Summary Test Report
Sulfur Dioxide and Flow Stratification Tests
Three Scrubber Module Discharges

Intermountain Power Project
October-November 2001

Submitted to:

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2. *Summary of Results*

Sulfur dioxide, carbon dioxide, oxygen, and gas flow was measured at the exhaust of the scrubber demisters at each of 30 test points in a six point by 5-port grid. In addition, a single moisture sample was collected by traversing all 30 points in each duct. The test point grid identification systems were identical for all three test locations.

Table 1 summarizes the average, maximum, and minimum sulfur dioxide concentrations (parts per million on a dry basis) and gas flow velocities (feet per second) measured in each of the three test locations. The sulfur dioxide emission rates were calculated and are also presented in the table. The emission rates were calculated based on the sum of the 30 sector emission rates determined from point-by-point SO2 concentrations and gas flow rates.

Table 2 presents a comparison of the average sulfur dioxide and flow measurements made at each of the 30 test points for the three test locations. Table 2 details the sulfur dioxide concentrations, the gas velocities, and the resulting sulfur dioxide emission rates for each sector represented by the test point.

Appendix A contains tabulated summaries of the test results for each test location. It also includes one-minute average measurements of SO2, CO2, and O2. Additional field sampling data including velocity and moisture data for each test location are included in Appendices B (Scrubber 1-B), C (Scrubber 2-D), and D (Scrubber 1-C). Summaries of instrument calibration and bias checks are provided in Appendix E.

Table 1
Comparison of Overall Scrubber Module Performance

	Scrubber Module 1-B	Scrubber Module 1-C	Scrubber Module 2-D
Average Sulfur Dioxide Concentration (ppmvd)	28.0	69.1	28.3
Maximum Point SO2 Concentration (ppmvd)	41.9	144.8	54.1
Minimum Point SO2 Concentration (ppmvd)	11.2	8.1	7.6
Average Gas Velocity (feet per second)	8.8	7.4	9.2
Maximum Point Velocity (fps)	20.9	34.3	23.7
Minimum Point Velocity (fps)	0	0	0
Average Module SO2 Emission Rate (lbs/hour)	94.3	167.3	78.8

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Table 2
Point-by-Point Comparison of Scrubber Modules 1-B, 1-C, and 2-D

	Point	Unit 1 Scrubber B	Unit 1 Scrubber C	Unit 2 Scrubber D	Unit 1 Scrubber B	Unit 1 Scrubber C	Unit 2 Scrubber D	Unit 1 Scrubber B	Unit 1 Scrubber C	Unit 2 Scrubber D
		Sulfur Dioxide (ppmvd)			Gas Flow Rate (feet/second)			Sulfur Dioxide Emissions (lbs/hour)		
Port 1	1	29.0	8.1	43.0	19.0	34.3	3.1	7.3	3.5	1.6
	2	34.6	34.7	26.6	12.5	17.3	20.2	5.6	7.4	6.6
	3	22.9	26.2	28.4	17.1	18.7	19.8	5.2	6.1	6.9
	4	11.2	46.2	17.9	17.5	14.8	20.7	2.9	8.5	4.5
	5	31.4	46.2	12.8	15.8	21.1	18.1	6.5	12.1	2.9
	6	20.7	50.4	7.6	19.6	12.5	23.7	5.5	7.8	2.2
Port 2	1	32.1	25.5	45.2	11.2	0.0	18.6	4.8	0.0	10.4
	2	27.5	51.3	43.4	3.1	0.0	4.0	1.1	0.0	2.1
	3	25.5	54.8	28.5	2.5	0.0	0.0	0.9	0.0	0.0
	4	25.1	63.3	20.0	1.8	0.0	0.0	0.6	0.0	0.0
	5	26.4	72.0	17.8	3.1	0.0	0.0	1.1	0.0	0.0
	6	20.8	59.8	14.1	11.9	6.6	13.7	3.4	4.9	2.4
Port 3	1	36.1	69.4	34.1	0.0	0.0	0.0	0.0	0.0	0.0
	2	35.5	71.2	38.1	0.0	0.0	0.0	0.0	0.0	0.0
	3	34.7	83.1	28.0	0.0	0.0	0.0	0.0	0.0	0.0
	4	35.9	81.1	34.6	0.0	0.0	0.0	0.0	0.0	0.0
	5	29.2	82.6	33.1	0.0	0.0	0.0	0.0	0.0	0.0
	6	32.2	81.3	33.0	2.5	0.0	0.0	1.1	0.0	0.0
Port 4	1	29.3	55.9	54.1	6.1	0.0	11.4	2.4	0.0	7.6
	2	25.2	73.2	41.8	1.8	1.8	0.0	0.6	1.6	0.0
	3	26.6	74.8	32.9	0.0	0.0	1.8	0.0	0.0	0.7
	4	24.4	84.0	33.0	3.5	0.0	0.0	1.2	0.0	0.0
	5	27.0	101.0	30.8	5.3	5.6	2.5	1.9	7.0	1.0
	6	37.8	138.8	30.7	9.4	10.9	8.2	4.7	18.7	3.1
Port 5	1	34.9	78.0	16.0	20.0	8.3	19.4	9.4	8.0	3.8
	2	25.3	56.8	26.6	14.5	7.9	16.3	5.0	5.5	5.3
	3	14.0	61.3	17.3	16.9	14.8	18.8	3.3	11.2	4.0
	4	14.6	88.7	13.2	12.5	12.2	17.7	2.5	13.3	2.9
	5	29.7	108.5	18.9	14.6	18.6	17.7	5.8	24.9	4.1
	6	41.9	144.8	26.3	20.9	15.1	20.2	11.6	26.9	6.5
Averages		28.0	69.1	28.3	8.8	7.4	9.2			
Sum of Scrubber Module Emissions								94.3	167.3	78.8

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3. Sampling and Analytical Procedures

Test Point Locations

Five test ports were available at each of the scrubber module test locations. Six test points were calculated and sampled on each of the five traverses, resulting in a total of 30 test points per test location. The test point locations in each scrubber outlet are shown in Figures in Appendices B, C, and D.

Gas Flow Rate

Gas velocity was measured using an S-type pitot tube attached to a differential pressure transducer with a full-scale range of 0 to 5 inches of water and a minimum detection limit of 0.001 inch of water. The velocity head and gas temperatures were measured at each test point. The gas temperature was measured using a Type K thermocouple.

Dry Gas Molecular Weight, Carbon dioxide, and Oxygen

Reference Method 3A was used to measure carbon dioxide (CO2), oxygen (O2), and to calculate the dry gas molecular weight. CO2 and O2 were measured on a dry basis using the same gas sample as that used to measure sulfur dioxide. Bias checks were performed following sampling of each test port, therefore a total of six bias checks were performed during the conductance of a single duct traverse. The oxygen analyzer failed after successful completion of the bias check following testing of the first port on the final test date. The average O2 measured in the first port was used as an estimate for the other four test ports for Scrubber 1-C.

Moisture

Method 4 was used to measure the stack gas moisture content. An unheated sample line was attached to each probe for extraction of the moisture sample. Moisture samples were extracted at a constant rate from all 30 test points in each duct. Each moisture test was conducted for 300 minutes. The moisture measurements made in the three ducts ranged from 11.7 to 12.95 percent by moisture. Using moisture charts the saturation point for the gas temperatures measured is approximately 12 percent. Twelve percent was used as the saturation moisture for all three tests.

Sulfur Dioxide

Method 6C was used to measure the gas stream sulfur dioxide concentration. SO2 was measured on a dry basis. The SO2 analyzer was operated and calibrated in a 0 to 100 parts per million full scale range. The system response time was measured and averaged 134 seconds. This was considered to be due to SO2 interaction of the low SO2 concentrations with the Teflon walls of the sample line. Each test point was sampled for a total of 10 minutes. The first 5 minutes of data were ignored and the final 5 minutes at each point were used to calculate the average sulfur dioxide concentration.

Two slightly out-of-specification system bias checks occurred following sampling of the first port on Scrubber 2-D (negative 5.6 span bias) and sampling of the third port of Scrubber 1-C (positive 7.1 percent zero drift). The Reference Method zero and span bias and drift compensation calculations were relied upon for minor corrections of these data.

2IP12-000021

Intermountain Power Project
Unit 1
Scrubber Module B
Tested October 31, 2001

Duct Pressure, in H2O	1.2
Barometric Pressure	25.45
Duct absolute pressure	25.54

	Point	Delta P	Stack Temp	SO2 (ppmvd)		SO2 (lbs/dscf)	CO2 (percent)	O2 (percent	% Moisture (sat)	MW dry	MW wet	Gas Velocity	Sector Flow (acfm)	Sector Flow (dscfm)	Sector Emissions (lbs/hour)
Port 1	1	0.117	113	30.7	29.0	5.103E-06	13.9	5.2	12	30.4	28.9	19.04	34278	23725	7.265
	2	0.05	116	36.1	34.6	5.999E-06	13.8	5.2	12	30.4	28.9	12.52	22531	15513	5.584
	3	0.093	116	24.8	22.9	4.112E-06	13.9	5.2	12	30.4	28.9	17.07	30723	21154	5.219
	4	0.098	115	13.5	11.2	2.236E-06	13.8	5.3	12	30.4	28.9	17.49	31491	21720	2.914
	5	0.08	116	33.1	31.4	5.488E-06	13.9	5.2	12	30.4	28.9	15.83	28498	19622	6.462
	6	0.123	116	22.6	20.7	3.759E-06	13.8	5.3	12	30.4	28.9	19.63	35342	24334	5.488
Port 2	1	0.04	117	34.4	32.1	5.714E-06	13.7	5.3	12	30.4	28.9	11.22	20197	13882	4.759
	2	0.003	116	29.8	27.5	4.954E-06	13.8	5.2	12	30.4	28.9	3.07	5521	3801	1.130
	3	0.002	116	27.8	25.5	4.61E-06	13.8	5.2	12	30.4	28.9	2.50	4507	3104	0.858
	4	0.001	114	27.5	25.1	4.557E-06	13.8	5.2	12	30.4	28.9	1.76	3176	2195	0.600
	5	0.003	115	28.8	26.4	4.774E-06	13.8	5.2	12	30.4	28.9	3.06	5511	3801	1.089
	6	0.045	116	23.1	20.8	3.834E-06	13.7	5.3	12	30.4	28.9	11.88	21384	14724	3.387
Port 3	1	0	115	38.9	36.1	6.462E-06	13.8	5.1	12	30.4	28.9	0.00	0	0	0.000
	2	0	115	38.3	35.5	6.363E-06	13.8	5.2	12	30.4	28.9	0.00	0	0	0.000
	3	0	115	37.5	34.7	6.229E-06	13.8	5.2	12	30.4	28.9	0.00	0	0	0.000
	4	0	116	38.8	35.9	6.437E-06	13.7	5.2	12	30.4	28.9	0.00	0	0	0.000
	5	0	115	31.8	29.2	5.281E-06	13.7	5.3	12	30.4	28.9	0.00	0	0	0.000
	6	0.002	115	34.9	32.2	5.792E-06	13.7	5.3	12	30.4	28.9	2.50	4502	3105	1.079
Port 4	1	0.012	116	32.1	29.3	5.323E-06	13.8	5.1	12	30.4	28.9	6.13	11039	7601	2.427
	2	0.001	116	27.7	25.2	4.598E-06	13.8	5.2	12	30.4	28.9	1.77	3188	2195	0.605
	3	0	116	29.2	26.6	4.842E-06	13.8	5.2	12	30.4	28.9	0.00	0	0	0.000
	4	0.004	116	26.9	24.4	4.469E-06	13.7	5.3	12	30.4	28.9	3.54	6376	4390	1.177
	5	0.009	116	29.6	27.0	4.919E-06	13.7	5.3	12	30.4	28.9	5.31	9566	6586	1.944
	6	0.028	116	41.0	37.8	6.799E-06	13.6	5.4	12	30.4	28.9	9.38	16877	11620	4.741
Port 5	1	0.128	116	37.8	34.9	6.28E-06	13.8	5.2	12	30.4	28.9	20.03	36062	24830	9.356
	2	0.067	116	27.7	25.3	4.598E-06	13.8	5.1	12	30.4	28.9	14.49	26086	17961	4.955
	3	0.091	116	15.8	14.0	2.624E-06	13.8	5.1	12	30.4	28.9	16.89	30402	20932	3.295
	4	0.05	115	16.4	14.6	2.729E-06	13.8	5.1	12	30.4	28.9	12.50	22498	15517	2.541
	5	0.068	116	32.3	29.7	5.366E-06	13.8	5.1	12	30.4	28.9	14.60	26283	18096	5.827
	6	0.139	116	45.1	41.9	7.492E-06	13.7	5.3	12	30.4	28.9	20.89	37596	25886	11.637
Averages		0.042	115.6	30.5	28.0	0.0	13.8	5.2		30.4	28.9	8.8			
Total for Scrubber Module													473633	326295	94.34

2IP12-000022

Intermountain Power Project
Unit 1
Scrubber Module C
Tested November 2, 2001

Duct Pressure, in H2O	1.7
Barometric Pressure	25.45
Duct absolute pressure	25.58

		Delta P	Stack Temp	SO2 (ppmvd)	SO2 Corrected (ppmvd)	SO2 (lbs/dscf)	CO2 (percent)	O2 (percent	% Moisture (sat)	MW dry	MW wet	Gas Velocity	Sector Flow (acfm)	Sector Flow (dscfm)	Sector Emissions (lbs/hour)
1	1	0.379	114	12.2	8.1	1.35E-06	13.9	5.3	12	30.43	28.94	34.28	61712	42700	3.462
	2	0.096	114	37.7	34.7	5.75E-06	13.9	5.2	12	30.43	28.94	17.25	31057	21489	7.420
	3	0.113	114	29.6	26.2	4.34E-06	13.9	5.2	12	30.43	28.94	18.72	33695	23314	6.078
	4	0.071	114	48.8	46.2	7.67E-06	13.9	5.2	12	30.44	28.95	14.84	26706	18479	8.502
	5	0.145	112	48.8	46.2	7.67E-06	13.9	5.3	12	30.44	28.94	21.13	38034	26409	12.149
	6	0.05	115	52.9	50.4	8.36E-06	13.9	5.3	12	30.44	28.95	12.47	22450	15507	7.783
2	1	0	114	29.7	25.5	4.23E-06	13.9	5.3	12	30.43	28.94	0.00	0	0	0.000
	2	0	115	55.3	51.3	8.51E-06	13.8	5.3	12	30.42	28.93	0.00	0	0	0.000
	3	0	115	58.8	54.8	9.10E-06	13.8	5.3	12	30.42	28.93	0.00	0	0	0.000
	4	0	113	67.3	63.3	1.05E-05	13.9	5.3	12	30.43	28.94	0.00	0	0	0.000
	5	0	115	75.9	72.0	1.20E-05	13.9	5.3	12	30.43	28.94	0.00	0	0	0.000
	6	0.014	116	63.8	59.8	9.93E-06	13.9	5.3	12	30.43	28.94	6.61	11904	8208	4.889
3	1	0	116	76.8	69.4	1.15E-05	13.9	5.3	12	30.43	28.94	0.00	0	0	0.000
	2	0	117	78.7	71.2	1.18E-05	13.9	5.3	12	30.43	28.94	0.00	0	0	0.000
	3	0	117	90.9	83.1	1.38E-05	13.9	5.3	12	30.43	28.94	0.00	0	0	0.000
	4	0	117	88.8	81.1	1.35E-05	13.8	5.3	12	30.43	28.93	0.00	0	0	0.000
	5	0	117	90.4	82.6	1.37E-05	13.9	5.3	12	30.43	28.94	0.00	0	0	0.000
	6	0	117	89.1	81.3	1.35E-05	13.8	5.3	12	30.42	28.93	0.00	0	0	0.000
4	1	0	117	57.62	55.9	9.27E-06	13.9	5.3	12	30.44	28.94	0.00	0	0	0.000
	2	0.001	118	75.09	73.2	1.22E-05	13.8	5.3	12	30.42	28.93	1.77	3193	2194	1.600
	3	0	117	76.70	74.8	1.24E-05	13.9	5.3	12	30.43	28.94	0.00	0	0	0.000
	4	0	117	85.89	84.0	1.39E-05	13.8	5.3	12	30.42	28.93	0.00	0	0	0.000
	5	0.01	117	103.00	101.0	1.68E-05	13.9	5.3	12	30.43	28.94	5.60	10078	6937	6.977
	6	0.038	118	141.00	138.8	2.30E-05	13.8	5.3	12	30.42	28.93	10.94	19684	13525	18.695
5	1	0.022	119	82.0	78.0	1.30E-05	13.92	5.3	12	30.44	28.94	8.33	14996	10286	7.993
	2	0.02	118	60.4	56.8	9.42E-06	13.94	5.3	12	30.44	28.95	7.93	14272	9807	5.545
	3	0.07	118	65.0	61.3	1.02E-05	13.91	5.3	12	30.44	28.94	14.84	26704	18349	11.196
	4	0.047	118	92.9	88.7	1.47E-05	13.87	5.3	12	30.43	28.94	12.16	21886	15038	13.292
	5	0.11	118	113.0	108.5	1.80E-05	13.82	5.3	12	30.42	28.93	18.61	33490	23012	24.858
	6	0.072	119	150.0	144.8	2.40E-05	13.78	5.3	12	30.41	28.93	15.08	27147	18621	26.857
Averages		0.042	116.2	73.3	69.1	0.0	13.9	5.3		30.4	28.9	7.4			
Total for Scrubber Module													397010	273878	167.29

Note: Oxygen analyzer failed during second test port. Average of first port used for all subsequent test points.
Note: Sulfur dioxide exceeded measurement range for Port 4, points 5 and 6 and Port 5, points 5 and 6. Values were estimated from instrument meter.

2IP12-000023

Intermountain Power Project
Unit 2
Scrubber Module D
Tested November 1, 2001

WIDER VARIATION ON O_2 BY ~ DOUBLE

Duct Pressure, in H2O	1.7
Barometric Pressure	25.45
Duct absolute pressure	25.58

	Point	Delta P	Stack Temp	SO2 (ppmvd)	SO2 Corrected (ppmvd)	SO2 (lbs/dscf)	CO2 (percent)	O2 (percent	% Moisture (sat)	MW dry	MW wet	Gas Velocity	Sector Flow (acfm)	Sector Flow (dscfm)	Sector Emissions (lbs/hour)
Port 1	1	0.003	118	42.2	43.0	7.13E-06	13.29	5.93	12	30.36	28.88	3.08	5540	3807	1.629
	2	0.129	118	25.8	26.6	4.42E-06	13.24	5.97	12	30.36	28.87	20.19	36339	24970	6.615
	3	0.124	118	27.5	28.4	4.71E-06	13.23	5.96	12	30.35	28.87	19.79	35629	24482	6.921
	4	0.135	118	17.0	17.9	2.97E-06	13.05	6.16	12	30.33	28.85	20.67	37199	25561	4.549
	5	0.103	118	11.9	12.8	2.13E-06	13.07	6.11	12	30.34	28.86	18.05	32492	22326	2.850
	6	0.178	117	6.7	7.6	1.26E-06	13.06	6.10	12	30.33	28.85	23.69	42642	29352	2.211
Port 2	1	0.11	117	41.5	45.2	7.51E-06	13.20	5.93	12	30.35	28.87	18.61	33506	23063	10.391
	2	0.005	117	39.7	43.4	7.20E-06	13.17	5.94	12	30.35	28.86	3.97	7144	4918	2.125
	3	0	117	24.9	28.5	4.73E-06	13.11	6.01	12	30.34	28.86	0.00	0	0	0.000
	4	0	117	16.5	20.0	3.32E-06	13.14	5.91	12	30.34	28.86	0.00	0	0	0.000
	5	0	116	14.3	17.8	2.96E-06	13.02	6.01	12	30.32	28.84	0.00	0	0	0.000
	6	0.06	115	10.6	14.1	2.34E-06	12.99	6.00	12	30.32	28.84	13.71	24683	17049	2.399
Port 3	1	0	116	31.2	34.1	5.67E-06	13.01	5.92	12	30.32	28.84	0.00	0	0	0.000
	2	0	116	35.2	38.1	6.33E-06	13.10	5.80	12	30.33	28.85	0.00	0	0	0.000
	3	0	115	25.1	28.0	4.65E-06	13.05	5.84	12	30.32	28.84	0.00	0	0	0.000
	4	0	116	31.7	34.6	5.75E-06	13.07	5.79	12	30.32	28.84	0.00	0	0	0.000
	5	0	116	30.2	33.1	5.49E-06	13.04	5.83	12	30.32	28.84	0.00	0	0	0.000
	6	0	117	30.0	33.0	5.47E-06	12.96	5.89	12	30.31	28.83	0.00	0	0	0.000
Port 4	1	0.041	118	56.8	54.1	8.98E-06	13.01	5.78	12	30.31	28.84	11.40	20514	14096	7.593
	2	0	118	43.8	41.8	6.94E-06	13.08	5.71	12	30.32	28.84	0.00	0	0	0.000
	3	0.001	118	34.5	32.9	5.47E-06	13.03	5.77	12	30.32	28.84	1.78	3203	2201	0.722
	4	0	118	34.5	33.0	5.47E-06	13.02	5.76	12	30.31	28.84	0.00	0	0	0.000
	5	0.002	118	32.2	30.8	5.11E-06	13.01	5.77	12	30.31	28.83	2.52	4531	3113	0.955
	6	0.021	118	32.1	30.7	5.09E-06	12.89	5.93	12	30.30	28.82	8.16	14687	10092	3.084
Port 5	1	0.118	119	16.9	16.0	2.66E-06	13.14	5.62	12	30.33	28.85	19.36	34846	23902	3.820
	2	0.084	119	27.7	26.6	4.42E-06	13.05	5.72	12	30.32	28.84	16.34	29410	20174	5.347
	3	0.112	118	18.1	17.3	2.87E-06	12.96	5.82	12	30.31	28.83	18.84	33912	23302	4.010
	4	0.098	119	14.0	13.2	2.19E-06	12.93	5.84	12	30.30	28.83	17.66	31780	21800	2.868
	5	0.099	118	19.8	18.9	3.14E-06	12.88	5.91	12	30.30	28.82	17.72	31892	21914	4.131
	6	0.129	118	27.4	26.3	4.36E-06	12.75	6.06	12	30.28	28.81	20.23	36422	25027	6.550
Averages		0.052	117.4	27.3	28.3	0.0	13.1	5.9		30.3	28.8	9.2			
Total for Scrubber Module													496371	341149	78.77

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		Date	Time	1 O2	2 CO2	3 SO2			
Port 1	Point 1	10/30/1997	8:48:00	5.15	13.95	29.9			
		10/30/1997	8:49:00	5.11	13.98	28.1			
		10/30/1997	8:50:00	5.18	13.91	26.4			
		10/30/1997	8:51:00	5.08	13.97	27.9			
		10/30/1997	8:52:00	5.12	13.95	30.4			
		10/30/1997	8:53:00	5.15	13.94	31.1			
		10/30/1997	8:54:00	5.17	13.92	29.6			
		10/30/1997	8:55:00	5.16	13.92	29.5			
		10/30/1997	8:56:00	5.20	13.88	31.3			
		10/30/1997	8:57:00	5.19	13.89	32.3	5.17	13.91	30.74
Port 1	Point 2	10/30/1997	8:58:00	5.15	13.93	33.3			
		10/30/1997	8:59:00	5.08	13.95	33.4			
		10/30/1997	9:00:00	5.10	13.95	33.9			
		10/30/1997	9:01:00	5.10	13.94	35.5			
		10/30/1997	9:02:00	5.26	13.85	36.7			
		10/30/1997	9:03:00	5.29	13.80	35.9			
		10/30/1997	9:04:00	5.26	13.81	35.8			
		10/30/1997	9:05:00	5.17	13.89	36.1			
		10/30/1997	9:06:00	5.19	13.89	36.2			
		10/30/1997	9:07:00	5.22	13.85	36.8	5.23	13.85	36.14
Port 1	Point 3	10/30/1997	9:08:00	5.13	13.90	32.5			
		10/30/1997	9:09:00	5.11	13.94	29.3			
		10/30/1997	9:10:00	5.06	13.94	28.5			
		10/30/1997	9:11:00	5.13	13.93	27.6			
		10/30/1997	9:12:00	5.16	13.90	27.0			
		10/30/1997	9:13:00	5.16	13.89	26.4			
		10/30/1997	9:14:00	5.21	13.86	25.4			
		10/30/1997	9:15:00	5.12	13.93	24.5			
		10/30/1997	9:16:00	5.14	13.91	24.0			
		10/30/1997	9:17:00	5.14	13.91	23.5	5.15	13.90	24.77
Port 1	Point 4	10/30/1997	9:18:00	5.21	13.84	21.9			
		10/30/1997	9:19:00	5.16	13.90	18.1			
		10/30/1997	9:20:00	5.00	14.02	16.0			
		10/30/1997	9:21:00	5.04	13.99	14.3			
		10/30/1997	9:22:00	5.12	13.91	12.8			
		10/30/1997	9:23:00	5.23	13.85	12.3			
		10/30/1997	9:24:00	5.35	13.77	12.3			
		10/30/1997	9:25:00	5.29	13.82	13.2			
		10/30/1997	9:26:00	5.27	13.83	13.8			
		10/30/1997	9:27:00	5.25	13.84	15.8	5.28	13.82	13.47
Port 1	Point 5	10/30/1997	9:28:00	5.15	13.90	26.0			
		10/30/1997	9:29:00	5.21	13.86	30.3			
		10/30/1997	9:30:00	5.26	13.80	31.7			
		10/30/1997	9:31:00	5.27	13.79	31.7			
		10/30/1997	9:32:00	5.21	13.82	31.5			
		10/30/1997	9:33:00	5.15	13.89	31.9			
		10/30/1997	9:34:00	5.12	13.89	32.2			
		10/30/1997	9:35:00	5.13	13.90	33.3			
		10/30/1997	9:36:00	5.18	13.88	34.1			
		10/30/1997	9:37:00	5.31	13.80	33.8	5.18	13.87	33.06
Port 1	Point 6	10/30/1997	9:38:00	5.30	13.82	28.0			
		10/30/1997	9:39:00	5.38	13.75	24.8			
		10/30/1997	9:40:00	5.28	13.81	20.2			
		10/30/1997	9:41:00	5.26	13.82	18.9			
		10/30/1997	9:42:00	5.16	13.89	21.7			
		10/30/1997	9:43:00	5.16	13.90	22.7			
		10/30/1997	9:44:00	5.28	13.80	22.9			
		10/30/1997	9:45:00	5.32	13.78	22.2			
		10/30/1997	9:46:00	5.34	13.76	22.3			
		10/30/1997	9:47:00	5.22	13.85	23.2	5.26	13.82	22.64

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Port 2	Point 1	10/30/1997	10:05:15	5.28	13.67	36.9			
		10/30/1997	10:06:15	5.30	13.70	40.2			
		10/30/1997	10:07:15	5.30	13.73	39.7			
		10/30/1997	10:08:15	5.30	13.72	38.6			
		10/30/1997	10:09:15	5.25	13.75	37.7			
		10/30/1997	10:10:15	5.25	13.77	36.8			
		10/30/1997	10:11:15	5.27	13.74	35.7			
		10/30/1997	10:12:15	5.32	13.72	34.4			
		10/30/1997	10:13:15	5.29	13.73	33.1			
		10/30/1997	10:14:15	5.30	13.73	32.1	5.28	13.74	34.42
Port 2	Point 2	10/30/1997	10:15:15	5.18	13.81	30.4			
		10/30/1997	10:16:15	5.25	13.75	30.0			
		10/30/1997	10:17:15	5.24	13.77	29.7			
		10/30/1997	10:18:15	5.17	13.82	29.9			
		10/30/1997	10:19:15	5.14	13.84	30.0			
		10/30/1997	10:20:15	5.23	13.79	29.8			
		10/30/1997	10:21:15	5.20	13.81	29.9			
		10/30/1997	10:22:15	5.30	13.74	29.8			
		10/30/1997	10:23:15	5.21	13.78	29.6			
		10/30/1997	10:24:15	5.20	13.79	30.1	5.23	13.78	29.84
Port 2	Point 3	10/30/1997	10:25:15	5.08	13.91	29.3			
		10/30/1997	10:26:15	5.13	13.85	29.0			
		10/30/1997	10:27:15	5.19	13.81	28.6			
		10/30/1997	10:28:15	5.26	13.76	28.4			
		10/30/1997	10:29:15	5.24	13.78	28.3			
		10/30/1997	10:30:15	5.29	13.74	28.2			
		10/30/1997	10:31:15	5.22	13.79	26.8			
		10/30/1997	10:32:15	5.16	13.83	26.6			
		10/30/1997	10:33:15	5.16	13.84	28.4			
		10/30/1997	10:34:15	5.25	13.77	28.8	5.21	13.79	27.77
Port 2	Point 4	10/30/1997	10:35:15	5.19	13.79	26.8			
		10/30/1997	10:36:15	5.10	13.87	25.0			
		10/30/1997	10:37:15	5.16	13.82	25.4			
		10/30/1997	10:38:15	5.18	13.81	27.2			
		10/30/1997	10:39:15	5.20	13.78	28.3			
		10/30/1997	10:40:15	5.20	13.78	27.3			
		10/30/1997	10:41:15	5.12	13.87	26.5			
		10/30/1997	10:42:15	5.23	13.77	27.0			
		10/30/1997	10:43:15	5.28	13.72	28.0			
		10/30/1997	10:44:15	5.21	13.77	28.4	5.21	13.78	27.45
Port 2	Point 5	10/30/1997	10:45:15	5.22	13.78	28.3			
		10/30/1997	10:46:15	5.18	13.80	28.3			
		10/30/1997	10:47:15	5.18	13.81	29.0			
		10/30/1997	10:48:15	5.24	13.77	29.3			
		10/30/1997	10:49:15	5.25	13.74	28.9			
		10/30/1997	10:50:15	5.16	13.82	28.1			
		10/30/1997	10:51:15	5.10	13.85	28.4			
		10/30/1997	10:52:15	5.26	13.75	29.3			
		10/30/1997	10:53:15	5.31	13.71	29.1			
		10/30/1997	10:54:15	5.23	13.77	28.9	5.21	13.78	28.76
Port 2	Point 6	10/30/1997	10:55:15	5.24	13.80	26.8			
		10/30/1997	10:56:15	5.18	13.86	24.3			
		10/30/1997	10:57:15	5.35	13.71	23.8			
		10/30/1997	10:58:15	5.27	13.74	23.6			
		10/30/1997	10:59:15	5.25	13.75	23.4			
		10/30/1997	11:00:15	5.29	13.73	23.3			
		10/30/1997	11:01:15	5.20	13.80	24.0			
		10/30/1997	11:02:15	5.29	13.73	23.9			
		10/30/1997	11:03:15	5.27	13.73	22.3			
		10/30/1997	11:04:15	5.32	13.73	22.0	5.27	13.74	23.10

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Port 3	Point 1	10/30/1997	11:18:15	5.10	13.76	25.3			
		10/30/1997	11:19:15	5.30	13.64	33.0			
		10/30/1997	11:20:15	5.33	13.67	35.4			
		10/30/1997	11:21:15	5.27	13.72	36.4			
		10/30/1997	11:22:15	5.14	13.81	37.4			
		10/30/1997	11:23:15	5.19	13.79	38.1			
		10/30/1997	11:24:15	5.18	13.78	38.2			
		10/30/1997	11:25:15	5.08	13.86	39.2			
		10/30/1997	11:26:15	5.17	13.82	39.6			
		10/30/1997	11:27:15	5.10	13.84	39.5	5.14	13.82	38.93
Port 3	Point 2	10/30/1997	11:28:15	5.16	13.82	39.4			
		10/30/1997	11:29:15	5.12	13.84	38.7			
		10/30/1997	11:30:15	5.13	13.82	38.7			
		10/30/1997	11:31:15	5.18	13.78	39.2			
		10/30/1997	11:32:15	5.21	13.75	38.8			
		10/30/1997	11:33:15	5.21	13.79	37.8			
		10/30/1997	11:34:15	5.29	13.74	37.0			
		10/30/1997	11:35:15	5.19	13.78	38.7			
		10/30/1997	11:36:15	5.20	13.79	39.8			
		10/30/1997	11:37:15	5.17	13.78	38.4	5.21	13.78	38.33
Port 3	Point 3	10/30/1997	11:38:15	5.23	13.77	35.1			
		10/30/1997	11:39:15	5.17	13.82	35.4			
		10/30/1997	11:40:15	5.14	13.83	38.0			
		10/30/1997	11:41:15	5.23	13.77	38.6			
		10/30/1997	11:42:15	5.25	13.74	36.6			
		10/30/1997	11:43:15	5.20	13.75	35.5			
		10/30/1997	11:44:15	5.22	13.74	36.8			
		10/30/1997	11:45:15	5.16	13.82	38.6			
		10/30/1997	11:46:15	5.18	13.82	39.3			
		10/30/1997	11:47:15	5.23	13.78	38.7	5.20	13.78	37.75
Port 3	Point 4	10/30/1997	11:48:15	5.29	13.73	38.2			
		10/30/1997	11:49:15	5.27	13.75	39.0			
		10/30/1997	11:50:15	5.18	13.80	40.0			
		10/30/1997	11:51:15	5.20	13.79	39.7			
		10/30/1997	11:52:15	5.25	13.75	38.7			
		10/30/1997	11:53:15	5.25	13.73	38.3			
		10/30/1997	11:54:15	5.23	13.76	39.2			
		10/30/1997	11:55:15	5.25	13.75	39.4			
		10/30/1997	11:56:15	5.25	13.75	38.3			
		10/30/1997	11:57:15	5.15	13.78	36.3	5.23	13.75	38.30
Port 3	Point 5	10/30/1997	11:58:15	5.32	13.68	35.6			
		10/30/1997	11:59:15	5.29	13.70	36.8			
		10/30/1997	12:00:15	5.19	13.76	36.6			
		10/30/1997	12:01:15	5.17	13.77	35.3			
		10/30/1997	12:02:15	5.18	13.81	34.0			
		10/30/1997	12:03:15	5.23	13.76	32.5			
		10/30/1997	12:04:15	5.27	13.70	31.2			
		10/30/1997	12:05:15	5.36	13.62	30.6			
		10/30/1997	12:06:15	5.24	13.70	30.7			
		10/30/1997	12:07:15	5.17	13.77	30.4	5.25	13.71	31.08
Port 3	Point 6	10/30/1997	12:08:15	5.19	13.76	30.5			
		10/30/1997	12:09:15	5.33	13.66	32.9			
		10/30/1997	12:10:15	5.32	13.66	32.4			
		10/30/1997	12:11:15	5.36	13.64	32.3			
		10/30/1997	12:12:15	5.30	13.69	33.8			
		10/30/1997	12:13:15	5.37	13.64	35.3			
		10/30/1997	12:14:15	5.33	13.67	35.6			
		10/30/1997	12:15:15	5.28	13.71	35.0			
		10/30/1997	12:16:15	5.28	13.69	34.8			
		10/30/1997	12:17:15	5.34	13.63	34.8	5.32	13.67	35.10

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Port 4	Point 1	10/30/1997	12:40:30	5.26	13.73	29.0			
		10/30/1997	12:41:30	5.29	13.72	30.3			
		10/30/1997	12:42:30	5.25	13.74	30.6			
		10/30/1997	12:43:30	5.12	13.83	31.2			
		10/30/1997	12:44:30	5.20	13.80	31.8			
		10/30/1997	12:45:30	5.17	13.80	31.8			
		10/30/1997	12:46:30	5.14	13.83	32.3			
		10/30/1997	12:47:30	5.02	13.92	32.6			
		10/30/1997	12:48:30	5.12	13.87	31.9			
		10/30/1997	12:49:30	5.10	13.91	29.6	5.11	13.87	31.61
Port 4	Point 2	10/30/1997	12:50:30	5.26	13.77	29.2			
		10/30/1997	12:51:30	5.29	13.73	28.2			
		10/30/1997	12:52:30	5.22	13.77	28.1			
		10/30/1997	12:53:30	5.14	13.82	28.2			
		10/30/1997	12:54:30	5.21	13.80	28.2			
		10/30/1997	12:55:30	5.17	13.79	28.3			
		10/30/1997	12:56:30	5.26	13.75	28.0			
		10/30/1997	12:57:30	5.28	13.73	26.8			
		10/30/1997	12:58:30	5.28	13.76	27.1			
		10/30/1997	12:59:30	5.11	13.85	28.3	5.22	13.78	27.70
Port 4	Point 3	10/30/1997	13:00:30	5.19	13.80	27.7			
		10/30/1997	13:01:30	5.30	13.75	25.9			
		10/30/1997	13:02:30	5.29	13.71	25.8			
		10/30/1997	13:03:30	5.23	13.76	29.1			
		10/30/1997	13:04:30	5.17	13.80	30.3			
		10/30/1997	13:05:30	5.20	13.78	29.9			
		10/30/1997	13:06:30	5.22	13.77	28.3			
		10/30/1997	13:07:30	5.19	13.77	28.1			
		10/30/1997	13:08:30	5.28	13.70	29.2			
		10/30/1997	13:09:30	5.29	13.72	29.7	5.23	13.75	29.05
Port 4	Point 4	10/30/1997	13:10:30	5.27	13.72	29.2			
		10/30/1997	13:11:30	5.36	13.65	28.6			
		10/30/1997	13:12:30	5.31	13.68	28.5			
		10/30/1997	13:13:30	5.29	13.72	28.6			
		10/30/1997	13:14:30	5.30	13.70	28.0			
		10/30/1997	13:15:30	5.21	13.76	26.8			
		10/30/1997	13:16:30	5.22	13.75	26.3			
		10/30/1997	13:17:30	5.24	13.74	26.6			
		10/30/1997	13:18:30	5.30	13.70	26.8			
		10/30/1997	13:19:30	5.25	13.74	27.5	5.24	13.74	26.81
Port 4	Point 5	10/30/1997	13:20:30	5.22	13.73	28.2			
		10/30/1997	13:21:30	5.22	13.75	28.4			
		10/30/1997	13:22:30	5.20	13.75	29.3			
		10/30/1997	13:23:30	5.27	13.69	29.5			
		10/30/1997	13:24:30	5.32	13.64	28.6			
		10/30/1997	13:25:30	5.31	13.66	28.8			
		10/30/1997	13:26:30	5.25	13.74	29.0			
		10/30/1997	13:27:30	5.19	13.77	29.7			
		10/30/1997	13:28:30	5.28	13.66	32.0			
		10/30/1997	13:29:30	5.38	13.62	38.4	5.28	13.69	31.59
Port 4	Point 6	10/30/1997	13:30:30	5.41	13.61	39.9			
		10/30/1997	13:31:30	5.30	13.64	39.8			
		10/30/1997	13:32:30	5.26	13.70	40.6			
		10/30/1997	13:33:30	5.33	13.66	41.0			
		10/30/1997	13:34:30	5.20	13.74	42.0			
		10/30/1997	13:35:30	5.38	13.62	41.9			
		10/30/1997	13:36:30	5.47	13.55	40.6			
		10/30/1997	13:37:30	5.42	13.58	40.8			
		10/30/1997	13:38:30	5.36	13.63	40.7			
		10/30/1997	13:39:30	5.32	13.65	40.8	5.39	13.60	40.96

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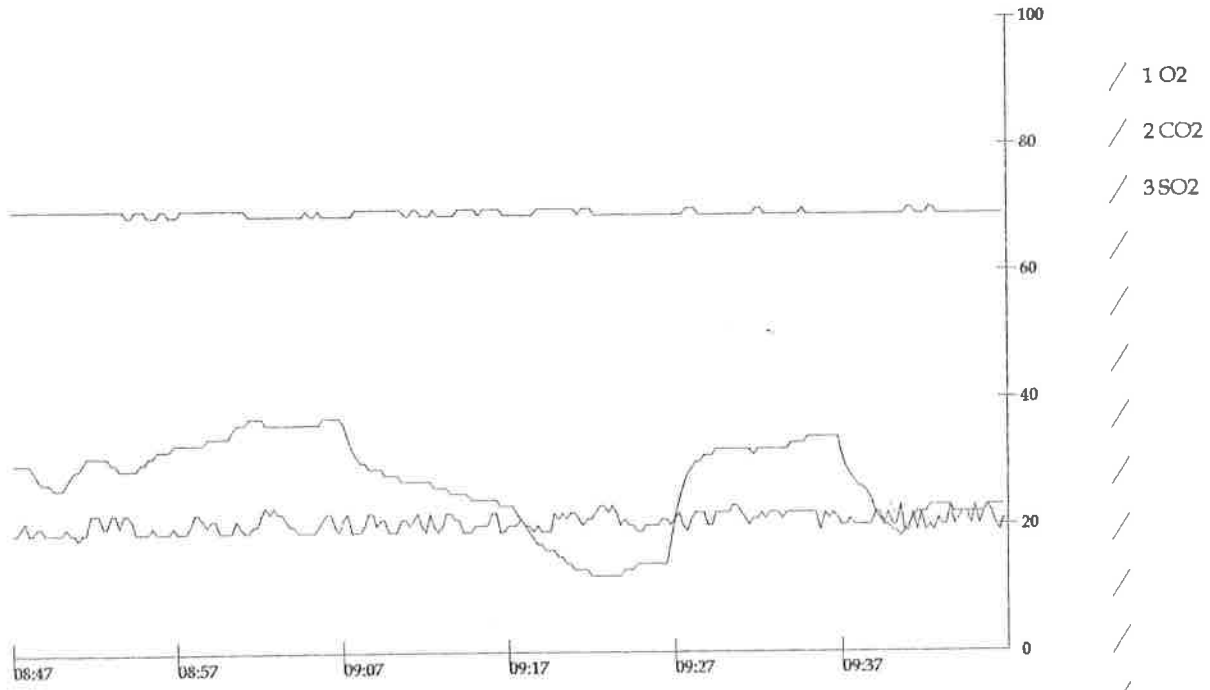
Port 5	Point 1	10/30/1997	14:00:15	5.18	13.78	35.1			
		10/30/1997	14:01:15	5.13	13.82	36.4			
		10/30/1997	14:02:15	5.08	13.86	37.2			
		10/30/1997	14:03:15	5.26	13.74	36.9			
		10/30/1997	14:04:15	5.23	13.75	37.5			
		10/30/1997	14:05:15	5.24	13.76	37.5			
		10/30/1997	14:06:15	5.16	13.80	38.2			
		10/30/1997	14:07:15	5.19	13.81	38.2			
		10/30/1997	14:08:15	5.23	13.78	37.7			
		10/30/1997	14:09:15	5.22	13.77	37.5	5.21	13.78	37.83
Port 5	Point 2	10/30/1997	14:10:15	5.15	13.80	37.3			
		10/30/1997	14:11:15	5.12	13.86	33.0			
		10/30/1997	14:12:15	5.14	13.84	30.4			
		10/30/1997	14:13:15	5.14	13.81	29.4			
		10/30/1997	14:14:15	5.13	13.83	29.4			
		10/30/1997	14:15:15	5.17	13.80	29.4			
		10/30/1997	14:16:15	5.11	13.86	29.3			
		10/30/1997	14:17:15	5.14	13.84	29.2			
		10/30/1997	14:18:15	5.13	13.83	28.4			
		10/30/1997	14:19:15	5.16	13.82	22.1	5.14	13.83	27.70
Port 5	Point 3	10/30/1997	14:20:15	5.15	13.83	19.0			
		10/30/1997	14:21:15	5.11	13.87	18.1			
		10/30/1997	14:22:15	5.08	13.84	18.2			
		10/30/1997	14:23:15	5.08	13.85	18.0			
		10/30/1997	14:24:15	5.00	13.89	17.7			
		10/30/1997	14:25:15	5.00	13.95	15.5			
		10/30/1997	14:26:15	5.05	13.86	14.8			
		10/30/1997	14:27:15	5.14	13.80	15.8			
		10/30/1997	14:28:15	5.17	13.80	16.6			
		10/30/1997	14:29:15	5.19	13.78	16.3	5.11	13.84	15.80
Port 5	Point 4	10/30/1997	14:30:15	5.17	13.81	14.7			
		10/30/1997	14:31:15	5.05	13.88	15.0			
		10/30/1997	14:32:15	5.11	13.82	16.9			
		10/30/1997	14:33:15	5.14	13.82	17.3			
		10/30/1997	14:34:15	5.14	13.83	16.7			
		10/30/1997	14:35:15	5.15	13.80	15.3			
		10/30/1997	14:36:15	5.06	13.84	15.7			
		10/30/1997	14:37:15	5.09	13.85	16.9			
		10/30/1997	14:38:15	5.12	13.83	17.1			
		10/30/1997	14:39:15	5.17	13.78	17.3	5.12	13.82	16.44
Port 5	Point 5	10/30/1997	14:40:15	5.29	13.69	24.9			
		10/30/1997	14:41:15	5.12	13.80	28.8			
		10/30/1997	14:42:15	5.18	13.78	30.2			
		10/30/1997	14:43:15	5.20	13.76	30.7			
		10/30/1997	14:44:15	5.17	13.78	30.7			
		10/30/1997	14:45:15	5.08	13.84	31.2			
		10/30/1997	14:46:15	5.03	13.89	32.4			
		10/30/1997	14:47:15	5.13	13.82	32.7			
		10/30/1997	14:48:15	5.19	13.77	32.1			
		10/30/1997	14:49:15	5.15	13.78	33.2	5.12	13.82	32.33
Port 5	Point 6	10/30/1997	14:50:15	5.16	13.77	42.6			
		10/30/1997	14:51:15	5.19	13.75	48.2			
		10/30/1997	14:52:15	5.17	13.74	48.6			
		10/30/1997	14:53:15	5.11	13.79	47.8			
		10/30/1997	14:54:15	5.23	13.71	47.2			
		10/30/1997	14:55:15	5.34	13.65	46.1			
		10/30/1997	14:56:15	5.18	13.76	45.7			
		10/30/1997	14:57:15	5.28	13.66	45.2			
		10/30/1997	14:58:15	5.31	13.64	44.3			
		10/30/1997	14:59:15	5.29	13.66	44.4	5.28	13.67	45.14

Appendix A

Point-by-Point Detailed Measurement Results

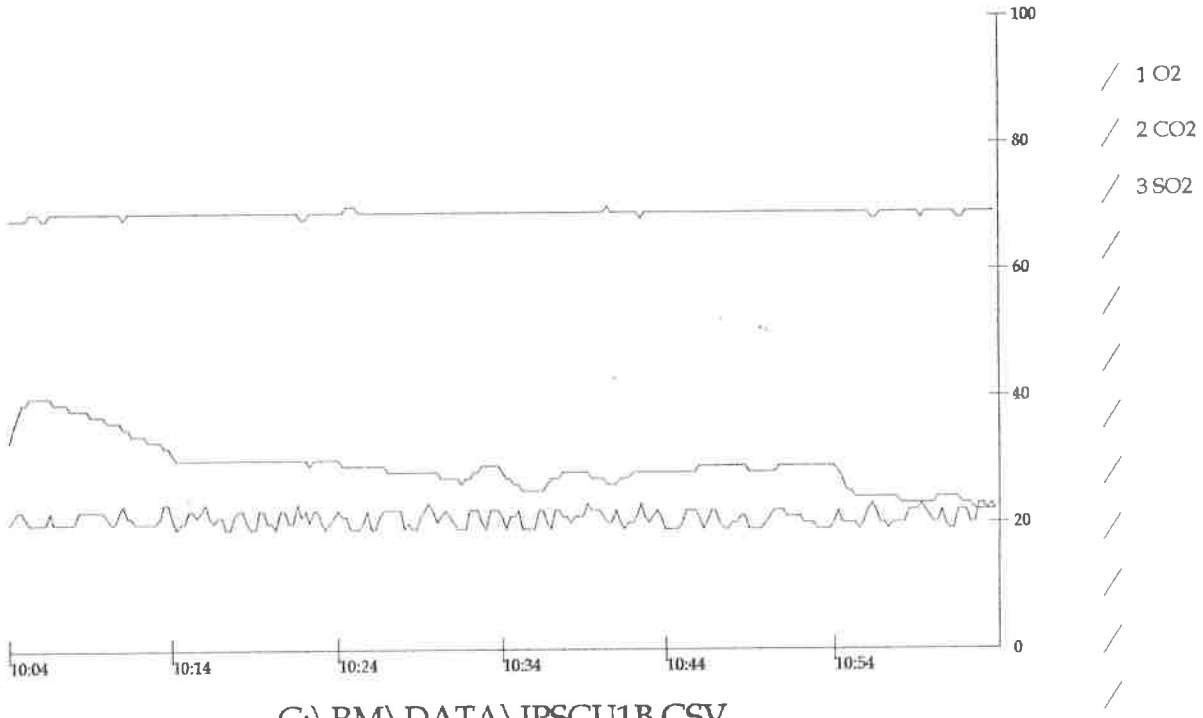
2IP12-000030

09:47:30 10-31-2001



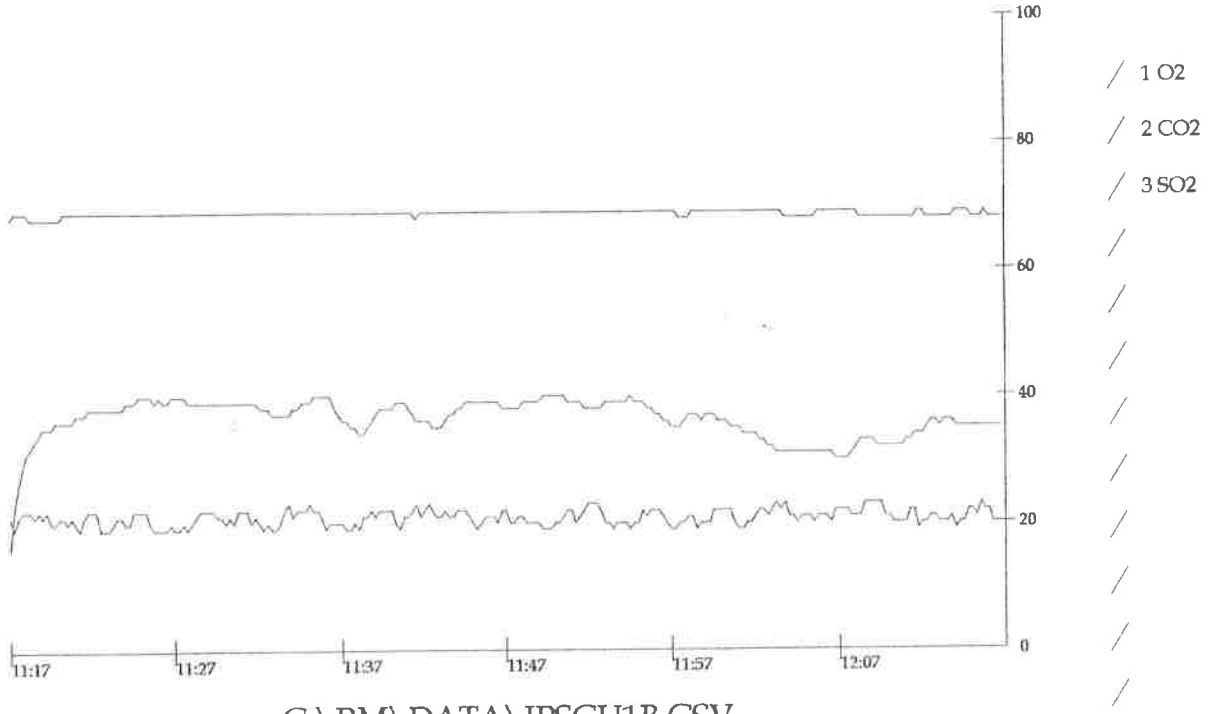
C:\RM\DATA\IPSCU1B.CSV

11:04:45 10-31-2001



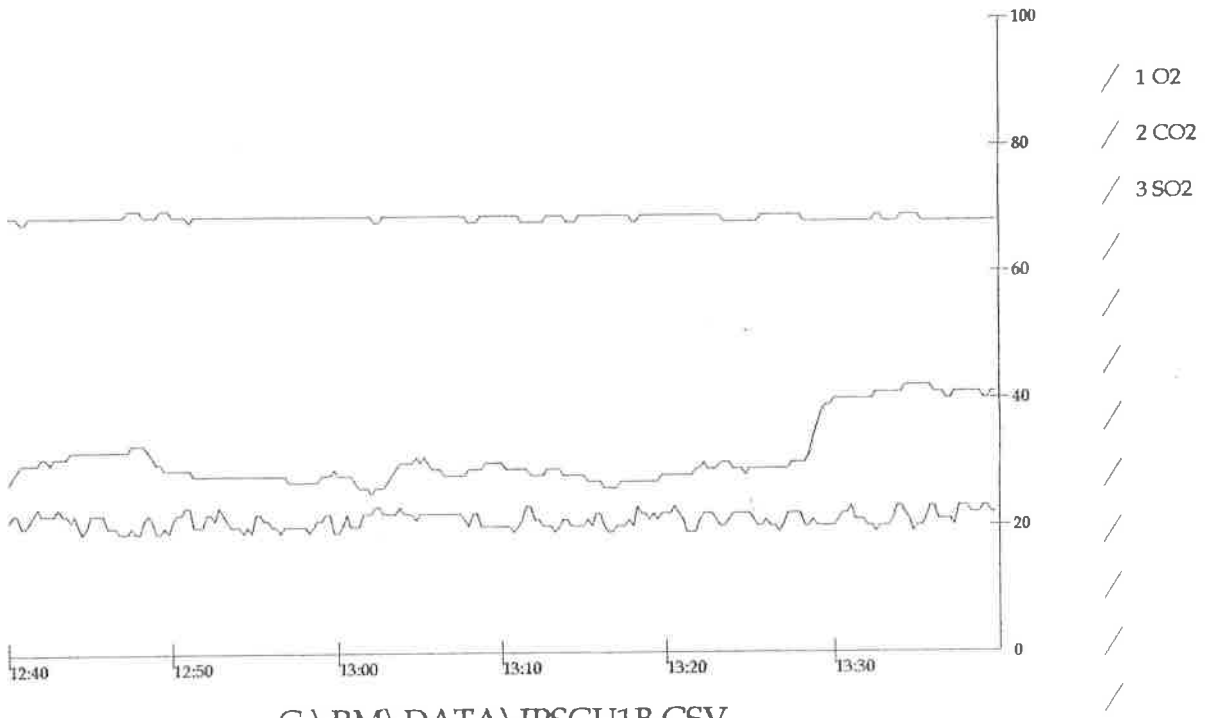
C:\RM\DATA\IPSCU1B.CSV

12:17:45 10-31-2001



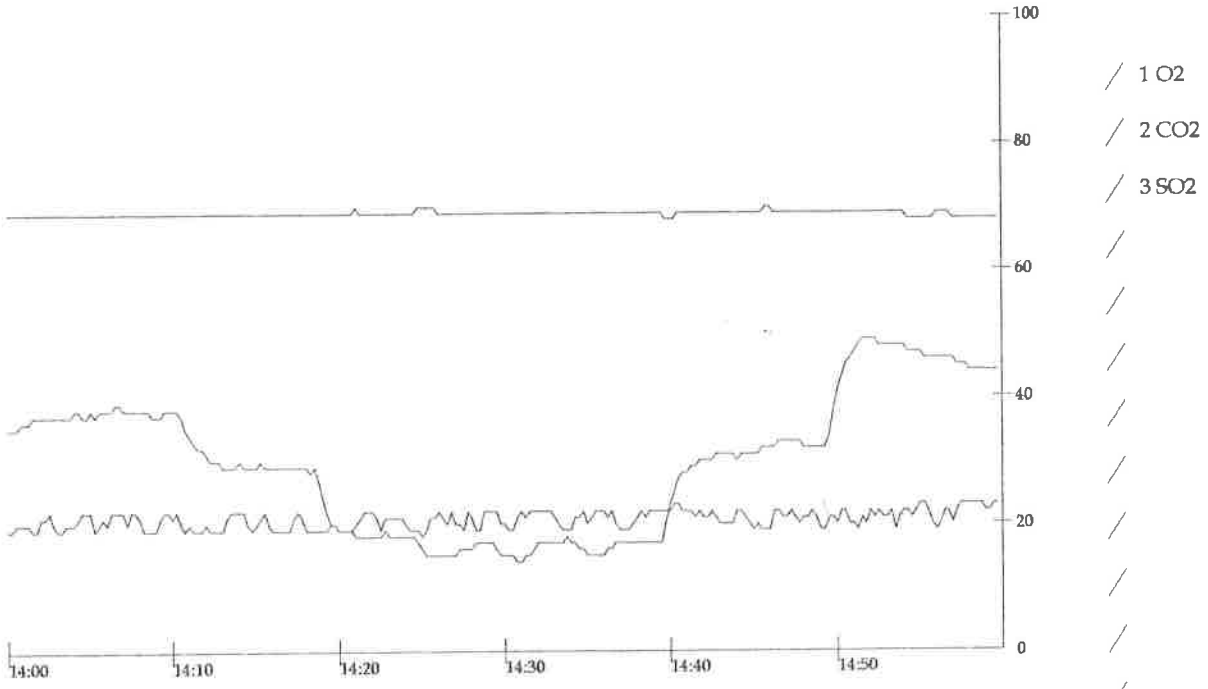
C:\RM\DATA\IPSCU1B.CSV

13:40:00 10-31-2001



C:\RM\DATA\IPSCU1B.CSV

15:00:00 10-31-2001



C:\RM\DATA\IPSCU1B.CSV

Intermountain Power Project
SO2 Stratification
Unit 2 Scrubber Module D
October 31, 2001

		Date	Time	1 O2	2 CO2	3 SO2			
Port 1	Point 1	11/1/01	9:00:15	6.01	13.20	40.2			
		11/1/01	9:01:15	6.11	13.15	40.1			
		11/1/01	9:02:15	6.00	13.23	40.5			
		11/1/01	9:03:15	6.00	13.22	41.7			
		11/1/01	9:04:15	6.08	13.16	41.5			
		11/1/01	9:05:15	6.00	13.25	40.2			
		11/1/01	9:06:15	5.86	13.32	39.9			
		11/1/01	9:07:15	5.91	13.32	42.1			
		11/1/01	9:08:15	5.99	13.25	44.2			
		11/1/01	9:09:15	5.90	13.33	44.5	5.93	13.29	42.15
Port 1	Point 2	11/1/01	9:10:15	5.82	13.38	36.5			
		11/1/01	9:11:15	5.79	13.41	29.7			
		11/1/01	9:12:15	5.89	13.33	27.7			
		11/1/01	9:13:15	5.98	13.23	26.6			
		11/1/01	9:14:15	6.03	13.22	25.7			
		11/1/01	9:15:15	5.85	13.31	24.9			
		11/1/01	9:16:15	5.97	13.24	25.0			
		11/1/01	9:17:15	5.93	13.28	26.0			
		11/1/01	9:18:15	6.05	13.19	26.1			
		11/1/01	9:19:15	6.04	13.17	26.8	5.97	13.24	25.76
Port 1	Point 3	11/1/01	9:20:15	6.07	13.15	29.1			
		11/1/01	9:21:15	5.99	13.19	32.2			
		11/1/01	9:22:15	6.02	13.22	33.6			
		11/1/01	9:23:15	6.01	13.21	31.8			
		11/1/01	9:24:15	5.98	13.22	29.4			
		11/1/01	9:25:15	6.01	13.20	27.9			
		11/1/01	9:26:15	5.92	13.25	27.8			
		11/1/01	9:27:15	5.93	13.26	27.6			
		11/1/01	9:28:15	5.98	13.23	27.3			
		11/1/01	9:29:15	5.97	13.19	27.1	5.96	13.23	27.55
Port 1	Point 4	11/1/01	9:30:15	5.96	13.21	21.9			
		11/1/01	9:31:15	5.92	13.27	19.3			
		11/1/01	9:32:15	6.01	13.20	18.3			
		11/1/01	9:33:15	6.02	13.17	17.9			
		11/1/01	9:34:15	6.11	13.12	17.4			
		11/1/01	9:35:15	6.13	13.09	16.9			
		11/1/01	9:36:15	6.10	13.09	16.9			
		11/1/01	9:37:15	6.20	13.01	17.2			
		11/1/01	9:38:15	6.16	13.05	17.2			
		11/1/01	9:39:15	6.21	13.01	16.8	6.16	13.05	17.01
Port 1	Point 5	11/1/01	9:40:15	6.21	12.99	16.2			
		11/1/01	9:41:15	6.21	12.98	15.6			
		11/1/01	9:42:15	6.15	13.03	15.0			
		11/1/01	9:43:15	6.17	13.02	13.9			
		11/1/01	9:44:15	6.21	12.99	13.3			
		11/1/01	9:45:15	6.13	13.07	13.3			
		11/1/01	9:46:15	6.03	13.12	13.4			
		11/1/01	9:47:15	6.09	13.09	12.3			
		11/1/01	9:48:15	6.13	13.05	10.9			
		11/1/01	9:49:15	6.19	13.01	9.9	6.11	13.07	11.95
Port 1	Point 6	11/1/01	9:50:15	6.27	12.92	8.4			
		11/1/01	9:51:15	6.18	13.02	7.1			
		11/1/01	9:52:15	6.12	13.06	6.7			
		11/1/01	9:53:15	6.18	13.00	6.6			
		11/1/01	9:54:15	6.18	12.99	6.7			
		11/1/01	9:55:15	6.21	12.97	6.9			
		11/1/01	9:56:15	6.12	13.05	6.7			
		11/1/01	9:57:15	6.00	13.14	6.4			
		11/1/01	9:58:15	6.06	13.11	6.5			
		11/1/01	9:59:15	6.13	13.02	6.9	6.10	13.06	6.68

Intermountain Power Project
SO2 Stratification
Unit 2 Scrubber Module D
October 31, 2001

Port 2	Point 1	11/1/01	10:23:15	5.91	13.21	44.3			
		11/1/01	10:24:15	5.91	13.22	44.1			
		11/1/01	10:25:15	5.88	13.22	42.4			
		11/1/01	10:26:15	5.97	13.17	44.6			
		11/1/01	10:27:15	5.90	13.22	44.9			
		11/1/01	10:28:15	5.95	13.19	45.8			
		11/1/01	10:29:15	5.86	13.25	40.8			
		11/1/01	10:30:15	5.88	13.23	38.4			
		11/1/01	10:31:15	5.91	13.21	42.2			
		11/1/01	10:32:15	6.04	13.13	40.5	5.93	13.20	41.53
Port 2	Point 2	11/1/01	10:33:15	6.03	13.12	39.8			
		11/1/01	10:34:15	5.97	13.15	36.5			
		11/1/01	10:35:15	5.96	13.17	35.5			
		11/1/01	10:36:15	5.99	13.15	37.0			
		11/1/01	10:37:15	5.94	13.20	39.4			
		11/1/01	10:38:15	5.96	13.17	40.1			
		11/1/01	10:39:15	5.96	13.17	39.6			
		11/1/01	10:40:15	5.94	13.17	39.4			
		11/1/01	10:41:15	5.96	13.15	39.5			
		11/1/01	10:42:15	5.89	13.19	39.8	5.94	13.17	39.69
Port 2	Point 3	11/1/01	10:43:15	6.02	13.11	34.2			
		11/1/01	10:44:15	6.02	13.09	31.2			
		11/1/01	10:45:15	6.06	13.06	30.2			
		11/1/01	10:46:15	5.98	13.13	29.4			
		11/1/01	10:47:15	5.91	13.19	28.5			
		11/1/01	10:48:15	5.93	13.19	26.6			
		11/1/01	10:49:15	5.98	13.14	26.9			
		11/1/01	10:50:15	6.04	13.07	24.9			
		11/1/01	10:51:15	6.03	13.10	23.8			
		11/1/01	10:52:15	6.05	13.07	22.2	6.01	13.11	24.88
Port 2	Point 4	11/1/01	10:53:15	6.03	13.07	20.7			
		11/1/01	10:54:15	6.00	13.10	18.5			
		11/1/01	10:55:15	5.93	13.13	17.0			
		11/1/01	10:56:15	5.97	13.08	16.4			
		11/1/01	10:57:15	5.99	13.07	16.2			
		11/1/01	10:58:15	5.92	13.12	17.0			
		11/1/01	10:59:15	5.95	13.10	16.3			
		11/1/01	11:00:15	5.95	13.10	15.9			
		11/1/01	11:01:15	5.93	13.13	16.3			
		11/1/01	11:02:15	5.79	13.23	17.0	5.91	13.14	16.49
Port 2	Point 5	11/1/01	11:03:15	5.80	13.23	17.7			
		11/1/01	11:04:15	5.90	13.14	16.7			
		11/1/01	11:05:15	6.00	13.07	16.1			
		11/1/01	11:06:15	5.92	13.10	15.3			
		11/1/01	11:07:15	5.94	13.07	13.8			
		11/1/01	11:08:15	5.97	13.04	14.0			
		11/1/01	11:09:15	6.05	12.98	15.3			
		11/1/01	11:10:15	5.95	13.06	15.9			
		11/1/01	11:11:15	5.98	13.05	14.7			
		11/1/01	11:12:15	6.10	12.95	11.6	6.01	13.02	14.31
Port 2	Point 6	11/1/01	11:13:15	5.95	13.05	10.7			
		11/1/01	11:14:15	5.92	13.09	11.0			
		11/1/01	11:15:15	5.94	13.07	10.8			
		11/1/01	11:16:15	5.99	13.01	10.3			
		11/1/01	11:17:15	6.01	12.98	10.0			
		11/1/01	11:18:15	6.04	12.97	10.3			
		11/1/01	11:19:15	6.09	12.93	10.8			
		11/1/01	11:20:15	5.92	13.04	10.9			
		11/1/01	11:21:15	5.95	13.02	10.5			
		11/1/01	11:22:15	6.01	12.96	10.6	6.00	12.99	10.63

Intermountain Power Project
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Port 3	Point 1	11/1/01							
		11/1/01	11:38:45	5.85	12.99	35.0			
		11/1/01	11:39:45	5.75	13.11	38.0			
		11/1/01	11:40:45	5.72	13.16	38.1			
		11/1/01	11:41:45	5.76	13.10	36.3			
		11/1/01	11:42:45	5.99	12.98	32.2			
		11/1/01	11:43:45	5.87	13.05	30.2			
		11/1/01	11:44:45	5.97	12.99	30.6			
		11/1/01	11:45:45	5.91	13.02	30.8			
		11/1/01	11:46:45	5.86	13.03	32.2	5.92	13.01	31.22
Port 3	Point 2	11/1/01	11:47:45	5.83	13.08	31.6			
		11/1/01	11:48:45	5.85	13.06	30.5			
		11/1/01	11:49:45	5.84	13.05	30.0			
		11/1/01	11:50:45	5.80	13.11	31.1			
		11/1/01	11:51:45	5.82	13.10	30.9			
		11/1/01	11:52:45	5.83	13.09	32.7			
		11/1/01	11:53:45	5.81	13.08	33.8			
		11/1/01	11:54:45	5.73	13.17	36.6			
		11/1/01	11:55:45	5.76	13.13	37.2			
		11/1/01	11:56:45	5.88	13.04	35.8	5.80	13.10	35.20
Port 3	Point 3	11/1/01	11:57:45	5.85	13.05	34.9			
		11/1/01	11:58:45	5.77	13.10	34.6			
		11/1/01	11:59:45	5.82	13.06	35.1			
		11/1/01	12:00:45	5.90	13.00	32.6			
		11/1/01	12:01:45	5.88	13.00	27.8			
		11/1/01	12:02:45	5.79	13.10	24.1			
		11/1/01	12:03:45	5.88	13.03	24.1			
		11/1/01	12:04:45	5.86	13.02	25.6			
		11/1/01	12:05:45	5.86	13.02	25.2			
		11/1/01	12:06:45	5.80	13.08	26.4	5.84	13.05	25.07
Port 3	Point 4	11/1/01	12:07:45	5.82	13.03	26.7			
		11/1/01	12:08:45	5.74	13.12	27.9			
		11/1/01	12:09:45	5.78	13.09	30.1			
		11/1/01	12:10:45	5.69	13.16	30.5			
		11/1/01	12:11:45	5.71	13.15	30.9			
		11/1/01	12:12:45	5.76	13.09	31.4			
		11/1/01	12:13:45	5.82	13.05	31.0			
		11/1/01	12:14:45	5.83	13.06	31.6			
		11/1/01	12:15:45	5.75	13.09	32.2			
		11/1/01	12:16:45	5.77	13.06	32.5	5.79	13.07	31.72
Port 3	Point 5	10/30/97	12:17:45	5.84	12.99	31.4			
		10/30/97	12:18:45	5.84	13.04	29.7			
		10/30/97	12:19:45	5.79	13.05	29.0			
		10/30/97	12:20:45	5.82	13.03	29.3			
		10/30/97	12:21:45	5.86	13.01	29.4			
		10/30/97	12:22:45	5.83	13.05	30.1			
		10/30/97	12:23:45	5.78	13.07	30.7			
		10/30/97	12:24:45	5.79	13.07	31.1			
		10/30/97	12:25:45	5.86	13.02	30.8			
		10/30/97	12:26:45	5.88	13.00	28.0	5.83	13.04	30.15
Port 3	Point 6	11/1/01	12:27:45	5.94	12.93	27.3			
		11/1/01	12:28:45	5.90	12.96	29.8			
		11/1/01	12:29:45	5.95	12.91	30.9			
		11/1/01	12:30:45	5.90	12.95	30.4			
		11/1/01	12:31:45	5.85	12.99	28.8			
		11/1/01	12:32:45	5.87	12.98	29.2			
		11/1/01	12:33:45	5.89	12.96	30.9			
		11/1/01	12:34:45	5.98	12.88	31.2			
		11/1/01	12:35:45	5.89	12.94	30.0			
		11/1/01	12:36:45	5.83	13.02	28.9	5.89	12.96	30.03

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Port 4	Point 1	11/1/01							
		11/1/01	12:51:00	5.77	12.95	53.2			
		11/1/01	12:52:00	5.75	13.03	57.9			
		11/1/01	12:53:00	5.78	13.02	59.3			
		11/1/01	12:54:00	5.78	13.02	58.8			
		11/1/01	12:55:00	5.70	13.04	58.3			
		11/1/01	12:56:00	5.73	13.07	56.8			
		11/1/01	12:57:00	5.84	12.98	57.3			
		11/1/01	12:58:00	5.82	12.97	58.6			
		11/1/01	12:59:00	5.81	12.99	53.2	5.78	13.01	56.84
Port 4	Point 2	11/1/01	13:00:00	5.80	13.03	48.1			
		11/1/01	13:01:00	5.81	13.03	48.3			
		11/1/01	13:02:00	5.82	12.97	44.6			
		11/1/01	13:03:00	5.78	13.03	43.1			
		11/1/01	13:04:00	5.69	13.13	42.3			
		11/1/01	13:05:00	5.73	13.06	42.5			
		11/1/01	13:06:00	5.76	13.03	44.1			
		11/1/01	13:07:00	5.64	13.12	47.0			
		11/1/01	13:08:00	5.64	13.12	46.0			
		11/1/01	13:09:00	5.76	13.06	39.6	5.71	13.08	43.83
Port 4	Point 3	11/1/01	13:10:00	5.82	13.01	35.9			
		11/1/01	13:11:00	5.77	13.04	38.7			
		11/1/01	13:12:00	5.74	13.04	38.6			
		11/1/01	13:13:00	5.76	13.02	35.4			
		11/1/01	13:14:00	5.83	13.00	33.1			
		11/1/01	13:15:00	5.80	13.02	34.1			
		11/1/01	13:16:00	5.71	13.08	35.8			
		11/1/01	13:17:00	5.67	13.13	35.9			
		11/1/01	13:18:00	5.80	13.00	34.0			
		11/1/01	13:19:00	5.87	12.95	32.6	5.77	13.03	34.47
Port 4	Point 4	11/1/01	13:20:00	5.83	12.98	34.1			
		11/1/01	13:21:00	5.74	13.02	35.8			
		11/1/01	13:22:00	5.84	12.97	34.7			
		11/1/01	13:23:00	5.74	13.03	34.8			
		11/1/01	13:24:00	5.76	13.01	34.5			
		11/1/01	13:25:00	5.78	13.02	34.6			
		11/1/01	13:26:00	5.82	12.99	35.1			
		11/1/01	13:27:00	5.78	13.01	34.8			
		11/1/01	13:28:00	5.73	13.05	34.1			
		11/1/01	13:29:00	5.71	13.04	33.8	5.76	13.02	34.47
Port 4	Point 5	11/1/01	13:30:00	5.79	13.01	32.8			
		11/1/01	13:31:00	5.77	13.03	32.7			
		11/1/01	13:32:00	5.77	13.03	32.5			
		11/1/01	13:33:00	5.70	13.06	32.0			
		11/1/01	13:34:00	5.78	13.03	32.7			
		11/1/01	13:35:00	5.74	13.03	32.7			
		11/1/01	13:36:00	5.79	13.01	32.3			
		11/1/01	13:37:00	5.73	13.04	32.2			
		11/1/01	13:38:00	5.74	13.02	31.7			
		11/1/01	13:39:00	5.87	12.92	32.0	5.77	13.01	32.20
Port 4	Point 6	11/1/01	13:40:00	5.88	12.94	32.2			
		11/1/01	13:41:00	5.81	13.00	31.5			
		11/1/01	13:42:00	5.88	12.93	30.9			
		11/1/01	13:43:00	5.97	12.82	30.5			
		11/1/01	13:44:00	5.95	12.85	30.9			
		11/1/01	13:45:00	5.87	12.94	31.6			
		11/1/01	13:46:00	5.99	12.84	31.7			
		11/1/01	13:47:00	5.92	12.90	31.8			
		11/1/01	13:48:00	5.93	12.89	32.5			
		11/1/01	13:49:00	5.95	12.88	32.7	5.93	12.89	32.07

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Unit 2 Scrubber Module D
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Port 5	Point 1	11/1/01							
		11/1/01	14:04:00	5.63	13.10	14.9			
		11/1/01	14:05:00	5.63	13.11	14.8			
		11/1/01	14:06:00	5.57	13.17	14.7			
		11/1/01	14:07:00	5.61	13.15	16.2			
		11/1/01	14:08:00	5.52	13.24	16.9			
		11/1/01	14:09:00	5.64	13.13	15.9			
		11/1/01	14:10:00	5.62	13.15	15.0			
		11/1/01	14:11:00	5.62	13.15	15.7			
		11/1/01	14:12:00	5.72	13.05	20.8	5.62	13.14	16.88
Port 5	Point 2	11/1/01	14:13:00	5.67	13.07	24.8			
		11/1/01	14:14:00	5.58	13.17	27.3			
		11/1/01	14:15:00	5.59	13.15	27.9			
		11/1/01	14:16:00	5.69	13.10	28.5			
		11/1/01	14:17:00	5.76	13.03	27.9			
		11/1/01	14:18:00	5.72	13.04	28.5			
		11/1/01	14:19:00	5.65	13.09	28.5			
		11/1/01	14:20:00	5.66	13.13	28.6			
		11/1/01	14:21:00	5.71	13.05	27.6			
		11/1/01	14:22:00	5.88	12.92	25.4	5.72	13.05	27.73
Port 5	Point 3	11/1/01	14:23:00	5.85	12.94	20.3			
		11/1/01	14:24:00	5.68	13.06	19.3			
		11/1/01	14:25:00	5.80	12.99	19.0			
		11/1/01	14:26:00	5.75	13.05	19.1			
		11/1/01	14:27:00	5.71	13.04	18.9			
		11/1/01	14:28:00	5.70	13.04	19.3			
		11/1/01	14:29:00	5.80	12.97	19.1			
		11/1/01	14:30:00	5.83	12.97	18.6			
		11/1/01	14:31:00	5.86	12.93	18.9			
		11/1/01	14:32:00	5.91	12.89	14.9	5.82	12.96	18.14
Port 5	Point 4	11/1/01	14:33:00	5.88	12.90	12.2			
		11/1/01	14:34:00	5.83	12.94	12.9			
		11/1/01	14:35:00	5.80	12.97	14.9			
		11/1/01	14:36:00	5.89	12.92	15.4			
		11/1/01	14:37:00	5.85	12.95	12.6			
		11/1/01	14:38:00	5.84	12.93	11.6			
		11/1/01	14:39:00	5.81	12.93	13.4			
		11/1/01	14:40:00	5.84	12.92	14.2			
		11/1/01	14:41:00	5.83	12.95	15.0			
		11/1/01	14:42:00	5.89	12.92	15.7	5.84	12.93	13.96
Port 5	Point 5	11/1/01	14:43:00	5.91	12.89	16.0			
		11/1/01	14:44:00	5.90	12.89	17.1			
		11/1/01	14:45:00	5.88	12.89	17.4			
		11/1/01	14:46:00	5.90	12.87	17.4			
		11/1/01	14:47:00	5.96	12.85	17.1			
		11/1/01	14:48:00	5.94	12.85	16.9			
		11/1/01	14:49:00	5.88	12.90	17.4			
		11/1/01	14:50:00	5.84	12.95	17.4			
		11/1/01	14:51:00	5.91	12.87	21.4			
		11/1/01	14:52:00	5.96	12.82	26.1	5.91	12.88	19.84
Port 5	Point 6	11/1/01	14:53:00	5.91	12.86	27.3			
		11/1/01	14:54:00	5.89	12.88	27.7			
		11/1/01	14:55:00	5.96	12.80	27.7			
		11/1/01	14:56:00	5.98	12.82	27.4			
		11/1/01	14:57:00	5.91	12.86	27.6			
		11/1/01	14:58:00	5.93	12.88	28.3			
		11/1/01	14:59:00	6.17	12.65	28.1			
		11/1/01	15:00:00	6.16	12.65	26.9			
		11/1/01	15:01:00	6.01	12.77	26.6			
		11/1/01	15:02:00	6.01	12.78	27.0	6.06	12.75	27.38

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		Date	Time	1 O2	2 CO2	3 SO2			
Port 1	Point 1	11/2/01	8:30:15	5.30	13.87	10.4			
		11/2/01	8:31:15	5.31	13.87	10.9			
		11/2/01	8:32:15	5.31	13.88	11.2			
		11/2/01	8:33:15	5.37	13.88	10.8			
		11/2/01	8:34:15	5.36	13.86	10.8			
		11/2/01	8:35:15	5.29	13.90	11.2			
		11/2/01	8:36:15	5.32	13.87	11.3			
		11/2/01	8:37:15	5.32	13.88	11.0			
		11/2/01	8:38:15	5.27	13.89	10.9			
		11/2/01	8:39:15	5.29	13.86	16.7	5.30	13.88	12.23
Port 1	Point 2	11/2/01	8:40:15	5.27	13.89	32.4			
		11/2/01	8:41:15	5.27	13.90	35.5			
		11/2/01	8:42:15	5.34	13.85	37.4			
		11/2/01	8:43:15	5.33	13.85	38.9			
		11/2/01	8:44:15	5.28	13.88	38.7			
		11/2/01	8:45:15	5.33	13.87	37.7			
		11/2/01	8:46:15	5.26	13.88	37.3			
		11/2/01	8:47:15	5.15	13.96	38.5			
		11/2/01	8:48:15	5.22	13.91	39.3			
		11/2/01	8:49:15	5.24	13.89	35.9	5.24	13.90	37.74
Port 1	Point 3	11/2/01	8:50:15	5.27	13.89	31.7			
		11/2/01	8:51:15	5.33	13.87	30.6			
		11/2/01	8:52:15	5.19	13.94	29.0			
		11/2/01	8:53:15	5.17	13.96	29.5			
		11/2/01	8:54:15	5.23	13.92	29.0			
		11/2/01	8:55:15	5.19	13.92	28.2			
		11/2/01	8:56:15	5.22	13.92	29.6			
		11/2/01	8:57:15	5.30	13.88	29.8			
		11/2/01	8:58:15	5.27	13.89	28.7			
		11/2/01	8:59:15	5.22	13.92	31.6	5.24	13.91	29.58
Port 1	Point 4	11/2/01	9:00:15	5.26	13.90	44.2			
		11/2/01	9:01:15	5.14	13.98	48.0			
		11/2/01	9:02:15	5.22	13.94	48.1			
		11/2/01	9:03:15	5.27	13.92	48.5			
		11/2/01	9:04:15	5.21	13.92	48.7			
		11/2/01	9:05:15	5.27	13.89	48.6			
		11/2/01	9:06:15	5.25	13.93	48.3			
		11/2/01	9:07:15	5.28	13.91	48.1			
		11/2/01	9:08:15	5.14	14.00	48.7			
		11/2/01	9:09:15	5.25	13.92	50.4	5.24	13.93	48.83
Port 1	Point 5	11/2/01	9:10:15	5.21	13.94	45.3			
		11/2/01	9:11:15	5.28	13.91	41.6			
		11/2/01	9:12:15	5.39	13.84	46.8			
		11/2/01	9:13:15	5.24	13.93	50.4			
		11/2/01	9:14:15	5.18	13.96	52.0			
		11/2/01	9:15:15	5.24	13.93	46.2			
		11/2/01	9:16:15	5.29	13.88	45.5			
		11/2/01	9:17:15	5.28	13.90	49.8			
		11/2/01	9:18:15	5.28	13.92	50.6			
		11/2/01	9:19:15	5.29	13.90	52.0	5.27	13.91	48.83
Port 1	Point 6	11/2/01	9:20:15	5.26	13.91	54.2			
		11/2/01	9:21:15	5.27	13.92	55.2			
		11/2/01	9:22:15	5.15	13.97	54.5			
		11/2/01	9:23:15	5.25	13.91	54.2			
		11/2/01	9:24:15	5.33	13.87	52.4			
		11/2/01	9:25:15	5.22	13.92	52.8			
		11/2/01	9:26:15	5.19	13.95	52.7			
		11/2/01	9:27:15	5.33	13.87	53.8			
		11/2/01	9:28:15	5.27	13.93	53.1			
		11/2/01	9:29:15	5.26	13.94	52.0	5.26	13.92	52.87

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Port 2	Point 1	11/2/01	9:45:15	13.80	18.8		
		11/2/01	9:46:15	13.81	23.8		
		11/2/01	9:47:15	13.83	27.6		
		11/2/01	9:48:15	13.87	28.0		
		11/2/01	9:49:15	13.85	27.8		
		11/2/01	9:50:15	13.88	28.6		
		11/2/01	9:51:15	13.95	29.7		
		11/2/01	9:52:15	13.90	29.3		
		11/2/01	9:53:15	13.89	28.8		
		11/2/01	9:54:15	13.85	32.2	13.89	29.73
Port 2	Point 2	11/2/01	9:55:15	13.85	46.5		
		11/2/01	9:56:15	13.89	52.4		
		11/2/01	9:57:15	13.92	54.0		
		11/2/01	9:58:15	13.86	54.7		
		11/2/01	9:59:15	13.90	55.2		
		11/2/01	10:00:15	13.83	55.8		
		11/2/01	10:01:15	13.82	55.4		
		11/2/01	10:02:15	13.80	55.2		
		11/2/01	10:03:15	13.85	55.1		
		11/2/01	10:04:15	13.90	54.9	13.84	55.30
Port 2	Point 3	11/2/01	10:05:15	13.86	57.1		
		11/2/01	10:06:15	13.82	59.1		
		11/2/01	10:07:15	13.77	58.8		
		11/2/01	10:08:15	13.79	58.9		
		11/2/01	10:09:15	13.76	59.9		
		11/2/01	10:10:15	13.80	56.9		
		11/2/01	10:11:15	13.85	57.9		
		11/2/01	10:12:15	13.88	58.3		
		11/2/01	10:13:15	13.85	59.2		
		11/2/01	10:14:15	13.80	61.9	13.84	58.84
Port 2	Point 4	11/2/01	10:15:15	13.86	59.2		
		11/2/01	10:16:15	13.86	58.9		
		11/2/01	10:17:15	13.89	64.7		
		11/2/01	10:18:15	13.93	67.0		
		11/2/01	10:19:15	13.91	67.3		
		11/2/01	10:20:15	13.93	67.1		
		11/2/01	10:21:15	13.90	65.9		
		11/2/01	10:22:15	13.89	67.3		
		11/2/01	10:23:15	13.83	67.6		
		11/2/01	10:24:15	13.87	68.5	13.88	67.29
Port 2	Point 5	11/2/01	10:25:15	13.89	72.2		
		11/2/01	10:26:15	13.86	74.6		
		11/2/01	10:27:15	13.80	75.8		
		11/2/01	10:28:15	13.84	76.1		
		11/2/01	10:29:15	13.90	73.7		
		11/2/01	10:30:15	13.92	72.8		
		11/2/01	10:31:15	13.82	75.3		
		11/2/01	10:32:15	13.84	76.8		
		11/2/01	10:33:15	13.89	78.7		
		11/2/01	10:34:15	13.83	75.8	13.86	75.90
Port 2	Point 6	11/2/01	10:35:15	13.81	65.2		
		11/2/01	10:36:15	13.84	63.7		
		11/2/01	10:37:15	13.88	64.0		
		11/2/01	10:38:15	13.91	61.8		
		11/2/01	10:39:15	13.81	61.1		
		11/2/01	10:40:15	13.81	61.8		
		11/2/01	10:41:15	13.87	64.3		
		11/2/01	10:42:15	13.92	65.3		
		11/2/01	10:43:15	13.83	64.5		
		11/2/01	10:44:15	13.86	63.0	13.86	63.79

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Port 3	Point 1	11/2/01	11:05:15	13.82	68.6		
		11/2/01	11:06:15	13.82	74.1		
		11/2/01	11:07:15	13.87	76.1		
		11/2/01	11:08:15	13.85	77.6		
		11/2/01	11:09:15	13.91	78.7		
		11/2/01	11:10:15	13.87	79.3		
		11/2/01	11:11:15	13.91	76.3		
		11/2/01	11:12:15	13.88	75.9		
		11/2/01	11:13:15	13.90	77.5		
		11/2/01	11:14:15	13.89	75.1	13.89	76.83
Port 3	Point 2	11/2/01	11:15:15	13.92	76.7		
		11/2/01	11:16:15	13.96	76.9		
		11/2/01	11:17:15	13.88	77.5		
		11/2/01	11:18:15	13.78	77.5		
		11/2/01	11:19:15	13.89	77.7		
		11/2/01	11:20:15	13.87	77.5		
		11/2/01	11:21:15	13.88	76.0		
		11/2/01	11:22:15	13.83	76.3		
		11/2/01	11:23:15	13.84	76.8		
		11/2/01	11:24:15	13.86	87.0	13.86	78.75
Port 3	Point 3	11/2/01	11:25:15	13.86	90.7		
		11/2/01	11:26:15	13.83	91.3		
		11/2/01	11:27:15	13.84	91.6		
		11/2/01	11:28:15	13.86	90.4		
		11/2/01	11:29:15	13.90	92.2		
		11/2/01	11:30:15	13.87	91.6		
		11/2/01	11:31:15	13.92	91.6		
		11/2/01	11:32:15	13.81	91.4		
		11/2/01	11:33:15	13.87	91.0		
		11/2/01	11:34:15	13.87	88.8	13.87	90.89
Port 3	Point 4	11/2/01	11:35:15	13.85	89.0		
		11/2/01	11:36:15	13.86	90.1		
		11/2/01	11:37:15	13.90	91.3		
		11/2/01	11:38:15	13.88	89.0		
		11/2/01	11:39:15	13.87	82.9		
		11/2/01	11:40:15	13.85	83.9		
		11/2/01	11:41:15	13.85	90.2		
		11/2/01	11:42:15	13.84	91.7		
		11/2/01	11:43:15	13.84	90.3		
		11/2/01	11:44:15	13.84	88.2	13.84	88.83
Port 3	Point 5	11/2/01	11:45:15	13.83	89.8		
		11/2/01	11:46:15	13.88	92.1		
		11/2/01	11:47:15	13.82	93.5		
		11/2/01	11:48:15	13.85	90.8		
		11/2/01	11:49:15	13.86	91.2		
		11/2/01	11:50:15	13.92	91.6		
		11/2/01	11:51:15	13.90	92.2		
		11/2/01	11:52:15	13.93	92.2		
		11/2/01	11:53:15	13.86	89.4		
		11/2/01	11:54:15	13.83	86.8	13.89	90.42
Port 3	Point 6	11/2/01	11:55:15	13.76	89.5		
		11/2/01	11:56:15	13.74	90.6		
		11/2/01	11:57:15	13.76	91.2		
		11/2/01	11:58:15	13.81	92.7		
		11/2/01	11:59:15	13.80	92.0		
		11/2/01	12:00:15	13.83	89.3		
		11/2/01	12:01:15	13.84	90.7		
		11/2/01	12:02:15	13.84	87.1		
		11/2/01	12:03:15	13.83	86.6		
		11/2/01	12:04:15	13.86	91.8	13.84	89.09

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Port 4	Point 1	11/2/01	12:27:00	13.80	53.2		
		11/2/01	12:28:00	13.86	58.3		
		11/2/01	12:29:00	13.90	59.9		
		11/2/01	12:30:00	13.89	59.7		
		11/2/01	12:31:00	13.88	59.0		
		11/2/01	12:32:00	13.90	58.7		
		11/2/01	12:33:00	13.94	57.7		
		11/2/01	12:34:00	13.91	56.1		
		11/2/01	12:35:00	13.92	52.8		
		11/2/01	12:36:00	13.87	62.9	13.91	57.62
Port 4	Point 2	11/2/01	12:37:00	13.85	69.9		
		11/2/01	12:38:00	13.95	71.6		
		11/2/01	12:39:00	13.93	71.9		
		11/2/01	12:40:00	13.83	70.4		
		11/2/01	12:41:00	13.80	72.3		
		11/2/01	12:42:00	13.78	74.6		
		11/2/01	12:43:00	13.79	74.2		
		11/2/01	12:44:00	13.86	75.3		
		11/2/01	12:45:00	13.86	75.5		
		11/2/01	12:46:00	13.85	75.8	13.83	75.09
Port 4	Point 3	11/2/01	12:47:00	13.89	83.7		
		11/2/01	12:48:00	13.92	85.1		
		11/2/01	12:49:00	13.95	84.6		
		11/2/01	12:50:00	13.98	84.9		
		11/2/01	12:51:00	13.95	82.4		
		11/2/01	12:52:00	13.87	78.7		
		11/2/01	12:53:00	13.86	75.7		
		11/2/01	12:54:00	13.91	74.0		
		11/2/01	12:55:00	13.94	74.4		
		11/2/01	12:56:00	13.84	80.8	13.88	76.70
Port 4	Point 4	11/2/01	12:57:00	13.79	86.3		
		11/2/01	12:58:00	13.85	87.9		
		11/2/01	12:59:00	13.81	87.4		
		11/2/01	13:00:00	13.81	83.8		
		11/2/01	13:01:00	13.87	83.5		
		11/2/01	13:02:00	13.82	84.2		
		11/2/01	13:03:00	13.89	84.3		
		11/2/01	13:04:00	13.82	86.0		
		11/2/01	13:05:00	13.75	87.9		
		11/2/01	13:06:00	13.81	87.1	13.82	85.89
Port 4	Point 5	11/2/01	13:07:00	13.90	90.4		
		11/2/01	13:08:00	13.94	97.4		
		11/2/01	13:09:00	13.94	100.5		
		11/2/01	13:10:00	13.96	100.5		
		11/2/01	13:11:00	13.83	100.5		
		11/2/01	13:12:00	13.82	100.2		
		11/2/01	13:13:00	13.88	100.5		
		11/2/01	13:14:00	13.88	100.5		
		11/2/01	13:15:00	13.88	100.1		
		11/2/01	13:16:00	13.83	97.4	13.86	99.76
Port 4	Point 6	11/2/01	13:17:00	13.81	100.5		
		11/2/01	13:18:00	13.77	100.5		
		11/2/01	13:19:00	13.72	100.5		
		11/2/01	13:20:00	13.73	100.5		
		11/2/01	13:21:00	13.73	100.5		
		11/2/01	13:22:00	13.78	100.5		
		11/2/01	13:23:00	13.84	100.5		
		11/2/01	13:24:00	13.82	100.5		
		11/2/01	13:25:00	13.81	100.5		
		11/2/01	13:26:00	13.85	100.5	13.82	100.54

Intermountain Power Project
SO2 Stratification
Unit 1 Scrubber Module C
November 2, 2001

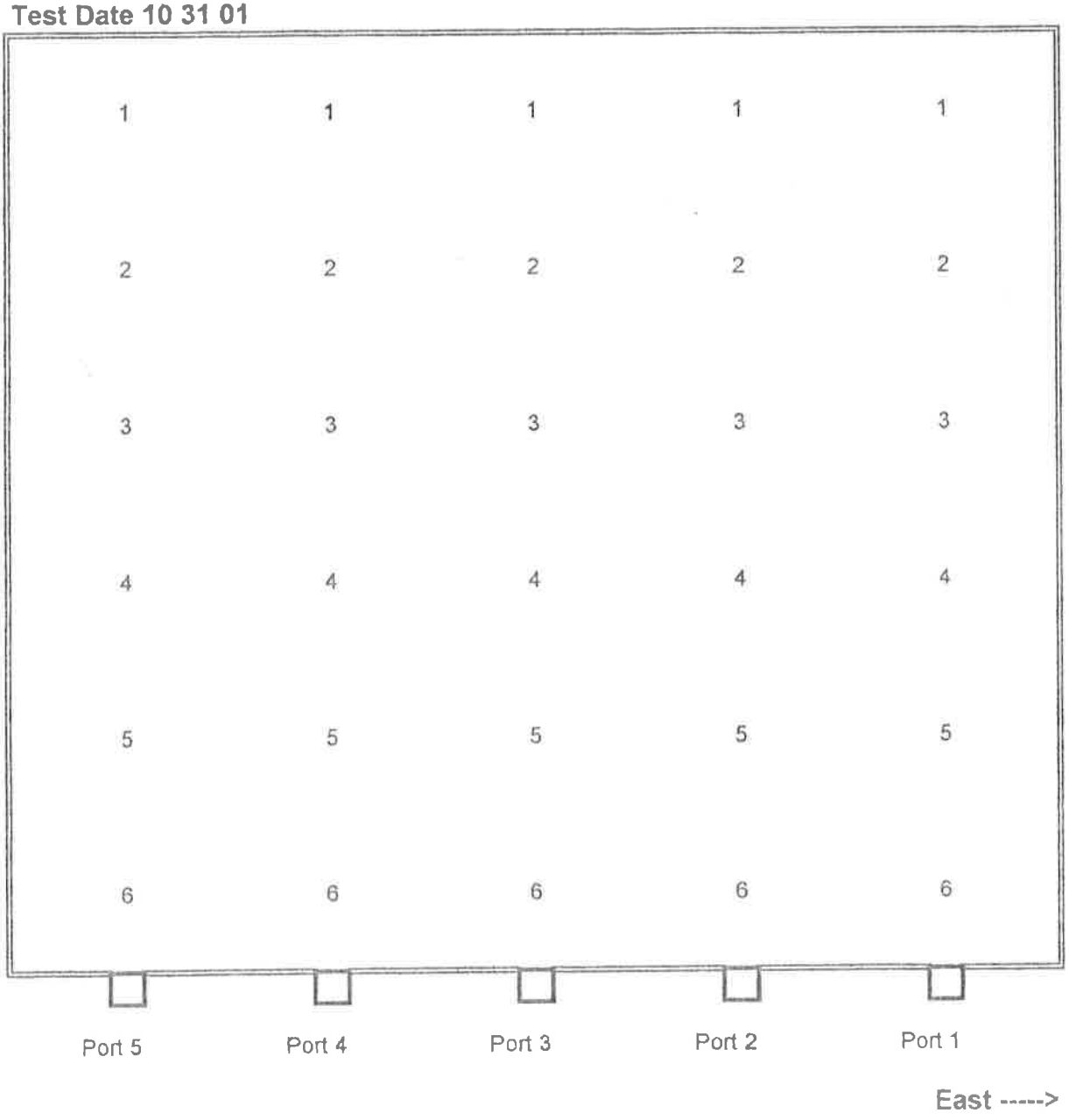
Port 5	Point 1	11/2/01	13:38:15	13.78	62.0		
		11/2/01	13:39:15	13.86	81.0		
		11/2/01	13:40:15	13.83	83.2		
		11/2/01	13:41:15	13.87	85.4		
		11/2/01	13:42:15	13.89	86.3		
		11/2/01	13:43:15	13.87	84.2		
		11/2/01	13:44:15	13.88	84.9		
		11/2/01	13:45:15	13.95	84.1		
		11/2/01	13:46:15	13.95	82.6		
		11/2/01	13:47:15	13.94	74.2	13.92	82.01
Port 5	Point 2	11/2/01	13:48:15	13.94	63.3		
		11/2/01	13:49:15	13.96	61.0		
		11/2/01	13:50:15	13.97	60.9		
		11/2/01	13:51:15	14.00	60.7		
		11/2/01	13:52:15	13.97	60.8		
		11/2/01	13:53:15	14.02	60.8		
		11/2/01	13:54:15	14.01	60.0		
		11/2/01	13:55:15	13.92	60.4		
		11/2/01	13:56:15	13.80	60.2		
		11/2/01	13:57:15	13.94	60.6	13.94	60.38
Port 5	Point 3	11/2/01	13:58:15	13.97	64.5		
		11/2/01	13:59:15	13.93	67.1		
		11/2/01	14:00:15	13.90	71.9		
		11/2/01	14:01:15	13.99	69.7		
		11/2/01	14:02:15	13.96	66.3		
		11/2/01	14:03:15	13.92	66.2		
		11/2/01	14:04:15	13.84	65.7		
		11/2/01	14:05:15	13.90	62.1		
		11/2/01	14:06:15	13.93	63.9		
		11/2/01	14:07:15	13.98	66.9	13.91	64.96
Port 5	Point 4	11/2/01	14:08:15	13.89	83.4		
		11/2/01	14:09:15	13.87	81.2		
		11/2/01	14:10:15	13.89	87.6		
		11/2/01	14:11:15	13.86	93.6		
		11/2/01	14:12:15	13.87	94.3		
		11/2/01	14:13:15	13.90	95.6		
		11/2/01	14:14:15	13.88	94.9		
		11/2/01	14:15:15	13.87	92.1		
		11/2/01	14:16:15	13.84	90.6		
		11/2/01	14:17:15	13.86	91.4	13.87	92.93
Port 5	Point 5	11/2/01	14:18:15	13.82	100.5		
		11/2/01	14:19:15	13.83	100.5		
		11/2/01	14:20:15	13.86	100.5		
		11/2/01	14:21:15	13.89	100.5		
		11/2/01	14:22:15	13.84	100.5		
		11/2/01	14:23:15	13.81	100.5		
		11/2/01	14:24:15	13.83	100.5		
		11/2/01	14:25:15	13.84	100.5		
		11/2/01	14:26:15	13.85	100.5		
		11/2/01	14:27:15	13.75	100.5	13.82	100.54
Port 5	Point 6	11/2/01	14:28:15	13.73	100.5		
		11/2/01	14 29:15	13.75	100.5		
		11/2/01	14:30:15	13.83	100.5		
		11/2/01	14:31:15	13.84	100.5		
		11/2/01	14:32:15	13.78	100.5		
		11/2/01	14:33:15	13.79	100.5		
		11/2/01	14:34:15	13.74	100.5		
		11/2/01	14:35:15	13.75	100.5		
		11/2/01	14:36:15	13.76	100.5		
		11/2/01	14:37:15	13.84	100.5	13.78	100.54

Appendix B

Scrubber 1-B Field Sampling Data

2IP12-000046

Intermountain Power Project
Unit 1 Scrubber Module B
Test Date 10 31 01



East ----->

CCI Environmental Consultants
3855 South 500 West, Suite I
Salt Lake City, Utah 84115

Velocity Traverse Field Data Sheet

Date 10-31-01		Operators MH, JR	
Plant Name- IPSC		Pitot Tube ID Number	
Unit Number/Location Unit 1 scrubber B		Static Pressure	+ 1.2
Barometric Pressure (Stack Elevation)		Start Time	848
Load Condition	Run # 1	End Time	

Port Number	Point Number	Delta P (in H_2O)	Temperature (°F)
1	1	0.117	113
1	2	0.050	116
1	3	0.093	116
1	4	0.098	115
1	5	0.088	116
1	6	0.123	116
2	1	0.040	117
2	2	0.003	116
2	3	0.002	116
2	4	0.001	114
2	5	0.003	115
2	6	0.045	116
3	1	-0.002	115
3	2	-0.002	~~116~~ 115
3	3	-0.004	~~116~~ 115
3	4	-0.002	116
3	5	-0.001	115
3	6	0.002	115
4	1	0.012	116
4	2	0.001	116
4	3	-0.008	116

Port Number	Point Number	Delta P (in H_2O)	Temperature (°F)
4	4	0.004	116
4	5	0.009	116
4	6	0.028	116
5	1	0.125	116
5	2	0.067	116
5	3	0.091	116
5	4	0.050	115
5	5	0.068	116
5	6	0.139	116
6	1		
6	2		
6	3		
6	4		
6	5		
6	6		

MOISTURE DATA

	PERCENT MOISTURE=	12.13	
METER VOLUME START	525.168	Bp=	25.50
METER VOLUME STOP	652.798	METER GAMMA=	1.000

Vm=	127.630
Vl=	323.6
Tm=	60.5

	Impinger 1	Impinger 2	Impinger 3	Impinger 4
FINAL	924.5	665.3	455.7	884.0
INTIAL	631.6	659.9	453.8	860.6
	292.9	5.4	1.9	23.4

METER TEMP

	Inlet	Outlet		
1	48.0	47.0	69.0	58.0
2	56.0	48.0	69.0	59.0
3	61.0	50.0	70.0	59.0
4	62.0	51.0	72.0	60.0
5	64.0	52.0	59.0	59.0
6	65.0	53.0	63.0	59.0
7	56.0	54.0	66.0	59.0
8	62.0	54.0	67.0	59.0
9	65.0	54.0	68.0	59.0
10	67.0	55.0	69.0	60.0
11	68.0	56.0	60.0	59.0
12	68.0	57.0	66.0	58.0
	59.0	57.0	68.0	59.0
	71.0	60.0	69.0	59.0
			70.0	60.0

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Salt Lake City, Utah 84115

Stack Gas Moisture Determination

Page 1

Date 10-31-01	Operators MH, JR	Meter Box Number	1
Plant Name I		Meter Box dH@	1.723
Unit/Location Unit 1 Scrubber B		Meter Box Gamma	1.000
Operating Load	Run # 1	Pretest Leak Check	0.006 at 15"
Barometric Pressure (Stack Elevation)		Posttest Leak Check	0.003 at 5"

Traverse Point Number	Clock Time	Elapsed Time (minutes)	Gas Meter Reading (cub. ft.)	Delta H (in. H_2O)	Vacuum (" of Hg)	Temperatures Stack F	Meter In F	Meter Out F	Impinger F
1-1	848	0	535.168	0.5	3.8	112	45	47	40
1-2		10	539.6	0.5	3.7	116	56	48	38
1-3		20	534	0.5	3.7	116	61	50	39
1-4		30	535.1	0.5	3.8	115	62	51	40
1-5		40	543.2	0.5	3.9	116	64	52	42
1-6		50	546.5	0.5		116	65	53	43
1-6	948	60	550.831	— Port change —					
2-1	1005	60	550.831	0.5	4.1	117	56	54	44
2-2		70	555.2	0.5	4	116	62	54	42
2-3		80	559.4	0.5	4	116	65	54	42
2-4		90	563.7	0.5	4	113	67	55	43
2-5		100	567.9	0.50	4	115	68	56	43
2-6		110	572.2	0.5	4	116	68	57	44
2-6	1105	120	576.416	Port change					
3-1	1118	120	576.416	0.5	4	115	59	57	50
3-2		130	561	0.5	4				

	Impinger 1 Weights	Impinger 2 Weights	Impinger 3 Weights	Impinger 4 Weights
Final	425.5	665.8	456	884.2
Initial	631.6	659.9	453.8	860.6
Net Gain				

VI = Total Gain (g)

Percent Moisture (M) = 4.715 * (VI)/((0.04715 * VI)+(17.64 * Y * Vm * Bp)/(460 + Tm)

Percent Moisture (M) = _____

2IP12-000050

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Salt Lake City, Utah 84115

Page 2

Stack Gas Moisture Determination

Date 10-31-01	Operators MH, JR	Meter Box Number	1
Plant Name IPSC		Meter Box dH @	1.723
Unit/Location 1 Scrubber B		Meter Box Gamma	1.000
Operating Load	Run # 1	Pretest Leak Check	0.006 at 15"
Barometric Pressure (Stack Elevation)		Posttest Leak Check	0.003 at 5"

Traverse Point Number	Clock Time	Elapsed Time (minutes)	Gas Meter Reading (cub. ft.)	Delta H (in. H_2O)	Vacuum (" of Hg)	Temperatures Stack F	Meter In F	Meter Out F	Impinger F
* 3-83		140	585.0	0.5	4	115	69	58	46
3-84		150	589.3	0.5	3.9	115	69	59	46
3-5		160	593.4	0.5	4	115	70	59	45
3-6	1210/1220	170	597.7	0.5	4	115	72	60	45
3-4-6	1240	180	602.004	0.5	4.2	116	59	59	51
4-2		190	606.4	0.5	4.0	116	63	59	46
4-23		200	610.8	0.5	4.0	116	66	59	47
4-54		210	615.0	0.5	4	116	67	59	47
4-45		220	619.2	0.5	4	116	68	59	46
4-56	1330/1340	230	623.6	0.5	4	116	69	60	47
** 4-51	1400	240.3	627.883	0.5	4	116	60	59	50
5-82		250	632.2	0.5	4	116	66	58	47
5-83		260	636.1	0.5	4	116	68	59	43
5-84		270	640.2	0.5	4	115	69	59	41
5-85		280	644.4	0.5	4	116	70	60	40
5-56	1450/1500	290	648.6	0.5	4	116	71	60	41
5-6		300	652.795						

* Shut down 12:44 to blow out Pitot lines Restart 1146
Gas meter 587.6 elapsed time 146

	Impinger 1 Weights	Impinger 2 Weights	Impinger 3 Weights	Impinger 4 Weights
Final				
Initial				
Net Gain				

VI = Total Gain (g)

Percent Moisture (M) = 4.715 * (VI)/((0.04715 * VI)+(17.64 * Y * Vm * Bp)/(460 + Tm)

Percent Moisture (M) = _____

2IP12-000051

Stack Gas Stratification Test Results

Date: 10-31-01

Run Number: 1

Plant Name: IPP - DELTA

Operator: L. LOTTONE

Unit Name or Number: UNIT 1 MODULE B

Raw File Name:

	Time Point Started	Traverse Point Number	SO_2 Conc. (ppmvd)			O_2 Conc. (%)	CO_2 Conc. (%)
	0847:45	1-1					
	0857:45	1-2					
	0907:45	1-3					
	0917:45	1-4					
	0927:45	1-5					
	0937:45	1-6					
	1005:00	2-1					
	1015:00	2-2					
	1025:00	2-3					
	1035:00	2-4					
	1045:00	2-5					
	1055:00	2-6					
	1118	3-1					
	1128	3-2					
	1138	3-3					
	1148	3-4					
	1158	3-5					
	1208	3-6					
	1240	4-1					
	1250	4-2					
	1300	4-3					
	1310	4-4					
	1320	4-5					
	1330	4-6					

Stack Gas Stratification Test Results

Date: 10-31-01

Run Number: 1

Plant Name: IPP DELTA

Operator: L. Cottone

Unit Name or Number: Unit 1 Module B

Raw File Name: IPSCU1B.CSV

	Time Point Started	Traverse Point Number	SO_2 Conc. (ppmvd)			O_2 Conc. (%)	CO_2 Conc. (%)
	1400	6-1					
	1410	6-2					
	1420	6-3					
	1430	6-4					
	1440	6-5					
	1450	6-6					

Run Number	Date	Time	1 O2	2 CO2	3 SO2
1	10/31/01	8:47:45	5.15	13.95	29.9
1	10/31/01	8:48:45	5.10	13.99	28.7
1	10/31/01	8:49:45	5.17	13.92	26.7
1	10/31/01	8:50:45	5.13	13.94	27.1
1	10/31/01	8:51:45	5.08	13.98	30.0
1	10/31/01	8:52:45	5.14	13.93	31.2
1	10/31/01	8:53:45	5.16	13.93	30.0
1	10/31/01	8:54:45	5.17	13.91	29.3
1	10/31/01	8:55:45	5.18	13.89	30.8
1	10/31/01	8:56:45	5.18	13.89	32.0
1	10/31/01	8:57:45	5.17	13.91	33.1
1	10/31/01	8:58:45	5.10	13.95	33.4
1	10/31/01	8:59:45	5.11	13.95	33.7
1	10/31/01	9:00:45	5.08	13.95	35.0
1	10/31/01	9:01:45	5.22	13.88	36.6
1	10/31/01	9:02:45	5.30	13.81	36.2
1	10/31/01	9:03:45	5.27	13.80	35.8
1	10/31/01	9:04:45	5.19	13.87	35.9
1	10/31/01	9:05:45	5.18	13.90	36.1
1	10/31/01	9:06:45	5.22	13.85	36.9
1	10/31/01	9:07:45	5.15	13.90	34.1
1	10/31/01	9:08:45	5.13	13.94	29.6
1	10/31/01	9:09:45	5.08	13.92	28.7
1	10/31/01	9:10:45	5.09	13.95	27.8
1	10/31/01	9:11:45	5.16	13.90	27.1
1	10/31/01	9:12:45	5.15	13.89	26.6
1	10/31/01	9:13:45	5.22	13.85	25.7
1	10/31/01	9:14:45	5.12	13.93	24.8
1	10/31/01	9:15:45	5.15	13.90	24.0
1	10/31/01	9:16:45	5.11	13.93	23.6
1	10/31/01	9:17:45	5.21	13.85	22.6
1	10/31/01	9:18:45	5.20	13.86	18.9
1	10/31/01	9:19:45	5.01	14.01	16.4
1	10/31/01	9:20:45	5.02	14.01	14.8
1	10/31/01	9:21:45	5.12	13.91	13.1
1	10/31/01	9:22:45	5.19	13.88	12.4
1	10/31/01	9:23:45	5.34	13.77	12.2
1	10/31/01	9:24:45	5.31	13.80	12.8
1	10/31/01	9:25:45	5.27	13.82	13.8

1	10/31/01	9:26:45	5.27	13.83	14.4
1	10/31/01	9:27:45	5.18	13.88	23.6
1	10/31/01	9:28:45	5.15	13.90	29.7
1	10/31/01	9:29:45	5.28	13.79	31.5
1	10/31/01	9:30:45	5.25	13.80	31.8
1	10/31/01	9:31:45	5.25	13.79	31.5
1	10/31/01	9:32:45	5.14	13.90	31.8
1	10/31/01	9:33:45	5.13	13.89	32.1
1	10/31/01	9:34:45	5.14	13.89	33.0
1	10/31/01	9:35:45	5.16	13.89	33.9
1	10/31/01	9:36:45	5.28	13.82	34.3
1	10/31/01	9:37:45	5.29	13.82	29.5
1	10/31/01	9:38:45	5.37	13.76	25.7
1	10/31/01	9:39:45	5.33	13.79	21.2
1	10/31/01	9:40:45	5.28	13.81	18.8
1	10/31/01	9:41:45	5.16	13.89	21.1
1	10/31/01	9:42:45	5.16	13.90	22.6
1	10/31/01	9:43:45	5.24	13.83	23.0
1	10/31/01	9:44:45	5.33	13.77	22.2
1	10/31/01	9:45:45	5.34	13.77	22.2
1	10/31/01	9:46:45	5.25	13.83	23.0
2	10/31/01	9:47:45	5.26	13.71	31.2
2	10/31/01	10:05:45	5.29	13.69	39.3
2	10/31/01	10:06:45	5.33	13.69	40.2
2	10/31/01	10:07:45	5.27	13.75	39.1
2	10/31/01	10:08:45	5.27	13.73	38.1
2	10/31/01	10:09:45	5.25	13.77	37.4
2	10/31/01	10:10:45	5.26	13.76	36.2
2	10/31/01	10:11:45	5.31	13.72	35.1
2	10/31/01	10:12:45	5.30	13.73	33.7
2	10/31/01	10:13:45	5.28	13.73	32.7
2	10/31/01	10:14:45	5.26	13.76	31.1
2	10/31/01	10:15:45	5.18	13.80	30.2
2	10/31/01	10:16:45	5.29	13.73	29.9
2	10/31/01	10:17:45	5.17	13.82	29.8
2	10/31/01	10:18:45	5.15	13.83	29.9
2	10/31/01	10:19:45	5.19	13.81	29.9
2	10/31/01	10:20:45	5.23	13.80	29.9
2	10/31/01	10:21:45	5.21	13.79	29.9
2	10/31/01	10:22:45	5.30	13.73	29.6
2	10/31/01	10:23:45	5.21	13.79	29.9
2	10/31/01	10:24:45	5.12	13.86	29.8
2	10/31/01	10:25:45	5.09	13.89	29.1

2	10/31/01	10:26:45	5.14	13.84	28.7
2	10/31/01	10:27:45	5.23	13.78	28.4
2	10/31/01	10:28:45	5.27	13.77	28.3
2	10/31/01	10:29:45	5.25	13.76	28.3
2	10/31/01	10:30:45	5.27	13.75	27.5
2	10/31/01	10:31:45	5.17	13.82	26.6
2	10/31/01	10:32:45	5.16	13.83	27.4
2	10/31/01	10:33:45	5.19	13.82	29.0
2	10/31/01	10:34:45	5.26	13.76	28.0
2	10/31/01	10:35:45	5.12	13.85	25.6
2	10/31/01	10:36:45	5.12	13.85	24.8
2	10/31/01	10:37:45	5.18	13.80	26.5
2	10/31/01	10:38:45	5.19	13.81	27.8
2	10/31/01	10:39:45	5.22	13.77	28.1
2	10/31/01	10:40:45	5.14	13.84	26.7
2	10/31/01	10:41:45	5.20	13.81	26.6
2	10/31/01	10:42:45	5.24	13.75	27.6
2	10/31/01	10:43:45	5.27	13.73	28.2
2	10/31/01	10:44:45	5.19	13.80	28.4
2	10/31/01	10:45:45	5.22	13.77	28.2
2	10/31/01	10:46:45	5.16	13.83	28.7
2	10/31/01	10:47:45	5.22	13.78	29.2
2	10/31/01	10:48:45	5.24	13.77	29.3
2	10/31/01	10:49:45	5.22	13.77	28.3
2	10/31/01	10:50:45	5.10	13.85	28.1
2	10/31/01	10:51:45	5.17	13.80	29.0
2	10/31/01	10:52:45	5.30	13.72	29.3
2	10/31/01	10:53:45	5.27	13.73	28.9
2	10/31/01	10:54:45	5.24	13.79	28.5
2	10/31/01	10:55:45	5.20	13.83	25.0
2	10/31/01	10:56:45	5.28	13.78	24.1
2	10/31/01	10:57:45	5.29	13.74	23.7
2	10/31/01	10:58:45	5.25	13.75	23.5
2	10/31/01	10:59:45	5.29	13.72	23.4
2	10/31/01	11:00:45	5.25	13.77	23.6
2	10/31/01	11:01:45	5.22	13.78	24.3
2	10/31/01	11:02:45	5.27	13.72	23.0
2	10/31/01	11:03:45	5.32	13.72	22.0
3	10/31/01	11:04:45	5.22	13.69	15.3
3	10/31/01	11:18:15	5.10	13.76	25.3
3	10/31/01	11:19:15	5.30	13.64	33.0
3	10/31/01	11:20:15	5.33	13.67	35.4
3	10/31/01	11:21:15	5.27	13.72	36.4

3	10/31/01	11:22:15	5.14	13.81	37.4
3	10/31/01	11:23:15	5.19	13.79	38.1
3	10/31/01	11:24:15	5.18	13.78	38.2
3	10/31/01	11:25:15	5.08	13.86	39.2
3	10/31/01	11:26:15	5.17	13.82	39.6
3	10/31/01	11:27:15	5.10	13.84	39.5
3	10/31/01	11:28:15	5.16	13.82	39.4
3	10/31/01	11:29:15	5.12	13.84	38.7
3	10/31/01	11:30:15	5.13	13.82	38.7
3	10/31/01	11:31:15	5.18	13.78	39.2
3	10/31/01	11:32:15	5.21	13.75	38.8
3	10/31/01	11:33:15	5.21	13.79	37.8
3	10/31/01	11:34:15	5.29	13.74	37.0
3	10/31/01	11:35:15	5.19	13.78	38.7
3	10/31/01	11:36:15	5.20	13.79	39.8
3	10/31/01	11:37:15	5.17	13.78	38.4
3	10/31/01	11:38:15	5.23	13.77	35.1
3	10/31/01	11:39:15	5.17	13.82	35.4
3	10/31/01	11:40:15	5.14	13.83	38.0
3	10/31/01	11:41:15	5.23	13.77	38.6
3	10/31/01	11:42:15	5.25	13.74	36.6
3	10/31/01	11:43:15	5.20	13.75	35.5
3	10/31/01	11:44:15	5.22	13.74	36.8
3	10/31/01	11:45:15	5.16	13.82	38.6
3	10/31/01	11:46:15	5.18	13.82	39.3
3	10/31/01	11:47:15	5.23	13.78	38.7
3	10/31/01	11:48:15	5.29	13.73	38.2
3	10/31/01	11:49:15	5.27	13.75	39.0
3	10/31/01	11:50:15	5.18	13.80	40.0
3	10/31/01	11:51:15	5.20	13.79	39.7
3	10/31/01	11:52:15	5.25	13.75	38.7
3	10/31/01	11:53:15	5.25	13.73	38.3
3	10/31/01	11:54:15	5.23	13.76	39.2
3	10/31/01	11:55:15	5.25	13.75	39.4
3	10/31/01	11:56:15	5.25	13.75	38.3
3	10/31/01	11:57:15	5.15	13.78	36.3
3	10/31/01	11:58:15	5.32	13.68	35.6
3	10/31/01	11:59:15	5.29	13.70	36.8
3	10/31/01	12:00:15	5.19	13.76	36.6
3	10/31/01	12:01:15	5.17	13.77	35.3
3	10/31/01	12:02:15	5.18	13.81	34.0
3	10/31/01	12:03:15	5.23	13.76	32.5
3	10/31/01	12:04:15	5.27	13.70	31.2

3	10/31/01	12:05:15	5.36	13.62	30.6
3	10/31/01	12:06:15	5.24	13.70	30.7
3	10/31/01	12:07:15	5.17	13.77	30.4
3	10/31/01	12:08:15	5.19	13.76	30.5
3	10/31/01	12:09:15	5.33	13.66	32.9
3	10/31/01	12:10:15	5.32	13.66	32.4
3	10/31/01	12:11:15	5.36	13.64	32.3
3	10/31/01	12:12:15	5.30	13.69	33.8
3	10/31/01	12:13:15	5.37	13.64	35.3
3	10/31/01	12:14:15	5.33	13.67	35.6
3	10/31/01	12:15:15	5.28	13.71	35.0
3	10/31/01	12:16:15	5.28	13.69	34.8
3	10/31/01	12:17:15	5.34	13.63	34.8
4	10/31/01	12:37:30	18.67	1.38	3.9
5	10/31/01	12:38:30	7.89	11.30	12.3
5	10/31/01	12:40:00	5.18	13.78	27.0
5	10/31/01	12:41:00	5.32	13.70	29.9
5	10/31/01	12:42:00	5.26	13.73	30.5
5	10/31/01	12:43:00	5.20	13.77	30.9
5	10/31/01	12:44:00	5.11	13.83	31.7
5	10/31/01	12:45:00	5.22	13.80	31.7
5	10/31/01	12:46:00	5.16	13.80	32.0
5	10/31/01	12:47:00	5.08	13.88	32.4
5	10/31/01	12:48:00	5.07	13.91	32.8
5	10/31/01	12:49:00	5.11	13.87	30.4
5	10/31/01	12:50:00	5.14	13.87	29.4
5	10/31/01	12:51:00	5.29	13.72	28.7
5	10/31/01	12:52:00	5.25	13.76	28.0
5	10/31/01	12:53:00	5.20	13.77	28.1
5	10/31/01	12:54:00	5.16	13.83	28.2
5	10/31/01	12:55:00	5.20	13.80	28.2
5	10/31/01	12:56:00	5.21	13.77	28.3
5	10/31/01	12:57:00	5.30	13.72	27.4
5	10/31/01	12:58:00	5.25	13.76	26.8
5	10/31/01	12:59:00	5.22	13.80	27.7
5	10/31/01	13:00:00	5.13	13.85	28.2
5	10/31/01	13:01:00	5.24	13.76	26.9
5	10/31/01	13:02:00	5.32	13.71	25.5
5	10/31/01	13:03:00	5.22	13.75	27.1
5	10/31/01	13:04:00	5.23	13.76	30.1
5	10/31/01	13:05:00	5.17	13.80	30.4
5	10/31/01	13:06:00	5.23	13.76	29.0
5	10/31/01	13:07:00	5.17	13.80	27.9

5	10/31/01	13:08:00	5.26	13.71	28.7
5	10/31/01	13:09:00	5.27	13.71	29.6
5	10/31/01	13:10:00	5.28	13.72	29.6
5	10/31/01	13:11:00	5.32	13.70	28.8
5	10/31/01	13:12:00	5.33	13.65	28.4
5	10/31/01	13:13:00	5.29	13.71	28.7
5	10/31/01	13:14:00	5.32	13.69	28.3
5	10/31/01	13:15:00	5.23	13.74	27.5
5	10/31/01	13:16:00	5.22	13.75	26.5
5	10/31/01	13:17:00	5.22	13.76	26.4
5	10/31/01	13:18:00	5.29	13.71	26.8
5	10/31/01	13:19:00	5.26	13.73	26.8
5	10/31/01	13:20:00	5.24	13.74	28.1
5	10/31/01	13:21:00	5.21	13.73	28.2
5	10/31/01	13:22:00	5.22	13.76	29.1
5	10/31/01	13:23:00	5.21	13.73	29.3
5	10/31/01	13:24:00	5.31	13.66	29.1
5	10/31/01	13:25:00	5.32	13.64	28.7
5	10/31/01	13:26:00	5.28	13.71	28.8
5	10/31/01	13:27:00	5.22	13.76	29.4
5	10/31/01	13:28:00	5.22	13.73	30.0
5	10/31/01	13:29:00	5.34	13.64	35.8
5	10/31/01	13:30:00	5.40	13.62	39.5
5	10/31/01	13:31:00	5.38	13.60	39.9
5	10/31/01	13:32:00	5.26	13.68	40.0
5	10/31/01	13:33:00	5.32	13.67	41.0
5	10/31/01	13:34:00	5.25	13.71	41.3
5	10/31/01	13:35:00	5.28	13.69	42.3
5	10/31/01	13:36:00	5.43	13.58	41.2
5	10/31/01	13:37:00	5.47	13.55	40.5
5	10/31/01	13:38:00	5.38	13.60	40.9
5	10/31/01	13:39:00	5.35	13.64	40.5
6	10/31/01	13:40:00	5.24	13.71	37.2
6	10/31/01	14:00:15	5.18	13.78	35.1
6	10/31/01	14:01:15	5.13	13.82	36.4
6	10/31/01	14:02:15	5.08	13.86	37.2
6	10/31/01	14:03:15	5.26	13.74	36.9
6	10/31/01	14:04:15	5.23	13.75	37.5
6	10/31/01	14:05:15	5.24	13.76	37.5
6	10/31/01	14:06:15	5.16	13.80	38.2
6	10/31/01	14:07:15	5.19	13.81	38.2
6	10/31/01	14:08:15	5.23	13.78	37.7
6	10/31/01	14:09:15	5.22	13.77	37.5

6	10/31/01	14:10:15	5.15	13.80	37.3
6	10/31/01	14:11:15	5.12	13.86	33.0
6	10/31/01	14:12:15	5.14	13.84	30.4
6	10/31/01	14:13:15	5.14	13.81	29.4
6	10/31/01	14:14:15	5.13	13.83	29.4
6	10/31/01	14:15:15	5.17	13.80	29.4
6	10/31/01	14:16:15	5.11	13.86	29.3
6	10/31/01	14:17:15	5.14	13.84	29.2
6	10/31/01	14:18:15	5.13	13.83	28.4
6	10/31/01	14:19:15	5.16	13.82	22.1
6	10/31/01	14:20:15	5.15	13.83	19.0
6	10/31/01	14:21:15	5.11	13.87	18.1
6	10/31/01	14:22:15	5.08	13.84	18.2
6	10/31/01	14:23:15	5.08	13.85	18.0
6	10/31/01	14:24:15	5.00	13.89	17.7
6	10/31/01	14:25:15	5.00	13.95	15.5
6	10/31/01	14:26:15	5.05	13.86	14.8
6	10/31/01	14:27:15	5.14	13.80	15.8
6	10/31/01	14:28:15	5.17	13.80	16.6
6	10/31/01	14:29:15	5.19	13.78	16.3
6	10/31/01	14:30:15	5.17	13.81	14.7
6	10/31/01	14:31:15	5.05	13.88	15.0
6	10/31/01	14:32:15	5.11	13.82	16.9
6	10/31/01	14:33:15	5.14	13.82	17.3
6	10/31/01	14:34:15	5.14	13.83	16.7
6	10/31/01	14:35:15	5.15	13.80	15.3
6	10/31/01	14:36:15	5.06	13.84	15.7
6	10/31/01	14:37:15	5.09	13.85	16.9
6	10/31/01	14:38:15	5.12	13.83	17.1
6	10/31/01	14:39:15	5.17	13.78	17.3
6	10/31/01	14:40:15	5.29	13.69	24.9
6	10/31/01	14:41:15	5.12	13.80	28.8
6	10/31/01	14:42:15	5.18	13.78	30.2
6	10/31/01	14:43:15	5.20	13.76	30.7
6	10/31/01	14:44:15	5.17	13.78	30.7
6	10/31/01	14:45:15	5.08	13.84	31.2
6	10/31/01	14:46:15	5.03	13.89	32.4
6	10/31/01	14:47:15	5.13	13.82	32.7
6	10/31/01	14:48:15	5.19	13.77	32.1
6	10/31/01	14:49:15	5.15	13.78	33.2
6	10/31/01	14:50:15	5.16	13.77	42.6
6	10/31/01	14:51:15	5.19	13.75	48.2
6	10/31/01	14:52:15	5.17	13.74	48.6

6	10/31/01	14:53:15	5.11	13.79	47.8
6	10/31/01	14:54:15	5.23	13.71	47.2
6	10/31/01	14:55:15	5.34	13.65	46.1
6	10/31/01	14:56:15	5.18	13.76	45.7
6	10/31/01	14:57:15	5.28	13.66	45.2
6	10/31/01	14:58:15	5.31	13.64	44.3
6	10/31/01	14:59:15	5.29	13.66	44.4
End					
	10/31/01	0.625174	5.31	13.69	43.9

Continuous Emissions Monitoring System
Response Time Determinations

Plant Name: Intermountain Power Project

Test Location: Unit 1 Module B

Date: 10 30 01

Operators: L. Cottam

Instrument Measurement Parameter	Manufacturer/ Model #	Serial #		Response Time 1 (seconds)	Response Time 2 (seconds)	Response Time 3 (seconds)	Average Response Time (seconds)
Oxygen	CAI		Zero to Stack Concentration	52	50	51	50.3
			High to Stack Concentration	49	50	50	
Carbon Dioxide	CAI/Fuji		Zero to Stack Concentration	53	50	51	50.7
			High to Stack Concentration	50	50	50	
Sulfur Dioxide	Bovar		Zero to Stack Concentration	131	134	133	133.8
			High to Stack Concentration	134	136	135	
			Zero to Stack Concentration				
			High to Stack Concentration				
			Zero to Stack Concentration				
			High to Stack Concentration				
			Zero to Stack Concentration				
			High to Stack Concentration				
			Zero to Stack Concentration				
			High to Stack Concentration				
			Zero to Stack Concentration				
			High to Stack Concentration				

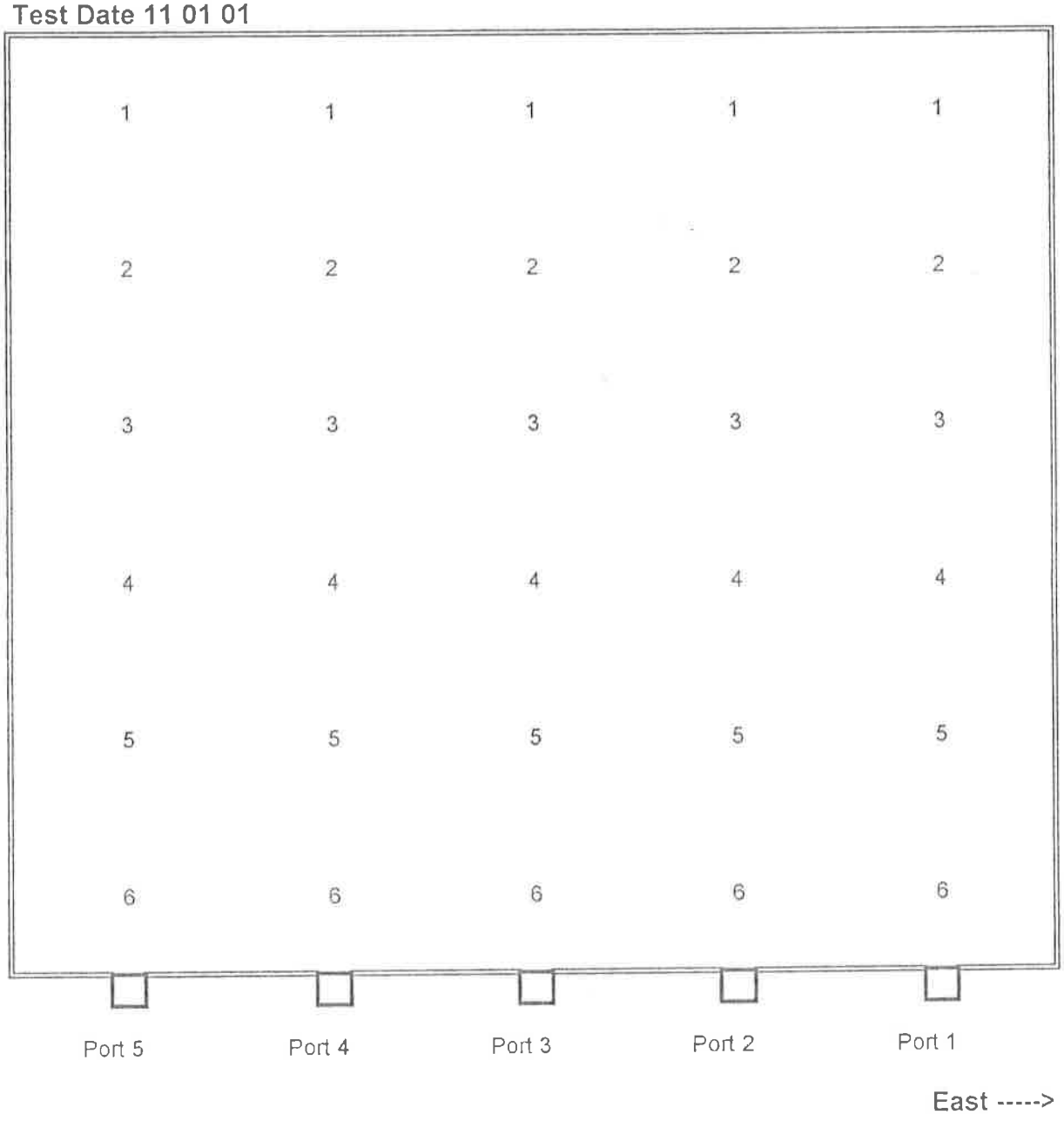
2IP12-000062

Appendix C

Scrubber 2-D Field Sampling Data

2IP12-000063

Intermountain Power Project
Unit 2 Scrubber Module D
Test Date 11 01 01



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Salt Lake City, Utah 84115

Velocity Traverse Field Data Sheet

Date 11-1-01		Operators MH, JR	
Plant Name- Intermountain Power		Pitot Tube ID Number 7-14	
Unit Number/Location 2-D		Static Pressure 1.7	
Barometric Pressure (Stack Elevation)		Start Time 900	
Load Condition	Run #	End Time 1502	

Port Number	Point Number	Delta P (in H_2O)	Temperature (°F)
1	1	0.033	118
1	2	0.129	118
1	3	0.124	118
1	4	0.135	118
1	5	0.1~~20~~ 0.209	118
1	6	0.178	117
2	1	0.110	117
2	2	0.005	117
2	3	-0.009	117
2	4	-0.006	117
2	5	-0.002	116
2	6	0.060	115
3	1	-0.002	116
3	2	0.00	116
3	3	-0.005	115
3	4	-0.008	116
3	5	-0.003	116
3	6	-0.001	117
4	1	0.041	118
4	2	-0.001	118
4-~~2~~	3	0.001	118

Port Number	Point Number	Delta P (in H_2O)	Temperature (°F)
4	~~8~~ 4	-0.003	118
4	5	0.002	118
4	6	0.021	118
5	1	0.118	118
5	2	0.084	119
5	3	0.112	118
5	4	~~0.9~~ 0.098 mm	119
5	5	0.099	118
5	6	0.129	118

MOISTURE DATA

	PERCENT MOISTURE=	12.85	
METER VOLUME START	653.167	Bp=	25.50
METER VOLUME STOP	780.359	METER GAMMA=	1.000

Vm=	127.192
Vl=	343.6
Tm=	61.4

	Impinger 1	Impinger 2	Impinger 3	Impinger 4
FINAL	1050.3	722.6	605.9	740.3
INTIAL	738.5	717.6	602.3	717.1
	311.8	5.0	3.6	23.2

METER TEMP

	Inlet	Outlet		
1	53.0	53.0	69.0	58.0
2	60.0	54.0	69.0	59.0
3	63.0	54.0	61.0	59.0
4	64.0	55.0	66.0	59.0
5	65.0	55.0	69.0	59.0
6	65.0	55.0	67.0	60.0
7	53.0	52.0	70.0	60.0
8	61.0	52.0	71.0	61.0
9	63.0	53.0	63.0	61.0
10	64.0	54.0	69.0	61.0
11	65.0	55.0	71.0	61.0
12	66.0	56.0	72.0	62.0
	58.0	56.0	73.0	63.0
	64.0	56.0	73.0	63.0
	67.0	57.0		
	68.0	57.0		

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Page 1

Stack Gas Moisture Determination

Date 11-1-01	Operators MH, JR	Meter Box Number	1
Plant Name IP		Meter Box dH@	1.723
Unit/Location Unit 2-D		Meter Box Gamma	1.000
Operating Load	Run # 2	Pretest Leak Check	0.007 at 16"
Barometric Pressure (Stack Elevation)		Posttest Leak Check	0.001 at 5"

Traverse Point Number	Clock Time	Elapsed Time (minutes)	Gas Meter Reading (cub. ft.)	Delta H (in. H_2O)	Vacuum (" of Hg)	Temperatures Stack F	Meter In F	Meter Out F	Impinger F
1-1	900	0	653.167	0.5	3.8	118	53	53	41
1-2		10	~~658.8~~ 657.8	0.5	3.6	118	60	54	42
1-3		20	662.0	0.5	3.6	118	63	54	41
1-4		30	666.2	0.5	3.6	118	64	55	41
1-5		40	670.5	0.5	3.6	118	65	55	41
1-6	950/1000	50/60	674.8	0.5	3.6	117	65	55	41
2-1	1023	60	679.096	0.5	3.9 3.6	117	53	52	46
2-2		70	683.5	0.5	3.6	117	61	52	40
2-3		80	687.6	0.5	3.6	117	63	53	43
2-4		90	691.9	0.5	3.7	117	64	54	44
2-5		100	~~696.1~~	0.5	3.7	116	65	55	42
2-6	1113/1123	110/120	700.5	0.5	3.8	115	66	56	42
3-1	1138	120	704.890	0.5	3.8	116	58	56	46
3-2		130	709.3	0.5	3.8	116	64	56	43
3-3		146	715.8	0.5	3.8	115	67	57	47
3-4		150	717.8	0.5	3.8	116	68	57	48

Vm 696.1 omit

	Impinger 1 Weights	Impinger 2 Weights	Impinger 3 Weights	Impinger 4 Weights
Final	1050.3	722.6	605.9	740.3
Initial	738.5	717.6	602.3	717.1
Net Gain				

Vl = Total Gain (g)

Percent Moisture (M) = 4.715 * (Vl)/((0.04715 * Vl)+(17.64 * Y * Vm * Bp)/(460 + Tm)

Percent Moisture (M) = _____

CCI
Environmental Consultants

3855 South 500 West, Suite I
Salt Lake City, Utah 84115

Page 2

Stack Gas Moisture Determination

Date 11-1-01	Operators MH, JR	Meter Box Number	1
Plant Name IP		Meter Box dH@	1.723
Unit/Location 2-D		Meter Box Gamma	1.000
Operating Load	Run # 2	Pretest Leak Check	0.007 at 16"
Barometric Pressure (Stack Elevation)		Posttest Leak Check	0.001 at 5"

Traverse Point Number	Clock Time	Elapsed Time (minutes)	Gas Meter Reading (cub. ft.)	Delta H (in. H_2O)	Vacuum (" of Hg)	Temperatures Stack F	Meter In F	Meter Out F	Impinger F
3-5	1218	160	722.1	0.5	3.9	117	69	58	45
3-6	1228/1238	170/180	726.4	0.5	3.9	117	69	59	44
4-1	1250	180	*730.234	0.5	3.9	118	61	59	50
4-2		190	734.9	0.5	3.9	118	66	59	51
4-3		200	739.2	0.5	3.9	118	69	59	48
**4-4		210	742.7	0.5	3.9	118	67	60	47
4-5		220	746.9	0.5	3.9	118	70	60	45
4-6	1340/1350	230/240	751.2	0.5	3.9	118	71	61	45
5-1	~~207~~ 1402	240	755.528	0.5	3.9	119	63	61	51
5-2		250	759.9	0.5	4	119	69	61	47
5-3		260	764.2	0.5	4	118	71	61	49
5-4		270	768.5	0.5	4	~~115~~ 119	72	62	49
5-5		280	772.8	0.5	4	118	73	63	48
5-6		290	777.1	0.5	4.1	118	73	63	47
5-6	1502	300	780.359		end	of	test		

* 730.512 mal **Power was off came on ~ 211 elasped time?

	Impinger 1 Weights	Impinger 2 Weights	Impinger 3 Weights	Impinger 4 Weights
Final				
Initial				
Net Gain				

VI = Total Gain (g)

Percent Moisture (M) = 4.715 * (VI)/((0.04715 * VI)+(17.64 * Y * Vm * Bp)/(460 + Tm)

Percent Moisture (M) = _____

2IP12-000068

Stack Gas Stratification Test Results

Date: 11-1-01

Plant Name: IPF

Unit Name or Number: Unit 2 Scrubber Mod D

Run Number: 2

Operator: L. Cottrell

Raw File Name: IPSCUD.CSV

	Time Point Started	Traverse Point Number	SO_2 Conc. (ppmvd)			O_2 Conc. (%)	CO_2 Conc. (%)
	0900	1-1					
	0910	1-2					
	0920	1-3					
	0930	1-4					
	0940	1-5					
	0950	1-6					
	1023	2-1					
	1033	2-2					
	1043	2-3					
	1053	2-4					
	1103	2-5					
	1113	2-6					
	1138	3-1					
	1148	3.2					
	1158	3.3					
	1208	3.4					
	1218	3.5					
	1228	3.6					
	1250	4-1					
	1300	4.2					
	1310	4.3					
	1320	4.4					
	1330	4.5					
	1340	4-6					

Stack Gas Stratification Test Results

Date: 11-1-01

Plant Name: IPS

Unit Name or Number: Unit 2 Scrub-Mod D

Run Number: 2

Operator: L. Cottonle

Raw File Name: IPSCMD.CS2

	Time Point Started	Traverse Point Number	SO_2 Conc. (ppmvd)			O_2 Conc. (%)	CO_2 Conc. (%)
	1402	5-1					
	1412	5-2					
	1422	5-3					
	1432	5-4					
	1442	5-5					
	1452	5-6					

Run Number	Date	Time	1 O2	2 CO2	3 SO2
1	11/1/01	9:00:15	6.01	13.20	40.2
1	11/1/01	9:01:15	6.11	13.15	40.1
1	11/1/01	9:02:15	6.00	13.23	40.5
1	11/1/01	9:03:15	6.00	13.22	41.7
1	11/1/01	9:04:15	6.08	13.16	41.5
1	11/1/01	9:05:15	6.00	13.25	40.2
1	11/1/01	9:06:15	5.86	13.32	39.9
1	11/1/01	9:07:15	5.91	13.32	42.1
1	11/1/01	9:08:15	5.99	13.25	44.2
1	11/1/01	9:09:15	5.90	13.33	44.5
1	11/1/01	9:10:15	5.82	13.38	36.5
1	11/1/01	9:11:15	5.79	13.41	29.7
1	11/1/01	9:12:15	5.89	13.33	27.7
1	11/1/01	9:13:15	5.98	13.23	26.6
1	11/1/01	9:14:15	6.03	13.22	25.7
1	11/1/01	9:15:15	5.85	13.31	24.9
1	11/1/01	9:16:15	5.97	13.24	25.0
1	11/1/01	9:17:15	5.93	13.28	26.0
1	11/1/01	9:18:15	6.05	13.19	26.1
1	11/1/01	9:19:15	6.04	13.17	26.8
1	11/1/01	9:20:15	6.07	13.15	29.1
1	11/1/01	9:21:15	5.99	13.19	32.2
1	11/1/01	9:22:15	6.02	13.22	33.6
1	11/1/01	9:23:15	6.01	13.21	31.8
1	11/1/01	9:24:15	5.98	13.22	29.4
1	11/1/01	9:25:15	6.01	13.20	27.9
1	11/1/01	9:26:15	5.92	13.25	27.8
1	11/1/01	9:27:15	5.93	13.26	27.6
1	11/1/01	9:28:15	5.98	13.23	27.3
1	11/1/01	9:29:15	5.97	13.19	27.1
1	11/1/01	9:30:15	5.96	13.21	21.9
1	11/1/01	9:31:15	5.92	13.27	19.3
1	11/1/01	9:32:15	6.01	13.20	18.3
1	11/1/01	9:33:15	6.02	13.17	17.9
1	11/1/01	9:34:15	6.11	13.12	17.4
1	11/1/01	9:35:15	6.13	13.09	16.9
1	11/1/01	9:36:15	6.10	13.09	16.9
1	11/1/01	9:37:15	6.20	13.01	17.2
1	11/1/01	9:38:15	6.16	13.05	17.2

1	11/1/01	9:39:15	6.21	13.01	16.8
1	11/1/01	9:40:15	6.21	12.99	16.2
1	11/1/01	9:41:15	6.21	12.98	15.6
1	11/1/01	9:42:15	6.15	13.03	15.0
1	11/1/01	9:43:15	6.17	13.02	13.9
1	11/1/01	9:44:15	6.21	12.99	13.3
1	11/1/01	9:45:15	6.13	13.07	13.3
1	11/1/01	9:46:15	6.03	13.12	13.4
1	11/1/01	9:47:15	6.09	13.09	12.3
1	11/1/01	9:48:15	6.13	13.05	10.9
1	11/1/01	9:49:15	6.19	13.01	9.9
1	11/1/01	9:50:15	6.27	12.92	8.4
1	11/1/01	9:51:15	6.18	13.02	7.1
1	11/1/01	9:52:15	6.12	13.06	6.7
1	11/1/01	9:53:15	6.18	13.00	6.6
1	11/1/01	9:54:15	6.18	12.99	6.7
1	11/1/01	9:55:15	6.21	12.97	6.9
1	11/1/01	9:56:15	6.12	13.05	6.7
1	11/1/01	9:57:15	6.00	13.14	6.4
1	11/1/01	9:58:15	6.06	13.11	6.5
1	11/1/01	9:59:15	6.13	13.02	6.9
2	11/1/01	10:23:15	5.91	13.21	44.3
2	11/1/01	10:24:15	5.91	13.22	44.1
2	11/1/01	10:25:15	5.88	13.22	42.4
2	11/1/01	10:26:15	5.97	13.17	44.6
2	11/1/01	10:27:15	5.90	13.22	44.9
2	11/1/01	10:28:15	5.95	13.19	45.8
2	11/1/01	10:29:15	5.86	13.25	40.8
2	11/1/01	10:30:15	5.88	13.23	38.4
2	11/1/01	10:31:15	5.91	13.21	42.2
2	11/1/01	10:32:15	6.04	13.13	40.5
2	11/1/01	10:33:15	6.03	13.12	39.8
2	11/1/01	10:34:15	5.97	13.15	36.5
2	11/1/01	10:35:15	5.96	13.17	35.5
2	11/1/01	10:36:15	5.99	13.15	37.0
2	11/1/01	10:37:15	5.94	13.20	39.4
2	11/1/01	10:38:15	5.96	13.17	40.1
2	11/1/01	10:39:15	5.96	13.17	39.6
2	11/1/01	10:40:15	5.94	13.17	39.4
2	11/1/01	10:41:15	5.96	13.15	39.5
2	11/1/01	10:42:15	5.89	13.19	39.8
2	11/1/01	10:43:15	6.02	13.11	34.2
2	11/1/01	10:44:15	6.02	13.09	31.2

2	11/1/01	10:45:15	6.06	13.06	30.2
2	11/1/01	10:46:15	5.98	13.13	29.4
2	11/1/01	10:47:15	5.91	13.19	28.5
2	11/1/01	10:48:15	5.93	13.19	26.6
2	11/1/01	10:49:15	5.98	13.14	26.9
2	11/1/01	10:50:15	6.04	13.07	24.9
2	11/1/01	10:51:15	6.03	13.10	23.8
2	11/1/01	10:52:15	6.05	13.07	22.2
2	11/1/01	10:53:15	6.03	13.07	20.7
2	11/1/01	10:54:15	6.00	13.10	18.5
2	11/1/01	10:55:15	5.93	13.13	17.0
2	11/1/01	10:56:15	5.97	13.08	16.4
2	11/1/01	10:57:15	5.99	13.07	16.2
2	11/1/01	10:58:15	5.92	13.12	17.0
2	11/1/01	10:59:15	5.95	13.10	16.3
2	11/1/01	11:00:15	5.95	13.10	15.9
2	11/1/01	11:01:15	5.93	13.13	16.3
2	11/1/01	11:02:15	5.79	13.23	17.0
2	11/1/01	11:03:15	5.80	13.23	17.7
2	11/1/01	11:04:15	5.90	13.14	16.7
2	11/1/01	11:05:15	6.00	13.07	16.1
2	11/1/01	11:06:15	5.92	13.10	15.3
2	11/1/01	11:07:15	5.94	13.07	13.8
2	11/1/01	11:08:15	5.97	13.04	14.0
2	11/1/01	11:09:15	6.05	12.98	15.3
2	11/1/01	11:10:15	5.95	13.06	15.9
2	11/1/01	11:11:15	5.98	13.05	14.7
2	11/1/01	11:12:15	6.10	12.95	11.6
2	11/1/01	11:13:15	5.95	13.05	10.7
2	11/1/01	11:14:15	5.92	13.09	11.0
2	11/1/01	11:15:15	5.94	13.07	10.8
2	11/1/01	11:16:15	5.99	13.01	10.3
2	11/1/01	11:17:15	6.01	12.98	10.0
2	11/1/01	11:18:15	6.04	12.97	10.3
2	11/1/01	11:19:15	6.09	12.93	10.8
2	11/1/01	11:20:15	5.92	13.04	10.9
2	11/1/01	11:21:15	5.95	13.02	10.5
2	11/1/01	11:22:15	6.01	12.96	10.6
3	11/1/01	11:23:15	5.91	12.92	18.4
3	11/1/01	11:38:45	5.85	12.99	35.0
3	11/1/01	11:39:45	5.75	13.11	38.0
3	11/1/01	11:40:45	5.72	13.16	38.1
3	11/1/01	11:41:45	5.76	13.10	36.3

3	11/1/01	11:42:45	5.99	12.98	32.2
3	11/1/01	11:43:45	5.87	13.05	30.2
3	11/1/01	11:44:45	5.97	12.99	30.6
3	11/1/01	11:45:45	5.91	13.02	30.8
3	11/1/01	11:46:45	5.86	13.03	32.2
3	11/1/01	11:47:45	5.83	13.08	31.6
3	11/1/01	11:48:45	5.85	13.06	30.5
3	11/1/01	11:49:45	5.84	13.05	30.0
3	11/1/01	11:50:45	5.80	13.11	31.1
3	11/1/01	11:51:45	5.82	13.10	30.9
3	11/1/01	11:52:45	5.83	13.09	32.7
3	11/1/01	11:53:45	5.81	13.08	33.8
3	11/1/01	11:54:45	5.73	13.17	36.6
3	11/1/01	11:55:45	5.76	13.13	37.2
3	11/1/01	11:56:45	5.88	13.04	35.8
3	11/1/01	11:57:45	5.85	13.05	34.9
3	11/1/01	11:58:45	5.77	13.10	34.6
3	11/1/01	11:59:45	5.82	13.06	35.1
3	11/1/01	12:00:45	5.90	13.00	32.6
3	11/1/01	12:01:45	5.88	13.00	27.8
3	11/1/01	12:02:45	5.79	13.10	24.1
3	11/1/01	12:03:45	5.88	13.03	24.1
3	11/1/01	12:04:45	5.86	13.02	25.6
3	11/1/01	12:05:45	5.86	13.02	25.2
3	11/1/01	12:06:45	5.80	13.08	26.4
3	11/1/01	12:07:45	5.82	13.03	26.7
3	11/1/01	12:08:45	5.74	13.12	27.9
3	11/1/01	12:09:45	5.78	13.09	30.1
3	11/1/01	12:10:45	5.69	13.16	30.5
3	11/1/01	12:11:45	5.71	13.15	30.9
3	11/1/01	12:12:45	5.76	13.09	31.4
3	11/1/01	12:13:45	5.82	13.05	31.0
3	11/1/01	12:14:45	5.83	13.06	31.6
3	11/1/01	12:15:45	5.75	13.09	32.2
3	11/1/01	12:16:45	5.77	13.06	32.5
3	11/1/01	12:17:45	5.84	12.99	31.4
3	11/1/01	12:18:45	5.84	13.04	29.7
3	11/1/01	12:19:45	5.79	13.05	29.0
3	11/1/01	12:20:45	5.82	13.03	29.3
3	11/1/01	12:21:45	5.86	13.01	29.4
3	11/1/01	12:22:45	5.83	13.05	30.1
3	11/1/01	12:23:45	5.78	13.07	30.7
3	11/1/01	12:24:45	5.79	13.07	31.1

3	11/1/01	12:25:45	5.86	13.02	30.8
3	11/1/01	12:26:45	5.88	13.00	28.0
3	11/1/01	12:27:45	5.94	12.93	27.3
3	11/1/01	12:28:45	5.90	12.96	29.8
3	11/1/01	12:29:45	5.95	12.91	30.9
3	11/1/01	12:30:45	5.90	12.95	30.4
3	11/1/01	12:31:45	5.85	12.99	28.8
3	11/1/01	12:32:45	5.87	12.98	29.2
3	11/1/01	12:33:45	5.89	12.96	30.9
3	11/1/01	12:34:45	5.98	12.88	31.2
3	11/1/01	12:35:45	5.89	12.94	30.0
3	11/1/01	12:36:45	5.83	13.02	28.9
4	11/1/01	12:37:45	5.85	12.90	39.2
4	11/1/01	12:51:00	5.77	12.95	53.2
4	11/1/01	12:52:00	5.75	13.03	57.9
4	11/1/01	12:53:00	5.78	13.02	59.3
4	11/1/01	12:54:00	5.78	13.02	58.8
4	11/1/01	12:55:00	5.70	13.04	58.3
4	11/1/01	12:56:00	5.73	13.07	56.8
4	11/1/01	12:57:00	5.84	12.98	57.3
4	11/1/01	12:58:00	5.82	12.97	58.6
4	11/1/01	12:59:00	5.81	12.99	53.2
4	11/1/01	13:00:00	5.80	13.03	48.1
4	11/1/01	13:01:00	5.81	13.03	48.3
4	11/1/01	13:02:00	5.82	12.97	44.6
4	11/1/01	13:03:00	5.78	13.03	43.1
4	11/1/01	13:04:00	5.69	13.13	42.3
4	11/1/01	13:05:00	5.73	13.06	42.5
4	11/1/01	13:06:00	5.76	13.03	44.1
4	11/1/01	13:07:00	5.64	13.12	47.0
4	11/1/01	13:08:00	5.64	13.12	46.0
4	11/1/01	13:09:00	5.76	13.06	39.6
4	11/1/01	13:10:00	5.82	13.01	35.9
4	11/1/01	13:11:00	5.77	13.04	38.7
4	11/1/01	13:12:00	5.74	13.04	38.6
4	11/1/01	13:13:00	5.76	13.02	35.4
4	11/1/01	13:14:00	5.83	13.00	33.1
4	11/1/01	13:15:00	5.80	13.02	34.1
4	11/1/01	13:16:00	5.71	13.08	35.8
4	11/1/01	13:17:00	5.67	13.13	35.9
4	11/1/01	13:18:00	5.80	13.00	34.0
4	11/1/01	13:19:00	5.87	12.95	32.6
4	11/1/01	13:20:00	5.83	12.98	34.1

4	11/1/01	13:21:00	5.74	13.02	35.8
4	11/1/01	13:22:00	5.84	12.97	34.7
4	11/1/01	13:23:00	5.74	13.03	34.8
4	11/1/01	13:24:00	5.76	13.01	34.5
4	11/1/01	13:25:00	5.78	13.02	34.6
4	11/1/01	13:26:00	5.82	12.99	35.1
4	11/1/01	13:27:00	5.78	13.01	34.8
4	11/1/01	13:28:00	5.73	13.05	34.1
4	11/1/01	13:29:00	5.71	13.04	33.8
4	11/1/01	13:30:00	5.79	13.01	32.8
4	11/1/01	13:31:00	5.77	13.03	32.7
4	11/1/01	13:32:00	5.77	13.03	32.5
4	11/1/01	13:33:00	5.70	13.06	32.0
4	11/1/01	13:34:00	5.78	13.03	32.7
4	11/1/01	13:35:00	5.74	13.03	32.7
4	11/1/01	13:36:00	5.79	13.01	32.3
4	11/1/01	13:37:00	5.73	13.04	32.2
4	11/1/01	13:38:00	5.74	13.02	31.7
4	11/1/01	13:39:00	5.87	12.92	32.0
4	11/1/01	13:40:00	5.88	12.94	32.2
4	11/1/01	13:41:00	5.81	13.00	31.5
4	11/1/01	13:42:00	5.88	12.93	30.9
4	11/1/01	13:43:00	5.97	12.82	30.5
4	11/1/01	13:44:00	5.95	12.85	30.9
4	11/1/01	13:45:00	5.87	12.94	31.6
4	11/1/01	13:46:00	5.99	12.84	31.7
4	11/1/01	13:47:00	5.92	12.90	31.8
4	11/1/01	13:48:00	5.93	12.89	32.5
4	11/1/01	13:49:00	5.95	12.88	32.7
5	11/1/01	13:50:00	5.76	13.00	19.0
5	11/1/01	14:04:00	5.63	13.10	14.9
5	11/1/01	14:05:00	5.63	13.11	14.8
5	11/1/01	14:06:00	5.57	13.17	14.7
5	11/1/01	14:07:00	5.61	13.15	16.2
5	11/1/01	14:08:00	5.52	13.24	16.9
5	11/1/01	14:09:00	5.64	13.13	15.9
5	11/1/01	14:10:00	5.62	13.15	15.0
5	11/1/01	14:11:00	5.62	13.15	15.7
5	11/1/01	14:12:00	5.72	13.05	20.8
5	11/1/01	14:13:00	5.67	13.07	24.8
5	11/1/01	14:14:00	5.58	13.17	27.3
5	11/1/01	14:15:00	5.59	13.15	27.9
5	11/1/01	14:16:00	5.69	13.10	28.5

5	11/1/01	14:17:00	5.76	13.03	27.9
5	11/1/01	14:18:00	5.72	13.04	28.5
5	11/1/01	14:19:00	5.65	13.09	28.5
5	11/1/01	14:20:00	5.66	13.13	28.6
5	11/1/01	14:21:00	5.71	13.05	27.6
5	11/1/01	14:22:00	5.88	12.92	25.4
5	11/1/01	14:23:00	5.85	12.94	20.3
5	11/1/01	14:24:00	5.68	13.06	19.3
5	11/1/01	14:25:00	5.80	12.99	19.0
5	11/1/01	14:26:00	5.75	13.05	19.1
5	11/1/01	14:27:00	5.71	13.04	18.9
5	11/1/01	14:28:00	5.70	13.04	19.3
5	11/1/01	14:29:00	5.80	12.97	19.1
5	11/1/01	14:30:00	5.83	12.97	18.6
5	11/1/01	14:31:00	5.86	12.93	18.9
5	11/1/01	14:32:00	5.91	12.89	14.9
5	11/1/01	14:33:00	5.88	12.90	12.2
5	11/1/01	14:34:00	5.83	12.94	12.9
5	11/1/01	14:35:00	5.80	12.97	14.9
5	11/1/01	14:36:00	5.89	12.92	15.4
5	11/1/01	14:37:00	5.85	12.95	12.6
5	11/1/01	14:38:00	5.84	12.93	11.6
5	11/1/01	14:39:00	5.81	12.93	13.4
5	11/1/01	14:40:00	5.84	12.92	14.2
5	11/1/01	14:41:00	5.83	12.95	15.0
5	11/1/01	14:42:00	5.89	12.92	15.7
5	11/1/01	14:43:00	5.91	12.89	16.0
5	11/1/01	14:44:00	5.90	12.89	17.1
5	11/1/01	14:45:00	5.88	12.89	17.4
5	11/1/01	14:46:00	5.90	12.87	17.4
5	11/1/01	14:47:00	5.96	12.85	17.1
5	11/1/01	14:48:00	5.94	12.85	16.9
5	11/1/01	14:49:00	5.88	12.90	17.4
5	11/1/01	14:50:00	5.84	12.95	17.4
5	11/1/01	14:51:00	5.91	12.87	21.4
5	11/1/01	14:52:00	5.96	12.82	26.1
5	11/1/01	14:53:00	5.91	12.86	27.3
5	11/1/01	14:54:00	5.89	12.88	27.7
5	11/1/01	14:55:00	5.96	12.80	27.7
5	11/1/01	14:56:00	5.98	12.82	27.4
5	11/1/01	14:57:00	5.91	12.86	27.6
5	11/1/01	14:58:00	5.93	12.88	28.3
5	11/1/01	14:59:00	6.17	12.65	28.1

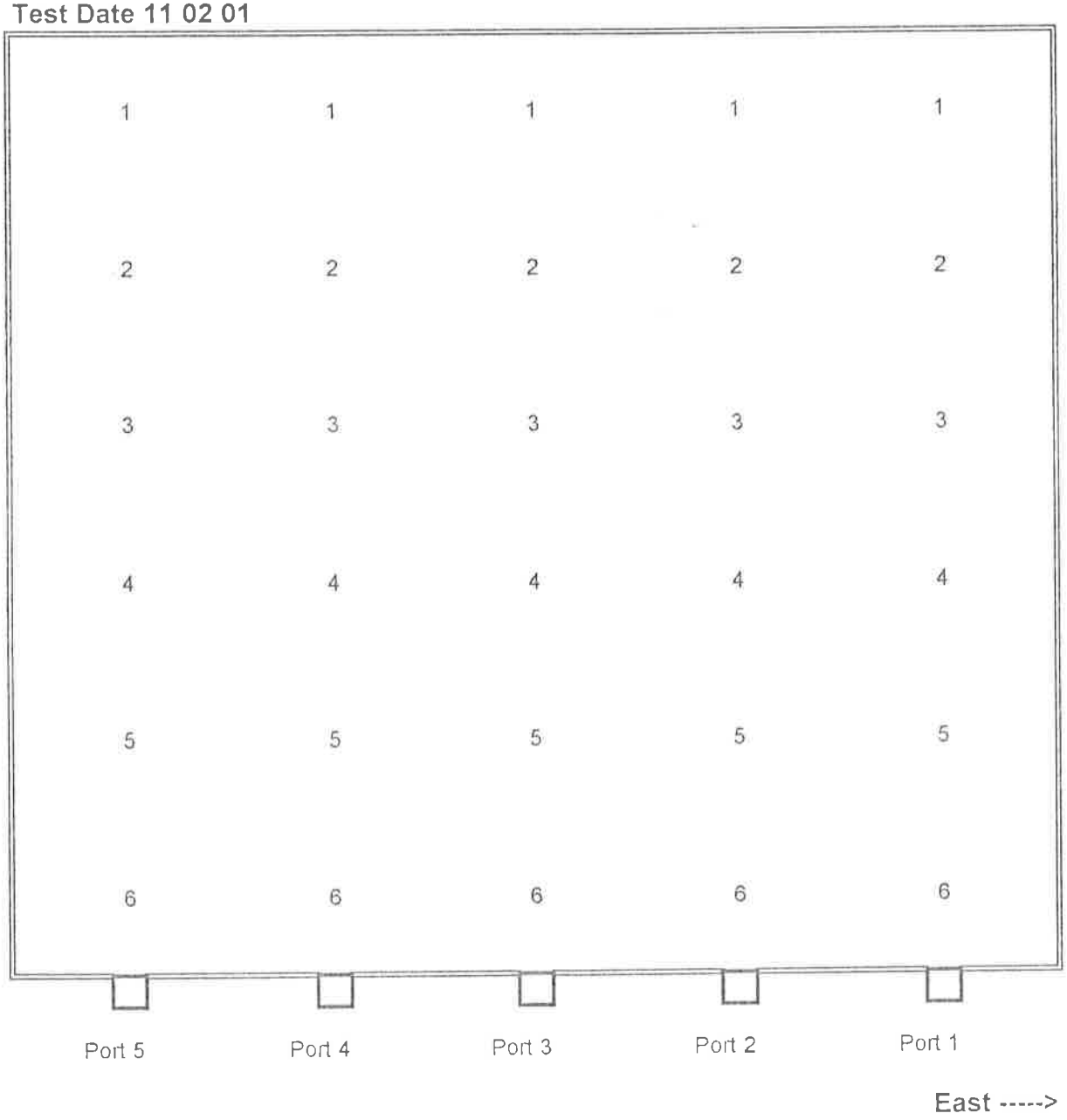
5	11/1/01	15:00:00	6.16	12.65	26.9
5	11/1/01	15:01:00	6.01	12.77	26.6
5	11/1/01	15:02:00	6.01	12.78	27.0
End					
	11/1/01	0.627083	6.00	12.78	27.4

Appendix D

Scrubber 1-C Field Sampling Data

2IP12-000079

Intermountain Power Project
Unit 1 Scrubber Module C
Test Date 11 02 01



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Velocity Traverse Field Data Sheet

Date	11-02-01	Operators	MH, JR
Plant Name-	IPSC	Pitot Tube ID Number	7-14
Unit Number/Location	1 scrubber C	Static Pressure	1.3
Barometric Pressure (Stack Elevation)		Start Time	8:30
Load Condition	Run # 3	End Time	1439

Port Number	Point Number	Delta P (in H_2O)	Temperature (°F)
1	1	0.379	114
1	2	0.096	114
1	3	0.113	114
1	4	0.071	114
1	5	0.145	~~114~~ 112
1	6	0.058	115
2	1	-0.019	114
2	2	-0.005	115
2	3	-0.001	115
2	4	0.000	113
2	5	0.000	115
2	6	0.014	116
3	1	-0.003	116
3	2	0.000	117
3	3	-0.002	117
3	4	-0.002	117
3	5	-0.001	117
3	6	-0.004	117
4	1	-0.071	117
4	2	0.001	115
4	3	-0.001	117

Port Number	Point Number	Delta P (in H_2O)	Temperature (°F)
4	4	-0.001	117
4	5	0.010	117
~~4~~ 4	6	0.038	118
5	~~3~~ 1	0.022	119
5	~~3~~ 2	0.020	115
5	~~4~~ 3	0.070	115
5	~~5~~ 4	0.047	115
5	~~6~~ 5	0.110	118
5	6	0.072	119

MOISTURE DATA

	PERCENT MOISTURE=	11.70	
METER VOLUME START	780.478	Bp=	25.50
METER VOLUME STOP	907.912	METER GAMMA=	1.000

Vm=	127.434
Vl=	311.6
Tm=	57.8

	Impinger 1	Impinger 2	Impinger 3	Impinger 4
FINAL	978.6	589.3	616.7	784.6
INTIAL	696.5	583.8	614.9	762.4
	282.1	5.5	1.8	22.2

METER TEMP

	Inlet	Outlet		
1	41.0	42.0	67.0	56.0
2	47.0	42.0	68.0	57.0
3	51.0	43.0	58.0	57.0
4	54.0	44.0	66.0	57.0
5	55.0	45.0	68.0	58.0
6	57.0	46.0	70.0	59.0
7	49.0	47.0	71.0	60.0
8	55.0	47.0	72.0	61.0
9	58.0	48.0	63.0	62.0
10	59.0	49.0	71.0	61.0
11	61.0	50.0	73.0	62.0
12	62.0	51.0	74.0	63.0
	53.0	52.0	74.0	63.0
	61.0	52.0	74.0	64.0
	63.0	53.0		
	65.0	54.0		

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Stack Gas Moisture Determination

Date 11-2-01		Operators MH, JR	
Plant Name IPSC		Meter Box Number 1.	
Unit/Location 1/C		Meter Box Gamma ~~1.723~~ 1.000	
Operating Load	Run # 3	Pretest Leak Check	0.003 at 15"
Barometric Pressure (Stack Elevation)		Posttest Leak Check	

Traverse Point Number	Clock Time	Elapsed Time (minutes)	Gas Meter Reading (cub. ft.)	Delta H (in. H_2O)	Vacuum (" of Hg)	Temperatures Stack F	Meter In F	Meter Out F	Impinger F
3-5	1145	160	848.1	0.5	3.8	117	67	56	51
3-6		170	~~849.4~~ 852.3	0.5	3.8	117	68	57	52
3-6	1205	180	856.635	Port Change					
4-1	1227	190	856.635	0.5	3.9	117	58	57	52
4-2		190	860.9	0.5	3.9	118	66	57	48
4-3		200	865.2	0.5	3.8	117	68	58	49
4-4		210	869.4	0.5	3.9	117	70	59	49
4-5		220	873.7	0.5	3.9	117	71	60	50
4-6		230	877.9	0.5	3.9	118	72	61	51
4-6	1327	240	882.278	Port Change					

	Impinger 1 Weights	Impinger 2 Weights	Impinger 3 Weights	Impinger 4 Weights
Final				
Initial				
Net Gain				

VI = Total Gain (g)

*Percent Moisture (M) = 4.715 * (VI)/((0.04715 * VI)+(17.64 * Y * Vm * Bp)/(460 + Tm)*

Percent Moisture (M) = _____

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Stack Gas Moisture Determination

Date 11-02-01	Operators MH, JR
Plant Name IPSC	Meter Box Number 1
Unit/Location 1/C	Meter Box Gamma 1.000
Operating Load Run # 3	Pretest Leak Check 0.003 at 15"
Barometric Pressure (Stack Elevation)	Posttest Leak Check 0.046 at 5"

Traverse Point Number	Clock Time	Elapsed Time (minutes)	Gas Meter Reading (cub. ft.)	Delta H (in. H_2O)	Vacuum (" of Hg)	Temperatures Stack F	Meter In F	Meter Out F	Impinger F
5-1	1339	240	882.278	0.5	4	119	63	62	56
5-2		250	886.5	0.5	4	118	71	61	54
5-3		260	890.65	0.5	3.9	118	73	62	53
5-4		270	895.1	0.5	3.9	118	74	63	53
5-5		280	899.4	0.5	3.9	118	74	63	53
5-6		290	903.6	0.5	4.0	119	74	64	52
5-6	1439	300	907.912		end	of test			

	Impinger 1 Weights	Impinger 2 Weights	Impinger 3 Weights	Impinger 4 Weights
Final				
Initial				
Net Gain				

Vl = Total Gain (g)

*Percent Moisture (M) = 4.715 * (Vl)/((0.04715 * Vl)+(17.64 * Y * Vm * Bp)/(460 + Tm)*

Percent Moisture (M) = _____

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Stack Gas Moisture Determination

Page 1

Date 11-2-01	Operators MH, JR	Meter Box Number	1
Plant Name IPSC		Meter Box dH@	1.723
Unit/Location 1-C		Meter Box Gamma	1.000
Operating Load	Run # 3	Pretest Leak Check	0.003 at 15"
Barometric Pressure (Stack Elevation)		Posttest Leak Check	0.046 at 5"

Traverse Point Number	Clock Time	Elapsed Time (minutes)	Gas Meter Reading (cub. ft.)	Delta H (in. H_2O)	Vacuum (" of Hg)	Temperatures Stack F	Meter In F	Meter Out F	Impinger F
1-1	830	0	780.478	0.5	3	114	41	42	37
1-2		10	784.7	0.5	3.3	114	47	42	38
1-3		20	788.9	0.5	3.3	114	51	43	39
1-4		30	793.1	0.5	3.3	114	54	44	39
1-5		40	797.3	0.5	3.4	112	55	45	40
1-6	920/930	50/60	801.5	0.5	3.5	115	57	46	41
2-1	945	60	805.731	0.5	3.5	114	49	47	41
2-2		70	809.9	0.5	3.5	115	55	47	42
2-3		80	814.2	0.5	3.5	115	58	48	43
2-4		90	818.4	0.5	3.5	113	59	49	43
2-5		100	822.6	0.5	3.5	115	61	50	44
2-6	1005/1045	110/120	826.9	0.5	3.6	116	62	51	45
3-1	1105	120	831.154	0.5	3.8	116	53	52	48
3-2		130	835.4	0.5	3.8	117	61	52	46
3-3		140	839.6	0.5	3.8	117	63	53	47
3-4		150	843.8	0.5	3.8	117	65	54	49

	Impinger 1 Weights	Impinger 2 Weights	Impinger 3 Weights	Impinger 4 Weights
Final	978.6	589.3	116.7	784.6
Initial	696.5	583.8	614.9	762.4
Net Gain				

Vl = Total Gain (g)

Percent Moisture (M) = 4.715 * (Vl)/((0.04715 * Vl)+(17.64 * Y * Vm * Bp)/(460 + Tm)

Percent Moisture (M) = _____

2IP12-000085

Stack Gas Stratification Test Results

Date: 11-2-01 Run Number 3

Plant Name: IPP Operator: L. Cottrell

Unit Name or Number: Unit 1 Module C Raw File Name: 1PSC41C

Time Point Started	Traverse Point Number	SO_2 Conc. (ppmvd)	Time Point Started	Traverse Point Number	O_2 Conc. (%)	CO_2 Conc. (%)
0830	1-1	1338	1398	5-1		
0840	1-2		1348	5-2		
0850	1-3		1358	5-3		
0900	1-4		1408	5-4		
0910	1-5		1418	5-5	Peaked 108, 113, 115 $\bar{X} \cong 113$	
0920	1-6		1428	5-6	OFF SCALE 147-153	Peaks 151.7 $\bar{X} \cong 150$
0945	2-1					
0955	2-2	O_2 ANALYZER FAILED DURING TEST				
1005	2-3					
1015	2-4					
1025	2-5					
1035	2-6					
1105	3-1					
1115	3-2					
1125	3-3					
1135	3-4					
1145	3-5					
1155	3-6					
1227	4-1					
1237	4-2					
1247	4-3					
1257	4-4					
1307	4-5	Peaked @ ≅ 104 ppm, 106		Range 100-106		$\bar{X} \cong 103$
1317	4-6	Peaked @ 139, 144		Range 139-142		$\bar{X} \cong 141$

Run Number	Date	Time	1 O2	2 CO2	3 SO2
1	11/2/01	8:30:15	5.30	13.87	10.4
1	11/2/01	8:31:15	5.31	13.87	10.9
1	11/2/01	8:32:15	5.31	13.88	11.2
1	11/2/01	8:33:15	5.37	13.88	10.8
1	11/2/01	8:34:15	5.36	13.86	10.8
1	11/2/01	8:35:15	5.29	13.90	11.2
1	11/2/01	8:36:15	5.32	13.87	11.3
1	11/2/01	8:37:15	5.32	13.88	11.0
1	11/2/01	8:38:15	5.27	13.89	10.9
1	11/2/01	8:39:15	5.29	13.86	16.7
1	11/2/01	8:40:15	5.27	13.89	32.4
1	11/2/01	8:41:15	5.27	13.90	35.5
1	11/2/01	8:42:15	5.34	13.85	37.4
1	11/2/01	8:43:15	5.33	13.85	38.9
1	11/2/01	8:44:15	5.28	13.88	38.7
1	11/2/01	8:45:15	5.33	13.87	37.7
1	11/2/01	8:46:15	5.26	13.88	37.3
1	11/2/01	8:47:15	5.15	13.96	38.5
1	11/2/01	8:48:15	5.22	13.91	39.3
1	11/2/01	8:49:15	5.24	13.89	35.9
1	11/2/01	8:50:15	5.27	13.89	31.7
1	11/2/01	8:51:15	5.33	13.87	30.6
1	11/2/01	8:52:15	5.19	13.94	29.0
1	11/2/01	8:53:15	5.17	13.96	29.5
1	11/2/01	8:54:15	5.23	13.92	29.0
1	11/2/01	8:55:15	5.19	13.92	28.2
1	11/2/01	8:56:15	5.22	13.92	29.6
1	11/2/01	8:57:15	5.30	13.88	29.8
1	11/2/01	8:58:15	5.27	13.89	28.7
1	11/2/01	8:59:15	5.22	13.92	31.6
1	11/2/01	9:00:15	5.26	13.90	44.2
1	11/2/01	9:01:15	5.14	13.98	48.0
1	11/2/01	9:02:15	5.22	13.94	48.1
1	11/2/01	9:03:15	5.27	13.92	48.5
1	11/2/01	9:04:15	5.21	13.92	48.7
1	11/2/01	9:05:15	5.27	13.89	48.6
1	11/2/01	9:06:15	5.25	13.93	48.3
1	11/2/01	9:07:15	5.28	13.91	48.1
1	11/2/01	9:08:15	5.14	14.00	48.7

1	11/2/01	9:09:15	5.25	13.92	50.4
1	11/2/01	9:10:15	5.21	13.94	45.3
1	11/2/01	9:11:15	5.28	13.91	41.6
1	11/2/01	9:12:15	5.39	13.84	46.8
1	11/2/01	9:13:15	5.24	13.93	50.4
1	11/2/01	9:14:15	5.18	13.96	52.0
1	11/2/01	9:15:15	5.24	13.93	46.2
1	11/2/01	9:16:15	5.29	13.88	45.5
1	11/2/01	9:17:15	5.28	13.90	49.8
1	11/2/01	9:18:15	5.28	13.92	50.6
1	11/2/01	9:19:15	5.29	13.90	52.0
1	11/2/01	9:20:15	5.26	13.91	54.2
1	11/2/01	9:21:15	5.27	13.92	55.2
1	11/2/01	9:22:15	5.15	13.97	54.5
1	11/2/01	9:23:15	5.25	13.91	54.2
1	11/2/01	9:24:15	5.33	13.87	52.4
1	11/2/01	9:25:15	5.22	13.92	52.8
1	11/2/01	9:26:15	5.19	13.95	52.7
1	11/2/01	9:27:15	5.33	13.87	53.8
1	11/2/01	9:28:15	5.27	13.93	53.1
1	11/2/01	9:29:15	5.26	13.94	52.0
2	11/2/01	9:45:15	5.27	13.80	18.8
2	11/2/01	9:46:15	5.29	13.81	23.8
2	11/2/01	9:47:15	6.87	13.83	27.6
2	11/2/01	9:48:15	7.59	13.87	28.0
2	11/2/01	9:49:15	7.70	13.85	27.8
2	11/2/01	9:50:15	7.69	13.88	28.6
2	11/2/01	9:51:15	7.56	13.95	29.7
2	11/2/01	9:52:15	7.68	13.90	29.3
2	11/2/01	9:53:15	7.70	13.89	28.8
2	11/2/01	9:54:15	7.76	13.85	32.2
2	11/2/01	9:55:15	7.78	13.85	46.5
2	11/2/01	9:56:15	6.99	13.89	52.4
2	11/2/01	9:57:15	6.58	13.92	54.0
2	11/2/01	9:58:15	6.62	13.86	54.7
2	11/2/01	9:59:15	6.46	13.90	55.2
2	11/2/01	10:00:15	6.46	13.83	55.8
2	11/2/01	10:01:15	6.56	13.82	55.4
2	11/2/01	10:02:15	6.66	13.80	55.2
2	11/2/01	10:03:15	6.61	13.85	55.1
2	11/2/01	10:04:15	6.50	13.90	54.9
2	11/2/01	10:05:15	6.60	13.86	57.1
2	11/2/01	10:06:15	6.66	13.82	59.1

2	11/2/01	10:07:15	6.69	13.77	58.8
2	11/2/01	10:08:15	6.64	13.79	58.9
2	11/2/01	10:09:15	6.73	13.76	59.9
2	11/2/01	10:10:15	6.71	13.80	56.9
2	11/2/01	10:11:15	8.43	13.85	57.9
2	11/2/01	10:12:15	9.44	13.88	58.3
2	11/2/01	10:13:15	9.44	13.85	59.2
2	11/2/01	10:14:15	9.69	13.80	61.9
2	11/2/01	10:15:15	9.51	13.86	59.2
2	11/2/01	10:16:15	9.58	13.86	58.9
2	11/2/01	10:17:15	9.47	13.89	64.7
2	11/2/01	10:18:15	9.46	13.93	67.0
2	11/2/01	10:19:15	9.48	13.91	67.3
2	11/2/01	10:20:15	9.37	13.93	67.1
2	11/2/01	10:21:15	9.61	13.90	65.9
2	11/2/01	10:22:15	9.72	13.89	67.3
2	11/2/01	10:23:15	9.84	13.83	67.6
2	11/2/01	10:24:15	9.71	13.87	68.5
2	11/2/01	10:25:15	9.72	13.89	72.2
2	11/2/01	10:26:15	9.66	13.86	74.6
2	11/2/01	10:27:15	9.98	13.80	75.8
2	11/2/01	10:28:15	9.81	13.84	76.1
2	11/2/01	10:29:15	9.66	13.90	73.7
2	11/2/01	10:30:15	9.64	13.92	72.8
2	11/2/01	10:31:15	9.86	13.82	75.3
2	11/2/01	10:32:15	9.79	13.84	76.8
2	11/2/01	10:33:15	9.63	13.89	78.7
2	11/2/01	10:34:15	9.79	13.83	75.8
2	11/2/01	10:35:15	9.88	13.81	65.2
2	11/2/01	10:36:15	9.78	13.84	63.7
2	11/2/01	10:37:15	9.68	13.88	64.0
2	11/2/01	10:38:15	9.53	13.91	61.8
2	11/2/01	10:39:15	9.79	13.81	61.1
2	11/2/01	10:40:15	9.83	13.81	61.8
2	11/2/01	10:41:15	9.63	13.87	64.3
2	11/2/01	10:42:15	9.48	13.92	65.3
2	11/2/01	10:43:15	9.72	13.83	64.5
2	11/2/01	10:44:15	9.62	13.86	63.0
3	11/2/01	11:05:15	9.36	13.82	68.6
3	11/2/01	11:06:15	9.50	13.82	74.1
3	11/2/01	11:07:15	9.46	13.87	76.1
3	11/2/01	11:08:15	9.57	13.85	77.6
3	11/2/01	11:09:15	9.29	13.91	78.7

3	11/2/01	11:10:15	9.35	13.87	79.3
3	11/2/01	11:11:15	9.17	13.91	76.3
3	11/2/01	11:12:15	9.24	13.88	75.9
3	11/2/01	11:13:15	9.21	13.90	77.5
3	11/2/01	11:14:15	9.26	13.89	75.1
3	11/2/01	11:15:15	8.97	13.92	76.7
3	11/2/01	11:16:15	8.89	13.96	76.9
3	11/2/01	11:17:15	8.99	13.88	77.5
3	11/2/01	11:18:15	9.19	13.78	77.5
3	11/2/01	11:19:15	8.97	13.89	77.7
3	11/2/01	11:20:15	8.91	13.87	77.5
3	11/2/01	11:21:15	8.96	13.88	76.0
3	11/2/01	11:22:15	8.95	13.83	76.3
3	11/2/01	11:23:15	8.94	13.84	76.8
3	11/2/01	11:24:15	9.00	13.86	87.0
3	11/2/01	11:25:15	8.91	13.86	90.7
3	11/2/01	11:26:15	9.05	13.83	91.3
3	11/2/01	11:27:15	9.08	13.84	91.6
3	11/2/01	11:28:15	8.96	13.86	90.4
3	11/2/01	11:29:15	8.92	13.90	92.2
3	11/2/01	11:30:15	8.95	13.87	91.6
3	11/2/01	11:31:15	8.92	13.92	91.6
3	11/2/01	11:32:15	9.16	13.81	91.4
3	11/2/01	11:33:15	8.96	13.87	91.0
3	11/2/01	11:34:15	8.90	13.87	88.8
3	11/2/01	11:35:15	9.01	13.85	89.0
3	11/2/01	11:36:15	8.93	13.86	90.1
3	11/2/01	11:37:15	8.79	13.90	91.3
3	11/2/01	11:38:15	8.83	13.88	89.0
3	11/2/01	11:39:15	8.87	13.87	82.9
3	11/2/01	11:40:15	8.86	13.85	83.9
3	11/2/01	11:41:15	8.89	13.85	90.2
3	11/2/01	11:42:15	8.98	13.84	91.7
3	11/2/01	11:43:15	9.00	13.84	90.3
3	11/2/01	11:44:15	8.91	13.84	88.2
3	11/2/01	11:45:15	8.94	13.83	89.8
3	11/2/01	11:46:15	8.80	13.88	92.1
3	11/2/01	11:47:15	8.94	13.82	93.5
3	11/2/01	11:48:15	8.87	13.85	90.8
3	11/2/01	11:49:15	8.89	13.86	91.2
3	11/2/01	11:50:15	8.77	13.92	91.6
3	11/2/01	11:51:15	8.74	13.90	92.2
3	11/2/01	11:52:15	8.61	13.93	92.2

3	11/2/01	11:53:15	8.87	13.86	89.4
3	11/2/01	11:54:15	8.99	13.83	86.8
3	11/2/01	11:55:15	9.03	13.76	89.5
3	11/2/01	11:56:15	9.14	13.74	90.6
3	11/2/01	11:57:15	8.97	13.76	91.2
3	11/2/01	11:58:15	8.88	13.81	92.7
3	11/2/01	11:59:15	8.91	13.80	92.0
3	11/2/01	12:00:15	8.90	13.83	89.3
3	11/2/01	12:01:15	8.84	13.84	90.7
3	11/2/01	12:02:15	8.89	13.84	87.1
3	11/2/01	12:03:15	8.94	13.83	86.6
3	11/2/01	12:04:15	8.84	13.86	91.8
4	11/2/01	12:27:00	8.73	13.80	53.2
4	11/2/01	12:28:00	9.02	13.86	58.3
4	11/2/01	12:29:00	8.88	13.90	59.9
4	11/2/01	12:30:00	8.88	13.89	59.7
4	11/2/01	12:31:00	8.99	13.88	59.0
4	11/2/01	12:32:00	8.93	13.90	58.7
4	11/2/01	12:33:00	8.83	13.94	57.7
4	11/2/01	12:34:00	8.94	13.91	56.1
4	11/2/01	12:35:00	8.81	13.92	52.8
4	11/2/01	12:36:00	8.89	13.87	62.9
4	11/2/01	12:37:00	8.94	13.85	69.9
4	11/2/01	12:38:00	8.90	13.95	71.6
4	11/2/01	12:39:00	9.37	13.93	71.9
4	11/2/01	12:40:00	9.56	13.83	70.4
4	11/2/01	12:41:00	9.61	13.80	72.3
4	11/2/01	12:42:00	9.59	13.78	74.6
4	11/2/01	12:43:00	9.44	13.79	74.2
4	11/2/01	12:44:00	9.26	13.86	75.3
4	11/2/01	12:45:00	9.31	13.86	75.5
4	11/2/01	12:46:00	9.34	13.85	75.8
4	11/2/01	12:47:00	9.22	13.89	83.7
4	11/2/01	12:48:00	9.12	13.92	85.1
4	11/2/01	12:49:00	9.05	13.95	84.6
4	11/2/01	12:50:00	8.98	13.98	84.9
4	11/2/01	12:51:00	9.00	13.95	82.4
4	11/2/01	12:52:00	9.10	13.87	78.7
4	11/2/01	12:53:00	9.17	13.86	75.7
4	11/2/01	12:54:00	9.05	13.91	74.0
4	11/2/01	12:55:00	9.00	13.94	74.4
4	11/2/01	12:56:00	9.17	13.84	80.8
4	11/2/01	12:57:00	9.34	13.79	86.3

4	11/2/01	12:58:00	9.22	13.85	87.9
4	11/2/01	12:59:00	9.30	13.81	87.4
4	11/2/01	13:00:00	9.20	13.81	83.8
4	11/2/01	13:01:00	9.00	13.87	83.5
4	11/2/01	13:02:00	9.05	13.82	84.2
4	11/2/01	13:03:00	9.06	13.89	84.3
4	11/2/01	13:04:00	9.08	13.82	86.0
4	11/2/01	13:05:00	9.17	13.75	87.9
4	11/2/01	13:06:00	9.11	13.81	87.1
4	11/2/01	13:07:00	8.95	13.90	90.4
4	11/2/01	13:08:00	8.83	13.94	97.4
4	11/2/01	13:09:00	8.86	13.94	100.5
4	11/2/01	13:10:00	8.82	13.96	100.5
4	11/2/01	13:11:00	9.18	13.83	100.5
4	11/2/01	13:12:00	9.13	13.82	100.2
4	11/2/01	13:13:00	9.09	13.88	100.5
4	11/2/01	13:14:00	9.05	13.88	100.5
4	11/2/01	13:15:00	8.99	13.88	100.1
4	11/2/01	13:16:00	9.14	13.83	97.4
4	11/2/01	13:17:00	9.12	13.81	100.5
4	11/2/01	13:18:00	9.23	13.77	100.5
4	11/2/01	13:19:00	9.34	13.72	100.5
4	11/2/01	13:20:00	9.42	13.73	100.5
4	11/2/01	13:21:00	9.24	13.73	100.5
4	11/2/01	13:22:00	9.12	13.78	100.5
4	11/2/01	13:23:00	9.02	13.84	100.5
4	11/2/01	13:24:00	9.14	13.82	100.5
4	11/2/01	13:25:00	9.15	13.81	100.5
4	11/2/01	13:26:00	8.93	13.85	100.5
5	11/2/01	13:38:15	9.08	13.78	62.0
5	11/2/01	13:39:15	8.96	13.86	81.0
5	11/2/01	13:40:15	9.05	13.83	83.2
5	11/2/01	13:41:15	9.01	13.87	85.4
5	11/2/01	13:42:15	8.97	13.89	86.3
5	11/2/01	13:43:15	8.98	13.87	84.2
5	11/2/01	13:44:15	9.03	13.88	84.9
5	11/2/01	13:45:15	8.88	13.95	84.1
5	11/2/01	13:46:15	8.92	13.95	82.6
5	11/2/01	13:47:15	8.92	13.94	74.2
5	11/2/01	13:48:15	8.96	13.94	63.3
5	11/2/01	13:49:15	8.89	13.96	61.0
5	11/2/01	13:50:15	8.89	13.97	60.9
5	11/2/01	13:51:15	8.89	14.00	60.7

5	11/2/01	13:52:15	8.88	13.97	60.8
5	11/2/01	13:53:15	8.80	14.02	60.8
5	11/2/01	13:54:15	8.85	14.01	60.0
5	11/2/01	13:55:15	9.01	13.92	60.4
5	11/2/01	13:56:15	9.33	13.80	60.2
5	11/2/01	13:57:15	9.03	13.94	60.6
5	11/2/01	13:58:15	8.86	13.97	64.5
5	11/2/01	13:59:15	8.88	13.93	67.1
5	11/2/01	14:00:15	8.99	13.90	71.9
5	11/2/01	14:01:15	8.82	13.99	69.7
5	11/2/01	14:02:15	8.92	13.96	66.3
5	11/2/01	14:03:15	8.99	13.92	66.2
5	11/2/01	14:04:15	9.16	13.84	65.7
5	11/2/01	14:05:15	9.02	13.90	62.1
5	11/2/01	14:06:15	8.95	13.93	63.9
5	11/2/01	14:07:15	8.85	13.98	66.9
5	11/2/01	14:08:15	8.91	13.89	83.4
5	11/2/01	14:09:15	8.50	13.87	81.2
5	11/2/01	14:10:15	8.37	13.89	87.6
5	11/2/01	14:11:15	8.18	13.86	93.6
5	11/2/01	14:12:15	8.52	13.87	94.3
5	11/2/01	14:13:15	8.45	13.90	95.6
5	11/2/01	14:14:15	8.41	13.88	94.9
5	11/2/01	14:15:15	8.49	13.87	92.1
5	11/2/01	14:16:15	8.64	13.84	90.6
5	11/2/01	14:17:15	8.55	13.86	91.4
5	11/2/01	14:18:15	8.63	13.82	100.5
5	11/2/01	14:19:15	8.57	13.83	100.5
5	11/2/01	14:20:15	8.47	13.86	100.5
5	11/2/01	14:21:15	8.39	13.89	100.5
5	11/2/01	14:22:15	8.55	13.84	100.5
5	11/2/01	14:23:15	8.65	13.81	100.5
5	11/2/01	14:24:15	8.57	13.83	100.5
5	11/2/01	14:25:15	7.93	13.84	100.5
5	11/2/01	14:26:15	7.35	13.85	100.5
5	11/2/01	14:27:15	7.45	13.75	100.5
5	11/2/01	14:28:15	7.51	13.73	100.5
5	11/2/01	14:29:15	7.37	13.75	100.5
5	11/2/01	14:30:15	7.25	13.83	100.5
5	11/2/01	14:31:15	7.34	13.84	100.5
5	11/2/01	14:32:15	7.54	13.78	100.5
5	11/2/01	14:33:15	7.57	13.79	100.5
5	11/2/01	14:34:15	7.69	13.74	100.5

5	11/2/01	14:35:15	7.58	13.75	100.5
5	11/2/01	14:36:15	7.46	13.76	100.5
5	11/2/01	14:37:15	7.39	13.84	100.5
End					

Appendix E

Equipment Calibrations

2IP12-000095

Analyzer Calibration Error

Test Performed For:
IPSC
Delta Generating Station
Unit 1 Scrubber Module B
Performance Evalution
Date:10/31/01

Test Performed By:
CCI Environmental
CEMS
Trailer 1
Larry Cottone
Run 1

Oxygen Monitor

Full Scale: 25.00 %

Method 3A
Serial Number: CAI 4E1104

Cylinder Number	Reference Gas Concentration	Analyzer Response	Difference	Calibration Error (%)
CC115360/cg1	0.00 %	-0.03 %	-0.03 %	-0.12 %
CC112163/cg2	12.19 %	12.25 %	0.06 %	0.24 %
ALM049005/cg3	20.90 %	20.96 %	0.06 %	0.24 %

Carbon Dioxide Monitor

Full Scale: 20.00 %

Method 3A
Serial Number: CAI N3P1212T

Cylinder Number	Reference Gas Concentration	Analyzer Response	Difference	Calibration Error (%)
CC115360/cg1	0.00 %	0.09 %	0.09 %	0.45 %
CC112163/cg2	10.08 %	10.30 %	0.22 %	1.10 %
ALM049005/cg3	18.00 %	17.92 %	-0.08 %	-0.40 %

Sulfur Dioxide Monitor

Full Scale: 100.0 ppm

Method 6C
Serial Number: BOVAR 95-721M8282-8

Cylinder Number	Reference Gas Concentration	Analyzer Response	Difference	Calibration Error (%)
CC115360/cg1	0.0 ppm	0.0 ppm	0.0 ppm	0.00 %
cc78776/cg5	44.6 ppm	46.3 ppm	1.7 ppm	1.70 %
CC49056/cg4	94.9 ppm	95.2 ppm	0.3 ppm	0.30 %

Sampling System Bias and Drift

Test Performed For:
IPSC
Delta Generating Station
Unit 1 Scrubber Module B
Performance Evalution
Date:10/31/01

Test Performed By:
CCI Environmental
CEMS
Trailer 1
Larry Cottone
Run 1

Monitor Type	Analyzer Cal Response	Initial Cal Value	Pre Run Bias (%)	Final Cal Value	Post Run Bias (%)	Total Run Drift (%)
O_2	-0.03 %	0.04 %	0.28 %	-0.02 %	0.04 %	-0.24 %
O_2	12.25 %	12.07 %	-0.72 %	11.69 %	-2.24 %	-1.52 %
CO_2	0.09 %	0.14 %	0.25 %	0.13 %	0.20 %	-0.05 %
CO_2	10.30 %	10.06 %	-1.20 %	9.98 %	-1.60 %	-0.40 %
SO_2	0.0 ppm	2.8 ppm	2.80 %	2.5 ppm	2.50 %	-0.30 %
SO_2	46.3 ppm	45.1 ppm	-1.20 %	46.5 ppm	0.20 %	1.40 %

2IP12-000097

Sampling System Bias and Drift

Test Performed For:
IPSC
Delta Generating Station
Unit 1 Scrubber Module B
Performance Evalution
Date:10/31/01

Test Performed By:
CCI Environmental
CEMS
Trailer 1
Larry Cottone
Run 2

Monitor Type	Analyzer Cal Response	Initial Cal Value	Pre Run Bias (%)	Final Cal Value	Post Run Bias (%)	Total Run Drift (%)
O_2	-0.03 %	0.01 %	0.16 %	-0.02 %	0.04 %	-0.12 %
O_2	12.25 %	11.69 %	-2.24 %	11.62 %	-2.52 %	-0.28 %
CO_2	0.09 %	0.25 %	0.80 %	0.11 %	0.10 %	-0.70 %
CO_2	10.30 %	9.98 %	-1.60 %	9.94 %	-1.80 %	-0.20 %
SO_2	0.0 ppm	2.5 ppm	2.50 %	1.9 ppm	1.90 %	-0.60 %
SO_2	46.3 ppm	46.5 ppm	0.20 %	47.5 ppm	1.20 %	1.00 %

2IP12-000098

Sampling System Bias and Drift

Test Performed For:
IPSC
Delta Generating Station
Unit 1 Scrubber Module B
Performance Evalution
Date:10/31/01

Test Performed By:
CCI Environmental
CEMS
Trailer 1
Larry Cottone
Run 3

Monitor Type	Analyzer Cal Response	Initial Cal Value	Pre Run Bias (%)	Final Cal Value	Post Run Bias (%)	Total Run Drift (%)
O_2	-0.03 %	-0.02 %	0.04 %	0.13 %	0.64 %	0.60 %
O_2	12.25 %	11.62 %	-2.52 %	11.45 %	-3.20 %	-0.68 %
CO_2	0.09 %	0.11 %	0.10 %	0.08 %	-0.05 %	-0.15 %
CO_2	10.30 %	9.94 %	-1.80 %	10.00 %	-1.50 %	0.30 %
SO_2	0.0 ppm	1.9 ppm	1.90 %	1.1 ppm	1.10 %	-0.80 %
SO_2	46.3 ppm	47.5 ppm	1.20 %	48.2 ppm	1.90 %	0.70 %

2IP12-000099

Sampling System Bias and Drift

Test Performed For:
IPSC
Delta Generating Station
Unit 1 Scrubber Module B
Performance Evalution
Date:10/31/01

Test Performed By:
CCI Environmental
CEMS
Trailer 1
Larry Cottone
Run 5

Monitor Type	Analyzer Cal Response	Initial Cal Value	Pre Run Bias (%)	Final Cal Value	Post Run Bias (%)	Total Run Drift (%)
O_2	-0.03 %	0.13 %	0.64 %	0.03 %	0.24 %	-0.40 %
O_2	12.25 %	11.45 %	-3.20 %	11.46 %	-3.16 %	0.04 %
CO_2	0.09 %	0.08 %	-0.05 %	0.15 %	0.30 %	0.35 %
CO_2	10.30 %	10.00 %	-1.50 %	9.99 %	-1.55 %	-0.05 %
SO_2	0.0 ppm	1.1 ppm	1.10 %	1.4 ppm	1.40 %	0.30 %
SO_2	46.3 ppm	48.0 ppm	1.70 %	48.2 ppm	1.90 %	0.20 %

2IP12-000100

Sampling System Bias and Drift

Test Performed For:
IPSC
Delta Generating Station
Unit 1 Scrubber Module B
Performance Evalution
Date:10/31/01

Test Performed By:
CCI Environmental
CEMS
Trailer 1
Larry Cottone
Run 6

Monitor Type	Analyzer Cal Response	Initial Cal Value	Pre Run Bias (%)	Final Cal Value	Post Run Bias (%)	Total Run Drift (%)
O_2	-0.03 %	0.03 %	0.24 %	0.06 %	0.36 %	0.12 %
O_2	12.25 %	11.46 %	-3.16 %	11.45 %	-3.20 %	-0.04 %
CO_2	0.09 %	0.15 %	0.30 %	0.15 %	0.30 %	0.00 %
CO_2	10.30 %	9.99 %	-1.55 %	10.01 %	-1.45 %	0.10 %
SO_2	0.0 ppm	1.4 ppm	1.40 %	0.8 ppm	0.80 %	-0.60 %
SO_2	46.3 ppm	48.2 ppm	1.90 %	47.8 ppm	1.50 %	-0.40 %

2IP12-000101

Analyzer Calibration Error

Test Performed For:
IPSC
Delta Generating Station
Unit 2 Scrubber Module D
Performance Evalution
Date:11/1/01

Test Performed By:
CCI Environmental
CEMS
Trailer 1
Larry Cottone
Run 1

Oxygen Monitor

Full Scale: 25.00 %

Method 3A
Serial Number: CAI 4E1104

Cylinder Number	Reference Gas Concentration	Analyzer Response	Difference	Calibration Error (%)
CC115360/cg1	0.00 %	-0.01 %	-0.01 %	-0.04 %
CC112163/cg2	12.19 %	12.21 %	0.02 %	0.08 %
ALM049005/cg3	20.90 %	20.88 %	-0.02 %	-0.08 %

Carbon Dioxide Monitor

Full Scale: 20.00 %

Method 3A
Serial Number: CAI N3P1212T

Cylinder Number	Reference Gas Concentration	Analyzer Response	Difference	Calibration Error (%)
CC115360/cg1	0.00 %	0.01 %	0.01 %	0.05 %
CC112163/cg2	10.08 %	10.38 %	0.30 %	1.50 %
ALM049005/cg3	18.00 %	17.97 %	-0.03 %	-0.15 %

Sulfur Dioxide Monitor

Full Scale: 100.0 ppm

Method 6C
Serial Number: BOVAR 95-721M8282-8

Cylinder Number	Reference Gas Concentration	Analyzer Response	Difference	Calibration Error (%)
CC115360/cg1	0.0 ppm	0.1 ppm	0.1 ppm	0.10 %
cc78776/cg5	44.6 ppm	45.7 ppm	1.1 ppm	1.10 %
CC49056/cg4	94.9 ppm	95.4 ppm	0.5 ppm	0.50 %

Sampling System Bias and Drift

Test Performed For:
IPSC
Delta Generating Station
Unit 2 Scrubber Module D
Performance Evalution
Date:11/1/01

Test Performed By:
CCI Environmental
CEMS
Trailer 1
Larry Cottone
Run 1

Monitor Type	Analyzer Cal Response	Initial Cal Value	Pre Run Bias (%)	Final Cal Value	Post Run Bias (%)	Total Run Drift (%)
O_2	-0.01 %	-0.02 %	-0.04 %	0.00 %	0.04 %	0.08 %
O_2	12.21 %	11.95 %	-1.04 %	11.57 %	-2.56 %	-1.52 %
CO_2	0.01 %	0.15 %	0.70 %	0.08 %	0.35 %	-0.35 %
CO_2	10.38 %	10.14 %	-1.20 %	9.86 %	-2.60 %	-1.40 %
SO_2	0.1 ppm	-0.1 ppm	-0.20 %	-2.0 ppm	-2.10 %	-1.90 %
SO_2	45.7 ppm	46.6 ppm	0.90 %	41.0 ppm	-4.70 %	-5.60 %

2IP12-000103

Sampling System Bias and Drift

Test Performed For:
IPSC
Delta Generating Station
Unit 2 Scrubber Module D
Performance Evalution
Date:11/1/01

Test Performed By:
CCI Environmental
CEMS
Trailer 1
Larry Cottone
Run 2

Monitor Type	Analyzer Cal Response	Initial Cal Value	Pre Run Bias (%)	Final Cal Value	Post Run Bias (%)	Total Run Drift (%)
O_2	-0.01 %	0.00 %	0.04 %	-0.04 %	-0.12 %	-0.16 %
O_2	12.21 %	11.57 %	-2.56 %	11.45 %	-3.04 %	-0.48 %
CO_2	0.01 %	0.08 %	0.35 %	-0.03 %	-0.20 %	-0.55 %
CO_2	10.38 %	9.86 %	-2.60 %	9.77 %	-3.05 %	-0.45 %
SO_2	0.1 ppm	-2.0 ppm	-2.10 %	-4.8 ppm	-4.90 %	-2.80 %
SO_2	45.7 ppm	41.0 ppm	-4.70 %	40.8 ppm	-4.90 %	-0.20 %

2IP12-000104

Sampling System Bias and Drift

Test Performed For:
IPSC
Delta Generating Station
Unit 2 Scrubber Module D
Performance Evalution
Date:11/1/01

Test Performed By:
CCI Environmental
CEMS
Trailer 1
Larry Cottone
Run 3

Monitor Type	Analyzer Cal Response	Initial Cal Value	Pre Run Bias (%)	Final Cal Value	Post Run Bias (%)	Total Run Drift (%)
O_2	-0.01 %	-0.04 %	-0.12 %	0.00 %	0.04 %	0.16 %
O_2	12.21 %	11.45 %	-3.04 %	11.25 %	-3.84 %	-0.80 %
CO_2	0.01 %	-0.03 %	-0.20 %	-0.06 %	-0.35 %	-0.15 %
CO_2	10.38 %	9.77 %	-3.05 %	9.72 %	-3.30 %	-0.25 %
SO_2	0.1 ppm	-4.8 ppm	-4.90 %	-1.2 ppm	-1.30 %	3.60 %
SO_2	45.7 ppm	40.8 ppm	-4.90 %	42.5 ppm	-3.20 %	1.70 %

2IP12-000105

Sampling System Bias and Drift

Test Performed For:
IPSC
Delta Generating Station
Unit 2 Scrubber Module D
Performance Evalution
Date:11/1/01

Test Performed By:
CCI Environmental
CEMS
Trailer 1
Larry Cottone
Run 4

Monitor Type	Analyzer Cal Response	Initial Cal Value	Pre Run Bias (%)	Final Cal Value	Post Run Bias (%)	Total Run Drift (%)
O_2	-0.01 %	0.00 %	0.04 %	-0.03 %	-0.08 %	-0.12 %
O_2	12.21 %	11.25 %	-3.84 %	11.27 %	-3.76 %	0.08 %
CO_2	0.01 %	-0.06 %	-0.35 %	-0.03 %	-0.20 %	0.15 %
CO_2	10.38 %	9.72 %	-3.30 %	9.70 %	-3.40 %	-0.10 %
SO_2	0.1 ppm	-1.2 ppm	-1.30 %	0.4 ppm	0.30 %	1.60 %
SO_2	45.7 ppm	47.2 ppm	1.50 %	46.3 ppm	0.60 %	-0.90 %

2IP12-000106

Sampling System Bias and Drift

Test Performed For:
IPSC
Delta Generating Station
Unit 2 Scrubber Module D
Performance Evalution
Date:11/1/01

Test Performed By:
CCI Environmental
CEMS
Trailer 1
Larry Cottone
Run 5

Monitor Type	Analyzer Cal Response	Initial Cal Value	Pre Run Bias (%)	Final Cal Value	Post Run Bias (%)	Total Run Drift (%)
O_2	-0.01 %	-0.03 %	-0.08 %	0.01 %	0.08 %	0.16 %
O_2	12.21 %	11.27 %	-3.76 %	11.28 %	-3.72 %	0.04 %
CO_2	0.01 %	-0.03 %	-0.20 %	-0.04 %	-0.25 %	-0.05 %
CO_2	10.38 %	9.70 %	-3.40 %	9.69 %	-3.45 %	-0.05 %
SO_2	0.1 ppm	0.4 ppm	0.30 %	0.4 ppm	0.30 %	0.00 %
SO_2	45.7 ppm	46.3 ppm	0.60 %	46.1 ppm	0.40 %	-0.20 %

2IP12-000107

Analyzer Calibration Error

Test Performed For:
IPSC
Delta Generating Station
Unit 1 Scrubber Module C
Performance Evalution
Date:11/2/01

Test Performed By:
CCI Environmental
CEMS
Trailer 1
Larry Cottone
Run 1

Oxygen Monitor

Full Scale: 25.00 %

Method 3A
Serial Number: CAI 4E1104

Cylinder Number	Reference Gas Concentration	Analyzer Response	Difference	Calibration Error (%)
CC115360/cg1	0.00 %	0.12 %	0.12 %	0.48 %
CC112163/cg2	12.19 %	12.29 %	0.10 %	0.40 %
ALM049005/cg3	20.90 %	20.87 %	-0.03 %	-0.12 %

Carbon Dioxide Monitor

Full Scale: 20.00 %

Method 3A
Serial Number: CAI N3P1212T

Cylinder Number	Reference Gas Concentration	Analyzer Response	Difference	Calibration Error (%)
CC115360/cg1	0.00 %	0.06 %	0.06 %	0.30 %
CC112163/cg2	10.08 %	10.11 %	0.03 %	0.15 %
ALM049005/cg3	18.00 %	17.91 %	-0.09 %	-0.45 %

Sulfur Dioxide Monitor

Full Scale: 100.0 ppm

Method 6C
Serial Number: BOVAR 95-721M8282-8

Cylinder Number	Reference Gas Concentration	Analyzer Response	Difference	Calibration Error (%)
CC115360/cg1	0.0 ppm	1.0 ppm	1.0 ppm	1.00 %
cc78776/cg5	44.6 ppm	45.8 ppm	1.2 ppm	1.20 %
CC49056/cg4	94.9 ppm	95.5 ppm	0.6 ppm	0.60 %

Sampling System Bias and Drift

Test Performed For:
IPSC
Delta Generating Station
Unit 1 Scrubber Module C
Performance Evalution
Date:11/2/01

Test Performed By:
CCI Environmental
CEMS
Trailer 1
Larry Cottone
Run 1

Monitor Type	Analyzer Cal Response	Initial Cal Value	Pre Run Bias (%)	Final Cal Value	Post Run Bias (%)	Total Run Drift (%)
O_2	0.12 %	0.03 %	-0.36 %	-0.05 %	-0.68 %	-0.32 %
O_2	12.29 %	12.62 %	1.32 %	11.94 %	-1.40 %	-2.72 %
CO_2	0.06 %	0.09 %	0.15 %	0.21 %	0.75 %	0.60 %
CO_2	10.11 %	10.00 %	-0.55 %	10.08 %	-0.15 %	0.40 %
SO_2	1.0 ppm	3.1 ppm	2.10 %	5.7 ppm	4.70 %	2.60 %
SO_2	45.8 ppm	47.3 ppm	1.50 %	47.3 ppm	1.50 %	0.00 %

2IP12-000109

Sampling System Bias and Drift

Test Performed For:
IPSC
Delta Generating Station
Unit 1 Scrubber Module C
Performance Evalution
Date:11/2/01

Test Performed By:
CCI Environmental
CEMS
Trailer 1
Larry Cottone
Run 2

Monitor Type	Analyzer Cal Response	Initial Cal Value	Pre Run Bias (%)	Final Cal Value	Post Run Bias (%)	Total Run Drift (%)
CO_2	0.06 %	0.21 %	0.75 %	0.31 %	1.25 %	0.50 %
CO_2	10.11 %	10.08 %	-0.15 %	10.04 %	-0.35 %	-0.20 %
SO_2	1.0 ppm	5.7 ppm	4.70 %	3.2 ppm	2.20 %	-2.50 %
SO_2	45.8 ppm	47.3 ppm	1.50 %	50.2 ppm	4.40 %	2.90 %

2IP12-000110

Sampling System Bias and Drift

Test Performed For:
IPSC
Delta Generating Station
Unit 1 Scrubber Module C
Performance Evalution
Date:11/2/01

Test Performed By:
CCI Environmental
CEMS
Trailer 1
Larry Cottone
Run 3

Monitor Type	Analyzer Cal Response	Initial Cal Value	Pre Run Bias (%)	Final Cal Value	Post Run Bias (%)	Total Run Drift (%)
CO_2	0.06 %	0.31 %	1.25 %	0.21 %	0.75 %	-0.50 %
CO_2	10.11 %	10.04 %	-0.35 %	10.01 %	-0.50 %	-0.15 %
SO_2	1.0 ppm	3.2 ppm	2.20 %	8.1 ppm	7.10 %	4.90 %
SO_2	45.8 ppm	50.2 ppm	4.40 %	52.7 ppm	6.90 %	2.50 %

2IP12-000111

Sampling System Bias and Drift

Test Performed For:
IPSC
Delta Generating Station
Unit 1 Scrubber Module C
Performance Evalution
Date:11/2/01

Test Performed By:
CCI Environmental
CEMS
Trailer 1
Larry Cottone
Run 4

Monitor Type	Analyzer Cal Response	Initial Cal Value	Pre Run Bias (%)	Final Cal Value	Post Run Bias (%)	Total Run Drift (%)
CO_2	0.06 %	0.21 %	0.75 %	0.25 %	0.95 %	0.20 %
CO_2	10.11 %	10.01 %	-0.50 %	9.98 %	-0.65 %	-0.15 %
SO_2	1.0 ppm	0.3 ppm	-0.70 %	2.6 ppm	1.60 %	2.30 %
SO_2	45.8 ppm	44.9 ppm	-0.90 %	47.7 ppm	1.90 %	2.80 %

2IP12-000112

Sampling System Bias and Drift

Test Performed For:
IPSC
Delta Generating Station
Unit 1 Scrubber Module C
Performance Evalution
Date:11/2/01

Test Performed By:
CCI Environmental
CEMS
Trailer 1
Larry Cottone
Run 5

Monitor Type	Analyzer Cal Response	Initial Cal Value	Pre Run Bias (%)	Final Cal Value	Post Run Bias (%)	Total Run Drift (%)
CO_2	0.06 %	0.25 %	0.95 %	0.23 %	0.85 %	-0.10 %
CO_2	10.11 %	9.98 %	-0.65 %	9.97 %	-0.70 %	-0.05 %
SO_2	1.0 ppm	2.6 ppm	1.60 %	2.6 ppm	1.60 %	0.00 %
SO_2	45.8 ppm	47.7 ppm	1.90 %	48.3 ppm	2.50 %	0.60 %

2IP12-000113

CCI Environmental Consultants
3855 South 500 West Suite I
Salt Lake City, Utah 84115

CALIBRATION OF METERING SYSTEM

EPA Method 5
Dry Gas Meter Calibration Method
English 'K' Factor, English Meter Box Units

Meter Box No.	CCI #1	Barometric Pressure	26.20
Date	10/18/2001	File Name	101801.no1

					Dry Gas Meter Readings				Reference Meter Readings				
ΔH@	Time	Initial	Final	Total	Initial Temps		Final Temps		Initial	Final	Total	Ambient Temps	
Setting	Elasped	Volume	Volume	Volume	Inlet	Outlet	Inlet	Outlet	Volume	Volume	Volume	Initial	Final
(in H_2O)	(min)	(cu ft)	(cu ft)	(cu ft)	(deg F)	(deg F)	(deg F)	(deg F)	(cu ft)	(cu ft)	(cu ft)	(deg F)	(deg F)
3.00	5.5	486.987	492.686	5.70	69	69	72	70	0	5.776	5.776	71	71
2.00	10.6	492.686	501.794	9.11	70	70	82	71	0	9.037	9.037	71	70.5
1.50	7	501.794	506.979	5.19	74	71	85	73	0	5.15	5.15	70.5	71
1.00	16.7	506.979	517.353	10.37	75	73	88	75	0	10.288	10.288	71	71
0.50	12.2	517.353	522.78	5.43	78	75	87	76	0	5.381	5.381	71	71

Results

Calibration Factor Y		Calibration Factor ΔH@	
Value (number)	Variation (number)	Value (in H_2O)	Variation (in H_2O)
1.003	-0.003	1.753	-0.029
0.991	0.009	1.768	-0.045
0.998	0.001	1.775	-0.052
1.002	-0.002	1.683	0.040
1.005	-0.005	1.637	0.086

Average Y ·····> 0.999886 1.723314 <····· Average

Note: For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is +-0.02.

For Orifice Calibration Factor dH@, the orifice differential pressure in inches of H2O that equates to 0.75 cfm of air at 68 F and 29.92 inches of Hg, acceptable tolerance of individual values from the average is +-.2.

Calibration factors should be +- 5% of previous calibration values

SIGNED: Mike Oliefay DATE: 10/18/2001

2IP12-000114

CEMS Certs, Inc.

METER BOX CALIBRATION DATA SHEET

Date 10-18-01	Meter Box ID Number 1
Barometric Pressure 26.20	Previous Meter dH@ 1.735
Operator Mike Higley	Previous Meter Box Gamma (Y) 0.999
	Previous Calibration Date 10-02-01

	Elapsed Time (min)	Orifice Meter delta H	Dry Gas Meter Volume (ft^3)	Dry Gas Meter Inlet (F^o)	Dry Gas Meter Outlet (F^o)	Wet Meter Volume (ft^3)	Wet Meter Temperature (F^o)	Pump Vac
Start	0	3.00	486.987	69	69	0	71	7
End	5.5		492.686	72	70	5.776	71	
Start	0	2.00	492.686	70	70	0	71	5
End	10.6		501.794	82	71	9.037	70.5	
Start	0	1.50	501.794	74	71	0	70.5	4
End	7.0		506.979	85	73	5.150	71	
Start	0	1.00	506.979	75	73	0	71	3
End	16.7		517.353	88	75	10.288	71	
Start	0	0.50	517.353	78	75	0	71	2
End	12.2		522.780	87	76	5.381	71	

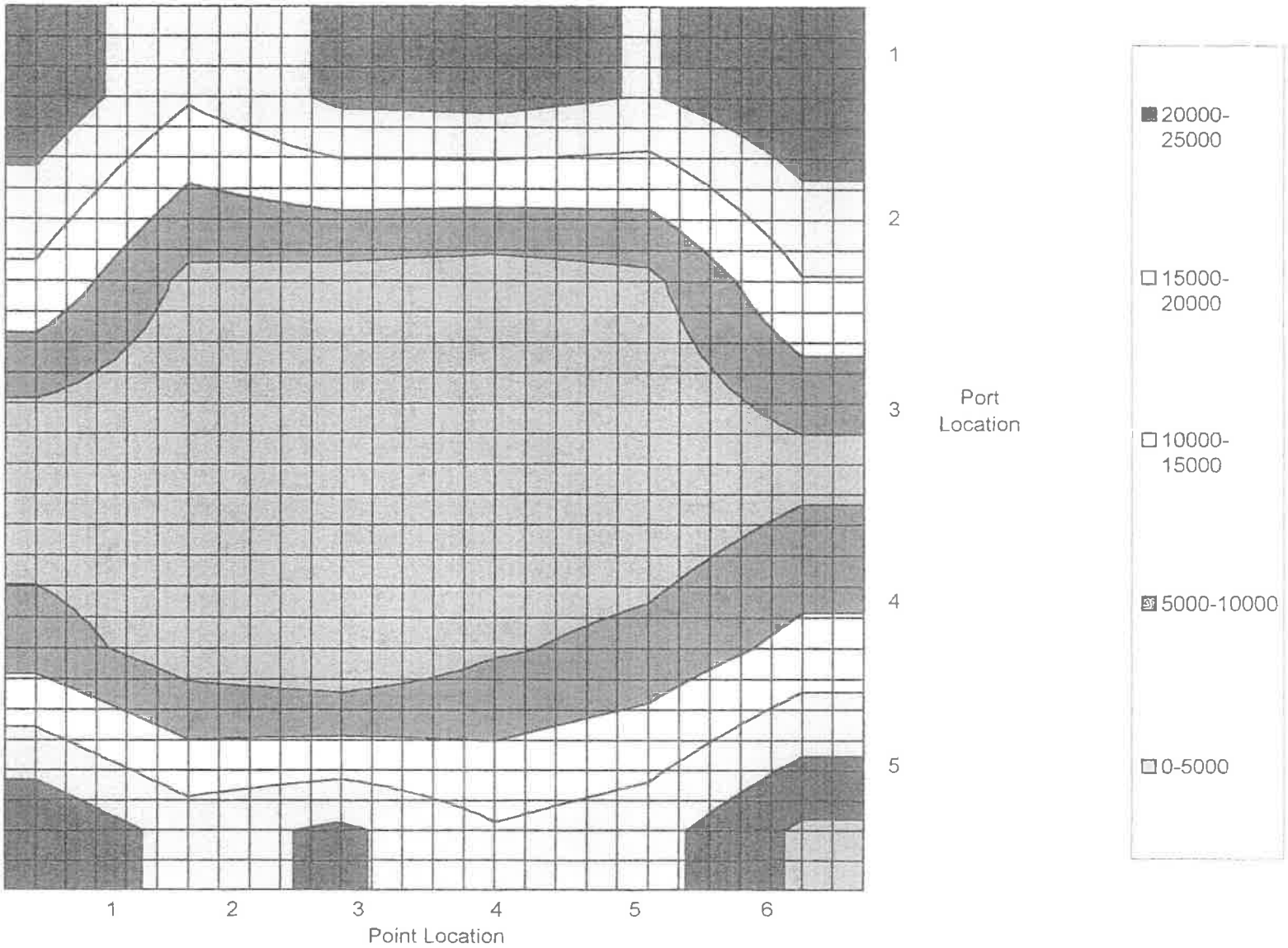
2IP12-000115

Appendix F

Scrubber Module Profiles of SO2 Concentrations, SO2 Emission Rates and Velocities

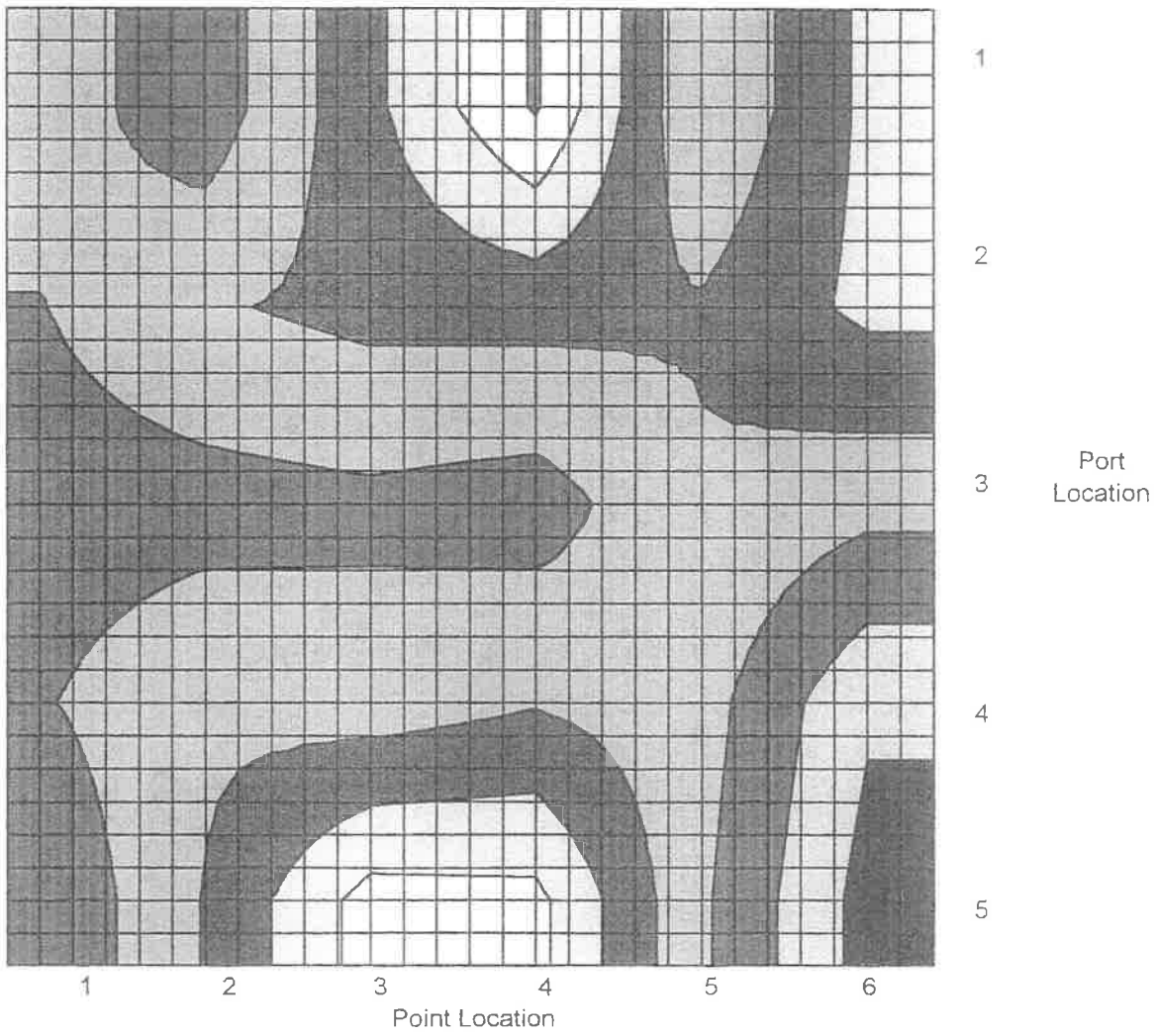
2IP12-000116

Unit 1, Scrubber B, Flows,dscfm



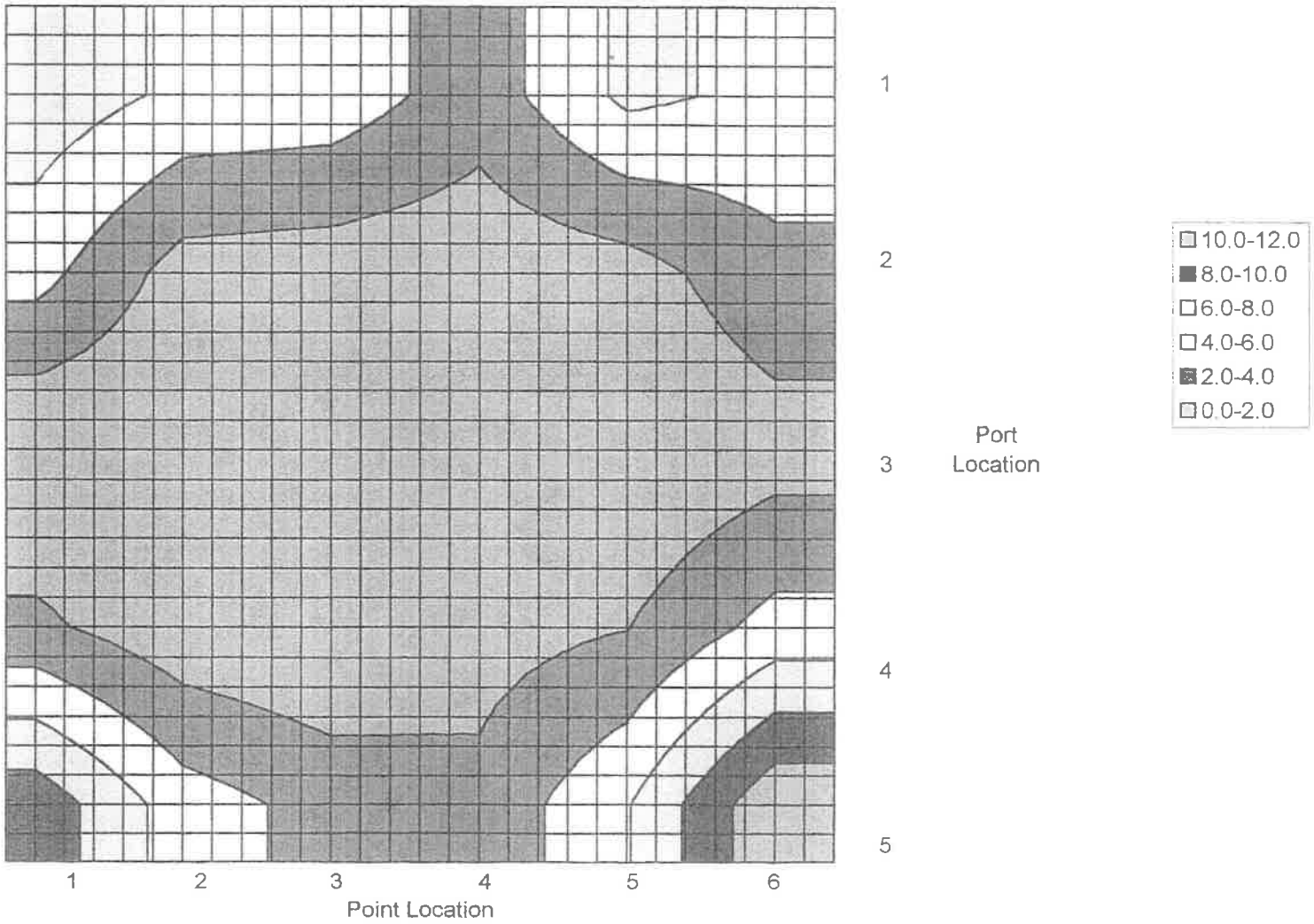
2IP12-000117

Unit 1, Scrubber B, Sulfur Dioxide Concentrations, ppmvd

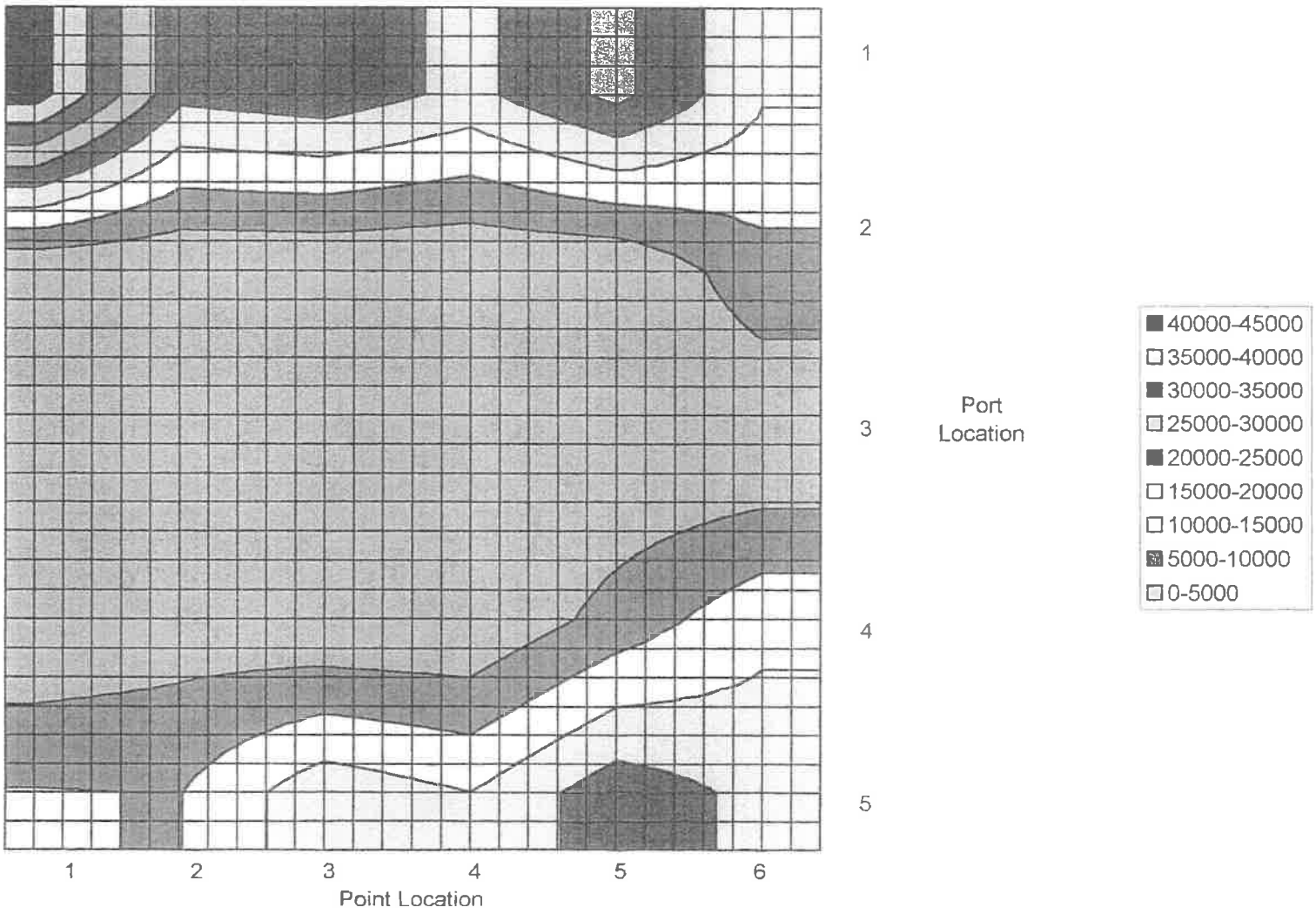


2IP12-000118

Unit 1, Scrubber B, Sulfur Dioxide, lbs/hr

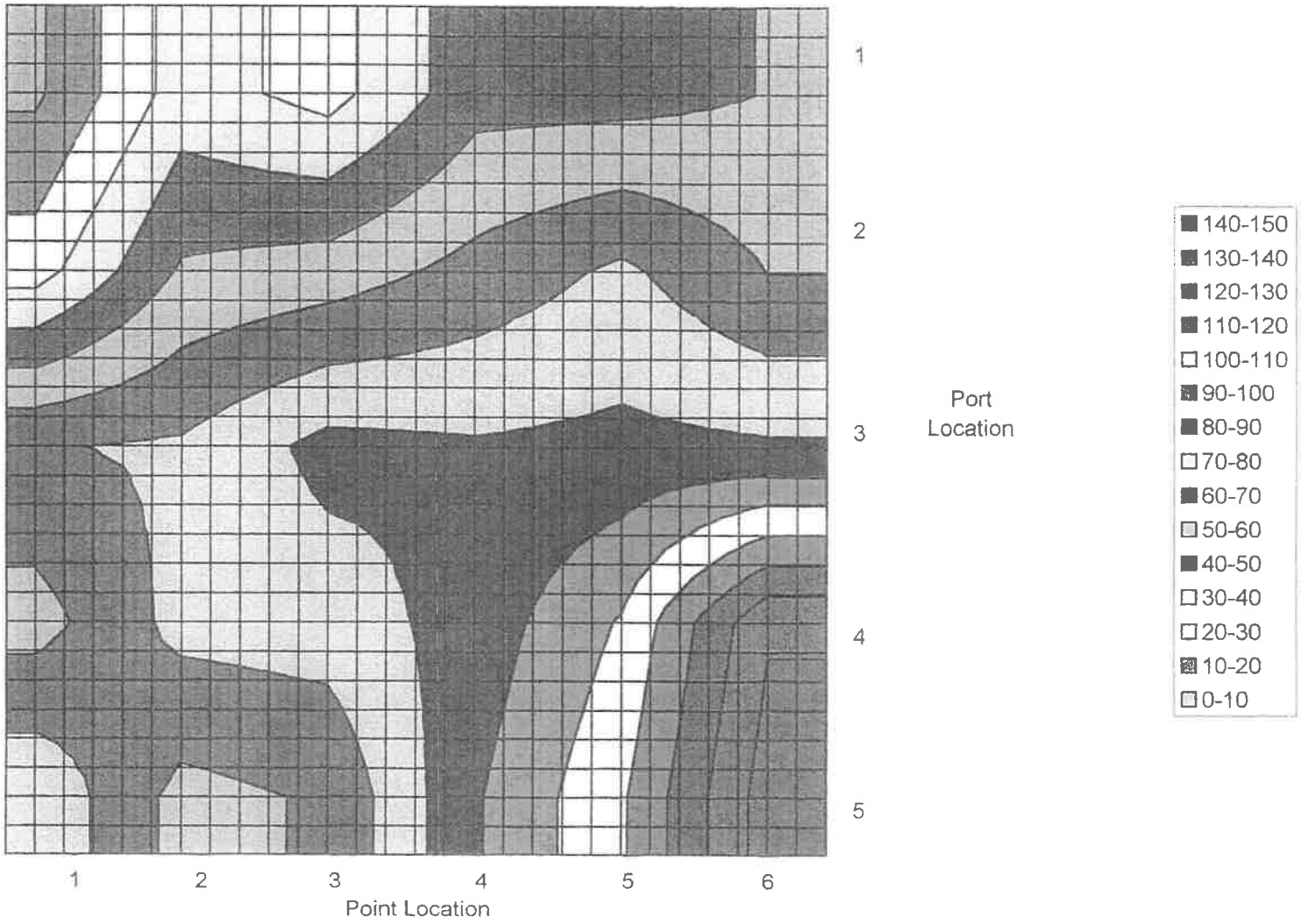


Unit 1, Scrubber C, Flows,dscfm



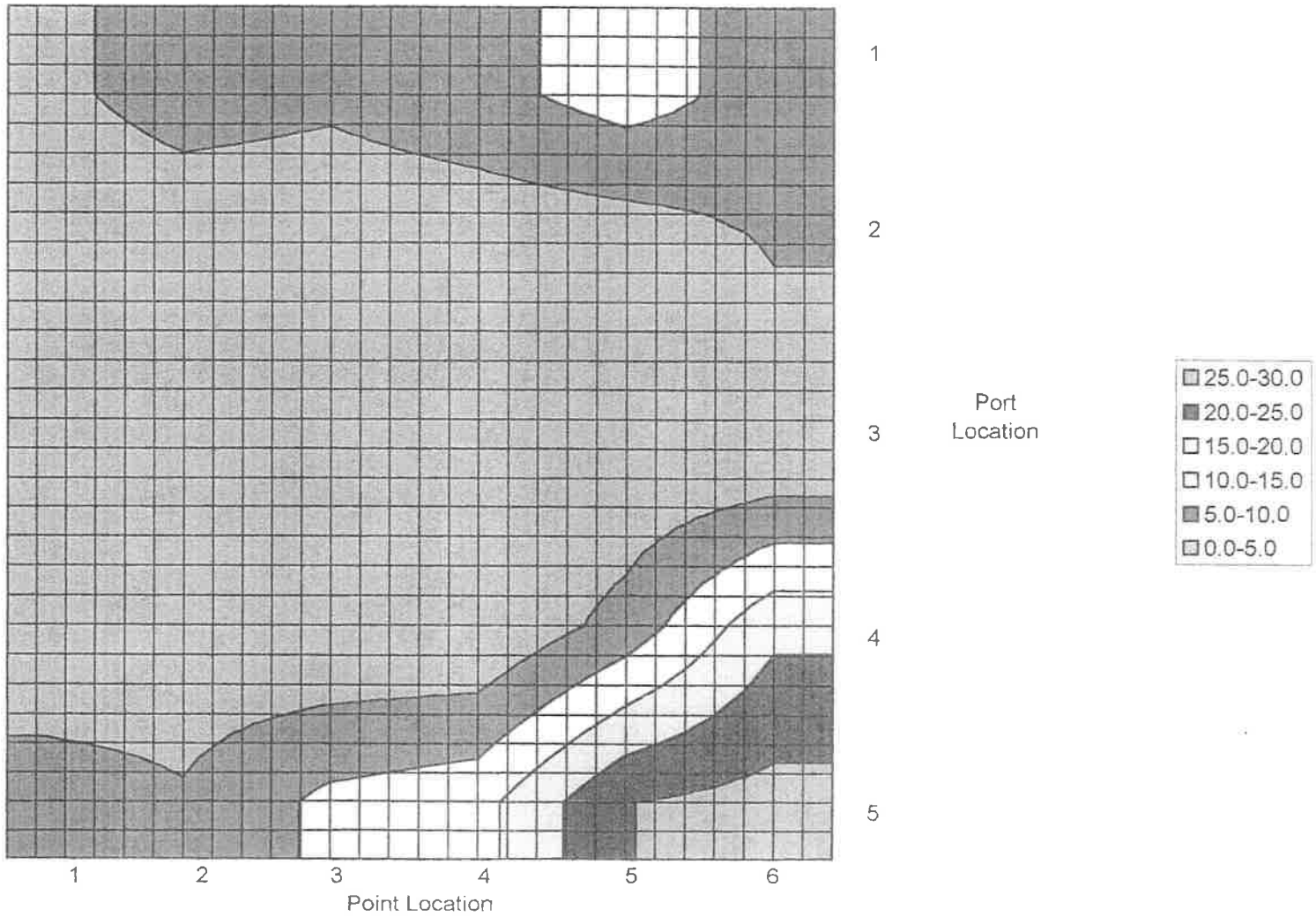
2IP12-000120

Unit 1, Scrubber C, Sulfur Dioxide Concentrations, ppmvd

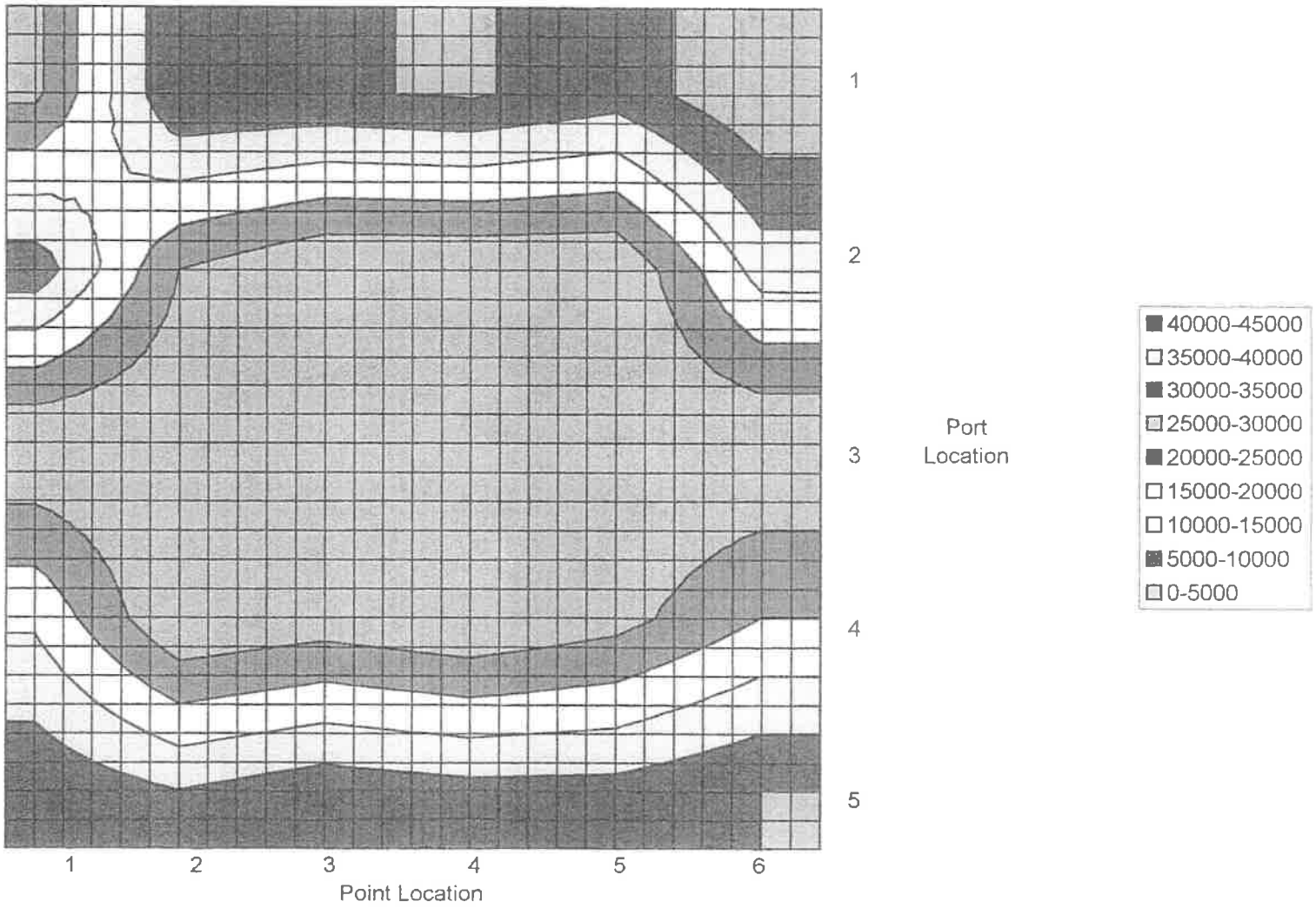


2IP12-000121

Unit 1, Scrubber C, Sulfur Dioxide, lbs/hr

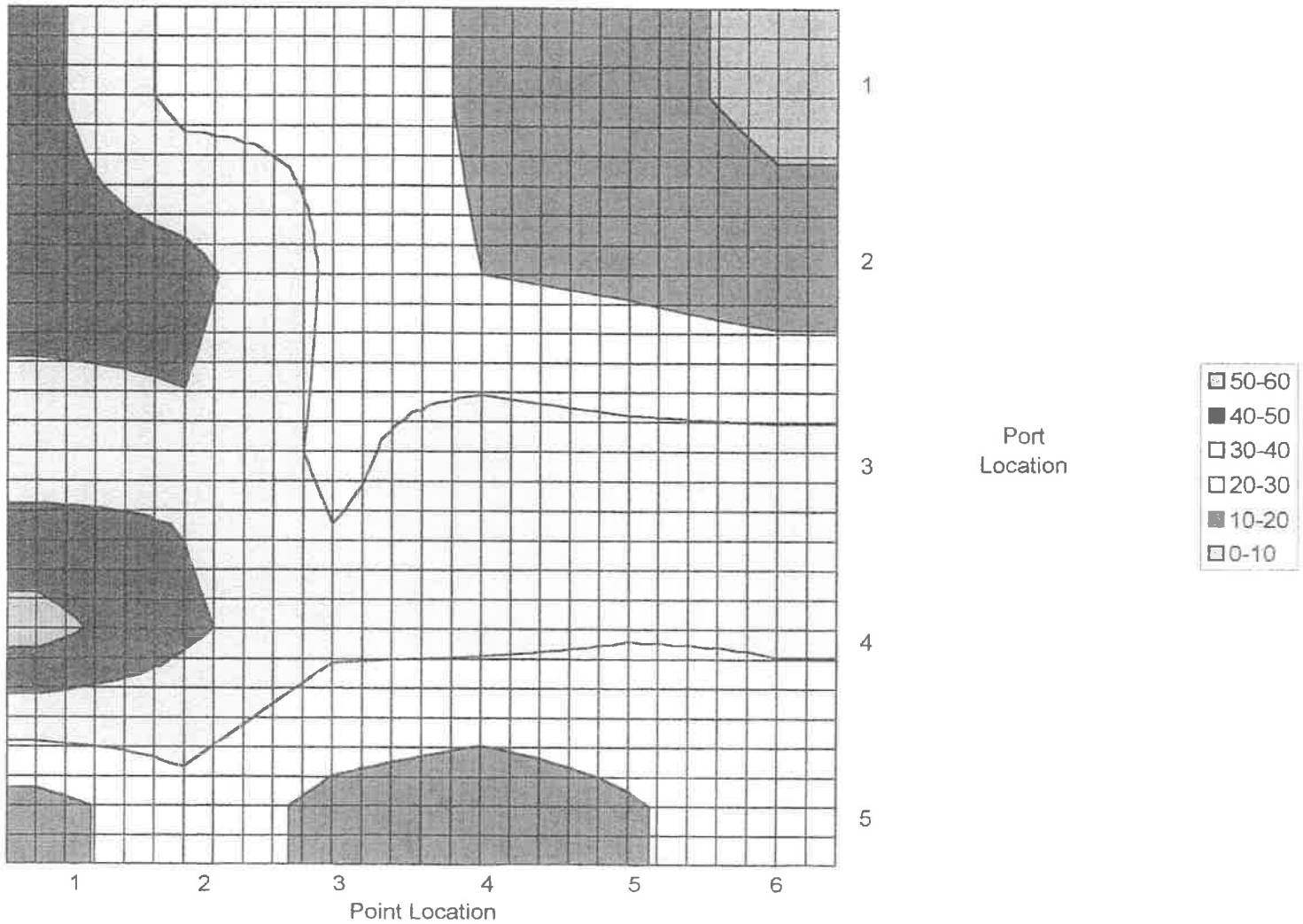


Unit 2, Scrubber D, Flows,dscfm



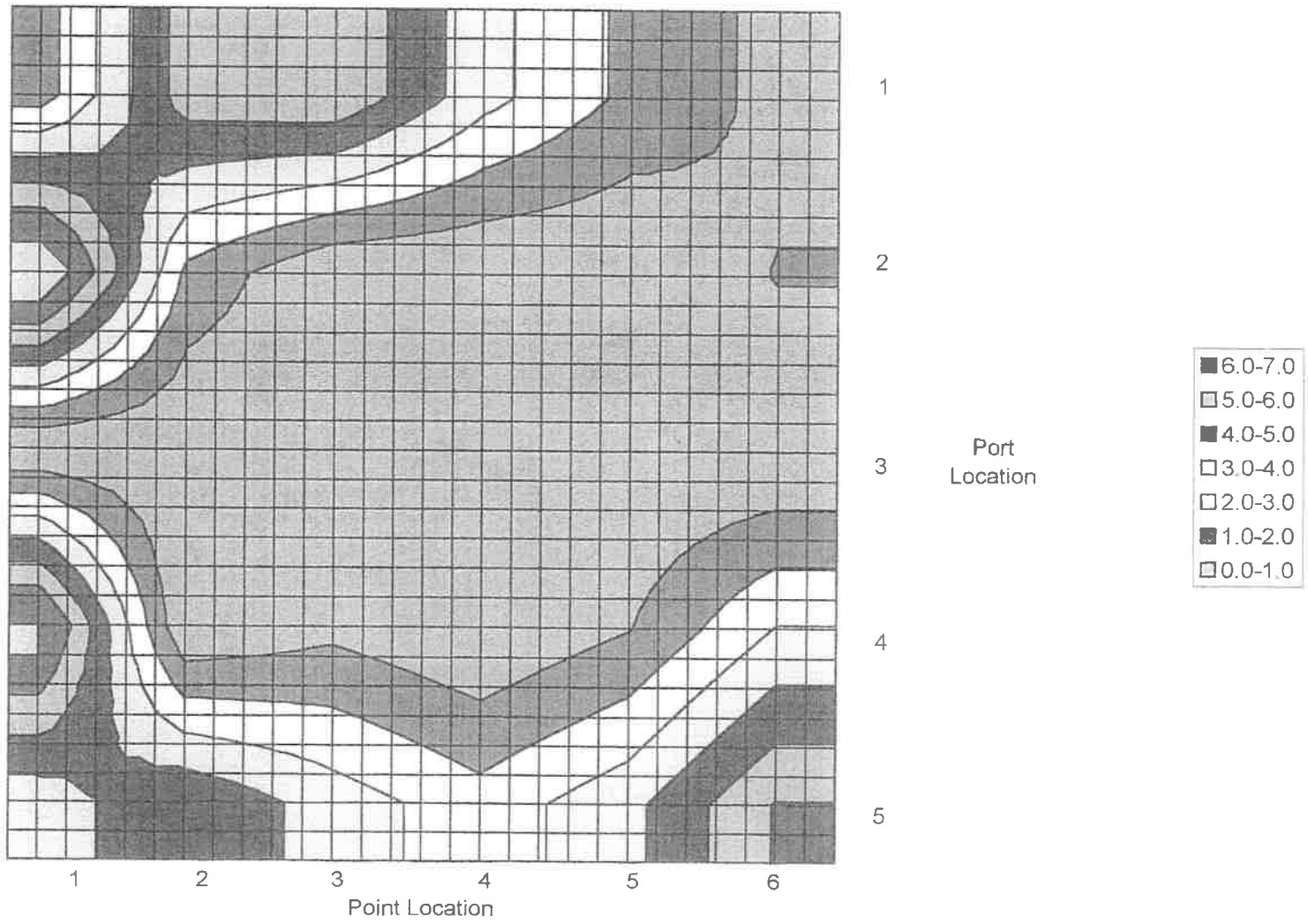
2IP12-000123

Unit 2, Scrubber D, Sulfur Dioxide Concentrations, ppmvd



2IP12-000124

Unit 2, Scrubber D, Sulfur Dioxide, lbs/hr



2IP12-000125

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