspect soot blowing @ ~1210-1230	
C(p)	0.838	O_2 readings @ 4-4.5%	
FILTER BOX SETTING	325		
PROBE HTR SETTING	325		
DUCT X-SECTION	circ ?	rect ?	other:
DUCT DIMENSIONS	2@25'x14.5'	DUCT AREA	725 ft^2

TRAVERSE POINT [port-inch]	CLOCK TIME (24-hr)	SAMPLE TIME [minute]	STATIC PRES [" H_2O]	PITOT HEAD [" H_2O]	METER DIFF PRESSURE [" H_2O]	METER VACUUM [" Hg]	METER READING [ft^3]	METER TEMP [oF] (6) inlet	METER TEMP [oF] (7) outlet	STACK TEMP [°F] (1)	PROBE TEMP [°F] (2)	FILTER BOX [°F]	LAST IMP TEMP [°F] (4)	METER EXHAUST O_2 [% vol]	METER EXHAUST CO_2 [% vol]
	1100	0					509.00								
		10		0.90	0.57	4.0	513.14	90	88	693	324		64	2.8	17.3
		20		0.72	0.45	4.0	516.89	93	89	698	330		63	2.7	17.2
South Duct 1-10 pt		30		0.66	0.42	4.0	520.50	96	91	697	330		63	2.7	17.2
		40	-4.26	0.55	0.35	4.0	523.84	98	92	697	332		65	2.6	17.3
		50		0.80	0.50	5.0	527.63	99	94	699	318		62	2.7	17.2
		60		0.78	0.48	6.0	531.64	101	95	694	324		60	2.7	17.2
				Post Leak @ South OK - 0 @ 10" Hg											
				Pre Leak @ North OK - 0 @ 10" Hg												
Nozzle	1215						532.10								
		70		1.00	0.63	5.0	536.45	104	99	711	329		63	4.0	15.9
		80		1.00	0.63	5.5	540.81	106	100	710	320		60	3.0	16.9
North Duct 1-10 pt		90	-4.81	1.05	0.66	6.0	545.27	106	101	707	320		60	4.0	16.0
		100		1.05	0.66	7.0	549.73	107	101	706	331		60	3.7	16.3
		110	-4.55	1.00	0.63	7.5	554.22	107	102	707	332		61	4.1	15.9
	1315	120		1.00	0.63	8.0	558.60	108	102	708	332		61	4.0	16.0
AVERAGE			-4.54	0.868	0.551		49.14	98.7		702.83				3.3	16.7

Sample Train Pre Test 0.010 ft^3 @ 15.0 in. Hg

Leak Checks: Post Test 0 ft^3 @ 10 in. Hg

Pitot Tube PreTest 0 @ 5 in. H_2O

Leak Checks: Post Test 0 @ 5+ in. H_2O

CONSOLENERGY

NOTE: Purge for 10 minutes at end of sampling.

ONTARIO HYDRO Hg SAMPLING AND SPECIATION FIELD DATA SHEET

TEST ID	AHO- 1	METER BOX	N-5	CAL. DATA: delta H	2.015	Comments:			
PLANT	SCR/FGD Plant 4	PITOT TUBE DESC	E 3	Y	1.01				
LOCATION	Air Heater Outlet/ESP Inlet	PROBE LENGTH [ft]	12	C(p)	0.846				
DATE	1-19-05	NOZZLE ID [inch]	9/16 B 0.188	FILTER BOX SETTING	325				
OPERATOR(S)	JL, PR, DO	%H_2O (Assumed)	8	PROBE HTR SETTING	325				
AMBIENT TEMP [°F]	70	FILTER ID	9	DUCT X-SECTION	circ ?	rect ?	other:		
BAR. PRESS. [" Hg]	29.96	K FACTOR	0.93	DUCT DIMENSIONS		DUCT AREA			

TRAVERSE POINT [port-inch]	CLOCK TIME (24-hr)	SAMPLE TIME [minute]	STATIC PRES [" H_2O]	PITOT HEAD [" H_2O]	METER DIFF PRESSURE [" H_2O]	METER VACUUM [" Hg]	METER READING [ft^3] 715	METER TEMP [oF] inlet	METER TEMP [oF] outlet	STACK TEMP [°F]	PROBE TEMP [°F]	FILTER BOX [°F]	LAST IMP TEMP [°F]	METER EXHAUST O_2 [% vol]	METER EXHAUST CO_2 [% vol]
	11:00	0					833.715								
A-1	11:10	10	-3.95	0.45	0.42	2.0	837.11	72	67	295	289	NA	65	5.2	14.9
A-1	11:20	20		0.45	0.42	2.0	840.49	70	74	296	291		63	4.7	15.3
A-1	11:30	30		0.42	0.39	2.0	843.735	74	76	296	292		66	4.6	15.5
					Leak Chk 0.005 @ 6" Hg										
	11:38 30						843.905								
B-1	1148	40		0.50	0.46	2.5	847.47	75	73	273	297		47	4.8	15.4
B-1	1158	50		0.54	0.50	3.00	851.21	78	79	291	301		45	4.3	15.9
B-1	1208	60		0.54	0.50	3.00	854.94	80	81	291	300		44	4.5	15.7
					Leak check 0.000 @ 6.0										
	1217						855.03								
C-1	1227	70	-3.9	0.59	0.54	3.0	858.89	82	81	261	292		43		
C-1	1237	80		0.65	0.60	3.0	862.94	85	83	270	304		46	4.4	15.6
C-1	1247	90		0.60	0.55	3.0	866.76	87	84	279	302		49	4.6	15.5
		100			Lk chk 0.000 @ 6" Hg										
	1255	110					870.90								
D-1	1305	100		0.45	0.42	2.5	870.29	87	84	235	282		55	5.6	14.4
D-1	1315	110		0.48	0.44	2.5	873.88	89	87	252	281		50	5.7	14.2
D-1	1325	120	-3.3	0.44	0.41	2.5	877.12	89	84	254	288		49	5.2	14.9
				Rms											
AVERAGE			-3.0	0.507	0.471		42.96	80.3		273.7				4.9	15.2

Sample Train Pre Test 0.005 ft^3 @ 10.2 in. Hg
Leak Checks: Post Test 0.000 ft^3 @ 5.0 in. Hg

Pitot Tube PreTest OK @ 8 in. H_2O
Leak Checks: Post Test OK @ 7 in. H_2O

CONSOLENERGY

NOTE: Purge for 10 minutes at end of sampling.

ONTARIO HYDRO Hg SAMPLING AND SPECIATION FIELD DATA SHEET

TEST ID	FGD- 1	METER BOX	D-4	CAL. DATA: delta H	1.983	Comments:			
PLANT	SCR/FGD Plant 4	PITOT TUBE DESC	E-12	Y	0.960				
LOCATION	FGD Inlet	PROBE LENGTH [ft]	8	C(p)	0.835				
DATE	1/19/05	NOZZLE ID [inch]	7/16C 0.193	FILTER BOX SETTING	325				
OPERATOR(S)	JAW DLO	%H_2O (Assumed)	6	PROBE HTR SETTING	325				
AMBIENT TEMP [°F]	55	FILTER ID	1	DUCT X-SECTION	circ ?	(rect ?)	other:		
BAR. PRESS. [" Hg]	24.96	K FACTOR	1.04	DUCT DIMENSIONS		DUCT AREA			

TRAVERSE POINT [port-inch]	CLOCK TIME (24-hr)	SAMPLE TIME [minute]	STATIC PRES [" H_2O]	PITOT HEAD [" H_2O]	METER DIFF PRESSURE [" H_2O]	METER VACUUM [" Hg]	METER READING [ft^3]	METER TEMP [°F] inlet	METER TEMP [°F] outlet	STACK TEMP [°F]	PROBE TEMP [°F]	FILTER BOX [°F]	LAST IMP TEMP [°F]	METER EXHAUST O_2 [% vol]	METER EXHAUST CO_2 [% vol]	
	11:00	0					921.60									O_2 20.9 cal check
	11:10	10	5.6	1.20	1.25	5.0	927.65	71	66	268	325	N/A	47	6.2	13.9	
	11:20	20	5.7	1.10	1.15	5.0	933.47	77	67	268	324		48	6.3	13.8	
	11:30	30	5.8	1.10	1.15	5.0	938.29	78	69	268	325		50	5.8	14.3	
	11:40	40	5.6	1.00	1.05	5.0	944.90	79	69	269	325		49	5.7	14.4	20.6 Read
	11:50	50	5.5	1.00	1.05	4.5	950.74	80	71	269	325		48	6.0	14.1	
	12:00	60	5.7	1.05	1.10	5.0	956.14	81	71	269	325		48	6.0	14.1	20.5 OK
	12:10	70	5.6	1.20	1.25	5.0	962.71	82	72	270	325		49	5.9	14.2	
	12:20	80	5.6	1.05	1.10	5.0	968.10	83	73	270	325		49	6.0	14.1	
	12:30	90	5.6	1.15	1.20	5.0	973.92	83	74	270	325		49	5.6	14.5	20.5 OK
	12:40	1000	5.8	1.25	1.30	5.5	980.10	83	74	270	325		50	5.9	14.2	
	12:50	1100	5.8	1.20	1.25	5.5	986.20	83	73	270	325		51	6.0	14.1	
	13:00	1200	5.8	1.20	1.75	5.5	992.28	84	74	270	325		51	6.1	14.0	20.8 OK
		100														
		110														
		120														
				(RMS)												
				1.123												
AVERAGE			5.68	~~1.125~~	1.175		70.68		75.7	269.3				5.96	14.14	

Sample Train Pre Test dual stop ft³ @ -12 in. Hg
Leak Checks: Post Test dual stop ft³ @ -10 in. Hg

Pitot Tube PreTest OK @ -8 in. H_2O
Leak Checks: Post Test _____ @ _____ in. H_2O

CONSOLENERGY

Post-test air purge for 10 min @ ΔH=1.0

NOTE: Purge for 10 minutes at end of sampling.

ONTARIO HYDRO Hg SAMPLING AND SPECIATION FIELD DATA SHEET

TEST ID	STK - 1	METER BOX	N-3	CAL. DATA: delta H	1.982	Comments:			
PLANT	SCR/FGD Plant 4	PITOT TUBE DESC	E-11	Y	1.026				
LOCATION	Stack	PROBE LENGTH [ft]	10	C(p)	0.806				
DATE	1-19-05	NOZZLE ID [inch]	7/32A 0.214	FILTER BOX SETTING	325				
OPERATOR(S)	J.C., B.S.	%H_2O (Assumed)	13.5	PROBE HTR SETTING	250				
AMBIENT TEMP [°F]	68° ~	FILTER ID	# 2	DUCT X-SECTION	circ ?	rect ?	other:		
BAR. PRESS. [" Hg]	29.96	K FACTOR	1.67	DUCT DIMENSIONS	19 ft ID	DUCT AREA	283.53 ft^2		

	TRAVERSE POINT [port-inch]	CLOCK TIME (24-hr)	SAMPLE TIME [minute]	STATIC PRES [" H_2O]	PITOT HEAD [" H_2O]	METER DIFF PRESSURE [" H_2O]	METER VACUUM [" Hg]	METER READING [ft^3]	METER TEMP [oF] (6) inlet	METER TEMP [oF] (7) outlet	STACK TEMP (1) [°F]	PROBE TEMP (2) [°F]	FILTER BOX (3) [°F]	LAST IMP TEMP (4) [°F]	METER EXHAUST O_2 [% vol]	METER EXHAUST CO_2 [% vol]
		1100	0					464.60								
	-10.00		10		.74	1.23	3.5	470.54	75	74	129	251	305	55	6.3	13.8
A	-33.33		20	-.4452	1.00	1.65	4	477.13	81	75	129	261	327	49	6.2	13.9
	-67.50		30		1.10	1.82	5	484.04	86	77	129	261	335	51	5.8	14.3
					L.C.	RESTART		484.16								
	-10.00		40		.70	1.15	3.5	489.76	83	77	127	247	307	49	6.3	13.8
B	-33.33		50	-.4996	1.00	1.65	4	496.33	85	77	127	253	322	46	5.8	14.3
	-67.50		60		1.10	1.82	5	503.24	86	78	126	255	333	47	6.0	14.1
					L.C.	RESTART		503.36								
	-10.00		70		.66	1.10	3.5	508.85	84	78	125	256	329	50	6.3	13.8
C	-33.33		80	-.3980	1.05	1.75	5	515.66	87	80	126	248	329	49	6.0	14.1
	-67.50		90		1.10	1.82	5	522.62	90	81	126	252	330	52	6.3	13.8
					L.C.	RESTART		522.74								
	-10.00		100		.78	1.30	4	528.66	87	81	126	255	329	54	6.3	13.8
D	-33.33		110	-.4651	1.10	1.82	5	535.60	89	82	126	253	328	52	6.3	13.8
	-67.50		120		1.10	1.82	5	542.58	91	84	126	256	330	54	6.2	13.9
		1320														
	AVERAGE			-0.45	0.944	1.57		77.62	882		126.8				6.2	14.0

Sample Train Leak Checks: Pre Test OK ft^3 @ 10 in. Hg; Post Test OK ft^3 @ 10 in. Hg

Pitot Tube Leak Checks: PreTest OK @ 7 in. H_2O; Post Test OK @ 7 in. H_2O

CONSOLENERGY.

NOTE: Purge for 10 minutes at end of sampling.

ONTARIO HYDRO Hg SAMPLING AND SPECIATION FIELD DATA SHEET

TEST ID	ECON- 2	METER BOX	N-1	CAL. DATA: delta H	1.976	Comments:			
PLANT	SCR/FGD Plant 4	PITOT TUBE DESC	E-15	Y	0.987				
LOCATION	Economizer Outlet	PROBE LENGTH [ft]	8'	C(p)	0.838				
DATE	1/20/05	NOZZLE ID [inch]	3/16" DIA, 0.194"	FILTER BOX SETTING	325				
OPERATOR(S)	GLC / ST	%H_2O (Assumed)		PROBE HTR SETTING	325				
AMBIENT TEMP [°F]	90	FILTER ID	2	DUCT X-SECTION	circ ?	rect ?	other:		
BAR. PRESS. [" Hg]	29.79	K FACTOR	0.632 ~~(0.632)~~	DUCT DIMENSIONS	2@25'x14.5'	DUCT AREA	725 ft^2		

TRAVERSE POINT [port-inch]	CLOCK TIME (24-hr)	SAMPLE TIME [minute]	STATIC PRES [" H_2O]	PITOT HEAD [" H_2O]	METER DIFF PRESSURE [" H_2O]	METER VACUUM [" Hg]	METER READING [ft^3]	METER TEMP [oF] (6) inlet	METER TEMP [oF] (7) outlet	STACK TEMP [°F] (1)	PROBE TEMP [°F] (2)	FILTER BOX [°F]	LAST IMP TEMP [°F] (4)	METER EXHAUST O_2 [% vol]	METER EXHAUST CO_2 [% vol]
	0936	0					564.10								
N		10		1.00	0.63	4.0	568.50	84	87	709	320		50	3.7	16.3
O		20	-4.56	1.05	0.66	4.5	572.91	86	83	711	330		47	3.7	16.3
R		30		1.05	0.66	5.0	577.34	89	85	710	329		48	4.2	15.9
T		40		1.05	0.66	5.0	581.78	92	86	711	321		49	4.0	16.0
H		50	-4.65	1.05	0.66	6.0	586.23	94	88	713	321		50	3.8	16.2
		60		1.05	0.66	6.5	590.66	95	89	714	318		51	4.2	15.9
				POST	NORTH	LEAK	CHECK	OK	0 @ 10" Hg						
	1054						594.50								
S		70		0.90	0.56	7.0	598.71	98	94	713	320		55	3.1	16.9
O		80	-4.49	0.80	0.50	7.0	602.68	99	94	712	320		52	3.7	16.7
U		90		0.80	0.50	8.0	606.64	100	95	710	330		52	3.7	16.3
T		100		0.80	0.50	8.5	610.60	101	96	711	330		54	3.5	16.5
H		110		0.80	0.50	9.0	614.52	102	97	712	329		54	3.6	16.4
		120		0.80	0.50	10.0	618.51	102	97	713	316		54	3.1	16.9
AVERAGE			-4.57	0.925	0.583		50.57	92.8		711.6			5	3.7	16.4

Sample Train Leak Checks: Pre Test 2.002 ft^3 @ 11 in. Hg; Post Test 0 ft^3 @ 11 in. Hg

Pitot Tube Leak Checks: PreTest 0 @ 5 in. H_2O; Post Test 6 @ 5 in. H_2O

CONSOLENERGY.

NOTE: Purge for 10 minutes at end of sampling.

1.005 ft³ / 10 s

ONTARIO HYDRO Hg SAMPLING AND SPECIATION FIELD DATA SHEET

TEST ID	AHO- 2
PLANT	SCR/FGD Plant 4
LOCATION	Air Heater Outlet/ESP Inlet
DATE	1-20-05
OPERATOR(S)	JL, DO, PR
AMBIENT TEMP [°F]	
BAR. PRESS. [" Hg]	29.79

METER BOX	N-5
PITOT TUBE DESC	
PROBE LENGTH [ft]	10
NOZZLE ID [inch]	
%H_2O (Assumed)	6
FILTER ID	10
K FACTOR	0.93

CAL. DATA: delta H	2.015	Comments:	
Y	1.011		
C(p)			
FILTER BOX SETTING	325		
PROBE HTR SETTING	325		
DUCT X-SECTION	circ ?	rect ?	other:
DUCT DIMENSIONS		DUCT AREA	

TRAVERSE POINT [port-inch]	CLOCK TIME (24-hr)	SAMPLE TIME [minute]	STATIC PRES [" H_2O]	PITOT HEAD [" H_2O]	METER DIFF PRESSURE [" H_2O]	METER VACUUM [" Hg]	METER READING [ft^3]	METER TEMP [oF] inlet	METER TEMP [oF] outlet	STACK TEMP [°F]	PROBE TEMP [°F]	FILTER BOX [°F]	LAST IMP TEMP [°F]	METER EXHAUST O_2 [% vol]	METER EXHAUST CO_2 [% vol]
	0735	0					836.000								
D-1	0745	10		0.30	0.28	1.0	888.84	58	61	254	306	NA	55		
D-1	0955	20	-9.03	0.30	0.28	1.0	891.57	60	62	254	294		47	5.7	14.1
D-1	1005	30		0.30	0.28	1.0	894.33	62	65	254	294		48	6.1	14.0
		40			Lk chk OK @ 7.6 "Hg										
	10:12	50					894.700								
C-1	1022	40		0.45	0.42	1.5	898.12	65	68	254	303		51		
C-1	1032	50	-9.27	0.50	0.46	1.5	901.66	67	68	270	300		47	5.1	15.0
C-1	1042	60		0.50	0.46	1.5	905.18	68	69	270	305		47	5.1	14.9
					Lk check OK @ 6.0 "Hg										
	10:51			0.82			905.47								
B-1	11:01	70		~~0.88~~	0.~~66~~76	2.0	910:00	70	72	288	322		55		
B-1	1111	80		0.95	0.87	2.0	914.68	72	71	293	314		51	5.5	14.5
B-1	1121	90		0.95	0.89	2.0	919.39	74	72	293	323		51	5.0	15.2
		100			Lk check 0.000 @ 7 "Hg										
	1130	120					919.50								
A-1	1140	100		0.45	0.41	1.5	922.97	73	74	295	274		61		
A-1	1150	110	-9.14	0.41	0.38	1.5	926.24	74	74	299	308		55	5.4	14.6
A-1	1200	120		0.53	0.49	2.0	929.985	75	74	300	317		56	5.6	14.6
AVERAGE			-9.16	0.516	0.497		43.215	68.7		277.0				5.4	~~14~~14.7

Sample Train Pre Test 0.012 ft^3 @ 10.0 in. Hg
Leak Checks: Post Test 0.000 ft^3 @ 5.0 in. Hg

Pitot Tube PreTest OK @ 8 in. H_2O
Leak Checks: Post Test OK @ 8 in. H_2O

NOTE: Purge for 10 minutes at end of sampling.

CONSOLENERGY.

ONTARIO HYDRO Hg SAMPLING AND SPECIATION FIELD DATA SHEET

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TEST ID	FGD- 2	METER BOX	N-4	CAL. DATA: delta H	1.983	Comments:			
PLANT	SCR/FGD Plant 4	PITOT TUBE DESC	E-12	Y	0.960				
LOCATION	FGD Inlet	PROBE LENGTH [ft]	8	C(p)	0.835				
DATE	1/20/05	NOZZLE ID [inch]	3/16 C 0.193	FILTER BOX SETTING	325				
OPERATOR(S)	JMW	%H_2O (Assumed)	~~5~~ 7.5	PROBE HTR SETTING	325				
AMBIENT TEMP [°F]	58	FILTER ID	2	DUCT X-SECTION	circ ?	rect ?	other:		
BAR. PRESS. [" Hg]	29.79	K FACTOR	1.06	DUCT DIMENSIONS		DUCT AREA			

O_2 meter cal, SI. check

TRAVERSE POINT [port-inch]	CLOCK TIME (24-hr)	SAMPLE TIME [minute]	STATIC PRES [" H_2O]	PITOT HEAD [" H_2O]	METER DIFF PRESSURE [" H_2O]	METER VACUUM [" Hg]	METER READING [ft^3]	METER TEMP [oF] inlet	METER TEMP [oF] outlet	STACK TEMP [°F]	PROBE TEMP [°F]	FILTER BOX [°F]	LAST IMP TEMP [°F]	METER EXHAUST O_2 [% vol]	METER EXHAUST CO [% vol]	
	09:35	0					998.80									
	09:45	10	4.3	1.15	1.20	4.0	1004.84	71	66	271	327	NA	50	6.0	14.1	
	09:55	20	4.2	1.15	1.20	4.0	1010.82	77	67	270	325		48	5.9	14.2	
	10:05	30	4.2	1.15	1.20	4.0	1016.75	78	68	271	326		49	5.8	14.3	20.8 OK
	10:15	40	4.4	1.10	1.15	4.0	1022.62	78	69	271	325		51	6.0	14.1	
	10:25	50	4.3	1.10	1.15	4.0	1028.47	79	69	271	325		51	5.5	14.6	20.6 Recal
	10:35	60	4.2	1.10	1.15	4.0	1034.30	80	70	272	325		51	5.7	14.4	
	10:45	70	4.5	1.00	1.05	4.0	1039.96	80	71	272	325		51	6.3	13.8	
	10:55	80	4.2	1.00	1.05	4.0	1045.58	80	72	272	325		52	5.7	14.4	20.9 OK
	11:05	90	4.3	0.95	1.00	4.0	1051.06	80	72	273	324		52	5.9	14.2	
	11:15	100	4.2	1.00	1.05	4.0	1056.72	81	72	273	325		53	6.0	14.1	
	11:25	110	4.2	0.94	1.00	4.0	1062.23	81	72	273	326		54	5.7	14.4	20.9 OK
	11:35	120	4.5	1.00	1.05	4.0	1067.87	81	73	274	326		54	5.9	14.2	
		100														
		110														
		120														
				(RMS)										5.87		
AVERAGE			4.29	1.052	1.104		69.07		74.5	271.9					14.23	

Sample Train Pre Test dead stop ft^3 @ 12 in. Hg

Leak Checks: Post Test dead stop ft^3 @ 10 in. Hg

Pitot Tube PreTest OK @ -8 in. H_2O

Leak Checks: Post Test _____ @ _____ in. H_2O

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Post-test air purge for 10 min @ ΔH=1.0

NOTE: Purge for 10 minutes at end of sampling.

ONTARIO HYDRO Hg SAMPLING AND SPECIATION FIELD DATA SHEET

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TEST ID	STK-#2	METER BOX	N-3	CAL. DATA: delta H	1.982	Comments:			
PLANT	SCR/FGD Plant 4	PITOT TUBE DESC	E-11	Y	1.026				
LOCATION	Stack	PROBE LENGTH [ft]	10	C(p)	0.806				
DATE	1-20-05	NOZZLE ID [inch]	7/32A 0.214	FILTER BOX SETTING	325				
OPERATOR(S)	K.C., B.S.	%H_2O (Assumed)		PROBE HTR SETTING	250				
AMBIENT TEMP [°F]	~55°	FILTER ID	#3	DUCT X-SECTION	circ ?	rect ?	other:		
BAR. PRESS. [" Hg]	29.79	K FACTOR	1.67	DUCT DIMENSIONS	19 ft ID	DUCT AREA	283.53 ft²		

								(6) METER TEMP [oF]	(7)	(1)	(2)	(3)	(4)	METER EXHAUST	
TRAVERSE POINT [port-inch]	CLOCK TIME (24-hr)	SAMPLE TIME [minute]	STATIC PRES [" H_2O]	PITOT HEAD [" H_2O]	METER DIFF PRESSURE [" H_2O]	METER VACUUM [" Hg]	METER READING [ft³]	inlet	outlet	STACK TEMP [°F]	PROBE TEMP [°F]	FILTER BOX [°F]	LAST IMP TEMP [°F]	O_2 [% vol]	CO_2 [% vol]
	0935	0					548.80								
-10.00		10		.70	1.15	3	554.34	71	69	129	248	328	52	6.6	13.6
-33.33		20	-.6590	1.10	1.82	4.5	561.22	74	70	128	255	332	52	6.2	13.9
-67.50		30		1.10	1.82	4.5	568.18	77	71	128	257	334	54	6.4	13.7
				L.C.	RESTART		568.30								
-10.00		40		.76	1.25	3.5	574.11	76	71	128	257	330	57	6.4	13.8
-33.33		50	-.5694	1.00	1.65	4	580.73	78	71	127	260	332	57	6.6	13.6
-67.50		60		1.10	1.82	5	587.73	80	72	127	261	332	59	6.3	13.9
				L.C.	RESTART		587.88	~~80~~	~~74~~	~~127~~	~~257~~	~~332~~	~~54~~	~~6.5~~	~~13.7~~
-10.00		70		.73	1.20	3.5	593.62	80	74	127	257	332	54	6.5	13.7
-33.33		80	-.5058	1.10	1.82	5	600.61	84	75	127	251	332	51	6.4	13.8
-67.50		90		1.15	1.90	5	607.77	85	76	126	257	332	49	6.5	13.7
				L.C.	RESTART		607.90								
-10.00		100		.70	1.15	3.5	613.49	83	77	126	252	325	50	6.4	13.8
-33.33		110	-.6109	1.00	1.65	4.5	620.16	84	77	126	258	329	49	6.4	13.8
-67.50		120		1.10	1.82	5	627.21	86	78	126	253	331	49	6.5	13.7
	1154														
AVERAGE			-0.59	0.953	1.588		78.01	76.6		127.1				6.4	13.8

D C B A

Sample Train Pre Test OK ft³ @ 10 in. Hg
Leak Checks: Post Test 0.15 ft³ @ 10 in. Hg

Pitot Tube PreTest 0.15 @ 7 in. H_2O
Leak Checks: Post Test OK @ 7 in. H_2O

CONSOLENERGY

NOTE: Purge for 10 minutes at end of sampling.

ONTARIO HYDRO Hg SAMPLING AND SPECIATION FIELD DATA SHEET

TEST ID	ECON- 3	METER BOX	N-1	CAL. DATA: delta H	1.976	Comments:	REAR PANEL REMOVED @ ~ 1500		
PLANT	SCR/FGD Plant 4	PITOT TUBE DESC	E-15	Y	0.987		PAUSE TEST @ 1513		
LOCATION	Economizer Outlet	PROBE LENGTH [ft]	8'	C(p)	0.838		RESTART TEST @ 1520		
DATE	1/20/05	NOZZLE ID [inch]	3/16" Dia, 0.191"	FILTER BOX SETTING	325		INSPECTED / LEAK TESTED PITOT LINES - OK		
OPERATOR(S)	GLC / ST	%H_2O (Assumed)		PROBE HTR SETTING	325				
AMBIENT TEMP [°F]	95	FILTER ID	3	DUCT X-SECTION	circ ?	rect ?	other:		
BAR. PRESS. [" Hg]	29.72	K FACTOR	0.632	DUCT DIMENSIONS	2@25'x14.5'	DUCT AREA	725 ft²		

TRAVERSE POINT [port-inch]	CLOCK TIME (24-hr)	SAMPLE TIME [minute]	STATIC PRES [" H_2O]	PITOT HEAD [" H_2O]	METER DIFF PRESSURE [" H_2O]	METER VACUUM [" Hg]	METER READING [ft³]	METER TEMP (6) [oF] inlet	METER TEMP (7) [oF] outlet	STACK TEMP (1) [°F]	PROBE TEMP (2) [°F]	FILTER BOX [°F]	LAST IMP TEMP (4) [°F]	METER EXHAUST O_2 [% vol]	METER EXHAUST CO_2 [% vol]
	1335	0					623.60								
S		10		0.82	0.52	4.0	627.66	99	97	712	315		63	3.5	16.5
O		20		0.82	0.52	4.0	631.67	100	97	710	324		60	3.2	16.8
U		30	-4.25	0.82	0.52	4.5	635.68	102	98	712	331		60	3.4	16.6
T		40		0.76	0.48	5.0	639.60	103	98	711	328		60	3.7	16.3
H		50	-4.54	0.76	0.48	5.0	643.51	104	99	712	327		61	3.6	16.4
		60		0.76	0.48	5.5	647.41	105	100	712	318		62	3.8	16.2
				POST	SOUTH	LEAK	CHECK OK - 0 @ 10" Hg								
				PRE -	NORTH	"	"	"	"						
	1453						647.70								
N		70		0.54	0.34	4.0	651.11	104	101	714	322		67	4.2	15.9
O		80		0.54	0.34	4.5	654.50	100	99	713	315		65	4.7	15.4
R		90		0.60	0.38	5.0	658.06	98	99	711	315		67	3.7	16.3
T		100	-4.62	0.56	0.35	5.5	661.47	98	99	716	320		67	3.9	16.1
H		110	-4.46	0.54	0.34	6.0	664.83	98	99	717	327		67	3.4	16.6
		120		0.60	0.38	6.5	668.32	98	98	721	330		68	3.1	16.9
AVERAGE			-4.47	0.672	0.428		44.43	99.7		713.4				3.7	16.3

Sample Train Pre Test 0 ft³ @ 10 in. Hg
Leak Checks: Post Test 0 ft³ @ 11 in. Hg

Pitot Tube PreTest 0 @ 5 in. H_2O
Leak Checks: Post Test _____ @ _____ in. H_2O

CONSOLENERGY

A SIDE = [redacted]
LEAK TEST
From 5" → 4.5", N 30 SEC

NOTE: Purge for 10 minutes at end of sampling.

ONTARIO HYDRO Hg SAMPLING AND SPECIATION FIELD DATA SHEET

TEST ID	AHO-3	METER BOX	N-5	CAL. DATA: delta H	2.015	Comments:			
PLANT	SCR/FGD Plant 4	PITOT TUBE DESC		Y	1.011				
LOCATION	Air Heater Outlet/ESP Inlet	PROBE LENGTH [ft]	10	C(p)					
DATE	1-20-05	NOZZLE ID [inch]		FILTER BOX SETTING	325				
OPERATOR(S)	JL AR DO	%H_2O (Assumed)		PROBE HTR SETTING	325				
AMBIENT TEMP [°F]		FILTER ID	11	DUCT X-SECTION	circ ?	rect ?	other:		
BAR. PRESS. [" Hg]	29.72	K FACTOR	0.93	DUCT DIMENSIONS		DUCT AREA			

TRAVERSE POINT [port-inch]	CLOCK TIME (24-hr)	SAMPLE TIME [minute]	STATIC PRES [" H_2O]	PITOT HEAD [" H_2O]	METER DIFF PRESSURE [" H_2O]	METER VACUUM [" Hg]	METER READING [ft^3]	METER TEMP [oF] inlet	METER TEMP [oF] outlet	STACK TEMP [°F]	PROBE TEMP [°F]	FILTER BOX [°F]	LAST IMP TEMP [°F]	METER EXHAUST O_2 [% vol]	METER EXHAUST CO_2 [% vol]
	13:35	0					435.44								
A-1	1345	10		0.65	0.60	2.0	939.41	78	78	298	286	NA	49	5.4	14.8
A-1	1355	20	-9.29	0.65	0.60	2.0	943.51	81	80	299	289		46	5.1	14.9
A-1	1405	30		0.65	0.60	2.0	947.556	82	81	299	290		46	5.5	14.9
					leak check	OK @ 7 in Hg									
	1414			0.45	0.41		947.702	80	~~77~~	~~74~~					
B-1	1424	40		0	~~0.37~~	1.5	951.21	80	79	294	294		51	5.4	14.7
B-1	1434	50	-8.55	0.48	0.44	2.0	954.73	81	80	294	310		49	4.9	15.2
B-1	1444	60		0.48	0.44	2.0	958.243	83	83	291	319		49	5.1	14.9
					leak check OK @ 6 in Hg										
	1450			52			958.332								
C-1	1500	70		0.~~50~~	0.~~48~~	2.0	961.96	84	87	267	300		55		
C-1	1510	80	-8.48	0.56	0.52	2.0	965.70	86	86	275	306		49	4.8	15.4
C-1	1520	90		0.56	0.52	2.0	969.317	86	86	275	317		48	5.0	14.9
		100		leak check OK @ 7 in Hg											
	1529	110					969.431								
D-1	1539	120		0.42	0.39	1.5	972.67	83	85	254	303		60		
D-1	1549	130	-8.28	0.42	0.39	1.5	976.05	85	85	257	323		47	5.6	14.5
D-1	1559	140		0.38	0.35	1.5	979.295	87	87	258	323		47	5.3	14.8
AVERAGE			-8.90	0.514	0.478		43.506	83.0		280.3				5.2	14.9

Sample Train Pre Test 0.000 ft^3 @ 11.0 in. Hg
Leak Checks: Post Test 0.600 ft^3 @ 5.0 in. Hg

Pitot Tube PreTest OK @ 7 in. H_2O
Leak Checks: Post Test OK @ 7 in. H_2O

CONSOLENERGY

NOTE: Purge for 10 minutes at end of sampling.

ONTARIO HYDRO Hg SAMPLING AND SPECIATION FIELD DATA SHEET

TEST ID	FGD- 3	METER BOX	N-4	CAL. DATA: delta H	1.983	Comments:			
PLANT	SCR/FGD Plant 4	PITOT TUBE DESC	E-12	Y	0.960				
LOCATION	FGD Inlet	PROBE LENGTH [ft]	8	C(p)	0.835				
DATE	1/20/05	NOZZLE ID [inch]	3/16 C 0.193	FILTER BOX SETTING	325				
OPERATOR(S)	JMW	%H_2O (Assumed)	7.5	PROBE HTR SETTING	325				
AMBIENT TEMP [°F]	68	FILTER ID	3	DUCT X-SECTION	circ ?	rect ?	other:		
BAR. PRESS. [" Hg]	29.72	K FACTOR	1.05	DUCT DIMENSIONS		DUCT AREA			

O_2 meter calib check

TRAVERSE POINT [port-inch]	CLOCK TIME (24-hr)	SAMPLE TIME [minute]	STATIC PRES [" H_2O]	PITOT HEAD [" H_2O]	METER DIFF PRESSURE [" H_2O]	METER VACUUM [" Hg]	METER READING [ft^3]	METER TEMP [oF] inlet	METER TEMP [oF] outlet	STACK TEMP [°F]	PROBE TEMP [°F]	FILTER BOX [°F]	LAST IMP TEMP [°F]	METER EXHAUST O_2 [% vol]	METER EXHAUST CO_2 [% vol]	
	13:36	0					074.80									
	13:46	10	5.6	1.25	1.30	4.0	81.10	75	71	274	325	NA	57	5.8	14.3	
	13:56	20	5.5	1.25	1.30	4.0	87.40	80	72	273	325		55	6.0	14.1	
	14:06	30	5.8	1.25	1.30	4.0	93.65	83	74	273	325		52	6.2	13.9	20.8 OK
	14:16	40	5.6	1.25	1.30	4.0	99.89	84	75	274	325		50	6.0	14.1	
	14:26	50	5.3	1.25	1.30	4.0	106.12	85	75	274	325		49	5.5	14.6	20.8 OK
	14:36	60	5.6	1.25	1.30	4.0	112.36	86	77	274	325		50	5.9	14.2	
	14:46	70	5.8	1.10	1.15	4.0	118.27	86	77	274	325		51	5.8	14.3	
	14:56	80	5.7	1.20	1.25	4.0	124.18	87	78	274	325		51	5.8	14.3	
	15:06	90	5.6	1.20	1.25	4.0	130.47	88	78	275	326		51	5.7	14.4	
	15:16	100	5.3	1.20	1.25	4.0	136.54	89	79	275	325		52	6.2	13.9	20.9 OK
	15:26	110	5.3	1.20	1.25	4.0	142.57	89	80	275	325		51	6.0	14.1	
	15:36	120	5.6	1.20	1.25	4.0	148.62	89	80	275	325			5.3		20.9 OK
		100														
		110														
		120														
				(RMS)												
AVERAGE			5.58	1.216	1.267		73.82		80.7	274.2				5.85	14.25	

Sample Train Pre Test leak ~~ft³~~ @ -12 in. Hg

Leak Checks: Post Test OK ft³ @ -5 in. Hg

Pitot Tube Leak Checks: PreTest OK @ -8 in. H_2O; Post Test OK @ -8 in. H_2O

CONSOLENERGY

NOTE: Purge for 10 minutes at end of sampling.

post-test air purge for 10 min - Δ H = 1.0

ONTARIO HYDRO Hg SAMPLING AND SPECIATION FIELD DATA SHEET

TEST ID	STK- #3	METER BOX	N-3	CAL. DATA: delta H	1.982	Comments:			
PLANT	SCR/FGD Plant 4	PITOT TUBE DESC	E-11	Y	1.026				
LOCATION	Stack	PROBE LENGTH [ft]	10	C(p)	0.806				
DATE	1-20-05	NOZZLE ID [inch]	7/32A 0.214	FILTER BOX SETTING	325				
OPERATOR(S)	K.C., B.S.	%H_2O (Assumed)		PROBE HTR SETTING	250				
AMBIENT TEMP [°F]	~ 64°	FILTER ID	# 4	DUCT X-SECTION	circ ?	rect ?	other:		
BAR. PRESS. [" Hg]	29.72	K FACTOR	1.67	DUCT DIMENSIONS	19 ft ID	DUCT AREA	283.53 ft^2		

TRAVERSE POINT [port-inch]	CLOCK TIME (24-hr)	SAMPLE TIME [minute]	STATIC PRES [" H_2O]	PITOT HEAD [" H_2O]	METER DIFF PRESSURE [" H_2O]	METER VACUUM [" Hg]	METER READING [ft^3]	METER TEMP [oF] (6) inlet	METER TEMP [oF] (7) outlet	(1) STACK TEMP [°F]	(2) PROBE TEMP [°F]	(3) FILTER BOX [°F]	(4) LAST IMP TEMP [°F]	METER EXHAUST O_2 [% vol]	METER EXHAUST CO_2 [% vol]	
	1335	0					633.00									
-10.00		10		.73	1.20	3.5	638.78	79	77	127	255	325	55	6.3	13.9	
-33.33		20	-.5556	1.05	1.75	4.5	645.67	83	78	127	259	333	50	6.2	14.0	A
-67.50		30		1.10	1.82	5	652.72	86	78	127	252	333	50	5.9	14.2	
				L.C.	RESTART		652.85									
-10.00		40		.70	1.15	3.5	658.47	86	80	127	257	330	52	6.1	14.0	
-33.33		50	-.5375	1.10	1.82	5	665.52	89	81	127	259	331	52	6.1	14.0	B
-67.50		60		1.15	1.90	5	672.73	90	81	126	254	331	52	6.2	14.0	
				L.C.	RESTART		672.86									
-10.00		70		.73	1.20	4	678.68	87	82	125	246	327	54	6.1	14.0	
-33.33		80	-.6511	1.05	1.75	5	685.58	90	83	126	253	333	55	6.2	14.0	C
-67.50		90		1.10	1.82	5	692.64	90	83	126	256	334	56	6.0	14.1	
				L.C.	RESTART		692.77									
-10.00		100		.66	1.10	3.5	698.35	89	84	127	255	330	55	6.1	14.0	
-33.33		110	-.5822	1.10	1.82	5	705.43	92	84	126	255	331	53	6.3	13.9	D
-67.50		120		1.15	1.90	5	712.70	92	84	124	256	329	54	6.1	14.0	
	1553															
AVERAGE			-0.58	0.958	1.60		79.31	84.5		126.3				6.1	14.0	

Sample Train Leak Checks: Pre Test OK ft^3 @ 10 in. Hg; Post Test OK ft^3 @ 10 in. Hg

Pitot Tube Leak Checks: PreTest OK @ 7 in. H_2O; Post Test OK @ 7 in. H_2O

CONSOL ENERGY

NOTE: Purge for 10 minutes at end of sampling.

ONTARIO HYDRO Hg SAMPLING AND SPECIATION FIELD DATA SHEET

TEST ID	ECON- 4	METER BOX	N-1	CAL. DATA: delta H	1.976	Comments:	MOST STABLE flows		
PLANT	SCR/FGD Plant 4	PITOT TUBE DESC	E-15	Y	0.987		DURING this TEST, Relative		
LOCATION	Economizer Outlet	PROBE LENGTH [ft]	8'	C(p)	0.838		to TESTS 1→3.		
DATE	1/21/05	NOZZLE ID [inch]	3/16", 0.191"	FILTER BOX SETTING	325				
OPERATOR(S)	GLC/ST	$\%H_2O$ (Assumed)		PROBE HTR SETTING	325				
AMBIENT TEMP [°F]	90	FILTER ID	4	DUCT X-SECTION	circ ?	rect ?	other:		
BAR. PRESS. [" Hg]		K FACTOR	0.632 .632	DUCT DIMENSIONS	2@25'x14.5'	DUCT AREA	725 ft²		

TRAVERSE POINT [port-inch]	CLOCK TIME (24-hr)	SAMPLE TIME [minute]	STATIC PRES [" H_2O]	PITOT HEAD [" H_2O]	METER DIFF PRESSURE [" H_2O]	METER VACUUM [" Hg]	METER READING [ft³]	METER TEMP (6) [oF] (7) inlet	METER TEMP (6) [oF] (7) outlet	STACK TEMP [°F] (1)	PROBE TEMP [°F] (2)	FILTER BOX [°F]	LAST IMP TEMP [°F] (4)	METER EXHAUST O_2 [% vol]	METER EXHAUST CO_2 [% vol]
	0900	0					678.60								
N		10		0.95	0.60	3.5	682.80	86	83	714	325		62	3.7	16.3
O		20	-4.36	0.95	0.60	4.0	687.02	89	85	716	330		56	3.7	16.3
R		30		0.95	0.60	4.5	691.23	89	85	713	315		55	3.6	16.4
T		40	-4.58	1.00	0.63	5.0	695.54	89	85	714	315		54	3.5	16.5
H		50		1.00	0.63	6.0	699.85	89	87	713	320		54	3.6	16.4
		60		1.00	0.63	7.0	704.15	90	87	713	322		55	3.3	16.7
				POST	NORTH	LEAK	CHECK	~0.015 ft³ @ 10" Hg							
				PRE	SOUTH	"	"	"		"					
	1013						704.50								
S		70		0.90	0.56	4.5	708.60	91	89	715	330		51	3.6	16.4
O		80	-4.43	0.90	0.56	5.0	712.74	93	91	713	315		50	3.6	16.4
U		90		0.95	0.60	6.0	716.98	94	92	713	315		48	4.0	15.9
T		100		0.95	0.60	7.0	721.18	94	93	715	316		50	3.1	16.9
H		110	-4.23	0.90	0.56	8.0	725.30	95	93	714	319		51	4.4	15.8
		120		0.90	0.56	8.5	729.42	95	94	715	320		52	3.7	16.3
AVERAGE			+4.40	0.945	0.594		50.47	89.9		714				3.7	16.4

Sample Train Leak Checks: Pre Test _____ ft³ @ 10 in. Hg; Post Test 0 ft³ @ 10 in. Hg

Pitot Tube Leak Checks: PreTest 0 @ 5 in. H_2O; Post Test 0 @ 5 in. H_2O

CONSOLENERGY

.005 / 12 SEC

NOTE: Purge for 10 minutes at end of sampling.

ONTARIO HYDRO Hg SAMPLING AND SPECIATION FIELD DATA SHEET

TEST ID	AHO-4	METER BOX	NJ-5	CAL. DATA: delta H	2.015	Comments:	
PLANT	SCR/FGD Plant 4	PITOT TUBE DESC		Y	1.011		
LOCATION	Air Heater Outlet/ESP Inlet Duct	PROBE LENGTH [ft]	10	C(p)			
DATE	1-21-05	NOZZLE ID [inch]		FILTER BOX SETTING	325		
OPERATOR(S)	JC CR DO	%H_2O (Assumed)	6	PROBE HTR SETTING	325		
AMBIENT TEMP [°F]		FILTER ID	12	DUCT X-SECTION	circ ?	rect ?	other:
BAR. PRESS. [" Hg]	29.65	K FACTOR	0.93	DUCT DIMENSIONS ~~35x146~~ 11"x113"x4		DUCT AREA	34.44

TRAVERSE POINT [port-inch]	CLOCK TIME (24-hr)	SAMPLE TIME [minute]	STATIC PRES [" H_2O]	PITOT HEAD [" H_2O]	METER DIFF PRESSURE [" H_2O]	METER VACUUM [" Hg]	METER READING [ft^3]	METER TEMP [oF] inlet	METER TEMP [oF] outlet	STACK TEMP [°F]	PROBE TEMP [°F]	FILTER BOX [°F]	LAST IMP TEMP [°F]	METER EXHAUST O_2 [% vol]	METER EXHAUST CO_2 [% vol]
	0900	0					987.415								
D-1	0910	10		0.44	0.41	2.0	987.78	55	54	254	326	NA	51		
D-1	0920	20	-8.94	0.44	0.41	2.0	991.12	55	57	254	327		45	6.0	14.1
D-1	0930	30		0.44	0.41	2.0	994.445	58	59	254	325		44	5.8	14.3
		~~40~~			leak check ok @ 6" ~~994~~										
~~C-1~~	0937	~~50~~					994.560								
C-1	0947	~~60~~ 40		0.44	0.41	2.0	997.800	59	63	259	324		50		
C-1	0957	50	-8.67	0.41	0.38	2.0	1001.000	63	64	270	324		44	4.7	15.4
C-1	1007	60		0.41	0.39	2.5	1004.237	64	65	270	325		44		
					leak check OK @ 6" Hg										
	10:13	~~70~~		57			1004.360								
B-1	10:23	~~80~~ 70		0.~~49~~	0.~~53~~	2.5	1008.17	65	68	285	324		51		
B-1	10:33	~~90~~ 80	-8.95	0.62	0.58	3.0	1012.14	68	69	293	322		49	5.0	15.1
B-1	10:43	~~100~~ 90		0.62	0.58	3.0	1016.113	70	71	293	325		51		
		~~110~~			leak check OK @ 6" Hg										
	10:50	~~120~~					1016.25								
A-1	11:00	100		0.51	0.47	2.5	1019.85	71	73	294	322		60		
A-1	11:10	110	-9.10	0.51	0.47	2.5	1023.39	73	73	301	316		54	5.3	14.8
A-1	11:20	120		0.51	0.47	3.0	1027.016	74	75	301	318		54	4.9	16.2
				0.491											
AVERAGE			~~-8.92~~	~~0.456~~	0.458		42.229	65.3		277.3				5.3	14.8

Sample Train Pre Test 0.000 ft^3 @ 11 in. Hg
Leak Checks: Post Test 0.000 ft^3 @ 5 in. Hg

Pitot Tube PreTest OK @ 8 in. H_2O
Leak Checks: Post Test _____ @ _____ in. H_2O

CONSOLENERGY

NOTE: Purge for 10 minutes at end of sampling.

ONTARIO HYDRO Hg SAMPLING AND SPECIATION FIELD DATA SHEET

TEST ID	FGD- 4	METER BOX	N4	CAL. DATA: delta H	1.983	Comments:			
PLANT	SCR/FGD Plant 4	PITOT TUBE DESC	E-12	Y	0.960				
LOCATION	FGD Inlet	PROBE LENGTH [ft]	8	C(p)	0.835				
DATE	1/21/05	NOZZLE ID [inch]	3/16C 0.193	FILTER BOX SETTING	325				
OPERATOR(S)	JMW	%H_2O (Assumed)	7.5	PROBE HTR SETTING	325				
AMBIENT TEMP [°F]	57	FILTER ID	4	DUCT X-SECTION	circ ?	rect ?	other:		
BAR. PRESS. [" Hg]	29.65	K FACTOR	1.06	DUCT DIMENSIONS		DUCT AREA			

TRAVERSE POINT [port-inch]	CLOCK TIME (24-hr)	SAMPLE TIME [minute]	STATIC PRES (5.6) [" H_2O]	PITOT HEAD (1.1) [" H_2O]	METER DIFF PRESSURE [" H_2O]	METER VACUUM [" Hg]	METER READING [ft^3]	METER TEMP [oF] (75) inlet	METER TEMP [oF] (75) outlet	STACK TEMP [°F] 272	PROBE TEMP [°F]	FILTER BOX [°F]	LAST IMP TEMP [°F]	METER EXHAUST O_2 (6) [% vol]	METER EXHAUST CO_2 (14) [% vol]
	09:00	0					155.20								
	09:10	10	5.5	1.20	1.25	4.0	161.43	65	62	270	325	NA	51	5.9	14.2
	09:20	20	5.6	1.20	1.25	4.0	167.50	69	63	270	325		51	5.9	14.2
	09:30	30	5.6	1.20	1.25	4.0	173.54	72	64	270	325		52	6.0	14.1
	09:40	40	5.7	1.30	1.35	4.5	179.86	74	65	270	325		53	5.7	14.4
	09:50	50	5.6	1.30	1.35	4.5	186.19	75	66	270	325		52	5.9	14.2
	10:00	60	5.6	1.30	1.35	4.5	192.50	77	67	270	325		52	5.7	14.4
	10:10	70	5.7	1.15	1.20	4.5	198.70	78	68	271	324		52	5.6	14.5
	10:20	80	5.6	1.15	1.20	4.5	204.79	79	69	271	325		54	5.9	14.2
	10:30	90	5.5	1.15	1.20	4.5	210.86	80	69	272	325		54	5.7	14.4
	10:40	100	5.6	1.20	1.25	4.5	216.95	81	70	272	325		55	5.9	14.2
	10:50	110	5.8	1.20	1.25	4.5	223.14	81	71	272	325		55	5.8	14.3
	11:00	120	5.8	1.20	1.25	4.5	229.15	82	72	273	325		56	5.9	14.2
		100													
		110													
		120													
				(Rec)											
AVERAGE			5.63	1.212	1.263		73.95		71.8	270.9				5.83	14.28

Sample Train Pre Test Leak Check 5 lpm ft³ @ −12 in. Hg

Leak Checks: Post Test OK ft³ @ −8 in. Hg

Pitot Tube PreTest OK @ −8 in. H_2O

Leak Checks: Post Test OK @ −8 in. H_2O

CONSOLENERGY

NOTE: Purge for 10 minutes at end of sampling.

Post-test air purge for 10 min @ ΔH = 1.0

ONTARIO HYDRO Hg SAMPLING AND SPECIATION FIELD DATA SHEET

TEST ID	STK - 1 TEST #4	METER BOX	N-3	CAL. DATA: delta H	1.982	Comments:			
PLANT	SCR/FGD Plant 4	PITOT TUBE DESC	E-11	Y	1.026				
LOCATION	Stack	PROBE LENGTH [ft]	10	C(p)	0.806				
DATE	1-21-05	NOZZLE ID [inch]	7/32A 0.214	FILTER BOX SETTING	325				
OPERATOR(S)	K.C. & ISO BABY	%H_2O (Assumed)		PROBE HTR SETTING	250				
AMBIENT TEMP [°F]	~53°	FILTER ID	#5	DUCT X-SECTION	circ ?	rect ?	other:		
BAR. PRESS. [" Hg]	29.65	K FACTOR	1.67	DUCT DIMENSIONS	19 ft ID	DUCT AREA	283.53 ft^2		

	TRAVERSE POINT [port-inch]	CLOCK TIME (24-hr)	SAMPLE TIME [minute]	STATIC PRES [" H_2O]	PITOT HEAD [" H_2O]	METER DIFF PRESSURE [" H_2O]	METER VACUUM [" Hg]	METER READING [ft^3]	METER TEMP [oF] (6) inlet	METER TEMP [oF] (7) outlet	STACK TEMP (1) [°F]	PROBE TEMP (2) [°F]	FILTER BOX (3) [°F]	LAST IMP TEMP (4) [°F]	METER EXHAUST O_2 [% vol]	METER EXHAUST CO_2 [% vol]
		0900	0					718.50								
	-10.00		10		.73	1.20	3.5	724.28	73	72	127	247	328	46	6.5	13.7
D	-33.33		20	-.6651	1.10	1.82	5	731.28	77	72	127	250	333	46	6.1	14.0
	-67.50		30		1.15	1.90	5	738.49	80	73	126	250	333	46	6.1	14.0
					L.C.	RESTART		738.61								
	-10.00		40		.73	1.20	3.5	744.38	78	73	126	251	330	47	6.1	14.0
C	-33.33		50	-.5008	1.05	1.75	5	751.25	81	74	126	257	330	49	5.9	14.2
	-67.50		60		1.10	1.82	5	758.29	82	75	126	252	331	51	6.1	14.0
					L.C.	RESTART		758.40								
	-10.00		70		.76	1.25	4	764.27	81	75	126	255	330	52	6.2	14.0
B	-33.33		80	-.5228	1.10	1.82	5	771.33	83	76	126	254	331	53	6.1	14.0
	-67.50		90		1.15	1.90	5	778.56	85	77	127	253	332	48	6.2	14.0
					L.C.	RESTART		778.70								
	-10.00		100		.76	1.25	4	784.57	84	78	127	255	327	46	6.2	14.0
A	-33.33		110	-.4812	1.10	1.82	5	791.60	86	78	127	254	331	46	6.2	14.0
	-67.50		120		1.15	1.90	5	798.83	89	80	127	259	332	47	6.1	14.0
		1115														
	AVERAGE			-0.54	0.982	1.64		79.96	78.4		126.5				6.2	14.0

Sample Train Pre Test OK ft^3 @ 10 in. Hg
Leak Checks: Post Test OK ft^3 @ 10 in. Hg

Pitot Tube PreTest OK @ 7 in. H_2O
Leak Checks: Post Test OK @ 7 in. H_2O

CONSOL ENERGY

NOTE: Purge for 10 minutes at end of sampling.

SCR/FGD Hg SAMPLING PROGRAM, PLANT 4 - ONTARIO HYDRO SAMPLING TRAIN DATA

Location			Econ Out Unit 1	AirHtr Out Unit 1	FGD Inlet Unit 1	Stack Unit 1	Econ Out Unit 1	AirHtr Out Unit 1	FGD Inlet Unit 1	Stack Unit 1	Econ Out Unit 1	AirHtr Out Unit 1	FGD Inlet Unit 1	Stack Unit 1	Econ Out Unit 1	AirHtr Out Unit 1	FGD Inlet Unit 1	Stack Unit 1
Date			19-Jan	19-Jan	19-Jan	19-Jan	20-Jan	20-Jan	20-Jan	20-Jan	20-Jan	20-Jan	20-Jan	20-Jan	01/21/2005	01/21/2005	01/21/2005	01/21/2005
Start Time			1100	1100	1100	1100	935	935	935	935	1335	1335	1335	1335	900	900	900	900
Stop Time			1315	1325	1300	1320	1154	1200		1154	1553	1559		1553	1113	1120	1100	1115
Test Number			ECON-1	AHO-1	FGD-1	STK-1	ECON-2	AHO-2	FGD-2	STK-2	ECON-3	AHO-3	FGD-3	STK-3	ECON-4	AHO-4	FGD-4	STK-4
Sample Type			OH-Hg	OH-Hg	OH-Hg	OH-Hg	OH-Hg	OH-Hg	OH-Hg	OH-Hg	OH-Hg	OH-Hg	OH-Hg	OH-Hg	OH-Hg	OH-Hg	OH-Hg	OH-Hg
Y factor of dry gas meter	-		0.987	1.010	0.960	1.026	0.987	1.010	0.960	1.026	0.987	1.010	0.960	1.026	0.987	1.010	0.960	1.026
Gas Volume	-	ft^3	49.14	42.96	70.68	77.62	50.57	43.22	73.82	78.01	44.43	43.51	69.07	79.31	50.47	42.23	73.95	79.96
Delta H of dry gas meter	-	" H_2O	0.55	0.47	1.18	1.57	0.58	0.50	1.27	1.59	0.43	0.48	1.10	1.60	0.59	0.46	1.26	1.64
Meter Temperature	-	°F	98.7	80.3	75.7	82.0	92.8	68.7	80.7	76.6	99.7	83.0	74.5	84.5	89.9	65.3	71.8	78.4
C Factor of pitot tube	-		0.838	0.846	0.835	0.806	0.838	0.846	0.835	0.806	0.838	0.846	0.835	0.806	0.838	0.846	0.835	0.806
Nozzle Diameter	-	inches	0.191	0.188	0.193	0.214	0.191	0.188	0.193	0.214	0.191	0.188	0.193	0.214	0.191	0.188	0.193	0.214
A n (area of nozzle)	-	ft^2	0.00020	0.00019	0.00020	0.00025	0.00020	0.00019	0.00020	0.00025	0.00020	0.00019	0.00020	0.00025	0.00020	0.00019	0.00020	0.00025
Area of Stack (Single of Dual)	-	ft^2	725.0	544.4		283.5	725.0	544.4		283.5	725.0	544.4		283.5	725.0	544.4		283.5
H_2O Weight	-	gm	90.7	76.4	114.1	239.2	91.5	71.7	107.5	243.3	77.3	74.0	124.9	241.4	90.1	89.7	121.6	245.3
Sample Time	-	minutes	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120
Barometric Pressure	-	" Hg	29.96	29.96	29.96	29.96	29.79	29.79	29.79	29.79	29.72	29.72	29.72	29.72	29.65	29.65	29.65	29.65
Static Pressure	-	" H_2O	-4.54	-9.00	5.68	-0.45	-4.57	-9.16	5.58	-0.59	-4.47	-8.90	4.29	-0.58	-4.40	-8.92	5.63	-0.54
% Oxygen	-		3.3	4.9	6.0	6.2	3.7	5.4	5.9	6.4	3.7	5.2	5.9	6.1	3.7	5.3	5.8	6.2
% Carbon Dioxide	-		16.7	15.2	14.1	14.0	16.4	14.7	14.3	13.8	16.3	14.9	14.2	14.0	16.4	14.8	14.3	14.0
% N_2 + CO	-		80.0	79.9	79.9	79.8	79.9	79.9	79.8	79.8	80.0	79.9	79.9	79.9	79.9	79.9	79.9	79.8
Stack Temp (Dry Bulb)	-	°F	702	274	269	127	712	277	274	127	713	280	272	126	714	277	271	127
Stack Temp (Wet Bulb)	-	°F																
"S" sample (rms vel head)	-	" H_2O	0.868	0.507	1.123	0.944	0.925	0.516	1.216	0.953	0.672	0.514	1.052	0.958	0.945	0.491	1.212	0.982
Dust Wt.	-	gm	5.300	1.638	0.0024	0.0002	6.576	0.698	0.0004	0.0030	6.039	2.135	0.0115	0.0012	7.128	1.597	0.0134	0.0017
Sample Volume	-	DSCF	45.94	42.49	67.13	77.95	47.52	43.44	69.09	78.69	41.12	42.47	65.21	78.66	47.45	42.51	70.04	80.02
Sample Volume	-	dscm	1.301	1.203	1.901	2.208	1.346	1.230	1.957	2.228	1.164	1.203	1.847	2.228	1.344	1.204	1.984	2.266
ABS ST PRES	-	" Hg	29.63	29.30	30.38	29.93	29.45	29.12	30.20	29.75	29.39	29.07	30.04	29.68	29.33	28.99	30.06	29.61
ABS ST TEMP	-	°R	1162	734	729	587	1172	737	734	587	1173	740	732	586	1174	737	731	587
H_2O - % by Vol	-	vapor	8.5	7.8	7.4	12.6	8.3	7.2	6.8	12.7	8.1	7.6	8.3	12.6	8.2	9.0	7.6	12.6
Water Volume	-	std ft^3	4.27	3.60	5.37	11.27	4.31	3.38	5.06	11.46	3.64	3.49	5.88	11.37	4.24	4.22	5.73	11.55
Dry Molecular Weight	-	lb/lb-mole	30.80	30.63	30.50	30.49	30.77	30.57	30.52	30.46	30.76	30.59	30.51	30.48	30.77	30.58	30.52	30.49
Wet Molecular Weight	-	lb/lb-mole	29.71	29.64	29.57	28.91	29.71	29.66	29.67	28.88	29.72	29.64	29.47	28.91	29.72	29.44	29.57	28.91
% EXCESS AIR	-		18.5	30.3	39.4	41.7	21.3	34.4	38.9	43.6	21.2	32.7	38.8	40.7	21.3	33.6	37.9	41.7
Dry Mole Frac.	-		0.915	0.922	0.926	0.874	0.917	0.928	0.932	0.873	0.919	0.924	0.917	0.874	0.918	0.910	0.924	0.874
Wet Mole Frac.	-		0.085	0.078	0.074	0.126	0.083	0.072	0.068	0.127	0.081	0.076	0.083	0.126	0.082	0.090	0.076	0.126
Gas Velocity, Direct	-	ft/sec	76.69	47.33	68.16	77.95	79.73	47.99	71.26	78.69	68.07	48.07	66.57	78.66	80.82	47.10	71.25	80.02
ACFM	-		3,336,140	1,546,234	0	1,326,070	3,468,059	1,567,764	0	1,338,659	2,960,969	1,570,237	0	1,338,148	3,515,756	1,538,526	0	1,361,284
DSCFM (FGD inlet = Air Heater Outlet)	-		1,372,962	1,004,537	1,004,537	1,042,760	1,410,646	1,014,161	1,014,161	1,044,777	1,202,357	1,005,445	1,005,445	1,044,352	1,422,593	971,175	971,175	1,059,801
DSCFM (rounded)			1,373,000	1,004,500	1,004,500	1,042,800	1,410,600	1,014,200	1,014,200	1,044,800	1,202,400	1,005,400	1,005,400	1,044,400	1,422,600	971,200	971,200	1,059,800
DSCMM			38,882	28,448	28,448	29,531	39,950	28,721	28,721	29,588	34,051	28,474	28,474	29,576	40,288	27,504	27,504	30,014
Excess Air Free DSCFM	-		1,156,179	769,023	718,075	733,425	1,160,915	752,129	727,867	724,845	989,500	755,286	721,611	739,541	1,170,747	724,896	701,662	745,410
CALCULATED FIRING RATE:																		
Dry	-	lb/min	8,648	5,752	5,371	5,486	8,710	5,643	5,461	5,438	7,424	5,667	5,414	5,549	9,028	5,590	5,411	5,748
Wet	-	lb/min	8,825	5,870	5,481	5,598	8,878	5,752	5,566	5,543	7,567	5,776	5,518	5,655	9,154	5,668	5,486	5,828
Dry	-	lb/hr	518,885	345,132	322,267	329,156	522,600	338,580	327,658	326,298	445,436	340,002	324,842	332,914	541,699	335,406	324,656	344,898
Wet	-	lb/hr	529,474	352,176	328,844	335,873	532,668	345,103	333,970	332,584	454,017	346,551	331,100	339,327	549,223	340,065	329,165	349,688
CALCULATED FIRING RATE:																		
Dry	-	tons/hr	259.4	172.6	161.1	164.6	261.3	169.3	163.8	163.1	222.7	170.0	162.4	166.5	270.8	167.7	162.3	172.4
Wet	-	tons/hr	264.7	176.1	164.4	167.9	266.3	172.6	167.0	166.3	227.0	173.3	165.6	169.7	274.6	170.0	164.6	174.8
HEAT INPUT:																		
MM Btu/hr	-		7100	4722	4410	4504	7152	4634	4484	4466	6096	4653	4446	4556	7153	4429	4287	4554
PARTICULATE LOADING:																		
Grains/DSCF	-		1.7799	0.5946	0.0006	0.0000	2.1356	0.2480	0.0001	0.0006	2.2660	0.7754	0.0027	0.0002	2.3179	0.5797	0.0030	0.0003
lb/hr	-		20,955	5,122	5	0.35	25,830	2,157	1	5.27	23,363	6,685	23.5	2.11	28,273	4,828	24.6	2.98
lb/MM Btu	-		2.95	1.08	0.00	0.00	3.61	0.47	0.00	0.00	3.83	1.44	0.01	0.00	3.95	1.09	0.01	0.00
Ash Production		lb/hr	40,317	26,817	25,040	25,575	43,062	27,899	26,999	26,887	36,704	28,016	26,767	27,432	64,191	39,746	38,472	40,870
Bagouse Ash			20,955	5,122	5	0.35	25,830	2,157	1	5.27	23,363	6,685	23	2.11	28,273	4,828	25	2.98
Bottom Ash			19,363	21,695	25,035	25,575	17,232	25,742	26,998	26,882	13,341	21,331	26,744	27,430	35,918	34,918	38,447	40,867
Percent Fly Ash			52.0%	19.1%	0.0%	0.0%	60.0%	7.7%	0.0%	0.0%	63.7%	23.9%	0.1%	0.0%	44.0%	12.1%	0.1%	0.0%
% ISOKINETIC	-		101.71	99.66	99.05	70.79	102.39	100.91	98.12	71.32	103.96	99.53	100.92	71.32	101.39	103.14	100.26	71.50

Impinger Components Wts & Volumes	ECON-1	AHO-1	FGD-1	STK-1	ECON-2	AHO-2	FGD-2	STK-2	ECON-3	AHO-3	FGD-3	STK-3	ECON-4	AHO-4	FGD-4	STK-4
Filter Wt., g	5.2995	1.6375	0.0024	0.3278	6.5763	0.6981	0.0004	0.3375	6.0387	2.1345	0.0115	0.3303	7.1277	1.5973	0.0134	0.3297
ppb Hg	15	462	<5.0	<5.0	15	80	<5.0	<5.0	14	98	<5.0	<5.0	18	95	<5.0	<5.0
total ug	0.08	0.76	<5.00E-03	<5.00E-03	0.10	0.06	<5.00E-03	<5.00E-03	0.08	0.21	<5.00E-03	<5.00E-03	0.13	0.15	<5.00E-03	<5.00E-03
ug/dscm	0.06	0.63	<2.63E-03	<2.26E-03	0.07	0.05	<2.56E-03	<2.24E-03	0.07	0.17	<2.71E-03	<2.24E-03	0.10	0.13	<2.52E-03	<2.21E-03
Probe Rinse volume, ml	177	143	64	109	188	120	77	105	170	121	135	111	227	88	127	109
Analytical Hg, ng/ml	<1.0	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
ug/dscm	<0.14	0.12	<0.03	<0.05	<0.14	<0.10	<0.04	<0.05	<0.15	<0.10	<0.07	<0.05	<0.17	<0.07	<0.06	<0.05
Heated Umbilical Line Rinse volume, ml	75	98	84	NA	111	106	80	NA	115	118	112	NA	173	139	107	NA
Analytical Hg, ng/ml	<1.0	1.7	<1.0		<1.0	5.1	<1.0		<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	
ug/dscm	<0.06	0.14	<0.04		<0.08	0.44	<0.04		<0.10	<0.10	<0.06		<0.13	<0.12	<0.05	
KCl volume, ml	537	528	559	680	537	524	555	683	526	523	566	684	537	539	562	690
Analytical Hg, ng/ml	11.2	12.3	21.0	1.3	11.9	14.9	22.7	1.0	10.2	14.6	23.9	0.9	8.2	9.9	11.7	0.7
ug/dscm	4.62	5.40	6.17	0.40	4.75	6.35	6.44	0.31	4.61	6.35	7.32	0.28	3.28	4.43	3.32	0.21
Nitric/Peroxide volume, ml	176	174	175	177	175	173	175	177	175	175	176	175	174	175	176	175
Analytical Hg, ng/ml	0.5	<0.2	<0.2	<0.20	0.5	0.9	0.4	<0.20	0.4	0.3	0.2	0.2	0.4	<0.2	<1.0	<0.20
ug/dscm	0.07	<0.03	<0.02	<0.02	0.07	0.13	0.04	<0.02	0.06	0.04	0.02	0.02	0.05	<0.03	<0.09	<0.02
KMnO4 volume, ml	244	243	244	245	246	242	243	246	245	246	247	245	245	245	247	244
Analytical Hg, ng/ml	23.2	0.4	2.4	2.3	17.3	3.5	1.4	6.3	13.4	4.5	2.0	9.1	8.0	1.3	2.6	4.3
ug/dscm	4.35	0.08	0.31	0.26	3.16	0.69	0.17	0.70	2.82	0.92	0.27	1.00	1.46	0.26	0.32	0.46
KMnO4-Acid Rinse volume, ml	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Analytical Hg, ng/ml	<1.0	1.5	<1.0	<1.0	1.8	<1.0	1.1	2.0	<1.0	<1.0	1.5	<1.0	<1.0	<1.0	<1.0	<1.0
ug/dscm	<0.08	0.12	<0.05	<0.05	0.13	<0.08	0.06	0.09	<0.09	<0.08	0.08	<0.04	<0.07	<0.08	<0.05	<0.04
Particulate, ug/m^3	0.0611	0.6287	2.63E-03	2.26E-03	0.0733	0.0454	2.56E-03	2.24E-03	0.0726	0.1739	2.71E-03	2.24E-03	0.0955	0.1260	2.52E-03	2.21E-03
Particulate, mg/sec	0.0251	0.2843	1.27E-03	1.11E-03	0.0305	0.0209	1.22E-03	1.11E-03	0.0308	0.0808	1.32E-03	1.11E-03	0.0408	0.0594	1.23E-03	1.10E-03
Percent of Total	0.6519	9.6464	0.0396	0.2947	0.8721	0.5801	0.0376	0.1939	0.9202	2.2388	0.0346	0.1615	1.8169	2.4600	0.0647	0.2807
Oxidized Fraction, ug/m^3	4.8164	5.6543	6.2523	0.4498	4.9711	6.8841	6.5191	0.3536	4.8521	6.5466	7.4582	0.3262	3.5746	4.6204	3.4330	0.2612
Oxidized Fraction, mg/sec	1.9800	2.5568	3.0279	0.2214	2.0666	3.1758	3.1077	0.1744	2.0580	3.0420	3.6274	0.1608	1.5282	2.1779	1.6718	0.1307
Percent of Total	51.3863	86.7578	94.2470	58.5185	59.1385	87.9653	96.0454	30.5640	61.4972	84.2812	95.2679	23.4682	68.0243	90.1879	88.0609	33.2360
Elemental Fraction, ug/^{3}	4.4954	0.2343	0.3790	0.3166	3.3614	0.8964	0.2659	0.8011	2.9652	1.0471	0.3678	1.0615	1.5848	0.3767	0.4629	0.5226
Elemental Fraction, mg/sec	1.8480	0.1060	0.1836	0.1558	1.3974	0.4135	0.1267	0.3950	1.2577	0.4865	0.1789	0.5232	0.6775	0.1775	0.2254	0.2614
Percent of Total	47.9618	3.5958	5.7133	41.1869	39.9894	11.4545	3.9170	69.2421	37.5827	13.4800	4.6976	76.3703	30.1588	7.3521	11.8744	66.4833
Total ug/m^3	9.3730	6.5173	6.6340	0.7687	8.4058	7.8260	6.7876	1.1569	7.8899	7.7676	7.8287	1.3899	5.2549	5.1231	3.8985	0.7860
Total mg/sec	3.8531	2.9471	3.2127	0.3783	3.4945	3.6103	3.2356	0.5705	3.3465	3.6094	3.8076	0.6851	2.2466	2.4149	1.8985	0.3932

Axial Flow Check

Location	Econ Out	Duct Ht, "		Barometric	30.15
Date	1/18/05	Duct ID,"		Static	
Time	1530	Duct Area	ft²	Dry Bulb	
Tube I.D.		% O_2		Wet Bulb	
C-Factor		% CO_2		% H_2O	
Operator(s)		% N_2		W.M.Wt	

PORT/ POINT	DISTANCE [" From Wall]	TEMP [°F]	DELTA P [" H_2O]	VELOCITY [Ft/Sec]	Null Angle	
South						
3	1/3	710	0.32			-4.0
2	1/2	718	0.47			-4.0
1	Full (8-10")	718	0.930			-4.8
North				0.95		
1	1/3	716	0.16			
2	1/2	724	0.925			-4.1
3	Full (8-10")	730	0.947			-5.1
Average						
Maximum						
Minimum						
SDEV						

DATA SUMMARY	
Velocity, [fps]	
acfm	
scfm	
dscfm	
Ex Air Free cfm	
Est. MM Btu/hr Heat Input	
Est. Firing Rate, lb/hr	

@ Location

Meter Box #-1

Y = 0.987

ΔH = 1.976

E-15 = 0.838

3/16 D = 0.191

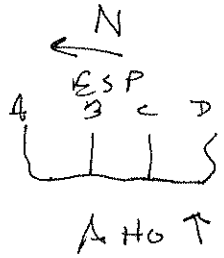
K = 0.632

Axial Flow Check

Location	AHO	Duct Ht, "		Barometric	
Date	2-19-15	Duct ID,"		Static	
Time		Duct Area	ft^2	Dry Bulb	
Tube I.D.		% O_2		Wet Bulb	
C-Factor		% CO_2		% H_20	
Operator(s)		% N_2		W.M.Wt	

PORT/ POINT	DISTANCE [" From Wall]	TEMP [°F]	DELTA P [" H_2O]	VELOCITY [Ft/Sec]	Null Angle	
A - 1		299	0.72			
2		300	0.30			-8.2
3		300	0.32			
4		300	0.72			
B - 1		292	0.79			
2		293	0.55			
3		293	0.50			-8.2
4		293	0.72			
C - 1		271	0.92			
2		271	0.62			
3		271	0.42			-8.3
4		271	0.70			
D - 1		256	0.65			
2		255	0.54			
3		256	0.27			-8.3
4		255	0.63			
Average						
Maximum						
Minimum						
SDEV						

DATA SUMMARY	
Velocity, [fps]	
acfm	
scfm	
dscfm	
Ex Air Free cfm	
Est. MM Btu/hr Heat Input	
Est. Firing Rate, lb/hr	



N=5
y< 1.011
ΔH@ = 2.015
E- 0.846
3/16 B = 0.188
Kc 0.93

Axial Flow Check

Location	FGDN	Duct Ht, "		Barometric	30.15
Date	1-18-05	Duct ID,"		Static	
Time		Duct Area	ft²	Dry Bulb	
Tube I.D.	S-14	% O_2		Wet Bulb	
C-Factor		% CO_2		% H_2O	
Operator(s)		% N_2		W.M.Wt	

PORT/ POINT	DISTANCE [" From Wall]	TEMP [°F]	DELTA P [" H_2O]	VELOCITY [Ft/Sec]	Null Angle
8'		220	1.28	use this pt	
7'			1.57		
6'			1.27		
5'			1.15		
4'		263	0.90		
8'		277	0.12		
7		275	0.14		
6		276	0.15		
5'		276	0.08		
4'		276	?		
Average					
Maximum					
Minimum					
SDEV					

North

South

DATA SUMMARY	
Velocity, [fps]	
acfm	
scfm	
dscfm	
Ex Air Free cfm	
Est. MM Btu/hr Heat Input	
Est. Firing Rate, lb/hr	

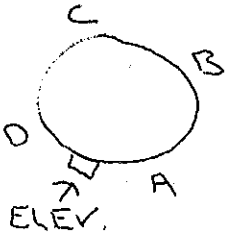
N-4
Y = 0.960
ΔH@ = 1.983
~~E-5 = 0.892~~
E-12 = 0.835
3/16 C = 0.193
K = 1.04

Axial Flow Check

Location	Stack	Duct Ht, "		Barometric	30.15
Date	1-18-05	Duct ID,"		Static	-0.5603
Time	1445 - 1500	Duct Area	ft²	Dry Bulb	
Tube I.D.	S-TYS-53	% O_2		Wet Bulb	
C-Factor		% CO_2		% H_20	
Operator(s)	K.C., B.S.	% N_2		W.M.Wt	

PORT/ POINT	DISTANCE [" From Wall]	TEMP [°F]	DELTA P [" H_2O]	VELOCITY [Ft/Sec]	Null Angle	
A-1	10.0	123.3		.5466		
A-2	33.3	123.2		1.275		-.5054
A-3	67.5	122.5		1.427		
B-1	10	123.7		.5092		
B-2	33.3	122.8		1.301		-.4255
B-3	67.5	124.0		1.413		
C-1	10	121.6		.1729	+2" .7300	
C-2	33.3	120.9		1.337		-.7538
C-3	67.5	122.8		1.292		
D-1	10	124.2		.7002		
D-2	33.3	124.1		1.243		-.5564
D-3	67.5	123.2		1.268		
		123.025		1.04		
Average				1.056		
Maximum				(RMS)		
Minimum						
SDEV						

DATA SUMMARY	
Velocity, [fps]	
acfm	
scfm	
dscfm	
Ex Air Free cfm	
Est. MM Btu/hr Heat Input	
Est. Firing Rate, lb/hr	



N-3
Y=1.026
ΔH@=1.982
E-11=0.806
7/32A=0.214
K=1.67

ONTARIO HYDRO Hg SAMPLING AND SPECIATION FIELD DATA SHEET

Page _____ of _____

TEST ID	ECON- 1	METER BOX	N-1	CAL. DATA: delta H	1.976	Comments:			
PLANT	SCR/FGD Plant 4 -	PITOT TUBE DESC		Y	0.987				
LOCATION	Economizer Outlet #2	PROBE LENGTH [ft]	8'	C(p)					
DATE	1/24/05	NOZZLE ID [inch]	3/16", 0191"	FILTER BOX SETTING	325				
OPERATOR(S)	GLC/MLF	%H_2O (Assumed)		PROBE HTR SETTING	325				
AMBIENT TEMP [°F]	60	FILTER ID	5	DUCT X-SECTION	circ ?	rect ?	other:		
BAR. PRESS. [" Hg]	29.92	K FACTOR	~~0.632~~	DUCT DIMENSIONS	2@25'x14.5'	DUCT AREA	725 ft²		

TRAVERSE POINT [port-inch]	CLOCK TIME (24-hr)	SAMPLE TIME [minute]	STATIC PRES [" H_2O]	PITOT HEAD [" H_2O]	METER DIFF PRESSURE [" H_2O]	METER VACUUM [" Hg]	METER READING [ft³]	METER TEMP [oF] (6) inlet	METER TEMP [oF] (7) outlet	STACK TEMP [°F] (1)	PROBE TEMP [°F] (2)	FILTER BOX [°F]	LAST IMP TEMP [°F] (4)	METER EXHAUST O_2 [% vol]	METER EXHAUST CO_2 [% vol]
	1130	0					739.10							4.3	15.7
N		10		0.60	0.38	3.0	742.46	63	60	671	325		49	~~4.3~~	~~15.7~~
O		20	-4.50	0.60	0.38	3.0	745.81	66	62	674	320		49	4.2	15.8
R		30		0.60	0.38	3.5	749.18	69	64	675	320		51	4.2	15.8
T		40	-4.20	0.60	0.38	4.0	752.56	71	65	675	320		52	4.3	15.7
H		50		0.60	0.38	4.0	755.93	73	67	677	323		53	4.2	15.8
		60		0.60	0.38	4.5	759.33	74	69	679	323		53	4.3	15.7
				Post NORTH LEAK CHECK OK - 0 @ 10" Hg											
	1241						759.45								
S		70		0.65	0.41	4.5	762.94	75	71	685	327		55	3.1	16.9
O		80	-4.58	0.70	0.44	5.0	766.56	77	72	688	323		54	3.0	16.9
U		90		0.70	0.44	6.0	770.22	78	73	687	322		56	2.8	17.1
T		100	-4.43	0.70	0.44	6.5	773.86	79	74	689	318		56	2.9	17.0
H		110		0.70	0.44	7.0	777.51	79	74	689	327		57	3.0	17.0
		120		0.72	0.45	8.0	781.14	80	75	690	322		57	3.0	17.0
AVERAGE			-4.4	0.647	0.408		41.92	71.3		681.6				3.6	16.4

Sample Train Pre Test 0 ft³ @ 10 in. Hg
Leak Checks: Post Test 0 ft³ @ 10 in. Hg

Pitot Tube PreTest 0 @ 6 in. H_2O
Leak Checks: Post Test 0 @ 5 in. H_2O

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✓NOTE: Purge for 10 minutes at end of sampling.

29.92

ONTARIO HYDRO Hg SAMPLING AND SPECIATION FIELD DATA SHEET

TEST ID	AHO- 1	METER BOX	N5	CAL. DATA: delta H	2.015	Comments:			
PLANT	SCR/FGD Plant 4	PITOT TUBE DESC		Y	1.011				
LOCATION	Air Heater Outlet/ESP Inlet #2	PROBE LENGTH [ft]	10	C(p)					
DATE	1-24-05	NOZZLE ID [inch]		FILTER BOX SETTING	325				
OPERATOR(S)	JR LR DO	%H_2O (Assumed)	8	PROBE HTR SETTING	325				
AMBIENT TEMP [°F]	42	FILTER ID		DUCT X-SECTION	circ ?	rect ?	other:		
BAR. PRESS. [" Hg]	29.92	K FACTOR	0.30	DUCT DIMENSIONS		DUCT AREA			

TRAVERSE POINT [port-inch]	CLOCK TIME (24-hr)	SAMPLE TIME [minute]	STATIC PRES [" H_2O]	PITOT HEAD [" H_2O]	METER DIFF PRESSURE [" H_2O]	METER VACUUM [" Hg]	METER READING [ft^3]	METER TEMP [oF] inlet	METER TEMP [oF] outlet	STACK TEMP [°F]	PROBE TEMP [°F]	FILTER BOX [°F]	LAST IMP TEMP [°F]	METER EXHAUST O_2 [% vol]	METER EXHAUST CO_2 [% vol]
	11:37	0					31.765								
D-1	11:40	10		0.45	0.40	2.0	35.060	57	58	265	246	N/A	46		
D-1	11:50	20		0.44	0.39	2.0	38.320	55	58	266	248		43	6.3	13.8
D-1	12:00	30		0.44	0.34	2.0	41.596	55	59	265	258		44	6.3	13.8
		40				leak check 0.000 4" Hg									
	1207	50					41.800								
C-1	1217	40		0.60	0.54	2.5	45.—	53	59	279	308		50		
C-1	1227	50	-12.75	0.58	0.52	2.5	49.29	61	60	281	304		46	4.9	15.2
C-1	1237	60		0.58	0.52	2.5	53.022	63	60	292	326		47	4.9	15.3
					leak check OK @ 6" Hg										
	12:50	80					53.150								
B-1	13:00	80 70		0.70	0.63	2.5	57.23	62	62	299	313		51		
B-1	1310	90 80	-13.15	0.70	0.63	3.0	61.31	65	63	299	320		46	4.4	15.7
B-1	1320	100 90		0.67	0.60	3.5	65.300	67	65	299	325		46	4.4	15.7
		110			leak check OK @ 7" Hg										
	1329	120					65.400								
A-1	1339	100		0.43	0.39	2.0	68.67	66	67	291	326		55		
A-1	1349	110	-12.95	0.40	0.36	2.0	71.86	69	69	302	324		52	5.0	15.1
A-1	1359	120		0.40	0.36	2.0	75.052	72	71	301	323		53	4.8	15.3
AVERAGE			-12.97	0.527	0.478		42.855	62.4		285.8				5.1	14.15.0

Sample Train Pre Test 0.000 ft^3 @ 11 in. Hg
Leak Checks: Post Test 0.000 ft^3 @ 5 in. Hg

Pitot Tube PreTest OK @ 9 in. H_2O
Leak Checks: Post Test _____ @ _____ in. H_2O

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NOTE: Purge for 10 minutes at end of sampling.

ONTARIO HYDRO Hg SAMPLING AND SPECIATION FIELD DATA SHEET

Unit 2

Page 1 of 1

TEST ID	FGD- 1
PLANT	SCR/FGD Plant 4
LOCATION	FGD Inlet
DATE	1/24/05
OPERATOR(S)	JAW
AMBIENT TEMP [°F]	53
BAR. PRESS. [" Hg]	29.92

METER BOX	N-4
PITOT TUBE DESC	S-54
PROBE LENGTH [ft]	6
NOZZLE ID [inch]	5 3/16
%H_2O (Assumed)	7.5
FILTER ID	1
K FACTOR	.8764) 1.0305)

CAL. DATA: delta H	1.983	Comments:	
Y	0.960		
C(p)	0.807		
FILTER BOX SETTING	325		
PROBE HTR SETTING	325		
DUCT X-SECTION	circ ?	rect ?	other:
DUCT DIMENSIONS		DUCT AREA	

DGM after calib check ↓

TRAVERSE POINT [port-inch]	CLOCK TIME (24-hr)	SAMPLE TIME [minute]	STATIC PRES [" H_2O]	PITOT HEAD [" H_2O]	METER DIFF PRESSURE [" H_2O]	METER VACUUM [" Hg]	METER READING [ft^3]	METER TEMP [oF] inlet	METER TEMP [oF] outlet	STACK TEMP [°F]	PROBE TEMP [°F]	FILTER BOX [°F]	LAST IMP TEMP [°F]	METER EXHAUST O_2 [% vol]	METER EXHAUST CO_2 [% vol]	
	11:30	0					238.10									
North	11:40	10	8.5	0.86	0.73	3.0	242.81	63	56	285	323	326	51	6.0	14.1	
	11:50	20			0.73	3.0	247.50	69	58		316	326	49	6.0	14.1	
	12:00	30				3.0	252.21	73	60		325	326	50	6.0	14.1	21C OK
	12:10	40				3.0	256.89	74	63		324	325	51	6.0	14.1	
	12:20	50				3.0	261.60	77	65		325	325	52	6.0	14.1	
	12:30	60				3.0	266.22	78	66		324	326	52	6.0	14.1	21d Recal
							28.12									
	12:45						266.50									
South	12:55	70	8.5	1.15	1.20	3.0	272.58	77	68	153	329	326	50	5.2	14.8	
	13:05	80				3.0	278.59	81	69		323	325	46	5.2	14.8	
	13:15	90				3.0	284.57	83	69		326	325	47	5.2	14.8	21.0 OK
	13:25	100				3.0	290.52	85	71		327	325	47	5.2	14.8	
	13:35	110				3.0	296.56	86	72		324	325	47	5.2	14.8	
	13:45	120				3.0	302.56	86	73		328	325	48	5.2	14.8	20.8 OK
							36.06									
				RMS												
AVERAGE			8.5	1.00	0.965		64.18		71.8	219				5.6	14.45	

Sample Train Pre Test dry gas ft³ @ 12 in. Hg

Leak Checks: Post Test leak <.06 ft³ @ 10 in. Hg

Pitot Tube PreTest NA @ ____ in. H_2O

Leak Checks: Post Test NA @ ____ in. H_2O

CONSOLENERGY.

Post-test air purge for 10 min @ Delta H = 1.0

NOTE: Purge for 10 minutes at end of sampling.

ONTARIO HYDRO Hg SAMPLING AND SPECIATION FIELD DATA SHEET

Page _____ of _____

TEST ID	STK- 2 TEST #1	METER BOX	N-3	CAL. DATA: delta H	1.982	Comments:			
PLANT	SCR/FGD Plant 4	PITOT TUBE DESC	E-11	Y	1.026				
LOCATION	Stack	PROBE LENGTH [ft]	~~10~~ 8	C(p)					
DATE	1-24-05	NOZZLE ID [inch]	7/32A	FILTER BOX SETTING	325				
OPERATOR(S)	K.C., B.S.	%H_2O (Assumed)		PROBE HTR SETTING	250				
AMBIENT TEMP [°F]	~ 460	FILTER ID	#1	DUCT X-SECTION	circ ?	rect ?	other:		
BAR. PRESS. [" Hg]	29.90	K FACTOR	1.59	DUCT DIMENSIONS	19 ft ID	DUCT AREA	283.53 ft^2		

	TRAVERSE POINT [port-inch]	CLOCK TIME (24-hr)	SAMPLE TIME [minute]	STATIC PRES [" H_2O]	PITOT HEAD [" H_2O]	METER DIFF PRESSURE [" H_2O]	METER VACUUM [" Hg]	METER READING [ft^3]	METER TEMP [oF] (6) inlet	METER TEMP [oF] (7) outlet	STACK TEMP (1) [°F]	PROBE TEMP (2) [°F]	FILTER BOX (3) [°F]	LAST IMP TEMP (4) [°F]	METER EXHAUST O_2 [% vol]	METER EXHAUST CO_2 [% vol]
		1130	0					808.30								
D	-10.00		10		.70	1.10	3.5	813.79	69	66	127	253	328	49	5.9	14.2
	-33.33		20	-.5832	1.00	1.59	4.5	820.27	74	67	127	257	331	52	5.9	14.2
	-67.50		30		1.05	1.67	5	826.92	77	68	125	257	331	57	5.9	14.2
					L.C.	RESTART		827.03								
C	-10.00		40		.70	1.10	3.5	832.51	76	69	125	226	320	51	6.0	14.1
	-33.33		50	-.7267	1.00	1.59	4.5	839.02	78	70	125	235	325	47	5.9	14.2
	-67.50		60		1.05	1.67	5	845.76	80	71	124	256	331	49	5.8	14.3
					L.C.	RESTART		845.90								
B	-10.00		70		.73	1.15	3.5	851.48	78	72	125	226	325	49	6.0	14.1
	-33.33		80	-.6246	1.05	1.67	5	858.02	81	73	125	250	330	51	5.8	14.3
	-67.50		90		1.10	1.74	5	865.05	82	74	124	256	332	54	5.8	14.3
					L.C.	RESTART		865.15								
A	-10.00		100		.70	1.10	3.5	870.68	80	74	124	253	329	52	6.0	14.1
	-33.33		110	-.5543	1.00	1.59	5	877.21	81	74	124	252	329	54	5.9	14.2
	-67.50		120		1.10	1.74	5	884.05	83	75	124	254	331	58	5.8	14.3
		1345														
	AVERAGE			-0.62	0.924	1.48		75.400	74.7		124.9				5.9	14.2

Sample Train Leak Checks: Pre Test OK ft^3 @ 10 in. Hg; Post Test OK ft^3 @ 10 in. Hg

Pitot Tube Leak Checks: PreTest OK @ 7 in. H_2O; Post Test OK @ 7 in. H_2O

CONSOL ENERGY

NOTE: Purge for 10 minutes at end of sampling.

ONTARIO HYDRO Hg SAMPLING AND SPECIATION FIELD DATA SHEET

TEST ID	ECON- 2
PLANT	SCR/FGD Plant 4 ~~42~~
LOCATION	Economizer Outlet
DATE	1/25/05
OPERATOR(S)	GLC/MLF
AMBIENT TEMP [°F]	75
BAR. PRESS. [" Hg]	29.79

METER BOX	N-1
PITOT TUBE DESC	E-815
PROBE LENGTH [ft]	8'
NOZZLE ID [inch]	3/16" 0.191
%H_2O (Assumed)	
FILTER ID	7
K FACTOR	0.632

CAL. DATA: delta H	1.976	Comments:	
Y	0.987		
C(p)			
FILTER BOX SETTING	325		
PROBE HTR SETTING	325		
DUCT X-SECTION	circ ?	rect ?	other:
DUCT DIMENSIONS	2@25'x14.5'	DUCT AREA	725 ft^2

TRAVERSE POINT [port-inch]	CLOCK TIME (24-hr)	SAMPLE TIME [minute]	STATIC PRES [" H_2O]	PITOT HEAD [" H_2O]	METER DIFF PRESSURE [" H_2O]	METER VACUUM [" Hg]	METER READING [ft^3]	METER TEMP (6) [oF] (7) inlet	METER TEMP (6) [oF] (7) outlet	STACK TEMP [°F] (1)	PROBE TEMP [°F] (2)	FILTER BOX [°F]	LAST IMP TEMP [°F] (4)	METER EXHAUST O_2 [% vol]	METER EXHAUST CO_2 [% vol]
	902	0					793.90								
S		10		0.66	0.42	3.0	797.46	70	66	673	324		68	3.5	16.5
O		20	-4.47	0.65	0.41	3.0	800.95	72	66	675	326		67	3.6	16.4
O		30		0.62	0.40	3.5	804.40	73	68	676	318		64	3.6	16.4
T		40	-4.65	0.62	0.40	4.0	807.89	74	68	676	328		62	3.7	16.3
H		50		0.62	0.40	4.5	811.35	74	69	676	318		61	3.6	16.4
		60		0.62	0.40	5.0	814.84	75	70	676	320		61	3.6	16.4
			POST - South / PRE-North				LEAK CHECK OK - 0 @ 10" Hg								
	1009						815.00								
N		70		0.50	0.32	3.0	818.16	76	72	669	318		62	4.5	15.6
O		80	-4.72	0.50	0.32	3.5	821.29	77	72	671	326		60	4.6	15.5
R		90		0.50	0.32	4.0	824.44	78	73	672	321		60	4.5	15.6
T		100	-4.54	0.50	0.32	4.0	827.60	79	74	670	318		60	4.5	15.6
H		110		0.50	0.32	4.5	830.76	80	75	671	320		59	4.5	15.5
		120		0.50	0.32	5.0	833.92	80	75	671	321		59	4.6	15.5
AVERAGE			-4.60	0.564	0.363		39.86	73.2		673				4.1	16.0

Sample Train Pre Test 0 ft^3 @ 10 in. Hg

Leak Checks: Post Test 0 ft^3 @ 10 in. Hg

Pitot Tube PreTest 0 @ 8 in. H_2O

Leak Checks: Post Test ~0 @ 6 in. H_2O

CONSOLENERGY

NOTE: Purge for 10 minutes at end of sampling.

ONTARIO HYDRO Hg SAMPLING AND SPECIATION FIELD DATA SHEET

TEST ID	AHO-2	METER BOX	N-5	CAL. DATA: delta H	2.015	Comments:		
PLANT	SCR/FGD Plant 4	PITOT TUBE DESC		Y	1.011			
LOCATION	Air Heater Outlet/ESP Inlet #2	PROBE LENGTH [ft]	10	C(p)				
DATE	1-25-05	NOZZLE ID [inch]	0.188	FILTER BOX SETTING	325			
OPERATOR(S)	JL LR DO	%H_2O (Assumed)	8	PROBE HTR SETTING	325			
AMBIENT TEMP [°F]		FILTER ID	14	DUCT X-SECTION	circ ?	rect ?	other:	
BAR. PRESS. [" Hg]	29.72	K FACTOR	0.90	DUCT DIMENSIONS		DUCT AREA		

TRAVERSE POINT [port-inch]	CLOCK TIME (24-hr)	SAMPLE TIME [minute]	STATIC PRES [" H_2O]	PITOT HEAD [" H_2O]	METER DIFF PRESSURE [" H_2O]	METER VACUUM [" Hg]	METER READING [ft^3]	METER TEMP [oF] inlet	METER TEMP [oF] outlet	STACK TEMP [°F]	PROBE TEMP [°F]	FILTER BOX [°F]	LAST IMP TEMP [°F]	METER EXHAUST O_2 [% vol]	METER EXHAUST CO_2 [% vol]
	0900	0					31.150								
A-1	0910	10		0.59	0.53	2.0	34.99	51	52	295	302	NA	41	5.0	14.7
A-1	0920	20	-13.13	0.59	0.53	2.0	38.66	54	53	296	284		40	5.4	14.7
A-1	0930	30		0.59	0.53	2.0	42.400	56	55	296	284		40	5.4	14.7
		40				leak check ok @ 5" Hg									
	0935	50					42.500								
B-1	0945	40		0.59	0.53	2.0	46	55	56	295	306		44		
B-1	0955	50	-13.58	0.59	0.53	2.5	49.93	58	57	294	311		41	4.6	15.5
B-1	1005	60		059	0.53	2.5	103.653	60	53	294	304		42	4.6	15.5
	1015	70					103.740								
C-1	1025	70		0.50	0.46	2.5	107.29	59	60	270	302		46		
C-1	1035	80	-13.10	0.50	0.45	2.5	110.765	61	61	276	309		44	5.0	15.1
C-1	1045	90		0.47	0.42	2.5	114.245	62	61	277	312		44	4.9	15.2
		100				leak check ok @ 5 in Hg									
	1048	100					114.310								
D-1	1058	100		0.50	0.45	2.5	117.903	62	61	255	317		48		
D-1	1108	110	-13.48	0.47	0.42	2.5	121.31	63	63	263	319		46	6.2	14.0
D-1	1118	120		0.47	0.42	2.5	124.714	64	63	264	314		46	6.2	14.0
														5.3	
AVERAGE			-13.30	0.538	0.483		43.317	58.5		279.6				~~6.8~~	14.8

Sample Train Pre Test 0.700 ft^3 @ 10 in. Hg
Leak Checks: Post Test 0.600 ft^3 @ 4.5 in. Hg

Pitot Tube PreTest OK @ 9 in. H_2O
Leak Checks: Post Test OK @ 7 in. H_2O

CONSOLENERGY

NOTE: Purge for 10 minutes at end of sampling.

ONTARIO HYDRO Hg SAMPLING AND SPECIATION FIELD DATA SHEET

UNIT 2

TEST ID	FGD- 2	METER BOX	N4	CAL. DATA: delta H	1.983	Comments:			
PLANT	SCR/FGD Plant 4	PITOT TUBE DESC	S-54	Y	0.960				
LOCATION	FGD Inlet	PROBE LENGTH [ft]	6	C(p)	0.807				
DATE	1/25/05	NOZZLE ID [inch]	G 3/16 0.188	FILTER BOX SETTING	325				
OPERATOR(S)	JAW	%H_2O (Assumed)	2.5	PROBE HTR SETTING	325				
AMBIENT TEMP [°F]	55	FILTER ID	2	DUCT X-SECTION	circ.?	rect ?	other:		
BAR. PRESS. [" Hg]	29.79	K FACTOR	0.886 .756 (S) (N)	DUCT DIMENSIONS		DUCT AREA			

TRAVERSE POINT [port-inch]	CLOCK TIME (24-hr)	SAMPLE TIME [minute]	STATIC PRES [" H_2O]	PITOT HEAD [" H_2O]	METER DIFF PRESSURE [" H_2O]	METER VACUUM [" Hg]	METER READING [ft^3]	METER TEMP [oF] inlet	METER TEMP [oF] outlet	STACK TEMP [°F]	PROBE TEMP [°F]	FILTER BOX [°F]	LAST IMP TEMP [°F]	METER EXHAUST O_2 [% vol]	METER EXHAUST CO_2 [% vol]
	09:00	0					309.70								
South	09:10	10	8.4	1.17	1.05	4.0	315.35	65	58	150	323	325	43	5.5	14.6
	09:20	20	"	"	"	4.0	320.92	72	62	"	323	325	43	5.5	14.6
	09:30	30	"	"	"	4.0	326.47	77	63	"	324	325	46	5.4	14.7
	09:40	40	"	"	"	4.0	332.08	79	65	"	329	325	47	5.4	14.7
	09:50	50	"	"	"	4.0	337.68	80	66	"	324	325	49	5.5	14.6
	10:00	60	"	"	"	4.0	343.29	82	68	"	325	325	49	5.5	14.6
							33.59								
			leak check; lead slip @ -10"												
	10:15						343.60								
North	10:25	70	8.9	0.78	0.59	2.5	347.96	76	69	276	329	325	47	6.0	14.1
	10:35	80	"	"	"	2.5	352.23	79	70	"	328	325	47	6.0	14.1
	10:45	90	"	"	"	2.5	356.52	81	71	"	328	325	47	6.0	14.1
	10:55	100	"	"	"	2.5	360.77	82	72	"	323	325	48	6.1	14.0
	11:05	110	"	"	"	2.5	365.02	83	73	"	324	325	49	6.0	14.1
	11:15	120	"	"	"	2.5	369.26	83	74	"	328	326	49	6.0	14.1
							25.66								
				RMS											
AVERAGE			8.65	0.963	0.82		59.25		72.9	213				5.74	14.36

Sample Train Leak Checks: Pre Test lead slip ft^3 @ 10 in. Hg; Post Test lead slip ft^3 @ 10 in. Hg

Pitot Tube Leak Checks: PreTest NA @ _____ in. H_2O; Post Test NA @ _____ in. H_2O

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post-test air purge for 10 min @ ΔH: 1.0

NOTE: Purge for 10 minutes at end of sampling.

ONTARIO HYDRO Hg SAMPLING AND SPECIATION FIELD DATA SHEET

TEST ID	STK-2 TEST #2	METER BOX	N-3	CAL. DATA: delta H	1.982	Comments:			
PLANT	SCR/FGD Plant 4	PITOT TUBE DESC	E-11	Y	1.026				
LOCATION	Stack	PROBE LENGTH [ft]	8	C(p)					
DATE	1-25-05	NOZZLE ID [inch]	7/32A	FILTER BOX SETTING	325				
OPERATOR(S)	K.C. B.S.	%H_2O (Assumed)		PROBE HTR SETTING	250				
AMBIENT TEMP [°F]	~50°	FILTER ID	#2	DUCT X-SECTION	circ ?	rect ?	other:		
BAR. PRESS. [" Hg]	29.72	K FACTOR	1.59	DUCT DIMENSIONS	19 ft ID	DUCT AREA	283.53 ft²		

	TRAVERSE POINT [port-inch]	CLOCK TIME (24-hr)	SAMPLE TIME [minute]	STATIC PRES [" H_2O]	PITOT HEAD [" H_2O]	METER DIFF PRESSURE [" H_2O]	METER VACUUM [" Hg]	METER READING [ft³]	METER TEMP [oF] (6) inlet	METER TEMP [oF] (7) outlet	STACK TEMP (1) [°F]	PROBE TEMP (2) [°F]	FILTER BOX (3) [°F]	LAST IMP TEMP (4) [°F]	METER EXHAUST O_2 [% vol]	METER EXHAUST CO_2 [% vol]
		0900	0					889.90								
	-10.00		10		.70	1.10	3.5	895.40	69	66	127	253	329	49	6.2	13.9
A	-33.33		20	.7326	1.05	1.67	4.5	902.04	74	68	126	257	333	49	6.1	14.0
	-67.50		30		1.10	1.72	5	908.83	77	69	126	258	333	49	6.1	14.0
					L.C.	RESTART		908.94								
	-10.00		40		.70	1.10	3.5	914.46	77	70	126	252	329	46	6.1	14.0
B	-33.33		50	.661	1.10	1.72	5	921.23	80	71	126	257	330	47	6.0	14.1
	-67.50		60		1.15	1.80	5	928.22	81	72	124	253	331	49	6.0	14.1
					L.C.	RESTART		928.34								
	-10.00		70		.66	1.05	3	933.71	79	73	126	224	309	44	6.1	14.0
C	-33.33		80	.787	1.05	1.67	4.5	940.43	81	74	126	246	322	44	6.0	14.1
	-67.50		90		1.10	1.72	5	947.23	83	74	124	256	329	46	6.0	14.1
					L.C.	RESTART		947.35								
	-10.00		100		.73	1.15	3.5	952.98	81	75	125	244	326	46	6.0	14.1
D	-33.33		110	.706	1.05	1.67	5	959.70	83	75	125	256	331	49	5.9	14.2
	-67.50		120		1.10	1.72	5	966.53	84	76	124	255	330	51	5.9	14.2
		1117														
	AVERAGE			.647	0.948	1.508		76.28	75.5		125.4				6.0	14.1

Sample Train Pre Test 0.15 ft³ @ 10 in. Hg
Leak Checks: Post Test 0.15 ft³ @ 10 in. Hg

Pitot Tube PreTest 0.15 @ 7 in. H_2O
Leak Checks: Post Test 0.15 @ 7 in. H_2O

CONSOLENERGY

NOTE: Purge for 10 minutes at end of sampling.

UNIT #2

ONTARIO HYDRO Hg SAMPLING AND SPECIATION FIELD DATA SHEET

TEST ID	ECON- 3	METER BOX	N-1	CAL. DATA: delta H	1.976	Comments:			
PLANT	SCR/FGD Plant 4 #2	PITOT TUBE DESC	[redacted] E-15	Y	0.987				
LOCATION	Economizer Outlet	PROBE LENGTH [ft]	8'	C(p)					
DATE	1/25/05	NOZZLE ID [inch]	3/16 DIA, 0.191"	FILTER BOX SETTING	325				
OPERATOR(S)	GLC/MLF	%H_2O (Assumed)		PROBE HTR SETTING	325				
AMBIENT TEMP [°F]	75	FILTER ID	6	DUCT X-SECTION	circ ?	rect ?	other:		
BAR. PRESS. [" Hg]	29.76	K FACTOR	0.632	DUCT DIMENSIONS	2@25'x14.5'	DUCT AREA	725 ft^2		

TRAVERSE POINT [port-inch]	CLOCK TIME (24-hr)	SAMPLE TIME [minute]	STATIC PRES [" H_2O]	PITOT HEAD [" H_2O]	METER DIFF PRESSURE [" H_2O]	METER VACUUM [" Hg]	METER READING [ft^3]	METER TEMP (6) [oF] (7) inlet	METER TEMP (6) [oF] (7) outlet	STACK TEMP [°F] (1)	PROBE TEMP [°F] (2)	FILTER BOX [°F]	LAST IMP TEMP [°F] (4)	METER EXHAUST O_2 [% vol]	METER EXHAUST CO_2 [% vol]
	1255	0					838.70								
N		10		0.50	0.32	3.0	841.88	81	78	672	320		53	4.2	15.8
O		20	-4.53	0.49	0.32	3.0	845.02	83	79	673	318		52	4.0	16.0
R		30		0.49	0.32	3.5	848.16	84	80	673	322		53	4.0	16.0
T		40		0.49	0.31	3.5	851.28	85	80	674	320		53	3.9	16.1
H		50	-4.56	0.49	0.31	4.0	854.49	86	81	673	325		55	4.0	16.0
		60		0.49	0.31	4.0	857.56	86	81	674	327		54	3.9	16.1
				POST - NORTH / PRE - South LEAK CHECK						OK -	0 @ 4.0 " Hg				
	1404						857.70								
S		70		0.70	0.44	4.0	861.38	87	83	676	327		52	3.2	16.8
O		80	-4.71	0.68	0.43	5.0	865.04	88	83	676	328		50	3.1	16.9
U		90		0.70	0.44	5.5	868.74	89	84	677	325		50	3.0	16.9
T		100	-4.79	0.70	0.44	6.0	872.40	90	84	677	317		51	3.1	16.9
H		110		0.70	0.44	6.5	876.11	90	85	675	318		51	3.0	16.9
		120		0.70	0.44	7.5	879.78	91	86	677	328		52	3.1	16.9
AVERAGE			-4.64	0.590	0.376		40.94	84.3		674.8				3.5	16.4

Sample Train Pre Test 0 ft^3 @ 10 in. Hg
Leak Checks: Post Test 0 ft^3 @ 10 in. Hg

Pitot Tube PreTest 0 @ 6 in. H_2O
Leak Checks: Post Test 0 @ 6 in. H_2O

CONSOLENERGY

✓ NOTE: Purge for 10 minutes at end of sampling.

ONTARIO HYDRO Hg SAMPLING AND SPECIATION FIELD DATA SHEET

TEST ID	AHO-3	METER BOX	N-5	CAL. DATA: delta H	2.015	Comments:			
PLANT	SCR/FGD Plant 4	PITOT TUBE DESC		Y	1.011				
LOCATION	Air Heater Outlet/ESP Inlet #2	PROBE LENGTH [ft]	10	C(p)					
DATE	1-25-05	NOZZLE ID [inch]	0.138 3/16"	FILTER BOX SETTING	325				
OPERATOR(S)	JL LR DJ	%H_2O (Assumed)	3	PROBE HTR SETTING	325				
AMBIENT TEMP [°F]		FILTER ID	15	DUCT X-SECTION	circ ?	rect ?	other:		
BAR. PRESS. [" Hg]	29.76	K FACTOR	0.90	DUCT DIMENSIONS		DUCT AREA			

TRAVERSE POINT [port-inch]	CLOCK TIME (24-hr)	SAMPLE TIME [minute]	STATIC PRES [" H_2O]	PITOT HEAD [" H_2O]	METER DIFF PRESSURE [" H_2O]	METER VACUUM [" Hg]	METER READING [ft^3]	METER TEMP [oF] inlet	METER TEMP [oF] outlet	STACK TEMP [°F]	PROBE TEMP [°F]	FILTER BOX [°F]	LAST IMP TEMP [°F]	METER EXHAUST O_2 [% vol]	METER EXHAUST CO_2 [% vol]
	1255	0					129.148								
D-1	1305	10		0.50	0.45	2.0	132.72	65	68	265	326	NA	67		
D-1	1315	20	-13.07	0.48	0.43	2.0	136.15	69	69	264	324		52	5.7	14.4
D-1	1325	30		0.50	0.45	2.0	139.769	71	71	264	305		52	6.1	14.0
		40			leak check OK @ 5"										
	1332	50					139.770								
C-1	1340	40		0.85	0.76	3.0	144.15	74	74	274	312		55		
C-1	1350	50	-13.35	0.85	0.74	3.5	148.75	76	74	279	304		52	4.9	15.2
C-1	1400	60		0.85	0.76	4.0	153.238	77	73	279	301		53	4.8	15.3
	1407	70					153.350								
B-1	1417	80 70		0.82	0.73	3.5	157.85	~~77~~ 80	77	290	305		57		
B-1	1427	90 80	-13.5	0.80	0.72	4.0	162.23	81	78	297	292		54	4.8	15.3
B-1	1437	~~100~~ 90		0.80	0.72	4.5	166.821	83	80	297	286		53	4.9	15.2
		110													
	1442	120					166.930								
A-1	1452	100		0.62	0.56	3.0	170.905	84	81	302	305		57		
A-1	1502	110		0.56	0.50	3.0	174.680	84	80	302	314		57	5.5	14.7
A-1	1512	120		0.58	0.52	3.0	178.645	83	78	302	316		57	5.4	14.7
AVERAGE			-13.31	0.676	0.613		49.146	76.3		284.6				5.3	14.9

Sample Train Pre Test 0.000 ft^3 @ 10 in. Hg
Leak Checks: Post Test 0.000 ft^3 @ 5 in. Hg

Pitot Tube PreTest ok @ 7 in. H_2O
Leak Checks: Post Test ok @ 6 in. H_2O

CONSOLENERGY

NOTE: Purge for 10 minutes at end of sampling.

ONTARIO HYDRO Hg SAMPLING AND SPECIATION FIELD DATA SHEET

UNIT 2

TEST ID	FGD-3
PLANT	SCR/FGD Plant 4
LOCATION	FGD Inlet
DATE	1/25/05
OPERATOR(S)	JAW
AMBIENT TEMP [°F]	
BAR. PRESS. [" Hg]	29.75

METER BOX	N4
PITOT TUBE DESC	S-54
PROBE LENGTH [ft]	6
NOZZLE ID [inch]	6 3/16 0.185
%H_2O (Assumed)	7.5
FILTER ID	3
K FACTOR	0.828 (N) 0.824 (S)

CAL. DATA: delta H	1.983	Comments:	
Y	0.960		
C(p)	0.807		
FILTER BOX SETTING	325		
PROBE HTR SETTING	325		
DUCT X-SECTION	circ ?	rect ?	other:
DUCT DIMENSIONS		DUCT AREA	

TRAVERSE POINT [port-inch]	CLOCK TIME (24-hr)	SAMPLE TIME [minute]	STATIC PRES [" H_2O]	PITOT HEAD [" H_2O]	METER DIFF PRESSURE [" H_2O]	METER VACUUM [" Hg]	METER READING [ft^3]	METER TEMP [oF] inlet	METER TEMP [oF] outlet	STACK TEMP [°F]	PROBE TEMP [°F]	FILTER BOX [°F]	LAST IMP TEMP [°F]	METER EXHAUST O_2 [% vol]	METER EXHAUST CO_2 [% vol]
	12:55	0					375.00								
North	13:05	10	9.2	0.79	0.65	2.0	379.56	78	74	284	323	325	57	6.0	14.1
	13:15	20	"	"	"	2.0	384.06	84	75	"	329	325	52	5.9	14.2
	13:25	30	"	"	"	2.0	388.59	86	77	"	327	326	54	5.8	14.3
	13:35	40	"	"	"	2.0	393.09	87	78	"	328	325	51	5.8	14.3
	13:45	50	"	"	"	2.0	397.62	88	78	"	328	325	53	5.9	14.2
	13:55	60	"	"	"	2.0	402.14	89	79	"	327	324	54	5.9	14.2
							(27.14)								
		leak check:	lead stop	@ 10"											
	14:15						402.40								
South	14:25	70	8.8	0.12	0.92	2.5	407.68	87	80	305	328	325	55	5.4	14.7
	14:35	80	"	"	"	2.5	413.01	90	80	"	327	326	51	5.4	14.7
	14:45	90	"	"	"	2.5	418.32	92	81	"	323	325	52	5.4	14.7
	14:55	100	"	"	"	2.5	423.63	93	82	"	326	324	52	5.4	14.7
	15:05	110	"	"	"	2.5	429.00	94	83	"	326	325	53	5.4	14.7
	15:15	120	"	"	"	2.5	434.36	95	84	"	324	325	54	5.3	14.8
							(31.96)								
				(RMS)											
AVERAGE			9.0	0.998	0.785		59.10		83.9	294.5				5.63	14.47

Sample Train Leak Checks: Pre Test lead stop ft^3 @ 10 in. Hg; Post Test lead stop ft^3 @ 10 in. Hg

Pitot Tube Leak Checks: PreTest NA @ ____ in. H_2O; Post Test NA @ ____ in. H_2O

CONSOLENERGY

post-test air purge for 10 min @ ΔH = 1.0

NOTE: Purge for 10 minutes at end of sampling.

ONTARIO HYDRO Hg SAMPLING AND SPECIATION FIELD DATA SHEET

TEST ID	STK-2 TEST #3	METER BOX	W-3	CAL. DATA: delta H	1.982	Comments:			
PLANT	SCR/FGD Plant 4	PITOT TUBE DESC	E-11	Y	1.026				
LOCATION	Stack	PROBE LENGTH [ft]	~~10~~ 8	C(p)					
DATE	1-25-05	NOZZLE ID [inch]	7/32A	FILTER BOX SETTING	325				
OPERATOR(S)	K.C., B.S.	%H_2O (Assumed)		PROBE HTR SETTING	250				
AMBIENT TEMP [°F]	~60°	FILTER ID	#3	DUCT X-SECTION	circ ?	rect ?	other:		
BAR. PRESS. [" Hg]	29.76	K FACTOR	1.59	DUCT DIMENSIONS	19 ft ID	DUCT AREA	283.53 ft²		

TRAVERSE POINT [port-inch]	CLOCK TIME (24-hr)	SAMPLE TIME [minute]	STATIC PRES [" H_2O]	PITOT HEAD [" H_2O]	METER DIFF PRESSURE [" H_2O]	METER VACUUM [" Hg]	METER READING [ft³]	METER TEMP [oF] (6) inlet	METER TEMP [oF] (7) outlet	STACK TEMP (1) [°F]	PROBE TEMP (2) [°F]	FILTER BOX (3) [°F]	LAST IMP TEMP (4) [°F]	METER EXHAUST O_2 [% vol]	METER EXHAUST CO_2 [% vol]
	1255	0					972.40								
-10.00		10		.70	1.10	3.5	977.96	76	74	127	257	329	46	6.0	14.1
-33.33		20	-.482	1.10	1.72	5	984.74	80	74	126	251	331	46	5.9	14.2
-67.50		30		1.15	1.80	5	991.76	83	75	125	256	329	49	5.8	14.3
				L.C.	RESTART		991.90								
-10.00		40		.73	1.15	3.5	997.58	82	75	126	229	316	46	6.0	14.1
-33.33		50	-.445	1.10	1.72	5	004.36	84	76	125	252	329	44	5.9	14.2
-67.50		60		1.15	1.80	5	011.36	86	77	123	254	331	46	5.9	14.2
				L.C.	RESTART		011.49								
-10.00		70		.76	1.20	4	017.23	83	77	124	254	327	43	6.3	13.8
-33.33		80	-.636	1.10	1.72	5	024.06	82	77	123	251	328	39	6.3	13.8
-67.50		90		1.15	1.80	5	031.07	84	78	124	256	330	41	6.2	13.9
				L.C.	RESTART		031.20								
-10.00		100		.76	1.20	4	037.00	84	80	125	252	329	46	6.2	13.9
-33.33		110	-.519	1.10	1.72	5	043.82	87	80	125	248	329	46	6.0	14.1
-67.50		120		1.15	1.80	5	050.84	89	81	125	250	332	46	6.0	14.1
	1533														
AVERAGE			-0.521	0.987	1.561		78.04	80.12		124.8				6.0	14.1

D C B A

Sample Train Pre Test OK ft³ @ 10 in. Hg

Leak Checks: Post Test OK ft³ @ 10 in. Hg

Pitot Tube PreTest OK @ 7 in. H_2O

Leak Checks: Post Test OK @ 7 in. H_2O

CONSOL ENERGY

NOTE: Purge for 10 minutes at end of sampling.

ONTARIO HYDRO Hg SAMPLING AND SPECIATION FIELD DATA SHEET

TEST ID	ECON- 4	METER BOX	N-1	CAL. DATA: delta H	1.976	Comments:			
PLANT	SCR/FGD Plant 4- #2	PITOT TUBE DESC	E-15	Y	0.987				
LOCATION	Economizer Outlet	PROBE LENGTH [ft]	8'	C(p)					
DATE	1/26/05	NOZZLE ID [inch]	3/16" DIA, 0.191"	FILTER BOX SETTING	325				
OPERATOR(S)	ELC/MLF	%H_2O (Assumed)		PROBE HTR SETTING	325				
AMBIENT TEMP [°F]	75	FILTER ID	B	DUCT X-SECTION	circ ?	rect ?	other:		
BAR. PRESS. [" Hg]	29.73	K FACTOR	0.632	DUCT DIMENSIONS	2@25'x14.5'	DUCT AREA	725 ft^2		

TRAVERSE POINT [port-inch]	CLOCK TIME (24-hr)	SAMPLE TIME [minute]	STATIC PRES [" H_2O]	PITOT HEAD [" H_2O]	METER DIFF PRESSURE [" H_2O]	METER VACUUM [" Hg]	METER READING [ft^3]	METER TEMP (6) [oF] (7) inlet	METER TEMP (6) [oF] (7) outlet	STACK TEMP [°F] (1)	PROBE TEMP [°F] (2)	FILTER BOX [°F]	LAST IMP TEMP [°F] (4)	METER EXHAUST O_2 [% vol]	METER EXHAUST CO_2 [% vol]
	837	0					381.10								
S		10		0.64	0.40	3.0	890.59	79	76	691	325		65	3.8	16.2
O		20	-4.43	0.64	0.40	3.0	894.07	81	77	691	325		65	3.7	16.3
U		30		0.64	0.40	3.5	897.57	83	78	691	323		65	3.8	16.2
T		40	-4.50	0.62	0.39	4.0	901.04	85	79	691	320		64	3.7	16.3
H		50		0.64	0.40	4.5	904.55	86	81	691	320		63	3.7	16.3
		60		0.64	0.40	5.0	908.09	87	81	691	326		63	3.7	16.3
				POST - South / PRE - North LEAK CHECK OK - 0 @ 10 "Hg											
	944						908.30								
N		70		0.50	0.32	3.0	911.49	87	83	684	322		67	4.5	15.6
O		80	-4.34	0.50	0.32	4.0	914.69	88	83	684	323		63	4.4	15.7
R		90		0.50	0.32	4.0	917.88	89	84	684	317		64	4.3	15.8
T		100	-4.69	0.50	0.32	4.5	921.08	90	85	685	320		64	4.4	15.7
H		110		0.50	0.32	5.0	924.27	90	86	687	326		65	4.3	15.8
		120		0.50	0.32	5.0	927.48	91	86	686	317		65	4.3	15.8
AVERAGE			-4.49	0.566	0.359		40.19	84.0		688				4.1	16.0

Sample Train Pre Test 0.02 ft^3 @ 10 in. Hg

Leak Checks: Post Test 0 ft^3 @ 10 in. Hg

Pitot Tube PreTest 0 @ 5 in. H_2O

Leak Checks: Post Test 0 @ 5 in. H_2O

CONSOL ENERGY

✓ NOTE: Purge for 10 minutes at end of sampling.

ONTARIO HYDRO Hg SAMPLING AND SPECIATION FIELD DATA SHEET

TEST ID	AHO-4	METER BOX	U-5	CAL. DATA: delta H	2.015	Comments:		
PLANT	SCR/FGD Plant 4	PITOT TUBE DESC		Y	1.011			
LOCATION	Air Heater Outlet/ESP Inlet B2	PROBE LENGTH [ft]	10	C(p)				
DATE	1-24-05	NOZZLE ID [inch]	0.335	FILTER BOX SETTING	325			
OPERATOR(S)	JL LR DJ	%H_2O (Assumed)		PROBE HTR SETTING	325			
AMBIENT TEMP [°F]		FILTER ID	16	DUCT X-SECTION	circ ?	rect ?	other:	
BAR. PRESS. [" Hg]	29.73	K FACTOR	0.90	DUCT DIMENSIONS		DUCT AREA		85.9

TRAVERSE POINT [port-inch]	CLOCK TIME (24-hr)	SAMPLE TIME [minute]	STATIC PRES [" H_2O]	PITOT HEAD [" H_2O]	METER DIFF PRESSURE [" H_2O]	METER VACUUM [" Hg]	METER READING [ft^3]	METER TEMP [oF] inlet	METER TEMP [oF] outlet	STACK TEMP [°F]	PROBE TEMP [°F]	FILTER BOX [°F]	LAST IMP TEMP [°F]	METER EXHAUST O_2 [% vol]	METER EXHAUST CO_2 [% vol]
	835	0					184.100								
A-1	845	10		0.50	0.45	2.0	187.525	57	58	302	293	~~N/A~~	47	5.4	14.7
A-1	855	20	-13.20	0.49	0.44	2.0	190.892	57	58	302	293		47	5.4	14.9
A-1	905	30		0.47	0.42	2.0	194.345	59	60	304	291		47		
		~~40~~			leak check OK @ 5 in Hg										
	0910	~~50~~					194.600								
B-1	920	~~60~~ 40		0.77	0.69	3.5	198.845	61	63	287	294		51	4.6	15.6
B-1	930	~~70~~ 50		0.80	0.72	4.0	203.145	65	65	301	289		49	4.5	15.6
B-1	940	~~80~~ 60		0.77	0.69	4.5	207.652	67	66	361	295		49	4.5	15.6
					leak check OK @ 6 in Hg										
	946	~~90~~ 70					207.850								
C-1	956	~~100~~ 80		0.82	0.73	4.0	212.214	68	68	278	313		52		
C-1	1006	~~110~~ 90	-13.34	0.82	0.73	5.0	216.61	70	69	284	283		49	4.6	15.5
C-1	1016	~~120~~ 100		0.~~82~~ 80	073	5.0	221.028	71	70	285	281		52	4.6	15.5
		~~130~~			leak check OK @ 7 in Hg										
	022	~~140~~					221.300								
D-1	1032	100		0.45	0.41	2.5	224.73	71	71	270	288		55	5.8	14.3
D-1	1042	110		0.45	.41	3.0	228.07	72	71	270	280		54	5.8	14.3
D-1	1052	120	-13.58	0.45	.41	3.0	231.526	72	72	270	284		54	5.8	14.3
AVERAGE			-13.37	0.623	0.569		46.751	65.9		287.8				5.1	15.0

Sample Train Pre Test 0.000 ft^3 @ 10 in. Hg
Leak Checks: Post Test 0.000 ft^3 @ 7 in. Hg

Pitot Tube PreTest OK @ 7 in. H_2O
Leak Checks: Post Test OK @ 7 in. H_2O

CONSOLENERGY

NOTE: Purge for 10 minutes at end of sampling.

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ONTARIO HYDRO Hg SAMPLING AND SPECIATION FIELD DATA SHEET

UNIT 2

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TEST ID	FGD- 4	METER BOX	#4	CAL. DATA: delta H	1.983	Comments:			
PLANT	SCR/FGD Plant 4	PITOT TUBE DESC	S-54	Y	0.960				
LOCATION	FGD Inlet	PROBE LENGTH [ft]	6	C(p)	0.807				
DATE	1/26/05	NOZZLE ID [inch]	3/16 0.185	FILTER BOX SETTING	325				
OPERATOR(S)	JAW	%H_2O (Assumed)	7.6	PROBE HTR SETTING	325				
AMBIENT TEMP [°F]	60.	FILTER ID	4	DUCT X-SECTION	circ ?	rect ?	other:		
BAR. PRESS. [" Hg]	29.73	K FACTOR	0.805 0.848 (S)	DUCT DIMENSIONS		DUCT AREA			

TRAVERSE POINT [port-inch]	CLOCK TIME (24-hr)	SAMPLE TIME [minute]	STATIC PRES [" H_2O]	PITOT HEAD [" H_2O]	METER DIFF PRESSURE [" H_2O]	METER VACUUM [" Hg]	METER READING [ft^3]	METER TEMP [oF] inlet	METER TEMP [oF] outlet	STACK TEMP [°F]	PROBE TEMP [°F]	FILTER BOX [°F]	LAST IMP TEMP [°F]	METER EXHAUST O_2 [% vol]	METER EXHAUST CO_2 [% vol]
	08:35	0					441.03								
South	08:45	10	8.3	1.17	0.94	3.0	446.38	71	65	305	325	327	47	5.5	14.6
	08:55	20				3.0	451.76	78	67		326	326	47	5.4	14.7
	09:05	30				3.0	457.14	83	69		328	325	51	5.4	14.7
	09:15	40				3.0	462.51	86	72		324	325	52	5.4	14.7
	09:25	50				3.0	467.96	87	74		328	325	49	5.4	14.7
	09:35	60				3.0	473.36	89	76		324	326	50	5.4	14.7
		leak check: dead step @ 10"					(32.36)								
North	09:55						473.60								
	10:05	70	8.6	0.82	0.70	3.0	478.44	84	78	285	321	325	48	6.2	13.9
	10:15	80				2.5	483.16	88	78		329	324	46	6.0	14.1
	10:25	90				2.5	487.95	90	80		329	325	47	6.1	14.0
	10:35	100				2.5	492.73	90	80		327	326	49	6.0	14.1
	10:45	110				2.5	497.49	91	81		323	325	49	6.0	14.1
	10:55	120				2.5	502.24	92	81		323	326	49	5.9	14.2
							(28.64)								
				(NA)											
AVERAGE			8.45	0.987	0.82		61.00		80.4	295				5.73	14.38

Sample Train Leak Checks: Pre Test dead step ft^3 @ 10 in. Hg; Post Test dead step ft^3 @ 10 in. Hg

Pitot Tube Leak Checks: PreTest NA @ ____ in. H_2O; Post Test NA @ ____ in. H_2O

CONSOLENERGY

A-purge for 10 min @ ΔH=1.0

NOTE: Purge for 10 minutes at end of sampling.

ONTARIO HYDRO Hg SAMPLING AND SPECIATION FIELD DATA SHEET

Page ____ of ____

TEST ID	STK-2 TEST #4	METER BOX	N-3	CAL. DATA: delta H	1.982	Comments:			
PLANT	SCR/FGD Plant 4	PITOT TUBE DESC	E-11	Y	1.026				
LOCATION	Stack	PROBE LENGTH [ft]	10 8	C(p)					
DATE	1-26-05	NOZZLE ID [inch]	7/32A	FILTER BOX SETTING	325				
OPERATOR(S)	K.C., B.S.	%H_2O (Assumed)		PROBE HTR SETTING	250				
AMBIENT TEMP [°F]	~ 54°	FILTER ID	#4	DUCT X-SECTION	circ ?	rect ?	other:		
BAR. PRESS. [" Hg]	29.73	K FACTOR	1.59	DUCT DIMENSIONS	19 ft ID	DUCT AREA	283.53 ft²		

	TRAVERSE POINT [port-inch]	CLOCK TIME (24-hr)	SAMPLE TIME [minute]	STATIC PRES [" H_2O]	PITOT HEAD [" H_2O]	METER DIFF PRESSURE [" H_2O]	METER VACUUM [" Hg]	METER READING [ft³]	METER TEMP [oF] (6) inlet	METER TEMP [oF] (7) outlet	STACK TEMP (1) [°F]	PROBE TEMP (2) [°F]	FILTER BOX (3) [°F]	LAST IMP TEMP (4) [°F]	METER EXHAUST O_2 [% vol]	METER EXHAUST CO_2 [% vol]
		0835	0					056.80								
	-10.00		10		.76	1.20	3.5	062.56	69	66	126	221	240	55	6.1	14.0
A	-33.33		20	-.742	1.10	1.72	4.5	069.34	73	68	125	244	291	49	5.9	14.2
	-67.50		30		1.15	1.80	5	076.27	75	69	125	259	317	47	5.9	14.2
					L.C.	RESTART		076.40								
	-10.00		40		.76	1.20	3.5	082.12	74	70	127	255	328	46	6.1	14.0
B	-33.33		50	-.809	1.10	1.72	5	088.93	78	71	127	258	333	49	6.1	14.0
	-67.50		60		1.15	1.80	5	095.92	80	72	127	250	332	50	6.0	14.1
					L.C.	RESTART		096.05								
	-10.00		70		.82	1.30	5	102.00	81	74	128	255	329	50	6.1	14.0
C	-33.33		80	-.650	1.10	1.72	5	108.88	83	75	126	257	331	44	6.0	14.1
	-67.50		90		1.15	1.80	5	115.91	85	76	127	258	333	44	6.0	14.1
					L.C.	RESTART		116.04								
	-10.00		100		.76	1.20	4	121.84	83	76	126	251	327	44	6.0	14.1
D	-33.33		110	-.635	1.10	1.72	5	128.67	86	78	127	256	330	46	5.9	14.2
	-67.50		120		1.15	1.80	5	135.70	86	78	127	256	330	47	5.9	14.2
		1057														
	AVERAGE			-0.709	1.001	1.582		78.51	76.1		126.5				6.0	14.1

Sample Train Leak Checks: Pre Test OK ft³ @ 10 in. Hg; Post Test OK ft³ @ 10 in. Hg

Pitot Tube Leak Checks: PreTest OK @ 7 in. H_2O; Post Test OK @ 7 in. H_2O

CONSOLENERGY

NOTE: Purge for 10 minutes at end of sampling.

SCR/FGD Hg SAMPLING PROGRAM, PLANT 4 - ONTARIO HYDRO SAMPLING TRAIN DATA

Location			Econ Out Unit 2	AirHtr Out Unit 2	FGD Inlet Unit 2	Stack Unit 2	Econ Out Unit 2	AirHtr Out Unit 2	FGD Inlet Unit 2	Stack Unit 2	Econ Out Unit 2	AirHtr Out Unit 2	FGD Inlet Unit 2	Stack Unit 2	Econ Out Unit 2	AirHtr Out Unit 2	FGD Inlet Unit 2	Stack Unit 2
Date			01/24/2005	01/24/2005	01/24/2005	01/24/2005	01/25/2005	01/25/2005	01/25/2005	01/25/2005	01/25/2005	01/25/2005	01/25/2005	01/25/2005	01/26/2005	01/26/2005	01/26/2005	01/26/2005
Start Time			1130	1130	1130	1130	900	900	900	900	1255	1255	1255	1255	835	835	835	835
Stop Time			1341	1359	1345	1345	1109	1118	1115	1117	1304	1512	1515	1533	1044	1052	1055	1057
Test Number			ECON-1	AHO-1	FGD-1	STK-1	ECON-2	AHO-2	FGD-2	STK-2	ECON-3	AHO-3	FGD-3	STK-3	ECON-4	AHO-4	FGD-4	STK-4
Sample Type			OH-Hg	OH-Hg	OH-Hg	OH-Hg	OH-Hg	OH-Hg	OH-Hg	OH-Hg	OH-Hg	OH-Hg	OH-Hg	OH-Hg	OH-Hg	OH-Hg	OH-Hg	OH-Hg
Y factor of dry gas meter	-		0.987	1.010	0.960	1.026	0.987	1.010	0.960	1.026	0.987	1.010	0.960	1.026	0.987	1.010	0.960	1.026
Gas Volume	-	ft^3	41.92	42.86	64.18	75.40	39.86	43.32	59.25	76.28	40.94	49.15	59.10	78.04	40.17	46.75	61.00	78.51
Delta H of dry gas meter	-	" H_2O	0.41	0.48	0.97	1.48	0.36	0.48	0.82	1.51	0.38	0.61	0.79	1.56	0.36	0.57	0.82	1.58
Meter Temperature	-	°F	71.3	62.4	71.8	74.7	73.2	58.5	72.9	75.5	84.3	76.3	83.9	80.2	84.0	65.9	80.4	76.1
C Factor of pitot tube	-		0.838	0.846	0.835	0.806	0.838	0.846	0.835	0.806	0.838	0.846	0.835	0.806	0.838	0.846	0.835	0.806
Nozzle Diameter	-	inches	0.191	0.188	0.185	0.214	0.191	0.188	0.185	0.214	0.191	0.188	0.185	0.214	0.191	0.188	0.188	0.214
A n (area of nozzle)	-	ft^2	0.00020	0.00019	0.00019	0.00025	0.00020	0.00019	0.00019	0.00025	0.00020	0.00019	0.00019	0.00025	0.00020	0.00019	0.00019	0.00025
Area of Stack (Single of Dual)	-	ft^2	725.0	544.4		283.5	725.0	544.4		283.5	725.0	544.4		283.5	725.0	544.4		283.5
H_2O Weight	-	gm	78.1	75.6	99.0	238.1	83.7	72.4	89.5	235.9	78.7	87.3	98.3	245.8	77.4	85.9	105.4	256.4
Sample Time	-	minutes	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120
Barometric Pressure	-	" Hg	29.92	29.92	29.92	29.92	29.79	29.79	29.79	29.79	29.76	29.76	29.76	29.76	29.73	29.73	29.73	29.73
Static Pressure	-	" H_2O	-4.40	-12.97	8.50	-0.62	-4.60	-13.30	8.65	-0.65	-4.66	-13.31	9.00	-0.52	-4.49	-13.37	8.45	-0.71
% Oxygen	-		3.6	5.1	5.6	5.9	4.1	5.3	5.7	6.0	3.5	5.3	5.6	6.0	4.1	5.1	5.7	6.0
% Carbon Dioxide	-		16.4	15.0	14.5	14.2	16.0	14.8	14.4	14.1	16.4	14.9	14.5	14.1	16.0	15.0	14.4	14.1
% N_2 + CO	-		80.0	79.9	80.0	79.9	79.9	79.9	79.9	79.9	80.1	79.8	79.9	79.9	79.9	79.9	79.9	79.9
Stack Temp (Dry Bulb)	-	°F	682	286	219	125	673	280	213	125	675	285	295	125	688	288	295	127
Stack Temp (Wet Bulb)	-	°F																
"S" sample (rms vel head)	-	" H_2O	0.647	0.527	1.000	0.924	0.564	0.538	0.965	0.948	0.590	0.676	0.948	0.987	0.566	0.623	0.987	1.001
Dust Wt.	-	gm	5.4040	1.1700	0.0005	0.0080	5.3862	2.3996	0.0001	0.0055	5.6593	2.7024	0.0011	0.0081	6.0508	5.5082	0.0002	0.0040
Sample Volume	-	DSCF	41.14	43.78	61.29	76.64	38.81	44.39	56.20	77.09	39.01	48.66	54.87	78.11	38.26	47.15	56.95	79.11
Sample Volume	-	dscm	1.165	1.240	1.736	2.170	1.099	1.257	1.592	2.183	1.105	1.378	1.554	2.212	1.083	1.335	1.613	2.240
ABS ST PRES	-	" Hg	29.60	28.97	30.55	29.87	29.45	28.81	30.43	29.74	29.42	28.78	30.42	29.72	29.40	28.75	30.35	29.68
ABS ST TEMP	-	°R	1142	746	679	585	1133	740	673	585	1135	745	755	585	1148	748	755	587
H_2O - % by Vol	-	vapor	8.2	7.5	7.1	12.8	9.2	7.1	7.0	12.6	8.7	7.8	7.8	12.9	8.7	7.9	8.0	13.2
Water Volume	-	std ft^3	3.68	3.56	4.66	11.21	3.94	3.41	4.22	11.11	3.71	4.11	4.63	11.58	3.65	4.05	4.96	12.08
Dry Molecular Weight	-	lb/lb-mole	30.77	30.60	30.54	30.51	30.72	30.58	30.53	30.50	30.76	30.60	30.54	30.50	30.72	30.60	30.53	30.50
Wet Molecular Weight	-	lb/lb-mole	29.72	29.66	29.65	28.91	29.55	29.68	29.66	28.92	29.66	29.61	29.57	28.88	29.62	29.61	29.53	28.84
% EXCESS AIR	-		20.5	31.9	36.1	38.8	24.1	33.6	37.0	39.8	19.8	33.6	36.1	39.8	24.1	31.9	37.0	39.8
Dry Mole Frac.	-		0.918	0.925	0.929	0.872	0.908	0.929	0.930	0.874	0.913	0.922	0.922	0.871	0.913	0.921	0.920	0.868
Wet Mole Frac.	-		0.082	0.075	0.071	0.128	0.092	0.071	0.070	0.126	0.087	0.078	0.078	0.129	0.087	0.079	0.080	0.132
Gas Velocity, Direct	-	ft/sec	65.65	48.92	61.81	76.64	61.39	49.33	60.56	77.09	62.76	55.58	63.66	78.11	61.89	53.51	65.09	79.11
ACFM	-		2,855,699	1,598,087	0	1,303,784	2,670,324	1,611,530	0	1,311,440	2,730,068	1,815,572	0	1,328,792	2,692,060	1,747,928	0	1,345,803
DSCFM	-		1,199,279	1,012,944	1,012,944	1,025,147	1,111,988	1,028,839	1,028,839	1,027,702	1,140,529	1,141,944	1,141,944	1,037,941	1,110,785	1,092,071	1,092,071	1,042,600
DSCFM (rounded)			1,199,300	1,012,900	1,012,900	1,025,100	1,112,000	1,028,800	1,028,800	1,027,700	1,140,500	1,141,900	1,141,900	1,037,900	1,110,800	1,092,100	1,092,100	1,042,600
DSCMM			33,964	28,687	28,687	29,032	31,492	29,137	29,137	29,105	32,300	32,340	32,340	29,394	31,457	30,927	30,927	29,526
Excess Air Free DSCFM	-		992,704	765,766	741,533	735,751	893,847	767,937	748,246	732,668	949,531	852,360	835,969	739,967	892,880	825,584	794,233	743,289
CALCULATED FIRING RATE:																		
Dry	-	lb/min	7,413	5,719	5,538	5,494	6,758	5,806	5,657	5,539	7,179	6,444	6,320	5,594	6,669	6,167	5,932	5,552
Wet	-	lb/min	7,552	5,825	5,641	5,597	6,860	5,894	5,742	5,623	7,287	6,542	6,416	5,679	6,778	6,268	6,030	5,643
Dry	-	lb/hr	444,799	343,115	332,257	329,666	405,461	348,346	339,414	332,348	430,720	386,642	379,206	335,659	400,156	369,997	355,946	333,115
Wet	-	lb/hr	453,090	349,511	338,451	335,812	411,594	353,615	344,548	337,375	437,235	392,490	384,942	340,736	406,704	376,051	361,771	338,566
CALCULATED FIRING RATE:																		
Dry	-	tons/hr	222.4	171.6	166.1	164.8	202.7	174.2	169.7	166.2	215.4	193.3	189.6	167.8	200.1	185.0	178.0	166.6
Wet	-	tons/hr	226.5	174.8	169.2	167.9	205.8	176.8	172.3	168.7	218.6	196.2	192.5	170.4	203.4	188.0	180.9	169.3
HEAT INPUT:																		
MM Btu/hr	-		6,122	4,723	4,573	4,538	5,540	4,759	4,637	4,541	5,885	5,283	5,181	4,586	5,507	5,092	4,898	4,584
PARTICULATE LOADING:																		
Grains/DSCF	-		2.0267	0.4123	0.0001	0.0016	2.1415	0.8340	0.0000	0.0011	2.2386	0.8569	0.0003	0.0016	2.4405	1.8024	0.0001	0.0008
lb/hr	-		20,841	3,581	1	14.16	20,419	7,357	0	9.70	21,891	8,390	3.0	14.24	23,245	16,878	0.5	6.97
lb/MM Btu	-		3.40	0.76	0.00	0.00	3.69	1.55	0.00	0.00	3.72	1.59	0.00	0.00	4.22	3.32	0.00	0.00
Ash Production		lb/hr	37,363	28,822	27,910	27,692	35,235	30,271	29,495	28,881	37,430	33,599	32,953	29,169	33,133	30,636	29,472	27,582
Bagouse Ash			20,841	3,581	1	14	20,419	7,357	0	10	21,891	8,390	3	14.24	23,245	16,878	1	6.97
Bottom Ash			16,522	25,240	27,908	27,678	14,815	22,914	29,495	28,871	15,538	25,209	32,950	29,155	9,888	13,757	29,472	27,575
Percent Fly Ash			55.8%	12.4%	0.0%	0.1%	58.0%	24.3%	0.0%	0.0%	58.5%	25.0%	0.0%	0.0%	70.2%	55.1%	0.0%	0.0%
% ISOKINETIC	-		104.28	101.84	100.12	70.79	106.09	101.67	93.14	71.03	103.97	100.40	97.84	71.27	104.69	101.73	96.70	71.85

Impinger Components Wts & Volumes	ECON-1	AHO-1	FGD-1	STK-1	ECON-2	AHO-2	FGD-2	STK-2	ECON-3	AHO-3	FGD-3	STK-3	ECON-4	AHO-4	FGD-4	STK-4
Filter Wt., g	5.4040	1.1700	0.0005	0.3278	5.3862	2.3996	0.0001	0.3375	5.6593	2.7024	0.0011	0.3303	6.0508	5.5082	0.0002	0.3297
ppb Hg	17	283	<5.0	<5.0	15	653	<5.0	<5.0	16	314	<5.0	<5.0	19	379	<5.0	<5.0
total ug	0.09	0.33	<5.00E-03	<5.00E-03	0.08	1.57	<5.00E-03	<5.00E-03	0.09	0.85	<5.00E-03	<5.00E-03	0.11	2.09	<5.00E-03	<5.00E-03
ug/dscm	0.08	0.27	<2.88E-03	<2.30E-03	0.07	1.25	<3.14E-03	<2.29E-03	0.08	0.62	<3.22E-03	<2.26E-03	0.11	1.56	<3.10E-03	<2.23E-03
Probe Rinse volume, ml	182	160	108	109	170	126	101	100	198	123	95	117	166	128	104	116
Analytical Hg, ng/ml	<1.0	1.6	1.5	1.7	<1.0	1.1	<1.0	1.7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.9
ug/dscm	<0.16	0.21	0.09	0.09	<0.15	0.11	<0.06	0.08	<0.18	<0.09	<0.06	<0.05	<0.15	<0.10	<0.06	0.10
Heated Umbilical Line Rinse volume, ml	121	148	109	NA	98	209	89	NA	106	130	121	NA	88	129	88	NA
Analytical Hg, ng/ml	1.7	2.5	<1.0		3.5	1.5	2.1		1.3	1.1	2.6		2.2	2.6	1.4	
ug/dscm	0.18	0.30	<0.06		0.31	0.25	0.12		0.12	0.10	0.20		0.18	0.25	0.08	
KCl volume, ml	523	524	544	672	539	523	535	672	525	529	543	687	522	532	550	698
Analytical Hg, ng/ml	12.1	15.3	22.4	<0.4	11.5	14.3	23.0	0.9	11.9	16.6	21.7	<0.2	8.8	12.3	18.2	<0.2
ug/dscm	5.43	6.47	7.02	<0.12	5.64	5.95	7.73	0.28	5.66	6.37	7.58	<0.06	4.24	4.90	6.21	<0.06
Nitric/Peroxide volume, ml	175	175	175	182	175	175	177	183	176	176	175	176	175	175	175	175
Analytical Hg, ng/ml	2.7	<0.2	<0.2	<0.20	0.2	<0.2	<0.2	<0.20	<0.2	<0.2	<0.2	<0.20	0.3	<0.2	<0.2	<0.20
ug/dscm	0.41	<0.03	<0.02	<0.02	0.03	<0.03	<0.02	<0.02	<0.03	<0.03	<0.02	<0.02	0.05	<0.03	<0.02	<0.02
KMnO4 volume, ml	247	246	247	244	246	244	245	245	248	250	248	247	249	247	247	247
Analytical Hg, ng/ml	19.3	<0.2	<0.2	0.9	19.8	0.4	0.2	0.7	13.7	0.8	<0.2	0.6	15.9	<0.2	0.2	0.4
ug/dscm	4.09	<0.04	<0.03	0.10	4.43	0.08	0.03	0.08	3.08	0.15	<0.03	0.07	3.65	<0.04	0.03	0.04
KMnO4-Acid Rinse volume, ml	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Analytical Hg, ng/ml	<1.0	1.5	1.4	<1.0	<1.0	1.1	1.3	1.4	1.4	<1.0	1.1	1.2	1.5	<1.0	1.5	<1.0
ug/dscm	<0.09	0.12	0.08	<0.05	<0.09	0.09	0.08	0.06	0.13	<0.07	0.07	0.05	0.14	<0.07	0.09	<0.04
Particulate, ug/m^3	0.079	0.267	2.88E-03	2.30E-03	0.074	1.246	3.14E-03	2.29E-03	0.082	0.616	3.22E-03	2.26E-03	0.106	1.563	3.10E-03	2.23E-03
Particulate, mg/sec	0.0331	0.1227	1.37E-03	1.11E-03	0.0316	0.5774	1.49E-03	1.11E-03	0.0344	0.2881	1.54E-03	1.11E-03	0.0463	0.7255	1.50E-03	1.10E-03
Percent of Total	0.76	3.60	0.04	0.61	0.68	16.09	0.04	0.44	0.88	8.29	0.04	0.89	1.25	22.50	0.05	0.84
Oxidized Fraction, ug/m^3	5.76	6.97	7.18	0.21	6.11	6.31	7.91	0.35	5.96	6.57	7.85	0.12	4.57	5.25	6.35	0.16
Oxidized Fraction, mg/sec	2.4182	3.2022	3.4043	0.101	2.6272	2.9227	3.7620	0.172	2.5000	3.0720	3.7437	0.056	1.9954	2.4351	3.0622	0.079
Percent of Total	55.29	93.86	98.19	55.71	56.89	81.42	98.29	68.69	64.25	88.43	98.39	45.20	53.67	75.51	97.71	60.12
Elemental Fraction, ug/^{3}	4.58	0.19	0.13	0.16	4.55	0.19	0.13	0.16	3.23	0.24	0.13	0.14	3.84	0.14	0.15	0.10
Elemental Fraction, mg/sec	1.9226	0.0868	0.0613	0.079	1.9595	0.0894	0.0641	0.077	1.3568	0.1138	0.0598	0.067	1.6765	0.0641	0.0701	0.051
Percent of Total	43.96	2.54	1.77	43.68	42.43	2.49	1.67	30.86	34.87	3.28	1.57	53.91	45.09	1.99	2.24	39.04
Total ug/m^3	10.43	7.43	7.31	0.38	10.73	7.75	8.05	0.5166	9.28	7.42	7.98	0.2544	8.52	6.95	6.50	0.2673
Total mg/sec	4.3739	3.4117	3.4670	0.182	4.6183	3.5896	3.8276	0.251	3.8912	3.4739	3.8050	0.12	3.7182	3.2247	3.1338	0.132

FGM in Pitot Survey 1/24/05

offset = 36"

North Port

Static = 8.56

	w/offset			Null Angle
64"	28"	0.8557	285°F	0°
52"	16"	0.8460	286	0°
44"	5"	1.175	285	0°
30"	—	0.	285	—

South Port

Static = 8.51

64"	28"	1.145	151°F	0°
50"	16"	1.050	152°F	0°
41"	5"	1.110	153°F	0°
30"	—	0	152	—

Axial Flow Check

Location	Stack 2	Duct Ht, "		Barometric	29.65
Date	1-21-05	Duct ID,"		Static	
Time	1400-1405	Duct Area	ft^2	Dry Bulb	
Tube I.D.	S-S3	% O_2		Wet Bulb	
C-Factor	K.C, B.S.	% CO_2		% H_20	
Operator(s)		% N_2		W.M.Wt	

PORT/ POINT	DISTANCE [" From Wall]	TEMP [°F]	DELTA P [" H_2O]	VELOCITY [Ft/Sec]	Null Angle
A-1	10.0	124.1		.7500	
A-2	33.3	124.1		1.281	-.4486
A-3	67.5	124.0		1.361	
B-1	10				
B-2	33.3				
B-3	67.5				
C-1	10				
C-2	33.3				
C-3	67.5				
D-1	10				
D-2	33.3				
D-3	67.5				
Average					
Maximum					
Minimum					
SDEV					

DATA SUMMARY	
Velocity, [fps]	
acfm	
scfm	
dscfm	
Ex Air Free cfm	
Est. MM Btu/hr Heat Input	
Est. Firing Rate, lb/hr	

APPENDIX B

Plant Process Data

CONSOL Energy - DOE / EPRI Mercury Tests

Plant 4 Operating Data - Unit 1 (1/19/05 - 1/21/05)

Description	Units	Test # 1	Test # 2	Test # 3	Test # 4
Total Coal Flow	TPH	168.1	163.7	162.2	168.0
Gross Generation	MW	460	460	458	459
Feedwater Flow	KLBH	3125.41	3091.33	3063.07	3134.92
Main Steam Flow	KLBH	3343.78	3344.49	3325.81	3337.82
Feedwater Pressure	PSIG	2826.4	2824.7	2818.6	2822.2
SH Outlet Pressure	PSIG	2547.6	2548.7	2545.7	2544.2
Economizer Gas Out Temp	deg F	709.9	716.2	720.4	723.2
Air Heater Gas Out Temp	deg F	280.5	284.0	288.0	285.3
Economizer Outlet O2	%	3.30	3.38	3.33	3.35
FGD Inlet Temp	deg F	280.0	282.0	296.0	284.0
FGD Blowdown Flow	GPM	~ 1000	~ 1000	~ 1000	~ 1000
FGD ME Wash Flow	Gallons	11660	14625	26325	0
FGD Makeup Water Flow	Gallons	2992	3658	3995	3000
FGD Additive Feed Flow	GPM	112	94	99	88
FGD Inlet SO2	PPM	885	814.2	769.6	654
FGD Inlet NOx	PPM				
Stack Temp	deg F	121.2	122.5	122.1	122.9
Stack SO2	PPM	156.9	146.8	141.2	118.4
Stack NOx	PPM	220.0	254.6	266.8	248.4
Stack O2	PPM	6.1	5.85	5.85	5.8
Stack CO2	PPM	11.5	11.5	11.6	11.4
Stack Gas Flow	SCFM	1126500	1144446	1139283	1137875

CONSOL Energy - DOE / EPRI Mercury Tests

Plant 4 Operating Data - Unit 2 (1/24/05 - 1/26/05)

Description	Units	Test # 1	Test # 2	Test # 3	Test # 4
Total Coal Flow	TPH	160.8	163.2	162.4	161.4
Gross Generation	MW	459	458	458	457
Feedwater Flow	KLBH	2,965.1	3,024.9	3,002.4	3,010.1
Main Steam Flow	KLBH	3,288.2	3,288.0	3,288.0	3,285.7
Feedwater Pressure	PSIG	2,761.5	2,765.9	2,765.0	2,763.2
SH Outlet Pressure	PSIG	2,533.3	2,534.0	2,534.4	2,532.3
Economizer Gas Out Temp	deg F	693.7	682.4	687.5	700.5
Air Heater Gas Out Temp	deg F	280.2	276.8	281.1	284.4
Economizer Outlet O2	%	3.20	3.24	3.19	3.19
SCR NH3 Feed Rate	LBH	220	238	236	256
FGD Inlet Temp	deg F	294	291	295	296
FGD Blowdown Flow	GPM	1,000	979	987	965
FGD ME Wash Flow	Gallons	56,000	61,600	56,000	56,000
FGD Makeup Water Flow	Gallons	0	0	0	0
FGD Additive Feed Flow	GPM	79.5	114.0	105.5	89.8
FGD Inlet SO2	PPM	840	769	735	621
FGD Inlet NOx	PPM				
Stack Temp	deg F	122.3	122.7	122.3	123.4
Stack SO2	PPM	70.8	56.0	53.3	54.7
Stack NOx	PPM	83.7	85.2	89.4	86.9
Stack O2	PPM				
Stack CO2	PPM	11.6	11.7	11.8	11.4
Stack Gas Flow	SCFM	1,111,992	1,129,667	1,123,488	1,143,206

APPENDIX C

Flue Gas Mercury Data

- Summary of Ontario-Hydro Impinger Analyses Data Sheets
- Recovery Data Sheets

Distribution: Mitkem - Locke Unit 1
Project No.: 1621-87
Sample Date: 1-19-05
Unit

Location: Econ Out Task: 1 Test: 1 Operator: Gary

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids						
1	1A	Probe & Filter Rinse				177		
2	1B	Heated Line Rinse				75		
3	2	KCl Impingers	300	150	87	537		
4	3	HNO_3/H_2O_2 Impinger	100	75	1	176		
5	4	$KMnO_4$ Impingers	200	50	-6	244		
6	5	$KMnO_4$ Acid Rinse		100		100		

Filter Gross wt: 6.8257 g Filter Net wt: 5.2995 g
Filter Tare wt: 1.5262 g Probe/Line Rinse wt: 0 g Condensate Total: 90.7 ml
Filter Net wt: 5.2995 g Total Particulate wt: 5.2995 g

Recovered By: Jw Date: 1-19-05

Location: AHO Task: 1 Test: 1 Operator: Jeff
Unit

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids 9						
7	1A	Probe & Filter Rinse				143		
8	1B	Heated Line Rinse				98		
9	2	KCl Impingers	300	150	78	528		
10	3	HNO_3/H_2O_2 Impinger	100	75	-1	174		
11	4	$KMnO_4$ Impingers	200	50	-7	243		
12	5	$KMnO_4$ Acid Rinse		100		100		

Filter Gross wt: 3.4433 g Filter Net wt: 1.6375 g
Filter Tare wt: 1.8058 g Probe/Line Rinse wt: 0 g Condensate Total: 75.4 ml
Filter Net wt: 1.6375 g Total Particulate wt: 1.6375 g

Recovered By: Jw Date: 1-19-05

Location: FGD In Task: 1 Test: 1 Operator: Jeff
Unit

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids 17						
13	1A	Probe & Filter Rinse				64		
14	1B	Heated Line Rinse				84		
15	2	KCl Impingers	300	150	109	559		
16	3	HNO_3/H_2O_2 Impinger	100	75	0	175		
17	4	$KMnO_4$ Impingers	200	50	-6	244		
18	5	$KMnO_4$ Acid Rinse		100		100		

Filter Gross wt: 0.1499 g Filter Net wt: 0.0024 g
Filter Tare wt: 0.1475 g Probe/Line Rinse wt: 0 g Condensate Total: 114.1 ml
Filter Net wt: 0.0024 g Total Particulate wt: 0.0024 g

Recovered By: Jw Date: 1-19-05

Location: Stack Task: 1 Test: 1 Operator: Keith
Unit

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids 23						
19	1A	Probe & Filter Rinse				109		
—	1B	Heated Line Rinse				—		
20	2	KCl Impingers	300	150	230	680		
21	3	HNO_3/H_2O_2 Impinger	100	75	2	177		
22	4	$KMnO_4$ Impingers	200	50	-5	245		
23	5	$KMnO_4$ Acid Rinse		100		100		

Filter Gross wt: 0.4066 g Filter Net wt: 0.0002 g
Filter Tare wt: 0.4064 g Probe/Line Rinse wt: 0 g Condensate Total: 239.2 ml
Filter Net wt: 0.0002 g Total Particulate wt: 0.0002 g

Recovered By: Jw Date: 1-19-05

Sample ID	Description	ppb Hg	Total ug of Hg
	3 in. Filter Blank		
	Thimble Blank		
24	KCl Blank		
25	HNO_3 / H2O2 Blank		
26	$KMnO_4$ Blank		
27	HNO_3 / HCl Blank		

Unit 1

Distribution: Mathews-Locke
Project No.: 1621-87
Sample Date: 1-20-05

Location: Econ Out Task: 1 (Unit) Test: 2 Operator: Gary

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids 2						
28	1A	Probe & Filter Rinse				188		
29	1B	Heated Line Rinse				111		
30	2	KCl Impingers	300	150	87	537		
31	3	HNO_3/H_2O_2 Impinger	100	75	0	175		
32	4	$KMnO_4$ Impingers	200	50	-4	246		
33	5	$KMnO_4$ Acid Rinse		100		100		

Filter Gross wt: 8.6967 g Filter Net wt: 6.5763 g
Filter Tare wt: 1.5204 g Probe/Line Rinse wt: 0 g Condensate Total: 91.5 ml
Filter Net wt: 6.5763 g Total Particulate wt: 6.5763 g

Recovered By: Jw Date: 1-20-05

Location: AHO Task: 1 (Unit) Test: 2 Operator: Jeff

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids 10						
34	1A	Probe & Filter Rinse				120		
35	1B	Heated Line Rinse				106		
36	2	KCl Impingers	300	150	74	524		
37	3	HNO_3/H_2O_2 Impinger	100	75	-2	173		
38	4	$KMnO_4$ Impingers	200	50	-8	242		
39	5	$KMnO_4$ Acid Rinse		100		100		

Filter Gross wt: 2.3274 g Filter Net wt: 0.6981 g
Filter Tare wt: 1.6293 g Probe/Line Rinse wt: 0 g Condensate Total: 71.7 ml
Filter Net wt: 0.6981 g Total Particulate wt: 0.6981 g

Recovered By: Jw Date: 1-20-05

Location: FGD In Task: 1 (Unit) Test: 2 Operator: Jeff

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids 18						
40	1A	Probe & Filter Rinse				77		
41	1B	Heated Line Rinse				80		
42	2	KCl Impingers	300	150	105	555		
43	3	HNO_3/H_2O_2 Impinger	100	75	0	175		
44	4	$KMnO_4$ Impingers	200	50	-7	243		
45	5	$KMnO_4$ Acid Rinse		100		100		

Filter Gross wt: 0.1476 g Filter Net wt: 0.0004 g
Filter Tare wt: 0.1472 g Probe/Line Rinse wt: 0 g Condensate Total: 107.5 ml
Filter Net wt: 0.0004 g Total Particulate wt: 0.0004 g

Recovered By: Jw Date: 1-20-05

Location: Stack Task: 1 (Unit) Test: 2 Operator: Keith

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids 24						
46	1A	Probe & Filter Rinse				105		
—	1B	Heated Line Rinse				—		
47	2	KCl Impingers	300	150	233	683		
48	3	HNO_3/H_2O_2 Impinger	100	75	2	177		
49	4	$KMnO_4$ Impingers	200	50	-4	246		
50	5	$KMnO_4$ Acid Rinse		100		100		

Filter Gross wt: 0.4146 g Filter Net wt: 0.0030 g
Filter Tare wt: 0.4116 g Probe/Line Rinse wt: 0 g Condensate Total: 243.3 ml
Filter Net wt: 0.0030 g Total Particulate wt: 0.0030 g

Recovered By: Jw Date: 1-20-05

Sample ID	Description	ppb Hg	Total ug of Hg
	3 in. Filter Blank		
	Thimble Blank		
	KCl Blank		
	HNO_3 / H2O2 Blank		
51	$KMnO_4$ Blank		
	HNO_3 / HCl Blank		

Unit 1

Distribution: Witham - Locke
Project No.: 1421-87
Sample Date: 1-20-05

Location: Econ Out Task: Unit 1 Test: 3 Operator: Gary

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids 3						
52	1A	Probe & Filter Rinse				170		
53	1B	Heated Line Rinse				115		
54	2	KCl Impingers	300	150	76	526		
55	3	HNO_3/H_2O_2 Impinger	100	75	0	175		
56	4	$KMnO_4$ Impingers	200	50	-5	245		
57	5	$KMnO_4$ Acid Rinse		100		100		

Filter Gross wt: 7.6839 g Filter Net wt: 6.0387 g
Filter Tare wt: 1.6452 g Probe/Line Rinse wt: 0 g Condensate Total: 77.3 ml
Filter Net wt: 6.0387 g Total Particulate wt: 6.0387 g

Recovered By: Jw Date: 1-20-05

Location: AHO Task: Unit 1 Test: 3 Operator: Jeff

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids 11						
58	1A	Probe & Filter Rinse				121		
59	1B	Heated Line Rinse				118		
60	2	KCl Impingers	300	150	73	523		
61	3	HNO_3/H_2O_2 Impinger	100	75	0	175		
62	4	$KMnO_4$ Impingers	200	50	-4	246		
63	5	$KMnO_4$ Acid Rinse		100		100		

Filter Gross wt: 3.5523 g Filter Net wt: 2.1345 g
Filter Tare wt: 1.4178 g Probe/Line Rinse wt: 0 g Condensate Total: 74.0 ml
Filter Net wt: 2.1345 g Total Particulate wt: 2.1345 g

Recovered By: Jw Date: 1-20-05

Location: FGD In Task: Unit 1 Test: 3 Operator: Jeff

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids 19						
64	1A	Probe & Filter Rinse				135		
65	1B	Heated Line Rinse				112		
66	2	KCl Impingers	306	150	114	564		
67	3	HNO_3/H_2O_2 Impinger	100	75	1	176		
68	4	$KMnO_4$ Impingers	200	50	-3	247		
69	5	$KMnO_4$ Acid Rinse		100		100		

Filter Gross wt: 0.1588 g Filter Net wt: 0.0115 g
Filter Tare wt: 0.1473 g Probe/Line Rinse wt: 0 g Condensate Total: 124.9 ml
Filter Net wt: 0.0115 g Total Particulate wt: 0.0115 g

Recovered By: Jw Date: 1-20-05

Location: Stack Task: Unit 1 Test: 3 Operator: Keith

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids 25						
70	1A	Probe & Filter Rinse				111		
—	1B	Heated Line Rinse				—		
71	2	KCl Impingers	360	150	234	684		
72	3	HNO_3/H_2O_2 Impinger	100	75	0	175		
73	4	$KMnO_4$ Impingers	200	50	-5	245		
74	5	$KMnO_4$ Acid Rinse		100		100		

Filter Gross wt: 0.4153 g Filter Net wt: 0.0012 g
Filter Tare wt: 0.4141 g Probe/Line Rinse wt: 0 g Condensate Total: 241.4 ml
Filter Net wt: 0.0012 g Total Particulate wt: 0.0012 g

Recovered By: Jw Date: 1-20-05

Sample ID	Description	ppb Hg	Total ug of Hg
	3 in. Filter Blank		
	Thimble Blank		
	KCl Blank		
	HNO_3 / H2O2 Blank		
75	$KMnO_4$ Blank		
	HNO_3 / HCl Blank		

Unit 1

Distribution: Witham - Locke
Project No.: 1621-87
Sample Date: 1-21-05

Location: Econ Out Task: Unit 1 Test: 4 Operator: Gary

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids 4						
76	1A	Probe & Filter Rinse				227		
77	1B	Heated Line Rinse				173		
78	2	KCl Impingers	300	150	87	537		
79	3	HNO_3/H_2O_2 Impinger	100	75	-1	174		
80	4	$KMnO_4$ Impingers	200	50	-5	245		
81	5	$KMnO_4$ Acid Rinse		100		100		

Filter Gross wt: 8.5924 g Filter Net wt: 7.1277 g
Filter Tare wt: 1.4647 g Probe/Line Rinse wt: 0 g Condensate Total: 90.1 ml
Filter Net wt: 7.1277 g Total Particulate wt: 7.1277 g

Recovered By: Jw Date: 1-21-05

Location: AHO Task: Unit 1 Test: 4 Operator: Jesse

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids 12						
82	1A	Probe & Filter Rinse				88		
83	1B	Heated Line Rinse				139		
84	2	KCl Impingers	300	150	89	539		
85	3	HNO_3/H_2O_2 Impinger	100	75	0	175		
86	4	$KMnO_4$ Impingers	200	50	-5	245		
87	5	$KMnO_4$ Acid Rinse		100		100		

Filter Gross wt: 3.0672 g Filter Net wt: 1.5973 g
Filter Tare wt: 1.4699 g Probe/Line Rinse wt: 0 g Condensate Total: 89.7 ml
Filter Net wt: 1.5973 g Total Particulate wt: 1.5973 g

Recovered By: Jw Date: 1-21-05

Location: FGD In Task: Unit 1 Test: 4 Operator: Jeff

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids 20						
88	1A	Probe & Filter Rinse				127		
89	1B	Heated Line Rinse				107		
90	2	KCl Impingers	360	150	112	562		
91	3	HNO_3/H_2O_2 Impinger	100	75	1	176		
92	4	$KMnO_4$ Impingers	200	50	-3	247		
93	5	$KMnO_4$ Acid Rinse		100		100		

Filter Gross wt: 0.1613 g Filter Net wt: 0.0134 g
Filter Tare wt: 0.1479 g Probe/Line Rinse wt: 0 g Condensate Total: 121.4 ml
Filter Net wt: 0.0134 g Total Particulate wt: 0.0134 g

Recovered By: Jw Date: 1-21-05

Location: Stack Task: Unit 1 Test: 4 Operator: Keith

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids 26						
94	1A	Probe & Filter Rinse				109		
-	1B	Heated Line Rinse				-		
95	2	KCl Impingers	300	150	240	690		
96	3	HNO_3/H_2O_2 Impinger	100	75	0	175		
97	4	$KMnO_4$ Impingers	200	50	-6	244		
98	5	$KMnO_4$ Acid Rinse		100		100		

Filter Gross wt: 0.4151 g Filter Net wt: 0.0017 g
Filter Tare wt: 0.4134 g Probe/Line Rinse wt: 0 g Condensate Total: 245.3 ml
Filter Net wt: 0.0017 g Total Particulate wt: 0.0017 g

Recovered By: Jw Date: 1-21-05

Sample ID	Description	ppb Hg	Total ug of Hg
	3 in. Filter Blank		
	Thimble Blank		
	KCl Blank		
	HNO_3 / H2O2 Blank		
	$KMnO_4$ Blank		
	HNO_3 / HCl Blank		

Project No	Test	Date	Loc.	Operator	Sample ID #	Task	Description	Anal No.	Hg	
1621-87	1	02/01/05	ECONOUT	#VALUE!	1	1	PROBE & FILTER RINSE	20050377	<1.0	ng/ml
1621-87	1	02/01/05	ECONOUT	#VALUE!	2	1	HEATED LINE RINSE	20050378	<1.0	ng/ml
1621-87	1	02/01/05	ECONOUT	#VALUE!	3	1	KCL IMPINGER	20050379	11.2	ng/ml
1621-87	1	02/01/05	ECONOUT	#VALUE!	4	1	HNO3/H2O2 IMPINGER	20050380	0.5	ng/ml
1621-87	1	02/01/05	ECONOUT	#VALUE!	5	1	KMNO4 IMPINGER	20050381	23.2	ng/ml
1621-87	1	02/01/05	ECONOUT	#VALUE!	6	1	KMNO4 ACID RINSE	20050382	<1.0	ng/ml
1621-87	1	02/01/05	AHO	#VALUE!	7	1	PROBE & FILTER RINSE	20050383	1.0	ng/ml
1621-87	1	02/01/05	AHO	#VALUE!	8	1	HEATED LINE RINSE	20050384	1.7	ng/ml
1621-87	1	02/01/05	AHO	#VALUE!	9	1	KCL IMPINGER	20050385	12.3	ng/ml
1621-87	1	02/01/05	AHO	#VALUE!	10	1	HNO3/H2O2 IMPINGER	20050386	<0.2	ng/ml
1621-87	1	02/01/05	AHO	#VALUE!	11	1	KMNO4 IMPINGER	20050387	0.4	ng/ml
1621-87	1	02/01/05	AHO	#VALUE!	12	1	KMNO4 ACID RINSE	20050388	1.5	ng/ml
1621-87	1	02/01/05	FGDIN	#VALUE!	13	1	PROBE & FILTER RINSE	20050389	<1.0	ng/ml
1621-87	1	02/01/05	FGDIN	#VALUE!	14	1	HEATED LINE RINSE	20050390	<1.0	ng/ml
1621-87	1	02/01/05	FGDIN	#VALUE!	15	1	KCL IMPINGER	20050391	21.0	ng/ml
1621-87	1	02/01/05	FGDIN	#VALUE!	16	1	HNO3/H2O2 IMPINGER	20050392	<0.2	ng/ml
1621-87	1	02/01/05	FGDIN	#VALUE!	17	1	KMNO4 IMPINGER	20050393	2.4	ng/ml
1621-87	1	02/01/05	FGDIN	#VALUE!	18	1	KMNO4 ACID RINSE	20050394	<1.0	ng/ml
1621-87	1	02/01/05	STACK	#VALUE!	19	1	PROBE & FILTER RINSE	20050395	<1.0	ng/ml
1621-87	1	02/01/05	STACK	#VALUE!	20	1	KCL IMPINGER	20050396	1.3	ng/ml
1621-87	1	02/01/05	STACK	#VALUE!	21	1	HNO3/H2O2 IMPINGER	20050397	<0.2	ng/ml
1621-87	1	02/01/05	STACK	#VALUE!	22	1	KMNO4 IMPINGER	20050398	2.3	ng/ml
1621-87	1	02/01/05	STACK	#VALUE!	23	1	KMNO4 ACID RINSE	20050399	<1.0	ng/ml
1621-87	#VALUE!	02/01/05	#VALUE!	#VALUE!	24	#VALUE!	KCL BLANK	20050400	<0.2	ng/ml
1621-87	#VALUE!	02/01/05	#VALUE!	#VALUE!	25	#VALUE!	HNO3/H2O2 BLANK	20050401	<0.2	ng/ml
1621-87	#VALUE!	02/01/05	#VALUE!	#VALUE!	26	#VALUE!	KMNO4 BLANK	20050402	<0.2	ng/ml
1621-87	#VALUE!	02/01/05	#VALUE!	#VALUE!	27	#VALUE!	HNO3/HCL BLANK	20050403	<0.2	ng/ml
1621-87	2	02/01/05	ECONOUT	#VALUE!	28	1	PROBE & FILTER RINSE	20050404	<1.0	ng/ml
1621-87	2	02/01/05	ECONOUT	#VALUE!	29	1	HEATED LINE RINSE	20050405	<1.0	ng/ml
1621-87	2	02/01/05	ECONOUT	#VALUE!	30	1	KCL IMPINGER	20050406	11.9	ng/ml
1621-87	2	02/01/05	ECONOUT	#VALUE!	31	1	HNO3/H2O2 IMPINGER	20050407	0.5	ng/ml
1621-87	2	02/01/05	ECONOUT	#VALUE!	32	1	KMNO4 IMPINGER	20050408	17.3	ng/ml
1621-87	2	02/01/05	ECONOUT	#VALUE!	33	1	KMNO4 ACID RINSE	20050409	1.8	ng/ml

1621-87	2	02/01/05	AHO	#VALUE!	34	1	PROBE & FILTER RINSE	20050410	<1.0	ng/ml
1621-87	2	02/01/05	AHO	#VALUE!	35	1	HEATED LINE RINSE	20050411	5.1	ng/ml
1621-87	2	02/01/05	AHO	#VALUE!	36	1	KCL IMPINGER	20050412	14.9	ng/ml
1621-87	2	02/01/05	AHO	#VALUE!	37	1	HNO3/H2O2 IMPINGER	20050413	0.9	ng/ml
1621-87	2	02/01/05	AHO	#VALUE!	38	1	KMNO4 IMPINGER	20050414	3.5	ng/ml
1621-87	2	02/01/05	AHO	#VALUE!	39	1	KMNO4 ACID RINSE	20050415	<1.0	ng/ml
1621-87	2	02/01/05	FGDIN	#VALUE!	40	1	PROBE & FILTER RINSE	20050416	<1.0	ng/ml
1621-87	2	02/01/05	FGDIN	#VALUE!	41	1	HEATED LINE RINSE	20050417	<1.0	ng/ml
1621-87	2	02/01/05	FGDIN	#VALUE!	42	1	KCL IMPINGER	20050418	22.7	ng/ml
1621-87	2	02/01/05	FGDIN	#VALUE!	43	1	HNO3/H2O2 IMPINGER	20050419	0.4	ng/ml
1621-87	2	02/01/05	FGDIN	#VALUE!	44	1	KMNO4 IMPINGER	20050420	1.4	ng/ml
1621-87	2	02/01/05	FGDIN	#VALUE!	45	1	KMNO4 ACID RINSE	20050421	1.1	ng/ml
1621-87	2	02/01/05	STACK	#VALUE!	46	1	PROBE & FILTER RINSE	20050422	<1.0	ng/ml
1621-87	2	02/01/05	STACK	#VALUE!	47	1	KCL IMPINGER	20050423	1.0	ng/ml
1621-87	2	02/01/05	STACK	#VALUE!	48	1	HNO3/H2O2 IMPINGER	20050424	<0.2	ng/ml
1621-87	2	02/01/05	STACK	#VALUE!	49	1	KMNO4 IMPINGER	20050425	6.3	ng/ml
1621-87	2	02/01/05	STACK	#VALUE!	50	1	KMNO4 ACID RINSE	20050426	2.0	ng/ml
1621-87	#VALUE!	02/01/05	#VALUE!	#VALUE!	51	#VALUE!	KMNO4 BLANK	20050427	<0.2	ng/ml
1621-87	3	02/01/05	ECONOUT	#VALUE!	52	1	PROBE & FILTER RINSE	20050428	<1.0	ng/ml
1621-87	3	02/01/05	ECONOUT	#VALUE!	53	1	HEATED LINE RINSE	20050429	<1.0	ng/ml
1621-87	3	02/01/05	ECONOUT	#VALUE!	54	1	KCL IMPINGER	20050430	10.2	ng/ml
1621-87	3	02/01/05	ECONOUT	#VALUE!	55	1	HNO3/H2O2 IMPINGER	20050431	0.4	ng/ml
1621-87	3	02/01/05	ECONOUT	#VALUE!	56	1	KMNO4 IMPINGER	20050432	13.4	ng/ml
1621-87	3	02/01/05	ECONOUT	#VALUE!	57	1	KMNO4 ACID RINSE	20050433	<1.0	ng/ml
1621-87	3	02/01/05	AHO	#VALUE!	58	1	PROBE & FILTER RINSE	20050434	<1.0	ng/ml
1621-87	3	02/01/05	AHO	#VALUE!	59	1	HEATED LINE RINSE	20050435	<1.0	ng/ml
1621-87	3	02/01/05	AHO	#VALUE!	60	1	KCL IMPINGER	20050436	14.6	ng/ml
1621-87	3	02/01/05	AHO	#VALUE!	61	1	HNO3/H2O2 IMPINGER	20050437	0.3	ng/ml
1621-87	3	02/01/05	AHO	#VALUE!	62	1	KMNO4 IMPINGER	20050438	4.5	ng/ml
1621-87	3	02/01/05	AHO	#VALUE!	63	1	KMNO4 ACID RINSE	20050439	<1.0	ng/ml
1621-87	3	02/01/05	FGDIN	#VALUE!	64	1	PROBE & FILTER RINSE	20050440	<1.0	ng/ml
1621-87	3	02/01/05	FGDIN	#VALUE!	65	1	HEATED LINE RINSE	20050441	<1.0	ng/ml
1621-87	3	02/01/05	FGDIN	#VALUE!	66	1	KCL IMPINGER	20050442	23.9	ng/ml
1621-87	3	02/01/05	FGDIN	#VALUE!	67	1	HNO3/H2O2 IMPINGER	20050443	0.2	ng/ml
1621-87	3	02/01/05	FGDIN	#VALUE!	68	1	KMNO4 IMPINGER	20050444	2.0	ng/ml
1621-87	3	02/01/05	FGDIN	#VALUE!	69	1	KMNO4 ACID RINSE	20050445	1.5	ng/ml

1621-87	3	02/01/05	STACK	#VALUE!	70	1	PROBE & FILTER RINSE	20050446	<1.0	ng/ml
1621-87	3	02/01/05	STACK	#VALUE!	71	1	KCL IMPINGER	20050447	0.9	ng/ml
1621-87	3	02/01/05	STACK	#VALUE!	72	1	HNO3/H2O2 IMPINGER	20050448	0.2	ng/ml
1621-87	3	02/01/05	STACK	#VALUE!	73	1	KMNO4 IMPINGER	20050449	9.1	ng/ml
1621-87	3	02/01/05	STACK	#VALUE!	74	1	KMNO4 ACID RINSE	20050450	<1.0	ng/ml
1621-87	#VALUE!	02/01/05	#VALUE!	#VALUE!	75	#VALUE!	KMNO4 BLANK	20050451	<0.2	ng/ml
1621-87	4	02/01/05	ECONOUT	#VALUE!	76	1	PROBE & FILTER RINSE	20050452	<1.0	ng/ml
1621-87	4	02/01/05	ECONOUT	#VALUE!	77	1	HEATED LINE RINSE	20050453	<1.0	ng/ml
1621-87	4	02/01/05	ECONOUT	#VALUE!	78	1	KCL IMPINGER	20050454	8.2	ng/ml
1621-87	4	02/01/05	ECONOUT	#VALUE!	79	1	HNO3/H2O2 IMPINGER	20050455	0.4	ng/ml
1621-87	4	02/01/05	ECONOUT	#VALUE!	80	1	KMNO4 IMPINGER	20050456	8.0	ng/ml
1621-87	4	02/01/05	ECONOUT	#VALUE!	81	1	KMNO4 ACID RINSE	20050457	<1.0	ng/ml
1621-87	4	02/01/05	AHO	#VALUE!	82	1	PROBE & FILTER RINSE	20050458	<1.0	ng/ml
1621-87	4	02/01/05	AHO	#VALUE!	83	1	HEATED LINE RINSE	20050459	<1.0	ng/ml
1621-87	4	02/01/05	AHO	#VALUE!	84	1	KCL IMPINGER	20050460	9.9	ng/ml
1621-87	4	02/01/05	AHO	#VALUE!	85	1	HNO3/H2O2 IMPINGER	20050461	<0.2	ng/ml
1621-87	4	02/01/05	AHO	#VALUE!	86	1	KMNO4 IMPINGER	20050462	1.3	ng/ml
1621-87	4	02/01/05	AHO	#VALUE!	87	1	KMNO4 ACID RINSE	20050463	<1.0	ng/ml
1621-87	4	02/01/05	FGDIN	#VALUE!	88	1	PROBE & FILTER RINSE	20050464	<1.0	ng/ml
1621-87	4	02/01/05	FGDIN	#VALUE!	89	1	HEATED LINE RINSE	20050465	<1.0	ng/ml
1621-87	4	02/01/05	FGDIN	#VALUE!	90	1	KCL IMPINGER	20050466	11.7	ng/ml
1621-87	4	02/01/05	FGDIN	#VALUE!	91	1	HNO3/H2O2 IMPINGER	20050467	<1.0	ng/ml
1621-87	4	02/01/05	FGDIN	#VALUE!	92	1	KMNO4 IMPINGER	20050468	2.6	ng/ml
1621-87	4	02/01/05	FGDIN	#VALUE!	93	1	KMNO4 ACID RINSE	20050469	<1.0	ng/ml
1621-87	4	02/01/05	STACK	#VALUE!	94	1	PROBE & FILTER RINSE	20050470	<1.0	ng/ml
1621-87	4	02/01/05	STACK	#VALUE!	95	1	KCL IMPINGER	20050471	0.7	ng/ml
1621-87	4	02/01/05	STACK	#VALUE!	96	1	HNO3/H2O2 IMPINGER	20050472	<0.2	ng/ml
1621-87	4	02/01/05	STACK	#VALUE!	97	1	KMNO4 IMPINGER	20050473	4.3	ng/ml
1621-87	4	02/01/05	STACK	#VALUE!	98	1	KMNO4 ACID RINSE	20050474	<1.0	ng/ml
1621-87	4	02/01/05	IMP	#VALUE!	99	1	KCL IMPINGER	20050475	<0.2	ng/ml
1621-87	4	02/01/05	IMP	#VALUE!	100	1	HNO3/H2O2 IMPINGER	20050476	<0.2	ng/ml
1621-87	4	02/01/05	IMP	#VALUE!	101	1	KMNO4 IMPINGER	20050477	<0.2	ng/ml
1621-87	4	02/01/05	IMP	#VALUE!	102	1	KMNO4 ACID RINSE	20050478	<1.0	ng/ml
1621-87	#VALUE!	02/01/05	#VALUE!	#VALUE!	103	#VALUE!	KMNO4 BLANK	20050479	<0.2	ng/ml
1621-87	4	02/01/05	IMP	#VALUE!	104	1	KCL IMPINGER	20050480	<0.2	ng/ml
1621-87	4	02/01/05	IMP	#VALUE!	105	1	HNO3/H2O2 IMPINGER	20050481	<0.2	ng/ml
1621-87	4	02/01/05	IMP	#VALUE!	106	1	KMNO4 IMPINGER	20050482	<0.2	ng/ml
1621-87	4	02/01/05	IMP	#VALUE!	107	1	KMNO4 ACID RINSE	20050483	<1.0	ng/ml

Run 1 Particulate in Thimbles by ASTM D6722, Direct Combustion

ANALNUM	SAMPLE	DATE	DESCR	Hg	
20050611	1	01/19/05	ECON OUT 1 THIMBLE	0.015	PPM
20050612	9	01/19/05	AHO-1 THIMBLE	0.462	PPM
20050615	2	01/20/05	ECON OUT 2 THIMBLE	0.015	PPM
20050616	10	01/20/05	AHO-2 THIMBLE	0.080	PPM
20050619	3	01/20/05	ECON OUT 3 THIMBLE	0.014	PPM
20050620	11	01/20/05	AHO-3 THIMBLE	0.098	PPM
20050623	4	01/21/05	ECON OUT 4 THIMBLE	0.018	PPM
20050624	12	01/21/05	AHO-4 THIMBLE	0.095	PPM

NIST 1633B (also used as Continuing Calibration Verification)						PPM		
1633B						0.153	109%	good
1633B						0.153	109%	good

Run 2 Filters by ASTM 6414, Acid Digestion/CVAA

ANALNUM	SAMPLE	DATE	DESCR	Hg	
20050613	17	01/19/05	FGD-1 47 MM	<5.0	ng/filter
20050614	23	01/19/05	STK-1 3-IN FILTER	<5.0	ng/filter
20050617	18	01/20/05	FGD-2 47 MM FILTER	<5.0	ng/filter
20050618	24	01/20/05	STK-2 3-IN FILTER	<5.0	ng/filter
20050621	19	01/20/05	FGD-3 47 MM FILTER	<5.0	ng/filter
20050622	25	01/20/05	STK-3 3-IN FILTER	<5.0	ng/filter
20050625	20	01/21/05	FGD-4 47 MM FILTER	<5.0	ng/filter
20050626	26	01/21/05	STK-4 3-IN FILTER	<5.0	ng/filter

NIST 1633B						PPM		
1633B						0.128	91%	good

Continuing Calibration Verification						ng/ml		
1641d 8 ppb						8.2	103%	good
1641d 8ppb						8.2	103%	good
1641d 8ppb						8.2	103%	good
1641d 8ppb						8.3	104%	good

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DESCRIPTION *ECON OUT 1 THIMBLE*
UNIT 1
DATE SAMPLED *01/19/05*
SAMPLE NUMBER *1*

DATE LOGGED *02/03/05*
DATE COMPLETED *03/09/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER **050611**

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	94.18

MISC. (As Det.)

MERCURY	0.015 PPM

ULTIMATE	(Dry)%
Carbon	5.36
Ash	94.18

MAJOR ASH ELEM	(Dry)%
Silicon	49.39
Al2O3	27.19
TiO2	1.41
Fe2O3	10.76
CaO	1.70
MgO	0.99
Na2O	0.54
K2O	2.52
P2O5	0.27
SO3	0.57
UND	4.66

AS DETERMINED MOISTURE: 0.06 %

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DESCRIPTION *AHO-1 THIMBLE*
UNIT 1
DATE SAMPLED *01/19/05*
SAMPLE NUMBER *9*

DATE LOGGED *02/03/05*
DATE COMPLETED *03/09/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050612

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	93.82

MISC. (As Det.)

MERCURY	0.462 PPM

ULTIMATE	(Dry)%
Carbon	5.66
Ash	93.82

MAJOR ASH ELEM	(Dry)%
Silicon	47.81
Al203	25.91
TiO2	1.31
Fe203	11.31
CaO	1.53
MgO	0.91
Na2O	0.48
K2O	2.36
P2O5	0.22
SO3	0.45
UND	7.71

AS DETERMINED MOISTURE: 0.30 %

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DESCRIPTION *FGD-1 47 MM*
UNIT 1
DATE SAMPLED *01/19/05*
SAMPLE NUMBER *17*

DATE LOGGED *02/03/05*
DATE COMPLETED *03/04/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050613

ANALYSIS REPORT

MISC. (As Det.)

MERCURY	<5.0	NG/FIL

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DESCRIPTION *STK-1 3-IN FILTER*
UNIT 1
DATE SAMPLED *01/19/05*
SAMPLE NUMBER *23*

DATE LOGGED *02/03/05*
DATE COMPLETED *03/04/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050614

ANALYSIS REPORT

MISC. (As Det.)

MERCURY	<5.0	NG/FIL

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DESCRIPTION *ECON OUT 2 THIMBLE UNIT 1*
DATE SAMPLED *01/20/05*
SAMPLE NUMBER *2*

DATE LOGGED *02/03/05*
DATE COMPLETED *03/09/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER **050615**

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	96.44

MISC. (As Det.)

MERCURY	0.015 PPM

ULTIMATE	(Dry)%
Carbon	3.18
Ash	96.44

MAJOR ASH ELEM	(Dry)%
Silicon	51.04
Al2O3	26.56
TiO2	1.45
Fe2O3	10.98
CaO	1.69
MgO	0.96
Na2O	0.58
K2O	2.35
P2O5	0.29
SO3	0.55
UND	3.55

AS DETERMINED MOISTURE: 0.12 %

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DESCRIPTION *AHO-2 THIMBLE*
UNIT 1
DATE SAMPLED *01/20/05*
SAMPLE NUMBER *10*

DATE LOGGED *02/03/05*
DATE COMPLETED *03/09/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER **050616**

ANALYSIS REPORT

PROXIMATE (Dry)%		ULTIMATE (Dry)%		MAJOR ASH ELEM (Dry)%	
Ash	97.02	Carbon	2.56	Silicon	51.34
		Ash	97.02	Al2O3	26.30
MISC. (As Det.)				TiO2	1.45
				Fe2O3	11.74
MERCURY	0.080 PPM			CaO	1.72
				MgO	0.95
				Na2O	0.54
				K2O	2.30
				P2O5	0.28
				SO3	0.56
				UND	2.82

AS DETERMINED MOISTURE: 0.31 %

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DESCRIPTION *FGD-2 47 MM FILTER*
UNIT 1
DATE SAMPLED *01/20/05*
SAMPLE NUMBER *18*

DATE LOGGED *02/03/05*
DATE COMPLETED *03/04/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050617

ANALYSIS REPORT

MISC. (As Det.)

MERCURY	<5.0	NG/FIL

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DESCRIPTION *STK-2 3-IN FILTER*
UNIT 1
DATE SAMPLED *01/20/05*
SAMPLE NUMBER *24*

DATE LOGGED *02/03/05*
DATE COMPLETED *03/04/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050618

ANALYSIS REPORT

MISC. (As Det.)

MERCURY	<5.0	NG/FIL

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DESCRIPTION *ECON OUT 3 THIMBLE*
UNIT 1
DATE SAMPLED *01/20/05*
SAMPLE NUMBER *3*

DATE LOGGED *02/03/05*
DATE COMPLETED *03/09/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050619

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	96.94

MISC. (As Det.)

MERCURY 0.014 PPM

ULTIMATE	(Dry)%
Carbon	2.95
Ash	96.94

MAJOR ASH ELEM	(Dry)%
Silicon	51.79
Al2O3	26.34
TiO2	1.46
Fe2O3	10.82
CaO	1.75
MgO	0.97
Na2O	0.56
K2O	2.42
P2O5	0.31
SO3	0.45
UND	3.13

AS DETERMINED MOISTURE: 0.10 %

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DESCRIPTION *AHO-3 THIMBLE*
UNIT 1
DATE SAMPLED *01/20/05*
SAMPLE NUMBER *11*

DATE LOGGED *02/03/05*
DATE COMPLETED *03/09/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER **050620**

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	96.91

ULTIMATE	(Dry)%
Carbon	2.84
Ash	96.91

MAJOR ASH ELEM	(Dry)%
Silicon	51.83
Al2O3	26.21
TiO2	1.43
Fe2O3	11.04
CaO	1.71
MgO	0.96
Na2O	0.54
K2O	2.34
P2O5	0.27
SO3	0.36
UND	3.31

MISC. (As Det.)

MERCURY 0.098 PPM

AS DETERMINED MOISTURE: 0.27 %

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DESCRIPTION *FGD-3 47 MM FILTER*
UNIT 1
DATE SAMPLED *01/20/05*
SAMPLE NUMBER *19*

DATE LOGGED *02/03/05*
DATE COMPLETED *03/04/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050621

ANALYSIS REPORT

MISC. (As Det.)

MERCURY	<5.0	NG/FIL

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DESCRIPTION *STK-3 3-IN FILTER*
UNIT 1
DATE SAMPLED *01/20/05*
SAMPLE NUMBER *25*

DATE LOGGED *02/03/05*
DATE COMPLETED *03/04/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050622

ANALYSIS REPORT

MISC. (As Det.)

MERCURY	<5.0	NG/FIL

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DESCRIPTION *ECON OUT 4 THIMBLE UNIT 1*
DATE SAMPLED *01/21/05*
SAMPLE NUMBER *4*

DATE LOGGED *02/03/05*
DATE COMPLETED *03/09/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050623

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	95.87

MISC. (As Det.)

MERCURY	0.018 PPM

ULTIMATE	(Dry)%
Carbon	3.47
Ash	95.87

MAJOR ASH ELEM	(Dry)%
Silicon	53.34
Al2O3	25.73
TiO2	1.43
Fe2O3	9.03
CaO	1.55
MgO	1.02
Na2O	0.61
K2O	2.53
P2O5	0.13
SO3	0.55
UND	4.08

AS DETERMINED MOISTURE: 0.08 %

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DESCRIPTION *AHO-4 THIMBLE*
UNIT 1
DATE SAMPLED *01/21/05*
SAMPLE NUMBER *12*

DATE LOGGED *02/03/05*
DATE COMPLETED *03/09/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050624

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	96.98

MISC. (As Det.)

MERCURY	0.095 PPM

ULTIMATE	(Dry)%
Carbon	2.45
Ash	96.98

MAJOR ASH ELEM	(Dry)%
Silicon	53.89
Al2O3	25.81
TiO2	1.41
Fe2O3	9.16
CaO	1.48
MgO	1.01
Na2O	0.61
K2O	2.51
P2O5	0.11
SO3	0.44
UND	3.57

AS DETERMINED MOISTURE: 0.18 %

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DESCRIPTION *FGD-4 47 MM FILTER*
UNIT 1
DATE SAMPLED *01/21/05*
SAMPLE NUMBER *20*

DATE LOGGED *02/03/05*
DATE COMPLETED *03/04/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050625

ANALYSIS REPORT

MISC. (As Det.)

MERCURY	<5.0	NG/FIL

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DESCRIPTION *STK-4 3-IN FILTER*
UNIT 1
DATE SAMPLED *01/21/05*
SAMPLE NUMBER *26*

DATE LOGGED *02/03/05*
DATE COMPLETED *03/04/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050626

ANALYSIS REPORT

MISC. (As Det.)

MERCURY	<5.0	NG/FIL

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Distribution: Huffman-Loche — Unit 2
Project No.: 1621-87
Sample Date: 1-24-05

Location: Econ Out — Task: Unit 2 — Test: 1 — Operator: Gary

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids 5						
1	1A	Probe & Filter Rinse				182		
2	1B	Heated Line Rinse				121		
3	2	KCl Impingers	300	150	73	523		
4	3	HNO_3/H_2O_2 Impinger	100	75	0	175		
5	4	$KMnO_4$ Impingers	200	50	-3	247		
6	5	$KMnO_4$ Acid Rinse		100		106		

Filter Gross wt: 7.0514 g — Filter Net wt: 5.4040 g
Filter Tare wt: 1.6474 g — Probe/Line Rinse wt: 0 g — Condensate Total: 78.1 ml
Filter Net wt: 5.4040 g — Total Particulate wt: 5.4040 g

Recovered By: Jw — Date: 1-24-05

Location: AHO — Task: Unit 2 — Test: 1 — Operator: Jeff

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids 13						
7	1A	Probe & Filter Rinse				160		
8	1B	Heated Line Rinse				148		
9	2	KCl Impingers	300	150	74	524		
10	3	HNO_3/H_2O_2 Impinger	100	75	0	175		
11	4	$KMnO_4$ Impingers	200	50	-4	246		
12	5	$KMnO_4$ Acid Rinse		100		100		

Filter Gross wt: 2.2802 g — Filter Net wt: 1.1700 g
Filter Tare wt: 1.5102 g — Probe/Line Rinse wt: 0 g — Condensate Total: 75.6 ml
Filter Net wt: 1.1700 g — Total Particulate wt: 1.1700 g

Recovered By: Jw — Date: 1-24-05

Location: FGD In — Task: Unit 2 — Test: 1 — Operator: Jeff

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids 34						
13	1A	Probe & Filter Rinse				108		
14	1B	Heated Line Rinse				109		
15	2	KCl Impingers	300	150	94	544		
16	3	HNO_3/H_2O_2 Impinger	100	75	0	175		
17	4	$KMnO_4$ Impingers	200	50	-3	247		
18	5	$KMnO_4$ Acid Rinse		100		100		

Filter Gross wt: 0.4030 g — Filter Net wt: 0.0005 g
Filter Tare wt: 0.4025 g — Probe/Line Rinse wt: 0 g — Condensate Total: 99.0 ml
Filter Net wt: 0.0005 g — Total Particulate wt: 0.0005 g

Recovered By: Jw — Date: 1-24-05

Location: Stack — Task: Unit 2 — Test: 1 — Operator: Keith

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids 27						
19	1A	Probe & Filter Rinse				109		
~	1B	Heated Line Rinse				—		
20	2	KCl Impingers	300	150	222	672		
21	3	HNO_3/H_2O_2 Impinger	100	75	7	182		
22	4	$KMnO_4$ Impingers	200	50	-6	244		
23	5	$KMnO_4$ Acid Rinse		100		100		

Filter Gross wt: 0.4085 g — Filter Net wt: 0.0080 g
Filter Tare wt: 0.4005 g — Probe/Line Rinse wt: 0 g — Condensate Total: 238.1 ml
Filter Net wt: 0.0080 g — Total Particulate wt: 0.0080 g

Recovered By: Jw — Date: 1-24-05

Sample ID	Description	ppb Hg	Total ug of Hg
	3 in. Filter Blank		
	Thimble Blank		
24	KCl Blank		
25	HNO_3 / H2O2 Blank		
26	$KMnO_4$ Blank		
27	HNO_3 / HCl Blank		

Unit 2

Distribution: Nathum - Loche
Project No.: 1621-87
Sample Date: 1-25-05

Location: Econ Out Task: 2 Test: 2 Operator: Jay

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids 7						
28	1A	Probe & Filter Rinse				170		
29	1B	Heated Line Rinse				98		
30	2	KCl Impingers	300	150	89	539		
31	3	HNO_3/H_2O_2 Impinger	100	75	0	175		
32	4	$KMnO_4$ Impingers	200	50	-4	246		
33	5	$KMnO_4$ Acid Rinse		100		100		

Filter Gross wt: 6.7910 g Filter Net wt: 5.3862 g
Filter Tare wt. 1.4048 g Probe/Line Rinse wt: 0 g Condensate Total: 83.7 ml
Filter Net wt: 5.3862 g Total Particulate wt: 5.3862 g

Recovered By: Jm Date: 1-25-05

Unit 2

Location: AHO Task: 2 Test: 2 Operator: Jm

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids 14						
34	1A	Probe & Filter Rinse				126		
35	1B	Heated Line Rinse				209		
36	2	KCl Impingers	300	150	73	523		
37	3	HNO_3/H_2O_2 Impinger	100	75	0	175		
38	4	$KMnO_4$ Impingers	200	50	-6	244		
39	5	$KMnO_4$ Acid Rinse		100		100		

Filter Gross wt: 4.0315 g Filter Net wt: 2.3996 g
Filter Tare wt: 1.6319 g Probe/Line Rinse wt: 0 g Condensate Total: 72.4 ml
Filter Net wt: 2.3996 g Total Particulate wt: 2.3996 g

Recovered By: Jm Date: 1-25-05

Unit 2

Location: FGD In Task: 2 Test: 2 Operator: Jeff

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids 35						
40	1A	Probe & Filter Rinse				101		
41	1B	Heated Line Rinse				89		
42	2	KCl Impingers	300	150	85	535		
43	3	HNO_3/H_2O_2 Impinger	100	75	2	177		
44	4	$KMnO_4$ Impingers	200	50	-5	245		
45	5	$KMnO_4$ Acid Rinse		100		100		

Filter Gross wt: 0.3988 g Filter Net wt: 0.0001 g
Filter Tare wt: 0.3987 g Probe/Line Rinse wt: 0 g Condensate Total: 89.5 ml
Filter Net wt: 0.0001 g Total Particulate wt: 0.0001 g

Recovered By: Jm Date: 1-25-05

Unit 2

Location: Stack Task: 2 Test: 2 Operator: Keith

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids 31						
46	1A	Probe & Filter Rinse				100		
—	1B	Heated Line Rinse				—		
47	2	KCl Impingers	300	150	222	672		
48	3	HNO_3/H_2O_2 Impinger	100	75	8	183		
49	4	$KMnO_4$ Impingers	200	50	-5	245		
50	5	$KMnO_4$ Acid Rinse		100		100		

Filter Gross wt: 0.4089 g Filter Net wt: 0.0055 g
Filter Tare wt: 0.4034 g Probe/Line Rinse wt: 0 g Condensate Total: 235.9 ml
Filter Net wt: 0.0055 g Total Particulate wt: 0.0055 g

Recovered By: Jm Date: 1-25-05

Sample ID	Description	ppb Hg	Total ug of Hg
	3 in. Filter Blank		
	Thimble Blank		
	KCl Blank		
	HNO_3 / H2O2 Blank		
	$KMnO_4$ Blank		
	HNO_3 / HCl Blank		

Unit 2

Distribution: Mirkun - Locke
Project No.: 1621-87
Sample Date: 1-25-05

Location: Econ Out Task: 2 (Unit 2) Test: 3 Operator: Jay

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids 6						
56	1A	Probe & Filter Rinse				198		
57	1B	Heated Line Rinse				106		
58	2	KCl Impingers	300	150	75	525		
59	3	HNO_3/H_2O_2 Impinger	100	75	1	176		
60	4	$KMnO_4$ Impingers	200	50	-2	248		
61	5	$KMnO_4$ Acid Rinse		100		100		

Filter Gross wt: 7.3005 g Filter Net wt: 5.6593 g
Filter Tare wt: 1.6412 g Probe/Line Rinse wt: 0 g Condensate Total: 78.7 ml
Filter Net wt: 5.6593 g Total Particulate wt: 5.6593 g

Recovered By: Jw Date: 1-25-05

Location: AHO Task: 2 (Unit 2) Test: 3 Operator: Jason

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids 15						
62	1A	Probe & Filter Rinse				123		
63	1B	Heated Line Rinse				130		
64	2	KCl Impingers	300	150	79	529		
65	3	HNO_3/H_2O_2 Impinger	100	75	1	176		
66	4	$KMnO_4$ Impingers	200	50	0	250		
67	5	$KMnO_4$ Acid Rinse		100		100		

Filter Gross wt: 4.4486 g Filter Net wt: 2.7024 g
Filter Tare wt: 1.7462 g Probe/Line Rinse wt: 0 g Condensate Total: 87.3 ml
Filter Net wt: 2.7024 g Total Particulate wt: 2.7024 g

Recovered By: Jw Date: 1-25-05

Location: FGD In Task: 2 (Unit 2) Test: 3 Operator: Jeff

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids 36						
68	1A	Probe & Filter Rinse				95		
69	1B	Heated Line Rinse				121		
70	2	KCl Impingers	300	150	93	543		
71	3	HNO_3/H_2O_2 Impinger	100	75	0	175		
72	4	$KMnO_4$ Impingers	200	50	-2	248		
73	5	$KMnO_4$ Acid Rinse		100		100		

Filter Gross wt: 0.3981 g Filter Net wt: 0.0011 g
Filter Tare wt: 0.3970 g Probe/Line Rinse wt: 0 g Condensate Total: 98.3 ml
Filter Net wt: 0.0011 g Total Particulate wt: 0.0011 g

Recovered By: Jw Date: 1-25-05

Location: Stack Task: 2 (Unit 2) Test: 3 Operator: Keith

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids 32						
74	1A	Probe & Filter Rinse				117		
–	1B	Heated Line Rinse				–		
75	2	KCl Impingers	300	150	237	687		
76	3	HNO_3/H_2O_2 Impinger	100	75	1	176		
77	4	$KMnO_4$ Impingers	200	50	-3	247		
78	5	$KMnO_4$ Acid Rinse		100		100		

Filter Gross wt: 0.4020 g Filter Net wt: 0.0081 g
Filter Tare wt: 0.3939 g Probe/Line Rinse wt: 0 g Condensate Total: 245.8 ml
Filter Net wt: 0.0081 g Total Particulate wt: 0.0081 g

Recovered By: Jw Date: 1-25-05

Sample ID	Description	ppb Hg	Total ug of Hg
	3 in. Filter Blank		
	Thimble Blank		
	KCl Blank		
	HNO_3 / H2O2 Blank		
79	$KMnO_4$ Blank		
	HNO_3 / HCl Blank		

Unit 2

Distribution: Witham - Locke
Project No.: 1621.87
Sample Date: 1-26-05

Location: Econ Out Unit Task: 2 Test: 4 Operator: Jay

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids 8						
80	1A	Probe & Filter Rinse				166		
81	1B	Heated Line Rinse				88		
82	2	KCl Impingers	300	150	72	522		
83	3	HNO_3/H_2O_2 Impinger	100	75	0	175		
84	4	$KMnO_4$ Impingers	200	50	-1	249		
85	5	$KMnO_4$ Acid Rinse		100		100		

Filter Gross wt: 7.6215 g Filter Net wt: 6.0508 g
Filter Tare wt: 1.5707 g Probe/Line Rinse wt: 0 g Condensate Total: 77.4 ml
Filter Net wt: 6.0508 g Total Particulate wt: 6.0508 g

Recovered By: Jw Date: 1-26-05

Location: AHO Unit Task: 2 Test: 4 Operator: Jesse

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids 16						
86	1A	Probe & Filter Rinse				128		
87	1B	Heated Line Rinse				129		
88	2	KCl Impingers	300	150	82	532		
89	3	HNO_3/H_2O_2 Impinger	100	75	0	175		
90	4	$KMnO_4$ Impingers	200	50	-3	247		
91	5	$KMnO_4$ Acid Rinse		100		100		

Filter Gross wt: 6.9845 g Filter Net wt: 5.5082 g
Filter Tare wt: 1.4763 g Probe/Line Rinse wt: 0 g Condensate Total: 85.9 ml
Filter Net wt: 5.5082 g Total Particulate wt: 5.5082 g

Recovered By: Jw Date: 1-26-05

Location: FGD In Unit Task: 2 Test: 4 Operator: Jeff

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids 37						
92	1A	Probe & Filter Rinse				104		
93	1B	Heated Line Rinse				88		
94	2	KCl Impingers	300	150	100	550		
95	3	HNO_3/H_2O_2 Impinger	100	75	0	175		
96	4	$KMnO_4$ Impingers	200	50	-3	247		
97	5	$KMnO_4$ Acid Rinse		100		100		

Filter Gross wt: 0.3960 g Filter Net wt: 0.0002 g
Filter Tare wt: 0.3958 g Probe/Line Rinse wt: 0 g Condensate Total: 105.4 ml
Filter Net wt: 0.0002 g Total Particulate wt: 0.0002 g

Recovered By: Jw Date: 1-26-05

Location: Stack Unit Task: 2 Test: 4 Operator: Keith

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids 33						
98	1A	Probe & Filter Rinse				116		
—	1B	Heated Line Rinse				—		
99	2	KCl Impingers	300	150	248	698		
100	3	HNO_3/H_2O_2 Impinger	100	75	0	175		
101	4	$KMnO_4$ Impingers	200	50	-3	247		
102	5	$KMnO_4$ Acid Rinse		100		100		

Filter Gross wt: 0.4080 g Filter Net wt: 0.0040 g
Filter Tare wt: 0.4040 g Probe/Line Rinse wt: 0 g Condensate Total: 256.4 ml
Filter Net wt: 0.0040 g Total Particulate wt: 0.0040 g

Recovered By: Jw Date: 1-26-05

Sample ID	Description	ppb Hg	Total ug of Hg
	3 in. Filter Blank		
	Thimble Blank		
	KCl Blank		
	HNO_3 / H2O2 Blank		
	$KMnO_4$ Blank		
	HNO_3 / HCl Blank		

Project No	Test	Date	Loc.	Operator	Sample ID #	Task	Description	Anal No.	Hg	
1621-87	1	02/01/05	ECONOUT	#VALUE!	1	2	PROBE & FILTER RINSE	20050484	<1.0	ng/ml
1621-87	1	02/01/05	ECONOUT	#VALUE!	2	2	HEATED LINE RINSE	20050485	1.7	ng/ml
1621-87	1	02/01/05	ECONOUT	#VALUE!	3	2	KCL IMPINGER	20050486	12.1	ng/ml
1621-87	1	02/01/05	ECONOUT	#VALUE!	4	2	HNO3/H2O2 IMPINGER	20050487	2.7	ng/ml
1621-87	1	02/01/05	ECONOUT	#VALUE!	5	2	KMNO4 IMPINGER	20050488	19.3	ng/ml
1621-87	1	02/01/05	ECONOUT	#VALUE!	6	2	KMNO4 ACID RINSE	20050489	<1.0	ng/ml
1621-87	1	02/01/05	AHO	#VALUE!	7	2	PROBE & FILTER RINSE	20050490	1.6	ng/ml
1621-87	1	02/01/05	AHO	#VALUE!	8	2	HEATED LINE RINSE	20050491	2.5	ng/ml
1621-87	1	02/01/05	AHO	#VALUE!	9	2	KCL IMPINGER	20050492	15.3	ng/ml
1621-87	1	02/01/05	AHO	#VALUE!	10	2	HNO3/H2O2 IMPINGER	20050493	<0.2	ng/ml
1621-87	1	02/01/05	AHO	#VALUE!	11	2	KMNO4 IMPINGER	20050494	<0.2	ng/ml
1621-87	1	02/01/05	AHO	#VALUE!	12	2	KMNO4 ACID RINSE	20050495	1.5	ng/ml
1621-87	1	02/01/05	FGDIN	#VALUE!	13	2	PROBE & FILTER RINSE	20050496	1.5	ng/ml
1621-87	1	02/01/05	FGDIN	#VALUE!	14	2	HEATED LINE RINSE	20050497	<1.0	ng/ml
1621-87	1	02/01/05	FGDIN	#VALUE!	15	2	KCL IMPINGER	20050498	22.4	ng/ml
1621-87	1	02/01/05	FGDIN	#VALUE!	16	2	HNO3/H2O2 IMPINGER	20050499	<0.2	ng/ml
1621-87	1	02/01/05	FGDIN	#VALUE!	17	2	KMNO4 IMPINGER	20050500	<0.2	ng/ml
1621-87	1	02/01/05	FGDIN	#VALUE!	18	2	KMNO4 ACID RINSE	20050501	1.4	ng/ml
1621-87	1	02/01/05	STACK	#VALUE!	19	2	PROBE & FILTER RINSE	20050502	1.7	ng/ml
1621-87	1	02/01/05	STACK	#VALUE!	20	2	KCL IMPINGER	20050503	0.4	ng/ml
1621-87	1	02/01/05	STACK	#VALUE!	21	2	HNO3/H2O2 IMPINGER	20050504	<0.2	ng/ml
1621-87	1	02/01/05	STACK	#VALUE!	22	2	KMNO4 IMPINGER	20050505	0.9	ng/ml
1621-87	1	02/01/05	STACK	#VALUE!	23	2	KMNO4 ACID RINSE	20050506	<1.0	ng/ml
1621-87	#VALUE!	02/01/05	#VALUE!	#VALUE!	24	#VALUE!	KCL BLANK	20050507	<0.2	ng/ml
1621-87	#VALUE!	02/01/05	#VALUE!	#VALUE!	25	#VALUE!	HNO3/H2O2 BLANK	20050508	<0.2	ng/ml
1621-87	#VALUE!	02/01/05	#VALUE!	#VALUE!	26	#VALUE!	KMNO4 BLANK	20050509	<0.2	ng/ml
1621-87	#VALUE!	02/01/05	#VALUE!	#VALUE!	27	#VALUE!	HNO3/HCL BLANK	20050510	<0.2	ng/ml
1621-87	2	02/01/05	ECONOUT	#VALUE!	28	2	PROBE & FILTER RINSE	20050511	<1.0	ng/ml
1621-87	2	02/01/05	ECONOUT	#VALUE!	29	2	HEATED LINE RINSE	20050512	3.5	ng/ml
1621-87	2	02/01/05	ECONOUT	#VALUE!	30	2	KCL IMPINGER	20050513	11.5	ng/ml
1621-87	2	02/01/05	ECONOUT	#VALUE!	31	2	HNO3/H2O2 IMPINGER	20050514	0.2	ng/ml
1621-87	2	02/01/05	ECONOUT	#VALUE!	32	2	KMNO4 IMPINGER	20050515	19.8	ng/ml
1621-87	2	02/01/05	ECONOUT	#VALUE!	33	2	KMNO4 ACID RINSE	20050516	<1.0	ng/ml

1621-87	2	02/01/05	AHO	#VALUE!	34	2	PROBE & FILTER RINSE	20050517	1.1	ng/ml
1621-87	2	02/01/05	AHO	#VALUE!	35	2	HEATED LINE RINSE	20050518	1.5	ng/ml
1621-87	2	02/01/05	AHO	#VALUE!	36	2	KCL IMPINGER	20050519	14.3	ng/ml
1621-87	2	02/01/05	AHO	#VALUE!	37	2	HNO3/H2O2 IMPINGER	20050520	<0.2	ng/ml
1621-87	2	02/01/05	AHO	#VALUE!	38	2	KMNO4 IMPINGER	20050521	0.4	ng/ml
1621-87	2	02/01/05	AHO	#VALUE!	39	2	KMNO4 ACID RINSE	20050522	1.1	ng/ml
1621-87	2	02/01/05	FGDIN	#VALUE!	40	2	PROBE & FILTER RINSE	20050523	<1.0	ng/ml
1621-87	2	02/01/05	FGDIN	#VALUE!	41	2	HEATED LINE RINSE	20050524	2.1	ng/ml
1621-87	2	02/01/05	FGDIN	#VALUE!	42	2	KCL IMPINGER	20050525	23.0	ng/ml
1621-87	2	02/01/05	FGDIN	#VALUE!	43	2	HNO3/H2O2 IMPINGER	20050526	<0.2	ng/ml
1621-87	2	02/01/05	FGDIN	#VALUE!	44	2	KMNO4 IMPINGER	20050527	0.2	ng/ml
1621-87	2	02/01/05	FGDIN	#VALUE!	45	2	KMNO4 ACID RINSE	20050528	1.3	ng/ml
1621-87	2	02/01/05	STACK	#VALUE!	46	2	PROBE & FILTER RINSE	20050529	1.7	ng/ml
1621-87	2	02/01/05	STACK	#VALUE!	47	2	KCL IMPINGER	20050530	0.9	ng/ml
1621-87	2	02/01/05	STACK	#VALUE!	48	2	HNO3/H2O2 IMPINGER	20050531	<0.2	ng/ml
1621-87	2	02/01/05	STACK	#VALUE!	49	2	KMNO4 IMPINGER	20050532	0.7	ng/ml
1621-87	2	02/01/05	STACK	#VALUE!	50	2	KMNO4 ACID RINSE	20050533	1.4	ng/ml
1621-87	#VALUE!	02/01/05	ECONOUT	#VALUE!	51	IMP	KCL IMPINGER	20050534	<0.2	ng/ml
1621-87	#VALUE!	02/01/05	ECONOUT	#VALUE!	52	IMP	HNO3/H2O2 IMPINGER	20050535	<0.2	ng/ml
1621-87	#VALUE!	02/01/05	ECONOUT	#VALUE!	53	IMP	KMNO4 IMPINGER	20050536	<0.2	ng/ml
1621-87	#VALUE!	02/01/05	ECONOUT	#VALUE!	54	IMP	KMNO4 ACID RINSE	20050537	<1.0	ng/ml
1621-87	#VALUE!	02/01/05	#VALUE!	#VALUE!	55	#VALUE!	KMNO4 BLANK	20050538	<0.2	ng/ml
1621-87	3	02/01/05	ECONOUT	#VALUE!	56	2	PROBE & FILTER RINSE	20050539	<1.0	ng/ml
1621-87	3	02/01/05	ECONOUT	#VALUE!	57	2	HEATED LINE RINSE	20050540	1.3	ng/ml
1621-87	3	02/01/05	ECONOUT	#VALUE!	58	2	KCL IMPINGER	20050541	11.9	ng/ml
1621-87	3	02/01/05	ECONOUT	#VALUE!	59	2	HNO3/H2O2 IMPINGER	20050542	<0.2	ng/ml
1621-87	3	02/01/05	ECONOUT	#VALUE!	60	2	KMNO4 IMPINGER	20050543	13.7	ng/ml
1621-87	3	02/01/05	ECONOUT	#VALUE!	61	2	KMNO4 ACID RINSE	20050544	1.4	ng/ml
1621-87	3	02/01/05	AHO	#VALUE!	62	2	PROBE & FILTER RINSE	20050545	<1.0	ng/ml
1621-87	3	02/01/05	AHO	#VALUE!	63	2	HEATED LINE RINSE	20050546	1.1	ng/ml
1621-87	3	02/01/05	AHO	#VALUE!	64	2	KCL IMPINGER	20050547	16.6	ng/ml
1621-87	3	02/01/05	AHO	#VALUE!	65	2	HNO3/H2O2 IMPINGER	20050548	<0.2	ng/ml
1621-87	3	02/01/05	AHO	#VALUE!	66	2	KMNO4 IMPINGER	20050549	0.8	ng/ml
1621-87	3	02/01/05	AHO	#VALUE!	67	2	KMNO4 ACID RINSE	20050550	<1.0	ng/ml

1621-87	3	02/01/05	FGDIN	#VALUE!	68	2	PROBE & FILTER RINSE	20050551	<1.0	ng/ml
1621-87	3	02/01/05	FGDIN	#VALUE!	69	2	HEATED LINE RINSE	20050552	2.6	ng/ml
1621-87	3	02/01/05	FGDIN	#VALUE!	70	2	KCL IMPINGER	20050553	21.7	ng/ml
1621-87	3	02/01/05	FGDIN	#VALUE!	71	2	HNO3/H2O2 IMPINGER	20050554	<0.2	ng/ml
1621-87	3	02/01/05	FGDIN	#VALUE!	72	2	KMNO4 IMPINGER	20050555	<0.2	ng/ml
1621-87	3	02/01/05	FGDIN	#VALUE!	73	2	KMNO4 ACID RINSE	20050556	1.1	ng/ml
1621-87	3	02/01/05	STACK	#VALUE!	74	2	PROBE & FILTER RINSE	20050557	<1.0	ng/ml
1621-87	3	02/01/05	STACK	#VALUE!	75	2	KCL IMPINGER	20050558	<0.2	ng/ml
1621-87	3	02/01/05	STACK	#VALUE!	76	2	HNO3/H2O2 IMPINGER	20050559	<0.2	ng/ml
1621-87	3	02/01/05	STACK	#VALUE!	77	2	KMNO4 IMPINGER	20050560	0.6	ng/ml
1621-87	3	02/01/05	STACK	#VALUE!	78	2	KMNO4 ACID RINSE	20050561	1.2	ng/ml
1621-87	#VALUE!	02/01/05	#VALUE!	#VALUE!	79	#VALUE!	KMNO4 BLANK	20050562	<0.2	ng/ml
1621-87	4	02/01/05	ECONOUT	#VALUE!	80	2	PROBE & FILTER RINSE	20050563	<1.0	ng/ml
1621-87	4	02/01/05	ECONOUT	#VALUE!	81	2	HEATED LINE RINSE	20050564	2.2	ng/ml
1621-87	4	02/01/05	ECONOUT	#VALUE!	82	2	KCL IMPINGER	20050565	8.8	ng/ml
1621-87	4	02/01/05	ECONOUT	#VALUE!	83	2	HNO3/H2O2 IMPINGER	20050566	0.3	ng/ml
1621-87	4	02/01/05	ECONOUT	#VALUE!	84	2	KMNO4 IMPINGER	20050567	15.9	ng/ml
1621-87	4	02/01/05	ECONOUT	#VALUE!	85	2	KMNO4 ACID RINSE	20050568	1.5	ng/ml
1621-87	4	02/01/05	AHO	#VALUE!	86	2	PROBE & FILTER RINSE	20050569	<1.0	ng/ml
1621-87	4	02/01/05	AHO	#VALUE!	87	2	HEATED LINE RINSE	20050570	2.6	ng/ml
1621-87	4	02/01/05	AHO	#VALUE!	88	2	KCL IMPINGER	20050571	12.3	ng/ml
1621-87	4	02/01/05	AHO	#VALUE!	89	2	HNO3/H2O2 IMPINGER	20050572	<0.2	ng/ml
1621-87	4	02/01/05	AHO	#VALUE!	90	2	KMNO4 IMPINGER	20050573	<0.2	ng/ml
1621-87	4	02/01/05	AHO	#VALUE!	91	2	KMNO4 ACID RINSE	20050574	<1.0	ng/ml
1621-87	4	02/01/05	FGDIN	#VALUE!	92	2	PROBE & FILTER RINSE	20050575	<1.0	ng/ml
1621-87	4	02/01/05	FGDIN	#VALUE!	93	2	HEATED LINE RINSE	20050576	1.4	ng/ml
1621-87	4	02/01/05	FGDIN	#VALUE!	94	2	KCL IMPINGER	20050577	18.2	ng/ml
1621-87	4	02/01/05	FGDIN	#VALUE!	95	2	HNO3/H2O2 IMPINGER	20050578	<0.2	ng/ml
1621-87	4	02/01/05	FGDIN	#VALUE!	96	2	KMNO4 IMPINGER	20050579	0.2	ng/ml
1621-87	4	02/01/05	FGDIN	#VALUE!	97	2	KMNO4 ACID RINSE	20050580	1.5	ng/ml
1621-87	4	02/01/05	STACK	#VALUE!	98	2	PROBE & FILTER RINSE	20050581	1.9	ng/ml
1621-87	4	02/01/05	STACK	#VALUE!	99	2	KCL IMPINGER	20050582	<0.2	ng/ml
1621-87	4	02/01/05	STACK	#VALUE!	100	2	HNO3/H2O2 IMPINGER	20050583	<0.2	ng/ml
1621-87	4	02/01/05	STACK	#VALUE!	101	2	KMNO4 IMPINGER	20050584	0.4	ng/ml
1621-87	4	02/01/05	STACK	#VALUE!	102	2	KMNO4 ACID RINSE	20050585	<1.0	ng/ml
1621-87	#VALUE!	02/01/05	FGDIN	#VALUE!	103	IMP	KCL IMPINGER	20050586	<0.2	ng/ml
1621-87	#VALUE!	02/01/05	FGDIN	#VALUE!	104	IMP	HNO3/H2O2 IMPINGER	20050587	<0.2	ng/ml
1621-87	#VALUE!	02/01/05	FGDIN	#VALUE!	105	IMP	KMNO4 IMPINGER	20050588	<0.2	ng/ml
1621-87	#VALUE!	02/01/05	FGDIN	#VALUE!	106	IMP	KMNO4 ACID RINSE	20050589	<1.0	ng/ml
1621-87	#VALUE!	02/01/05	#VALUE!	#VALUE!	107	#VALUE!	KMNO4 BLANK	20050590	<0.2	ng/ml

Run 1 Particulate in Thimbles by ASTM D6722, Direct Combustion

ANALNUM	SAMPLE	DATE	DESCR	Hg	
20050627	5	01/24/05	ECON OUT 1 THIMBLE	0.017	PPM
20050628	13	01/24/05	AHO-1 THIMBLE	0.283	PPM
20050631	7	01/25/05	ECON OUT 2 THIMBLE	0.015	PPM
20050632	14	01/25/05	AHO-2 THIMBLE	0.653	PPM
20050635	6	01/25/05	ECON OUT 3 THIMBLE	0.016	PPM
20050636	15	01/25/05	AHO-3 THIMBLE	0.314	PPM
20050639	8	01/26/05	ECON OUT 4 THIMBLE	0.019	PPM
20050640	16	01/26/05	AHO-4 THIMBLE	0.379	PPM

NIST 1633B (also used as Continuing Calibration Verification)

						PPM		
1633B						0.153	109%	good
1633B						0.153	109%	good

Run 2 Filters by ASTM 6414, Acid Digestion/CVAA

ANALNUM	SAMPLE	DATE	DESCR	Hg	
20050629	34	01/24/05	FGD-1 3-IN FILTER	<5.0	ng/filter
20050630	27	01/24/05	STK-1 3-IN FILTER	<5.0	ng/filter
20050633	35	01/25/05	FGD-2 3-IN FILTER	<5.0	ng/filter
20050634	31	01/25/05	STK-2 3-IN FILTER	<5.0	ng/filter
20050637	36	01/25/05	FGD-3 3-IN FILTER	<5.0	ng/filter
20050638	32	01/25/05	STK-3 3-IN FILTER	<5.0	ng/filter
20050641	37	01/26/05	FGD-4 3-IN FILTER	<5.0	ng/filter
20050642	33	01/26/05	STK-4 3-IN FILTER	<5.0	ng/filter
20050644	47-B	01/26/05	47-B 47 MM FILTER	<5.0	ng/filter
20050645	3IN-B	01/26/05	3IN-B 3-IN FILTER	<5.0	ng/filter
20050643	THM-B	01/26/05	THM-B THIMBLE	<0.005	PPM

NIST 1633B

						PPM		
1633B						0.128	91%	good

Continuing Calibration Verification

						ng/ml		
1641d 8 ppb						8.2	103%	good
1641d 8ppb						8.2	103%	good
1641d 8ppb						8.2	103%	good
1641d 8ppb						8.3	104%	good

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ANALYTICAL LABORATORY
4000 BROWNSVILLE ROAD, SOUTH PARK, PA 15129

DESCRIPTION *ECON OUT 1 THIMBLE UNIT 2*
DATE SAMPLED *01/24/05*
SAMPLE NUMBER *5*

DATE LOGGED *02/03/05*
DATE COMPLETED *03/09/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050627

ANALYSIS REPORT

PROXIMATE (Dry)%	
Ash	95.52

ULTIMATE (Dry)%	
Carbon	4.19
Ash	95.52

MAJOR ASH ELEM (Dry)%	
Silicon	49.24
Al2O3	24.14
TiO2	1.40
Fe2O3	12.98
CaO	1.64
MgO	1.05
Na2O	0.54
K2O	2.39
P2O5	0.30
SO3	0.53
UND	5.79

MISC. (As Det.)

MERCURY 0.017 PPM

AS DETERMINED MOISTURE: 0.19 %

DISTRIBUTION:
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DESCRIPTION *AHO-1 THIMBLE*
UNIT 2
DATE SAMPLED *01/24/05*
SAMPLE NUMBER *13*

DATE LOGGED *02/03/05*
DATE COMPLETED *03/09/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050628

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	93.28

MISC. (As Det.)

MERCURY	0.283 PPM

ULTIMATE	(Dry)%
Carbon	5.52
Ash	93.28

MAJOR ASH ELEM	(Dry)%
Silicon	48.07
Al2O3	23.35
TiO2	1.32
Fe2O3	12.81
CaO	1.50
MgO	1.01
Na2O	0.53
K2O	2.33
P2O5	0.28
SO3	0.78
UND	8.02

AS DETERMINED MOISTURE: 0.35 %

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DESCRIPTION *FGD-1 3-IN FILTER*
UNIT 2
DATE SAMPLED *01/24/05*
SAMPLE NUMBER *34*

DATE LOGGED *02/03/05*
DATE COMPLETED *03/04/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050629

ANALYSIS REPORT

MISC. (As Det.)

MERCURY	<5.0	NG/FIL

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DESCRIPTION *STK-1 3-IN FILTER*
UNIT 2
DATE SAMPLED *01/24/05*
SAMPLE NUMBER *27*

DATE LOGGED *02/03/05*
DATE COMPLETED *03/04/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050630

ANALYSIS REPORT

MISC. (As Det.)

MERCURY	<5.0	NG/FIL

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DESCRIPTION *ECON OUT 2 THIMBLE UNIT 2*
DATE SAMPLED *01/25/05*
SAMPLE NUMBER *7*

DATE LOGGED *02/03/05*
DATE COMPLETED *03/09/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050631

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	93.83

MISC. (As Det.)	
MERCURY	0.015 PPM

ULTIMATE	(Dry)%
Carbon	5.68
Ash	93.83

MAJOR ASH ELEM	(Dry)%
Silicon	47.65
Al2O3	26.35
TiO2	1.37
Fe2O3	9.91
CaO	1.44
MgO	0.93
Na2O	0.50
K2O	2.41
P2O5	0.35
SO3	0.53
UND	8.56

AS DETERMINED MOISTURE: 0.27 %

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DESCRIPTION *AHO-2 THIMBLE*
UNIT 2
DATE SAMPLED *01/25/05*
SAMPLE NUMBER *14*

DATE LOGGED *02/03/05*
DATE COMPLETED *03/09/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050632

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	93.18

MISC. (As Det.)

MERCURY	0.653 PPM

ULTIMATE	(Dry)%
Carbon	6.45
Ash	93.18

MAJOR ASH ELEM	(Dry)%
Silicon	48.11
Al2O3	26.00
TiO2	1.37
Fe2O3	10.23
CaO	1.46
MgO	0.92
Na2O	0.47
K2O	2.38
P2O5	0.33
SO3	0.65
UND	8.08

AS DETERMINED MOISTURE: 0.37 %

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DESCRIPTION *FGD-2 3-IN FILTER UNIT 2*
DATE SAMPLED *01/25/05*
SAMPLE NUMBER *35*

DATE LOGGED *02/03/05*
DATE COMPLETED *03/04/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050633

ANALYSIS REPORT

MISC. (As Det.)

MERCURY	<5.0	NG/FIL

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DESCRIPTION *STK-2 3-IN FILTER UNIT 2*
DATE SAMPLED *01/25/05*
SAMPLE NUMBER *31*

DATE LOGGED *02/03/05*
DATE COMPLETED *03/04/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050634

ANALYSIS REPORT

MISC. (As Det.)

MERCURY	<5.0	NG/FIL

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DESCRIPTION *ECON OUT 3 THIMBLE UNIT 2*
DATE SAMPLED *01/25/05*
SAMPLE NUMBER *6*

DATE LOGGED *02/03/05*
DATE COMPLETED *03/09/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050635

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	93.64

MISC. (As Det.)

MERCURY	0.016 PPM

ULTIMATE	(Dry)%
Carbon	6.24
Ash	93.64

MAJOR ASH ELEM	(Dry)%
Silicon	49.70
Al2O3	26.71
TiO2	1.42
Fe2O3	9.71
CaO	1.45
MgO	0.95
Na2O	0.49
K2O	2.47
P2O5	0.39
SO3	0.42
UND	6.29

AS DETERMINED MOISTURE: 0.22 %

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DESCRIPTION *AHO-3 THIMBLE*
UNIT 2
DATE SAMPLED *01/25/05*
SAMPLE NUMBER *15*

DATE LOGGED *02/03/05*
DATE COMPLETED *03/09/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050636

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	91.72

MISC. (As Det.)

MERCURY 0.314 PPM

ULTIMATE	(Dry)%
Carbon	7.45
Ash	91.72

MAJOR ASH ELEM	(Dry)%
Silicon	48.48
Al2O3	26.48
TiO2	1.38
Fe2O3	9.74
CaO	1.37
MgO	0.92
Na2O	0.51
K2O	2.49
P2O5	0.38
SO3	0.73
UND	7.52

AS DETERMINED MOISTURE: 0.28 %

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DESCRIPTION *FGD-3 3-IN FILTER*
UNIT 2
DATE SAMPLED *01/25/05*
SAMPLE NUMBER *36*

DATE LOGGED *02/03/05*
DATE COMPLETED *03/04/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050637

ANALYSIS REPORT

MISC. (As Det.)

MERCURY	<5.0	NG/FIL

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DESCRIPTION *STK-3 3-IN FILTER*
UNIT 2
DATE SAMPLED *01/25/05*
SAMPLE NUMBER *32*

DATE LOGGED *02/03/05*
DATE COMPLETED *03/04/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050638

ANALYSIS REPORT

MISC. (As Det.)

MERCURY	<5.0	NG/FIL

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DESCRIPTION *ECON OUT 4 THIMBLE UNIT 2*
DATE SAMPLED *01/26/05*
SAMPLE NUMBER *8*

DATE LOGGED *02/03/05*
DATE COMPLETED *03/09/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER **050639**

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	94.96

MISC. (As Det.)

MERCURY	0.019 PPM

ULTIMATE	(Dry)%
Carbon	5.00
Ash	94.96

MAJOR ASH ELEM	(Dry)%
Silicon	50.78
Al2O3	26.93
TiO2	1.53
Fe2O3	8.69
CaO	1.52
MgO	0.91
Na2O	0.52
K2O	2.36
P2O5	0.50
SO3	0.42
UND	5.84

AS DETERMINED MOISTURE: 0.19 %

DISTRIBUTION:
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DESCRIPTION *AHO-4 THIMBLE*
UNIT 2
DATE SAMPLED *01/26/05*
SAMPLE NUMBER *16*

DATE LOGGED *02/03/05*
DATE COMPLETED *03/09/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050640

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	92.91

MISC. (As Det.)

MERCURY	0.379 PPM

ULTIMATE	(Dry)%
Carbon	6.49
Ash	92.91

MAJOR ASH ELEM	(Dry)%
Silicon	50.68
Al2O3	25.89
TiO2	1.47
Fe2O3	9.00
CaO	1.51
MgO	0.89
Na2O	0.46
K2O	2.26
P2O5	0.46
SO3	0.58
UND	6.80

AS DETERMINED MOISTURE: 0.28 %

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DESCRIPTION *FGD-4 3-IN FILTER*
UNIT 2
DATE SAMPLED *01/26/05*
SAMPLE NUMBER *37*

DATE LOGGED *02/03/05*
DATE COMPLETED *03/04/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050641

ANALYSIS REPORT

MISC. (As Det.)

MERCURY	<5.0	NG/FIL

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DESCRIPTION *STK-4 3-IN FILTER UNIT 2*
DATE SAMPLED *01/26/05*
SAMPLE NUMBER *33*

DATE LOGGED *02/03/05*
DATE COMPLETED *03/04/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050642

ANALYSIS REPORT

MISC. (As Det.)

MERCURY	<5.0	NG/FIL

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Unit 1 — Thumbs + fifteen numbers

Test	Eco Out Gary Thumb	AH Out Jim Thumb	FGD in Jeff 47 mm	Stack Keith 3"
1	1	9	17	23
2	2	10	18	24
3	3	11	19	25
4	4	12	20	26

Unit 2

Test	Eco Out Gary Thumb	AH Out Jim Thumb	FGD in Jeff 3"	Stack Keith 3"
1	5	13	34	27
2	~~7~~	14	35	31
3	~~6~~	15	36	32
4	6	16	37	33

3" Jeff Unit 2 tests 1-2-3-4

34 0.4025

35 0.3987

36 0.3970

37 0.3958

Unit 1

Distribution: Witham - Locke
Project No.: 1621-87
Sample Date: 1-21-05
Location: Bfamp Unit Inlet Task: 1 Test: 4 Operator: Jeff

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids						
	1A	Probe & Filter Rinse						
	1B	Heated Line Rinse						
99	2	KCl Impingers	300	150		450		
100	3	HNO_3/H_2O_2 Impinger	100	75		175		
101	4	$KMnO_4$ Impingers	200	50		250		
102	5	$KMnO_4$ Acid Rinse		100		100		

Filter Gross wt: _____g Filter Net wt: _____g
Filter Tare wt: _____g Probe/Line Rinse wt: _____g Condensate Total: _____ ml
Filter Net wt: _____g Total Particulate wt: _____g

Recovered By: Jeff Date: 1-21-05

Location: 2nd Fence Unit Inlet Task: 1 Test: 4 Operator: Gary

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids						
	1A	Probe & Filter Rinse						
	1B	Heated Line Rinse						
104	2	KCl Impingers	300	150		450		
105	3	HNO_3/H_2O_2 Impinger	100	75		175		
106	4	$KMnO_4$ Impingers	200	50		250		
107	5	$KMnO_4$ Acid Rinse		100		100		

Filter Gross wt: _____g Filter Net wt: _____g
Filter Tare wt: _____g Probe/Line Rinse wt: _____g Condensate Total: _____ ml
Filter Net wt: _____g Total Particulate wt: _____g

Recovered By: Jeff Date: 1-21-05

Location: FGD In Task: _____ Test: _____ Operator: _____

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids						
	1A	Probe & Filter Rinse						
	1B	Heated Line Rinse						
	2	KCl Impingers						
	3	HNO_3/H_2O_2 Impinger						
	4	$KMnO_4$ Impingers						
	5	$KMnO_4$ Acid Rinse						

Filter Gross wt: _____g Filter Net wt: _____g
Filter Tare wt: _____g Probe/Line Rinse wt: _____g Condensate Total: _____ ml
Filter Net wt: _____g Total Particulate wt: _____g

Recovered By: _____ Date: _____

Location: Stack Task: _____ Test: _____ Operator: _____

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids						
	1A	Probe & Filter Rinse						
	1B	Heated Line Rinse						
	2	KCl Impingers						
	3	HNO_3/H_2O_2 Impinger						
	4	$KMnO_4$ Impingers						
	5	$KMnO_4$ Acid Rinse						

Filter Gross wt: _____g Filter Net wt: _____g
Filter Tare wt: _____g Probe/Line Rinse wt: _____g Condensate Total: _____ ml
Filter Net wt: _____g Total Particulate wt: _____g

Recovered By: _____ Date: _____

Sample ID	Description	ppb Hg	Total ug of Hg
	3 in. Filter Blank		
	Thimble Blank		
	KCl Blank		
	HNO_3 / H2O2 Blank		
103	$KMnO_4$ Blank		
	HNO_3 / HCl Blank		

Unit 2

Distribution: Luthern Locke
Project No.: 1621-87
Sample Date: 1-26-05

Location: FGD IN Task: Blank Dup Test: _____ Operator: Jeff

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids						
	1A	Probe & Filter Rinse						
	1B	Heated Line Rinse						
103	2	KCl Impingers	300	150		450		
104	3	HNO_3/H_2O_2 Impinger	100	75		175		
105	4	$KMnO_4$ Impingers	200	50		250		
106	5	$KMnO_4$ Acid Rinse		100		100		

Filter Gross wt: _____g Filter Net wt: _____g
Filter Tare wt: _____g Probe/Line Rinse wt: _____g Condensate Total: _____ ml
Filter Net wt: _____g Total Particulate wt: _____g

Recovered By: J Date: 1-26-05

Location: AHO Task: _____ Test: _____ Operator: _____

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids						
	1A	Probe & Filter Rinse						
	1B	Heated Line Rinse						
	2	KCl Impingers						
	3	HNO_3/H_2O_2 Impinger						
	4	$KMnO_4$ Impingers						
	5	$KMnO_4$ Acid Rinse						

Filter Gross wt: _____g Filter Net wt: _____g
Filter Tare wt: _____g Probe/Line Rinse wt: _____g Condensate Total: _____ ml
Filter Net wt: _____g Total Particulate wt: _____g

Recovered By: _____ Date: _____

Location: FGD In Task: _____ Test: _____ Operator: _____

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids						
	1A	Probe & Filter Rinse						
	1B	Heated Line Rinse						
	2	KCl Impingers						
	3	HNO_3/H_2O_2 Impinger						
	4	$KMnO_4$ Impingers						
	5	$KMnO_4$ Acid Rinse						

Filter Gross wt: _____g Filter Net wt: _____g
Filter Tare wt: _____g Probe/Line Rinse wt: _____g Condensate Total: _____ ml
Filter Net wt: _____g Total Particulate wt: _____g

Recovered By: _____ Date: _____

Location: Stack Task: _____ Test: _____ Operator: _____

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids						
	1A	Probe & Filter Rinse						
	1B	Heated Line Rinse						
	2	KCl Impingers						
	3	HNO_3/H_2O_2 Impinger						
	4	$KMnO_4$ Impingers						
	5	$KMnO_4$ Acid Rinse						

Filter Gross wt: _____g Filter Net wt: _____g
Filter Tare wt: _____g Probe/Line Rinse wt: _____g Condensate Total: _____ ml
Filter Net wt: _____g Total Particulate wt: _____g

Recovered By: _____ Date: _____

Sample ID	Description	ppb Hg	Total ug of Hg
	3 in. Filter Blank		
	Thimble Blank		
	KCl Blank		
	HNO_3 / H2O2 Blank		
107	$KMnO_4$ Blank		
	HNO_3 / HCl Blank		

Unit 2

Distribution: Hutchison - Locke
Project No.: 1621 - 87
Sample Date: 1-25-05

Location: Econ Out Task: 2nd rinse Dup Test: _____ Operator: Gary

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids						
	1A	Probe & Filter Rinse						
	1B	Heated Line Rinse						
S1	2	KCl Impingers	300	150		450		
S2	3	HNO_3/H_2O_2 Impinger	100	75		175		
S3	4	$KMnO_4$ Impingers	200	50		250		
S4	5	$KMnO_4$ Acid Rinse		100		100		

Filter Gross wt: _____g Filter Net wt: _____g
Filter Tare wt: _____g Probe/Line Rinse wt: _____g Condensate Total: _____ ml
Filter Net wt: _____g Total Particulate wt: _____g

Recovered By: _____ Date: 1-25-05

Location: AHO Task: _____ Test: _____ Operator: _____

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids						
	1A	Probe & Filter Rinse						
	1B	Heated Line Rinse						
	2	KCl Impingers						
	3	HNO_3/H_2O_2 Impinger						
	4	$KMnO_4$ Impingers						
	5	$KMnO_4$ Acid Rinse						

Filter Gross wt: _____g Filter Net wt: _____g
Filter Tare wt: _____g Probe/Line Rinse wt: _____g Condensate Total: _____ ml
Filter Net wt: _____g Total Particulate wt: _____g

Recovered By: _____ Date: _____

Location: FGD In Task: _____ Test: _____ Operator: _____

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids						
	1A	Probe & Filter Rinse						
	1B	Heated Line Rinse						
	2	KCl Impingers						
	3	HNO_3/H_2O_2 Impinger						
	4	$KMnO_4$ Impingers						
	5	$KMnO_4$ Acid Rinse						

Filter Gross wt: _____g Filter Net wt: _____g
Filter Tare wt: _____g Probe/Line Rinse wt: _____g Condensate Total: _____ ml
Filter Net wt: _____g Total Particulate wt: _____g

Recovered By: _____ Date: _____

Location: Stack Task: _____ Test: _____ Operator: _____

Sample ID	Bottle #	Description	Initial Vol mL	Rinse Vol mL	Gain mL	Final Vol mL	ppb Hg	Total ug of Hg
	S	Filter/Solids						
	1A	Probe & Filter Rinse						
	1B	Heated Line Rinse						
	2	KCl Impingers						
	3	HNO_3/H_2O_2 Impinger						
	4	$KMnO_4$ Impingers						
	5	$KMnO_4$ Acid Rinse						

Filter Gross wt: _____g Filter Net wt: _____g
Filter Tare wt: _____g Probe/Line Rinse wt: _____g Condensate Total: _____ ml
Filter Net wt: _____g Total Particulate wt: _____g

Recovered By: _____ Date: _____

Sample ID	Description	ppb Hg	Total ug of Hg
	3 in. Filter Blank		
	Thimble Blank		
	KCl Blank		
	HNO_3 / H2O2 Blank		
S5	$KMnO_4$ Blank		
	HNO_3 / HCl Blank		

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DESCRIPTION *THM-B THIMBLE BLANK*
DATE SAMPLED *01/26/05*
SAMPLE NUMBER *THM-B*

DATE LOGGED *02/03/05*
DATE COMPLETED *03/04/05*
PROJECT NUMBER *1621-87* -
ANALYTICAL NUMBER 050643

ANALYSIS REPORT

MISC. (As Det.)

MERCURY <0.005 PPM

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DESCRIPTION *47-B 47 MM FILTER BLANK*
DATE SAMPLED *01/26/05*
SAMPLE NUMBER *47-B*

DATE LOGGED *02/03/05*
DATE COMPLETED *03/04/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050644

ANALYSIS REPORT

MISC. (As Det.)

MERCURY	<5.0	NG/FIL

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DESCRIPTION *3IN-B 3-IN FILTER BLANK*
DATE SAMPLED *01/26/05*
SAMPLE NUMBER *3IN-B*

DATE LOGGED *02/03/05*
DATE COMPLETED *02/11/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050645

ANALYSIS REPORT

MISC. (As Det.)

MERCURY	<5.0	NG/FIL

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APPENDIX D

Process Material Data

- Coal Analysis Data Sheets
- Bottom Ash Analysis Data Sheets
- Limestone Slurry Solids Analysis Data Sheets
- Limestone Slurry Filtrate Analysis Data Sheets
- Ash Analysis Data Sheets
- FGD Slurry Solids Analysis Data Sheets
- FGD Slurry Filtrate Data Sheets
- FGD Makeup Water Analysis Data Sheets

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DESCRIPTION *AS-FIRED COAL*
UNIT 1 TEST 1
DATE SAMPLED *01/19/05*
SAMPLE NUMBER *COAL-U1T1*

DATE LOGGED *02/07/05*
DATE COMPLETED *02/15/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050682

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	7.77
Volatile Matter	38.08
Fixed Carbon	54.15
Sulfur, Total	1.39
BTU/lb	13683
MAF BTU/lb	14836

ULTIMATE	(Dry)%
Carbon	77.74
Hydrogen	4.63
Nitrogen	1.56
Chlorine	0.144
Sulfur, Total	1.39
Ash	7.77
Oxygen (DIFF)	6.77

MAJOR ASH ELEM	%
Ignited at 750 C	
Silicon	50.01
Al203	27.77
Ti02	1.29
Fe203	12.63
CaO	1.73
MgO	1.00
Na20	0.55
K20	2.28
P205	0.18
SO3	1.68
UND	0.88

MISC. (As Det.)

Hg 0.091 PPM

AS DETERMINED MOISTURE: 2.00 %

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DESCRIPTION *AS-FIRED COAL*
UNIT 1 TESTS 2&3
DATE SAMPLED *01/20/05*
SAMPLE NUMBER *COAL-U1T2T3*

DATE LOGGED *02/07/05*
DATE COMPLETED *02/15/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050683

ANALYSIS REPORT

PROXIMATE (Dry)%	
Ash	8.24
Volatile Matter	38.40
Fixed Carbon	53.36
Sulfur, Total	1.45
BTU/lb	13686
MAF BTU/lb	14915

ULTIMATE (Dry)%	
Carbon	77.01
Hydrogen	4.81
Nitrogen	1.61
Chlorine	0.143
Sulfur, Total	1.45
Ash	8.24
Oxygen (DIFF)	6.74

MAJOR ASH ELEM % Ignited at 750 C	
Silicon	50.46
Al203	26.57
TiO2	1.34
Fe203	12.73
CaO	1.69
MgO	0.98
Na2O	0.53
K2O	2.29
P205	0.25
SO3	1.62
UND	1.54

MISC. (As Det.)

Hg 0.110 PPM

AS DETERMINED MOISTURE: 1.89 %

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DESCRIPTION *AS-FIRED COAL*
UNIT 1 TEST 4
DATE SAMPLED *01/21/05*
SAMPLE NUMBER *COAL-U1T4*

DATE LOGGED *02/07/05*
DATE COMPLETED *02/15/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER **050684**

ANALYSIS REPORT

PROXIMATE (Dry)%	
Ash	11.85
Volatile Matter	37.32
Fixed Carbon	50.83
Sulfur, Total	1.19
BTU/lb	13205
MAF BTU/lb	14980

ULTIMATE (Dry)%	
Carbon	74.83
Hydrogen	4.65
Nitrogen	1.58
Chlorine	0.157
Sulfur, Total	1.19
Ash	11.85
Oxygen (DIFF)	5.74

MAJOR ASH ELEM % Ignited at 750 C	
Silicon	54.52
Al2O3	26.87
TiO2	1.09
Fe2O3	9.17
CaO	1.50
MgO	1.17
Na2O	0.63
K2O	2.90
P2O5	0.11
SO3	1.24
UND	0.80

MISC. (As Det.)

Hg 0.066 PPM

AS DETERMINED MOISTURE: 1.37 %

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DESCRIPTION *AS-FIRED COAL*
UNIT 2 TEST 1
DATE SAMPLED *01/24/05*
SAMPLE NUMBER *COAL-U2T1*

DATE LOGGED *02/07/05*
DATE COMPLETED *02/15/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050685

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	8.40
Volatile Matter	38.57
Fixed Carbon	53.03
Sulfur, Total	1.66
BTU/lb	13764
MAF BTU/lb	15026

ULTIMATE	(Dry)%
Carbon	77.39
Hydrogen	4.72
Nitrogen	1.52
Chlorine	0.141
Sulfur, Total	1.66
Ash	8.40
Oxygen (DIFF)	6.17

MAJOR ASH ELEM	%
Ignited at 750 C	
Silicon	49.70
Al203	24.10
TiO2	1.15
Fe203	16.77
CaO	1.68
MgO	1.16
Na2O	0.57
K2O	2.58
P2O5	0.22
SO3	1.52
UND	0.55

MISC. (As Det.)

Hg 0.145 PPM

AS DETERMINED MOISTURE: 1.83 %

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DESCRIPTION *AS-FIRED COAL*
UNIT 2 TESTS 2&3
DATE SAMPLED *01/25/05*
SAMPLE NUMBER *COAL-U2T2T3*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/09/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050686

ANALYSIS REPORT

PROXIMATE (Dry)%	
Ash	8.69
Volatile Matter	36.26
Fixed Carbon	55.05
Sulfur, Total	1.59
BTU/lb	13663
MAF BTU/lb	14963

ULTIMATE (Dry)%	
Carbon	76.66
Hydrogen	4.67
Nitrogen	1.46
Chlorine	0.135
Sulfur, Total	1.59
Ash	8.69
Oxygen (DIFF)	6.80

MAJOR ASH ELEM %	
Ignited at 75 C	
Silicon	51.13
Al2O3	23.98
TiO2	1.05
Fe2O3	15.05
CaO	2.81
MgO	0.72
Na2O	0.65
K2O	1.86
P2O5	0.35
SO3	1.54
UND	0.86

MISC. (As Det.)

Hg 0.163 PPM

AS DETERMINED MOISTURE: 1.49 %

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DESCRIPTION *AS-FIRED COAL*
UNIT 2 TEST 4
DATE SAMPLED *01/26/05*
SAMPLE NUMBER *COAL-U2T4*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/02/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050687

ANALYSIS REPORT

PROXIMATE (Dry)%	
Ash	8.28
Volatile Matter	35.46
Fixed Carbon	56.26
Sulfur, Total	1.38
BTU/lb	13761
MAF BTU/lb	15003

ULTIMATE (Dry)%	
Carbon	77.44
Hydrogen	4.77
Nitrogen	1.53
Chlorine	0.151
Sulfur, Total	1.38
Ash	8.28
Oxygen (DIFF)	6.45

MAJOR ASH ELEM %	
Ignited at 75 C	
Silicon	50.50
Al2O3	28.16
TiO2	1.41
Fe2O3	11.76
CaO	1.58
MgO	0.95
Na2O	0.53
K2O	2.35
P2O5	0.47
SO3	1.39
UND	0.90

MISC. (As Det.)

Hg 0.113 PPM

AS DETERMINED MOISTURE: 1.61 %

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DESCRIPTION *MILL REJECTS*
UNIT 1 TEST 1
DATE SAMPLED *01/19/05*
SAMPLE NUMBER *REJECTS U1T1*

DATE LOGGED *02/07/05*
DATE COMPLETED *02/15/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050688

ANALYSIS REPORT

PROXIMATE (Dry)%	
Ash	14.88
Volatile Matter	35.77
Fixed Carbon	49.35
Sulfur, Total	3.20
BTU/lb	12413
MAF BTU/lb	14583

ULTIMATE (Dry)%	
Carbon	69.43
Hydrogen	4.25
Nitrogen	1.32
Chlorine	0.085
Sulfur, Total	3.20
Ash	14.88
Oxygen (DIFF)	6.84

MAJOR ASH ELEM % Ignited at 750 C	
Silicon	45.98
Al2O3	22.24
TiO2	1.22
Fe2O3	21.31
CaO	2.18
MgO	0.81
Na2O	0.48
K2O	1.63
P2O5	0.35
SO3	1.62
UND	2.18

MISC. (As Det.)

Hg 0.426 PPM

AS DETERMINED MOISTURE: 1.50 %

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DESCRIPTION *MILL REJECTS*
UNIT 2 TEST 1
DATE SAMPLED *01/24/05*
SAMPLE NUMBER *REJECTS U2T1*

DATE LOGGED *02/07/05*
DATE COMPLETED *02/15/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050689

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	39.74
Volatile Matter	28.78
Fixed Carbon	31.48
Sulfur, Total	6.07
BTU/lb	8456
MAF BTU/lb	14033

ULTIMATE	(Dry)%
Carbon	46.83
Hydrogen	2.82
Nitrogen	0.81
Chlorine	0.074
Sulfur, Total	6.07
Ash	39.74
Oxygen (DIFF)	3.66

MAJOR ASH ELEM	%
Ignited at 750 C	
Silicon	45.27
Al2O3	17.97
TiO2	0.88
Fe2O3	24.07
CaO	4.66
MgO	0.85
Na2O	0.28
K2O	1.03
P2O5	0.22
SO3	3.81
UND	0.96

MISC. (As Det.)

Hg 0.783 PPM

AS DETERMINED MOISTURE: 0.82 %

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DESCRIPTION *MILL REJECTS*
UNIT 2 TEST 2
DATE SAMPLED *01/25/05*
SAMPLE NUMBER *REJECTS U2T2*

DATE LOGGED *02/07/05*
DATE COMPLETED *02/15/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050690

ANALYSIS REPORT

PROXIMATE (Dry)%	
Ash	46.20
Volatile Matter	30.88
Fixed Carbon	22.92
Sulfur, Total	8.74
BTU/lb	6899
MAF BTU/lb	12823

ULTIMATE (Dry)%	
Carbon	39.74
Hydrogen	2.37
Nitrogen	0.66
Chlorine	0.059
Sulfur, Total	8.74
Ash	46.20
Oxygen (DIFF)	2.23

MAJOR ASH ELEM % Ignited at 750 C	
Silicon	28.75
Al2O3	11.82
TiO2	0.46
Fe2O3	40.41
CaO	8.41
MgO	0.89
Na2O	0.21
K2O	0.81
P2O5	0.13
SO3	8.17
UND	-0.06

MISC. (As Det.)

Hg 2.33 PPM

AS DETERMINED MOISTURE: 0.68 %

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DESCRIPTION *MILL REJECTS 17:00*
UNIT 2 TEST 3
DATE SAMPLED *01/25/05*
SAMPLE NUMBER *REJECTS U2T3*

DATE LOGGED *02/07/05*
DATE COMPLETED *02/15/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050691

ANALYSIS REPORT

PROXIMATE (Dry)%	
Ash	58.31
Volatile Matter	26.31
Fixed Carbon	15.38
Sulfur, Total	17.98
BTU/lb	4502
MAF BTU/lb	10799

ULTIMATE (Dry)%	
Carbon	24.51
Hydrogen	1.45
Nitrogen	0.38
Chlorine	0.035
Sulfur, Total	17.98
Ash	58.31
Oxygen (DIFF)	~~-2.66~~

MAJOR ASH ELEM % Ignited at 750 C	
Silicon	25.07
Al203	6.85
Ti02	0.33
Fe203	52.03
CaO	7.45
MgO	0.68
Na20	0.17
K20	0.72
P205	0.04
SO3	7.95
UND	-1.29

MISC. (As Det.)

Hg 2.63 PPM

AS DETERMINED MOISTURE: 0.44 %

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DESCRIPTION *MILL REJECTS*
UNIT 2 TEST 4
DATE SAMPLED *01/26/05*
SAMPLE NUMBER *REJECTS U2T4*

DATE LOGGED *02/07/05*
DATE COMPLETED *02/15/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER **050692**

ANALYSIS REPORT

PROXIMATE (Dry)%	
Ash	52.38
Volatile Matter	26.69
Fixed Carbon	20.93
Sulfur, Total	14.97
BTU/lb	5954
MAF BTU/lb	12503

ULTIMATE (Dry)%	
Carbon	32.41
Hydrogen	1.95
Nitrogen	0.53
Chlorine	0.036
Sulfur, Total	14.97
Ash	52.38
Oxygen (DIFF)	2.28

MAJOR ASH ELEM %	
Ignited at 750 C	
Silicon	23.91
Al2O3	6.99
TiO2	0.40
Fe2O3	49.64
CaO	7.58
MgO	0.50
Na2O	0.13
K2O	0.59
P2O5	0.04
SO3	8.54
UND	1.68

MISC. (As Det.)

Hg 3.00 PPM

AS DETERMINED MOISTURE: 0.48 %

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DESCRIPTION *BOTTOM ASH 16:30-16:40*
UNIT 1 TEST 1
DATE SAMPLED *01/19/05*
SAMPLE NUMBER *BTMASH-U1T1*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/16/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050693

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	99.73
Total Sulfur	0.02

MISC. (As Det.)	
Hg	0.011 PPM

ULTIMATE	(Dry)%
Carbon	0.39
Chlorine	0.025
Ash	99.73

MAJOR ASH ELEM	(Dry)%
Silicon	51.91
Al2O3	25.87
TiO2	1.36
Fe2O3	13.81
CaO	1.45
MgO	0.89
Na2O	0.48
K2O	2.18
P2O5	0.14
SO3	0.04
UND	1.87

AS DETERMINED MOISTURE: 0.01 %

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DESCRIPTION *BOTTOM ASH 16:30*
UNIT 1 TESTS 2&3
DATE SAMPLED *01/20/05*
SAMPLE NUMBER *BTMASH-U1T2T3*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/16/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050694

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	99.99
Total Sulfur	0.00

MISC. (As Det.)	
Hg	0.011 PPM

ULTIMATE	(Dry)%
Carbon	0.20
Chlorine	0.027
Ash	99.99

MAJOR ASH ELEM	(Dry)%
Silicon	52.37
Al2O3	25.86
TiO2	1.38
Fe2O3	14.13
CaO	1.47
MgO	0.90
Na2O	0.47
K2O	2.19
P2O5	0.16
SO3	0.01
UND	1.06

AS DETERMINED MOISTURE: 0.01 %

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DESCRIPTION *BOTTOM ASH 16:00-16:30*
UNIT 2 TESTS 2&3
DATE SAMPLED *01/25/05*
SAMPLE NUMBER *BTMASH-U2T2T3*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/16/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050697

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	98.16
Total Sulfur	0.32

MISC. (As Det.)	
Hg	0.074 PPM

ULTIMATE	(Dry)%
Carbon	1.93
Chlorine	0.035
Ash	98.16

MAJOR ASH ELEM	(Dry)%
Silicon	51.02
Al2O3	24.66
TiO2	1.33
Fe2O3	14.96
CaO	1.35
MgO	0.92
Na2O	0.46
K2O	2.23
P2O5	0.22
SO3	0.80
UND	2.05

AS DETERMINED MOISTURE: 0.10 %

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DESCRIPTION *BOTTOM ASH 11:15-11:45*
UNIT 2 TEST 4
DATE SAMPLED *01/26/05*
SAMPLE NUMBER *BTMASH-U2T4*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/16/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050698

ANALYSIS REPORT

PROXIMATE (Dry)%	
Ash	99.03
Total Sulfur	0.10

MISC. (As Det.)	
Hg	0.017 PPM

ULTIMATE (Dry)%	
Carbon	1.12
Chlorine	0.048
Ash	99.03

MAJOR ASH ELEM (Dry)%	
Silicon	52.96
Al203	26.12
TiO2	1.44
Fe203	12.62
CaO	1.45
MgO	0.91
Na20	0.47
K20	2.25
P205	0.30
SO3	0.24
UND	1.24

AS DETERMINED MOISTURE: 0.01 %

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South Park, PA 15129

BOTTOM ASH FILTRATE 16:30-16:40

Sample No.: BTMASH-U1T1
Date Received: 02/07/2005
Date Completed: 04/05/2005

Analytical No.: **20050780**
Project No.: 1621 -087 -000

Submitter: S. TSENG

Water Result
(mg/L unless noted otherwise)

Parameter	Value	Value	Units	Avg Value
pH				
Acidity, $CaCO_3$				
Alkalinity, $CaCO_3$				
Hydroxide, $CaCO_3$				
Carbonate, $CaCO_3$				
Bicarbonate, $CaCO_3$				
Total Suspended Solids				
Total Dissolved Solids				
Specific Conductivity				
Hardness				
Turbidity				
Osmotic Pressure				
Dissolved Oxygen				
Ammonia, N	<10			
Total Elements				
Aluminum				
Calcium	326.80			
Iron	<1.25			
Magnesium	217.38			
Manganese				
Potassium	68.44			
Phosphorous				
Silicon				
Sodium	485.84			
Chromium				
Anions:				
Sulfate	711.98			
Chloride	1620			
Nitrate, N	4.91			
Nitrite, N				
Bromide				
Fluoride				

Quality Control Calculations

Ion Sum	3452.19
Cation Sum	57.07
Anion Sum	60.87
Ion Balance	3.62
% Ion Imbalance	-3.22

Hg <1.0 mg/ml

These values have been reviewed and are approved for transmission.

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BOTTOM ASH FILTRATE 16:30

Sample No.: BTMASH-U1T2T3
Date Received: 02/07/2005
Date Completed: 04/05/2005

Analytical No.: 20050781
Project No.: 1621 -087 -000

Submitter: S. TSENG

Water Result
(mg/L unless noted otherwise)

Parameter	Value	Value	Units	Avg Value
pH				
Acidity, $CaCO_3$				
Alkalinity, $CaCO_3$				
Hydroxide, $CaCO_3$				
Carbonate, $CaCO_3$				
Bicarbonate, $CaCO_3$				
Total Suspended Solids				
Total Dissolved Solids				
Specific Conductivity				
Hardness				
Turbidity				
Osmotic Pressure				
Dissolved Oxygen				
Ammonia, N	<10			
Total Elements				
Aluminum				
Calcium	344.97			
Iron	<1.25			
Magnesium	229.51			
Manganese				
Potassium	70.65			
Phosphorous				
Silicon				
Sodium	512.34			
Chromium				
Anions:				
Sulfate	762.09			
Chloride	1500			
Nitrate, N	4.92			
Nitrite, N				
Bromide				
Fluoride				

Quality Control Calculations

Ion Sum	3441.35
Cation Sum	60.18
Anion Sum	58.53
Ion Balance	-1.63
% Ion Imbalance	1.39

Hg <1.0 ng/ml

These values have been reviewed and are approved for transmission.

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BOTTOM ASH FILTRATE 16:00-16:30

Sample No.: BTMASH-U2T2T3
Date Received: 02/07/2005
Date Completed: 04/05/2005

Analytical No.: **20050782**
Project No.: 1621 -087 -000

Submitter: S. TSENG

Water Result
(mg/L unless noted otherwise)

Parameter	Value	Value	Units	Avg Value
pH				
Acidity, $CaCO_3$				
Alkalinity, $CaCO_3$				
Hydroxide, $CaCO_3$				
Carbonate, $CaCO_3$				
Bicarbonate, $CaCO_3$				
Total Suspended Solids				
Total Dissolved Solids				
Specific Conductivity				
Hardness				
Turbidity				
Osmotic Pressure				
Dissolved Oxygen				
Ammonia, N	<10			
Total Elements				
Aluminum				
Calcium	309.00			
Iron	<1.25			
Magnesium	184.56			
Manganese				
Potassium	62.99			
Phosphorous				
Silicon				
Sodium	448.86			
Chromium				
Anions:				
Sulfate	748.34			
Chloride	1250			
Nitrate, N	4.21			
Nitrite, N				
Bromide				
Fluoride				

Quality Control Calculations

Ion Sum	3022.40
Cation Sum	51.73
Anion Sum	51.14
Ion Balance	-0.66
% Ion Imbalance	0.57

Hg <1.0 mg/ml

These values have been reviewed and are approved for transmission.

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BOTTOM ASH FILTRATE 11:15-11:45

Sample No.: BTMASH-U2T4
Date Received: 02/07/2005
Date Completed: 04/05/2005

Analytical No.: 20050783
Project No.: 1621 -087 -000

Submitter: S. TSENG

Water Result
(mg/L unless noted otherwise)

Parameter	Value	Value	Units	Avg Value
pH				
Acidity, $CaCO_3$				
Alkalinity, $CaCO_3$				
Hydroxide, $CaCO_3$				
Carbonate, $CaCO_3$				
Bicarbonate, $CaCO_3$				
Total Suspended Solids				
Total Dissolved Solids				
Specific Conductivity				
Hardness				
Turbidity				
Osmotic Pressure				
Dissolved Oxygen				
Ammonia, N	<10			
Total Elements				
Aluminum				
Calcium	297.14			
Iron	<1.25			
Magnesium	175.00			
Manganese				
Potassium	60.95			
Phosphorous				
Silicon				
Sodium	431.88			
Chromium				
Anions:				
Sulfate	722.89			
Chloride	1000			
Nitrate, N	4.25			
Nitrite, N				
Bromide				
Fluoride				

Quality Control Calculations

Ion Sum	2706.68
Cation Sum	49.56
Anion Sum	43.56
Ion Balance	-7.67
% Ion Imbalance	6.44

Hg <1.0 ng/mL

These values have been reviewed and are approved for transmission.

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LIMESTONE SLURRY SOLIDS 09:35

UNIT 1 TEST 1

Sample No.: LS U1T1

Date Completed: 04/01/2005
Date Received: 2/7/05
Submitted by: S. TSENG

Project No.: 1621 - 087 - 000
Analytical No.: **20050699**

Proximate (Dry)	%
Ash	56.69
Volatile Matter	
Fixed Carbon	
BTU/lb	
MAF BTU/lb	

Ultimate (Dry)	%
Carbon	11.67
Hydrogen	
Nitrogen	
Chlorine	0.0500
Sulfur, Total	
Ash	56.69
Oxygen (DIFF)	

Ash Fusion Reducing Temp. °F

I.D.	
Soft.	
Hemi.	
Fluid	

Ash Fusion Oxidizing Temp. °F

I.D.	
Soft.	
Hemi.	
Fluid	

Grindability

HGI	
At Moisture %	0.60
	0.00

Free Swelling Index

FSI

Trace Elements

Sulfur Form (Dry)

Pyritic Sulfur	
Sulfate	
Organic	
Sulfur, Total	

Major Ash Elem.
as Det

SiO2	1.49
Al2O3	0.15
TiO2	0.01
Fe2O3	0.14
CaO	53.60
MgO	1.15
Na2O	0.06
K2O	0.03
P2O5	0.08
SO3	0.29
Undetermined	43.00

Misc.

Analysis	Value
Hg	0.044 ppm
Fluorine	

As Determined Moisture 0.60 %

These values have been reviewed and are approved for transmission.

Distribution: S. TSENG
J. LOCKE
J. WITHUM

Approved: _____

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LIMESTONE SLURRY SOLIDS 09:45

UNIT 1 TEST 2

Sample No.: LS U1T2

Date Completed: 04/04/2005
Date Received: 2/7/05
Submitted by: S. TSENG

Project No.: 1621 - 087 - 000

Analytical No.: **20050700**

Proximate (Dry)	%
Ash	56.52
Volatile Matter	
Fixed Carbon	
BTU/lb	
MAF BTU/lb	

Ultimate (Dry)	%
Carbon	11.34
Hydrogen	
Nitrogen	
Chlorine	0.0700
Sulfur, Total	
Ash	56.52
Oxygen (DIFF)	

Ash Fusion Reducing Temp. °F
I.D.
Soft.
Hemi.
Fluid

Ash Fusion Oxidizing Temp. °F
I.D.
Soft.
Hemi.
Fluid

Grindability

HGI	
At Moisture %	0.60
	0.00

Free Swelling Index

FSI

Trace Elements

Sulfur Form (Dry)

Pyritic Sulfur	
Sulfate	
Organic	
Sulfur, Total	

Misc.

Analysis	Value
Hg	0.045 ppm
Fluorine	

Major Ash Elem.

as Det.

SiO2	1.45
Al2O3	0.22
TiO2	0.01
Fe2O3	0.17
CaO	53.39
MgO	1.31
Na2O	0.08
K2O	0.07
P2O5	0.10
SO3	0.26
Undetermined	42.94

As Determined Moisture 0.60 %

These values have been reviewed and are approved for transmission.

Distribution: S. TSENG
J. LOCKE
J. WITHUM

Approved: _____

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LIMESTONE SLURRY SOLIDS 13:45

UNIT 1 TEST 3

Sample No.: LS U1T3

Date Completed: 04/04/2005
Date Received: 2/7/05
Submitted by: S. TSENG

Project No.: 1621 - 087 - 000

Analytical No.: **20050701**

Proximate (Dry)	%
Ash	56.76
Volatile Matter	
Fixed Carbon	
BTU/lb	
MAF BTU/lb	

Ultimate (Dry)	%
Carbon	11.58
Hydrogen	
Nitrogen	
Chlorine	0.0400
Sulfur, Total	
Ash	56.76
Oxygen (DIFF)	

Ash Fusion Reducing Temp. °F

I.D.	
Soft.	
Hemi.	
Fluid	

Grindability

HGI	
At Moisture %	0.73
	0.00

Free Swelling Index

FSI

Ash Fusion Oxidizing Temp. °F

I.D.	
Soft.	
Hemi.	
Fluid	

Trace Elements

Sulfur Form (Dry)

Pyritic Sulfur	
Sulfate	
Organic	
Sulfur, Total	

Misc.

Analysis	Value
Hg	0.038 ppm
Fluorine	

Major Ash Elem.
as det.

SiO2	1.17
Al2O3	0.16
TiO2	0.01
Fe2O3	0.18
CaO	53.23
MgO	1.47
Na2O	0.06
K2O	0.02
P2O5	0.09
SO3	0.24
Undetermined	43.37

As Determined Moisture 0.73 %

These values have been reviewed and are approved for transmission.

Distribution: S. TSENG
J. LOCKE
J. WITHUM

Approved: _____

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LIMESTONE SLURRY SOLIDS 09:15

UNIT 1 TEST 4

Sample No.: LS U1T4

Date Completed: 04/04/2005
Date Received: 2/7/05
Submitted by: S. TSENG

Project No.: 1621 - 087 -000

Analytical No.: **20050702**

Proximate (Dry)	%
Ash	56.92
Volatile Matter	
Fixed Carbon	
BTU/lb	
MAF BTU/lb	

Grindability	
HGI	
At Moisture %	0.76
	0.00

Sulfur Form (Dry)
Pyritic Sulfur
Sulfate
Organic
Sulfur, Total

Misc.

Analysis	Value

Ultimate (Dry)	%
Carbon	11.55
Hydrogen	
Nitrogen	
Chlorine	0.1100
Sulfur, Total	
Ash	56.92
Oxygen (DIFF)	

Free Swelling Index

FSI

Trace Elements

Hg	0.063 ppm
Fluorine	

Ash Fusion Reducing Temp. °F
I.D.
Soft.
Hemi.
Fluid

Ash Fusion Oxidizing Temp. °F
I.D.
Soft.
Hemi.
Fluid

Major Ash Elem.

95 Det

SiO2	1.76
Al2O3	0.18
TiO2	0.01
Fe2O3	0.18
CaO	53.58
MgO	1.51
Na2O	0.05
K2O	0.03
P2O5	0.10
SO3	0.34
Undetermined	42.26

As Determined Moisture 0.76 %

These values have been reviewed and are approved for transmission.

Distribution: S. TSENG
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LIMESTONE SLURRY SOLIDS

UNIT 2 TEST 1

Sample No.: LS U2T1

Date Completed: 04/04/2005
Date Received: 2/7/05
Submitted by: S. TSENG

Project No.: 1621 - 087 - 000
Analytical No.: **20050703**

Proximate (Dry)	%
Ash	56.84
Volatile Matter	
Fixed Carbon	
BTU/lb	
MAF BTU/lb	

Ultimate (Dry)	%
Carbon	11.69
Hydrogen	
Nitrogen	
Chlorine	0.0700
Sulfur, Total	
Ash	56.84
Oxygen (DIFF)	

Ash Fusion Reducing Temp. °F

I.D.	
Soft.	
Hemi.	
Fluid	

Grindability

HGI	
At Moisture %	0.40
	0.00

Free Swelling Index

FSI

Ash Fusion Oxidizing Temp. °F

I.D.	
Soft.	
Hemi.	
Fluid	

Trace Elements

Sulfur Form (Dry)

Pyritic Sulfur	
Sulfate	
Organic	
Sulfur, Total	

Major Ash Elem.

as Det.

SiO2	1.49
Al2O3	0.09
TiO2	0.00
Fe2O3	0.11
CaO	54.88
MgO	0.78
Na2O	0.04
K2O	0.02
P2O5	0.06
SO3	0.20
Undetermined	42.33

Misc.

Analysis	Value
Hg	0.063 ppm
Fluorine	

As Determined Moisture 0.40 %

These values have been reviewed and are approved for transmission.

Distribution: S. TSENG
J. LOCKE
J. WITHUM

Approved: _____

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LIMESTONE SLURRY SOLIDS

UNIT 2 TEST 2

Sample No.: LS U2T2

Date Completed: 04/04/2005
Date Received: 2/7/05
Submitted by: S. TSENG

Project No.: 1621 - 087 - 000
Analytical No.: **20050704**

Proximate	%
Ash	56.95
Volatile Matter	
Fixed Carbon	
BTU/lb	
MAF BTU/lb	

Grindability

HGI	
At Moisture %	0.49
	0.00

Sulfur Form

Pyritic Sulfur	
Sulfate	
Organic	
Sulfur, Total	

Misc.

Analysis	Value

Ultimate	%
Carbon	11.27
Hydrogen	
Nitrogen	
Chlorine	0.1100
Sulfur, Total	
Ash	56.95
Oxygen (DIFF)	

Free Swelling Index

FSI

Trace Elements

Hg	0.068 ppm
Fluorine	

Ash Fusion Reducing Temp. °F

I.D.	
Soft.	
Hemi.	
Fluid	

Ash Fusion Oxidizing Temp. °F

I.D.	
Soft.	
Hemi.	
Fluid	

Major Ash Elem.

as Det.

SiO2	1.67
Al2O3	0.11
TiO2	0.00
Fe2O3	0.11
CaO	55.01
MgO	0.91
Na2O	0.05
K2O	0.01
P2O5	0.09
SO3	0.25
Undetermined	41.79

As Determined Moisture 0.49 %

These values have been reviewed and are approved for transmission.

Distribution: S. TSENG
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J. WITHUM

Approved: _____

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LIMESTONE SLURRY SOLIDS

UNIT 2 TEST 3

Sample No.: LS U2T3

Date Completed: 04/04/2005
Date Received: 2/7/05
Submitted by: S. TSENG

Project No.: 1621 - 087 - 000
Analytical No.: **20050705**

Proximate (Dry)	%
Ash	56.93
Volatile Matter	
Fixed Carbon	
BTU/lb	
MAF BTU/lb	

Ultimate (Dry)	%
Carbon	11.62
Hydrogen	
Nitrogen	
Chlorine	0.0800
Sulfur, Total	
Ash	56.93
Oxygen (DIFF)	

Ash Fusion Reducing Temp. °F
I.D.
Soft.
Hemi.
Fluid

Ash Fusion Oxidizing Temp. °F
I.D.
Soft.
Hemi.
Fluid

Grindability

HGI	
At Moisture %	0.52
	0.00

Free Swelling Index

FSI

Trace Elements

Sulfur Form (Dry)

Pyritic Sulfur	
Sulfate	
Organic	
Sulfur, Total	

Major Ash Elem. as Dec.

SiO2	1.62
Al2O3	0.12
TiO2	0.01
Fe2O3	0.13
CaO	55.15
MgO	0.95
Na2O	0.04
K2O	0.00
P2O5	0.08
SO3	0.25
Undetermined	41.65

Misc.

Analysis	Value
Hg	0.060 ppm
Fluorine	

As Determined Moisture 0.52 %

These values have been reviewed and are approved for transmission.

Distribution: S. TSENG
J. LOCKE
J. WITHUM

Approved: _____

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LIMESTONE SLURRY SOLIDS

UNIT 2 TEST 4

Sample No.: LS U2T4

Date Completed: 04/04/2005
Date Received: 2/7/05
Submitted by: S. TSENG

Project No.: 1621 - 087 -000

Analytical No.: **20050706**

Proximate (Dry)	%
Ash	57.02
Volatile Matter	
Fixed Carbon	
BTU/lb	
MAF BTU/lb	

Ultimate (Dry)	%
Carbon	11.65
Hydrogen	
Nitrogen	
Chlorine	0.0800
Sulfur, Total	
Ash	57.02
Oxygen (DIFF)	

Ash Fusion Reducing Temp. °F

I.D.	
Soft.	
Hemi.	
Fluid	

Grindability

HGI	
At Moisture %	0.37
	0.00

Free Swelling Index

FSI

Ash Fusion Oxidizing Temp. °F

I.D.	
Soft.	
Hemi.	
Fluid	

Trace Elements

Sulfur Form (Dry)

Pyritic Sulfur	
Sulfate	
Organic	
Sulfur, Total	

Misc.

Analysis	Value
% SOLIDS	13.5
DENSITY	1.055

Hg	0.048 ppm
Fluorine	

Major Ash Elem.

as Det.

SiO2	1.70
Al2O3	0.08
TiO2	0.00
Fe2O3	0.09
CaO	55.01
MgO	0.70
Na2O	0.03
K2O	0.02
P2O5	0.07
SO3	0.21
Undetermined	42.09

As Determined Moisture 0.37 %

These values have been reviewed and are approved for transmission.

Distribution: S. TSENG
J. LOCKE
J. WITHUM

Approved: _____

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LIMESTONE SLURRY FILTRATE 09:35

Sample No.: LS U1T1
Date Received: 02/07/2005
Date Completed: 04/05/2005

Analytical No.: 20050784
Project No.: 1621 -087 -000

Submitter: S. TSENG

Parameter	Water Result (mg/L unless noted otherwise) Value	Value	Units	Avg Value
pH				
Acidity, $CaCO_3$				
Alkalinity, $CaCO_3$				
Hydroxide, $CaCO_3$				
Carbonate, $CaCO_3$				
Bicarbonate, $CaCO_3$				
Total Suspended Solids				
Total Dissolved Solids				
Specific Conductivity				
Hardness				
Turbidity				
Osmotic Pressure				
Dissolved Oxygen				
Ammonia, N	<10			
Total Elements				
Aluminum				
Calcium	461.88			
Iron	<1.25			
Magnesium	313.30			
Manganese				
Potassium	90.40			
Phosphorous				
Silicon				
Sodium	629.36			
Chromium				
Anions:				
Sulfate	786.60			
Chloride	2150			
Nitrate, N	0.11			
Nitrite, N				
Bromide				
Fluoride				

Quality Control Calculations

Ion Sum	4432.03
Cation Sum	78.50
Anion Sum	77.03
Ion Balance	-1.13
% Ion Imbalance	0.95

Hg <1.0 ng/mL

These values have been reviewed and are approved for transmission.

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LIMESTONE SLURRY FILTRATE 09:45

Sample No.: LS U1T2
Date Received: 02/07/2005
Date Completed: 04/05/2005

Analytical No.: 20050785
Project No.: 1621 -087 -000

Submitter: S. TSENG

Water Result
(mg/L unless noted otherwise)

Parameter	Value	Value	Units	Avg Value
pH				
Acidity, $CaCO_3$				
Alkalinity, $CaCO_3$				
Hydroxide, $CaCO_3$				
Carbonate, $CaCO_3$				
Bicarbonate, $CaCO_3$				
Total Suspended Solids				
Total Dissolved Solids				
Specific Conductivity				
Hardness				
Turbidity				
Osmotic Pressure				
Dissolved Oxygen				
Ammonia, N	<10			
Total Elements				
Aluminum				
Calcium	441.02			
Iron	<1.25			
Magnesium	134.67			
Manganese				
Potassium	73.54			
Phosphorous				
Silicon				
Sodium	466.13			
Chromium				
Anions:				
Sulfate	594.06			
Chloride	1475			
Nitrate, N	<0.02			
Nitrite, N				
Bromide				
Fluoride				

Quality Control Calculations

Ion Sum	3184.42
Cation Sum	55.24
Anion Sum	53.97
Ion Balance	-1.34
% Ion Imbalance	1.16

Hg <1.0 ng/mL

These values have been reviewed and are approved for transmission.

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LIMESTONE SLURRY FILTRATE 13:45

Sample No.: LS U1T3
Date Received: 02/07/2005
Date Completed: 04/05/2005

Analytical No.: **20050786**
Project No.: 1621 -087 -000

Submitter: S. TSENG

Water Result
(mg/L unless noted otherwise)

Parameter	Value	Value	Units	Avg Value
pH				
Acidity, $CaCO_3$				
Alkalinity, $CaCO_3$				
Hydroxide, $CaCO_3$				
Carbonate, $CaCO_3$				
Bicarbonate, $CaCO_3$				
Total Suspended Solids				
Total Dissolved Solids				
Specific Conductivity				
Hardness				
Turbidity				
Osmotic Pressure				
Dissolved Oxygen				
Ammonia, N	<10			
Total Elements				
Aluminum				
Calcium	333.63			
Iron	<1.25			
Magnesium	103.17			
Manganese				
Potassium	54.14			
Phosphorous				
Silicon				
Sodium	381.99			
Chromium				
Anions:				
Sulfate	460.32			
Chloride	1225			
Nitrate, N	<0.02			
Nitrite, N				
Bromide				
Fluoride				

Quality Control Calculations

Ion Sum	2558.25
Cation Sum	43.13
Anion Sum	44.14
Ion Balance	1.27
% Ion Imbalance	-1.15

Hg <1.0 ng/mL

These values have been reviewed and are approved for transmission.

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LIMESTONE SLURRY FILTRATE 09:15

Sample No.: LS U1T4
Date Received: 02/07/2005
Date Completed: 04/05/2005

Analytical No.: 20050787
Project No.: 1621 -087 -000

Submitter: S. TSENG

Water Result
(mg/L unless noted otherwise)

Parameter	Value	Value	Units	Avg Value
pH				
Acidity, $CaCO_3$				
Alkalinity, $CaCO_3$				
Hydroxide, $CaCO_3$				
Carbonate, $CaCO_3$				
Bicarbonate, $CaCO_3$				
Total Suspended Solids				
Total Dissolved Solids				
Specific Conductivity				
Hardness				
Turbidity				
Osmotic Pressure				
Dissolved Oxygen				
Ammonia, N	<10			
Total Elements				
Aluminum				
Calcium	395.13			
Iron	<1.25			
Magnesium	176.80			
Manganese				
Potassium	70.99			
Phosphorous				
Silicon				
Sodium	478.53			
Chromium				
Anions:				
Sulfate	608.28			
Chloride	1575			
Nitrate, N	0.07			
Nitrite, N				
Bromide				
Fluoride				

Quality Control Calculations

Ion Sum	3305.04
Cation Sum	56.89
Anion Sum	57.09
Ion Balance	0.21
% Ion Imbalance	-0.18

Hg <1.0 ng/mL

These values have been reviewed and are approved for transmission.

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LIMESTONE SLURRY FILTRATE

Sample No.: LS U2T1
Date Received: 02/07/2005
Date Completed: 04/05/2005

Analytical No.: 20050788
Project No.: 1621 -087 -000

Submitter: S. TSENG

Water Result
(mg/L unless noted otherwise)

Parameter	Value	Value	Units	Avg Value
pH				
Acidity, $CaCO_3$				
Alkalinity, $CaCO_3$				
Hydroxide, $CaCO_3$				
Carbonate, $CaCO_3$				
Bicarbonate, $CaCO_3$				
Total Suspended Solids				
Total Dissolved Solids				
Specific Conductivity				
Hardness				
Turbidity				
Osmotic Pressure				
Dissolved Oxygen				
Ammonia, N	<10			
Total Elements				
Aluminum				
Calcium	651.97			
Iron	2.30			
Magnesium	500.46			
Manganese				
Potassium	117.80			
Phosphorous				
Silicon				
Sodium	844.41			
Chromium				
Anions:				
Sulfate	1085.33			
Chloride	3.00			
Nitrate, N	3.32			
Nitrite, N				
Bromide				
Fluoride				

Quality Control Calculations

Ion Sum	3219.97
Cation Sum	113.51
Anion Sum	22.93
Ion Balance	-196.08
% Ion Imbalance	66.39

Hg <1.0 ng/mL

These values have been reviewed and are approved for transmission.

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LIMESTONE SLURRY FILTRATE

Sample No.: LS U2T2
Date Received: 02/07/2005
Date Completed: 04/05/2005

Analytical No.: 20050789
Project No.: 1621 -087 -000

Submitter: S. TSENG

Water Result
(mg/L unless noted otherwise)

Parameter	Value	Value	Units	Avg Value
pH				
Acidity, $CaCO_3$				
Alkalinity, $CaCO_3$				
Hydroxide, $CaCO_3$				
Carbonate, $CaCO_3$				
Bicarbonate, $CaCO_3$				
Total Suspended Solids				
Total Dissolved Solids				
Specific Conductivity				
Hardness				
Turbidity				
Osmotic Pressure				
Dissolved Oxygen				
Ammonia, N	<10			
Total Elements				
Aluminum				
Calcium	658.89			
Iron	<1.25			
Magnesium	490.49			
Manganese				
Potassium	118.30			
Phosphorous				
Silicon				
Sodium	836.10			
Chromium				
Anions:				
Sulfate	1108.94			
Chloride	2975			
Nitrate, N	<0.02			
Nitrite, N				
Bromide				
Fluoride				

Quality Control Calculations

Ion Sum	6187.72
Cation Sum	112.61
Anion Sum	107.00
Ion Balance	-3.18
% Ion Imbalance	2.55

Hg 1.3 ng/mL

These values have been reviewed and are approved for transmission.

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LIMESTONE SLURRY FILTRATE

Sample No.: LS U2T3
Date Received: 02/07/2005
Date Completed: 04/05/2005

Analytical No.: 20050790
Project No.: 1621 -087 -000

Submitter: S. TSENG

Water Result
(mg/L unless noted otherwise)

Parameter	Value	Value	Units	Avg Value
pH				
Acidity, $CaCO_3$				
Alkalinity, $CaCO_3$				
Hydroxide, $CaCO_3$				
Carbonate, $CaCO_3$				
Bicarbonate, $CaCO_3$				
Total Suspended Solids				
Total Dissolved Solids				
Specific Conductivity				
Hardness				
Turbidity				
Osmotic Pressure				
Dissolved Oxygen				
Ammonia, N	<10			
Total Elements				
Aluminum				
Calcium	610.69			
Iron	<1.25			
Magnesium	482.56			
Manganese				
Potassium	114.30			
Phosphorous				
Silicon				
Sodium	823.98			
Chromium				
Anions:				
Sulfate	1104.28			
Chloride	3000			
Nitrate, N	0.07			
Nitrite, N				
Bromide				
Fluoride				

Quality Control Calculations

Ion Sum	6136.12
Cation Sum	108.92
Anion Sum	107.61
Ion Balance	-0.74
% Ion Imbalance	0.60

Hg <1.0 ng/mL

These values have been reviewed and are approved for transmission.

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LIMESTONE SLURRY FILTRATE

Sample No.: LS U2T4
Date Received: 02/07/2005
Date Completed: 04/05/2005

Analytical No.: **20050791**
Project No.: 1621 -087 -000

Submitter: S. TSENG

Water Result
(mg/L unless noted otherwise)

Parameter	Value	Value	Units	Avg Value
pH				
Acidity, $CaCO_3$				
Alkalinity, $CaCO_3$				
Hydroxide, $CaCO_3$				
Carbonate, $CaCO_3$				
Bicarbonate, $CaCO_3$				
Total Suspended Solids				
Total Dissolved Solids				
Specific Conductivity				
Hardness				
Turbidity				
Osmotic Pressure				
Dissolved Oxygen				
Ammonia, N	<10			
Total Elements				
Aluminum				
Calcium	697.63			
Iron	<1.25			
Magnesium	540.12			
Manganese				
Potassium	128.96			
Phosphorous				
Silicon				
Sodium	914.02			
Chromium				
Anions:				
Sulfate	1201.73			
Chloride	3350			
Nitrate, N	4.17			
Nitrite, N				
Bromide				
Fluoride				

Quality Control Calculations

Ion Sum	6850.93
Cation Sum	122.29
Anion Sum	119.81
Ion Balance	-1.26
% Ion Imbalance	1.02

Hg <1.0 ng/mL

These values have been reviewed and are approved for transmission.

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DESCRIPTION *ESP HOPPER ASH 11:30-11:45*
UNIT 1 FIELD 1 SILO 2
DATE SAMPLED *01/19/05*
SAMPLE NUMBER *ESP ASH U1T1F1*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/09/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050723

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	94.32
Total Sulfur	0.19

MISC. (As Det.)

Hg	0.204 ppm

ULTIMATE	(Dry)%
Carbon	4.98
Chlorine	0.002
Ash	94.32

MAJOR ASH ELEM Ignited at a C	%
SiO2	48.79
Al2O3	26.85
TiO2	1.40
Fe2O3	11.56
CaO	1.57
MgO	0.95
Na2O	0.51
K2O	2.38
P2O5	0.23
SO3	0.48
UND	5.28

AS DETERMINED MOISTURE: 0.21 %

DISTRIBUTION:
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DESCRIPTION *ESP HOPPER ASH 12:00-12:10*
UNIT 1 FIELD 2 SILO 2
DATE SAMPLED *01/19/05*
SAMPLE NUMBER *ESP ASH U1T1F2*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/09/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER **050724**

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	94.90
Total Sulfur	0.20

MISC. (As Det.)

Hg	0.210 ppm

ULTIMATE	(Dry)%
Carbon	4.36
Chlorine	0.002
Ash	94.90

MAJOR ASH ELEM	%
Ignited at a C	
SiO2	48.94
Al2O3	26.79
TiO2	1.42
Fe2O3	11.43
CaO	1.61
MgO	0.95
Na2O	0.52
K2O	2.37
P2O5	0.24
SO3	0.51
UND	5.22

AS DETERMINED MOISTURE: 0.23 %

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DESCRIPTION *ESP HOPPER ASH 12:20-12:45*
UNIT 1 FIELD 3 SILO 2
DATE SAMPLED *01/19/05*
SAMPLE NUMBER *ESP ASH U1T1F3*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/09/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050725

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	94.73
Total Sulfur	0.17

MISC. (As Det.)	
Hg	0.217 ppm

ULTIMATE	(Dry)%
Carbon	4.71
Chlorine	0.002
Ash	94.73

MAJOR ASH ELEM	%
Ignited at a C	
SiO2	50.95
Al2O3	26.86
TiO2	1.49
Fe2O3	9.87
CaO	1.68
MgO	0.95
Na2O	0.49
K2O	2.31
P2O5	0.36
SO3	0.43
UND	4.61

AS DETERMINED MOISTURE: 0.24 %

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DESCRIPTION *ESP HOPPER ASH 13:30-14:00*
UNIT 1 FIELD 4 SILO 2
DATE SAMPLED *01/19/05*
SAMPLE NUMBER *ESP ASH U1T1F4*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/09/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050726

ANALYSIS REPORT

PROXIMATE (Dry)%	
Ash	95.38
Total Sulfur	0.20

MISC. (As Det.)	
Hg	0.186 ppm

ULTIMATE (Dry)%	
Carbon	4.09
Chlorine	0.003
Ash	95.38

MAJOR ASH ELEM % Ignited at a C	
SiO2	49.97
Al2O3	26.94
TiO2	1.46
Fe2O3	11.05
CaO	1.66
MgO	0.97
Na2O	0.53
K2O	2.37
P2O5	0.29
SO3	0.50
UND	4.26

AS DETERMINED MOISTURE: 0.25 %

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DESCRIPTION *ESP HOPPER ASH 14:25-14:30*
UNIT 1 FIELD 5 SILO 2
DATE SAMPLED *01/19/05*
SAMPLE NUMBER *ESP ASH U1T1F5*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/09/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER **050727**

ANALYSIS REPORT

PROXIMATE (Dry)%	
Ash	95.36
Total Sulfur	0.18

MISC. (As Det.)

Hg	0.185 ppm

ULTIMATE (Dry)%	
Carbon	4.04
Chlorine	0.003
Ash	95.36

MAJOR ASH ELEM % Ignited at a C	
SiO2	49.83
Al2O3	26.53
TiO2	1.44
Fe2O3	11.03
CaO	1.63
MgO	0.95
Na2O	0.51
K2O	2.33
P2O5	0.26
SO3	0.46
UND	5.03

AS DETERMINED MOISTURE: 0.19 %

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DESCRIPTION *ESP HOPPER ASH 14:05-14:15*
UNIT 1 FIELD 6 SILO 2
DATE SAMPLED *01/19/05*
SAMPLE NUMBER *ESP ASH U1T1F6*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/09/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050728

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	95.38
Total Sulfur	0.19

MISC. (As Det.)

Hg	0.188 ppm

ULTIMATE	(Dry)%
Carbon	4.17
Chlorine	0.003
Ash	95.38

MAJOR ASH ELEM	%
Ignited at a C	
SiO2	50.50
Al2O3	26.80
TiO2	1.46
Fe2O3	11.21
CaO	1.64
MgO	0.96
Na2O	0.52
K2O	2.34
P2O5	0.25
SO3	0.48
UND	3.84

AS DETERMINED MOISTURE: 0.22 %

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DESCRIPTION *ESP HOPPER ASH 09:40-09:45*
UNIT 1 FIELD 1 SILO 2
DATE SAMPLED *01/20/05*
SAMPLE NUMBER *ESP ASH U1T2F1*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/09/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER **050729**

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	95.96
Total Sulfur	0.18

MISC. (As Det.)

Hg	0.162 ppm

ULTIMATE	(Dry)%
Carbon	3.66
Chlorine	0.002
Ash	95.96

MAJOR ASH ELEM	%
Ignited at a C	
SiO2	49.82
Al2O3	26.35
TiO2	1.43
Fe2O3	12.23
CaO	1.59
MgO	0.94
Na2O	0.51
K2O	2.25
P2O5	0.23
SO3	0.46
UND	4.19

AS DETERMINED MOISTURE: 0.19 %

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DESCRIPTION *ESP HOPPER ASH 10:00-10:05*
UNIT 1 FIELD 2 SILO 2
DATE SAMPLED *01/20/05*
SAMPLE NUMBER *ESP ASH U1T2F2*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/09/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER **050730**

ANALYSIS REPORT

PROXIMATE (Dry)%	
Ash	95.79
Total Sulfur	0.18

MISC. (As Det.)

Hg	0.166 ppm

ULTIMATE (Dry)%	
Carbon	3.82
Chlorine	0.003
Ash	95.79

MAJOR ASH ELEM % Ignited at a C	
SiO2	49.23
Al2O3	25.79
TiO2	1.42
Fe2O3	12.02
CaO	1.52
MgO	0.90
Na2O	0.50
K2O	2.22
P2O5	0.21
SO3	0.46
UND	5.73

AS DETERMINED MOISTURE: 0.13 %

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DESCRIPTION *ESP HOPPER ASH 10:20-10:25*
UNIT 1 FIELD 3 SILO 2
DATE SAMPLED *01/20/05*
SAMPLE NUMBER *ESP ASH U1T2F3*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/09/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050731

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	95.82
Total Sulfur	0.19

MISC. (As Det.)

Hg	0.098 ppm

ULTIMATE	(Dry)%
Carbon	3.74
Chlorine	0.003
Ash	95.82

MAJOR ASH ELEM	%
Ignited at a C	
SiO2	50.03
Al2O3	26.61
TiO2	1.45
Fe2O3	12.04
CaO	1.60
MgO	0.94
Na2O	0.52
K2O	2.31
P2O5	0.20
SO3	0.47
UND	3.83

AS DETERMINED MOISTURE: 0.18 %

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DESCRIPTION *ESP HOPPER ASH 14:00-14:05*
UNIT 1 FIELD 1 SILO 2
DATE SAMPLED *01/20/05*
SAMPLE NUMBER *ESP ASH U1T3F1*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/09/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050732

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	96.22
Total Sulfur	0.17

MISC. (As Det.)

Hg	0.143 ppm

ULTIMATE	(Dry)%
Carbon	3.27
Chlorine	0.002
Ash	96.22

MAJOR ASH ELEM	%
Ignited at a C	
SiO2	50.79
Al2O3	26.42
TiO2	1.47
Fe2O3	11.53
CaO	1.66
MgO	0.96
Na2O	0.52
K2O	2.30
P2O5	0.24
SO3	0.43
UND	3.68

AS DETERMINED MOISTURE: 0.16 %

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DESCRIPTION *ESP HOPPER ASH 14:20-14:25*
UNIT 1 FIELD 2 SILO 2
DATE SAMPLED *01/20/05*
SAMPLE NUMBER *ESP ASH U1T3F2*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/09/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER **050733**

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	96.17
Total Sulfur	0.16

MISC. (As Det.)

Hg	0.151 ppm

ULTIMATE	(Dry)%
Carbon	3.30
Chlorine	0.003
Ash	96.17

MAJOR ASH ELEM Ignited at a C	%
SiO2	50.15
Al2O3	26.16
TiO2	1.45
Fe2O3	11.77
CaO	1.62
MgO	0.94
Na2O	0.50
K2O	2.25
P2O5	0.23
SO3	0.41
UND	4.52

AS DETERMINED MOISTURE: 0.09 %

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DESCRIPTION *ESP HOPPER ASH 14:40-14:45*
UNIT 1 FIELD 3 SILO 2
DATE SAMPLED *01/20/05*
SAMPLE NUMBER *ESP ASH U1T3F3*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/09/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050734

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	96.12
Total Sulfur	0.16

MISC. (As Det.)

Hg	0.156 ppm

ULTIMATE	(Dry)%
Carbon	3.47
Chlorine	0.003
Ash	96.12

MAJOR ASH ELEM	(Dry)%
SiO2	49.86
Al2O3	26.06
TiO2	1.45
Fe2O3	11.76
CaO	1.61
MgO	0.94
Na2O	0.49
K2O	2.26
P2O5	0.25
SO3	0.41
UND	4.91

AS DETERMINED MOISTURE: 0.12 %

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DESCRIPTION *ESP HOPPER ASH 14:55-15:00*
UNIT 1 FIELD 4 SILO 2
DATE SAMPLED *01/20/05*
SAMPLE NUMBER *ESP ASH U1T3F4*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/09/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050735

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	96.14
Total Sulfur	0.17

MISC. (As Det.)

Hg	0.147 ppm

ULTIMATE	(Dry)%
Carbon	3.33
Chlorine	0.002
Ash	96.14

MAJOR ASH ELEM	(Dry)%
SiO2	49.83
Al203	26.00
TiO2	1.46
Fe203	11.70
CaO	1.61
MgO	0.94
Na2O	0.49
K2O	2.25
P2O5	0.23
SO3	0.42
UND	5.07

AS DETERMINED MOISTURE: 0.07 %

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DESCRIPTION *ESP HOPPER ASH 15:15-15:20*
UNIT 1 FIELD 5 SILO 2
DATE SAMPLED *01/20/05*
SAMPLE NUMBER *ESP ASH U1T3F5*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/09/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050736

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	96.05
Total Sulfur	0.17

MISC. (As Det.)

Hg	0.160 ppm

ULTIMATE	(Dry)%
Carbon	3.48
Chlorine	0.003
Ash	96.05

MAJOR ASH ELEM	(Dry)%
SiO2	49.67
Al203	25.92
TiO2	1.45
Fe203	11.70
CaO	1.61
MgO	0.93
Na20	0.49
K20	2.25
P205	0.22
SO3	0.43
UND	5.33

AS DETERMINED MOISTURE: 0.07 %

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DESCRIPTION *ESP HOPPER ASH 15:30-15:35*
UNIT 1 FIELD 6 SILO 2
DATE SAMPLED *01/20/05*
SAMPLE NUMBER *ESP ASH U1T3F6*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/09/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050737

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	95.93
Total Sulfur	0.18

MISC. (As Det.)

Hg	0.157 ppm

ULTIMATE	(Dry)%
Carbon	3.61
Chlorine	0.003
Ash	95.93

MAJOR ASH ELEM	(Dry)%
SiO2	49.46
Al2O3	25.85
TiO2	1.46
Fe2O3	11.72
CaO	1.62
MgO	0.93
Na2O	0.48
K2O	2.21
P2O5	0.22
SO3	0.45
UND	5.60

AS DETERMINED MOISTURE: 0.12 %

DISTRIBUTION:
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DESCRIPTION *ESP HOPPER ASH 09:20-09:25*
UNIT 1 FIELD 1 SILO 2
DATE SAMPLED *01/21/05*
SAMPLE NUMBER *ESP ASH U1T4F1*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/09/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050738

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	96.43
Total Sulfur	0.18

MISC. (As Det.)

Hg	0.115 ppm

ULTIMATE	(Dry)%
Carbon	3.14
Chlorine	0.003
Ash	96.43

MAJOR ASH ELEM	(Dry)%
SiO2	52.31
Al203	25.63
TiO2	1.44
Fe203	10.16
CaO	1.50
MgO	0.97
Na20	0.55
K20	2.41
P205	0.15
SO3	0.44
UND	4.44

AS DETERMINED MOISTURE: 0.11 %

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DESCRIPTION *ESP HOPPER ASH 09:40-09:45*
UNIT 1 FIELD 2 SILO 2
DATE SAMPLED *01/21/05*
SAMPLE NUMBER *ESP ASH U1T4F2*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/09/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050739

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	96.47
Total Sulfur	0.18

MISC. (As Det.)

Hg	0.120 ppm

ULTIMATE	(Dry)%
Carbon	3.04
Chlorine	0.003
Ash	96.47

MAJOR ASH ELEM	(Dry)%
SiO2	52.00
Al2O3	25.38
TiO2	1.45
Fe2O3	10.56
CaO	1.54
MgO	0.97
Na2O	0.53
K2O	2.35
P2O5	0.15
SO3	0.44
UND	4.63

AS DETERMINED MOISTURE: 0.11 %

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DESCRIPTION *ESP HOPPER ASH 10:00-10:05*
UNIT 1 FIELD 3 SILO 2
DATE SAMPLED *01/21/05*
SAMPLE NUMBER *ESP ASH U1T4F3*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/09/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050740

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	96.62
Total Sulfur	0.18

MISC. (As Det.)

Hg	0.118 ppm

ULTIMATE	(Dry)%
Carbon	2.99
Chlorine	0.004
Ash	96.62

MAJOR ASH ELEM	(Dry)%
SiO2	51.53
Al203	25.39
TiO2	1.45
Fe203	10.27
CaO	1.53
MgO	0.96
Na2O	0.53
K2O	2.36
P2O5	0.17
SO3	0.44
UND	5.37

AS DETERMINED MOISTURE: 0.14 %

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DESCRIPTION *ESP HOPPER ASH 10:20-10:25*
UNIT 1 FIELD 4 SILO 2
DATE SAMPLED *01/21/05*
SAMPLE NUMBER *ESP ASH U1T4F4*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/09/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050741

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	96.45
Total Sulfur	0.18

ULTIMATE	(Dry)%
Carbon	2.98
Chlorine	0.004
Ash	96.45

MAJOR ASH ELEM	(Dry)%
SiO2	52.02
Al2O3	25.71
TiO2	1.46
Fe2O3	10.40
CaO	1.53
MgO	0.98
Na2O	0.54
K2O	2.39
P2O5	0.18
SO3	0.45
UND	4.34

MISC. (As Det.)

Hg 0.119 ppm

AS DETERMINED MOISTURE: 0.05 %

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DESCRIPTION *ESP HOPPER ASH 10:40-10:45*
UNIT 1 FIELD 5 SILO 2
DATE SAMPLED *01/21/05*
SAMPLE NUMBER *ESP ASH U1T4F5*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/09/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050742

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	96.49
Total Sulfur	0.16

MISC. (As Det.)

Hg	0.116 ppm

ULTIMATE	(Dry)%
Carbon	3.13
Chlorine	0.003
Ash	96.49

MAJOR ASH ELEM	(Dry)%
SiO2	51.64
Al2O3	25.21
TiO2	1.45
Fe2O3	10.55
CaO	1.54
MgO	0.97
Na2O	0.52
K2O	2.32
P2O5	0.16
SO3	0.39
UND	5.25

AS DETERMINED MOISTURE: 0.05 %

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DESCRIPTION *ESP HOPPER ASH 11:00-11:05*
UNIT 1 FIELD 6 SILO 2
DATE SAMPLED *01/21/05*
SAMPLE NUMBER *ESP ASH U1T4F6*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/09/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER **050743**

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	96.54
Total Sulfur	0.18

MISC. (As Det.)

Hg	0.118 ppm

ULTIMATE	(Dry)%
Carbon	2.97
Chlorine	0.003
Ash	96.54

MAJOR ASH ELEM	(Dry)%
SiO2	51.70
Al2O3	25.68
TiO2	1.47
Fe2O3	10.38
CaO	1.57
MgO	0.97
Na2O	0.53
K2O	2.38
P2O5	0.19
SO3	0.46
UND	4.67

AS DETERMINED MOISTURE: 0.13 %

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DESCRIPTION *ESP HOPPER ASH 13:54*
UNIT 2 TEST 1 FIELD 1 SILO 1
DATE SAMPLED *01/24/05*
SAMPLE NUMBER *ESP ASH U2T1F1*

DATE LOGGED *02/07/05.*
DATE COMPLETED *03/09/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050744

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	93.03
Total Sulfur	0.24

MISC. (As Det.)

Hg	0.247 ppm

ULTIMATE	(Dry)%
Carbon	6.01
Chlorine	0.003
Ash	93.03

MAJOR ASH ELEM	(Dry)%
SiO2	49.86
Al2O3	24.01
TiO2	1.40
Fe2O3	10.71
CaO	1.51
MgO	0.95
Na2O	0.49
K2O	2.25
P2O5	0.21
SO3	0.61
UND	8.00

AS DETERMINED MOISTURE: 0.17 %

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DESCRIPTION *ESP HOPPER ASH 14:00*
UNIT 2 TEST 1 FIELD 2 SILO 1
DATE SAMPLED *01/24/05*
SAMPLE NUMBER *ESP ASH U2T1F2*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/09/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050745

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	93.15
Total Sulfur	0.24

MISC. (As Det.)

Hg	0.239 ppm

ULTIMATE	(Dry)%
Carbon	5.99
Chlorine	0.003
Ash	93.15

MAJOR ASH ELEM	(Dry)%
SiO2	49.30
Al2O3	23.89
TiO2	1.39
Fe2O3	10.69
CaO	1.52
MgO	0.94
Na2O	0.49
K2O	2.25
P2O5	0.21
SO3	0.59
UND	8.73

AS DETERMINED MOISTURE: 0.17 %

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DESCRIPTION *ESP HOPPER ASH 14:16*
UNIT 2 TEST 1 FIELD 3 SILO 1
DATE SAMPLED *01/24/05*
SAMPLE NUMBER *ESP ASH U2T1F3*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/09/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050746

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	93.06
Total Sulfur	0.24

MISC. (As Det.)

Hg	0.246 ppm

ULTIMATE	(Dry)%
Carbon	6.21
Chlorine	0.004
Ash	93.06

MAJOR ASH ELEM	(Dry)%
SiO2	49.63
Al2O3	23.91
TiO2	1.39
Fe2O3	10.77
CaO	1.51
MgO	0.95
Na2O	0.50
K2O	2.28
P2O5	0.19
SO3	0.61
UND	8.26

AS DETERMINED MOISTURE: 0.21 %

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DESCRIPTION *ESP HOPPER ASH 14:26*
UNIT 2 TEST 1 FIELD 4 SILO 1
DATE SAMPLED *01/24/05*
SAMPLE NUMBER *ESP ASH U2T1F4*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/16/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050747

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	93.06
Total Sulfur	0.26

MISC. (As Det.)

Hg	0.179 PPM

ULTIMATE	(Dry)%
Carbon	6.08
Chlorine	0.004
Ash	93.06

MAJOR ASH ELEM	(Dry)%
Silicon	49.65
Al2O3	24.08
TiO2	1.32
Fe2O3	10.46
CaO	1.50
MgO	0.94
Na2O	0.53
K2O	2.29
P2O5	0.21
SO3	0.66
UND	8.36

AS DETERMINED MOISTURE: 0.15 %

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DESCRIPTION *ESP HOPPER ASH 14:36*
UNIT 2 TEST 1 FIELD 5 SILO 1
DATE SAMPLED *01/24/05*
SAMPLE NUMBER *ESP ASH U2T1F5*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/15/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050748

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	93.15
Total Sulfur	0.26

MISC. (As Det.)

Hg	0.240 PPM

ULTIMATE	(Dry)%
Carbon	6.25
Chlorine	0.003
Ash	93.15

MAJOR ASH ELEM	(Dry)%
Silicon	49.92
Al2O3	24.55
TiO2	1.33
Fe2O3	10.73
CaO	1.51
MgO	0.95
Na2O	0.53
K2O	2.32
P2O5	0.21
SO3	0.65
UND	7.30

AS DETERMINED MOISTURE: 0.15 %

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DESCRIPTION *ESP HOPPER ASH 14:50*
UNIT 2 TEST 1 FIELD 6 SILO 1
DATE SAMPLED *01/24/05*
SAMPLE NUMBER *ESP ASH U2T1F6*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/15/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050749

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	93.03
Total Sulfur	0.25

MISC. (As Det.)	
Hg	0.230 PPM

ULTIMATE	(Dry)%
Carbon	6.18
Chlorine	0.004
Ash	93.03

MAJOR ASH ELEM	(Dry)%
Silicon	49.65
Al203	24.47
TiO2	1.33
Fe203	10.75
CaO	1.50
MgO	0.94
Na20	0.52
K20	2.29
P205	0.20
SO3	0.62
UND	7.73

AS DETERMINED MOISTURE: 0.04 %

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DESCRIPTION *ESP HOPPER ASH 10:23*
UNIT 2 TEST 2 FIELD 1 SILO 1
DATE SAMPLED *01/25/05*
SAMPLE NUMBER *ESP ASH U2T2F1*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/15/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER **050750**

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	92.84
Total Sulfur	0.26

MISC. (As Det.)

Hg	0.246 PPM

ULTIMATE	(Dry)%
Carbon	6.40
Chlorine	0.002
Ash	92.84

MAJOR ASH ELEM	(Dry)%
Silicon	46.66
Al203	23.67
TiO2	1.28
Fe203	10.88
CaO	1.42
MgO	0.94
Na20	0.49
K20	2.24
P205	0.23
SO3	0.64
UND	11.55

AS DETERMINED MOISTURE: 0.09 %

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DESCRIPTION *ESP HOPPER ASH 10:44*
UNIT 2 TEST 2 FIELD 2 SILO 1
DATE SAMPLED *01/25/05*
SAMPLE NUMBER *ESP ASH U2T2F2*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/15/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050751

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	92.81
Total Sulfur	0.27

ULTIMATE	(Dry)%
Carbon	6.36
Chlorine	0.002
Ash	92.81

MAJOR ASH ELEM	(Dry)%
Silicon	48.96
Al2O3	24.50
TiO2	1.34
Fe2O3	11.68
CaO	1.49
MgO	0.96
Na2O	0.51
K2O	2.30
P2O5	0.24
SO3	0.67
UND	7.35

MISC. (As Det.)

Hg 0.268 PPM

AS DETERMINED MOISTURE: 0.09 %

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DESCRIPTION *ESP HOPPER ASH 10:59*
UNIT 2 TEST 2 FIELD 3 SILO 1
DATE SAMPLED *01/25/05*
SAMPLE NUMBER *ESP ASH U2T2F3*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/15/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050752

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	92.82
Total Sulfur	0.28

MISC. (As Det.)

Hg	0.268 PPM

ULTIMATE	(Dry)%
Carbon	6.31
Chlorine	0.002
Ash	92.82

MAJOR ASH ELEM	(Dry)%
Silicon	48.76
Al203	24.42
Ti02	1.34
Fe203	11.48
CaO	1.49
MgO	0.96
Na20	0.51
K20	2.31
P205	0.23
SO3	0.69
UND	7.81

AS DETERMINED MOISTURE: 0.09 %

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DESCRIPTION *ESP HOPPER ASH 11:12*
UNIT 2 TEST 2 FIELD 4 SILO 1
DATE SAMPLED *01/25/05*
SAMPLE NUMBER *ESP ASH U2T2F4*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/15/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050753

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	92.86
Total Sulfur	0.26

MISC. (As Det.)

Hg	0.262 PPM

ULTIMATE	(Dry)%
Carbon	6.12
Chlorine	0.004
Ash	92.86

MAJOR ASH ELEM	(Dry)%
Silicon	48.64
Al2O3	24.33
TiO2	1.33
Fe2O3	11.41
CaO	1.49
MgO	0.96
Na2O	0.50
K2O	2.29
P2O5	0.23
SO3	0.64
UND	8.18

AS DETERMINED MOISTURE: 0.09 %

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DESCRIPTION *ESP HOPPER ASH 11:23*
UNIT 2 TEST 2 FIELD 5 SILO 1
DATE SAMPLED *01/25/05*
SAMPLE NUMBER *ESP ASH U2T2F5*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/15/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050754

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	92.86
Total Sulfur	0.25

MISC. (As Det.)

Hg	0.251 PPM

ULTIMATE	(Dry)%
Carbon	6.24
Chlorine	0.002
Ash	92.86

MAJOR ASH ELEM	(Dry)%
Silicon	48.43
Al203	24.23
Ti02	1.33
Fe203	11.55
CaO	1.49
MgO	0.96
Na20	0.49
K20	2.29
P205	0.23
S03	0.63
UND	8.37

AS DETERMINED MOISTURE: 0.05 %

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DESCRIPTION *ESP HOPPER ASH 11:37*
UNIT 2 TEST 2 FIELD 6 SILO 1
DATE SAMPLED *01/25/05*
SAMPLE NUMBER *ESP ASH U2T2F6*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/15/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050755

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	92.86
Total Sulfur	0.25

MISC. (As Det.)

Hg	0.245 PPM

ULTIMATE	(Dry)%
Carbon	6.49
Chlorine	0.002
Ash	92.86

MAJOR ASH ELEM	(Dry)%
Silicon	48.92
Al2O3	24.30
TiO2	1.34
Fe2O3	11.51
CaO	1.49
MgO	0.95
Na2O	0.50
K2O	2.30
P2O5	0.22
SO3	0.63
UND	7.84

AS DETERMINED MOISTURE: 0.17 %

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DESCRIPTION *ESP HOPPER ASH 14:35*
UNIT 2 TEST 3 FIELD 1 SILO 1
DATE SAMPLED *01/25/05*
SAMPLE NUMBER *ESP ASH U2T3F1*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/15/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050756

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	92.67
Total Sulfur	0.26

MISC. (As Det.)

Hg	0.257 PPM

ULTIMATE	(Dry)%
Carbon	6.49
Chlorine	0.003
Ash	92.67

MAJOR ASH ELEM	(Dry)%
Silicon	48.95
Al203	24.42
TiO2	1.34
Fe203	11.33
CaO	1.49
MgO	0.95
Na2O	0.50
K2O	2.29
P2O5	0.24
SO3	0.64
UND	7.85

AS DETERMINED MOISTURE: 0.15 %

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DESCRIPTION *ESP HOPPER ASH 14:49*
UNIT 2 TEST 3 FIELD 2 SILO 1
DATE SAMPLED *01/25/05*
SAMPLE NUMBER *ESP ASH U2T3F2*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/15/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050757

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	92.68
Total Sulfur	0.26

MISC. (As Det.)

Hg	0.258 PPM

ULTIMATE	(Dry)%
Carbon	6.44
Chlorine	0.002
Ash	92.68

MAJOR ASH ELEM	(Dry)%
Silicon	48.89
Al203	24.30
TiO2	1.33
Fe203	11.45
CaO	1.49
MgO	0.96
Na2O	0.49
K2O	2.28
P2O5	0.24
SO3	0.66
UND	7.91

AS DETERMINED MOISTURE: 0.11 %

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DESCRIPTION *ESP HOPPER ASH 14:59*
UNIT 2 TEST 3 FIELD 3 SILO 1
DATE SAMPLED *01/25/05*
SAMPLE NUMBER *ESP ASH U2T3F3*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/15/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050758

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	92.66
Total Sulfur	0.26

MISC. (As Det.)	
Hg	0.249 PPM

ULTIMATE	(Dry)%
Carbon	6.43
Chlorine	0.002
Ash	92.66

MAJOR ASH ELEM	(Dry)%
Silicon	49.39
Al2O3	24.89
TiO2	1.36
Fe2O3	11.17
CaO	1.50
MgO	0.97
Na2O	0.51
K2O	2.35
P2O5	0.25
SO3	0.65
UND	6.96

AS DETERMINED MOISTURE: 0.15 %

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DESCRIPTION *ESP HOPPER ASH 15:10*
UNIT 2 TEST 3 FIELD 4 SILO 1
DATE SAMPLED *01/25/05*
SAMPLE NUMBER *ESP ASH U2T3F4*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/15/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050759

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	92.68
Total Sulfur	0.26

MISC. (As Det.)	
Hg	0.263 PPM

ULTIMATE	(Dry)%
Carbon	6.50
Chlorine	0.003
Ash	92.68

MAJOR ASH ELEM	(Dry)%
Silicon	49.25
Al2O3	24.64
TiO2	1.35
Fe2O3	11.33
CaO	1.47
MgO	0.95
Na2O	0.51
K2O	2.31
P2O5	0.24
SO3	0.66
UND	7.29

AS DETERMINED MOISTURE: 0.13 %

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DESCRIPTION *ESP HOPPER ASH 15:24*
UNIT 2 TEST 3 FIELD 5 SILO 1
DATE SAMPLED *01/25/05*
SAMPLE NUMBER *ESP ASH U2T3F5*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/15/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050760

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	92.61
Total Sulfur	0.25

MISC. (As Det.)

Hg	0.271 PPM

ULTIMATE	(Dry)%
Carbon	6.49
Chlorine	0.003
Ash	92.61

MAJOR ASH ELEM	(Dry)%
Silicon	48.72
Al2O3	24.36
TiO2	1.34
Fe2O3	11.37
CaO	1.46
MgO	0.95
Na2O	0.49
K2O	2.31
P2O5	0.24
SO3	0.62
UND	8.14

AS DETERMINED MOISTURE: 0.11 %

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DESCRIPTION *ESP HOPPER ASH 15:35*
UNIT 2 TEST 3 FIELD 6 SILO 1
DATE SAMPLED *01/25/05*
SAMPLE NUMBER *ESP ASH U2T3F6*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/15/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050761

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	92.67
Total Sulfur	0.26

MISC. (As Det.)

Hg	0.266 PPM

ULTIMATE	(Dry)%
Carbon	6.47
Chlorine	0.003
Ash	92.67

MAJOR ASH ELEM	(Dry)%
Silicon	48.88
Al2O3	24.50
TiO2	1.34
Fe2O3	11.40
CaO	1.47
MgO	0.96
Na2O	0.51
K2O	2.34
P2O5	0.24
SO3	0.64
UND	7.72

AS DETERMINED MOISTURE: 0.11 %

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DESCRIPTION *ESP HOPPER ASH 10:15*
UNIT 2 TEST 4 FIELD 1 SILO 1
DATE SAMPLED *01/26/05*
SAMPLE NUMBER *ESP ASH U2T4F1*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/15/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050762

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	92.95
Total Sulfur	0.25

MISC. (As Det.)

Hg	0.253 PPM

ULTIMATE	(Dry)%
Carbon	6.09
Chlorine	0.003
Ash	92.95

MAJOR ASH ELEM	(Dry)%
Silicon	49.21
Al2O3	25.14
TiO2	1.40
Fe2O3	10.38
CaO	1.48
MgO	0.92
Na2O	0.49
K2O	2.28
P2O5	0.29
SO3	0.62
UND	7.79

AS DETERMINED MOISTURE: 0.09 %

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DESCRIPTION *ESP HOPPER ASH 10:02*
UNIT 2 TEST 4 FIELD 2 SILO 1
DATE SAMPLED *01/26/05*
SAMPLE NUMBER *ESP ASH U2T4F2*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/15/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER **050763**

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	92.96
Total Sulfur	0.25

MISC. (As Det.)	
Hg	0.248 PPM

ULTIMATE	(Dry)%
Carbon	6.10
Chlorine	0.002
Ash	92.96

MAJOR ASH ELEM	(Dry)%
Silicon	49.58
Al2O3	25.52
TiO2	1.40
Fe2O3	10.45
CaO	1.46
MgO	0.93
Na2O	0.52
K2O	2.38
P2O5	0.31
SO3	0.63
UND	6.82

AS DETERMINED MOISTURE: 0.12 %

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DESCRIPTION *ESP HOPPER ASH 10:27*
UNIT 2 TEST 4 FIELD 3 SILO 1
DATE SAMPLED *01/26/05*
SAMPLE NUMBER *ESP ASH U2T4F3*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/15/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050764

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	92.96
Total Sulfur	0.25

MISC. (As Det.)

Hg	0.245 PPM

ULTIMATE	(Dry)%
Carbon	6.03
Chlorine	0.003
Ash	92.96

MAJOR ASH ELEM	(Dry)%
Silicon	50.16
Al2O3	25.45
TiO2	1.41
Fe2O3	10.43
CaO	1.48
MgO	0.93
Na2O	0.52
K2O	2.33
P2O5	0.29
SO3	0.63
UND	6.37

AS DETERMINED MOISTURE: 0.15 %

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DESCRIPTION *ESP HOPPER ASH 10:37*
UNIT 2 TEST 4 FIELD 4 SILO 1
DATE SAMPLED *01/26/05*
SAMPLE NUMBER *ESP ASH U2T4F4*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/15/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050765

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	92.98
Total Sulfur	0.24

MISC. (As Det.)

Hg	0.238 PPM

ULTIMATE	(Dry)%
Carbon	5.97
Chlorine	0.003
Ash	92.98

MAJOR ASH ELEM	(Dry)%
Silicon	49.57
Al2O3	25.16
TiO2	1.38
Fe2O3	10.30
CaO	1.46
MgO	0.92
Na2O	0.53
K2O	2.35
P2O5	0.30
SO3	0.61
UND	7.42

AS DETERMINED MOISTURE: 0.09 %

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DESCRIPTION *ESP HOPPER ASH 10:47*
UNIT 2 TEST 4 FIELD 5 SILO 1
DATE SAMPLED *01/26/05*
SAMPLE NUMBER *ESP ASH U2T4F5*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/15/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050766

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	93.02
Total Sulfur	0.25

MISC. (As Det.)

Hg	0.246 PPM

ULTIMATE	(Dry)%
Carbon	5.90
Chlorine	0.003
Ash	93.02

MAJOR ASH ELEM	(Dry)%
Silicon	49.82
Al2O3	25.61
TiO2	1.41
Fe2O3	10.25
CaO	1.47
MgO	0.93
Na2O	0.53
K2O	2.40
P2O5	0.30
SO3	0.62
UND	6.66

AS DETERMINED MOISTURE: 0.22 %

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DESCRIPTION *ESP HOPPER ASH 10:58*
UNIT 2 TEST 4 FIELD 6 SILO 1
DATE SAMPLED *01/26/05*
SAMPLE NUMBER *ESP ASH U2T4F6*

DATE LOGGED *02/07/05*
DATE COMPLETED *03/15/05*
PROJECT NUMBER *1621-87 -*
ANALYTICAL NUMBER 050767

ANALYSIS REPORT

PROXIMATE	(Dry)%
Ash	93.02
Total Sulfur	0.25

MISC. (As Det.)

Hg	0.240 PPM

ULTIMATE	(Dry)%
Carbon	6.03
Chlorine	0.003
Ash	93.02

MAJOR ASH ELEM	(Dry)%
Silicon	50.09
Al2O3	25.63
TiO2	1.41
Fe2O3	10.41
CaO	1.46
MgO	0.94
Na2O	0.53
K2O	2.38
P2O5	0.30
SO3	0.62
UND	6.23

AS DETERMINED MOISTURE: 0.18 %

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FGD SLURRY SOLIDS 13:05

UNIT 1 TEST 1 MODULE 1A

Sample No.: U1T1 FGDS-1A

Date Completed: 04/04/2005
Date Received: 2/7/05
Submitted by: S. TSENG

Project No.: 1621 - 087 - 000
Analytical No.: **20050707**

Proximate (Dry)	%
Ash	99.92
Volatile Matter	
Fixed Carbon	
BTU/lb	
MAF BTU/lb	

Grindability

HGI	
At Moisture %	4.47
	0.00

Sulfur Form (Dry)

Pyritic Sulfur	
Sulfate	
Organic	
Sulfur, Total	

Misc.

Analysis	Value
% SOLIDS	13.0
DENSITY	1.115

Ultimate (Dry)	%	
Carbon	0.62	
Hydrogen		
Nitrogen		
Chlorine	~~0.6000~~	OK
Sulfur, Total		
Ash	99.92	
Oxygen (DIFF)		

Free Swelling Index

FSI	

Trace Elements

Hg	0.827 ppm
Fluorine	

Ash Fusion Reducing Temp. °F

I.D.	
Soft.	
Hemi.	
Fluid	

Ash Fusion Oxidizing Temp. °F

I.D.	
Soft.	
Hemi.	
Fluid	

Major Ash Elem. as Determined

SiO2	0.74
Al2O3	0.11
TiO2	0.00
Fe2O3	0.10
CaO	41.53
MgO	0.34
Na2O	0.24
K2O	0.06
P2O5	0.03
SO3	50.18
Undetermined	6.67

As Determined Moisture 4.47 %

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FGD SLURRY SOLIDS 13:05

UNIT 1 TEST 1 MODULE 1B

Sample No.: U1T1 FGDS-1B

Date Completed: 04/04/2005
Date Received: 2/7/05
Submitted by: S. TSENG

Project No.: 1621 - 087 - 000
Analytical No.: **20050708**

Proximate (Dry) %

Ash	90.24
Volatile Matter	
Fixed Carbon	
BTU/lb	
MAF BTU/lb	

Grindability

HGI	
At Moisture %	4.12
	0.00

Sulfur Form (Dry)

Pyritic Sulfur	
Sulfate	
Organic	
Sulfur, Total	

Misc.

Analysis	Value
% SOLIDS	11.1
DENSITY	1.098

Ultimate (Dry) %

Carbon	2.85
Hydrogen	
Nitrogen	
Chlorine	0.3500
Sulfur, Total	
Ash	90.24
Oxygen (DIFF)	

Free Swelling Index

FSI

Trace Elements

Hg	0.609 ppm
Fluorine	

Ash Fusion Reducing Temp. °F

I.D.	
Soft.	
Hemi.	
Fluid	

Ash Fusion Oxidizing Temp. °F

I.D.	
Soft.	
Hemi.	
Fluid	

Major Ash Elem.

as Det.

SiO2	0.79
Al2O3	0.08
TiO2	0.01
Fe2O3	0.11
CaO	43.80
MgO	0.33
Na2O	0.16
K2O	0.04
P2O5	0.04
SO3	41.13
Undetermined	13.51

As Determined Moisture 4.12 %

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FGD SLURRY SOLIDS 11:00

UNIT 1 TEST 2 MODULE 1A

Sample No.: U1T2 FGDS-1A

Date Completed: 04/04/2005
Date Received: 2/7/05
Submitted by: S. TSENG

Project No.: 1621 - 087 - 000
Analytical No.: **20050709**

Proximate (Dry)	%
Ash	103.14
Volatile Matter	
Fixed Carbon	
BTU/lb	
MAF BTU/lb	

Ultimate (Dry)	%
Carbon	0.84
Hydrogen	
Nitrogen	
Chlorine	0.6300
Sulfur, Total	
Ash	103.14
Oxygen (DIFF)	

Ash Fusion Reducing Temp. °F

I.D.	
Soft.	
Hemi.	
Fluid	

Grindability

HGI	
At Moisture %	4.03
	0.00

Free Swelling Index

FSI

Ash Fusion Oxidizing Temp. °F

I.D.	
Soft.	
Hemi.	
Fluid	

Sulfur Form (Dry)

Pyritic Sulfur	
Sulfate	
Organic	
Sulfur, Total	

Trace Elements

Hg	0.871 ppm
Fluorine	

Major Ash Elem.
Ac. Det.

SiO2	0.87
Al2O3	0.14
TiO2	0.01
Fe2O3	0.13
CaO	42.15
MgO	0.36
Na2O	0.25
K2O	0.06
P2O5	0.02
SO3	49.68
Undetermined	6.33

Misc.

Analysis	Value
% SOLIDS	12.9
DENSITY	1.113

As Determined Moisture 4.03 %

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FGD SLURRY SOLIDS 11:05

UNIT 1 TEST 2 MODULE 1B

Sample No.: U1T2 FGDS-1B

Date Completed: 04/04/2005
Date Received: 2/7/05
Submitted by: S. TSENG

Project No.: 1621 - 087 - 000
Analytical No.: **20050710**

Proximate (Dry)	%
Ash	91.54
Volatile Matter	
Fixed Carbon	
BTU/lb	
MAF BTU/lb	

Grindability

HGI	
At Moisture %	5.32
	0.00

Sulfur Form (Dry)

Pyritic Sulfur	
Sulfate	
Organic	
Sulfur, Total	

Misc.

Analysis	Value
% SOLIDS	7.4
DENSITY	1.070

Ultimate (Dry)	%
Carbon	2.39
Hydrogen	
Nitrogen	
Chlorine	0.3600
Sulfur, Total	
Ash	91.54
Oxygen (DIFF)	

Free Swelling Index

FSI	

Trace Elements

Hg	0.712 ppm
Fluorine	

Ash Fusion Reducing Temp. °F

I.D.	
Soft.	
Hemi.	
Fluid	

Ash Fusion Oxidizing Temp. °F

I.D.	
Soft.	
Hemi.	
Fluid	

Major Ash Elem.
ces Def.

SiO2	0.73
Al2O3	0.08
TiO2	0.00
Fe2O3	0.11
CaO	43.20
MgO	0.31
Na2O	0.16
K2O	0.03
P2O5	0.04
SO3	41.41
Undetermined	13.93

As Determined Moisture 5.32 %

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FGD SLURRY SOLIDS 15:45

UNIT 1 TEST 3 MODULE 1A

Sample No.: U1T3 FGDS-1A

Date Completed: 04/04/2005
Date Received: 2/7/05
Submitted by: S. TSENG

Project No.: 1621 - 087 - 000
Analytical No.: **20050711**

Proximate (Dry)	%
Ash	99.81
Volatile Matter	
Fixed Carbon	
BTU/lb	
MAF BTU/lb	

Grindability	
HGI	
At Moisture %	4.03
	0.00

Sulfur Form (Dry)

Pyritic Sulfur	
Sulfate	
Organic	
Sulfur, Total	

Ultimate (Dry)	%
Carbon	0.68
Hydrogen	
Nitrogen	
Chlorine	0.6100
Sulfur, Total	
Ash	99.81
Oxygen (DIFF)	

Free Swelling Index

FSI

Trace Elements

Hg	0.908 ppm
Fluorine	

Ash Fusion Reducing Temp. °F

I.D.	
Soft.	
Hemi.	
Fluid	

Ash Fusion Oxidizing Temp. °F

I.D.	
Soft.	
Hemi.	
Fluid	

Major Ash Elem.

es Dec.

SiO_2	0.77
Al_2O_3	0.12
TiO_2	0.01
Fe_2O_3	0.12
CaO	40.64
MgO	0.40
Na_2O	0.30
K_2O	0.07
P_2O_5	0.03
SO_3	49.37
Undetermined	8.17

Misc.

Analysis	Value
% SOLIDS	12.8
DENSITY	1.117

As Determined Moisture 4.03 %

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FGD SLURRY SOLIDS 15:50

UNIT 1 TEST 3 MODULE 1B

Sample No.: U1T3 FGDS-1B

Date Completed: 04/04/2005
Date Received: 2/7/05
Submitted by: S. TSENG

Project No.: 1621 - 087 - 000
Analytical No.: **20050712**

Proximate (Dry)	%
Ash	92.24
Volatile Matter	
Fixed Carbon	
BTU/lb	
MAF BTU/lb	

Grindability

HGI	
At Moisture %	5.46
	0.00

Sulfur Form (Dry)

Pyritic Sulfur	
Sulfate	
Organic	
Sulfur, Total	

Misc.

Analysis	Value
% SOLIDS	7.0
DENSITY	1.070

Ultimate (Dry)	%
Carbon	2.31
Hydrogen	
Nitrogen	
Chlorine	0.4000
Sulfur, Total	
Ash	92.24
Oxygen (DIFF)	

Free Swelling Index

FSI

Trace Elements

Hg	0.744 ppm
Fluorine	

Ash Fusion Reducing Temp. °F

I.D.	
Soft.	
Hemi.	
Fluid	

Ash Fusion Oxidizing Temp. °F

I.D.	
Soft.	
Hemi.	
Fluid	

Major Ash Elem.
as Det.

SiO2	0.74
Al2O3	0.10
TiO2	0.01
Fe2O3	0.12
CaO	41.98
MgO	0.34
Na2O	0.20
K2O	0.05
P2O5	0.05
SO3	41.79
Undetermined	14.62

As Determined Moisture 5.46 %

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FGD SLURRY SOLIDS 11:20

UNIT 1 TEST 4 MODULE 1A

Sample No.: U1T4 FGDS-1A

Date Completed: 04/04/2005
Date Received: 2/7/05
Submitted by: S. TSENG

Project No.: 1621 - 087 -000

Analytical No.: **20050713**

Proximate (Dry)	%
Ash	99.30
Volatile Matter	
Fixed Carbon	
BTU/lb	
MAF BTU/lb	

Grindability

HGI	
At Moisture %	4.06
	0.00

Sulfur Form (Dry)

Pyritic Sulfur	
Sulfate	
Organic	
Sulfur, Total	

Misc.

Analysis	Value
% SOLIDS	13.1
DENSITY	1.120

Ultimate (Dry)	%
Carbon	0.78
Hydrogen	
Nitrogen	
Chlorine	0.5600
Sulfur, Total	
Ash	99.30
Oxygen (DIFF)	

Free Swelling Index

FSI

Trace Elements

Hg	0.888 ppm
Fluorine	

Ash Fusion Reducing Temp. °F

I.D.	
Soft.	
Hemi.	
Fluid	

Ash Fusion Oxidizing Temp. °F

I.D.	
Soft.	
Hemi.	
Fluid	

Major Ash Elem.
as Det.

SiO2	0.86
Al2O3	0.14
TiO2	0.01
Fe2O3	0.13
CaO	41.77
MgO	0.33
Na2O	0.23
K2O	0.06
P2O5	0.05
SO3	49.64
Undetermined	6.78

As Determined Moisture 4.06 %

These values have been reviewed and are approved for transmission.

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FGD SLURRY SOLIDS 11:25

UNIT 1 TEST 4 MODULE 1B

Sample No.: U1T4 FGDS-1B

Date Completed: 04/04/2005
Date Received: 2/7/05
Submitted by: S. TSENG

Project No.: 1621 - 087 - 000

Analytical No.: **20050714**

Proximate (Dry)	%
Ash	93.02
Volatile Matter	
Fixed Carbon	
BTU/lb	
MAF BTU/lb	

Grindability

HGI	
At Moisture %	5.83
	0.00

Sulfur Form (Dry)

Pyritic Sulfur	
Sulfate	
Organic	
Sulfur, Total	

Misc.

Analysis	Value
% SOLIDS	6.9
DENSITY	1.074

Ultimate (Dry)	%
Carbon	2.06
Hydrogen	
Nitrogen	
Chlorine	0.4800
Sulfur, Total	
Ash	93.02
Oxygen (DIFF)	

Free Swelling Index

FSI

Trace Elements

Hg	0.744 ppm
Fluorine	

Ash Fusion Reducing Temp. °F

I.D.	
Soft.	
Hemi.	
Fluid	

Ash Fusion Oxidizing Temp. °F

I.D.	
Soft.	
Hemi.	
Fluid	

Major Ash Elem.
as Det.

SiO2	0.77
Al2O3	0.10
TiO2	0.01
Fe2O3	0.12
CaO	41.64
MgO	0.31
Na2O	0.19
K2O	0.06
P2O5	0.04
SO3	43.23
Undetermined	13.53

As Determined Moisture 5.83 %

These values have been reviewed and are approved for transmission.

Distribution: S. TSENG
J. LOCKE
J. WITHUM

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FGD SLURRY SOLIDS 12:53

UNIT 2 TEST 1 MODULE 2A

Sample No.: U2T1 FGDS-2A

Date Completed: 04/04/2005
Date Received: 2/7/05
Submitted by: S. TSENG

Project No.: 1621 - 087 - 000
Analytical No.: **20050715**

Proximate (Dry)	%
Ash	96.99
Volatile Matter	
Fixed Carbon	
BTU/lb	
MAF BTU/lb	

Ultimate (Dry)	%
Carbon	1.32
Hydrogen	
Nitrogen	
Chlorine	0.5400
Sulfur, Total	
Ash	96.99
Oxygen (DIFF)	

Ash Fusion Reducing Temp. °F
I.D.
Soft.
Hemi.
Fluid

Grindability

HGI	
At Moisture %	4.52
	0.00

Free Swelling Index

FSI

Ash Fusion Oxidizing Temp. °F
I.D.
Soft.
Hemi.
Fluid

Sulfur Form (Dry)

Pyritic Sulfur	
Sulfate	
Organic	
Sulfur, Total	

Trace Elements

Hg	0.607 ppm
Fluorine	

Major Ash Elem.

as Def.

SiO2	0.99
Al2O3	0.06
TiO2	0.00
Fe2O3	0.05
CaO	41.87
MgO	0.29
Na2O	0.22
K2O	0.04
P2O5	0.02
SO3	46.67
Undetermined	9.79

Misc.

Analysis	Value
% SOLIDS	9.5
DENSITY	1.077

As Determined Moisture 4.52 %

These values have been reviewed and are approved for transmission.

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FGD SLURRY SOLIDS 12:58

UNIT 2 TEST 1 MODULE 2C

Sample No.: U2T1 FGDS-2C

Date Completed: 04/04/2005
Date Received: 2/7/05
Submitted by: S. TSENG

Project No.: 1621 - 087 -000

Analytical No.: **20050716**

Proximate (Dry)	%
Ash	99.90
Volatile Matter	
Fixed Carbon	
BTU/lb	
MAF BTU/lb	

Grindability	
HGI	
At Moisture %	6.12
	0.00

Sulfur Form (Dry)	
Pyritic Sulfur	
Sulfate	
Organic	
Sulfur, Total	

Misc.	
Analysis	Value
% SOLIDS	10.9
DENSITY	1.098

Ultimate (Dry)	%
Carbon	0.60
Hydrogen	
Nitrogen	
Chlorine	0.6200
Sulfur, Total	
Ash	99.90
Oxygen (DIFF)	

Free Swelling Index	
FSI	

Trace Elements	
Hg	0.562 ppm
Fluorine	

Ash Fusion Reducing Temp. °F	
I.D.	
Soft.	
Hemi.	
Fluid	

Ash Fusion Oxidizing Temp. °F	
I.D.	
Soft.	
Hemi.	
Fluid	

Major Ash Elem. as Det.	
SiO2	1.27
Al2O3	0.12
TiO2	0.01
Fe2O3	0.08
CaO	40.12
MgO	0.33
Na2O	0.30
K2O	0.07
P2O5	0.00
SO3	50.62
Undetermined	7.08

As Determined Moisture 6.12 %

These values have been reviewed and are approved for transmission.

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FGD SLURRY SOLIDS 10:11

UNIT 2 TEST 2 MODULE 2A

Sample No.: U2T2 FGDS-2A

Date Completed: 04/04/2005
Date Received: 2/7/05
Submitted by: S. TSENG

Project No.: 1621 - 087 - 000

Analytical No.: **20050717**

Proximate (Dry)	%
Ash	95.23
Volatile Matter	
Fixed Carbon	
BTU/lb	
MAF BTU/lb	

Grindability

HGI	
At Moisture %	4.60
	0.00

Sulfur Form (Dry)

Pyritic Sulfur	
Sulfate	
Organic	
Sulfur, Total	

Misc.

Analysis	Value
% SOLIDS	10.1
DENSITY	1.088

Ultimate (Dry)	%
Carbon	1.83
Hydrogen	
Nitrogen	
Chlorine	0.4800
Sulfur, Total	
Ash	95.23
Oxygen (DIFF)	

Free Swelling Index

FSI

Trace Elements

Hg	0.592 ppm
Fluorine	

Ash Fusion Reducing Temp. °F

I.D.	
Soft.	
Hemi.	
Fluid	

Ash Fusion Oxidizing Temp. °F

I.D.	
Soft.	
Hemi.	
Fluid	

Major Ash Elem.

as Det.

SiO2	1.27
Al2O3	0.07
TiO2	0.00
Fe2O3	0.07
CaO	43.37
MgO	0.40
Na2O	0.29
K2O	0.05
P2O5	0.03
SO3	45.43
Undetermined	9.02

As Determined Moisture 4.60 %

These values have been reviewed and are approved for transmission.

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FGD SLURRY SOLIDS 10:16

UNIT 2 TEST 2 MODULE 2C

Sample No.: U2T2 FGDS-2C

Date Completed: 04/04/2005
Date Received: 2/7/05
Submitted by: S. TSENG

Project No.: 1621 - 087 -000

Analytical No.: **20050718**

Proximate (Dry)	%
Ash	97.80
Volatile Matter	
Fixed Carbon	
BTU/lb	
MAF BTU/lb	

Ultimate (Dry)	%
Carbon	0.60
Hydrogen	
Nitrogen	
Chlorine	0.6300
Sulfur, Total	
Ash	97.80
Oxygen (DIFF)	

Ash Fusion Reducing Temp. °F
I.D.
Soft.
Hemi.
Fluid

Ash Fusion Oxidizing Temp. °F
I.D.
Soft.
Hemi.
Fluid

Grindability

HGI	
At Moisture %	3.42
	0.00

Free Swelling Index

FSI

Trace Elements

Sulfur Form (Dry)

Pyritic Sulfur	
Sulfate	
Organic	
Sulfur, Total	

Misc.

Analysis	Value
% SOLIDS	11.0
DENSITY	1.084

Hg	0.562 ppm
Fluorine	

Major Ash Elem.

ars Det

SiO2	1.15
Al2O3	0.06
TiO2	0.00
Fe2O3	0.05
CaO	40.81
MgO	0.29
Na2O	0.24
K2O	0.04
P2O5	0.01
SO3	51.29
Undetermined	6.06

As Determined Moisture 3.42 %

These values have been reviewed and are approved for transmission.

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FGD SLURRY SOLIDS 14:02

UNIT 2 TEST 3 MODULE 2A

Sample No.: U2T3 FGDS-2A

Date Completed: 04/04/2005
Date Received: 2/7/05
Submitted by: S. TSENG

Project No.: 1621 - 087 - 000
Analytical No.: **20050719**

Proximate (Dry)	%
Ash	94.29
Volatile Matter	
Fixed Carbon	
BTU/lb	
MAF BTU/lb	

Grindability	
HGI	
At Moisture %	2.51
	0.00

Sulfur Form (Dry)	
Pyritic Sulfur	
Sulfate	
Organic	
Sulfur, Total	

Misc.	
Analysis	Value
% SOLIDS	9.5
DENSITY	1.093

Ultimate (Dry)	%
Carbon	1.69
Hydrogen	
Nitrogen	
Chlorine	0.6200
Sulfur, Total	
Ash	94.29
Oxygen (DIFF)	

Free Swelling Index	
FSI	

Trace Elements		
Hg	0.639	ppm
Fluorine		

Ash Fusion Reducing Temp. °F
I.D.
Soft.
Hemi.
Fluid

Ash Fusion Oxidizing Temp. °F
I.D.
Soft.
Hemi.
Fluid

Major Ash Elem. (as Det.)	
SiO2	1.24
Al2O3	0.06
TiO2	0.00
Fe2O3	0.06
CaO	42.21
MgO	0.31
Na2O	0.22
K2O	0.03
P2O5	0.00
SO3	46.15
Undetermined	9.72

As Determined Moisture 2.51 %

These values have been reviewed and are approved for transmission.

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FGD SLURRY SOLIDS 14:07

UNIT 2 TEST 3 MODULE 2C

Sample No.: U2T3 FGDS-2C

Date Completed: 04/04/2005
Date Received: 2/7/05
Submitted by: S. TSENG

Project No.: 1621 - 087 -000

Analytical No.: **20050720**

Proximate (Dry)	%
Ash	97.56
Volatile Matter	
Fixed Carbon	
BTU/lb	
MAF BTU/lb	

Grindability	
HGI	
At Moisture %	2.69
	0.00

Sulfur Form (Dry)	
Pyritic Sulfur	
Sulfate	
Organic	
Sulfur, Total	

Misc.	
Analysis	Value
% SOLIDS	10.5
DENSITY	1.084

Ultimate (Dry)	%
Carbon	0.66
Hydrogen	
Nitrogen	
Chlorine	0.5900
Sulfur, Total	
Ash	97.56
Oxygen (DIFF)	

Free Swelling Index
FSI

Trace Elements	
Hg	0.575 ppm
Fluorine	

Ash Fusion Reducing Temp. °F
I.D.
Soft.
Hemi.
Fluid

Ash Fusion Oxidizing Temp. °F
I.D.
Soft.
Hemi.
Fluid

Major Ash Elem. as Det.	
SiO2	1.18
Al2O3	0.07
TiO2	0.00
Fe2O3	0.07
CaO	41.34
MgO	0.33
Na2O	0.26
K2O	0.03
P2O5	0.01
SO3	51.73
Undetermined	4.98

As Determined Moisture 2.69 %

These values have been reviewed and are approved for transmission.

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FGD SLURRY SOLIDS 09:38

UNIT 2 TEST 4 MODULE 2A

Sample No.: U2T4 FGDS-2A

Date Completed: 04/04/2005
Date Received: 2/7/05
Submitted by: S. TSENG

Project No.: 1621 - 087 - 000

Analytical No.: **20050721**

Proximate (Dry)	%
Ash	97.50
Volatile Matter	
Fixed Carbon	
BTU/lb	
MAF BTU/lb	

Grindability

HGI	
At Moisture %	2.95
	0.00

Sulfur Form (Dry)

Pyritic Sulfur	
Sulfate	
Organic	
Sulfur, Total	

Misc.

Analysis	Value

Ultimate (Dry)	%
Carbon	0.79
Hydrogen	
Nitrogen	
Chlorine	0.6400
Sulfur, Total	
Ash	97.50
Oxygen (DIFF)	

Free Swelling Index

FSI

Trace Elements

Hg	0.592 ppm
Fluorine	

Ash Fusion Reducing Temp. °F

I.D.
Soft.
Hemi.
Fluid

Ash Fusion Oxidizing Temp. °F

I.D.
Soft.
Hemi.
Fluid

Major Ash Elem.
as Det

SiO_2	1.19
Al_2O_3	0.07
TiO_2	0.00
Fe_2O_3	0.06
CaO	40.71
MgO	0.31
Na_2O	0.26
K_2O	0.05
P_2O_5	0.01
SO_3	49.97
Undetermined	7.37

As Determined Moisture 2.95 %

These values have been reviewed and are approved for transmission.

Distribution: S. TSENG
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FGD SLURRY SOLIDS 09:40

UNIT 2 TEST 4 MODULE 2C

Sample No.: U2T4 FGDS-2C

Date Completed: 04/04/2005
Date Received: 2/7/05
Submitted by: S. TSENG

Project No.: 1621 - 087 - 000

Analytical No.: **20050722**

Proximate	%
Ash	97.70
Volatile Matter	
Fixed Carbon	
BTU/lb	
MAF BTU/lb	

Grindability

HGI	
At Moisture %	3.25
	0.00

Sulfur Form

Pyritic Sulfur	
Sulfate	
Organic	
Sulfur, Total	

Misc.

Analysis	Value
% SOLIDS	9.4
DENSITY	1.090

Ultimate	%
Carbon	0.59
Hydrogen	
Nitrogen	
Chlorine	0.6400
Sulfur, Total	
Ash	97.70
Oxygen (DIFF)	

Free Swelling Index

FSI

Trace Elements

Hg	0.616 ppm
Fluorine	

Ash Fusion Reducing Temp. °F

I.D.	
Soft.	
Hemi.	
Fluid	

Ash Fusion Oxidizing Temp. °F

I.D.	
Soft.	
Hemi.	
Fluid	

Major Ash Elem.

as Det.

SiO2	1.18
Al2O3	0.05
TiO2	0.00
Fe2O3	0.05
CaO	40.23
MgO	0.33
Na2O	0.28
K2O	0.04
P2O5	0.01
SO3	51.01
Undetermined	6.82

As Determined Moisture 3.25 %

These values have been reviewed and are approved for transmission.

Distribution: S. TSENG
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FGD SLURRY FILTRATE 13:05

Sample No.: U1T1 FGDS-1A
Date Received: 02/07/2005
Date Completed: 04/05/2005

Analytical No.: **20050792**
Project No.: 1621 -087 -000

Submitter: S. TSENG

Water Result
(mg/L unless noted otherwise)

Parameter	Value	Value	Units	Avg Value
pH				
Acidity, $CaCO_3$				
Alkalinity, $CaCO_3$				
Hydroxide, $CaCO_3$				
Carbonate, $CaCO_3$				
Bicarbonate, $CaCO_3$				
Total Suspended Solids				
Total Dissolved Solids				
Specific Conductivity				
Hardness				
Turbidity				
Osmotic Pressure				
Dissolved Oxygen				
Ammonia, N	<10			
Total Elements				
Aluminum				
Calcium	3910.37			
Iron	1.42			
Magnesium	4525.65			
Manganese				
Potassium	753.97			
Phosphorous				
Silicon				
Sodium	5021.37			
Chromium				
Anions:				
Sulfate	4059.71			
Chloride	32500			
Nitrate, N	44.08			
Nitrite, N				
Bromide				
Fluoride				

Quality Control Calculations

Ion Sum	50967.72
Cation Sum	805.05
Anion Sum	1004.25
Ion Balance	12.71
% Ion Imbalance	-11.01

Hg	4.0	ng/mL

These values have been reviewed and are approved for transmission.

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FGD SLURRY FILTRATE 13:05

Sample No.: U1T1 FGDS-1B
Date Received: 02/07/2005
Date Completed: 04/05/2005

Analytical No.: **20050793**
Project No.: 1621 -087 -000

Submitter: S. TSENG

Water Result
(mg/L unless noted otherwise)

Parameter	Value	Value	Units	Avg Value
pH				
Acidity, $CaCO_3$				
Alkalinity, $CaCO_3$				
Hydroxide, $CaCO_3$				
Carbonate, $CaCO_3$				
Bicarbonate, $CaCO_3$				
Total Suspended Solids				
Total Dissolved Solids				
Specific Conductivity				
Hardness				
Turbidity				
Osmotic Pressure				
Dissolved Oxygen				
Ammonia, N	<10			
Total Elements				
Aluminum				
Calcium	2981.17			
Iron	3.99			
Magnesium	3011.70			
Manganese				
Potassium	506.33			
Phosphorous				
Silicon				
Sodium	3335.64			
Chromium				
Anions:				
Sulfate	3936.56			
Chloride	24000			
Nitrate, N	99.5			
Nitrite, N				
Bromide				
Fluoride				

Quality Control Calculations

Ion Sum	38216.08
Cation Sum	554.62
Anion Sum	765.94
Ion Balance	17.64
% Ion Imbalance	-16.00

Hg 4.5 ng/mL

These values have been reviewed and are approved for transmission.

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FGD SLURRY FILTRATE 11:00

Sample No.: U1T2 FGDS-1A
Date Received: 02/07/2005
Date Completed: 04/05/2005

Analytical No.: **20050794**
Project No.: 1621 -087 -000

Submitter: S. TSENG

Water Result
(mg/L unless noted otherwise)

Parameter	Value	Value	Units	Avg Value
pH				
Acidity, $CaCO_3$				
Alkalinity, $CaCO_3$				
Hydroxide, $CaCO_3$				
Carbonate, $CaCO_3$				
Bicarbonate, $CaCO_3$				
Total Suspended Solids				
Total Dissolved Solids				
Specific Conductivity				
Hardness				
Turbidity				
Osmotic Pressure				
Dissolved Oxygen				
Ammonia, N	10			
Total Elements				
Aluminum				
Calcium	3447.08			
Iron	<1.25			
Magnesium	4002.58			
Manganese				
Potassium	659.04			
Phosphorous				
Silicon				
Sodium	4383.71			
Chromium				
Anions:				
Sulfate	3617.71			
Chloride	34500			
Nitrate, N	13.8			
Nitrite, N				
Bromide				
Fluoride				

Quality Control Calculations

Ion Sum	50671.24
Cation Sum	708.70
Anion Sum	1049.28
Ion Balance	20.80
% Ion Imbalance	-19.37

Hg 4.8 ng/mL

These values have been reviewed and are approved for transmission.

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FGD SLURRY FILTRATE 11:05

Sample No.: U1T2 FGDS-1B
Date Received: 02/07/2005
Date Completed: 04/05/2005

Analytical No.: **20050795**
Project No.: 1621 -087 -000

Submitter: S. TSENG

Water Result
(mg/L unless noted otherwise)

Parameter	Value	Value	Units	Avg Value
pH				
Acidity, $CaCO_3$				
Alkalinity, $CaCO_3$				
Hydroxide, $CaCO_3$				
Carbonate, $CaCO_3$				
Bicarbonate, $CaCO_3$				
Total Suspended Solids				
Total Dissolved Solids				
Specific Conductivity				
Hardness				
Turbidity				
Osmotic Pressure				
Dissolved Oxygen				
Ammonia, N	10			
Total Elements				
Aluminum				
Calcium	3044.15			
Iron	4.53			
Magnesium	3017.89			
Manganese				
Potassium	505.00			
Phosphorous				
Silicon				
Sodium	3380.13			
Chromium				
Anions:				
Sulfate	4478.75			
Chloride	21500			
Nitrate, N	97.5			
Nitrite, N				
Bromide				
Fluoride				

Quality Control Calculations

Ion Sum	36362.28
Cation Sum	560.19
Anion Sum	706.59
Ion Balance	13.24
% Ion Imbalance	-11.56

Hg 5.7 ng/mL

These values have been reviewed and are approved for transmission.

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FGD SLURRY FILTRATE 15:45

Sample No.: U1T3 FGDS-1A
Date Received: 02/07/2005
Date Completed: 04/05/2005

Analytical No.: **20050796**
Project No.: 1621 -087 -000

Submitter: S. TSENG

Water Result
(mg/L unless noted otherwise)

Parameter	Value	Value	Units	Avg Value
pH				
Acidity, $CaCO_3$				
Alkalinity, $CaCO_3$				
Hydroxide, $CaCO_3$				
Carbonate, $CaCO_3$				
Bicarbonate, $CaCO_3$				
Total Suspended Solids				
Total Dissolved Solids				
Specific Conductivity				
Hardness				
Turbidity				
Osmotic Pressure				
Dissolved Oxygen				
Ammonia, N	10			
Total Elements				
Aluminum				
Calcium	3673.01			
Iron	2.29			
Magnesium	4276.17			
Manganese				
Potassium	697.68			
Phosphorous				
Silicon				
Sodium	4634.72			
Chromium				
Anions:				
Sulfate	3795.12			
Chloride	33500			
Nitrate, N	11.2			
Nitrite, N				
Bromide				
Fluoride				

Quality Control Calculations

Ion Sum	50628.59
Cation Sum	754.47
Anion Sum	1024.59
Ion Balance	16.90
% Ion Imbalance	-15.18

Hg 2.7 ng/mL

These values have been reviewed and are approved for transmission.

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FGD SLURRY FILTRATE 15:50

Sample No.: U1T3 FGDS-1B
Date Received: 02/07/2005
Date Completed: 04/05/2005

Analytical No.: **20050797**
Project No.: 1621 -087 -000

Submitter: S. TSENG

Water Result
(mg/L unless noted otherwise)

Parameter	Value	Value	Units	Avg Value
pH				
Acidity, $CaCO_3$				
Alkalinity, $CaCO_3$				
Hydroxide, $CaCO_3$				
Carbonate, $CaCO_3$				
Bicarbonate, $CaCO_3$				
Total Suspended Solids				
Total Dissolved Solids				
Specific Conductivity				
Hardness				
Turbidity				
Osmotic Pressure				
Dissolved Oxygen				
Ammonia, N	<10			
Total Elements				
Aluminum				
Calcium	2833.62			
Iron	4.17			
Magnesium	2797.98			
Manganese				
Potassium	472.19			
Phosphorous				
Silicon				
Sodium	3174.58			
Chromium				
Anions:				
Sulfate	4230.53			
Chloride	22500			
Nitrate, N	84.2			
Nitrite, N				
Bromide				
Fluoride				

Quality Control Calculations

Ion Sum	36385.99
Cation Sum	521.81
Anion Sum	728.67
Ion Balance	18.14
% Ion Imbalance	-16.54

Hg 3.6 ng/mL

These values have been reviewed and are approved for transmission.

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FGD SLURRY FILTRATE 11:20

Sample No.: U1T4 FGDS-1A
Date Received: 02/07/2005
Date Completed: 04/05/2005

Analytical No.: **20050798**
Project No.: 1621 -087 -000

Submitter: S. TSENG

Water Result
(mg/L unless noted otherwise)

Parameter	Value	Value	Units	Avg Value
pH				
Acidity, $CaCO_3$				
Alkalinity, $CaCO_3$				
Hydroxide, $CaCO_3$				
Carbonate, $CaCO_3$				
Bicarbonate, $CaCO_3$				
Total Suspended Solids				
Total Dissolved Solids				
Specific Conductivity				
Hardness				
Turbidity				
Osmotic Pressure				
Dissolved Oxygen				
Ammonia, N	<10			
Total Elements				
Aluminum				
Calcium	3389.53			
Iron	2.14			
Magnesium	3937.33			
Manganese				
Potassium	639.89			
Phosphorous				
Silicon				
Sodium	4258.81			
Chromium				
Anions:				
Sulfate	3474.18			
Chloride	33500			
Nitrate, N	4.26			
Nitrite, N				
Bromide				
Fluoride				

Quality Control Calculations

Ion Sum	49220.75
Cation Sum	694.62
Anion Sum	1017.41
Ion Balance	20.33
% Ion Imbalance	-18.85

Hg	4.0	ng/mL

These values have been reviewed and are approved for transmission.

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FGD SLURRY FILTRATE 11:25

Sample No.: U1T4 FGDS-1B
Date Received: 02/07/2005
Date Completed: 04/05/2005

Analytical No.: **20050799**
Project No.: 1621 -087 -000

Submitter: S. TSENG

Water Result
(mg/L unless noted otherwise)

Parameter	Value	Value	Units	Avg Value
pH				
Acidity, $CaCO_3$				
Alkalinity, $CaCO_3$				
Hydroxide, $CaCO_3$				
Carbonate, $CaCO_3$				
Bicarbonate, $CaCO_3$				
Total Suspended Solids				
Total Dissolved Solids				
Specific Conductivity				
Hardness				
Turbidity				
Osmotic Pressure				
Dissolved Oxygen				
Ammonia, N	10			
Total Elements				
Aluminum				
Calcium	2767.72			
Iron	3.63			
Magnesium	2738.40			
Manganese				
Potassium	454.20			
Phosphorous				
Silicon				
Sodium	3038.37			
Chromium				
Anions:				
Sulfate	3615.30			
Chloride	20500			
Nitrate, N	82.5			
Nitrite, N				
Bromide				
Fluoride				

Quality Control Calculations

Ion Sum	33483.01
Cation Sum	507.21
Anion Sum	659.33
Ion Balance	14.73
% Ion Imbalance	-13.04

Hg 4.2 ng/mL

These values have been reviewed and are approved for transmission.

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FGD SLURRY FILTRATE 12:53

Sample No.: U2T1 FGDS-2A
Date Received: 02/07/2005
Date Completed: 04/05/2005

Analytical No.: **20050800**
Project No.: 1621 -087 -000

Submitter: S. TSENG

Water Result
(mg/L unless noted otherwise)

Parameter	Value	Value	Units	Avg Value
pH				
Acidity, $CaCO_3$				
Alkalinity, $CaCO_3$				
Hydroxide, $CaCO_3$				
Carbonate, $CaCO_3$				
Bicarbonate, $CaCO_3$				
Total Suspended Solids				
Total Dissolved Solids				
Specific Conductivity				
Hardness				
Turbidity				
Osmotic Pressure				
Dissolved Oxygen				
Ammonia, N	10			
Total Elements				
Aluminum				
Calcium	3639.67			
Iron	1.98			
Magnesium	3627.91			
Manganese				
Potassium	668.04			
Phosphorous				
Silicon				
Sodium	4447.30			
Chromium				
Anions:				
Sulfate	2882.38			
Chloride	29500			
Nitrate, N	44.7			
Nitrite, N				
Bromide				
Fluoride				

Quality Control Calculations

Ion Sum	44965.26
Cation Sum	690.57
Anion Sum	895.17
Ion Balance	14.63
% Ion Imbalance	-12.90

Hg <1.0 mg/mL

These values have been reviewed and are approved for transmission.

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FGD SLURRY FILTRATE 12:58

Sample No.: U2T1 FGDS-2C
Date Received: 02/07/2005
Date Completed: 04/05/2005

Analytical No.: **20050801**
Project No.: 1621 -087 -000

Submitter: S. TSENG

Water Result
(mg/L unless noted otherwise)

Parameter	Value	Value	Units	Avg Value
pH				
Acidity, $CaCO_3$				
Alkalinity, $CaCO_3$				
Hydroxide, $CaCO_3$				
Carbonate, $CaCO_3$				
Bicarbonate, $CaCO_3$				
Total Suspended Solids				
Total Dissolved Solids				
Specific Conductivity				
Hardness				
Turbidity				
Osmotic Pressure				
Dissolved Oxygen				
Ammonia, N	10			
Total Elements				
Aluminum				
Calcium	3795.69			
Iron	<1.25			
Magnesium	3869.88			
Manganese				
Potassium	706.67			
Phosphorous				
Silicon				
Sodium	4685.44			
Chromium				
Anions:				
Sulfate	2897.32			
Chloride	33000			
Nitrate, N	45.8			
Nitrite, N				
Bromide				
Fluoride				

Quality Control Calculations

Ion Sum	49157.85
Cation Sum	729.53
Anion Sum	994.26
Ion Balance	17.06
% Ion Imbalance	-15.36

Hg 1.9 ng/mL

These values have been reviewed and are approved for transmission.

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FGD SLURRY FILTRATE 10:11

Sample No.: U2T2 FGDS-2A
Date Received: 02/07/2005
Date Completed: 04/05/2005

Analytical No.: **20050802**
Project No.: 1621 -087 -000

Submitter: S. TSENG

Water Result
(mg/L unless noted otherwise)

Parameter	Value	Value	Units	Avg Value
pH				
Acidity, $CaCO_3$				
Alkalinity, $CaCO_3$				
Hydroxide, $CaCO_3$				
Carbonate, $CaCO_3$				
Bicarbonate, $CaCO_3$				
Total Suspended Solids				
Total Dissolved Solids				
Specific Conductivity				
Hardness				
Turbidity				
Osmotic Pressure				
Dissolved Oxygen				
Ammonia, N	<10			
Total Elements				
Aluminum				
Calcium	3313.01			
Iron	1.69			
Magnesium	3313.00			
Manganese				
Potassium	610.91			
Phosphorous				
Silicon				
Sodium	4097.95			
Chromium				
Anions:				
Sulfate	2673.03			
Chloride	27500			
Nitrate, N	46.3			
Nitrite, N				
Bromide				
Fluoride				

Quality Control Calculations

Ion Sum	41714.65
Cation Sum	631.70
Anion Sum	834.52
Ion Balance	15.55
% Ion Imbalance	-13.83

Hg 1.3 ug/mL

These values have been reviewed and are approved for transmission.

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FGD SLURRY FILTRATE 10:16

Sample No.: U2T2 FGDS-2C
Date Received: 02/07/2005
Date Completed: 04/05/2005

Analytical No.: **20050803**
Project No.: 1621 -087 -000

Submitter: S. TSENG

Water Result
(mg/L unless noted otherwise)

Parameter	Value	Value	Units	Avg Value
pH				
Acidity, $CaCO_3$				
Alkalinity, $CaCO_3$				
Hydroxide, $CaCO_3$				
Carbonate, $CaCO_3$				
Bicarbonate, $CaCO_3$				
Total Suspended Solids				
Total Dissolved Solids				
Specific Conductivity				
Hardness				
Turbidity				
Osmotic Pressure				
Dissolved Oxygen				
Ammonia, N	<10			
Total Elements				
Aluminum				
Calcium	4367.31			
Iron	<1.25			
Magnesium	4548.29			
Manganese				
Potassium	836.90			
Phosphorous				
Silicon				
Sodium	5651.44			
Chromium				
Anions:				
Sulfate	3336.26			
Chloride	31000			
Nitrate, N	44.3			
Nitrite, N				
Bromide				
Fluoride				

Quality Control Calculations

Ion Sum	49936.40
Cation Sum	859.19
Anion Sum	946.89
Ion Balance	5.93
% Ion Imbalance	-4.86

Hg <1.0 ng/mL

These values have been reviewed and are approved for transmission.

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FGD SLURRY FILTRATE 14:02

Sample No.: U2T3 FGDS-2A
Date Received: 02/07/2005
Date Completed: 04/05/2005

Analytical No.: **20050804**
Project No.: 1621 -087 -000

Submitter: S. TSENG

Water Result
(mg/L unless noted otherwise)

Parameter	Value	Value	Units	Avg Value
pH				
Acidity, $CaCO_3$				
Alkalinity, $CaCO_3$				
Hydroxide, $CaCO_3$				
Carbonate, $CaCO_3$				
Bicarbonate, $CaCO_3$				
Total Suspended Solids				
Total Dissolved Solids				
Specific Conductivity				
Hardness				
Turbidity				
Osmotic Pressure				
Dissolved Oxygen				
Ammonia, N	<10			
Total Elements				
Aluminum				
Calcium	3122.81			
Iron	<1.25			
Magnesium	3148.49			
Manganese				
Potassium	586.93			
Phosphorous				
Silicon				
Sodium	4000.99			
Chromium				
Anions:				
Sulfate	2565.78			
Chloride	24500			
Nitrate, N	32.8			
Nitrite, N				
Bromide				
Fluoride				

Quality Control Calculations

Ion Sum	38070.27
Cation Sum	603.79
Anion Sum	746.72
Ion Balance	12.24
% Ion Imbalance	-10.58

Hg 1.3 ng/mL

These values have been reviewed and are approved for transmission.

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FGD SLURRY FILTRATE 14:07

Sample No.: U2T3 FGDS-2C
Date Received: 02/07/2005
Date Completed: 04/05/2005

Analytical No.: **20050805**
Project No.: 1621 -087 -000

Submitter: S. TSENG

Water Result
(mg/L unless noted otherwise)

Parameter	Value	Value	Units	Avg Value
pH				
Acidity, $CaCO_3$				
Alkalinity, $CaCO_3$				
Hydroxide, $CaCO_3$				
Carbonate, $CaCO_3$				
Bicarbonate, $CaCO_3$				
Total Suspended Solids				
Total Dissolved Solids				
Specific Conductivity				
Hardness				
Turbidity				
Osmotic Pressure				
Dissolved Oxygen				
Ammonia, N	10			
Total Elements				
Aluminum				
Calcium	4145.00			
Iron	<1.25			
Magnesium	4277.07			
Manganese				
Potassium	784.28			
Phosphorous				
Silicon				
Sodium	5251.84			
Chromium				
Anions:				
Sulfate	3150.18			
Chloride	30500			
Nitrate, N	35.0			
Nitrite, N				
Bromide				
Fluoride				

Quality Control Calculations

Ion Sum	48263.39
Cation Sum	807.07
Anion Sum	928.25
Ion Balance	8.36
% Ion Imbalance	-6.98

Hg 1.0 ng/mL

These values have been reviewed and are approved for transmission.

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FGD SLURRY FILTRATE 09:38

Sample No.: U2T4 FGDS-2A
Date Received: 02/07/2005
Date Completed: 04/05/2005

Analytical No.: **20050806**
Project No.: 1621 -087 -000

Submitter: S. TSENG

Water Result
(mg/L unless noted otherwise)

Parameter	Value	Value	Units	Avg Value
pH				
Acidity, $CaCO_3$				
Alkalinity, $CaCO_3$				
Hydroxide, $CaCO_3$				
Carbonate, $CaCO_3$				
Bicarbonate, $CaCO_3$				
Total Suspended Solids				
Total Dissolved Solids				
Specific Conductivity				
Hardness				
Turbidity				
Osmotic Pressure				
Dissolved Oxygen				
Ammonia, N	<10			
Total Elements				
Aluminum				
Calcium	3928.41			
Iron	1.61			
Magnesium	4067.27			
Manganese				
Potassium	752.80			
Phosphorous				
Silicon				
Sodium	5121.87			
Chromium				
Anions:				
Sulfate	3218.26			
Chloride	29000			
Nitrate, N	44.3			
Nitrite, N				
Bromide				
Fluoride				

Quality Control Calculations

Ion Sum	46286.42
Cation Sum	772.61
Anion Sum	888.03
Ion Balance	8.32
% Ion Imbalance	-6.95

Hg 1.0 ng/mL

These values have been reviewed and are approved for transmission.

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FGD SLURRY FILTRATE 09:40

Sample No.: U2T4 FGDS-2C
Date Received: 02/07/2005
Date Completed: 04/05/2005

Analytical No.: **20050807**
Project No.: 1621 -087 -000

Submitter: S. TSENG

Water Result
(mg/L unless noted otherwise)

Parameter	Value	Value	Units	Avg Value
pH				
Acidity, $CaCO_3$				
Alkalinity, $CaCO_3$				
Hydroxide, $CaCO_3$				
Carbonate, $CaCO_3$				
Bicarbonate, $CaCO_3$				
Total Suspended Solids				
Total Dissolved Solids				
Specific Conductivity				
Hardness				
Turbidity				
Osmotic Pressure				
Dissolved Oxygen				
Ammonia, N	10			
Total Elements				
Aluminum				
Calcium	3541.98			
Iron	<1.25			
Magnesium	3649.58			
Manganese				
Potassium	682.19			
Phosphorous				
Silicon				
Sodium	4585.21			
Chromium				
Anions:				
Sulfate	2787.98			
Chloride	35000			
Nitrate, N	38.0			
Nitrite, N				
Bromide				
Fluoride				

Quality Control Calculations

Ion Sum	50415.24
Cation Sum	693.77
Anion Sum	1047.82
Ion Balance	21.66
% Ion Imbalance	-20.33

Hg 1.3 ng/mL

These values have been reviewed and are approved for transmission.

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FGD MAKE-UP WATER 13:00

Sample No.: FGD MAKEUP U1T1
Date Received: 02/07/2005
Date Completed: 04/05/2005

Analytical No.: **20050808**
Project No.: 1621 -087 -000

Submitter: S. TSENG

Water Result
(mg/L unless noted otherwise)

Parameter	Value	Value	Units	Avg Value
pH				
Acidity, $CaCO_3$				
Alkalinity, $CaCO_3$				
Hydroxide, $CaCO_3$				
Carbonate, $CaCO_3$				
Bicarbonate, $CaCO_3$				
Total Suspended Solids				
Total Dissolved Solids				
Specific Conductivity				
Hardness				
Turbidity				
Osmotic Pressure				
Dissolved Oxygen				
Ammonia, N	<10			
Total Elements				
Aluminum				
Calcium	917.31			
Iron	0.10			
Magnesium	679.16			
Manganese				
Potassium	198.57			
Phosphorous				
Silicon				
Sodium	1140.83			
Chromium				
Anions:				
Sulfate	1853.07			
Chloride	4500			
Nitrate, N	3.9			
Nitrite, N				
Bromide				
Fluoride				

Quality Control Calculations

Ion Sum	9306.31
Cation Sum	156.33
Anion Sum	165.79
Ion Balance	3.53
% Ion Imbalance	-2.94

Hg <1.0 mg/mL

These values have been reviewed and are approved for transmission.

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FGD MAKE-UP WATER 11:00

Sample No.: FGD MAKEUP U1T2
Date Received: 02/07/2005
Date Completed: 04/05/2005

Analytical No.: **20050809**
Project No.: 1621 -087 -000

Submitter: S. TSENG

Water Result
(mg/L unless noted otherwise)

Parameter	Value	Value	Units	Avg Value
pH				
Acidity, $CaCO_3$				
Alkalinity, $CaCO_3$				
Hydroxide, $CaCO_3$				
Carbonate, $CaCO_3$				
Bicarbonate, $CaCO_3$				
Total Suspended Solids				
Total Dissolved Solids				
Specific Conductivity				
Hardness				
Turbidity				
Osmotic Pressure				
Dissolved Oxygen				
Ammonia, N	<10			
Total Elements				
Aluminum				
Calcium	828.85			
Iron	0.13			
Magnesium	609.90			
Manganese				
Potassium	170.14			
Phosphorous				
Silicon				
Sodium	1069.51			
Chromium				
Anions:				
Sulfate	1762.52			
Chloride	3950			
Nitrate, N	8.1			
Nitrite, N				
Bromide				
Fluoride				

Quality Control Calculations

Ion Sum	8426.92
Cation Sum	142.39
Anion Sum	148.69
Ion Balance	2.61
% Ion Imbalance	-2.16

Hg <1.0 ng/mL

These values have been reviewed and are approved for transmission.

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FGD MAKE-UP WATER 15:40

Sample No.: FGD MAKEUP U1T3
Date Received: 02/07/2005
Date Completed: 04/05/2005

Analytical No.: **20050810**
Project No.: 1621 -087 -000

Submitter: S. TSENG

Water Result
(mg/L unless noted otherwise)

Parameter	Value	Value	Units	Avg Value
pH				
Acidity, $CaCO_3$				
Alkalinity, $CaCO_3$				
Hydroxide, $CaCO_3$				
Carbonate, $CaCO_3$				
Bicarbonate, $CaCO_3$				
Total Suspended Solids				
Total Dissolved Solids				
Specific Conductivity				
Hardness				
Turbidity				
Osmotic Pressure				
Dissolved Oxygen				
Ammonia, N	<10			
Total Elements				
Aluminum				
Calcium	810.99			
Iron	0.07			
Magnesium	595.92			
Manganese				
Potassium	164.96			
Phosphorous				
Silicon				
Sodium	1040.89			
Chromium				
Anions:				
Sulfate	1721.64			
Chloride	3900			
Nitrate, N	9.8			
Nitrite, N				
Bromide				
Fluoride				

Quality Control Calculations

Ion Sum	8277.87
Cation Sum	138.97
Anion Sum	146.55
Ion Balance	3.19
% Ion Imbalance	-2.65

Hg <1.0 ng/mL

These values have been reviewed and are approved for transmission.

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FGD MAKE-UP WATER 11:15

Sample No.: FGD MAKEUP U1T4
Date Received: 02/07/2005
Date Completed: 04/05/2005

Analytical No.: **20050811**
Project No.: 1621 -087 -000

Submitter: S. TSENG

Water Result
(mg/L unless noted otherwise)

Parameter	Value	Value	Units	Avg Value
pH				
Acidity, $CaCO_3$				
Alkalinity, $CaCO_3$				
Hydroxide, $CaCO_3$				
Carbonate, $CaCO_3$				
Bicarbonate, $CaCO_3$				
Total Suspended Solids				
Total Dissolved Solids				
Specific Conductivity				
Hardness				
Turbidity				
Osmotic Pressure				
Dissolved Oxygen				
Ammonia, N	<10			
Total Elements				
Aluminum				
Calcium	694.67			
Iron	0.08			
Magnesium	496.20			
Manganese				
Potassium	153.82			
Phosphorous				
Silicon				
Sodium	1005.17			
Chromium				
Anions:				
Sulfate	1649.71			
Chloride	3250			
Nitrate, N	10.1			
Nitrite, N				
Bromide				
Fluoride				

Quality Control Calculations

Ion Sum	7294.38
Cation Sum	123.13
Anion Sum	126.74
Ion Balance	1.75
% Ion Imbalance	-1.45

Hg <1.0 ng/mL

These values have been reviewed and are approved for transmission.

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FGD MAKE-UP WATER 11:45

Sample No.: FGD MAKEUP U2T1
Date Received: 02/07/2005
Date Completed: 04/05/2005

Analytical No.: **20050812**
Project No.: 1621 -087 -000

Submitter: S. TSENG

Water Result
(mg/L unless noted otherwise)

Parameter	Value	Value	Units	Avg Value
pH				
Acidity, $CaCO_3$				
Alkalinity, $CaCO_3$				
Hydroxide, $CaCO_3$				
Carbonate, $CaCO_3$				
Bicarbonate, $CaCO_3$				
Total Suspended Solids				
Total Dissolved Solids				
Specific Conductivity				
Hardness				
Turbidity				
Osmotic Pressure				
Dissolved Oxygen				
Ammonia, N	<10			
Total Elements				
Aluminum				
Calcium	2798.04			
Iron	0.64			
Magnesium	2565.96			
Manganese				
Potassium	489.87			
Phosphorous				
Silicon				
Sodium	3259.80			
Chromium				
Anions:				
Sulfate	3033.73			
Chloride	19500			
Nitrate, N	<0.02			
Nitrite, N				
Bromide				
Fluoride				

Quality Control Calculations

Ion Sum	31648.04
Cation Sum	504.98
Anion Sum	613.12
Ion Balance	11.25
% Ion Imbalance	-9.67

Hg <1.0 ng/mL

These values have been reviewed and are approved for transmission.

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FGD MAKE-UP WATER 09:17

Sample No.: FGD MAKEUP U2T2
Date Received: 02/07/2005
Date Completed: 04/05/2005

Analytical No.: **20050813**
Project No.: 1621 -087 -000

Submitter: S. TSENG

Water Result
(mg/L unless noted otherwise)

Parameter	Value	Value	Units	Avg Value
pH				
Acidity, $CaCO_3$				
Alkalinity, $CaCO_3$				
Hydroxide, $CaCO_3$				
Carbonate, $CaCO_3$				
Bicarbonate, $CaCO_3$				
Total Suspended Solids				
Total Dissolved Solids				
Specific Conductivity				
Hardness				
Turbidity				
Osmotic Pressure				
Dissolved Oxygen				
Ammonia, N	10			
Total Elements				
Aluminum				
Calcium	3173.55			
Iron	0.94			
Magnesium	2938.35			
Manganese				
Potassium	549.83			
Phosphorous				
Silicon				
Sodium	3642.54			
Chromium				
Anions:				
Sulfate	3291.75			
Chloride	21000			
Nitrate, N	<0.02			
Nitrite, N				
Bromide				
Fluoride				

Quality Control Calculations

Ion Sum	34596.96
Cation Sum	572.54
Anion Sum	660.79
Ion Balance	8.53
% Ion Imbalance	-7.16

Hg <1.0 ng/mL

These values have been reviewed and are approved for transmission.

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FGD MAKE-UP WATER 13:30

Sample No.: FGD MAKEUP U2T3
Date Received: 02/07/2005
Date Completed: 04/05/2005

Analytical No.: **20050814**
Project No.: 1621 -087 -000

Submitter: S. TSENG

Water Result
(mg/L unless noted otherwise)

Parameter	Value	Value	Units	Avg Value
pH				
Acidity, $CaCO_3$				
Alkalinity, $CaCO_3$				
Hydroxide, $CaCO_3$				
Carbonate, $CaCO_3$				
Bicarbonate, $CaCO_3$				
Total Suspended Solids				
Total Dissolved Solids				
Specific Conductivity				
Hardness				
Turbidity				
Osmotic Pressure				
Dissolved Oxygen				
Ammonia, N	10			
Total Elements				
Aluminum				
Calcium	2693.57			
Iron	0.97			
Magnesium	2404.54			
Manganese				
Potassium	452.63			
Phosphorous				
Silicon				
Sodium	3006.98			
Chromium				
Anions:				
Sulfate	2898.47			
Chloride	17000			
Nitrate, N	<0.02			
Nitrite, N				
Bromide				
Fluoride				

Quality Control Calculations

Ion Sum	28457.16
Cation Sum	474.56
Anion Sum	539.80
Ion Balance	7.70
% Ion Imbalance	-6.43

Hg <1.0 ng/mL

These values have been reviewed and are approved for transmission.

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FGD MAKE-UP WATER 09:00

Sample No.: FGD MAKEUP U2T4
Date Received: 02/07/2005
Date Completed: 04/05/2005

Analytical No.: **20050815**
Project No.: 1621 -087 -000

Submitter: S. TSENG

Water Result
(mg/L unless noted otherwise)

Parameter	Value	Value	Units	Avg Value
pH				
Acidity, $CaCO_3$				
Alkalinity, $CaCO_3$				
Hydroxide, $CaCO_3$				
Carbonate, $CaCO_3$				
Bicarbonate, $CaCO_3$				
Total Suspended Solids				
Total Dissolved Solids				
Specific Conductivity				
Hardness				
Turbidity				
Osmotic Pressure				
Dissolved Oxygen				
Ammonia, N	<10			
Total Elements				
Aluminum				
Calcium	2225.20			
Iron	0.77			
Magnesium	1999.49			
Manganese				
Potassium	392.08			
Phosphorous				
Silicon				
Sodium	2649.03			
Chromium				
Anions:				
Sulfate	2532.68			
Chloride	15500			
Nitrate, N	<0.02			
Nitrite, N				
Bromide				
Fluoride				

Quality Control Calculations

Ion Sum	25299.25
Cation Sum	400.75
Anion Sum	489.88
Ion Balance	11.58
% Ion Imbalance	-10.01

Hg <1.0 ng/mL

These values have been reviewed and are approved for transmission.