Appendix A

Process Data Summary

Test Descriptor Code Definitions

P1-X	Low-Particulate Parametric Testing
L1-X	Low-Particulate Long-Term Testing
HR1-X	Low-Particulate High Removal Testing
AL1-X	Low-Particulate Alternate Limestone Testing
P1B1-X	Low-Particulate Alternate Limestone "clean" JBR Parametric Tests
AC1-X	Low-Particulate Alternate Coal Tests
P2-X	High-Particulate Parametric Testing
L2-X	High-Particulate Long-Term Testing
HR2-X	High-Particulate High Removal Testing
AL2-X	High-Particulate Alternate Limestone Testing
AC2-X	High-Particulate Alternate Coal Tests

Note: Data for tests L1-X and L2-X are shown as 24-hour averages since each test was conducted over an extended period of time. All other test period entries are for the entire test period.

CT-121 DEMONSTRATION PROJECT PROCESS DATA SUMMARY

Test ID	Unit Load (MWe)	Flue Gas Duct Flow (skcfm)	Inlet SO_2 (ppm)[1]	JBR ΔP (in. WC)	pH	SO_2 Removal Efficiency (%)	Predicted Removal (%)	Relative Difference (%)	I.D. Fan Power (kW)[2]
P1-1	100.7	299.3	2158	8.2	4.5	75.5	78.9	4.5	487
P1-2	100.3	300.6	2185	12.1	4.5	91.4	91.3	-0.1	684
P1-3	100.3	302.8	2180	16.1	4.5	97.1	96.7	-0.4	873
P1-4	75.4	239.4	2156	8.2	4.5	82.0	83.6	1.9	358
P1-5	75.3	238.3	2166	12.3	4.5	94.5	93.8	-0.7	534
P1-6	75.3	236.5	2220	16.2	4.5	97.8	97.4	-0.4	663
P1-7	49.7	179.3	2329	8.2	4.5	87.9	87.4	-0.6	215
P1-8	49.2	177.3	2323	12.2	4.5	95.9	95.2	-0.7	352
P1-9	49.8	178.2	2355	16.1	4.5	98.0	98.1	0.1	519
P1-10	49.7	179.0	2388	8.2	5.0	87.8	87.0	-1.0	212
P1-11	50.4	176.4	2327	12.2	5.0	96.4	96.1	-0.3	349
P1-12	50.4	176.8	2262	16.2	5.0	98.7	98.9	0.2	506
P1-13	50.7	177.9	2252	8.2	4.0	79.9	82.4	3.1	229
P1-14	50.0	175.2	2322	12.2	4.0	92.5	91.2	-1.4	348
P1-15	50.2	174.5	2271	16.2	4.0	96.0	95.5	-0.5	497
P1-16	75.2	231.0	2323	8.2	4.0	70.2	73.9	5.3	281

1. Normalized to 3% O_2.
2. Credited 1.6 MW at 100% MRC, 1.18 MW at 75% MRC, and 0.88 MW at 50% MRC due to I.D. fan replacing boiler I.D. fan and scrubber booster fan.

CT-121 DEMONSTRATION PROJECT PROCESS DATA SUMMARY

Test ID	Unit Load (MWe)	Flue Gas Duct Flow (skcfm)	Inlet SO_2 (ppm)[1]	JBR ΔP (in. WC)	pH	SO_2 Removal Efficiency (%)	Predicted Removal (%)	Relative Difference (%)	I.D. Fan Power (kW)[2]
P1-17	75.2	230.6	2328	12.2	4.0	86.4	86.7	0.4	453
P1-18	75.0	229.4	2235	16.2	4.0	93.6	93.8	0.3	603
P1-19	75.1	231.5	2513	8.2	5.0	76.7	76.7	0.0	277
P1-20	76.4	236.5	2560	12.2	5.0	92.3	92.7	0.4	479
P1-21	75.0	225.3	2509	16.2	5.0	98.0	98.0	0.0	566
P1-22	99.6	288.1	2399	8.2	4.5	68.4	67.7	-1.0	454
P1-23	100.0	290.5	2449	12.1	4.5	86.9	86.0	-1.1	604
P1-24	99.7	288.6	2446	16.1	4.5	95.0	94.7	-0.3	817
P1-25	99.6	283.7	2263	8.1	5.0	68.4	72.9	6.6	436
P1-26	99.6	266.8	2216	12.1	5.0	89.6	92.7	3.5	610
P1-27	99.5	283.5	2205	16.1	5.0	96.9	97.9	1.1	783
P1-28	99.3	282.4	2282	8.1	4.0	68.2	63.6	-6.7	384
P1-29	99.9	284.4	2231	12.1	4.0	82.8	83.1	0.3	609
P1-30	99.7	286.8	2206	16.1	4.0	92.1	91.8	-0.3	813
P1-19R	74.9	228.7	2293	8.1	5.0	76.9	80.3	4.4	306
P1-20R	74.6	233.6	2350	12.1	5.0	93.1	94.0	0.9	515

1. Normalized to 3% O_2.
2. Credited 1.6 MW at 100% MRC, 1.18 MW at 75% MRC, and 0.88 MW at 50% MRC due to I.D. fan replacing boiler I.D. fan and scrubber booster fan.

CT-121 DEMONSTRATION PROJECT PROCESS DATA SUMMARY

Test ID	Unit Load (MWe)	Flue Gas Duct Flow (skcfm)	Inlet SO_2 (ppm)[1]	JBR ΔP (in. WC)	pH	SO_2 Removal Efficiency (%)	Predicted Removal (%)	Relative Difference (%)	I.D. Fan Power (kW)[2]
P1-21R	74.7	222.9	2105	16.1	5.0	98.3	98.6	0.3	671
L1-1	82.9	238.9	584	12.2	4.0	80.3	88.6	10.4	1917
L1-1	68.0	207.7	466	12.3	4.0	87.9	89.8	2.2	1585
L1-1	66.7	204.9	434	12.3	4.0	89.5	89.9	0.4	1534
L1-1	70.1	212.1	441	12.2	4.0	85.3	89.4	4.8	1591
L1-1	84.0	241.2	528	12.2	4.0	76.9	87.4	13.7	1877
L1-1	77.0	226.6	488	12.2	4.0	80.8	90.0	11.3	1737
L1-1	56.0	182.5	355	12.2	4.0	89.8	92.4	2.9	1302
L1-1	61.8	194.6	353	12.2	4.0	88.2	91.5	3.8	1382
L1-2	53.0	176.2	769	13.8	5.4	95.0	97.9	3.0	1673
L1-2	76.5	225.5	522	14.1	5.0	97.0	97.2	0.2	1763
L1-2	73.5	219.3	528	13.8	5.0	95.1	96.9	2.0	1727
L1-2	70.9	213.9	531	14.3	4.9	95.2	97.5	2.5	1693
L1-2	84.7	242.8	637	14.0	5.0	93.0	96.4	3.6	1997
L1-2	79.1	231.0	589	14.0	5.0	93.2	96.7	3.7	1868

1. Normalized to 3% O_2.
2. Credited 1.6 MW at 100% MRC, 1.18 MW at 75% MRC, and 0.88 MW at 50% MRC due to I.D. fan replacing boiler I.D. fan and scrubber booster fan.

CT-121 DEMONSTRATION PROJECT PROCESS DATA SUMMARY

Test ID	Unit Load (MWe)	Flue Gas Duct Flow (skcfm)	Inlet SO_2 (ppm)[1]	JBR ΔP (in. WC)	pH	SO_2 Removal Efficiency (%)	Predicted Removal (%)	Relative Difference (%)	I.D. Fan Power (kW)[2]
L1-2	81.3	235.7	604	14.0	5.0	93.1	96.6	3.7	1916
L1-2	84.2	241.8	614	14.0	5.0	93.5	96.4	3.1	1967
L1-2	78.6	229.9	576	14.2	5.1	95.1	97.1	2.1	1848
L1-2	71.8	215.7	540	14.1	5.0	95.2	97.3	2.2	1714
L1-2	64.6	200.5	477	14.1	5.0	95.6	97.6	2.1	1547
L1-2	72.9	217.9	567	14.0	5.0	93.2	96.9	3.9	1756
L1-2	61.6	194.4	514	14.0	5.1	95.6	97.4	2.0	1542
L1-2	50.4	170.8	502	14.0	5.0	96.2	98.0	1.9	1368
L1-3	100.2	280.5	753	14.1	4.5	94.6	94.6	0.1	2336
L1-3	100.1	278.8	746	14.0	4.5	94.6	94.7	0.2	2328
L1-3	99.9	277.3	735	13.9	4.5	94.5	95.0	0.6	2313
L1-3	70.9	212.7	528	14.0	4.5	95.7	96.8	1.1	1690
L1-3	56.6	184.7	502	14.0	4.5	96.4	97.5	1.1	1456
L1-3	79.6	232.8	621	14.0	4.5	94.5	96.2	1.8	1907
L1-3	78.1	228.9	603	14.1	4.5	94.4	96.3	2.0	1869
L1-3	81.4	240.4	653	14.4	4.5	94.2	96.3	2.3	1965

1. Normalized to 3% O_2.
2. Credited 1.6 MW at 100% MRC, 1.18 MW at 75% MRC, and 0.88 MW at 50% MRC due to I.D. fan replacing boiler I.D. fan and scrubber booster fan.

CT-121 DEMONSTRATION PROJECT PROCESS DATA SUMMARY

Test ID	Unit Load (MWe)	Flue Gas Duct Flow (skcfm)	Inlet SO_2 (ppm)[1]	JBR ΔP (in. WC)	pH	SO_2 Removal Efficiency (%)	Predicted Removal (%)	Relative Difference (%)	I.D. Fan Power (kW)[2]
L1-3	71.0	223.1	583	14.2	4.5	95.4	96.8	1.5	1746
L1-3	79.6	235.2	598	14.2	4.5	95.6	96.3	0.7	1885
L1-3	84.6	241.2	609	14.2	4.5	95.4	96.0	0.6	1968
L1-3	65.6	204.2	515	14.0	4.5	97.9	97.1	0.0	1599
L1-3	72.8	225.2	565	14.3	4.6	97.3	97.4	0.1	1753
L1-3	78.4	240.4	634	14.1	4.5	96.5	96.5	0.0	1902
L1-3	80.0	242.2	648	14.0	4.5	95.6	96.0	0.4	1940
L1-3	91.3	270.5	756	14.1	4.5	92.7	95.2	2.7	2210
L1-3	81.5	241.0	625	14.1	4.5	93.5	95.9	2.5	1939
L1-3	81.6	238.4	608	14.1	4.5	92.6	95.8	3.4	1924
L1-3	78.2	229.8	572	14.1	4.5	93.1	96.2	3.3	1838
L1-3	74.9	222.1	537	14.1	4.5	93.1	96.1	3.2	1756
L1-3	89.9	260.1	685	14.1	4.6	93.9	95.0	1.2	2120
L1-3	100.9	281.2	732	14.1	4.5	91.6	94.4	3.0	2324
L1-3	100.9	278.7	707	14.1	4.5	90.8	94.1	3.6	2300
L1-3	100.3	278.1	691	14.1	4.5	88.7	95.0	7.1	2275

1. Normalized to 3% O_2.
2. Credited 1.6 MW at 100% MRC, 1.18 MW at 75% MRC, and 0.88 MW at 50% MRC due to I.D. fan replacing boiler I.D. fan and scrubber booster fan.

CT-121 DEMONSTRATION PROJECT PROCESS DATA SUMMARY

Test ID	Unit Load (MWe)	Flue Gas Duct Flow (skcfm)	Inlet SO_2 (ppm)[1]	JBR ΔP (in. WC)	pH	SO_2 Removal Efficiency (%)	Predicted Removal (%)	Relative Difference (%)	I.D. Fan Power (kW)[2]
L1-3	100.2	275.8	659	14.1	4.5	88.8	94.4	6.3	2242
L1-3	100.4	279.1	705	14.1	4.5	90.6	95.3	5.2	2291
L1-3	101.8	283.8	764	14.1	4.5	87.6	93.7	7.0	2370
L1-3	100.8	283.0	766	14.1	4.5	90.5	94.0	3.9	2357
L1-3	92.3	265.5	711	14.2	4.5	90.4	94.9	4.9	2180
L1-3	70.3	214.6	549	14.1	4.5	93.0	96.5	3.7	1702
L1-3	69.0	213.7	558	14.1	4.5	92.9	96.4	3.8	1691
L1-3	57.9	189.4	476	14.1	4.5	94.2	97.0	3.0	1450
L1-3	79.5	235.5	634	14.1	4.5	91.9	95.5	4.0	1919
L1-3	77.6	229.1	590	14.1	4.5	91.4	95.6	4.6	1848
L1-3	76.2	221.8	533	14.1	4.5	92.0	95.7	4.0	1770
L1-3	76.3	219.9	507	14.1	4.5	92.8	95.6	3.1	1746
L1-3	71.5	216.4	546	14.1	4.5	93.2	96.2	3.3	1716
L1-3	70.0	211.7	535	14.1	4.5	93.4	96.5	3.4	1682
L1-3	79.0	230.4	570	14.1	4.5	92.6	95.6	3.3	1848
L1-3	80.6	239.7	640	14.1	4.5	92.9	95.6	2.9	1941

1. Normalized to 3% O_2.
2. Credited 1.6 MW at 100% MRC, 1.18 MW at 75% MRC, and 0.88 MW at 50% MRC due to I.D. fan replacing boiler I.D. fan and scrubber booster fan.

CT-121 DEMONSTRATION PROJECT PROCESS DATA SUMMARY

Test ID	Unit Load (MWe)	Flue Gas Duct Flow (skcfm)	Inlet SO_2 (ppm)[1]	JBR ΔP (in. WC)	pH	SO_2 Removal Efficiency (%)	Predicted Removal (%)	Relative Difference (%)	I.D. Fan Power (kW)[2]
L1-3	73.4	226.2	607	14.1	4.5	92.5	96.2	4.1	1804
L1-3	78.1	233.5	620	14.1	4.5	91.7	96.4	5.1	1884
L1-3	75.8	227.6	602	14.1	4.5	92.4	96.3	4.2	1834
L1-3	77.0	230.9	625	14.2	4.5	92.4	96.1	3.9	1874
L1-3	85.8	246.2	647	14.2	4.5	91.0	95.1	4.5	2023
L1-3	87.3	257.7	720	14.1	4.5	94.7	95.4	0.8	2117
L1-3	86.2	257.4	748	14.1	4.5	92.8	95.3	2.7	2129
L1-3	80.3	242.5	700	14.2	4.5	92.9	95.6	2.9	1996
L1-3	79.5	242.0	672	14.1	4.5	94.4	95.8	1.5	1957
L1-3	72.1	221.0	575	14.1	4.5	94.6	96.5	2.0	1754
L1-3	78.6	236.6	632	14.1	4.5	93.7	96.3	2.7	1903
L1-3	74.3	226.4	583	14.1	4.5	93.6	96.0	2.5	1794
L1-3	96.1	277.6	772	14.1	4.5	92.8	94.5	1.8	2296
L1-3	84.4	252.6	680	14.1	4.5	93.1	95.8	2.9	2035
L1-3	79.9	241.0	626	14.1	4.5	93.5	96.4	3.1	1915
L1-3	76.9	226.9	541	14.1	4.5	93.8	96.4	2.9	1788

1. Normalized to 3% O_2.
2. Credited 1.6 MW at 100% MRC, 1.18 MW at 75% MRC, and 0.88 MW at 50% MRC due to I.D. fan replacing boiler I.D. fan and scrubber booster fan.

CT-121 DEMONSTRATION PROJECT PROCESS DATA SUMMARY

Test ID	Unit Load (MWe)	Flue Gas Duct Flow (skcfm)	Inlet SO_2 (ppm)[1]	JBR ΔP (in. WC)	pH	SO_2 Removal Efficiency (%)	Predicted Removal (%)	Relative Difference (%)	I.D. Fan Power (kW)[2]
L1-3	58.2	191.7	471	14.1	4.5	95.9	97.6	1.8	1449
L1-3	61.0	202.5	526	14.1	4.5	95.9	97.6	1.8	1545
L1-3	55.8	188.9	469	14.1	4.5	95.6	97.7	2.1	1413
L1-3	56.9	187.5	459	14.1	4.5	94.6	97.6	3.1	1418
L1-3	53.1	181.4	451	14.1	4.5	95.7	97.8	2.1	1356
L1-3	63.8	202.4	527	14.0	4.5	95.9	97.1	1.2	1585
L1-3	68.7	208.4	509	14.1	4.5	95.8	97.1	1.3	1638
L1-3	60.3	192.7	494	14.1	4.5	96.9	97.7	0.8	1502
L1-3	70.6	215.8	567	14.1	4.5	95.7	96.8	1.1	1723
L1-3	66.9	210.4	567	14.1	4.5	96.0	97.0	1.1	1670
L1-3	58.5	195.8	532	14.1	4.5	96.5	97.6	1.2	1514
L1-3	58.9	196.0	539	14.1	4.5	96.4	97.6	1.3	1527
L1-3	65.0	206.3	563	14.1	4.5	96.0	97.1	1.2	1638
L1-3	50.5	179.5	501	14.1	4.5	96.9	97.6	0.8	1367
L1-3	75.1	225.8	589	14.1	4.5	93.2	96.9	3.9	1810
L1-3	72.0	218.5	606	14.1	4.5	93.2	96.9	4.0	1782

1. Normalized to 3% O_2.
2. Credited 1.6 MW at 100% MRC, 1.18 MW at 75% MRC, and 0.88 MW at 50% MRC due to I.D. fan replacing boiler I.D. fan and scrubber booster fan.

CT-121 DEMONSTRATION PROJECT PROCESS DATA SUMMARY

Test ID	Unit Load (MWe)	Flue Gas Duct Flow (*skcfm*)	Inlet SO_2 (*ppm*)[1]	JBR ΔP (*in.* WC)	pH	SO_2 Removal Efficiency (%)	Predicted Removal (%)	Relative Difference (%)	I.D. Fan Power (kW)[2]
L1-3	65.5	200.3	515	14.2	4.5	93.7	97.2	3.7	1598
L1-3	54.2	185.3	617	14.1	4.5	96.0	97.8	1.8	1538
L1-3	74.6	224.2	622	14.1	4.5	94.4	96.7	2.5	1837
L1-3	61.7	188.0	477	14.1	4.5	95.5	97.3	1.8	1506
L1-3	67.1	200.5	475	14.1	4.5	94.6	97.4	3.0	1582
L1-3	67.0	203.6	499	14.2	4.5	94.8	97.0	2.3	1604
L1-3	64.9	204.3	551	14.2	4.5	95.1	97.2	2.2	1626
L1-3	60.5	190.0	494	14.2	4.5	95.0	97.4	2.5	1505
L1-3	58.5	184.7	445	14.2	4.5	95.0	97.5	2.6	1427
L1-3	67.9	212.6	590	14.2	4.5	93.5	97.1	3.8	1708
L1-3	72.6	224.8	652	14.1	4.5	93.2	96.9	4.0	1838
L1-3	73.5	227.1	653	14.2	4.5	93.4	96.7	3.6	1851
L1-3	73.5	226.2	650	14.2	4.5	93.3	96.6	3.5	1848
L1-3	62.3	199.4	543	14.2	4.5	94.2	97.1	3.0	1579
L1-3	53.0	176.0	465	14.2	4.5	95.5	97.6	2.3	1368
L1-3	50.3	172.2	479	14.2	4.5	96.8	97.8	1.0	1343

1. Normalized to 3% O_2.
2. Credited 1.6 MW at 100% MRC, 1.18 MW at 75% MRC, and 0.88 MW at 50% MRC due to I.D. fan replacing boiler I.D. fan and scrubber booster fan.

CT-121 DEMONSTRATION PROJECT PROCESS DATA SUMMARY

Test ID	Unit Load (MWe)	Flue Gas Duct Flow (skcfm)	Inlet SO_2 (ppm)[1]	JBR ΔP (in. WC)	pH	SO_2 Removal Efficiency (%)	Predicted Removal (%)	Relative Difference (%)	I.D. Fan Power (kW)[2]
L1-3	52.2	179.6	513	14.1	4.5	96.4	97.8	1.4	1405
HR1-1	87.9	184	2260	18.2	4.8	97.8	98.7	1.0	810
HR1-2	75.3	155	2290	18.2	4.8	97.5	98.9	1.4	620
HR1-3	50.1	104	2220	18.2	4.8	97.8	99.2	1.5	580
HR1-4	90.6	172	2080	18.2	4.8	97.0	99.0	2.0	920
P1B1-1	101.3	287	2210	10.2	4.4	82.3	84.6	2.8	910
P1B1-2	51.0	176	2170	16.2	4.5	97.2	98.1	0.9	600
P1B1-3	52.3	179	2270	10.2	4.5	92.7	91.9	-0.9	360
P1B1-4	100.7	290	2190	16.2	4.5	92.5	96.7	4.5	890
P1B1-5	49.8	172	2220	16.1	5.0	98.7	98.8	0.1	560
P1B1-6	100.6	291	2200	16.2	4.9	98.1	97.9	-0.3	990
P1B1-7	48.7	172	2130	10.2	5.0	95.7	92.9	-2.9	440
P1B1-9	50.8	171	2350	16.2	4.0	94.7	95.8	1.0	610
P1B1-10	101.6	298	2270	10.2	4.0	74.8	74.5	-0.4	1000

1. Normalized to 3% O_2.
2. Credited 1.6 MW at 100% MRC, 1.18 MW at 75% MRC, and 0.88 MW at 50% MRC due to I.D. fan replacing boiler I.D. fan and scrubber booster fan.

CT-121 DEMONSTRATION PROJECT PROCESS DATA SUMMARY

Test ID	Unit Load (MWe)	Flue Gas Duct Flow (skcfm)	Inlet SO_2 (ppm)[1]	JBR ΔP (in. WC)	pH	SO_2 Removal Efficiency (%)	Predicted Removal (%)	Relative Difference (%)	I.D. Fan Power (kW)[2]
P1B1-11	100.1	284	2110	16.2	4.0	92.6	93.2	0.7	930
P1B1-12	49.7	173	2080	10.2	4.0	89.7	87.5	-2.5	350
P1B1-13	80.4	234	2270	16.2	5.1	97.2	98.4	1.2	820
AL1-1	55.5	189	2250	14.2	4.8	95.8	97.5	1.8	600
AL1-2	59.7	200	1810	10.1	4.0	90.5	87.5	-3.4	420
AC1-1	49.5	167	3560	10.2	4.0	81.1	88.8	9.5	250
AC1-2	49.9	171	3700	16.1	4.0	93.3	95.8	2.7	500
AC1-4	74.4	218	3390	16.1	4.0	88.7	83.2	-6.2	570
AC1-5	46.2	180	3610	16.1	4.5	94.2	98.6	4.7	590
AC1-6	75.0	221	3510	16.1	4.5	92.9	91.8	-1.2	690
AC1-8	49.6	173	3700	10.1	4.5	81.4	92.7	13.9	390
AC1-9	50.9	179	3760	16.2	5.0	97.2	98.9	1.7	700
AC1-10	75.5	226	3820	10.2	5.0	79.0	58.7	-25.7	540
AC1-11	74.7	220	3590	16.2	5.0	94.5	95.0	0.5	680

1. Normalized to 3% O_2.
2. Credited 1.6 MW at 100% MRC, 1.18 MW at 75% MRC, and 0.88 MW at 50% MRC due to I.D. fan replacing boiler I.D. fan and scrubber booster fan.

CT-121 DEMONSTRATION PROJECT PROCESS DATA SUMMARY

Test ID	Unit Load (MWe)	Flue Gas Duct Flow (skcfm)	Inlet SO_2 (ppm)[1]	JBR ΔP (in. WC)	pH	SO_2 Removal Efficiency (%)	Predicted Removal (%)	Relative Difference (%)	I.D. Fan Power (kW)[2]
AC1-12	49.5	164	3490	10.2	5.0	86.4	93.5	8.3	290
P2-1	50.3	181.8	2173	10.2	4.5	93.1	92.1	-1.1	1278
P2-2	50.9	171.1	2168	16.3	4.5	98.7	98.1	-0.6	1421
P2-3	100.0	261.1	2198	10.3	4.5	81.5	86.3	5.9	1974
P2-4	100.2	259.3	2134	16.3	4.5	95.7	97.1	1.5	2242
P2-5	100.5	261.1	2133	16.2	4.0	90.4	92.9	2.8	2276
P2-6	100.6	260.4	2081	10.1	3.5	67.3	59.3	-11.8	2015
P2-7	98.8	264.9	2117	15.9	3.5	89.8	76.3	-15.1	2320
P2-8	47.5	157.0	2084	10.2	3.5	89.5	72.3	-19.2	1121
P2-9	50.3	156.6	2065	16.2	3.5	96.6	84.6	-12.4	1345
P2-10	50.0	170.1	2254	13.2	3.8	95.1	89.3	-6.1	1326
P2-11	74.9	220.8	2369	13.2	3.8	93.3	83.4	-10.6	1722
P2-12	98.5	279.7	2348	13.1	3.8	86.0	75.3	-12.5	2368
P2-13	52.4	174.6	2256	10.2	4.1	90.6	88.1	-2.8	1213
P2-14	51.9	172.4	2187	13.2	4.0	95.6	92.6	-3.1	1319

1. Normalized to 3% O_2.
2. Credited 1.6 MW at 100% MRC, 1.18 MW at 75% MRC, and 0.88 MW at 50% MRC due to I.D. fan replacing boiler I.D. fan and scrubber booster fan.

CT-121 DEMONSTRATION PROJECT PROCESS DATA SUMMARY

Test ID	Unit Load (MWe)	Flue Gas Duct Flow (skcfm)	Inlet SO_2 (ppm)[1]	JBR ΔP (in. WC)	pH	SO_2 Removal Efficiency (%)	Predicted Removal (%)	Relative Difference (%)	I.D. Fan Power (kW)[2]
P2-15	49.8	165.9	2158	16.1	4.0	98.3	95.5	-2.8	1386
P2-16	50.4	172.9	2277	10.2	3.6	81.4	76.4	-6.2	1238
P2-17	50.3	173.9	2405	13.2	3.5	89.0	79.0	-11.3	1346
P2-18	50.3	173.2	2438	16.2	3.5	93.2	84.9	-8.9	1453
P2-19	75.6	213.5	2397	10.2	3.6	79.3	60.7	-23.4	1524
P2-20	76.1	218.3	2351	13.2	3.6	89.6	74.6	-16.8	1682
P2-21	75.7	220.5	2204	16.2	3.6	94.7	84.4	-10.9	1817
P2-22	75.2	216.5	2209	10.2	4.1	75.2	84.2	12.0	1540
P2-23	75.4	216.0	2225	13.2	4.0	87.3	90.3	3.4	1668
P2-24	74.2	204.7	2429	16.2	4.0	85.0	93.0	9.4	1710
P2-25	100.6	269.8	2452	10.2	3.7	52.3	48.3	-7.6	2097
P2-26	101.5	272.1	2448	13.2	3.7	66.5	65.1	-2.1	2269
P2-27	101.9	273.7	2352	16.1	3.8	78.6	80.6	2.6	2428
P2-28	100.6	267.6	2270	10.2	4.0	55.1	74.6	35.5	2083
P2-29	99.8	268.2	2301	13.1	4.0	70.5	83.8	18.9	2168
P2-30	100.6	268.6	2316	16.2	4.0	83.2	90.1	8.3	2303

1. Normalized to 3% O_2.
2. Credited 1.6 MW at 100% MRC, 1.18 MW at 75% MRC, and 0.88 MW at 50% MRC due to I.D. fan replacing boiler I.D. fan and scrubber booster fan.

CT-121 DEMONSTRATION PROJECT PROCESS DATA SUMMARY

Test ID	Unit Load (MWe)	Flue Gas Duct Flow (skcfm)	Inlet SO_2 (ppm)[1]	JBR ΔP (in. WC)	pH	SO_2 Removal Efficiency (%)	Predicted Removal (%)	Relative Difference (%)	I.D. Fan Power (kW)[2]
P2-31	100.0	263.5	2351	10.2	3.5	49.1	34.5	-29.8	2033
P2-32	100.9	281.2	2194	13.1	3.5	77.0	64.7	-16.0	2374
P2-33	100.0	276.0	2169	16.1	3.6	88.0	78.1	-11.3	2461
P2-33R	100.7	262.3	2326	16.2	3.5	75.4	65.6	-13.0	2303
L2-2	73.0	214	2184	14.2	4.0	94.4	92.2	-2.3	586
L2-2	59.6	188	2200	14.2	4.1	95.4	94.1	-1.4	629
L2-2	54.1	174	2221	14.2	4.1	96.4	94.7	-1.8	515
L2-2	53.6	179	2229	14.2	4.1	96.5	94.7	-1.9	569
L2-2	56.2	185	2228	14.2	4.1	96.1	94.3	-1.9	651
L2-2	81.3	242	2216	14.2	4.0	91.1	91.4	0.3	907
L2-2	90.2	257	2185	14.1	4.0	89.1	90.9	2.0	610
L2-2	60.4	191	2203	14.2	4.1	94.7	94.0	-0.8	376
L2-2	60.9	192	2135	14.2	4.1	94.9	94.0	-0.9	381
L2-2	82.7	240	2023	14.2	4.1	92.1	93.2	1.2	878
L2-2	78.1	230	1978	14.2	4.0	92.0	93.5	1.6	784

1. Normalized to 3% O_2.
2. Credited 1.6 MW at 100% MRC, 1.18 MW at 75% MRC, and 0.88 MW at 50% MRC due to I.D. fan replacing boiler I.D. fan and scrubber booster fan.

CT-121 DEMONSTRATION PROJECT PROCESS DATA SUMMARY

Test ID	Unit Load (MWe)	Flue Gas Duct Flow (skcfm)	Inlet SO_2 (ppm)[1]	JBR ΔP (in. WC)	pH	SO_2 Removal Efficiency (%)	Predicted Removal (%)	Relative Difference (%)	I.D. Fan Power (kW)[2]
L2-2	71.3	212	1982	14.2	4.0	92.8	93.1	0.4	602
L2-2	68.0	206	2002	14.1	4.0	93.2	92.2	-1.1	541
L2-2	53.5	177	2076	14.1	4.0	95.3	93.4	-2.1	559
L2-2	51.3	172	2066	14.1	4.0	95.2	93.5	-1.8	511
L2-2	57.4	188	2165	14.1	4.0	93.8	93.1	-0.8	658
L2-2	51.8	186	2136	14.1	4.0	95.1	93.4	-1.8	653
L2-2	68.5	210	2164	14.1	4.0	91.6	92.2	0.7	581
L2-2	51.2	161	2175	14.1	4.0	94.7	93.5	-1.3	410
L2-2	52.9	172	2182	14.1	4.0	94.9	93.4	-1.6	521
L2-2	54.3	175	2205	14.1	4.0	94.9	93.3	-1.7	548
L2-2	54.2	178	2207	14.1	4.0	94.9	93.3	-1.8	573
L2-2	52.8	177	1852	14.1	4.0	97.2	93.5	-3.8	555
L2-2	53.3	177	1972	14.1	4.0	96.5	93.4	-3.2	561
L2-2	53.5	178	1998	14.1	4.0	95.7	93.4	-2.3	565
L2-2	51.7	179	2194	14.1	4.0	95.1	93.4	-1.8	579
L2-2	52.7	192	2077	14.1	4.0	95.1	93.4	-1.8	703

1. Normalized to 3% O_2.
2. Credited 1.6 MW at 100% MRC, 1.18 MW at 75% MRC, and 0.88 MW at 50% MRC due to I.D. fan replacing boiler I.D. fan and scrubber booster fan.

CT-121 DEMONSTRATION PROJECT PROCESS DATA SUMMARY

Test ID	Unit Load (MWe)	Flue Gas Duct Flow (skcfm)	Inlet SO_2 (ppm)[1]	JBR ΔP (in. WC)	pH	SO_2 Removal Efficiency (%)	Predicted Removal (%)	Relative Difference (%)	I.D. Fan Power (kW)[2]
L2-2	55.4	189	1935	14.1	4.0	94.9	93.4	-1.5	663
L2-2	51.2	167	1915	14.1	4.0	95.5	93.5	-2.1	469
L2-2	53.1	176	1968	14.1	4.0	95.9	93.4	-2.6	558
L2-2	52.6	165	1970	14.1	4.0	96.1	93.5	-2.8	444
L2-2	56.5	170	1968	14.1	4.0	95.8	93.4	-2.5	501
L2-2	55.1	174	2111	14.1	4.0	95.7	93.3	-5.6	523
L2-2	53.8	170	2126	14.1	4.0	94.7	93.3	-1.4	491
L2-2	66.7	202	2011	14.1	4.0	91.5	93.0	1.7	496
L2-2	68.4	202	2075	14.1	4.0	91.0	92.7	1.8	495
L2-2	75.7	219	2059	14.1	4.0	91.3	92.4	1.2	651
L2-2	64.1	195	1974	14.1	4.0	92.3	93.2	1.0	418
L2-2	53.1	171	1971	14.1	4.0	94.6	93.4	-1.2	501
L2-2	69.9	210	1945	14.1	4.0	89.8	93.2	3.9	571
L2-2	58.4	185	1929	14.1	4.0	93.1	93.4	0.3	624
L2-2	59.6	186	1870	14.1	4.0	92.9	93.5	0.7	631
L2-2	53.8	167	1908	14.1	4.0	94.0	93.5	-0.5	463

1. Normalized to 3% O_2.
2. Credited 1.6 MW at 100% MRC, 1.18 MW at 75% MRC, and 0.88 MW at 50% MRC due to I.D. fan replacing boiler I.D. fan and scrubber booster fan.

CT-121 DEMONSTRATION PROJECT PROCESS DATA SUMMARY

Test ID	Unit Load (MWe)	Flue Gas Duct Flow (skcfm)	Inlet SO_2 (ppm)[1]	JBR ΔP (in. WC)	pH	SO_2 Removal Efficiency (%)	Predicted Removal (%)	Relative Difference (%)	I.D. Fan Power (kW)[2]
L2-2	53.5	164	1918	14.1	4.0	95.0	93.5	-1.6	440
L2-2	50.6	165	1985	14.1	4.0	95.4	93.5	-2.0	465
L2-2	49.0	165	2054	14.1	4.0	94.5	93.5	-1.0	469
L2-2	48.7	167	2065	14.1	4.0	93.6	93.6	0.0	489
L2-2	49.1	172	2041	14.1	4.0	91.7	93.5	2.0	526
L2-2	49.4	171	2045	14.1	4.0	91.6	93.5	2.2	509
L2-2	61.3	193	2106	14.1	4.0	85.9	92.9	8.2	407
L2-2	53.4	169	2084	14.1	4.0	90.0	93.4	3.7	465
L2-2	64.1	194	1968	14.1	4.0	85.4	93.2	9.2	395
L2-2	53.6	174	1962	14.1	4.0	90.7	93.4	3.1	517
L2-2	61.3	192	1901	14.1	4.0	86.2	93.5	8.5	389
L2-2	53.0	176	1977	14.1	4.0	89.9	93.5	4.0	537
L2-2	58.0	187	1833	14.1	4.0	91.0	93.6	2.8	612
L2-2	66.3	205	1873	14.1	4.0	87.8	93.6	6.6	488
L2-2	55.4	177	1908	14.2	4.0	92.7	93.5	0.9	513
L2-2	53.8	173	1853	14.1	4.0	90.9	93.5	2.9	495

1. Normalized to 3% O_2.
2. Credited 1.6 MW at 100% MRC, 1.18 MW at 75% MRC, and 0.88 MW at 50% MRC due to I.D. fan replacing boiler I.D. fan and scrubber booster fan.

CT-121 DEMONSTRATION PROJECT PROCESS DATA SUMMARY

Test ID	Unit Load (MWe)	Flue Gas Duct Flow (skcfm)	Inlet SO_2 (ppm)[1]	JBR ΔP (in. WC)	pH	SO_2 Removal Efficiency (%)	Predicted Removal (%)	Relative Difference (%)	I.D. Fan Power (kW)[2]
L2-2	51.7	168	1870	14.1	4.0	91.6	93.5	2.1	465
L2-3	66.7	200	1886	14.1	4.0	87.3	93.1	6.6	476
L2-3	60.6	181	1870	14.1	4.0	90.7	93.5	3.2	270
L2-3	54.1	171	1897	14.1	4.0	92.1	93.5	1.5	484
L2-3	75.0	222	1781	14.1	4.0	85.5	94.1	10.1	680
L2-3	47.0	158	1761	14.1	4.0	93.5	93.3	-0.2	388
L2-3	50.9	167	1764	14.1	4.0	92.7	93.5	0.9	458
L2-3	57.7	185	1972	14.1	4.0	88.4	93.4	5.7	606
L2-3	56.9	185	1926	14.1	4.0	90.1	93.5	3.7	610
L2-3	57.2	186	1990	14.1	4.0	89.6	93.4	4.2	616
L2-3	62.6	196	2083	14.2	4.0	86.4	93.0	7.7	425
HR2-1	100.7	271.7	909	20.1	4.0	98.1	97.8	-0.3	934
HR2-2	75.1	221.2	992	20.1	4.0	99.4	97.8	-1.6	818
HR2-3	52.7	169.4	997	20.1	4.0	98.3	97.7	-0.6	669
HR2-4	58.9	160.0	984	20.1	4.0	98.6	97.7	-0.9	788

1. Normalized to 3% O_2.
2. Credited 1.6 MW at 100% MRC, 1.18 MW at 75% MRC, and 0.88 MW at 50% MRC due to I.D. fan replacing boiler I.D. fan and scrubber booster fan.

CT-121 DEMONSTRATION PROJECT PROCESS DATA SUMMARY

Test ID	Unit Load (MWe)	Flue Gas Duct Flow (skcfm)	Inlet SO_2 (ppm)[1]	JBR ΔP (in. WC)	pH	SO_2 Removal Efficiency (%)	Predicted Removal (%)	Relative Difference (%)	I.D. Fan Power (kW)[2]
AC2-1	101.1	270.7	2949	14.1	4.0	83.5	80.1	-4.1	711
AC2-2	75.2	213.6	3016	14.1	4.0	90.3	87.3	-3.4	540
AC2-3	51.1	163.2	2921	14.1	4.0	93.3	92.4	-1.0	443
AC2-4	100.2	279.2	2920	10.1	4.0	61.5	61.7	0.3	621
AC2-5	75.2	219.1	3035	10.1	4.0	77.7	74.1	-4.6	407
AC2-6	50.9	166.7	3006	10.1	4.0	86.0	84.1	-2.2	305
AC2-7	100.5	279.5	2990	18.1	4.0	92.6	89.8	-3.0	951
AC2-8	75.9	221.1	3036	18.1	4.0	95.4	93.5	-2.0	762
AC2-9	49.9	164.8	3029	18.1	4.0	98.1	96.1	-2.0	578
AC2-10	78.0	227.0	2759	14.1	4.0	85.0	88.7	4.3	721
AC2-5R	75.1	219.2	3011	10.1	4.0	75.0	74.5	-0.6	408

1. Normalized to 3% O_2.
2. Credited 1.6 MW at 100% MRC, 1.18 MW at 75% MRC, and 0.88 MW at 50% MRC due to I.D. fan replacing boiler I.D. fan and scrubber booster fan.

CT-121 DEMONSTRATION PROJECT PROCESS DATA SUMMARY

Test ID	Unit Load (MWe)	Flue Gas Duct Flow (skcfm)	Inlet SO_2 (ppm)[1]	JBR ΔP (in. WC)	pH	SO_2 Removal Efficiency (%)	Predicted Removal (%)	Relative Difference (%)	I.D. Fan Power (kW)[2]
AL2-1	100.4	272.6	1008	18.1	4.0	97.8	97.7	-0.1	868
AL2-1R	100.8	269.1	979	18.1	4.0	98.0	97.7	-0.3	834
AL2-2	99.5	265.9	955	10.1	4.0	92.6	92.1	-0.5	451
AL2-3	50.9	166.6	1022	18.1	4.0	97.7	97.8	0.1	564
AL2-3R	50.4	158.9	996	18.1	4.0	99.0	97.8	-1.2	528
AL2-4	50.7	159.9	905	10.1	4.0	96.0	95.5	-0.5	250
AL2-5	82.5	233.6	893	14.1	3.80	97.2	96.8	-0.4	729
AL2-6	50.0	161.3	919	14.1	3.75	97.1	97.4	0.3	377
AL2-7	75.4	210.1	961	14.1	3.75	96.7	97.0	0.3	476
AL2-8	100.1	269.3	920	14.1	3.75	96.9	96.4	-0.5	657
AL2-9	100.5	269.1	903	10.1	3.75	92.6	92.0	-0.6	467
AL2-10	75.3	207.4	877	10.1	3.75	94.9	94.0	-0.9	290
AL2-11	50.1	161.8	842	10.1	3.75	95.1	95.5	0.5	255
AL2-12	50.0	162.2	919	18.1	3.75	97.6	97.8	0.2	555
AL2-13	76.9	223.2	750	18.1	3.75	97.4	97.7	0.4	764
AL2-14	100.4	280.8	875	18.1	3.75	97.8	97.7	-0.1	954

1. Normalized to 3% O_2.
2. Credited 1.6 MW at 100% MRC, 1.18 MW at 75% MRC, and 0.88 MW at 50% MRC due to I.D. fan replacing boiler I.D. fan and scrubber booster fan.

Appendix B

Detailed Analytical Results

Appendix B

Analytical Results

Appendix Section	Stream/Analyte
B1	Ash Pond Analytical Results
B2	Gypsum Pond Analytical Results
B3	Gypsum Slurry Tranfer Tank Analytical Results
B4	JBR Draw-Off Analytical Results
B5	JBR Froth Zone Analytical Results
B6	Trace Metals Analyses
B7	Limestone Analytical Results
B8	Gypsum Particle Size Distribution

Appendix B

Glossary

AP	Site Ash Pond (Make-up Water Source)
FFR	Form Filtration Rate
GP	Gypsum Pond (Recycle Process Water)
GSTT	Gypsum Slurry Transfer Tank (Diluted JBR Draw-off Slurry)
JBR-D	JBR Draw-off Slurry
JBR-F	JBR Froth Zone Slurry
MDL	Method Detection Limit
UA	Thickener Unit Area

Limestone Sources

MMA	Martin Marietta Aggregates - Leesburg, Georgia
Dravo	Dravo Lime Company - Saginaw, Alabama
Fla. Rock	Florida Rock Corporation - Rome, Georgia

Plant Yates CT-121 Demonstration Project Ash Pond Analytical Results

Sample Location:	AP	AP	AP	AP	AP	AP	AP	AP	AP	AP	AP	AP	AP	AP
Date:	2/15/93	6/6/93	8/9/93	10/24/93	1/10/94	2/14/94	4/25/94	6/1/94	6/27/94	7/7/94	8/10/94	9/12/94	10/24/94	12/6/94
Time:	0800	1300	0800	1030	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800
Sample ID:	S0310	S0573	S0742	S0961	S1123	S1227	S1375	S1543	S1622	S1644	S1740	S1810	S1902	S1948
Test ID:	P1-18	L1-3	L1-3	HR1-4	AL1-1	AC1-10	P2-15	L2-1	L2-2	L2-2	L2-2	HR2-2	AC2-10	AL2-3
pH:		6.75	6.08		7.36		5.95		4.95		5.65	4.61		
Temp (°C):		27	30		7		23		20		28	25		
Weight % Solids:							0				0	0		
Solid Ca (mM/g):														
Solid Mg (mM/g):														
Solid SO_3 (mM/g):														
Solid Total SO_4 (mM/g):														
Solid CO_3 (mM/g):														
Weight % Inerts:														
Liquid Ca^{++} (mM):	6.13	1.09	10.34	0.45	0.51	4.26	0.95	0.84	2.32	2.25	1.14	0.0	0.0	0.89
Liquid Mg^{++} (mM):	0.5	0.0	0.076	0.0	0.136	0.75	0.0	1.83	4.47	0.93	0.207	0.0	0.0	0.36
Liquid Na^{++} (mM):	0.42	0.09	0.31	0.53	0.8	1.62	0.83	0.0	10.84	1.62	0.6	0.64	0.23	0.19
Liquid SO_3^- (mM):	0.002	0.008	0.006	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.002	0.0	0.0
Liquid SO_4^- (mM):	1.17	0.48	1.58	0.7	0.14	1.15	1.19	0.75	1.3	1.21	1.35	1.53	0.87	0.87
Liquid CO_3^- (mM):	0.1	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	1.23	0.0	0.0	0.0	0.0
Liquid Cl^- (mM):	5	1.19	0.63	0.98	1.05	3.9	6.71	7.26	1.48	3.2	4.25	47.54	0.38	1.5
U.A. @30 Wt% (ft^2*D/T):														
Cake Weight % Solids:														
F.F.R. (lb/hr*ft^2):														
Final Settled Density:														
Molar Closure (% error):														
Solid Closure (% error):														
Liq. Charge Imbal. (%):														
LS Util. - Ca Indep (%):														
LS Util. - S Indep (%):														
Average:														
SO_3 Oxidation (%):														
Weight % Gypsum:														
Weight % $CaCO_3$:														
Gypsum Relative Saturation:	0.08													

Plant Yates CT-121 Demonstration Project Gypsum Pond Analytical Results

Sample Location:	GP	GP	GP	GP	GP	GP	GP	GP	GP	GP	GP	GP	GP	GP
Date:	1/22/93	1/27/93	2/1/93	2/5/93	2/9/93	2/15/93	2/21/93	2/26/93	3/4/93	3/8/93	3/12/93	3/16/93	3/18/93	3/20/93
Time:	0730	0800	0800	0815	0800	0800	0730	0800	0800	0800	0800	1400	0800	0900
Sample ID:	S0215	S0234	S0252	S0277	S0291	S0308	S0326	S0341	S0358	S0369	S0386	S0400	S0409	S0418
Test ID:	P1-2	P1-5	P1-9	P1-12	P1-14	P1-18	P1-21	P1-24	P1-27	P1-28	P1-21R	P1-31	P1-32	P1-33
pH:	6.45	5.95	5.70	6.22	6.54	6.36	6.30	6.88	6.57	6.59	6.71	6.71	6.58	6.40
Temp (^{O}C):	14	15	16	13	14	14	13	10	15	14	17	18	13	15
Weight % Solids:	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Solid Ca (mM/g):														
Solid Mg (mM/g):														
Solid SO_3 (mM/g):														
Solid Total SO_4 (mM/g):														
Solid CO_3 (mM/g):														
Weight % Inerts:														
Liquid Ca^{++} (mM):	65.70	141.07	145.26	137.45	127.62	138.73	123.01	145.78	162.12	145.64	192.33	177.39	196.24	211.52
Liquid Mg^{++} (mM):	13.32	18.61	19.49	16.47	16.38	18.50	16.90	20.41	24.15	20.78	27.18	25.05	28.30	28.86
Liquid Na^{++} (mM):	1.98	2.53	2.5	1.97	3.05	2.48	2.51	2.61	2.78	7.32	3.29	3.04	3.28	5.13
Liquid SO_3^{-} (mM):	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.01
Liquid SO_4^{-} (mM):	16.58	8.69	8.33	6.50	7.67	7.78	6.76	6.95	8.12	3.69	8.48	8.10	7.96	7.92
Liquid CO_3^{-} (mM):	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	1.60	1.60	1.60	1.60	1.60	1.60
Liquid Cl^{-} (mM):	202.50	327.63	349.25	261.08	236.10	278.76	252.30	290.65	335.90	299.60	392.40	370.00	407.40	445.20
U.A. @30 Wt% (ft^2*D/T):														
Cake Weight % Solids:														
F.F.R. (lb/hr*ft^2):														
Final Settled Density:														
Molar Closure (% error):														
Solid Closure (% error):														
Liq. Charge Imbal. (%):	-19.1	-3.5	-4.9	6.1	7.3	3.7	3.0	4.7	3.0	5.0	3.7	2.6	3.2	2.5
LS Util. - Ca Indep (%):														
LS Util. - S Indep (%):														
Average:														
SO_3 Oxidation (%):														
Weight % Gypsum:														
Weight % $CaCO_3$:														
Gypsum Relative Saturation:	NC	0.82	0.81	0.64	0.74	0.64	0.68	0.75	NC	NC	NC	NC	NC	NC

Plant Yates CT-121 Demonstration Project Gypsum Pond Analytical Results

Sample Location:	GP	GP	GP	GP	GP	GP	GP	GP	GP	GP	GP	GP	GP	GP
Date:	3/22/93	3/28/93	3/30/93	4/5/93	4/19/93	4/25/93	5/28/93	6/1/93	6/6/93	6/14/93	6/22/93	6/28/93	7/6/93	7/12/93
Time:	0830	0800	0800	0800	0800	1000	0745	0800	1300	0800	0800	0800	0800	0800
Sample ID:	S0423	S0444	S0453	S0470	S0495	S0517	S0549	S0554	S0571	S0589	S0610	S0627	S0648	S0666
Test ID:	P1-34	P1-35	P1-36	L1-1	L1-2	L1-2	L1-3	L1-3	L1-3	L1-3	L1-3	L1-3	L1-3	L1-3
pH:	6.60	6.49	6.83	6.62	6.60	6.70	7.01	6.35	6.11	6.54	6.50	6.73	6.35	6.23
Temp (°C):	21	22	22	19	23	25	25	23	29	34	30	31	33	35
Weight % Solids:	0.03	0.04	0.00	0.02	0.00	0.00	0.02	0.00	0.06	0.00	0.04	0.18	0.03	0.00
Solid Ca (mM/g):														
Solid Mg (mM/g):														
Solid SO_3 (mM/g):														
Solid Total SO_4 (mM/g):														
Solid CO_3 (mM/g):														
Weight % Inerts:														
Liquid Ca^{++} (mM):	207.72	222.76	141.74	158.08	151.51	178.42	131.61	176.32	200.18	174.16	201.09	218.39	196.77	222.24
Liquid Mg^{++} (mM):	28.50	31.53	19.92	25.04	21.01	23.05	17.49	24.91	29.42	25.77	28.37	33.70	27.22	26.02
Liquid Na^{++} (mM):	3.77	3.91	3.05	2.79	2.88	3.25	2.43	3.33	4.08	4.06	4.31	2.74	4.20	9.01
Liquid $SO_3^{=}$ (mM):	0.01	0.01	0.01	0.00	0.00	0.01	0.00	0.01	0.01	0.02	0.01	0.00	0.01	0.01
Liquid $SO_4^{=}$ (mM):	8.44	7.56	11.30	7.86	8.89	8.07	8.68	8.98	9.34	8.57	8.56	8.80	8.95	9.01
Liquid $CO_3^{=}$ (mM):	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	0.60	0.60
Liquid Cl^- (mM):	445.10	451.40	276.30	300.40	304.49	347.50	227.00	317.76	373.46	360.09	381.84	407.29	403.77	466.04
U.A. @30 Wt% (ft^2*D/T):														
Cake Weight % Solids:														
F.F.R. (lb/hr*ft^2):														
Final Settled Density:														
Molar Closure (% error):														
Solid Closure (% error):														
Liq. Charge Imbal. (%):	1.4	4.6	4.2	7.6	3.7	5.4	10.1	9.3	8.2	3.3	7.5	8.7	3.5	2.1
LS Util. - Ca Indep (%):														
LS Util. - S Indep (%):														
Average:														
SO_3 Oxidation (%):														
Weight % Gypsum:														
Weight % $CaCO_3$:														
Gypsum Relative Saturation:	NC	NC	NC	0.74	0.83	0.77	0.81	0.85	0.89	0.80	0.82	0.84	0.85	0.88

Plant Yates CT-121 Demonstration Project Gypsum Pond Analytical Results

Sample Location:	GP	GP	GP	GP	GP	GP	GP	GP	GP	GP	GP	GP	GP	GP
Date:	7/19/93	7/26/93	8/2/93	8/9/93	8/16/93	8/23/93	8/29/93	9/7/93	9/14/93	9/19/93	9/27/93	10/5/93	10/11/93	10/14/93
Time:	0800	0800	0800	0800	0800	0800	0800	0800	1000	1320	0800	0800	0930	0800
Sample ID:	S0687	S0705	S0722	S0740	S0762	S0783	S0804	S0829	S0840	S0856	S0881	S0899	S0916	S0930
Test ID:	L1-3	L1-3	L1-3	L1-3	L1-3	L1-3	L1-3	L1-3	HR1-1	HR1-4	HR1-4	HR1-4	HR1-4	HR1-4
pH:	5.91	7.05	6.51	6.51	6.60	6.17	6.34	5.08	6.31	6.13	6.34	6.46	5.53	6.51
Temp (°C):	34	34	32	32	34	36	33	35	29	35	28	20	22	20
Weight % Solids:	0.00	0.00	0.06	0.00	0.02	0.04	0.09	0.00	0.04	0.04	0.08	0.02	0.81	0.51
Solid Ca (mM/g):														
Solid Mg (mM/g):														
Solid SO_3 (mM/g):														
Solid Total SO_4 (mM/g):														
Solid CO_3 (mM/g):														
Weight % Inerts:														
Liquid Ca^{++} (mM):	140.0	143.63	190.25	163.13	208.62	158.14	196.46	253.10	264.94	212.75	327.80	245.43	368.56	283.62
Liquid Mg^{++} (mM):	19.49	20.69	27.26	23.66	30.68	31.61	26.86	37.50	31.05	29.77	15.56	39.47	48.94	38.18
Liquid Na^{++} (mM):	5.72	3.80	4.89	4.01	5.42	5.54	4.94	7.25	6.37	5.17	8.35	7.01	9.14	6.18
Liquid SO_3^- (mM):	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.03	0.03
Liquid SO_4^- (mM):	9.04	9.24	8.92	8.76	7.77	8.57	8.73	8.60	9.09	9.14	8.10	8.03	12.44	14.17
Liquid CO_3^- (mM):	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.51	0.51	0.51	0.51	0.51	0.51
Liquid Cl^- (mM):	295.60	286.28	394.96	294.05	393.73	463.50	407.90	514.56	565.38	359.68	638.38	558.75	770.20	478.30
U.A. @30 Wt% (ft^2*D/T):														
Cake Weight % Solids:														
F.F.R. (lb/hrft^2):*														
Final Settled Density:														
Molar Closure (% error):														
Solid Closure (% error):														
Liq. Charge Imbal. (%):	1.7	4.3	3.1	9.5	8.3	-11.1	3.0	5.1	1.2	12.9	3.0	0.1	3.0	12.3
LS Util. - Ca Indep (%):														
LS Util. - S Indep (%):														
Average:														
SO_3 Oxidation (%):														
Weight % Gypsum:														
Weight % $CaCO_3$:														
Gypsum Relative Saturation:	0.82	0.84	0.83	0.82	0.74	0.75	0.83	0.85	0.92	0.88	0.89	0.79	1.35	1.45

Plant Yates CT-121 Demonstration Project Gypsum Pond Analytical Results

Sample Location:	GP	GP	GP	GP	GP	GP	GP	GP	GP	GP	GP	GP	GP	GP
Date:	10/18/93	10/24/93	11/1/93	12/2/93	12/5/93	12/13/93	12/19/93	12/28/93	1/3/94	1/10/94	1/17/94	1/25/94	1/31/94	2/7/94
Time:	0800	1030	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800
Sample ID:	S0948	S0960	S0986	S1015	S1024	S1050	S1074	S1095	S1108	S1121	S1144	S1165	S1182	S1205
Test ID:	HR1-4	HR1-4	P1A-11	P1B-1	P1B-5	P1B-9R	P1B-9R2	AL1-1	AL1-1	AL1-1	AL1-1	AC1-1	AC1-1	AC1-3
pH:	6.26	6.49	5.48	6.77	6.81	6.58	6.45	5.97	6.88	6.43	6.47	6.61	6.45	5.39
Temp (°C):	24	21	11	13	18	11	13	7	46	7	4	5	12	15
Weight % Solids:	0.16	0.14	0.03	0.05	0.07	0.08	0.29	0.11	0.08	0.18	0.21	0.23	0.19	0.44
Solid Ca (mM/g):														
Solid Mg (mM/g):														
Solid SO_3 (mM/g):														
Solid Total SO_4 (mM/g):														
Solid CO_3 (mM/g):														
Weight % Inerts:														
Liquid Ca^{++} (mM):	211.34	200.06	261.11	237.42	292.54	299.35	399.52	441.80	321.21	356.73	327.04	313.19	420.99	473.97
Liquid Mg^{++} (mM):	28.35	28.26	38.93	37.26	47.45	52.20	72.47	37.70	66.53	42.55	81.81	77.39	119.88	174.69
Liquid Na^{++} (mM):	5.57	5.10	6.07	5.51	5.35	6.65	8.93	9.76	7.16	7.81	7.30	7.80	9.46	13.06
Liquid SO_3^- (mM):	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00
Liquid SO_4^- (mM):	7.57	7.66	7.37	8.21	8.26	7.08	7.27	6.75	5.14	7.33	7.53	7.84	7.27	8.19
Liquid CO_3^- (mM):	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	1.59	1.59	1.59	1.59	1.59	1.46
Liquid Cl^- (mM):	438.94	462.90	467.71	487.43	618.34	634.89	860.11	818.79	646.36	840.91	678.78	705.02	939.05	1219.10
U.A. @30 Wt% (ft^2*D/T):														
Cake Weight % Solids:														
F.F.R. (lb/hr*ft^2):														
Final Settled Density:														
Molar Closure (% error):														
Solid Closure (% error):														
Liq. Charge Imbal. (%):	3.3	-1.8	11.4	4.8	3.8	4.4	4.3	7.6	8.7	-3.0	8.6	4.4	6.7	2.9
LS Util. - Ca Indep (%):														
LS Util. - S Indep (%):														
Average:														
SO_3 Oxidation (%):														
Weight % Gypsum:														
Weight % $CaCO_3$:														
Gypsum Relative Saturation:	0.73	0.73	0.76	0.82	0.84	0.74	0.81	0.84	0.52	0.85	0.84	0.83	0.80	0.79

Plant Yates CT-121 Demonstration Project Gypsum Pond Analytical Results

Sample Location:	GP	GP	GP	GP	GP	GP	GP	GP	GP	GP	GP	GP	GP	GP
Date:	2/14/94	3/15/94	3/18/94	3/22/94	3/25/94	4/20/94	4/25/94	4/28/94	5/2/94	5/6/94	5/11/94	5/16/94	5/20/94	5/23/94
Time:	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800
Sample ID:	S1226	S1281	S1294	S1314	S1327	S1352	S1373	S1391	S1404	S1421	S1442	S1507	S1520	S1525
Test ID:	AC1-10	P2-0	P2-2	P2-5	P2-6	P2-11	P2-15	P2-31	P2-19	P2-22	P2-17	P2-27	P2-30	P2-31
pH:	6.31	6.54	6.51	5.60	N/A	6.24	5.97	5.58	5.35	5.34	5.42	5.09	5.47	5.00
Temp (°C):	14	17	17	21	22	24	25	28	25	22	25	27	26	23
Weight % Solids:	0.34	0.09	0.05	0.04	0.50	0.01	0.05	0.02	0.03	0.00	0.09	0.08	0.01	0.04
Solid Ca (mM/g):														
Solid Mg (mM/g):														
Solid SO_3 (mM/g):														
Solid Total SO_4 (mM/g):														
Solid CO_3 (mM/g):														
Weight % Inerts:														
Liquid Ca^{++} (mM):	338.11	288.94	207.78	186.51	174.63	87.19	109.20	104.47	114.69	127.16	115.89	155.20	119.71	153.45
Liquid Mg^{++} (mM):	139.42	148.57	114.49	123.23	83.31	35.93	53.73	59.29	65.20	69.46	62.50	84.31	67.62	88.18
Liquid Na^{++} (mM):	11.79	9.84	7.36	8.33	5.63	3.09	4.08	4.82	5.62	5.84	5.58	7.82	6.90	8.92
Liquid SO_3^- (mM):	0.00	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.01	0.01	0.00
Liquid SO_4^- (mM):	8.59	9.43	9.26	10.09	10.05	11.20	11.64	11.51	11.97	11.88	12.06	11.79	11.23	11.72
Liquid CO_3^- (mM):	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.34	1.34	1.34	1.34	1.23	1.23
Liquid Cl^- (mM):	822.50	834.96	575.90	620.45	459.42	209.54	287.98	284.96	338.01	321.04	299.28	399.73	335.64	418.14
U.A. @30 Wt% (ft^2*D/T):														
Cake Weight % Solids:														
F.F.R. (lb/hr*ft^2):														
Final Settled Density:														
Molar Closure (% error):														
Solid Closure (% error):														
Liq. Charge Imbal. (%):	7.0	1.7	4.5	-1.0	4.2	3.5	2.8	3.8	0.5	7.3	5.7	7.0	3.1	5.4
LS Util. - Ca Indep (%):														
LS Util. - S Indep (%):														
Average:														
SO_3 Oxidation (%):														
Weight % Gypsum:														
Weight % $CaCO_3$:														
Gypsum Relative Saturation:	0.83	0.83	0.73	0.74	0.78	0.84	0.84	0.79	0.84	0.86	0.86	0.87	0.78	0.85

Plant Yates CT-121 Demonstration Project Gypsum Pond Analytical Results

Sample Location:	GP	GP	GP	GP	GP	GP	GP	GP	GP	GP	GP	GP	GP	GP
Date:	6/1/94	6/7/94	6/15/94	6/20/94	6/27/94	7/7/94	7/11/94	7/18/94	7/25/94	8/1/94	8/10/94	8/15/94	8/22/94	8/28/94
Time:	0800	0800	0800	1400	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800
Sample ID:	S1552	S1557	S1581	S1598	S1620	S1643	S1653	S1674	S1695	S1717	S1738	S1752	S1773	S1794
Test ID:	L2-1	L2-1	L2-2	L2-2	L2-2	L2-2	L2-2	L2-2	L2-2	L2-2	L2-2	L2-2	L2-3	L2-2
pH:	5.50	5.52	5.87	5.88	5.91	6.23	6.19	6.28	5.95	6.11	5.51	5.60	5.60	5.74
Temp (°C):	27	33	31	40	23	27	30	31	32	29	31	31	31	31
Weight % Solids:	0.14	0.28	0.22	0.03	0.04	0.06	0.12	0.33	0.06	0.04	0.06	0.21	0.05	0.12
Solid Ca (mM/g):														
Solid Mg (mM/g):														
Solid SO_3 (mM/g):														
Solid Total SO_4 (mM/g):														
Solid CO3 (mM/g):														
Weight % Inerts:														
Liquid Ca^{++} (mM):	124.45	120.63	145.45	155.91	187.14	139.25	150.27	167.12	172.29	217.20	221.76	234.73	229.28	231.83
Liquid Mg^{++} (mM):	70.20	63.88	81.11	85.99	106.96	70.94	80.06	99.99	93.17	115.68	119.70	125.83	120.90	128.67
Liquid Na^{++} (mM):	7.50	7.22	8.33	11.25	20.42	8.56	9.56	9.90	9.91	11.04	11.20	15.45	10.36	15.21
Liquid SO_3^- (mM):	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.01	0.02
Liquid SO_4^- (mM):	11.71	11.68	11.31	11.14	10.59	9.93	11.17	10.82	11.17	10.42	11.13	11.30	10.26	11.53
Liquid CO_3^- (mM):	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23
Liquid Cl^- (mM):	349.32	333.50	428.74	395.26	540.32	345.70	431.00	491.68	490.45	628.92	631.84	665.42	625.21	641.06
U.A. @30 Wt% (ft^2*D/T):														
Cake Weight % Solids:														
F.F.R. (lb/hr*ft^2):														
Final Settled Density:														
Molar Closure (% error):														
Solid Closure (% error):														
Liq. Charge Imbal. (%):	3.1	2.6	1.1	8.5	4.0	7.9	1.8	2.9	2.6	2.0	3.0	3.4	4.8	e.1
LS Util. - Ca Indep (%):														
LS Util. - S Indep (%):														
Average:														
SO_3 Oxidation (%):														
Weight % Gypsum:														
Weight % $CaCO_3$:														
Gypsum Relative Saturation:	0.82	0.83	0.81	0.81	0.79	0.73	0.81	0.78	0.83	0.81	0.87	0.89	0.81	0.90

Plant Yates CT-121 Demonstration Project Gypsum Pond Analytical Results

Sample Location:	GP	GP	GP	GP	GP	GP	GP	GP	GP	GP	GP	GP	GP
Date:	9/8/94	9/12/94	9/19/94	10/5/94	10/13/94	10/17/94	10/24/94	12/2/94	12/6/94	12/12/94	12/15/94	12/19/94	12/27/94
Time:	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800	1100
Sample ID:	S1799	S1808	S1830	S1858	S1871	S1880	S1901	S1936	S1946	S1960	S1973	S1978	S1999
Test ID:	HR2-2	HR2-2	HR2-2	AC2-2	AC2-5	AC2-8	AC2-10	AL2-1	AL2-3	AL2-4	AL2-5	AL2-6	AL2-14
pH:	6.30	5.71	5.96	6.03	5.92	5.25	5.50	6.76	6.02	6.20	5.92	6.13	6.08
Temp (°C):	20	30	29	25	19	22	25	15	20	14	15	16	14
Weight % Solids:	0.00	0.00	0.01	0.07	0.18	0.10	0.24	0.00	0.00	0.00	0.00	0.00	0.01
Solid Ca (mM/g):													
Solid Mg (mM/g):													
Solid SO_3 (mM/g):													
Solid Total SO^4 (mM/g):													
Solid CO_3 (mM/g):													
Weight % Inerts:													
Liquid Ca^{++} (mM):	105.45	121.61	115.89	156.43	183.44	190.83	224.56	50.93	66.82	67.80	87.96	96.95	101.90
Liquid Mg^{++} (mM):	56.73	67.86	65.89	40.61	120.42	128.91	130.81	24.12	33.84	36.50	45.44	51.52	55.61
Liquid Na^{++} (mM):	5.37	6.95	6.77	9.25	9.72	10.73	15.33	2.50	3.06	3.51	4.76	5.22	5.88
Liquid SO_3= (mM):	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.02
Liquid SO_4= (mM):	12.01	11.93	11.34	11.27	10.70	12.04	11.71	11.54	12.38	11.65	12.11	11.88	11.39
Liquid CO_3= (mM):	1.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
Liquid Cl^- (mM):	290.10	367.74	370.60	423.15	513.57	557.66	711.93	111.72	156.21	172.17	235.57	266.87	272.28
U.A. @30 Wt% (ft^2*D/T):													
Cake Weight % Solids:													
F.F.R. (lb/hr*ft^2):													
Final Settled Density:													
Molar Closure (% error):													
Solid Closure (% error):													
Liq. Charge Imbal. (%):	2.3	-0.7	-3.0	-5.0	7.1	5.6	-0.6	6.1	6.1	4.1	2.2	1.9	4.2
LS Util. - Ca Indep (%):													
LS Util. - S Indep (%):													
Average:													
SO_3 Oxidation (%):													
Weight % Gypsum:													
Weight % $CaCO_3$:													
Gypsum Relative Saturation:	0.86	0.83	0.78	0.95	0.78	0.87	0.91	0.84	0.88	0.83	0.88	0.86	0.83

Plant Yates CT-121 Demonstration Project Gypsum Slurry Transfer Tank Analytical Results

Sample Location:	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT
Date:	1/22/93	1/27/93	2/1/93	2/5/93	2/9/93	2/15/93	2/21/93	2/26/93	3/4/93	3/8/93	3/12/93	3/16/93	3/18/93	3/20/93
Time:	0730	0800	0800	0815	0800	0800	0730	0800	0800	0800	0800	1400	0800	0900
Sample ID:	S0213	S0232	S0251	S0276	S0290	SO307	S0325	S0340	S0357	S0368	S0385	S0399	S0408	S0417
Test ID:	P1-2	P1-6	P1-9	P1-12	P1-14	P1-18	P1-21	P1-24	P1-27	P1-28	P1-21R	P1-31	P1-32	P1-33
pH:	5.75	5.83	5.84	6.28	6.06	6.00	6.25	7.21	6.25	5.92	6.30	6.48	6.53	6.49
Temp (°C):	18	16	20	13	17	13	21	9	18	21	16	15	13	15
Weight % Solids:	5.39	1.82	0.00	2.00	3.89	0.95	7.03	2.28	3.94	5.67	0.01	1.13	0.53	0.74
Solid Ca (mM/g):														
Solid SO_3 (mM/g):														
Solid Total SO_4 (mM/g):														
Weight % Inerts:														
Liquid Ca^{++} (mM):	100.12	156.89	172.71	145.40	155.85	89.49	194.26	120.42	226.20	128.73	201.89	189.80	208.26	181.04
Liquid Mg^{++} (mM):	17.74	20.57	22.47	17.82	20.20	10.00	32.20	17.15	31.38	15.08	27.87	26.94	31.55	24.64
Liquid Na^{++}(mM):	2.46	2.67	2.83	2.16	2.56	1.62	2.88	2.45	3.38	2.31	3.31	3.23	3.41	4.56
Liquid SO_3^{-}(mM):	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.00	0.01	0.01	0.01
Liquid SO_4^{-}(mM):	9.94	7.48	8.42	5.21	6.71	5.27	6.57	7.76	7.61	8.80	8.70	8.12	7.98	7.85
Liquid CO_3^{-}(mM):	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	1.60	1.60	1.60	1.60	1.60	1.60
Liquid Cl^{-}(mM):	257.80	383.90	394.88	259.90	294.62	106.16	283.10	233.58	400.11	256.70	441.22	398.89	431.44	325.09
U.A. @30 Wt% (ft^2*D/T):														
Cake Weight % Solids:														
F.F.R. (lb/hr*ft^2):														
Final Settled Density:														
Molar Closure (% error):														
Solid Closure (% error):														
Liq. Charge Imbal. (%):	-7.7	-5.5	-2.3	9.7	7.0	26.4	21.2	5.4	11.0	2.7	0.4	2.4	3.7	9.8
LS Util. - Ca Indep (%):														
LS Util - S Indep (%):														
Average:														
SO_3 Oxidation (%):														
Weight % Gypsum:														
Weight % $CaCO_3$:														
Gypsum Relative Saturation:	0.86	0.71	0.80	0.52	0.65	0.64	0.76	0.54	NC	NC	NC	NC	NC	NC

Plant Yates CT-121 Demonstration Project Gypsum Slurry Transfer Tank Analytical Results

Sample Location:	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT
Date:	3/22/93	3/28/93	3/30/93	4/5/93	4/19/93	4/25/93	5/28/93	6/1/93	6/6/93	6/14/93	6/22/93	6/28/93	7/6/93	7/12/93
Time:	0830	0800	0800	0800	0800	1000	0745	0800	1300	0800	0800	0800	0800	0800
Sample ID:	S0422	S0443	S0452	S0469	S0494	S0516	S0548	S0553	S0570	S0588	S0609	S0626	S0647	S0665
Test ID:	P1-34	P1-35	P1-36	L1-1	L1-2	L1-2	L1-3	L1-3	L1-3	L1-3	L1-3	L1-3	L1-3	L1-3
pH:	6.10	6.43	6.85	6.25	6.53	6.74	6.81	6.18	6.21	6.57	6.38	6.39	6.09	6.20
Temp (°C):	24	20	21	20	22	20	26	29	31	31	28	32	31	32
Weight % Solids:	5.45	0.70	0.25	1.74	1.66	0.43	0.74	1.93	2.91	0.79	0.65	1.72	0.41	1.64
Solid Ca (mM/g):														
Solid Mg (mM/g):														
Solid SO_3 (mM/g):														
Solid Total SO_4 (mM/g):														
Solid CO_3 (mM/g):														
Weight % Inerts:														
Liquid Ca^{++} (mM):	207.72	165.00	107.08	177.35	177.03	103.12	144.01	193.81	144.29	170.48	190.11	221.75	162.62	236.17
Liquid Mg^{++} (mM):	31.65	22.94	14.52	27.15	30.50	14.12	18.46	28.22	20.43	25.00	25.75	33.84	23.92	26.71
Liquid Na^{++} (mM):	4.46	3.07	2.18	2.96	3.28	2.16	2.72	3.67	3.44	4.08	4.12	4.62	3.63	7.08
Liquid $SO_3^{=}$ (mM):	0.02	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.01	0.01
Liquid $SO_4^{=}$ (mM):	8.79	7.63	7.70	7.64	9.06	8.20	9.00	9.03	9.97	8.86	7.97	8.72	10.48	9.25
Liquid $CO_3^{=}$(mM):	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	0.60	0.60
Liquid Cl (mM):	519.18	414.10	211.66	368.87	356.90	209.40	250.00	348.38	260.63	446.19	424.17	443.43	360.78	508.88
U.A. @30 Wt% (ft^2*D/T):														
Cake Weight % Solids:														
F.F.R. (lb/hr*ft^2):														
Final Settled Density:														
Molar Closure (% error):														
Solid Closure (% error):														
Liq. Charge Imbal. (%):	-5.3	-6.3	3.6	3.4	5.3	2.1	9.8	9.9	8.4	-8.1	-0.5	5.5	-0.7	0.5
LS Util. - Ca Indep (%):														
LS Util - S Indep (%):														
Average:														
SO_3 Oxidation (%):														
Weight % Gypsum:														
Weight % $CaCO_3$:														
Gypsum Relative Saturation:	NC	NC	NC	0.73	0.84	0.75	0.85	0.86	0.92	0.81	0.75	0.84	0.96	0.91

Plant Yates CT-121 Demonstration Project Gypsum Slurry Transfer Tank Analytical Results

Sample Location:	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT
Date:	7/19/93	7/26/93	8/2/93	8/9/93	8/16/93	8/23/93	8/29/93	9/7/93	9/14/93	9/19/93	9/27/93	10/5/93	10/11/93	10/14/93
Time:	0800	0800	0800	0800	0800	0800	0800	0800	1000	1320	0800	0800	0930	0800
Sample ID:	S0686	S0704	S0721	S0739	S0761	S0782	S0803	S0828	S0838	S0855	S0880	S0898	S0915	S0929
Test ID:	L1-3	L1-3	L1-3	L1-3	L1-3	L1-3	L1-3	L1-3	HR1-1	HR1-4	HR1-4	HR1-4	HR1-4	HR1-4
pH:	5.76	6.54	6.11	6.47	6.53	6.08	6.10	4.97	6.36	6.08	5.99	6.60	5.57	6.30
Temp (°C):	34	32	32	30	31	33	32	31	26	35	29	19	32	18
Weight % Solids:	3.83	1.27	2.17	0.63	0.72	2.90	0.96	1.54	0.70	6.39	1.02	0.05	7.42	0.91
Solid Ca (mM/g):														
Solid Mg (mM/g):														
Solid SO_3 (mM/g):														
Solid Total SO_4 (mM/g):														
Solid CO_3 (mM/g):														
Weight % Inerts:														
Liquid Ca^{++} (mM):	180.46	114.90	203.43	182.56	210.33	173.96	188.12	243.83	265.30	279.67	141.49	236.48	353.63	288.10
Liquid Mg^{++} (mM):	25.56	16.37	29.54	24.19	20.67	22.82	25.84	35.81	33.65	39.42	19.49	39.81	48.54	40.11
Liquid Na^{++} (mM):	4.44	3.20	5.24	4.28	5.44	4.36	5.12	6.37	6.65	6.65	4.07	8.56	8.37	6.52
Liquid SO_3^- (mM):	0.00	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.01	0.00	0.00	0.55	0.26
Liquid SO_4^- (mM):	9.38	9.23	8.15	8.94	8.55	8.85	9.01	8.75	8.94	8.58	8.31	8.14	8.46	13.28
Liquid CO_3^- (mM):	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.51	0.51	0.51	0.51	0.51
Liquid Cl^- (mM):	380.05	274.14	431.52	355.52	412.83	334.05	430.76	520.81	572.02	539.66	276.21	529.36	760.90	598.90
U.A. @30 Wt% (ft^2*D/T):														
Cake Weight % Solids:														
F.F.R. (lb/hr*ft^2):														
Final Settled Density:														
Molar Closure (% error):														
Solid CLosure (% error):														
Liq. Charge Imbal. (%):	2.2	-4.9	2.5	5.6	4.1	6.1	-1.8	2.5	1.2	7.3	5.3	1.4	2.2	2.9
LS Util. - Ca Indep (%):														
LS Utiil. - S Indep (%):														
Average:														
SO_3 Oxidation (%):														
Weight % Gypsum:														
Weight % $CaCO_3$:														
Gypsum Relative Saturation:	0.88	0.81	0.77	0.85	0.84	0.83	0.85	0.89	0.90	0.86	0.76	0.79	0.90	1.40

Plant Yates CT-121 Demonstration Project Gypsum Slurry Transfer Tank Analytical Results

Sample Location:	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT
Date:	10/18/93	10/24/93	11/1/93	12/2/93	12/5/93	12/13/93	12/19/93	12/28/93	1/3/94	1/10/94	1/17/94	1/25/94	1/31/94	2/7/94
Time:	0800	1030	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800
Sample ID:	S0946	S0959	S0985	S1014	S1023	S1048	S1073	S1094	S1107	S1120	S1143	S1164	S1181	S1204
Test ID:	HR1-4	HR1-4	P1A-11	P1B-1	P1B-5	P1B-9R	P1B-9R2	AL1-1	AL1-1	AL1-1	AL1-1	AC1-1	AC1-1	AC1-3
pH:	6.13	6.43	6.02	6.72	5.81	6.10	6.81	5.82	6.89	6.58	6.56	6.66	6.10	4.76
Temp (°C):	24	22	20	12	22	12	12	7	9	7	25	5	18	20
Weight % Solids:	0.72	2.33	8.22	1.73	3.69	0.64	0.53	1.72	0.75	0.97	0.09	0.55	5.06	6.10
Solid Ca (mM/g):														
Solid Mg (mM/g):														
Solid SO_3 (mM/g):														
Solid Total SO_4 (mM/g):														
Solid CO_3 (mM/g):														
Weight % Inserts:														
Liquid Ca^{++} (mM):	237.60	193.86	379.47	245.34	313.08	181.82	307.26	459.31	320.72	285.66	316.81	328.36	446.23	525.15
Liquid Mg^{++} (mM):	32.08	32.49	62.59	38.22	51.64	47.38	55.73	46.58	66.00	60.45	71.85	77.61	135.57	183.46
Liquid Na^{++} (mM):	6.04	5.57	7.75	5.68	7.05	4.59	7.00	10.31	7.06	6.60	7.35	7.59	10.45	14.77
Liquid $SO_3^{=}$(mM):	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.00
Liquid $SO_4^{=}$(mM):	7.36	7.79	7.71	8.11	8.99	7.16	7.57	6.77	9.81	7.09	7.99	7.82	7.22	7.86
Liquid $CO_3^{=}$(mM):	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	1.59	1.59	1.59	1.59	1.59	1.46
Liquid Cl^{-}(mM):	457.56	462.78	802.79	506.02	652.29	366.65	662.48	1021.39	671.17	594.87	713.87	713.18	999.64	1405.96
U.A. @30 Wt% (ft^2*D/T):														
Cake Weight % Solids:														
F.F.R. (lb/hr*ft^2):														
Final Settled Density:														
Molar Closure (% error):														
Solid CLosure (% error):														
Liq. Charge Imbal. (%):	7.2	-2.2	4.3	4.6	4.7	9.7	3.9	-0.6	6.0	6.8	3.5	5.8	7.3	0.4
LS Util. - Ca Indep (%):														
LS Util. - S Indep (%):														
Average:														
SO_3 Oxidation (%):														
Weight % Gypsum:														
Weight % $CaCO_3$:														
Gypsum Relative Saturation:	0.73	0.73	0.84	0.82	0.92	0.66	0.79	0.87	1.04	0.74	0.79	0.84	0.79	0.94

Plant Yates CT-121 Demonstration Project Gypsum Slurry Transfer Tank Analytical Results

Sample Location:	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT
Date:	2/14/94	3/15/94	3/18/94	3/22/94	3/25/94	4/20/94	4/25/94	4/28/94	5/2/94	5/6/94	5/11/94	5/16/94	5/20/94	5/23/94
Time:	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800
Sample ID:	S1225	S1280	S1293	S1313	S1326	S1351	S1372	S1390	S1403	S1420	S1441	S1506	S1519	S1524
Test ID:	AC1-10	P2-0	P2-2	P2-5	P2-6	P2-11	P2-15	P2-31	P2-19	P2-22	P2-17	P2-27	P2-30	P2-31
pH:	6.41	6.45	6.39	5.57	5.13	6.15	5.79	5.34	5.63	5.39	5.31	4.40	5.48	4.79
Temp (°C):	15	20	17	21	27	23	23	31	25	23	24	27	25	30
Weight % Solids:	1.95	2.28	1.74	1.31	4.31	0.36	1.39	1.59	0.03	3.06	0.52	0.28	0.05	5.97
Solid Ca (mM/g):														
Solid Mg (mM/g):														
Solid SO_3 (mM/g):														
Solid Total SO_4 (mM/g):														
Solid CO_3 (mM/g):														
Weight % Inerts:														
Liquid Ca^{++} (mM):	296.78	264.83	187.08	207.54	215.87	87.31	109.49	116.69	46.96	136.05	122.03	149.58	121.86	178.45
Liquid Mg^{++} (mM):	131.16	132.10	117.06	124.38	104.51	35.98	56.76	67.78	24.49	70.72	66.60	82.30	71.14	104.05
Liquid Na^{++} (mM):	9.29	9.06	7.56	8.31	7.03	3.17	4.13	5.41	2.77	6.11	5.70	7.52	7.16	10.55
Liquid SO_3^{-}(mM):	0.00	0.01	0.02	0.01	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.01	0.01	0.00
Liquid SO_4^{-}(mM):	8.51	9.70	9.94	9.96	10.33	11.04	5.61	12.03	10.24	11.81	11.96	11.84	10.97	11.26
Liquid CO_3^{-}(mM):	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.34	1.34	1.34	1.34	0.93	0.93
Liquid Cl(mM):	754.50	764.64	589.74	634.83	624.96	218.00	286.53	345.18	149.89	346.12	314.92	414.33	347.09	506.67
U.A. @30 Wt% (ft^2*D/T):														
Cake Weight % Solids:														
F.F.R. (lb/hr*ft^2):														
Final Settled Density:														
Molar Closure (% error):														
Solid Closure (% error):														
Liq. Charge Imbal. (%):	5.7	1.1	0.4	1.3	0.2	1.8	6.1	0.7	-7.9	6.3	6.1	3.7	3.1	4.2
LS Util. - Ca Indep (%):														
LS Util. - S Indep (%):														
Average:														
SO_3 Oxidation (%):														
Weight % Gypsum:														
Weight % $CaCO_3$:														
Gypsum Relative Saturation:	0.77	0.83	0.75	0.76	0.83	0.82	0.41	0.83	0.66	0.87	0.86	0.86	0.77	0.82

Plant Yates CT-121 Demonstration Project Gypsum Slurry Transfer Tank Analytical Results

Sample Location:	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT
Date:	6/1/94	6/7/94	6/15/94	6/20/94	6/27/94	7/7/94	7/11/94	7/18/94	7/25/94	8/1/94	8/10/94	8/15/94	8/22/94	8/28/94
Time:	0800	0800	0800	1400	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800
Sample ID:	S1550	S1555	S1580	S1597	S1619	S1642	S1652	S1673	S1694	S1716	S1737	S1751	S1772	S1793
Test ID:	L2-1	L2-1	L2-2	L2-2	L2-2	L2-2	L2-2	L2-2	L2-2	L2-2	L2-2	L2-2	L2-3	L2-2
pH:	5.15	5.34	5.76	5.85	5.82	6.18	6.09	6.25	5.75	5.92	5.71	5.40	5.71	5.75
Temp (°C):	28	29	30	34	23	26	30	29	32	29	28	33	27	29
Weight % Solids:	0.21	0.11	0.76	0.20	0.33	1.52	0.34	0.34	1.97	1.63	0.22	2.89	0.71	0.84
Solid Ca (mM/g):														
Solid Mg (mM/g):														
Solid SO_3 (mM/g):														
Solid Total SO_4 (mM/g):														
Solid CO_3 (mM/g):														
Weight % Inerts:														
Liquid Ca^{++} (mM):	127.40	119.81	152.74	156.75	188.21	148.31	150.27	148.81	191.78	228.32	229.34	268.26	233.96	182.03
Liquid Mg^{++} (mM):	68.96	62.38	81.36	85.36	107.18	78.16	79.28	100.95	102.96	123.45	121.78	138.56	123.02	101.44
Liquid Na^{++} (mM):	7.67	7.58	8.95	8.89	1.55	10.50	9.38	9.83	10.49	11.84	11.27	13.10	25.88	9.10
Liquid SO_3^{-}(mM):	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.01	0.02
Liquid SO_4^{-} (mM):	11.80	11.77	11.44	11.32	10.49	10.82	11.15	10.64	10.38	10.57	10.81	10.80	10.89	11.11
Liquid CO_3^{-} (mM):	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Liquid Cl^{-} (mM):	350.93	331.66	439.24	442.53	538.01	415.40	439.10	518.78	533.12	651.56	659.94	755.86	643.22	511.07
U.A. @30 Wt% (ft^2*D/T):														
Cake Weight % Solids:														
F.F.R. (lb/hr*ft^2):														
Final Settled Density:														
Molar CLosure (% error):														
Solid Closure (% error):														
Liq. Charge Imbal. (%):	3.3	2.3	1.6	2.9	2.9	2.9	0.7	-3.0	4.0	3.1	2.3	3.1	5.3	3.8
LS Util. - Ca Indep (%):														
LS Util - S Indep (%):														
Average:														
SO_3 Oxidation (%):														
Weight % Gypsum:														
Weight % $CaCO_3$:														
Gypsum Relative Saturation:	0.84	0.84	0.83	0.82	0.79	0.79	0.81	0.72	0.79	0.83	0.86	0.89	0.85	0.83

Plant Yates CT-121 Demonstration Project Gypsum Slurry Transfer Tank Analytical Results

Sample Location:	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT	GSTT
Date:	9/8/94	9/12/94	9/19/94	10/13/94	10/17/94	10/24/94	12/2/94	12/6/94	12/12/94	12/15/94	12/19/94	12/27/94
Time:	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800	1100
Sample ID:	S1798	S1807	S1829	S1870	S1879	S1900	S1935	S1945	S1959	S1972	S1977	S1998
Test ID:	HR2-2	HR2-2	HR2-2	AC2-5	AC2-8	AC2-10	AL2-1	AL2-3	AL2-4	AL2-5	AL2-6	AL2-14
pH:	5.39	5.52	5.57	5.85	5.21	5.50	6.09	5.82	6.01	5.18	6.28	5.64
Temp (°C):	32	29	30	19	23	25	15	17	15	21	12	20
Weight % Solids:	3.29	0.46	1.79	0.48	1.34	0.45	0.15	0.34	0.28	2.69	0.32	3.08
Solid Ca (mM/g):												
Solid Mg (mM/g):												
Solid SO_3 (mM/g):												
Solid Total SO_4 (mM/g):												
Solid CO_3 (mM/g):												
Weight % Inerts:												
Liquid Ca^{++} (mM):	107.98	117.87	140.78	187.22	205.56	177.48	46.26	68.83	55.08	111.57	98.94	117.84
Liquid Mg^{++} (mM):	59.22	67.46	80.78	117.83	138.54	111.69	21.45	34.89	29.17	60.31	51.94	63.79
Liquid Na^{++} (mM):	5.41	6.68	8.30	10.06	11.12	12.04	2.10	3.08	3.16	6.12	5.36	6.74
Liquid $SO_3^{=}$ (mM):	0.01	0.01	0.03	0.00	0.01	0.00	0.00	0.00	0.01	0.02	0.01	0.02
Liqiud $SO_4^{=}$ (mM):	11.70	11.85	11.57	10.86	11.94	11.30	11.09	12.34	10.86	13.17	12.22	11.60
Liquid $CO_3^{=}$ (mM):	0.93	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Liquid Cl^{-} (mM):	299.60	353.24	445.12	529.41	584.01	557.74	96.63	179.59	175.90	309.51	271.22	321.98
U.A. @30 Wt% (ft^2*D/T):												
Cake Weight % Solids:												
F.F.R. (lb/hr*ft^2):												
Final Settled Density:												
Molar Closure (% error):												
Solid Closure (% error):												
Liq. Charge Imbal. (%):	2.5	0.0	-1.8	5.9	7.0	0.8	7.2	1.5	-7.1	2.0	1.8	3.4
LS Util. - Ca Indep (%):												
LS Util. - S Indep (%):												
Average:												
SO_3 Oxidation (%):												
Weight % Gypsum:												
Weight % $CaCO_3$:												
Gypsum Relative Saturation:	0.81	0.82	0.81	0.81	0.88	0.81	0.81	0.87	0.73	0.94	0.90	0.84

Plant Yates CT-121 Demonstration Project JBR Draw-Off Analytical Results

Sample Location:	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D
Date:	1/22/93	1/27/93	2/1/93	2/5/93	2/9/93	2/15/93	2/21/93	2/26/93	3/4/93	3/8/93	3/12/93	3/16/93	3/18/93	3/20/93
Time:	0730	0800	0800	0815	0800	0800	0730	0800	0800	0800	0800	1400	0800	0900
Sample ID:	S0212	S0236	S0250	S0275	S0289	SO306	S0324	S0339	S0356	S0367	S0384	S0398	S0407	S0416
Test ID:	P1-2	P1-6	P1-9	P1-12	P1-14	P1-18	P1-21	P1-24	P1-27	P1-28	P1-21R	P1-31	P1-32	P1-33
pH:	4.54	4.79	4.93	5.31	4.85	4.37	5.18	4.76	5.18	4.45	5.38	4.90	5.15	5.21
Temp (°C):	48	46	46	46	46	48	47	48	49	48	48	50	47	48
Weight % Solids:	22.63	22.58	19.01	22.67	22.48	21.14	22.59	21.52	22.04	19.88	20.61	15.49	19.62	19.11
Solid Ca (mM/g):	6.16	6.05	5.79	5.60	6.11	6.03	5.61	5.54	5.78	5.59	5.92	5.88	5.93	5.76
Solid Mg (mM/g):	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.06	0.03	0.01	0.00	0.00	0.01
Solid CO_3 (mM/g):	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01
Solid Total SO_4 (mM/g):	5.91	5.60	5.86	5.98	6.04	6.21	5.58	5.62	5.91	6.11	5.78	5.68	5.64	5.81
Solid CO_3 (mM/g):	0.18	0.30	0.11	0.12	0.14	0.09	0.18	0.19	0.24	0.08	0.22	0.09	0.14	0.45
Weight % Inerts:	1.66	0.00	1.20	1.27	0.94	0.56	0.67	2.41	1.98	2.12	0.26	1.76	1.83	1.63
Liquid Ca^{++} (mM):														
Liquid Mg^{++} (mM):														
Liquid Na^{++} (mM):														
Liquid $SO_3^{=}$ (mM):														
Liquid $SO_4^{=}$ (mM):														
Liquid $CO_3^{=}$ (mM):														
Liquid Cl^- (mM):														
U.A. @30 Wt% (ft^2*D/T):	0.84	1.02	1.93	0.88	0.96	1.10	1.81	1.48	1.16	1.14	1.22	1.68	1.25	0.92
Cake Weight % Solids:	85.0	82.6	83.5		74.5	84.9	82.7	84.7	82.5	84.9	85.6	82.7	84.4	83.9
F.F.R. (lb/hr*ft^1):	218	84	67	214	233	159	145	91	166	166	131	160	135	214
Final Settled Density:														
Molar Closure (% error):	0.6	1.3	-1.5	-4.3	-0.6	-2.2	-1.3	-2.3	-2.6	-4.9	-0.6	1.0	1.3	-4.1
Solid Closure (% error):	-5.1	0.7	-3.1	-5.3	-6.2	-8.3	1.6	-1.0	-5.9	-8.0	-1.9	-0.3	-0.2	-6.0
Liq. Charge Imbal. (%):														
LS Util. - Ca Indep (%):	97.04	94.92	98.16	98.03	97.73	98.57	96.88	96.73	96.10	98.66	96.33	98.44	97.58	92.81
LS Util. - S Indep (%):	97.08	95.04	98.10	97.86	97.71	98.51	96.79	96.57	95.89	98.52	96.29	98.47	97.64	92.20
Average:	97.06	94.98	98.13	97.95	97.72	98.54	96.84	96.65	95.99	98.59	96.31	98.46	97.61	92.50
SO_3 Oxidation (%):	101.65	96.20	100.71	102.84	103.89	106.73	95.94	96.62	101.39	105.09	99.42	97.70	97.01	99.83
Weight % Gypsum:	1.80	3.00	1.10	1.20	1.40	0.90	1.80	1.90	2.40	0.83	2.20	0.90	1.40	4.50
Weight % $CaCO_3$:														
Gypsum Relative Saturation:														

Plant Yates CT-121 Demonstration Project JBR Draw-Off Analytical Results

Sample Location:	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D
Date:	3/22/93	3/28/93	3/30/93	4/5/93	4/19/93	4/25/93	5/28/93	6/1/93	6/6/93	6/14/93	6/22/93	6/28/93	7/6/93	7/12/93
Time:	0830	0800	0800	0800	0800	1000	0745	0800	1300	0800	0800	0800	0800	0800
Sample ID:	S0421	S0442	S0451	S0468	S0493	S0515	S0547	S0552	S0569	S0587	S0608	S0625	S0646	S0664
Test ID:	P1-34	P1-35	P1-36	L1-1	L1-2	L1-2	L1-3	L1-3	L1-3	L1-3	L1-3	L1-3	L1-3	L1-3
pH:	5.54	5.30	5.69	4.98	5.12	5.27	4.71	4.74	4.63	5.02	4.86	4.82	4.54	4.81
Temp (°C):	49	50	49	50	49	49	50	50	52	51	52	54	52	50
Weight % Solids:	19.76	20.56	23.02	20.02	23.96	18.25	20.55	22.64	23.24	14.24	21.86	20.77	21.30	21.98
Solid Ca (mM/g):	6.60	6.19	6.99	5.55	5.86	5.56	5.71	6.09	5.80	5.42	5.83	5.73	5.94	5.69
Solid Mg (mM/g):	0.02	0.01	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solid SO_3 (mM/g):	0.01	0.01	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01
Solid Total SO_4 (mM/g):	5.77	5.21	4.36	5.81	5.59	5.60	5.94	6.15	5.64	5.59	5.61	5.83	6.00	5.79
Solid CO_3 (mM/g):	3.16	0.78	2.41	0.09	0.19	0.21	0.12	0.17	0.26	0.09	0.22	0.10	0.08	0.05
Weight % Inerts:	0.00	0.45	0.51	1.63	2.03	1.63	1.82	1.71	2.17	0.86	1.59	1.86	1.66	0.38
Liqiud Ca^{++} (mM):														
Liquid Mg^{++} (mM):														
Liquid Na^{++} (mM):														
Liquid $SO_3^{=}$ (Mm):														
Liquid $SO_4^{=}$ (mM):														
Liquid $CO_3^{=}$ (mM):														
Liquid Cl^- (mM):														
U.A. @30 Wt% (ft^2*D/T):	1.49	1.02	0.74	1.05	1.04	0.95	2.20	0.79	0.73	0.98	0.84	0.74	0.75	0.69
Cake Weight % Solids:	79.7	84.3	82.9	85.0	85.2	84.8	80.8	86.4	85.6	85.5	86.0	86.4	86.9	87.1
F.F.R. (lb/hr*ft^2):	79	97	42	123	245	198	198	166	105	296	229	314	235	260
Final Settled Density:														
Molar Closure (% error):	-14.9	1.7	1.7	-3.0	0.8	-2.1	-2.9	-1.8	-0.8	-2.3	0.0	-1.7	-1.1	-1.3
Solid Closure (% error):	-30.8	2.2	0.4	-2.3	-0.1	-0.0	-5.2	-9.1	-1.8	2.1	-0.2	-3.1	-5.6	-0.4
Liq. Charge Imbal. (%):														
LS Util. - Ca Indep (%):	64.61	86.98	64.40	98.47	96.71	96.39	98.04	97.39	95.59	98.42	96.23	98.40	98.68	99.14
LS Util. - S Indep (%):	52.25	87.42	65.61	98.38	96.76	96.23	97.92	97.29	95.52	98.34	96.23	98.34	98.65	99.12
Average:	58.43	87.20	65.00	98.43	96.74	96.31	97.98	97.34	95.56	98.38	96.23	98.37	98.67	99.13
SO_3 Oxidation (%):				99.6	100.0	99.9	100.0	100.0	100.0	99.9	99.9	100.0	100.0	99.9
Weight % Gypsum:	99.10	89.45	74.89	99.49	96.11	96.24	102.17	105.78	96.99	96.09	96.35	100.28	103.18	99.47
Weight % $CaCO_3$:	31.60	7.80	24.10	0.90	1.90	2.10	1.19	1.65	2.60	0.90	2.20	0.95	0.80	0.50
Gypsum Relative Saturation:														

Plant Yates CT-121 Demonstration Project JBR Draw-Off Analytical Results

Sample Location:	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D
Date:	7/26/93	8/2/93	8/9/93	8/16/93	8/23/93	8/29/93	9/7/93	9/14/93	9/19/93	9/27/93	10/5/93	10/11/93	10/14/93	10/18/93
Time:	0800	0800	0800	0800	0800	0800	0800	1000	1320	0800	0800	0930	0800	0800
Sample ID:	S0703	S0720	S0738	S0760	S0781	S0802	S0827	S0837	S0854	S0879	S0897	S0914	S0928	S0945
Test ID:	L1-3	L1-3	L1-3	L1-3	L1-3	L1-3	L1-3	HR1-1	HR1-4	HR1-4	HR1-4	HR1-4	HR1-4	HR1-4
pH:	5.10	5.17	4.54	5.08	4.68	4.55	3.83	4.81	5.27	4.28	5.05	4.35	4.32	4.80
Temp (°C):	50	46	51	52	51	52	50	54	52	52	51	52	47	51
Weight % Solids:	21.04	21.51	14.55	18.31	20.03	22.22	17.45	19.76	22.90	19.13	20.71	19.84	25.01	26.91
Solid Ca (mM/g):	5.44	5.51	5.76	5.79	5.78	5.52	5.46	5.72	5.96	5.92	5.39	6.13	6.13	5.53
Solid Mg (mM/g):	0.00	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.02	0.01	0.01	0.03	0.01	0.00
Solid SO_3 (mM/g):	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	1.48	0.61	0.01
Solid Total SO_4 (mM/g):	5.59	5.85	5.72	5.79	5.76	5.76	5.68	5.71	5.73	5.64	5.31	5.52	5.98	5.46
Solid CO_3 (mM/g):	0.08	0.05	0.14	0.15	0.04	0.05	0.05	0.19	0.08	0.07	0.49	1.32	0.15	0.16
Weight % Inerts:	1.58	0.80	1.68	1.49	1.86	1.03	2.10	3.27	0.48	1.63	2.40	2.21	2.03	2.05
Liquid Ca^{++} (mM):														
Liquid Mg^{++} (mM):														
Liquid Na^{++} (mM):														
Liquid $SO_3^{=}$ (mM):														
Liquid $SO_4^{=}$ (mM):														
Liquid $CO_3^{=}$ (mM):														
Liquid Cl^- (mM):														
U.A. @30 Wt% (ft^2*D/T):	0.84	0.79	1.02	0.90	0.83	0.84	1.02	0.98	1.03	0.79				0.84
Cake Weight % Solids:	86.9	86.8	85.2	86.1	86.6	87.2	84.7	85.8	85.3	86.7		66.5	77.0	84.9
F.F.R. (lb/hr*ft^2):	227	235	378	201	223	263	153	195	159	245		47	35	208
Final Settled Density:														
Molar Closure (% error):	-2.0	-3.3	-0.8	-1.2	-0.1	-2.5	5.7							
Solid Closure (% error):	1.5	-1.8	-1.4	-2.6	-1.3	-0.5	-2.3	-1.4	1.4	1.9	-3.6	-5.3	0.1	-0.8
Liq. Charge Imbal. (%):														
LS Util. - Ca Indep (%):	98.59	99.24	97.61	97.47	99.31	99.22	99.14	96.83	98.62	98.70	91.55	80.70	97.62	97.15
LS Util. - S Indep (%):	98.53	99.18	97.57	97.41	99.31	99.18	99.10	96.74	98.66	98.75	90.92	78.56	97.62	97.11
Average:	98.56	99.21	97.59	97.44	99.31	99.20	99.12	96.78	98.64	98.73	91.23	79.63	97.62	97.13
SO_3 Oxidation (%):	100.0	100.0	99.9	100.0	99.9	99.9	100.0	100.0	100.0	100.0	99.9	73.2	89.8	99.9
Weight % Gypsum:	96.13	100.58	98.30	99.57	99.01	98.99	97.68	98.21	98.56	97.00	91.27	64.98	90.51	93.79
Weight % $CaCO_3$:	0.80	0.50	1.40	1.50	0.40	0.45	0.49	1.87	0.80	0.74	4.90	13.20	1.46	1.60
Gypsum Relative Saturation:														

Plant Yates CT-121 Demonstration Project JBR Draw-Off Analytical Results

Sample Location:	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D
Date:	10/24/93	11/1/93	12/2/93	12/5/93	12/13/93	12/19/93	12/28/93	1/3/94	1/10/94	1/17/94	1/25/94	2/7/94	2/14/94	3/15/94
Time:	1030	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800
Sample ID:	S0958	S0984	S1013	S1022	S1047	S1072	S1093	S1106	S1119	S1142	S1163	S1203	S1224	S1279
Test ID:	HR1-4	P1A-11	P1B-1	P1B-5	P1B-9R	P1B-9R2	AL1-1	AL1-1	AL1-1	AL1-1	AC1-1	AC1-3	AC1-10	P2-0
pH:	5.10	4.67	5.06	4.70	4.34	5.18	4.84	4.80	4.65	4.98	4.52	4.28	5.14	4.81
Temp (°C):	49	47	49	49	46	45	36	45	44	40	49	47	47	48
Weight % Solids:	27.85	21.04	22.10	21.92	16.99	24.46	21.10	22.15	21.36	22.26	17.79	23.77	21.74	20.93
Solid Ca (mM/g):	5.04	5.48	5.88	5.53	5.78	6.16	5.84	5.99	5.71	5.94	5.79	6.08	5.89	5.73
Solid Mg (mM/g):	0.05	0.03	0.05	0.04	0.06	0.07	0.03	0.05	0.06	0.05	0.07	0.18	0.09	0.08
Solid SO_3 (mM/g):	0.00	0.00	0.01	0.02	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solid Total SO_4 (mM/g):	4.54	5.49	5.81	5.09	5.72	5.54	5.53	5.90	5.74	5.59	5.73	5.75	5.63	5.51
Solid CO_3 (mM/g):	0.31	0.02	0.35	0.63	0.07	0.64	0.01	0.12	0.11	0.16	0.19	0.16	0.34	0.19
Weight % Inerts:	15.54	0.94	0.94	0.82	1.41	1.06	0.70	0.77	0.76	0.59	0.71	0.51	0.43	0.95
Liquid Ca^{++} (mM):														
Liquid Mg^{++} (mM):														
Liquid Na^{++} (mM):														
Liquid $SO_3^{=}$ (mM):														
Liquid $SO_4^{=}$ (mM):														
Liquid $CO_3^{=}$ (mM):														
Liquid Cl^- (mM):														
U.A. @30 Wt% (ft^2*D/T):	1.29	0.62			1.09		0.80	0.74	0.87	0.77	0.69	0.78	1.03	0.79
Cake Weight % Solids:	87.6	89.3	87.3	87.5	86.5	87.6	88.2	89.0	89.1	89.0	85.7	89.5	88.7	90.2
F.F.R. (lb/hr*ft^2):	764	1273	2514	928	425	1026	774	1603	1289	2107	1476	1330	1266	2348
Final Settled Density:														
Molar Closure (% error):		0.0	-1.9	-1.3	0.4	0.4	2.9	0.2	-0.7	2.1	-0.5	2.9	0.1	1.0
Solid Closure (% error):	2.4	4.5	-4.3	5.5	-0.3	-2.6	4.1	-3.4	-0.5	1.8	-1.0	-0.7	-0.5	2.5
Liq. Charge Imbal. (%):														
LS Util. - Ca Indep (%):	93.61	99.62	94.32	88.99	98.79	89.64	99.82	98.01	98.12	97.22	96.79	97.29	94.30	96.67
LS Util. - S Indep (%):	93.91	99.62	94.09	88.69	98.80	89.73	99.83	98.01	98.09	97.33	96.76	97.44	94.31	96.73
Average:	93.76	99.62	94.21	88.84	98.80	89.68	99.82	98.01	98.11	97.27	96.77	97.37	94.31	96.70
SO_3 Oxidation (%):	99.9	99.9	99.9	99.6	99.7	99.8	100.0	100.0	100.0	100.0	99.9	100.0	99.9	100.0
Weight % Gypsum:	78.03	94.35	99.79	87.16	97.98	95.05	95.08	101.44	98.71	96.13	98.48	98.90	96.76	94.75
Weight % $CaCO_3$:	3.10	0.21	3.50	6.30	0.70	6.40	0.10	1.20	1.10	1.60	1.90	1.60	3.40	1.90
Gypsum Relative Saturation:														

Plant Yates CT-121 Demonstration Project JBR Draw-Off Analytical Results

Sample Location:	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D
Date:	3/18/94	3/21/94	3/22/94	3/25/94	4/20/94	4/25/94	4/28/94	5/2/94	5/6/94	5/11/94	5/16/94	5/20/94	5/23/94	6/1/94
Time:	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800
Sample ID:	S1292	S1308	S1312	S1325	S1350	S1371	S1389	S1402	S1419	S1440	S1505	S1518	S1523	S1549
Test ID:	P2-2	P2-5	P2-5	P2-6	P2-11	P2-15	P2-31	P2-19	P2-22	P2-17	P2-27	P2-30	P2-31	L2-1
pH:	4.55	4.65	4.11	3.32	4.57	4.04	3.86	4.28	4.07	3.71	3.89	4.37	4.07	4.88
Temp (°C):	46	51	49	50	51	49	52	49	48	47	53	50	47	50
Weight % Solids:	18.40	26.65	24.80	20.32	23.68	19.19	20.32	21.01	19.96	23.04	19.34	19.46	19.94	24.20
Solid Ca (mM/g):	5.89	6.26	5.62	3.32	3.48	3.53	3.27	3.50	3.70	3.98	3.47	3.06	3.22	5.17
Solid Mg (mM/g):	0.11	0.15	0.13	0.05	0.05	0.03	0.04	0.05	0.06	0.03	0.04	0.05	0.03	0.04
Solid SO_3 (mM/g):	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
Solid Total SO_4 (mM/g):	5.13	4.31	4.86	3.20	3.40	3.38	3.24	3.50	3.33	3.76	3.22	3.05	3.38	5.15
Solid CO_3 (mM/g):	0.81	2.11	1.02	0.11	0.18	0.07	0.14	0.17	0.31	0.04	0.11	0.22	0.13	0.23
Weight % Inerts:	1.15	1.07	2.08	38.99	32.51	37.42	41.65	35.28	35.64	33.06	41.34	37.87	37.53	5.51
Liquid Ca^{++} (mM):														
Liquid Mg^{++} (mM):														
Liquid Na^{++} (mM):														
Liquid $SO_3^{=}$ (mM):														
Liquid $SO_4^{=}$ (mM):														
Liquid $CO_3^{=}$ (mM):														
Liquid Cl^- (mM):														
U.A. @30 Wt% (ft^2*D/T):														
Cake Weight % Solids:	86.3		84.1											
F.F.R. (lb/hr*ft^2):	968													
Final Settled Density:									63.9	73.3		55.9	60.5	60.9
Molar Closure (% error):	0.5	-0.0	-1.1	0.8	-0.7	1.6	-1.0	-1.7	1.6	2.7	2.6	-2.6	-3.9	-1.6
Solid Closure (% error):	2.7	3.9	4.3	4.9	7.3	3.8	1.3	2.9	4.1	1.9	2.3	7.6	3.1	3.7
Liq. Charge Imbal. (%):														
LS Util. - Ca Indep (%):	86.36	67.13	82.65	96.68	94.97	97.97	95.86	95.37	91.48	98.95	96.70	93.27	96.30	95.72
LS Util. - S Indep (%):	86.51	67.10	82.27	96.73	94.90	98.03	95.77	95.21	91.76	99.00	96.86	92.92	96.00	95.59
Average:	86.44	67.12	82.46	96.70	94.94	98.00	95.82	95.29	91.62	98.97	96.78	93.09	96.15	95.66
SO_3 Oxidation (%):	100.0	100.0	100.0	100.0	99.9	100.0	100.0	100.0	100.0	100.0	99.9	99.8	99.9	100.0
Weight % Gypsum:	88.22	74.13	83.59	55.04	58.42	58.14	55.71	60.20	57.28	64.67	55.32	52.36	58.08	88.58
Weight % $CaCO_3$:	8.10	21.10	10.20	1.10	1.80	0.70	1.40	1.70	3.10	0.40	1.10	2.20	1.30	2.30
Gypsum Relative Saturation:														

Plant Yates CT-121 Demonstration Project JBR Draw-Off Analytical Results

Sample Location:	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D
Date:	6/7/94	6/15/94	6/20/94	6/27/94	7/7/94	7/11/94	7/18/94	7/25/94	8/1/94	8/10/94	8/15/94	8/22/94	8/28/94	9/8/94
Time:	0800	0800	1400	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800
Sample ID:	S1554	S1579	S1596	S1618	S1641	S1651	S1672	S1693	S1715	S1736	S1750	S1771	S1792	S1797
Test ID:	L2-1	L2-2	L2-2	L2-2	L2-2	L2-2	L2-2	L2-2	L2-2	L2-2	L2-2	L2-3	L2-2	HR2-1
pH:	4.72	4.55	4.71	4.61	4.60	4.56	4.59	4.45	4.14	4.34	4.53	4.38	4.32	4.10
Temp (°C):	50	49	54	45	50	50	51	51	51	49	51	50	53	51
Weight % Solids:	10.92	20.12	17.20	17.11	19.47	20.79	18.82	19.81	18.25	16.60	16.96	18.23	16.90	13.97
Solid Ca (mM/g):	5.56	4.98	5.16	5.18	5.29	5.46	5.51	5.28	5.54	5.47	5.54	5.40	5.40	4.97
Solid Mg (mM/g):	0.08	0.03	0.02	0.02	0.03	0.07	0.01	0.03	0.04	0.07	0.06	0.07	0.02	0.01
Solid SO_3 (mM/g):	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solid Total SO_4 (mM/g):	4.88	5.14	5.12	5.23	5.28	5.28	5.27	5.17	5.44	5.28	5.42	5.38	5.43	4.98
Solid CO_3 (mM/g):	1.10	0.10	0.11	0.03	0.15	0.12	0.12	0.12	0.05	0.09	0.14	0.15	0.09	0.04
Weight % Inerts:	2.24	6.61	6.41	4.91	5.85	6.63	5.49	7.87	4.45	6.82	5.69	6.41	7.74	12.11
Liquid Ca^{++} (mM):														
Liquid Mg^{++} (mM):														
Liquid Na^{++} (mM):														
Liquid $SO_3^{=}$ (mM):														
Liquid $SO_4^{=}$ (mM):														
Liquid $CO_3^{=}$ (mM):														
Liquid Cl^- (mM):														
U.A. @ 30 Wt% (ft^2*D/T):				0.6	0.2	0.61	0.51	0.52		0.39	0.64	0.75		1.18
Cake Weight % Solids:	86.0	72.6	72.8	80.4	79.6	81.4	82.0		75.9	74.0	76.7	78.3	78.9	70.4
F.F.R. (lb/hr*ft^2):	1111	178	203	235	253	388	165	187	115	95	108	107	110	202
Final Settled Density:	61.3	69.4	67.2											
Molar Closure (% error):	-2.9	-2.3	-0.5	-0.6	-1.0	1.1	1.2	0.2	0.9	1.6	0.4	-0.5	-0.9	-0.4
Solid Closure (% error):	3.0	4.0	4.5	4.8	1.9	1.5	2.7	2.1	1.6	1.6	-0.2	-0.3	-2.0	1.8
Liq. Charge Imbal. (%):														
LS Util. - Ca Indep (%):	81.61	98.09	97.90	99.39	97.24	97.78	97.77	97.73	99.14	98.40	97.48	97.29	98.37	99.20
LS Util. - S Indep (%):	80.50	98.00	97.88	99.38	97.18	97.83	97.82	97.74	99.16	98.45	97.50	97.26	98.34	99.20
Average:	81.05	98.05	97.89	99.39	97.21	97.80	97.80	97.74	99.15	98.42	97.49	97.27	98.35	99.20
SO_3 Oxidation (%):	99.6	99.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Weight % Gypsum:	83.57	88.35	88.04	89.92	90.82	90.80	90.64	88.90	93.57	90.82	93.20	92.52	93.38	85.66
Weight % $CaCO_3$:	11.00	1.00	1.10	0.32	1.50	1.20	1.20	1.20	0.47	0.86	1.40	2.10	2.60	0.40
Gypsum Relative Saturation:														

Plant Yates CT-121 Demonstration Project JBR Draw-Off Analytical Results

Sample Location:	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D
Date:	9/12/94	9/19/94	10/5/94	10/13/94	10/17/94	10/24/94	12/2/94	12/6/94	12/12/94	12/15/94	12/19/94	12/27/94
Time:	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800	1100
Sample ID:	S1806	S1828	S1856	S1869	S1878	S1899	S1934	S1944	S1958	S1971	S1976	S1997
Test ID:	HR2-3	HR2-4	AC2-2	AC2-5	AC2-8	AC2-10	AL2-1	AL2-3	AL2-4	AL2-5	AL2-6	AL2-14
pH:	4.21	4.47	4.77	4.62	4.45	3.98	4.25	4.30	4.62	3.92	4.17	4.12
Temp (°C):	50	50	52	48	50	51	48	47	47	46	44	48
Weight % Solids:	21.33	15.68	20.92	22.57	21.39	17.73	14.92	15.20	14.39	15.01	10.79	13.68
Solid Ca (mM/g):	4.83	5.43	5.44	5.58	6.00	5.52	5.02	5.00	5.95	5.66	5.76	5.60
Solid Mg (mM/g):	0.02	0.06	0.06	0.07	0.09	0.08	0.03	0.01	0.06	0.04	0.04	0.03
Solid SO_3 (mM/g):	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solid Total SO_4 (mM/g):	4.82	5.50	5.28	5.29	5.75	5.35	4.96	5.00	4.69	5.46	5.49	5.48
Solid CO_3 (mM/g):	0.10	0.26	0.26	0.28	0.32	0.31	0.11	0.10	1.38	0.23	0.39	0.19
Weight % Inerts:	18.03	2.26	7.76	7.95	5.43	3.94	12.51	14.23	4.81	2.76	2.60	3.70
Liquid Ca^{++} (mM):												
Liquid Mg^{++} (mM):												
Liquid Na^{++} (mM):												
Liquid $SO_3^{=}$ (mM):												
Liquid $SO_4^{=}$ (mM):												
Liquid $CO_3^{=}$ (mM):												
Liquid Cl^- (mM):												
U.A. @30 Wt% (ft^2*D/T):		0.64										
Cake Weight % Solids:	74.5	82.5	81.0	83.2	86.0	80.8	61.7	63.2	62.2	64.9	61.1	61.0
F.F.R. (lb/hr*ft^2):	110	120	227	603	874	908	165	121	121	73	1182	65
Final Settled Density:							76.0	76.8	73.7	79.6	83.4	73.4
Molar Closure (% error):	-0.8	-2.4	-0.4	0.7	0.1	-0.5	-0.2	-0.9	-0.5	0.1	-0.7	-0.3
Solid Closure (% error):	-1.9	0.6	-1.1	-1.6	-7.4	1.1	1.1	-1.2	0.8	1.1	-0.9	0.2
Liq. Charge Imbal. (%):												
LS Util. - Ca Indep (%):	97.97	95.49	95.31	94.97	94.73	94.52	97.83	98.04	77.27	95.96	93.37	96.65
LS Util. - S Indep (%):	97.94	95.27	95.27	95.04	94.74	94.47	97.82	98.00	77.05	95.96	93.28	96.63
Average:	97.95	95.38	95.29	95.01	94.74	94.49	97.83	98.02	77.16	95.96	93.32	96.64
SO_3 Oxidation (%):	100.0	100.0	100.0	99.9	100.0	100.0	99.9	100.0	100.0	100.0	100.0	100.0
Weight & Gypsum:	82.88	94.58	90.80	90.93	98.86	92.00	85.25	85.96	80.67	93.87	94.39	94.26
Weight % $CaCO_3$:	1.00	2.60	2.60	2.80	3.20	3.10	1.10	1.00	13.80	2.30	3.90	1.90
Gypsum Relative Saturation:												

Plant Yates CT-121 Demonstration Project JBR Froth Zone Analytical Results

Sample Location:	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F
Date:	1/22/93	1/27/93	2/1/93	2/5/93	2/9/93	2/15/93	2/21/93	2/26/93	3/4/93	3/8/93	3/12/93	3/16/93	3/18/93	3/20/93
Time:	0730	0800	0800	0815	0800	0800	0730	0800	0800	0800	0800	1400	0800	0900
Sample ID:	S0211	S0235	S0249	S0274	S0288	S0305	S0323	S0388	SO355	S0366	S0383	S0397	S0406	S0415
Test ID:	P1-2	P1-6	P1-9	P1-12	P1-14	P1-18	P1-21	P1-24	P1-27	P1-28	P1-21R	P1-31	P1-32	P1-33
pH:	4.38	4.60	4.70	5.16	4.46	4.20	5.13	4.56	5.03	4.01	5.07	4.15	4.48	5.00
Temp (°C):	48	46	46	46	45	45	47	46	48	47	47	46	48	47
Weight % Solids:	22.33	20.11	21.41	21.93	22.19	19.28	22.52	22.81	22.38	21.04	21.12	15.81	20.39	18.63
Solid Ca (mM/g):														
Solid Mg (mM/g):														
Solid SO_3 (mM/g):														
Solid Total SO_4 (mM/g):														
Solid CO_3 (mM/g):														
Weight % Inerts:														
Liquid Ca^{++} (mM):	254.64	305.10	284.69	294.30	295.70	368.90	302.30	342.46	424.35	399.72	525.39	251.57	459.82	524.01
Liquid Mg^{++}(mM):	38.24	41.05	38.79	40.06	42.22	27.31	44.92	50.17	54.24	56.48	72.86	36.55	65.36	37.00
Liquid Na^{++} (mM):	4.86	5.11	4.61	4.66	4.82	6.09	4.15	6.26	2.44	6.54	6.83	4.30	7.09	9.44
Liquid SO_3^- (mM):	0.01	0.02	0.00	0.02	0.01	0.00	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01
Liquid SO_4^- (mM):	11.16	7.59	8.45	10.81	10.26	9.97	6.84	7.63	8.45	7.55	8.72	8.79	8.42	7.62
Liquid CO_3^- (mM):	0.20	0.20	0.30	0.20	0.20	0.20	0.20	0.20	1.60	1.60	1.60	1.60	1.60	1.60
Liquid Cl^- (mM):	550.00	770.84	636.62	618.25	641.57	793.62	613.76	812.38	802.00	834.00	925.00	575.00	967.00	1073.00
U.A. @30 Wt% (ft^2*D/T):														
Cake Weight % Solids:														
F.F.R. (lb/hr*ft^2):														
Final Settled Density:														
Molar Closure (% error):														
Solid Closure (% error):														
Liq. Charge Imbal. (%):	1.6	-6.0	-0.1	2.5	1.4	-0.9	5.4	-2.2	7.9	4.0	12.1	-1.0	3.6	1.9
LS Util. - Ca Indep (%):														
LS Util. - S Indep (%):														
Average:														
SO_3 Oxidation (%):														
Weight % Gypsum:														
Weight % $CaCO_3$:														
Gypsum Relative Saturation:	1.12	1.17	0.87	1.18	1.06	1.13	0.71	0.82	NC	NC	NC	NC	NC	NC

Plant Yates CT-121 Demonstration Project JBR Froth Zone Analytical Results

Sample Location:	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F
Date:	3/22/93	3/28/93	3/30/93	4/5/93	4/19/93	4/25/93	5/28/93	6/1/93	6/6/93	6/14/93	6/22/93	6/28/93	7/6/93	7/12/93
Time:	0830	0800	0800	0800	0800	1000	0745	0800	1300	0800	0800	0800	0800	0800
Sample ID:	S0420	S0411	S0450	S0467	S0492	S0514	S0546	S0551	S0568	S0586	S0607	S0624	S0645	S0663
Test ID:	P1-34	P1-35	P1-36	L1-1	L1-2	L1-3	L1-3	L1-3	L1-3	L1-3	L1-3	L1-3	L1-3	L1-3
pH:	5.60	5.35	5.69	4.03	5.18	5.03	4.39	4.81	4.58	4.63	4.34	4.07	4.17	4.61
Temp (°C):	48	50	49	48	50	49	51	49	52	50	51	53	52	50
Weight % Solids:	18.98	17.94	23.38	21.80	21.71	21.16	21.17	23.67	21.86	16.09	23.06	22.41	25.39	21.13
Solid Ca (mM/g):														
Solid Mg (mM/g):														
Solid SO_3 (mM/g):														
Solid Total SO_4 (mM/g):														
Solid CO_3 (mM/g):														
Weight % Inerts:														
Liquid Ca^{++} (mM):	419.76	531.96	362.57	174.87	383.21	418.90	313.02	420.23	452.64	314.04	472.03	490.66	504.96	526.80
Liquid Mg^{++} (mM):	29.35	72.98	52.71	27.10	67.04	61.22	47.02	61.69	69.27	47.50	69.73	76.97	78.30	97.44
Liquid Na^{++} (mM):	7.88	8.46	6.07	3.12	6.65	7.84	6.43	8.05	10.66	7.19	10.24	11.62	11.29	6.38
Liquid SO_3^- (mM):	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.06	0.03	0.01	0.01
Liquid SO_4^- (mM):	9.12	7.49	8.95	7.99	8.27	7.72	9.42	8.12	8.93	7.70	8.24	8.81	8.25	8.05
Liquid CO_3^- (mM):	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.90	1.90
Liquid Cl (mM):	824.00	1070.00	701.00	330.55	708.52	882.02	670.75	823.24	836.62	651.07	911.51	1045.17	1035.38	1037.47
U.A. @30 Wt% (ft^2*D/T):														
Cake Weight % Solids:														
F.F.R. (*lb/hr*ft^2*):														
Final Settled Density:														
Molar Closure (% error):														
Solid Closure (% error):														
Liq. Charge Imbal. (%):	3.7	5.8	7.6	8.0	11.1	3.8	2.6	7.3	10.5	4.6	8.2	3.8	5.6	8.7
LS Util. - Ca Indep (%):														
LS Util. - S Indep (%):														
Average:														
SO_3 Oxidation (%):														
Weight % Gypsum:														
Weight % $CaCO_3$:														
Gypsum Relative Saturation:	NC	NC	NC	0.76	0.90	0.87	0.99	0.91	1.02	0.81	0.96	1.05	0.98	0.95

Plant Yates CT-121 Demonstration Project JBR Forth Zone Analytical Results

Sample Location:	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F
Date:	7/26/93	8/2/93	8/9/933	8/16/93	8/23/93	8/29/93	9/7/93	9/14/93	9/19/93	9/27/93	10/5/93	10/11/93	10/14/93
Time:	0800	0800	0800	0800	0800	0800	0800	1000	1320	0800	0800	0930	0800
Sample ID:	S0702	S0719	S0737	S0759	S0780	S0801	S0826	S0836	S0853	S0878	S0896	S0913	S0927
Test ID:	L1-3	L1-3	L1-3	L1-3	L1-3	L1-3	L1-3	HR1-1	HR1-4	HR1-4	HR1-4	HR1-4	HR1-4
pH:	4.78	4.52	4.26	4.70	4.62	4.62	4.27	4.42	4.72	4.75	4.76	4.84	4.08
Temp: (°C)	50	49	51	52	51	51	50	54	50	54	51	52	49
Weight % Solids:	20.63	21.11	12.57	18.74	17.50	21.83	15.69	21.60	21.16	18.20	20.33	19.12	24.49
Solid Ca (mM/g):													
Solid Mg (mM/g):													
Solid SO_3 (mM/g):													
Solid Total SO_4 (mM/g):													
Solid CO_3 (mM/g):													
Weight % Inerts:													
Liquid Ca^{++} (Mm):	451.91	449.68	331.81	361.27	428.65	443.63	521.63	566.09	508.88	706.52	563.83	621.26	847.63
Liquid Mg^{++} (mM):	67.56	66.53	53.18	48.34	61.26	65.01	79.42	66.36	74.32	103.54	43.74	48.86	121.34
Liquid Na^{++} (mM):	10.51	10.77	8.92	8.44	9.76	10.63	15.70	13.05	11.90	6.00	12.46	21.49	18.96
Liquid $SO_3^{=}$ (mM):	0.02	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.02	0.14	0.24
Liquid $SO_4^{=}$ (mM):	8.87	8.54	9.84	9.31	9.16	7.99	7.74	8.84	8.28	7.06	6.66	6.50	9.22
Liquid $CO_3^{=}$ (mM):	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.55	1.55	1.55	1.55	1.55
Liquid Cl^{-} (mM):	1022.02	1026.07	713.86	705.60	941.72	958.16	1183.36	1235.01	952.19	1498.00	1055.60	1920.00	1832.00
U.A. @30 Wt% (ft^2*D/T):													
Cake Weight % Solids:													
F.F.R. (lb/hr*ft^2):													
Final Settled Density:													
Molar Closure (% error):													
Solid Closure (% error):													
Liq. Charge Imbal. (%):	0.5	-0.0	3.0	6.7	1.5	2.7	0.8	1.0	9.8	3.6	6.9	-17.3	2.8
LS Util. - Ca Indep (%):													
LS Util. - S Indep (%):													
Average:													
SO_3 Oxidation (%):													
Weight % Gypsum:													
Weight % $CaCO_3$:													
Gypsum Relative Saturation:	1.03	0.99	1.04	0.92	1.05	0.92	0.95	1.14	0.98	0.97	0.86	0.96	1.40

Plant Yates CT-121 Demonstration Project JBR Froth Zone Analytical Results

Sample Location:	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F
Date:	10/18/93	10/24/93	11/1/93	12/2/93	12/5/93	12/13/93	12/19/93	12/28/93	1/3/94	1/10/94	1/17/94	1/25/94	1/31/94	2/7/94
Time:	0800	1030	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800
Sample ID:	S0944	S0957	S0983	S1012	S1021	S1046	S1071	S1092	S1105	S1118	S1141	S1162	S1179	S1202
Test ID:	HR1-4	HR1-4	P1A-11	P1B-1	P1B-5	P1B-9R	P1B-9R2	AL1-1	AL1-1	AL1-1	AL1-1	AC1-1	AC1-1	AC1-3
pH:	4.10	4.83	4.59	4.38	4.62	4.05	4.87	4.60	4.40	4.51	4.58	4.06	4.61	4.10
Temp: (°C)	51	49	47	49	50	46	48	38	43	42	37	49	46	47
Weight % Solids:	25.88	29.23	16.98	23.39	19.52	15.82	19.77	21.58	23.77	27.13	20.86	17.44	19.73	21.97
Solid Ca (mM/g):														
Solid Mg (mM/g):														
Solid SO_3 (mM/g):														
Solid Total SO_4 (mM/g):														
Solid CO_3 (mM/g):														
Weight % Inerts:														
Liquid Ca^{++} (mM):	652.13	563.23	553.41	509.60	608.21	632.62	976.10	889.57	760.36	769.34	647.76	555.43	649.39	840.25
Liquid Mg^{++} (mM):	88.56	38.96	96.14	88.33	102.19	127.05	192.67	177.11	150.74	173.05	164.24	150.89	224.02	194.15
Liquid Na^{++} (mM):	14.98	13.95	12.86	11.31	13.30	15.57	20.00	19.16	16.23	17.07	15.22	12.53	15.95	21.18
Liquid SO_3^- (mM):	0.28	0.01	0.01	0.02	0.40	0.02	0.02	0.02	0.01	0.01	0.02	0.03	0.02	0.00
Liquid SO_4^- (mM):	6.59	7.31	7.51	8.34	17.75	6.26	6.11	5.88	6.16	5.75	7.34	7.32	7.30	7.13
Liquid CO_3^- (mM):	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	2.88	2.88	2.88	2.88	2.88	2.83
Liquid Cl (mM):	1510.66	1243.98	1252.44	1107.67	1332.06	1431.48	2043.04	1804.24	1842.40	1597.83	1468.00	973.24	1497.18	1939.74
U.A. @30 Wt% (ft^2*D/T):														
Cake Weight % Solids:														
F.F.R. (lb/hr*ft^2):														
Final Settled Density:														
Molar Closure (% error):														
Solid Closure (% error):														
Liq. Charge Imbal. (%):	-0.9	-1.6	1.7	3.6	2.4	3.1	6.8	8.5	-0.4	8.3	5.0	18.1	7.7	3.4
LS Util. - Ca Indep (%):														
LS Util. - S Indep (%):														
Average:														
SO_3 Oxidation (%):														
Weight % Gypsum:														
Weight % $CaCO_3$:														
Gypsum Relative Saturation:	0.90	0.97	0.93	1.00	2.26	0.80	0.95	1.22	0.88	0.79	0.94	0.82	0.88	1.03

Plant Yates CT-121 Demonstration Project JBR Froth Zone Analytical Results

Sample Location:	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F
Date:	2/14/94	3/18/94	3/22/94	3/25/94	4/20/94	4/25/94	4/28/94	5/2/94	5/6/94	5/11/94	5/16/94	5/20/94	5/23/94	6/1/94
Time:	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800
Sample ID:	S1223	S1291	S1311	S1324	S1349	S1370	S1388	S1401	S1418	S1439	S1504	S1517	S1522	S1548
Test ID:	AC1-10	P2-2	P2-5	P2-6	P2-11	P2-15	P2-31	P2-19	P2-22	P2-17	P2-27	P2-30	P2-31	L2-1
pH:	5.15	4.43	4.31	3.52	3.64	3.94	3.80	3.72	3.96	3.21	3.46	3.88	3.40	4.48
Temp: (°C)	47	46	49	51	51	49	52	48	49	47	53	50	46	49
Weight % Solids:	17.40	16.30	17.22	20.49	21.24	18.20	20.45	20.95	22.62	21.42	19.56	21.03	19.11	14.30
Solid Ca (mM/g):														
Solid Mg (mM/g):														
Solid SO_3 (mM/g):														
Solid Total SO_4 (mM/g):														
Solid CO_3 (mM/g):														
Weight % Inerts:														
Liquid Ca^{++} (mM):	674.77	382.04	587.38	403.50	167.37	180.16	217.77	216.17	227.18	208.93	268.02	230.34	253.26	152.80
Liquid Mg^{++} (mM):	343.61	247.58	300.30	221.36	98.90	129.13	143.68	155.91	129.59	127.47	167.01	134.28	159.38	124.31
Liquid Na^{++} (mM):	18.70	14.33	17.89	13.95	7.54	8.56	10.98	12.01	11.43	11.59	14.88	13.78	15.92	11.88
Liquid SO_3^- (mM):	0.01	0.02	0.02	0.02	0.00	0.00	0.01	0.01	0.00	0.00	0.09	0.02	0.03	0.00
Liquid SO_4^- (mM):	7.88	9.75	9.15	13.08	12.63	12.81	12.53	12.89	12.82	13.31	13.86	12.26	12.23	11.48
Liquid CO_3^- (mM):	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.99	2.99	2.99	2.99	2.36	2.36	2.36
Liquid Cl^- (mM):	1801.80	1273.54	1252.87	1131.93	475.78	572.19	775.04	863.73	639.54	650.04	770.41	746.83	748.51	545.94
U.A. @30 Wt% (ft^2*D/T):														
Cake Weight % Solids:														
F.F.R. (lb/hr*ft^2):														
Final Settled Density:														
Molar Closure (% error):														
Solid Closure (% error):														
Liq. Charge Imbal. (%):	6.1	-0.8	17.0	4.4	3.7	2.4	-4.3	-8.1	4.3	0.6	5.2	-1.9	4.2	-0.2
LS Util. - Ca Indep (%):														
LS Util. - S Indep (%):														
Average:														
SO_3 Oxidation (%):														
Weight % Gypsum:														
Weight % $CaCO_3$:														
Gypsum Relative Saturation:	0.91	0.86	0.95	1.20	0.91	0.88	0.92	0.93	0.99	0.98	1.08	0.95	0.94	0.74

Plant Yates CT-121 Demonstration Project JBR Froth Zone Analytical Results

Sample Location:	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F
Date:	6/7/94	6/15/94	6/20/94	6/27/94	7/7/94	7/11/94	7/18/94	7/25/94	8/1/94	8/10/94	8/15/94	8/22/94	8/28/94	9/8/94
Time:	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800
Sample ID:	S1553	S1578	S1595	S1617	S1640	S1650	S1671	S1692	S1714	S1735	S1749	S1770	S1791	S1796
Test ID:	L2-1	L2-2	L2-2	L2-2	L2-2	L2-2	L2-2	L2-2	L2-2	L2-2	L2-2	L2-2	L2-2	HR2-2
pH:	4.44	4.19	4.23	4.07	4.02	3.92	3.81	4.07	4.01	4.10	4.32	3.97	4.02	3.78
Temp (°C):	50	50	50	59	49	50	51	51	51	49	52	50	53	51
Weight % Solids:	10.34	20.51	16.56	18.77	19.38	19.57	22.17	21.07	15.99	17.53	14.11	17.06	16.63	12.13
Solid Ca (mM/g):														
Solid Mg (mM/g):														
Solid SO_3 (mM/g):														
Solid Total SO_4 (mM/g):														
Solid CO_3 (mM/g):														
Weight % Inerts:														
Liquid Ca^{++} (mM):	179.49	306.27	251.07	373.95	238.21	307.21	279.93	369.38	420.50	420.34	434.70	466.08	444.52	194.67
Liquid Mg^{++} (mM):	90.07	191.35	152.13	215.58	130.17	164.99	150.56	208.94	221.40	218.80	213.74	238.77	241.26	125.37
Liquid Na^{++} (mM):	9.67	17.64	14.74	1.32	14.86	20.58	15.32	20.27	21.67	20.96	20.76	33.16	22.62	10.88
Liquid SO_3^- (mM):	0.00	0.01	0.02	0.01	0.01	0.00	0.00	0.01	0.01	0.07	0.02	0.03	0.03	0.00
Liquid SO_4^- (mM):	12.85	11.00	11.42	10.07	11.18	10.72	10.72	10.18	10.06	10.95	10.26	10.03	10.71	13.41
Liquid CO_3^- (mM):	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36
Liquid Cl^- (mM):	462.13	937.96	744.35	1153.70	925.20	1056.60	1103.86	1240.74	1228.96	1257.76	1242.08	1452.05	1363.85	569.10
U.A. @30 Wt% (ft^2*D/T):														
Cake Weight % Solids:														
F.F.R. (lb/hr*ft^2):														
Final Settled Density:														
Molar Closure (% error):														
Solid Closure (% error):														
Liq. Charge Imbal. (%):	5.9	2.7	3.4	0.3	-11.5	-5.5	-12.4	-3.5	2.2	0.8	2.1	-1.0	0.3	4.4
LS Util. - Ca Indep (%):														
LS Util. - S Indep (%):														
Average:														
SO_3 Oxidation (%):														
Weight % Gypsum:														
Weight % $CaCO_3$:														
Gypsum Relative Saturation:	0.98	0.90	0.88	0.89	0.89	0.92	0.91	0.92	0.95	1.04	0.99	1.00	1.03	0.97

Plant Yates CT-121 Demonstration Project JBR Froth Zone Analytical Results

Sample Location:	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F
Date:	9/12/94	9/19/94	10/5/94	10/13/94	10/17/94	10/24/94	12/2/94	12/6/94	12/12/94	12/15/94	12/19/94	12/27/94
Time:	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800	0800	1100
Sample ID:	S1805	S1827	S1855	S1868	S1877	S1898	S1933	S1943	S1957	S1970	S1975	S1996
Test ID:	HR2-2	HR2-2	AC2-2	AC2-5	AC2-8	AC2-10	AL2-1	AL2-3	AL2-4	AL2-5	AL2-6	AL2-14
pH:	3.81	3.98	4.08	4.30	4.07	3.98	4.03	3.93	4.25	3.73	3.99	3.72
Temp (°C):	51	50	51	51	50	50	47	46	47	43	44	47
Weight % Solids:	16.20	14.51	18.28	19.43	17.57	15.74	12.64	12.72	16.25	12.72	10.47	12.57
Solid Ca (mM/g):												
Solid Mg (mM/g):												
Solid SO_3 (mM/g):												
Solid Total SO_4 (mM/g):												
Solid CO_3 (mM/g):												
Weight % Inerts:												
Liquid Ca^{++} (mM):	307.87	326.43	296.32	340.76	324.93	412.14	123.60	137.11	165.47	186.39	172.50	238.59
Liquid Mg^{++} (mM):	175.85	179.84	205.18	246.92	229.44	381.95	75.23	82.89	90.42	113.42	107.04	128.29
Liquid Na^{++} (mM):	19.66	19.59	17.10	19.90	18.89	28.70	6.78	7.21	8.53	10.10	9.60	13.68
Liquid SO_3^- (mM):	0.01	0.07	0.01	0.02	0.01	0.01	0.02	0.01	0.03	0.03	0.03	0.05
Liquid SO_4^- (mM):	11.77	12.77	12.19	12.30	12.24	10.50	14.66	14.12	14.35	14.33	14.59	14.16
Liquid CO_3^- (mM):	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Liquid Cl^- (mM):	1097.03	1071.45	888.63	1020.39	1140.48	1448.30	367.81	412.05	463.63	523.56	493.45	596.16
U.A. @30 Wt% (ft^2*D/T):												
Cake Weight % Solids:												
F.F.R. (lb/hr*ft^2):												
Final Settled Density:												
Molar Closure (% error):												
Solid Closure (% error):												
Liq. Charge Imbal. (%):	-6.3	-3.0	5.5	6.7	-1.6	4.8	0.9	0.8	2.8	4.9	4.2	9.0
LS Util. - Ca Indep (%):												
LS Util. - S Indep (%):												
Average:												
SO_3 Oxidation (%):												
Weight % Gypsum:												
Weight % $CaCO_3$:												
Gypsum Relative Saturation:	0.86	1.11	0.95	0.99	0.99	0.85	1.00	0.97	1.05	1.04	1.04	1.11

Plant Yates CT-121 Demonstration Project Trace Metals Analyses

Sample Location:		GP	GP	GP	GP	GP	GP	GP	GP	GP	GP	GP
Date:		2/15/93	3/22/93	6/14/93	7/12/93	8/9/93	9/14/93	10/11/93	12/5/93	12/28/93	1/10/94	2/14/94
Sample ID:		S0308	S0423	S0589	S0666	S0740	S0840	S0916	S1024	S1095	S1123	S1226
Test ID:		P1-18	P1-34	L1-3	L1-3	L1-3	HR1-1	HR1-4	P1B-9R	AL1-1	AL1-1	AC1-10
Method	Units:	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ICP	Aluminum:	2.0a	<0.55	0.5	1.49	0.44	0.26	1.7	1.26	1.18	0.174	<0.28
GFAA	Antimony:	<2.8	<0.024	0.01	0.008a	<0.006	<0.0139	<0.004	0.005	<0.014	<0.0139	<0.0056
ICP	Arsenic:	<0.78	<0.04	<0.008	<0.007	<0.002	<0.001	0.02	<0.001	0.04	0.05	0.06
ICP	Barium:	1.00	1.30	1.09	0.07	0.91	1.25	2.13	1.12	0.54	0.58	0.51
ICP	Beryllium:	<0.0052	<0.0055	0.001j	<0.004	0.003j	<0.0026	0.02	0.00	<0.0005	<0.0005	<0.0005
ICP	Boron:	380	580	473	29	414	718	894	737	319	385.00	518.00
ICP	Cadmium:	0.16	0.12	0.14	0.01	0.14	0.25	0.25	0.17	0.06	0.07	0.10
ICP	Chromium:	<0.026	0.086a	0.03	0.005j	0.03	0.04	<0.0829	0.05	0.01	0.01	0.03
ICP	Cobalt:	0.14	0.15	0.09	0.009j	0.13	0.19	0.18	0.21	0.09	0.10	0.18
ICP	Copper:	<0.052	<0.055	0.03	0.02	<0.06	0.03	<0.127	<0.0123	0.05	0.05	<0.038
GFAA	Iron:	<0.13	<0.14	0.39	<0.02	<0.09	<0.028	<0.198	<0.019	<0.0059	<0.0059	<0.06
ICP	Lead:	<0.13	<0.003	<0.003	<0.003	<0.0008	<0.008	<0.0008	<0.001	<0.0016	<0.0016	<0.002
ICP	Manganese:	89.00	130.00	107.00	6.80	530.00	157.00	224.00	138.00	57.70	67.80	72.10
CVAA	Mercury:		<0.0002			0.0007	0.0023	0.0001	0.0002	0.0005	0.00	0.00
ICP	Molybdenum:	<0.13	<0.14	0.06	0.005j	0.07	0.09	<0.154	0.06	142.00	0.02	0.05
ICP	Nickel:	0.66	0.73	0.57	0.06	0.47	0.77	1.10	0.72	0.35	0.42	0.76
ICP	Potassium:	34a	48.0	44.0	2.5	43.5	65.2	55.0	74.8	32.0	37.30	44.90
GFAA	Selenium:	<0.78	0.029a	0.08	0.16	0.06	<0.002	0.10	0.06	0.04	0.09	0.12
ICP	Silicon:	16.0	9.5a	13.8	1.7	14.4	15.1	12.1	15.8	5.4	4.98	4.40
ICP	Silver:	<0.026	<0.027	0.01j	0.001j	<0.08	<0.023	<0.164	0.02	0.01	0.01	<0.049
ICP	Sodium:	57.0	84.0	90.1	5.3	92.3	139.0	185.0	155.0	69.0	80.50	102.00
ICP	Strontium:	9.7	14.0	12.9	0.7	11.0	17.2	23.7	26.8	14.0	17.50	22.20
GFAA	Thallium:	<0.26	<0.005	0.01	0.01	0.00	<0.0103	<0.0087	<0.002	0.02	0.02	0.02
ICP	Vanadium:	<0.052	0.29	0.08	0.003j	0.09	0.14	0.10	0.11	0.04	0.05	0.05
ICP	Zinc:	1.30	0.79	0.69	0.06	0.67	1.04	1.33	1.18	0.58	0.67	0.96
SIE	Fluoride:											

a: values less than 5 times the MDL

j: values below the method detection limit

S0308 not enough sample to run As, Sb, Pb, Se, and Tl by GFAA and Hg by CVAA.

S0589 no enough sample to run Hc by CVAA.

S0666 not enough sample to run Hg by CVAA.

S0740 GFAA for As, Pb, Se, Sb, and Tl have not been reported.

Plant Yates CT-121 Demonstration Project Trace Metals Analyses

Sample Location:		GP	GP	GP	GP	GP	GP	GP	GP	GP	GSTT	JBR-D
Date:		03/07/94	04/25/94	06/07/94	07/27/94	08/10/94	09/12/94	10/17/94	12/06/94	12/07/94	6/14/93	02/21/93
Sample ID:		S1263	S1373	S1557	S1705	S1738	S1808	S1880	S1946	S1952	S0588	S0339
Test ID:		AC1-10	L1-2	L2-1	L2-2	L2-2	HR2-2	AC2-8	AL2-3	AL2-3	L1-3	P1-21
Method	Units:	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/kg
ICP	Aluminum:	<0.284	6.86	12.1	1.29	5.74	1.1	8.67	6.25	5.71	0.63	832
GFAA	Antimony:	0.02	0.01	0.0084	0.00455	0.00544	0.00585	0.0132	0.00507	0.00462	0.014	<0.537
ICP	Arsenic:	<0.0129	0.01	<0.00856	0.0062	<0.0107	0.0225	0.0107			<0.009	<0.31
ICP	Barium:	0.40	0.12	0.217	0.165	0.226	0.17	0.215	0.137	0.133	1.11	4.16
ICP	Beryllium:	<0.0055	0.01	0.0132	0.00083	<0.00086	0.00135	0.008	0.00336	0.0084	0.001j	0.312
ICP	Boron:	462.00	176.00	246.00	197.00	355.00	186.00	338.00			504.00	78.8
ICP	Cadmium:	0.12	0.05	0.104	0.086	0.138	0.0684	0.13			0.14	<1.20
ICP	Chromium:	0.03	0.01	0.0664	0.0763	0.0743	0.0449	0.0602	0.0794	0.0816	0.04	11.7
ICP	Cobalt:	0.16	0.06	0.112	0.0902	0.158	0.0825	0.14	0.071	0.0237	0.1	2.33
ICP	Copper:	<0.0381	0.02	0.0284	0.0324	0.0443	0.0387	0.0271	0.0437	0.0379	0.04	4.13
GFAA	Iron:	<0.0596	<0.0045	<0.00452	<0.00452	1.09	0.418	<0.0045	<0.0045	<0.0045	0.19	2040.00
ICP	Lead:	<0.0008	0.01	<0.00205	0.0046	0.00546	<0.0022	<0.00205			<0.004	2.35
ICP	Manganese:	65.20	16.60	22.3	728	25.6	14.4	29.2	10.3	10.2	109	27.40
CVAA	Mercury:	0.01	<0.00033	<0.000033	0.00051	0.00047	0.00027	0.00009				0.2800
ICP	Molybdenum:	<0.0463	0.19	0.297	0.0486	0.181	0.102	0.144	0.0891	0.0396	0.05	1.7
ICP	Nickel:	0.79	0.25	0.418	0.348	0.533	0.264	0.699			0.55	5.85
ICP	Potassium:	48.60	22.00	45.6	42.7	60.4	33.9	65.2	23.6	22.9	46.8	256.0
GFAA	Selenium:	0.14	0.06	0.0982	0.15	0.0803	0.0646	0.0637			0.04	3.53
ICP	Silicon:	9.01	10.20	12.8	5.67	10.9	7.3	10.1			14.3	1190.0
ICP	Silver:	<0.0492	<0.005	<0.00519	<0.00519	<0.00519	<0.00519	<0.00519			0.03	1.26
ICP	Sodium:	94.60	39.50	0.0401	67.7	91.9	51.3	92.4	37	33.4	90.6	71.6
ICP	Strontium:	18.40	4.73	6.58	7.06	10.2	0.0263	9.05			12.9	52.2
GFAA	Thallium:	0.03	0.02	0.0441	0.0366	0.0296	0.0263	0.0696			0.01	<0.114
ICP	Vanadium:	0.03	0.04	0.254	0.245	<0.0454	<0.0454	<0.045	<0.0227	<0.0227	0.12	5.94
ICP	Zinc:	0.83	0.81	1.94	1.02	1.38	0.668	1.2			0.72	9.5
SIE	Fluoride:											

a: values less than 5 times the MDL

j: values below the method detection limit

S0588 not enough sample to run Hg by CVAA.

Plant Yates CT-121 Demonstration Project Trace Metals Analyses

Sample Location:		JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D
Date:		02/21/93	03/22/93	04/25/93	06/14/93	06/28/93	07/12/93	07/26/93	08/09/93	08/23/93	09/14/93	09/27/93
Sample ID:		S0324	S0421	S0515	S0587	S0625	S0664	S0703	S0738	S0781	S0837	S0879
Test ID:		P1-21	P1-34	L1-2	L1-3	L1-3	L1-3	L1-3	L1-3	L1-3	HR1-1	HR1-4
Method	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
ICP	Aluminum:	780	990	848	676	709	621	607	661	909	979	920
GFAA	Antimony:	<0.29	<0.59	0.10	0.09	0.20	0.10	0.09	0.10	0.09	0.09	<0.0608
GFAA	Arsenic:	<1.6	<0.31	<0.31	<0.31	0.31	<0.31	<0.31	<0.31	<0.31	<0.30	<0.28
ICP	Barium:	2.0a	2.8a	1.64	1.84	1.95	1.62	1.37	1.78	3.50	4.05	2.39
ICP	Beryllium:	<0.15	<0.15	0.12	0.12	0.18	0.12	0.13	<0.058	<0.056	<0.0535	<0.556
ICP	Boron:	64a	<46	105	30	139	99	116	108	93	186	203
ICP	Cadmium:	<0.38	<0.38	<0.279	<0.27	<0.281	<0.273	<0.266	<0.284	<0.271	<0.261	<0.271
ICP	Chromium:	11.00	13.00	8.85	8.54	7.99	6.89	7.39	8.15	7.30	9.29	8.75
ICP	Cobalt:	<0.76	0.81a	1.10	0.52	1.08	0.94	0.67	0.61	<0.49	0.96	0.53
ICP	Copper:	4.1a	3.2a	2.59	2.42	1.66	1.52	1.19	4.47	4.95	4.41	3.44
ICP	Iron:	2000.00	2400.00	1460.00	1440.00	1320.00	1060.00	1080.00	1340.00	1590.00	1920.00	1670.00
GFAA	Lead:	<0.29	<0.23	0.69	0.69	1.13	0.79	1.19	0.96	0.99	1.52	0.79
ICP	Manganese:	28.00	85.00	32.00	15.40	31.90	24.20	28.60	37.30	31.10	517.00	58.30
CVAA	Mercury:	0.10a	0.14a	0.1180	0.0875	0.1020	0.0325	0.0450	0.0575	0.0975	0.0975	0.0575
ICP	Molybdenum:	<3.8	<3.8	0.72	0.79	0.65	1.23	0.75	1.12	0.60	0.83	0.74
ICP	Nickel:	2.2a	3.8a	1.71	1.25	1.82	1.50	1.07	2.13	1.20	2.52	1.90
ICP	Potassium:	<230	<230	179.0	139.0	215.0	222.0	147.0	164.0	113.0	220.0	188.0
GFAA	Selenium:	1.3a	1.4a	2.25	<0.147	4.06	2.57	3.07	1.92	4.55	2.95	<0.13
ICP	Silicon:	230a	220a	683.0	459.0	399.0	355.0	374.0	442.0	594.0	374.0	505.0
ICP	Silver:	<0.76	0.76	<1.78	<0.17	<0.179	<0.174	<0.169	0.67	<0.173	<0.166	<0.173
ICP	Sodium:	<76	<76	<25.1	24.1	45.5	36.8	44.2	34.8	31.4	57.6	59.9
ICP	Strontium:	58.0	76.0	<0.56	43.4	37.5	35.5	34.4	56.5	50.3	58.2	51.7
GFAA	Thallium:	<0.37	<0.38	<0.114	<0.115	<0.109	<0.115	<0.115	<0.112	<0.115	<0.11	<0.102
ICP	Vanadium:	11.00	12.00	<4.17	7.05	7.92	7.14	6.32	7.72	7.37	8.73	7.94
ICP	Zinc:	6.6a	9.50	<2.83	5.00	5.79	4.45	4.92	4.26	4.58	5.89	5.01
SIE	Fluoride:											

a: values less than 5 times the MDL

j: values below the method detection limit

Plant Yates CT-121 Demonstration Project Trace Metals Analyses

Sample Location:		JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D
Date:		10/11/93	10/24/93	11/1/93	12/05/93	12/17/93	12/28/93	01/10/94	02/14/94	03/07/94	04/25/94	06/07/94
Sample ID:		S0914	S0958	S0984	S1022	YAT-2	S1093	S1119	S1224	S1261	S1371	S1554
Test ID:		HR1-4	HR1-4	P1A-11	P1B-5	ICAP	AL1-1	AL1-1	AC1-10	AC1-10	P2-15	L2-1
Method	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
ICP	Aluminum:	1220	968	456	404	3490	325	325	335	446	5900	1150
GFAA	Antimony:	0.21	<0.129	<0.126	<0.11	<1.86	0.09	0.08	<0.059	0.25	0.82	0.572
GFAA	Arsenic:	8.17	<0.79	<0.76	<0.355	2.26	2.79	2.23	0.76	1.73	13.00	3.75
ICP	Barium:	5.31	87.20	56.10	33.40	175.00	35.50	35.30	168.00	148.00	224.00	153
ICP	Beryllium:	<0.11	<0.118	<0.115	<0.06	0.45	0.07	0.07	<0.054	<0.0546	1.20	0.272
ICP	Boron:	378	248	110	105	445	138	138.00	308.00	389.00	82.10	84.3
ICP	Cadmium:	0.88	<0.574	<0.563	<0.28	0.35	<0.28	<0.276	<0.26	<0.271	<0.36	<0.348
ICP	Chromium:	15.00	8.62	6.15	3.72	14.50	3.86	3.86	3.51	2.95	18.50	11.4
ICP	Cobalt:	1.24	<1.04	<1.02	<0.51	1.13	0.75	0.75	<0.48	<2.46	<2.59	0.655
ICP	Copper:	3.95	2.47	1.92	<0.24	8.48	2.69	2.69	1.31	1.25	12.90	4.42
ICP	Iron:	1990.00	1430.00	681.00	626.00	3620.00	445.00	445.00	595.00	406.00	9300.00	1480
GFAA	Lead:	1.81	0.88	0.69	0.24	<0.556	<0.106	<0.104	<0.10	0.64	10.30	
ICP	Manganese:	188.00	60.60	22.00	24.00	69.90	21.20	21.20	40.90	50.60	33.30	45.9
CVAA	Mercury:		0.165	0.188	0.1150		0.0950	0.14	0.18	0.19	0.15	0.03
ICP	Molybdenum:	1.93	0.76	2.09	<0.26	6.27	1.02	1.02	0.27	4.35	14.80	7.12
ICP	Nickel:	5.18	2.28	<2.14	<1.07	6.48	1.78	1.78	<0.99	<5.14	7.48	2.18
ICP	Potassium:	383.0	268.0	358.0	<33.9	1080.0	182.0	182.00	171.00	196.00	1350.00	361
GFAA	Selenium:	8.21	7.61	6.50	3.65	32.30	2.59	2.82	2.55	1.97	4.25	2.86
ICP	Silicon:	1890.0	560.0	543.0	435.0	974.0	471.0	471.00	224.00	359.00	499.00	756
ICP	Silver:	0.41	0.45	1.29	<0.18	<0.18	<0.18	<0.176	<0.166	<0.173	<2.13	<0.414
ICP	Sodium:	111.0	75.8	28.8	<2.54	217.0	34.2	34.20	64.60	84.10	359.00	113
ICP	Strontium:	84.5	73.1	80.5	105.0	98.1	83.8	83.80	105.00	113.00	121.00	128
GFAA	Thallium:	0.17	<0.116	0.20	<0.11	<6.67	<0.223	<0.219	<0.105	<0.076	1.55	<0.16
ICP	Vanadium:	13.90	13.30	9.00	5.63	20.50	5.97	5.97	4.44	2.81	44.40	29.6
ICP	Zinc:	11.70	6.35	1.89	3.72	23.70	1.54	1.54	1.64	3.43	62.50	13.8
SIE	Fluoride:											

a: values less than 5 times the MDL

j: values below the method detection limit

Plant Yates CT-121 Demonstration Project Trace Metals Analyses

Sample Location:		JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-F	JBR-F	JBR-F
Date:		07/27/94	08/10/94	08/22/94	09/12/94	10/17/94	12/02/94	12/06/94	12/07/94	03/22/93	06/14/93	07/12/93
Sample ID:		S1702	S1736	S1771	S1806	S1878	S1934	S1944	S1950	S0420	S0586	S0663
Test ID:		L2-2	L2-2	L2-3	HR2-3	AC2-8	AL2-1	AL2-3	AL2-3	P1-34	L1-3	L1-3
Method	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/L	mg/L
ICP	Aluminum:	1930	1610	2520	2280	1610	2600	3370	2800	<0.34	4.67	0.45
GFAA	Antimony:	0.523	0.52	0.602	0.552	0.631	0.568	1.04	0.687	<0.024	0.019	0.01j
GFAA	Arsenic:	6.56	9.6	22.7	29.3	6.29	26.2	29	25	<0.04	<0.011	<0.008
ICP	Barium:	144	124	222	124	149	85.6	106	88.1	2.3	2.09	0.18
ICP	Beryllium:	0.234	0.0618	0.269	0.345	0.327	1.69	1.66	1.71	<0.0034	0.005	<0.004
ICP	Boron:	222	201	477	238	544				1000	894	69.7
ICP	Cadmium:	<0.298	<0.339	0.62	0.615	0.682				0.072	0.25	0.02
ICP	Chromium:	12.6	14.1	13	11.1	9.48	12.6	12.1	11.6	0.049	0.04	<0.007
ICP	Cobalt:	0.944	2.23	3.06	3.2	1.24	2.41	3.08	<2.30	0.14	0.18	0.02
ICP	Copper:	5.5	4.58	8.49	11	3950	10.3	15.3	12.8	0.036a	0.23	0.03
ICP	Iron:	2540	3640	3530	2790	<1.63	3580	4060	3600	<0.086	0.162j	<0.02
GFAA	Lead:	5.12	5.45	4.88	7.87	1.66	5.91	6.41	6.08	<0.006	<0.004	0.001j
ICP	Manganese:	23.5	17.2	59.4	41	66.8	9.15	22.1	17.3	250	193	16.4
CVAA	Mercury:	0.338	0.174	0.612	0.585	0.252	0.766	0.555	0.668	<0.0002		
ICP	Molybdenum:	6.25	7.85	8.24	6.24	6.4	7.14	7.01	2.92	<0.086	0.014j	0.004j
ICP	Nickel:	4.47	6.4	5.47	12.8	10.6				0.67	0.976	0.08
ICP	Potassium:	473	445	826	658	535	545	638	635	77	78.1	5.04
GFAA	Selenium:	9.9	7.77	12	17	4.38	18.2	16.3	17	0.094a	0.12	0.09
ICP	Silicon:	345	369	1000	569	238				8.4a	24.6	3.12
ICP	Silver:	<0.354	<0.403	<0.43	<0.366	<0.341				<0.02	0.024	0.002j
ICP	Sodium:	148	130	265	172	186	79.9	135	115	140	153	11.9
ICP	Strontium:	105	101	143	167	124				23	22.2	1.72
GFAA	Thallium:	0.25	0.415	0.388	0.586	0.678	<0.325	<0.317	<0.319	<0.01	0.006	0.004
ICP	Vanadium:	31.7	17.4	17.7	38.6	11.2	18.4	26.1	20.2	0.17	0.117	<0.007
ICP	Zinc:	20	19.9	19.5	11.5	17.5				0.56	1.35	0.15
SIE	Fluoride:											

a: values less than 5 times the MDL

j: values below the method detection limit

S0586 and S0663 not enough sample to run Hg by CVAA.

Plant Yates CT-121 Demonstration Project Trace Metals Analyses

Sample Location:		JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F
Date:		08/09/93	09/14/93	10/11/93	12/05/93	12/28/93	01/10/94	02/14/94	03/07/94	03/21/94	04/25/94	06/07/94
Sample ID:		S0737	S0836	S0913	S1021	S1092	S1118	S1223	S1260	S1310	S1370	S1553
Test ID:		L1-3	HR1-1	HR1-4	P1B-5	All-1	AL1-1	AC1-10	AC1-10	P2-5	P2-15	L2-1
Method	Units:	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ICP	Aluminum:	18.9	7.75	1.91	8.37	3.56	0.693	<0.28	<0.284	<0.0523	62.2	20.2
GFAA	Antimony:	0.07	<0.0139	<0.001	0.01	<0.014	<0.0139	0.01	0.01	0.01	0.01	0.00658
GFAA	Arsenic:	<0.002	0.01	0.04	<0.001	0.09	0.07	0.15	0.05	0.06	0.04	<0.00856
ICP	Barium:	2.12	3.08	5.24	2.54	1.81	1.31	0.94	1.11	<0.001	0.29	0.302
ICP	Beryllium:	0.01	<0.0016	0.04	0.00	<0.0005	0.00	<0.0005	<0.0055	<0.0005	0.03	0.00815
ICP	Boron:	899	1510	2170	1530	1220	884.00	947.00	1230.00	872.00	394.00	318
ICP	Cadmium:	0.31	0.51	0.46	0.26	0.18	0.14	0.18	0.25	<0.004	0.12	0.126
ICP	Chromium:	0.02	0.04	0.32	0.03	0.01	0.01	0.12	0.08	<0.005	0.02	0.0654
ICP	Cobalt:	0.27	0.40	0.73	0.34	0.26	0.20	0.31	0.37	<0.004	0.14	0.128
ICP	Copper:	0.32	0.31	0.21	0.30	0.26	0.16	<0.38	0.42	<0.009	0.30	0.107
ICP	Iron:	<0.019	<0.0319	<0.14	<0.0148	<0.0059	<0.0059	<0.06	<0.0596	<0.004	<0.004	<0.00452
GFAA	Lead:	0.00	<0.008	0.02	<0.002	0.04	0.02	0.01	0.04	0.02	0.01	0.00369
ICP	Manganese:	212.00	332.00	533.00	239.00	203.00	142.00	130.00	160.00	0.18	32.30	25.3
CVAA	Mercury:	0.0030	0.0056	0.0001	0.0005	0.0024	0.00	0.01	0.02	<0.00033	0.01	0.00576
ICP	Molybdenum:	<0.014	0.07	0.12	0.10	0.01	0.01	<0.046	<0.0463	<0.007	0.17	0.0654
ICP	Nickel:	1.10	1.60	2.53	1.37	0.99	0.84	1.26	1.67	<0.014	0.62	0.571
ICP	Potassium:	94.0	150.0	202.0	150.0	121.0	88.80	85.90	115.00	<0.822	60.70	57.5
GFAA	Selenium:	0.16	0.09	0.23	0.37	0.16	0.21	0.24	0.29	0.03	0.26	0.202
ICP	Silicon:	35.2	29.1	22.1	33.3	15.3	8.54	6.28	19.00	<0.032	41.00	18
ICP	Silver:	0.06	0.06	<0.116	<0.012	0.02	0.01	<0.049	<0.049	<0.005	<0.005	<0.0032
ICP	Sodium:	194.0	297.0	448.0	311.0	253.0	188.00	183.00	242.00	<0.04	93.30	93.3
ICP	Strontium:	23.4	37.0	56.8	53.3	47.8	39.60	40.20	46.80	0.00	9.42	7.65
GFAA	Thallium:	<0.001	<0.0103	0.01	<0.002	0.10	0.06	0.01	0.15	0.05	0.02	0.0558
ICP	Vanadium:	0.08	0.17	0.81	0.09	0.05	0.04	0.42	0.23	<0.004	0.05	0.25
ICP	Zinc:	1.78	2.47	3.58	2.31	1.80	1.41	1.49	2.27	<0.004	2.79	2.42
SIE	Fluoride:											

a: values less than 5 times the MDL
j: values below the method detection limit

S0737 GFAA for As, Pb, Se, SB, and Ti have not been reported.

Plant Yates CT-121 Demonstration Project Trace Metals Analyses

Sample Location:		JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F	JBR-F
Date:	06/28/94	07/27/94	08/10/94	09/12/94	10/17/94	12/06/94	12/07/94	
Sample ID:		S1623	S1701	S1735	S1805	S1877	S1943	S1949
Test ID:	L2-1	L2-2	L2-2	HR2-2	AC2-8	AL2-3	AL2-3	
Method	Units:	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ICP	Aluminum:	30.3	6.65	24.2	49.3	29.5	35.6	49.9
GFAA	Antimony:		0.0173	0.0204	0.0296	0.0187	0.00613	0.00809
GFAA	Arsenic:		0.018	<0.0107	0.0396	0.00648	0.0071	0.0158
ICP	Barium:		0.353	0.395	0.552	0.466	0.278	0.459
ICP	Beryllium:		0.00972	0.0111	0.025	0.0319	0.034	0.0318
ICP	Boron:		482	479	446	624		
ICP	Cadmium:		0.175	0.164	0.153	0.221		
ICP	Chromium:		0.0736	0.0716	0.0538	0.0559	0.0822	0.0812
ICP	Cobalt:		0.186	0.203	0.219	0.243	0.118	0.158
ICP	Copper:		0.176	0.187	0.301	0.125	0.223	0.359
ICP	Iron:		<0.00452	1.17	0.0373	<0.0045	0.0515	0.0807
GFAA	Lead:		0.0332	0.0731	0.0459	0.016	0.00542	0.00494
ICP	Manganese:		33.6	31.8	32.6	52.4	13	20.4
CVAA	Mercury:		0.00098	0.00164	0.0004	0.00024	0.00017	0.00017
ICP	Molybdenum:		0.145	0.046	0.0845	0.122	0.024	0.0375
ICP	Nickel:		0.751	0.693	0.721	1.24		
ICP	Potassium:		87.2	82.8	89.3	120	33.2	52.6
GFAA	Selenium:		0.205	0.088	0.109	0.0938	0.0677	0.124
ICP	Silicon:		18.2	17.7	31.7	20.4		
ICP	Silver:		0.0895	<0.00519	0.0075	0.0054		
ICP	Sodium:		135	123	125	164	48.4	76.2
ICP	Strontium:		14.2	13.2	0.0941	14.4		
GFAA	Thallium:		0.0777	0.0929	0.0941	0.134	0.0196	0.0353
ICP	Vanadium:		0.243	<0.0454	<0.0454	<0.045	<0.0227	<0.0227
ICP	Zinc:		2.13	2.03	1.72	2.24		
SIE	Fluoride:	44.6						

a: values less than 5 times the MDL

j: values below the method detection limit

Plant Yates CT-121 Demonstration Project Limestone Analyses

Date:	1/22/93	1/27/93	2/1/93	2/5/93	2/9/932	2/15/93	2/22/93	2/26/93	3/8/93	3/12/93	3/16/93
Source:	MMA	MMA	MMA	MMA	MMA	MMA	MMA	MMA	MMA	MMA	MMA
Test ID:	P1-2	P1-6	P1-9	P1-12	P1-14	P1-18	P1-21	P1-24	P1-28	P1-21R	P1-31
Ca, mm/g:	9.70	9.51	9.50	9.54	9.56	9.71	9.33	8.71	9.92	9.80	9.70
Mg, mm/g:	0.04	0.04	0.04	0.01	0.04	0.04	0.04	0.00	0.06	0.04	0.0
CO_3, mm/g:	8.51	9.50	9.36	9.70	9.98	9.82	9.38	9.73	9.26	9.29	9.90
Ca, mg/g:	388.8	381.2	380.8	382.4	383.2	389.2	373.9	349.1	397.6	392.8	387.6
Mg, mg/g:	0.97	1.02	1.02	0.24	1.02	1.00	1.00	0.02	1.39	1.07	1.02
CO_3, mg/g:	510.6	570.0	561.6	582.0	598.8	589.2	562.8	583.8	92.6	92.9	98.7
$CaCO_3$, wt%:	97.1	95.2	95.1	95.5	95.7	97.2	93.4	87.2	99.3	98.1	96.8
$MgCO_3$, wt%:	0.3	0.4	0.4	0.1	0.4	0.3	0.3	0.0	0.5	0.4	0.4
Inert, wt%:	2.1	1.9	2.0	1.9	2.0	2.0	2.0	3.3	2.7	1.5	2.4
CLOSURES:											
molar, %:	6.7	0.3	1.0	-0.8	-1.9	-0.4	-0.0	-5.5	3.7	2.9	-0.8
weight, %:	-0.5	-2.6	-2.6	-2.6	-2.0	-0.5	-4.3	-9.5	2.5	0.0	-0.5
weight %:	33.64	33.94	33.28	33.61	32.31	31.93	32.36	32.24	33.09	23.54	27.07
% past #200:	88.36	90.26	81.16	87.22	89.28	89.27	87.02	85.88	87.04	87.21	72.01

Plant Yates CT-121 Demonstration Project Limestone Analyses

Date:	3/16/93	3/18/93	3/20/93	3/28/93	3/30/93	4/5/93	4/19/93	4/25/93	5/28/93	6/1/93	6/6/93
Source:	MMA	MMA	MMA	MMA	MMA	MMA	MMA	MMA	MMA	MMA	MMA
Test ID:	P1-31	P1-32	P1-33	P1-35	P1-36	L1-1	L1-2	L1-3	L1-3	L1-3	L1-3
Ca, mm/g:	9.7	9.9	9.2	10.0	9.93	9.02	9.48	9.51	9.28	9.25	9.7
Mg, mm/g:	0.0	0.0	0.0	0.0	0.048	0.048	0.04	0.044	0.04	0.039	0.043
CO_3, mm/g:	9.9	9.3	9.7	9.4	9.59	9.6	9.73	9.79	9.7	9.82	9.92
Ca, mg/g:	387.6	396.0	369.9	402.0	398.0	361.52	379.96	381.16	371.94	370.74	388.78
Mg, mg/g:	1.02	1.02	0.97	1.04	1.17	1.17	0.97	1.07	0.97	0.95	1.04
CO_3, mg/g:	98.7	93.0	96.6	94.2	95.9	576.00	583.80	587.40	582.00	589.20	595.20
$CaCO_3$, wt%:	96.8	98.9	92.4	100.4	99.4	90.29	94.89	95.20	92.89	92.59	97.10
$MgCO_3$, wt%:	0.4	0.4	0.3	0.4	0.4	0.40	0.34	0.37	0.34	0.33	0.36
Inert, wt%:	2.4	2.6	2.3	0.6	0.6	2.78	2.54	2.31	1.98	1.99	2.43
CLOSURES:											
molar, %:	-0.8	3.2	-2.1	3.3	2.0	-2.8	-1.1	-1.2	-2.0	-2.8	-0.9
weight, %:	-0.5	1.8	-5.0	1.4	0.4	-6.5	-2.2	-2.1	-4.8	-5.1	-0.1
weight %:	27.07	34.54	37.13	33.02	30.4	26.72	30.49	28.58	27.39	28.34	28.99
% past #200:	72.01	69.84	66.44	83.66	87.33	88.66	84.35	87.1	92.35	89.24	91.44

Plant Yates CT-121 Demonstration Project Limestone Analyses

Date:	6/14/93	6/22/93	6/28/93	7/6/93	7/12/93	7/19/93	7/26/93	8/2/93	8/9/93	8/16/93	8/23/93
Source:	MMA	MMA	MMA	MMA	MMA	MMA	MMA	MMA	MMA	MMA	MMA
Test ID:	L1-3	L1-3	L1-3	L1-3	L1-3	L1-3	L1-3	L1-3	L1-3	L1-3	L1-3
Ca, mm/g:	9.55	9.50	9.4	9.54	9.52	9.64	9.06	9.42	9.58	9.48	9.84
Mg, mm/g:	0.04	0.04	0.0	0.04	0.05	0.04	0.04	0.04	0.05	0.04	0.04
CO_3, mm/g:	9.74	9.98	9.9	9.87	9.38	9.81	9.61	9.59	9.50	9.48	9.26
Ca, mg/g:	382.76	380.76	378.36	382.36	381.56	386.37	363.12	377.55	383.97	379.96	394.39
Mg, mg/g:	1.00	1.02	1.07	1.04	1.09	1.04	1.07	1.07	1.19	1.07	1.07
CO_3, mg/g:	584.40	598.80	596.40	592.20	562.80	588.60	576.60	575.40	570.00	568.80	555.60
$CaCO_3$, wt%:	95.60	95.10	94.49	95.50	95.30	96.50	90.69	94.29	95.90	94.89	98.50
$MgCO_3$, wt%:	0.35	0.35	0.37	0.36	0.38	0.36	0.37	0.37	0.41	0.37	0.37
Inert, wt%:	1.88	2.16	1.83	2.31	0.56	1.49	2.14	2.43	2.39	2.24	2.21
CLOSURES:											
molar, %:	-0.8	-2.2	-2.3	-1.5	1.0	-0.7	-2.7	-0.7	0.7	0.2	3.3
weight, %:	-2.2	-2.4	-3.3	-1.8	-3.8	-1.7	-6.8	-2.9	-1.3	-2.5	1.1
weight %:	28.38	28.27	27.72	28.30	27.46	25.55	27.53	27.66	28.73	25.13	27.12
% past #200:	92.31	92.71	94.17	92.93	92.99	93.88	93.23	92.06	91.82	91.74	82.21

Plant Yates CT-121 Demonstration Project Limestone Analysis

Date:	8/29/93	9/5/93	9/14/93	9/19/93	9/27/93	10/5/93	10/11/93	10/14/93	10/18/93	10/24/93	11/1/93
Source:	MMA	MMA	MMA	MMA	MMA	MMA	MMA	MMA	MMA	Dravo	Dravo
Test ID:	L1-3	L1-3	HR1-1	HR1-4	HR1-4	HR1-4	HR1-4	HR1-4	HR1-4	HR1-4	P1A-11
Ca, mm/g:	9.32	9.58	9.35	9.58	9.49	9.56	9.64	9.18	9.39	9.43	9.89
Mg, mm/g:	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.04	0.00	0.16	0.17
CO_3, mm/g:	9.90	9.64	9.63	9.64	9.80	9.32	9.93	9.94	9.54	9.77	9.88
Ca, mg/g:	373.55	383.97	374.75	383.97	380.36	383.16	386.37	367.93	376.35	377.95	396.39
Mg, mg/g:	1.07	1.17	1.12	1.17	1.14	1.14	1.12	1.04	0.05	3.89	4.06
CO_3, mg/g:	594.00	578.40	577.80	578.40	588.00	559.20	595.80	596.40	572.40	586.20	592.80
$CaCO_3$, wt%:	93.29	95.90	93.59	95.90	94.99	95.70	96.50	91.89	93.99	94.39	99.00
$MgCO_3$, wt%:	0.37	0.40	0.39	0.40	0.40	0.40	0.39	0.36	0.02	1.35	1.41
Inert, wt%:	2.08	2.14	2.18	2.14	2.22	2.36	2.21	2.16	2.87	1.16	0.69
CLOSURES:											
molar, %:	-2.8	-0.1	-1.2	-0.1	-1.4	1.5	-1.2	-3.7	-0.8	-0.9	0.9
weight, %:	-4.3	-1.6	-3.8	-1.6	-2.4	-1.5	-0.9	-5.6	-3.1	-3.1	1.1
weight %:	28.19	24.40	27.33	24.40	22.15	33.84	38.93	34.26	25.02	29.16	29.40
% past #200:	92.40	89.90	92.51	89.90	93.77	98.16	80.24	84.27	83.98	85.66	84.85

Plant Yates CT-121 Demonstration Project Limestone Analyses

Date:	12/2/93	12/10/93	12/13/93	12/19/93	12/28/93	1/3/94	1/10/94	1/17/94	1/25/93	1/31/94
Source:	Dravo	Dravo	Dravo	Dravo	Dravo	Dravo	Dravo	Dravo	Dravo	Dravo
Test ID:	P1B-1	P1B-5	P1B-9R	P1B-9R2	AL1-1	AL1-1	AL1-1	AL1-1	AC1-1	AC1-1
Ca, mm/g:	9.81	9.82	9.50	9.51	9.75	9.70	9.77	9.66	9.22	9.59
Mg, mm/g:	0.15	0.15	0.17	0.17	0.15	0.15	0.17	0.07	0.25	0.29
CO_3, mm/g:	10.27	10.27	9.74	9.64	9.58	9.66	9.96	9.74	9.85	9.97
Ca, mg/g:	393.18	393.59	380.76	381.16	390.78	388.78	391.58	387.17	369.54	384.37
Mg, mg/g:	3.69	3.65	4.03	4.03	3.67	3.67	4.03	1.70	6.03	6.93
CO_3, mg/g:	616.20	616.20	584.40	578.40	574.80	579.60	597.60	584.40	591.00	598.20
$CaCO_3$, wt%:	98.20	98.30	95.10	95.20	97.60	97.10	97.80	96.70	92.29	96.00
$MgCO_3$, wt%:	1.28	1.26	1.40	1.40	1.27	1.27	1.40	0.59	2.09	2.40
Inert, wt%:	0.94	0.72	0.62	0.77	0.72	0.88	0.55	0.76	1.21	0.80
CLOSURES:										
molar, %:	-1.5	-1.5	-0.4	0.2	1.6	1.0	-0.1	-0.1	-2.0	-0.5
weight, %:	0.4	0.3	-2.9	-2.6	-0.4	-0.8	-0.3	-2.0	-4.4	-0.8
weight %:	29.16	28.12	24.00	20.58	30.82	32.00	31.30	33.69	26.85	32.85
% past #200:	87.75	84.59	80.08	82.98	82.90	83.39	84.54	87.37	87.48	89.90

Plant Yates CT-121 Demonstration Project Limestone Analyses

Date:	2/7/94	2/14/94	3/15/94	3/18/94	3/22/94	3/25/94	4/20/94	4/25/94	4/28/94	5/2/94	5/6/94
Source:	Dravo	Dravo	Dravo	Dravo	Dravo	Dravo	Dravo	Dravo	Dravo	Dravo	Dravo
Test ID:	AC1-3	AC1-10	P2-1	P2-2	P2-5	P2-6	P2-11	P2-15	P2-31	P2-19	P2-22
Ca, mm/g:	9.62	9.74	9.54	9.74	9.67	9.76	9.26	9.81	9.27	9.25	9.57
Mg, mm/g:	0.32	0.26	0.27	0.28	0.30	0.29	0.29	0.30	0.30	0.29	0.24
CO_3, mm/g:	9.92	9.94	9.85	10.39	10.28	9.88	9.87	10.21	10.00	10.00	9.85
Ca, mg/g:	385.57	390.38	382.36	390.38	387.57	391.18	371.14	393.18	371.54	370.74	383.57
Mg, mg/g:	7.78	6.32	6.49	6.73	7.17	6.95	7.00	7.17	7.34	6.93	5.93
CO_3, mg/g:	595.20	596.40	591.00	623.40	616.80	592.80	592.20	612.60	600.00	600.00	591.00
$CaCO_3$, wt%:	96.30	97.50	95.50	97.50	96.80	97.70	92.69	98.20	92.79	92.59	95.80
$MgCO_3$, wt%:	2.70	2.19	2.25	2.34	2.49	2.41	2.43	2.49	2.55	2.40	2.06
Inert, wt%:	0.85	0.85	0.78	0.79	0.60	1.07	0.25	0.01	0.59	0.63	0.52
CLOSURES:											
molar, %:	0.1	0.3	-0.2	-1.8	-1.6	0.8	-1.7	-0.5	-2.2	-2.4	-0.2
weight, %:	-0.2	0.5	-1.5	0.6	-0.1	1.2	-4.6	0.7	-4.1	-4.4	-1.6
weight %:	32.51	33.22	29.89	29.86	28.11	30.04	29.36	30.36	29.80	27.46	28.70
% past #200:	89.46	89.32	90.41	89.72	89.53	90.68	92.18	92.21	90.15	90.95	92.92

Plant Yates CT-121 Demonstration Project Limestone Analyses

Date:	5/11/94	5/16/94	5/20/94	5/23/94	6/1/94	6/1/94	6/7/94	6/7/94	6/15/94	6/15/94	6/20/94
Source:	Dravo	Dravo	Dravo	Dravo	Dravo	Dravo	Dravo	Dravo	Dravo	Dravo	Dravo
Test ID:	P2-17	P2-27	P2-30	P2-31	L2-1	L2-1	L2-1	L2-1	L2-2	L2-2	L2-2
Ca, mm/g:	9.73	9.75	9.04	9.07	8.83	9.41	8.82	9.32	8.81	9.45	9.09
Mg, mm/g:	0.22	0.23	0.22	0.24	0.20	0.21	0.20	0.22	0.18	0.19	0.19
CO_3, mm/g:	9.86	9.83	10.01	9.91	9.86	9.77	9.83	9.82	9.82	9.78	9.90
Ca, mg/g:	389.98	390.78	362.32	363.53	353.91	377.15	353.51	373.55	353.10	378.76	364.33
Mg, mg/g:	5.37	5.64	5.27	5.76	4.93	5.10	4.76	5.35	4.33	4.62	4.62
CO_3, mg/g:	591.60	589.80	600.60	594.60	591.60	586.20	589.80	589.20	589.20	586.80	594.00
$CaCO_3$, wt%:	97.40	97.60	90.49	90.79	88.39	94.19	88.29	93.29	88.19	94.59	90.99
$MgCO_3$, wt%:	1.86	1.96	1.83	2.00	1.71	1.77	1.65	1.85	1.50	1.60	1.60
Inert, wt%:	0.61	0.72	0.98	0.98	0.85	1.31	0.90	1.06	0.86	1.22	0.89
CLOSURES:											
molar, %:	0.5	0.8	-3.9	-3.1	-4.4	-0.8	-4.3	-1.4	-4.4	-0.7	-3.2
weight, %:	-0.1	0.3	-6.7	-6.2	-9.1	-2.7	-9.2	-3.8	-9.5	-2.6	-6.5
weight %:	29.62	26.42	27.58	27.19	28.33		29.21		28.39		27.5
% past #200:	89.75	92.55	93.35	93.59	96.89		93.05		93.34		94.17

Plant Yates CT-121 Demonstration Project Limestone Analyses

Date:	6/27/94	7/7/94	7/11/94	7/18/94	7/25/95	8/1/94	8/10/94	8/15/94	8/22/94	8/28/94	9/8/94
Source:	Dravo	Dravo	Dravo	Dravo	Dravo	Dravo	Dravo	Dravo	Dravo	Dravo	Dravo
Test ID:	L2-2	L2-2	L2-2	L2-2	L2-2	L2-2	L2-2	L2-2	L2-2	L2-2	HR2-2
Ca, mm/g:	9.14	9.45	9.91	9.68	9.22	9.38	9.64	9.47	9.38	9.38	9.41
Mg, mm/g:	0.18	0.18	0.17	0.06	0.21	0.22	0.21	0.20	0.21	0.21	0.22
CO_3, mm/g:	9.95	9.98	9.99	10.07	9.90	9.81	9.52	10.00	10.10	10.34	9.90
Ca, mg/g:	366.33	378.76	397.19	387.97	369.54	375.95	386.37	379.56	375.95	375.95	377.15
Mg, mg/g:	4.37	4.40	4.18	1.34	5.10	5.35	5.05	4.96	5.10	5.10	5.42
CO_3, mg/g:	597.00	598.80	599.40	604.20	594.00	588.60	571.20	600.00	606.00	620.40	594.00
$CaCO_3$, wt%:	91.49	94.59	99.20	96.90	92.29	93.89	96.50	94.79	93.89	93.89	94.19
$MgCO_3$, wt%:	1.52	1.53	1.45	0.46	1.77	1.85	1.75	1.72	1.77	1.77	1.88
Inert, wt%:	1.06	1.27	1.45	0.55	0.92	1.22	0.41	0.39	0.72	0.80	0.75
CLOSURES:											
molar, %:	-3.3	-1.8	0.5	-1.7	-2.4	-1.1	1.7	-1.7	-2.6	-3.8	-1.4
weight, %:	-5.9	-2.6	2.1	-2.1	-5.0	-3.0	-1.3	-3.1	-3.6	-3.5	-3.2
weight %:	26.12	31.64	30.60	28.47	28.92	25.97	25.90	22.95	27.67	27.74	28.60
% past #200:	94.25	81.62	86.81	91.34	92.63	92.52	93.23	93.66	91.70	93.60	92.39

Plant Yates CT-121 Demonstration Project Limestone Analyses

Date:	9/12/94	9/19/94	10/5/94	10/13/94	10/17/94	10/24/94	12/2/94	12/6/94	12/12/94	12/15/94	12/19/94
Source:	Dravo	Dravo	Dravo	Dravo	Dravo	Dravo	Fla. Rock	Fla. Rock	Fla. Rock	Fla. Rock	Fla. Rock
Test ID:	HR2-2	HR2-2	AC2-2	AC2-5	AC2-8	AC2-10	AL2-1	AL2-3	AL2-4	AL2-5	AL2-6
Ca, mm/g:	9.40	9.00	9.46	9.46	9.44	9.40	9.00	9.07	9.06	9.10	9.13
Mg, mm/g:	0.25	0.24	0.20	0.25	0.23	0.23	0.19	0.19	0.19	0.20	0.20
CO_3, mm/g:	9.89	10.34	9.98	9.93	9.98	9.71	9.51	9.68	9.68	9.40	9.58
Ca, mg/g:	376.75	360.72	379.16	379.16	378.36	376.75	360.72	363.53	363.12	364.73	365.93
Mg, mg/g:	6.08	5.83	4.86	6.08	5.54	5.52	4.52	4.62	4.71	4.86	4.93
CO_3, mg/g:	593.40	620.40	598.80	595.80	598.80	582.60	570.60	580.80	580.80	564.00	574.80
$CaCO_3$, wt%:	94.09	90.09	94.69	94.69	94.49	94.09	90.09	90.79	90.69	91.09	91.39
$MgCO_3$, wt%:	2.11	2.02	1.69	2.11	1.92	1.91	1.57	1.60	1.64	1.69	1.71
Inert, wt%:	0.44	0.40	0.43	1.32	1.13	0.70	3.51	3.81	3.65	4.49	3.91
CLOSURES:											
molar, %:	-1.2	-5.6	-1.6	-1.1	-1.6	-0.4	-1.7	-2.2	-2.2	-0.5	-1.3
weight, %:	-3.4	-7.5	-3.2	-1.9	-2.5	-3.3	-4.8	-3.8	-4.0	-2.7	-3.0
weight %:	28.49	27.90	27.23	27.61	28.29	27.70	32.24	33.23	29.66	32.68	33.40
% past #200:	92.94	93.09	87.44	94.21	90.53	89.32	84.70	83.49	85.24	83.44	84.09

Plant Yates CT-121 Demonstration Project Gypsum Byproduct Particle Size Distribution

Sample ID:		S0339	S0367	S0515	S0625	S0703	S0738	S0837	S0958	S0984
Date:		2/26/93	3/8/93	4/25/93	6/28/93	7/26/93	8/9/93	9/14/93	10/24/93	11/1/93
Sample Type:		JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D
A										
%	**150 microns:**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%	**106 microns:**	4.1	3.6	10.3	7.2	4.9	7.3	5.0	4.2	6.6
%	**75 microns:**	15.9	18.3	24.4	24.1	22.0	28.3	22.9	22.2	26.5
%	**53 microns:**	22.0	23.0	22.6	24.0	24.1	27.6	24.5	25.9	25.6
%	**38 microns:**	22.9	22.4	18.0	19.5	20.4	18.8	20.6	22.5	18.2
%	**27 microns:**	14.5	14.5	10.3	11.6	13.2	8.7	12.8	13.1	10.2
%	**19 microns:**	8.1	7.4	5.3	5.3	6.5	4.0	5.9	5.0	4.7
%	**13 microns:**	4.7	4.0	3.2	3.1	3.7	2.3	3.2	2.8	2.3
%	**9.4 microns:**	3.2	2.7	2.1	1.9	2.1	1.2	2.0	1.7	1.9
%	**6.6 microns:**	1.7	1.6	1.6	1.1	1.2	0.7	1.1	0.9	2.0
%	**4.7 microns:**	1.7	1.6	1.4	1.4	1.3	0.9	1.3	1.2	1.4
%	**3.3 microns:**	0.9	0.8	0.7	0.7	0.6	0.4	0.6	0.6	0.6
%	**2.4 microns:**	0.2	0.1	0.0	0.2	0.0	0.0	0.0	0.0	0.0
B										
%	**90 microns:**	66.87	67.29	75.95	72.41	69.90	72.90	70.21	69.26	72.19
%	**50 microns:**	34.19	35.48	42.90	41.28	38.62	45.15	39.48	39.30	43.11
%	**10 microns:**	11.14	12.34	14.06	14.82	14.02	19.62	14.78	16.46	15.39

A contains the percentage in the specified size range.

B contains the particle size statistics. e.g., 50 % of the particles are 44.95 microns, 90% are smaller than 74.72 and 10% are smaller than 15.79 microns.

Plant Yates CT-121 Demonstration Project Gypsum Byproduct Particle Size Distribution

Sample ID:		S1022	S1093	S1119	S1224	S1261	S1389	S1505	S1554	S1702
Date:		12/5/93	12/28/93	1/10/94	2/14/94	3/7/94	4/28/94	5/16/94	6/7/94	7/27/94
Sample Type:		JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D
A										
%	150 microns:	0	0	0	00	0	0	0	0	0
%	106 microns:	8.7	5.6	4.5	4.2	4.7	4.9	5.9	9.0	8.1
%	75 microns:	27.8	24.4	25.9	20.6	23.2	16.2	17.8	19.5	27.7
%	53 microns:	25.3	24.9	27.1	21.9	24.8	13.4	14.9	14.1	24.1
%	38 microns:	17.2	17.4	19.8	19.2	19.3	11.6	12.5	12.4	15.7
%	27 microns:	8.8	10.2	11	13.9	12.2	10.7	10.3	11.5	8.9
%	19 microns:	3.6	5.7	4.8	7.9	5.8	8.3	7.5	9.2	4.1
%	13 microns:	2.7	3.5	2.3	4	3.1	7.6	6.5	7.2	2.8
%	9.4 microns:	2	2.1	1.5	2.7	2.3	8.4	6.8	6	2.2
%	6.6 microns:	1.4	2.2	1.5	2.3	1.7	6.5	5.5	4.3	1.9
%	4.7 microns:	1.5	2.2	1.1	2	1.7	6.2	5.9	3.7	2.2
%	3.3 microns:	0.8	1.3	0.5	1.1	1	4.1	4.1	2.2	1.5
%	2.4 microns:	0.2	0.5	0	0.3	0.3	2.2	2.4	0.9	0.7
B										
%	90 microns:	73.96	71.03	70.34	68.77	70.01	68.01	69.89	73.83	73.48
%	50 microns:	44.97	40.98	42.17	36.08	39.64	24.07	27.97	31.42	44.16
%	10 microns:	15.36	11.14	16.92	10.83	12.95	4.15	4.15	6.08	11.34

A contains the percentage in the specified size range.
B contains the particle size statistics. e.g., 50 % of the particles are 44.95 microns, 90% are smaller than 74.72 and 10% are smaller than 15.79 microns.

Plant Yates CT-121 Demonstration Project Gypsum Byproduct Particle Size Distribution

Sample ID:		S1736	S1771	S1806	S1828	S1878	S1944	S1950
Date:		8/10/94	8/22/94	9/12/94	9/19/94	10/25/94	12/06/94	12/07/94
Sample Type:		JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D	JBR-D
A								
%	**150 microns:**	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%	**106 microns:**	12.9	9.0	7.5	7.0	8.4	6.8	6.7
%	**75 microns:**	24.1	21.8	20.0	22.4	20.2	19.8	22.3
%	**53 microns:**	20.8	20.7	19.6	23.4	17.3	17.5	20.7
%	**38 microns:**	16.0	16.3	16.7	20.5	15.0	14.5	17.2
%	**27 microns:**	8.4	9.1	8.8	11.0	10.5	10.5	10.7
%	**19 microns:**	4.7	5.2	5.1	4.5	6.1	5.9	5.1
%	**13 microns:**	3.0	3.3	4.2	2.8	4.5	4.3	3.5
%	**9.4 microns:**	3.1	3.8	5.1	2.6	4.9	5.1	3.3
%	**6.6 microns:**	2.3	2.9	3.8	2.1	3.7	3.9	2.8
%	**4.7 microns:**	2.5	3.7	4.3	2.1	4.4	5.2	3.6
%	**3.3 microns:**	1.6	2.6	3.0	1.2	3.1	3.9	2.5
%	**2.4 microns:**	0.7	1.6	1.7	0.5	1.9	2.6	1.5
B								
%	**90 microns:**	81.92	74.02	72.28	72.06	73.31	71.47	71.75
%	**50 microns:**	43.58	39.12	36.16	39.76	35.01	33.51	37.81
%	**10 microns:**	9.32	6.09	5.16	11.42	5.00	4.25	6.32

A contains the percentage in the specified size range.

B contains the particle size statistics. e.g., 50 % of the particles are 44.95 microns, 90% are smaller than 74.72 and 10% are smaller than 15.79 microns.

Appendix C

Coal Analyses

Appendix C

Coal Analyses

C1 Proximate Analyses

C2 Ultimate Analyses

Appendix C1

Proximate Analyses

Plant Yates CT-121 Demonstration Project Proximate Coal Analyses

BURN DATE	TONNAGE	As Burned				Dry Basis					M&A FREE	SO_2
		MOIST	ASH	SULFUR	BTU/lb	ASH	SULFUR	BTU/lb	VOL	FIXED C	BTU/lb	lb/MMBTU
01/15/93	300	12.86	11.12	2.38	10834	12.73	2.73	12433	37.9	49.4	14452	4.39
01/16/93	985	13.06	10.98	2.37	10922	12.63	2.72	12563	38.4	49	14379	4.34
01/17/93	614	13.9	10.6	2.32	10858	12.31	2.7	12611	38.6	49.1	14381	4.27
01/18/93	383	13.14	10.74	2.42	10972	12.36	2.79	12631	38.1	49.5	14412	4.41
01/19/93	905	12.98	10.69	2.39	10981	12.28	2.74	12620	38.3	49.5	14386	4.35
01/20/93	819	12.79	10.71	2.45	10987	12.28	2.81	12598	38.4	49.3	14361	4.46
01/21/93	1530	14.7	10.54	2.42	10726	12.36	2.84	12574	38.7	49	14348	4.51
01/22/93	1393	13.67	10.89	2.44	10777	12.62	2.83	12484	38.6	48.7	14287	4.53
01/23/93	1086	13.39	10.91	2.39	10859	12.6	2.76	12538	38.5	48.9	14346	4.4
01/24/93	929	15.13	10.82	2.34	10690	12.75	2.76	12596	38.4	48.8	14436	4.38
01/25/93	950	13.88	10.64	2.31	10869	12.36	2.68	12620	30.7	49	14400	4.25
01/26/93	1010	13.56	10.89	2.29	10859	12.6	2.64	12563	38	49.4	14374	4.22
01/27/93	773	13.07	9.38	2.48	11225	10.79	2.85	12913	38.9	50.3	14474	4.42
01/28/93	975	13.09	9.34	2.48	11098	10.75	2.85	12770	39	50.2	14309	4.47
01/31/93	403	13.05	9.76	2.63	11093	11.22	3.03	12758	40.1	48.7	14370	4.74
02/01/93	452	6.66	11.36	1.53	12340	12.17	1.64	13220	35.8	52.1	15052	2.48
02/02/93	658	12.03	10.61	2.57	10955	12.06	2.93	12453	38.8	49.1	14160	4.69
02/03/93	527	12.23	10.29	2.54	11045	11.72	2.89	12584	39.1	49.2	14255	4.6
02/04/93	664	11.93	10.24	2.56	11216	11.63	2.9	12736	39.2	49.1	14412	4.56
02/05/93	514	12.15	9.81	2.5	11297	11.17	2.85	12859	39.2	49.6	14476	4.43
02/06/93	685	11.67	9.76	2.48	11331	11.05	2.81	12829	39.3	49.7	14423	4.38
02/07/93	773	12.52	10.79	2.57	11015	12.34	2.94	12592	39.3	48.3	14364	4.67
02/08/93	500	13.27	10.91	2.57	10919	12.58	2.97	12589	39.1	48.3	14400	4.71
02/09/93	325	13.5	9.26	2.4	11159	10.7	2.77	12900	39	50.3	14446	4.3
02/10/93	685	14.27	9.37	2.44	11039	10.93	2.84	12877	38.6	50.5	14457	4.42
02/11/93	681	14.18	9.49	2.43	11045	11.06	2.83	12870	38.7	50.3	14471	4.4
02/12/93	512	15	9.22	2.45	10932	10.85	2.89	12861	39.2	50	14426	4.48
02/13/93	820	14.35	9.65	2.46	10950	11.27	2.87	12784	39.2	49.6	14408	4.49
02/14/93	895	13.44	9.93	2.41	11053	11.47	2.79	12770	38.9	49.6	14424	4.36
02/15/93	958	13.46	10.37	2.32	11009	11.98	2.68	12721	38.9	49.1	14452	4.21
02/16/93	525	14.2	9.68	2.66	10941	11.28	3.1	12752	39.8	48.9	14373	4.86
02/17/93	1416	13.62	9.84	2.69	11007	11.39	3.11	12743	39.8	48.8	14381	4.89
02/18/93	653	13.77	9.86	2.65	10990	11.43	3.07	12745	39	49.6	14390	4.82
02/20/93	545	13.63	9.96	2.65	11004	11.53	3.06	12741	38.9	49.6	14401	4.82
02/21/93	970	15.37	9.91	2.56	10764	11.71	3.02	12718	38.9	49.4	14405	4.76
02/22/93	838	15.16	9.86	2.64	10804	11.62	3.11	12735	39.8	48.6	14410	4.89
02/23/93	675	12.63	9.11	2.48	11324	10.43	2.84	12961	39.6	50	14471	4.38
02/25/93	317	12.92	9.35	2.52	11197	10.74	2.9	12859	39.7	49.6	14406	4.5
02/26/93	772	13.32	9.39	2.56	11163	10.83	2.95	12878	39.6	49.6	14442	4.59

Plant Yates CT-121 Demonstration Project Proximate Coal Analyses

BURN DATE	TONNAGE	As Burned				Dry Basis					M&A FREE	SO_2
		MOIST	ASH	SULFUR	BTU/lb	ASH	SULFUR	BTU/lb	VOL	FIXED C	BTU/lb	lb/MMBTU
02/27/93	1143	12.81	9.54	2.55	11249	10.94	2.93	12902	39.7	49.4	14487	4.53
02/28/93	1136	12.7	9.52	2.59	11225	10.9	2.97	12858	39.6	49.5	14431	4.61
03/01/93	1087	13.05	9.89	2.6	11102	11.37	2.99	12768	39.5	49.2	14406	4.68
03/02/93	1278	13.92	10.64	2.4	10884	12.36	2.79	12644	38.7	48.9	14427	4.41
03/03/93	1187	12.82	8.89	2.38	11368	10.2	2.73	13040	39.6	50.2	14521	4.19
03/04/93	1225	11.4	9.76	2.14	11494	11.01	2.42	12972	38	51	14577	3.72
03/05/93	1062	13.32	9.13	2.42	11196	10.53	2.8	12916	38.7	50.8	14437	4.32
03/06/93	1171	13.23	8.84	2.42	11237	10.19	2.79	12950	39.2	50.7	14419	4.31
03/07/93	918	12.24	8.95	2.39	11362	10.2	2.73	12947	39.4	50.4	14417	4.21
03/08/93	970	12.65	8.97	2.48	11376	10.27	2.84	13023	39.6	50.1	14514	4.36
03/09/93	1018	12.65	8.98	2.38	11376	10.28	2.73	13023	39.7	50	14516	4.18
03/10/93	727	12.67	9.11	2.7	11305	10.43	3.09	12944	39.8	49.8	14451	4.78
03/11/93	894	12.31	8.96	2.63	11379	10.22	3	12976	39.7	50.1	14454	4.62
03/12/93	835	11.9	9.1	2.37	11440	10.33	2.69	12984	39.2	50.5	14480	4.14
03/13/93	797	10.96	9.96	1.9	11674	11.19	2.14	13110	36.9	51.9	14762	3.26
03/14/93	735	13.29	8.81	2.31	11296	10.16	2.66	13027	39.5	50.3	14501	4.09
03/15/93	908	12.65	9	2.49	11314	10.3	2.85	12953	39.6	50.1	14441	4.4
03/16/93	379	12.74	8.99	2.45	11318	10.3	2.81	12971	39.7	50	14461	4.33
03/17/93	1044	12.28	8.93	2.33	11414	10.18	2.66	13012	39.3	50.6	14486	4.08
03/18/93	800	12.67	8.9	2.44	11366	10.19	2.79	13016	39.5	50.4	14492	4.29
03/19/93	1246	12.3	9.02	2.42	11353	10.29	2.76	12945	39.8	49.9	14430	4.26
03/20/93	1051	12.85	8.92	2.36	11308	10.23	2.71	12975	39.7	50.1	14454	4.17
03/21/93	1030	12.46	9.03	2.39	11390	10.32	2.73	13010	39.6	50.1	14508	4.2
03/22/93	1107	12.59	8.84	2.39	11364	10.11	2.73	13002	39.7	50.2	14464	4.21
03/23/93	979	12	8.84	2.38	11401	10.05	2.7	12955	39	50.9	14403	4.18
03/24/93	1225	11.61	8.89	2.38	11493	10.06	2.69	13002	39.2	50.7	14457	4.14
03/25/93	900	11.55	8.81	2.37	11520	9.96	2.68	13024	39.6	50.5	14464	4.11
03/26/93	479	12.19	9.29	2.27	11443	10.58	2.58	13032	37.7	51.7	14574	3.97
03/27/93	800	12.27	9.33	2.27	11450	10.63	2.59	13052	38.3	51.1	14605	3.97
03/28/93	1788	12.25	9.35	2.21	11463	10.66	2.52	13062	38.1	51.2	14621	3.86
03/29/93	1019	13.02	8.73	2.35	11329	10.04	2.7	13025	39.4	50.6	14478	4.15
03/30/93	871	12.71	8.7	2.28	11400	9.97	2.61	13059	39.3	50.7	14505	4
03/31/93	808	11.15	9.58	2.02	11570	10.78	2.27	13022	37.9	51.3	14595	3.49
04/01/93	628	13.22	8.75	2.41	11285	10.08	2.78	13003	39.3	50.6	14461	4.27
04/02/93	1186	12.88	8.69	2.41	11328	9.98	2.76	13003	39.4	50.6	14444	4.25
04/03/93	1128	12.24	9.15	2.36	11365	10.43	2.68	12950	39.2	50.3	14458	4.15
04/04/93	753	12.22	8.88	2.52	11446	10.12	2.88	13040	39.5	50.4	14509	4.4
04/05/93	1224	12.05	8.86	2.15	11739	10.07	2.44	13347	37.7	52.2	14842	3.66
04/06/93	1771	12.94	8.97	2.42	11300	10.3	2.78	12980	39.8	49.9	14471	4.28
04/07/93	731	12.6	8.98	2.23	11360	10.27	2.55	12998	39.5	50.2	14486	3.93
04/15/93	466	12.04	9	2.23	11507	10.23	2.53	13082	38.7	51.1	14573	3.88

Plant Yates CT-121 Demonstration Project Proximate Coal Analyses

BURN DATE	TONNAGE	As Burned				Dry Basis					M&A FREE	SO_2
		MOIST	ASH	SULFUR	BTU/lb	ASH	SULFUR	BTU/lb	VOL	FIXED C	BTU/lb	lb/MMBTU
04/16/93	859	13.36	8.85	2.2	11328	10.21	2.54	13076	38.7	51.1	14562	3.88
04/17/93	703	12.08	8.96	2.3	11461	10.19	2.61	13036	38.9	50.9	14515	4.01
04/18/93	634	11.07	9.3	2.27	11606	10.46	2.56	13051	38.4	51.1	14575	3.91
04/19/93	1203	12.12	8.81	2.35	11448	10.02	2.68	13027	39.3	50.7	14478	4.11
04/20/93	548	12.59	9.09	2.26	11372	10.4	2.58	13010	39.4	50.2	14520	3.97
04/21/93	842	12.55	9.27	2.26	11325	10.6	2.58	12950	39.2	50.3	14486	3.99
04/22/93	534	11.98	9.27	2.29	11415	10.53	2.61	12969	39	50.5	14495	4.01
04/23/93	941	11.33	9.39	2.32	11553	10.59	2.62	13029	38.5	50.9	14573	4.02
04/24/93	917	11.5	9.2	2.34	11506	10.4	2.64	13002	38.8	50.8	14511	4.07
04/25/93	1150	12.04	9.22	2.38	11457	10.48	2.7	13025	38.7	50.8	14550	4.15
04/26/93	715	11.75	9.22	2.28	11518	10.45	2.59	13051	38.9	50.7	14574	3.96
04/27/93	930	11.6	8.99	2.32	11538	10.17	2.62	13052	39.5	50.3	14529	4.02
04/28/93	429	11.68	9.21	2.33	11497	10.43	2.64	13018	39	50.5	14534	4.05
06/01/93	989	11.81	8.95	2.23	11338	10.15	2.53	12857	39	50.9	14309	3.93
06/02/93	534	10.96	8.86	2.29	11623	9.95	2.57	13055	39.3	50.7	14497	3.94
06/03/93	529	11.6	8.8	2.29	11556	9.96	2.59	13073	39	51.1	14519	3.96
06/04/93	979	11.86	8.75	2.32	11491	9.93	2.63	13038	39.4	50.7	14475	4.04
06/05/93	1063	11.27	8.84	2.36	11507	9.96	2.66	12969	39.7	50.4	14403	4.1
06/06/93	1081	10.79	9.03	2.35	11545	10.12	2.63	12940	39.4	50.5	14398	4.07
06/07/93	644	10.59	9.13	2.34	11572	10.21	2.62	12943	39.5	50.3	14414	4.04
06/08/93	813	9.77	9.24	2.34	11725	10.24	2.59	12994	39.1	50.7	14477	3.99
06/09/93	300	6.91	9.5	1.84	12481	10.21	1.98	13407	36.1	53.7	14932	2.95
06/10/93	247	9.85	9.24	2.37	11696	10.25	2.63	12974	39.1	50.7	14456	4.05
06/12/93	227	10.22	8.91	2.23	11864	9.92	2.49	13215	38.1	51.9	14670	3.76
06/13/93	610	11.16	9.02	2.24	11621	10.15	2.52	13081	38.8	51.1	14559	3.86
06/14/93	962	11.15	9.1	2.23	11601	10.24	2.51	13058	38.4	51.4	14547	3.84
06/15/93	956	11.34	9.05	2.38	11544	10.21	2.68	13021	38.7	51.1	14501	4.12
06/16/93	755	10.96	8.93	2.38	11583	10.03	2.67	13009	39.5	50.5	14459	4.11
06/17/93	596	9.33	9.3	2.22	11896	10.26	2.45	13121	38	51.7	14621	3.73
06/18/93	1196	10.5	9.47	2.35	11640	10.58	2.62	13006	38.5	50.9	14544	4.04
06/19/93	851	12.39	9.43	2.54	11215	10.76	2.9	12802	39	50.2	14345	4.53
06/20/93	517	11.49	10.09	2.41	11309	11.4	2.72	12777	38.2	50.5	14422	4.26
06/21/93	910	11.89	9.24	2.43	11330	10.49	2.76	12859	39	50.5	14366	4.29
06/22/93	1260	11.68	9.62	2.43	11340	10.89	2.75	12840	38.2	50.9	14410	4.29
06/23/93	801	11.11	9.38	2.41	11464	10.55	2.71	12897	39.2	50.2	14418	4.2
06/24/93	1521	12.76	9.33	2.49	11200	10.7	2.85	12838	38.9	50.4	14377	4.45
06/26/93	1218	11.75	10.26	2.36	11186	11.63	2.68	12675	37.9	50.5	14343	4.22
06/27/93	1120	11.5	10.92	2.38	11196	12.34	2.69	12651	37.8	49.9	14432	4.25
06/28/93	958	12.58	10.95	2.28	11024	12.53	2.6	12610	38	49.5	14417	4.14
06/29/93	1171	13.12	9.8	2.41	11094	11.28	2.76	12769	38.5	50.2	14393	4.34
06/30/93	1188	13.66	9.27	2.45	11103	10.74	2.84	12859	38.7	50.5	14406	4.41

Plant Yates CT-121 Demonstration Project Proximate Coal Analyses

BURN DATE	TONNAGE	As Burned MOIST	ASH	SULFUR	BTU/lb	Dry Basis ASH	SULFUR	BTU/lb	VOL	FIXED C	M&A FREE BTU/lb	SO_2 lb/MMBTU
07/01/93	1119	12.9	9.39	2.45	11144	10.78	2.81	12794	38.7	50.5	14339	4.4
07/02/93	1285	12.59	9.5	2.45	11209	10.94	2.81	12823	38.1	51	14399	4.37
07/03/93	1081	13.07	9.66	2.43	11174	11.11	2.8	12855	38.2	50.7	14461	4.35
07/04/93	598	11.85	9.76	2.45	11296	11.07	2.78	12815	38.3	50.6	14410	4.34
07/05/93	816	12.24	9.7	2.44	11230	11.05	2.78	12796	38.4	50.5	14385	4.35
07/06/93	766	11.3	9.76	2.41	11355	11	2.72	12801	38.2	50.8	14383	4.24
07/07/93	1074	10.07	9.78	2.36	11705	10.88	2.62	13015	37.7	51.5	14604	4.03
07/08/93	665	11.62	9.9	2.54	11205	11.2	2.87	12769	38.9	49.9	14379	4.5
07/09/93	707	12.85	9.8	2.56	11149	11.25	2.94	12792	38.9	49.9	14414	4.59
07/10/93	769	10.38	9.6	2.19	11740	10.71	2.45	13100	37.5	51.8	14672	3.73
07/11/93	784	11.91	9.85	2.44	11339	11.18	2.77	12871	38.5	50.3	14491	4.3
07/12/93	864	11.75	10.04	2.46	11319	11.38	2.78	12825	38.3	50.4	14472	4.35
07/13/93	690	12.93	9.33	2.39	11215	10.72	2.75	12881	38.7	50.6	14428	4.26
07/14/93	785	12.98	9.18	2.31	11266	10.55	2.66	12947	38.3	51.2	14474	4.1
07/15/93	988	13.54	8.99	2.36	11176	10.4	2.73	12925	38.6	51	14425	4.22
07/16/93	815	11.66	9.27	2.15	11544	10.49	2.43	13067	37.6	51.9	14599	3.72
07/17/93	1147	13.5	9.06	2.41	11143	10.47	2.79	12882	39	50.5	14388	4.33
07/18/93	642	13.8	8.92	2.36	11106	10.35	2.74	12884	38.8	50.9	14371	4.25
07/19/93	889	13.47	8.82	2.33	11195	10.19	2.69	12938	38.8	51	14406	4.16
07/20/93	1082	11.94	8.88	2.51	11403	10.09	2.85	12950	38.8	51.1	14404	4.4
07/21/93	829	12.39	8.99	2.44	11339	10.26	2.78	12942	38.8	51	14422	4.3
07/23/93	612	11.32	9.15	2.42	11505	10.32	2.73	12973	38.5	51.2	14466	4.21
07/24/93	593	11.31	9.14	2.4	11480	10.31	2.71	12944	38.9	50.8	14432	4.18
07/25/93	975	10.86	9.11	2.3	11613	10.22	2.58	13028	38.4	51.4	14512	3.96
07/26/93	1187	11.34	9.58	2.58	11428	10.8	2.91	12890	38.7	50.5	14451	4.52
07/28/93	600	9.78	9.87	2.19	11680	10.94	2.43	12947	37.9	51.2	14537	3.75
07/29/93	951	12.09	8.92	2.25	11467	10.15	2.56	13043	38.5	51.3	14517	3.92
07/30/93	982	11.9	8.92	2.21	11498	10.12	2.51	13050	38.4	51.5	14520	3.84
07/31/93	803	12.15	9.03	2.42	11379	10.28	2.75	12953	38.7	51	14437	4.25
08/01/93	802	12.01	8.77	2.29	11463	9.97	2.61	13028	38.8	51.3	14470	4
08/02/93	755	11.14	9.41	2.28	11540	10.59	2.57	12987	37.8	51.6	14425	3.95
08/03/93	746	11.76	8.67	2.23	11548	9.83	2.53	13087	38.3	51.9	14514	3.86
08/04/93	735	11.61	9.01	2.34	11540	10.19	2.65	13055	38.3	51.6	14536	4.06
08/05/93	390	11.76	9	2.35	11499	10.2	2.66	13032	38.3	51.5	14512	4.09
08/08/93	300	14.28	8.85	2.6	11081	10.32	3.04	12927	38.8	50.8	14414	4.69
08/09/93	1002	12.72	8.91	2.37	11360	10.21	2.72	13016	38.1	51.7	14496	4.17
08/10/93	577	13.29	9.05	2.06	11282	10.44	2.37	13011	37.4	52.1	14527	3.65
08/11/93	792	11.82	8.83	2.37	11538	10.01	2.68	13085	38.3	51.7	14541	4.11
08/12/93	729	12.62	8.59	2.38	11406	9.83	2.73	13053	38.5	51.7	14476	4.17
08/13/93	860	12.25	8.73	2.28	11535	9.95	2.59	13145	38.1	52	14597	3.95
08/14/93	677	12.36	10.42	2.31	11155	11.89	2.64	12.728	37.5	50.6	14445	4.14

Plant Yates CT-121 Demonstration Project Proximate Coal Analyses

BURN DATE	TONNAGE	As Burned				Dry Basis					M&A FREE	SO_2
		MOIST	ASH	SULFUR	BTU/lb	ASH	SULFUR	BTU/lb	VOL	FIXED C	BTU/lb	lb/MMBTU
08/15/93	721	12.7	9.87	2.84	11245	11.3	3.25	12880	37.9	50.8	14521	5.05
08/16/93	832	12.53	8.85	2.16	11474	10.12	2.47	13118	37.9	52	14595	3.77
08/17/93	804	11.14	9.38	2.24	11564	10.56	2.52	13015	37.6	51.8	14551	3.87
08/18/93	855	12.09	9.93	2.23	11280	11.29	2.53	12831	37.5	51.2	14465	3.95
08/19/93	666	11.4	9.6	2.28	11449	10.83	2.57	12922	37.8	51.4	14491	3.98
08/20/93	909	11.47	10.17	2.39	11368	11.49	2.7	12841	38.2	50.3	14508	4.2
08/21/93	655	10.78	10.44	2.26	11464	11.7	2.54	12849	37.5	50.8	14551	3.94
08/23/93	724	8.31	11.27	1.76	11971	12.29	1.92	13055	34.4	53.3	14885	2.94
08/24/93	762	10.72	10.69	2.39	11388	11.97	2.68	12756	37.4	50.6	14491	4.2
08/25/93	794	10.7	10.77	2.3	11434	12.06	2.57	12804	37.2	50.7	14560	4.02
08/26/93	827	10.92	10.58	2.33	11412	11.88	2.62	12811	37.2	50.9	14538	4.08
08/27/93	852	11.06	10.29	2.47	11392	11.57	2.77	12809	37.5	50.9	14485	4.34
08/28/93	466	11.87	10.66	2.36	11216	12.1	2.68	12726	37.7	50.2	14477	4.21
08/29/93	1106	10.89	10.35	2.32	11405	11.62	2.61	12800	37.8	50.6	14483	4.07
08/30/93	772	10.1	9.08	2.31	11690	10.1	2.57	13004	38.5	51.4	14465	3.95
08/31/93	614	10.88	9.38	2.46	11481	10.53	2.76	12882	38.7	50.8	14398	4.29
09/01/93	906	10.71	10.13	2.43	11460	11.34	2.72	12835	37.8	50.9	14477	4.24
09/02/93	1071	10.92	10.08	2.45	11439	11.32	2.75	12842	37.9	50.8	14481	4.28
09/03/93	671	10.96	9.99	2.42	11420	11.22	2.72	12827	37.9	50.9	14448	4.24
09/04/93	497	11.25	9.69	2.4	11394	10.92	2.71	12839	38.1	51	14413	4.21
09/07/93	280	10.64	10.23	2.4	11408	11.45	2.69	12767	37.1	51.5	14418	4.21
09/13/93	412	11.08	10.3	2.59	11386	11.58	2.92	12805	38.7	49.7	14482	4.55
09/14/93	1051	11.15	10.32	2.6	11345	11.61	2.93	12768	38.6	49.8	14446	4.58
09/15/93	716	10.38	10.69	2.41	11495	11.93	2.69	12826	37.2	50.8	14563	4.19
09/16/93	689	9.83	10.5	2.31	11614	11.64	2.56	12880	37.2	51.2	14576	3.98
09/17/93	623	11.13	10.46	2.47	11364	11.77	2.78	12788	37.8	50.5	14494	4.35
09/18/93	1143	11.06	10.47	2.55	11388	11.77	2.86	12804	37.8	50.5	14512	4.48
09/19/93	1019	11.06	10.3	2.47	11411	11.58	2.78	12830	38.6	49.8	14510	4.33
09/20/93	693	10.01	9.79	1.82	11760	10.88	2.02	13067	36.9	52.2	14662	3.1
09/21/93	1120	13.3	9.49	2.23	11205	10.95	2.57	12924	38.1	51	14513	3.98
09/22/93	892	12.53	10.45	2.22	11142	11.95	2.54	12738	37.4	50.7	14467	3.98
09/23/93	864	12.87	9.51	2.25	11273	10.91	2.58	12937	37.5	51.6	14522	3.99
09/24/93	715	12.32	10	2.14	11267	11.41	2.45	12849	37.6	51	14504	3.8
09/25/93	757	12.87	9.69	2.33	11187	11.12	2.67	12839	37.9	51	14445	4.17
09/26/93	788	12.58	9.9	2.5	11174	11.33	2.86	12782	38.3	50.4	14415	4.47
09/27/93	1288	11.95	9.93	2.43	11314	11.28	2.76	12849	37.9	50.8	14482	4.3
09/28/93	577	10.53	10.49	2.45	11469	11.73	2.74	12819	38	50.3	14522	4.27
09/29/93	1283	12.45	9.39	2.52	11305	10.73	2.88	12913	38.7	50.6	14465	4.46
10/04/93	869	11.06	9.43	2.47	11494	10.6	2.77	12923	38.4	51	14455	4.3
10/05/93	910	11.1	9.51	2.47	11461	10.7	2.78	12892	38.4	50.9	14437	4.31
10/06/93	1430	12.61	9.63	2.52	11216	11.02	2.88	12835	38.6	50.4	14425	4.49

Plant Yates CT-121 Demonstration Project Proximate Coal Analyses

BURN DATE	TONNAGE	As Burned				Dry Basis					M&A FREE	SO_2
		MOIST	ASH	SULFUR	BTU/lb	ASH	SULFUR	BTU/lb	VOL	FIXED C	BTU/lb	lb/MMBTU
10/07/93	1038	12.35	9.48	2.53	11267	10.81	2.89	12854	38.7	50.5	14412	4.49
10/08/93	1131	12.46	9.31	2.34	11282	10.64	2.67	12887	38.3	51	14421	4.15
10/09/93	1015	11.71	9.23	2.37	11420	10.45	2.68	12935	38.7	50.8	14444	4.15
10/10/93	1198	12.29	8.93	2.48	11409	10.18	2.83	13007	38.7	51.1	14481	4.35
10/11/93	1210	12.89	9	2.56	11232	10.33	2.94	12894	38.9	50.8	14379	4.56
10/12/93	997	11.57	9.59	2.41	11414	10.85	2.73	12907	38.6	50.6	14478	4.22
10/13/93	1029	11.68	9.83	2.38	11403	11.13	2.7	12911	38.2	50.7	14528	4.17
10/14/93	973	10.64	9.75	2.47	11470	10.91	2.77	12836	38.4	50.7	14408	4.31
10/15/93	1203	11.08	9.6	2.42	11477	10.8	2.72	12907	38.6	50.6	14470	4.22
10/16/93	822	11.96	9.34	2.4	11322	10.61	2.73	12861	38.8	50.6	14387	4.24
10/17/93	1037	11.51	9.57	2.41	11348	10.82	2.72	12825	38.7	50.5	14381	4.25
10/18/94	1120	11.25	9.47	2.43	11421	10.67	2.74	12869	38.7	50.6	14406	4.26
10/19/93	795	11.53	9.61	2.5	11393	10.86	2.82	12877	38.8	50.4	14446	4.39
10/23/93	867	12.71	9.61	2.39	11188	11.01	2.74	12817	38.2	50.8	14403	4.27
10/24/93	1199	12.33	9.04	2.3	11335	10.31	2.62	12930	38.5	51.2	14416	4.06
10/25/93	998	12.8	8.79	2.29	11377	10.08	2.63	13047	38.7	51.2	14510	4.03
10/26/93	1011	12.9	8.68	2.35	11321	9.96	2.69	12998	38.8	51.2	14435	4.15
10/27/93	796	12.4	8.76	2.26	11381	10	2.58	12992	38.7	51.3	14436	3.97
10/28/93	899	12.47	8.73	2.31	11375	9.97	2.64	12997	38.7	51.3	14436	4.06
10/29/93	1089	11.85	8.96	2.19	11416	10.17	2.49	12951	38	51.9	14417	3.84
10/30/93	1125	14.16	8.47	2.15	11166	9.87	2.51	13009	37.8	52.3	14434	3.85
10/31/93	696	13.86	8.62	2.29	11157	10.01	2.66	12952	38.2	51.8	14393	4.11
11/01/93	1064	12.71	8.94	2.22	11312	10.24	2.54	12958	38.2	51.5	14437	3.93
11/02/93	866	13.29	8.79	2.29	11302	10.14	2.64	13035	38.3	51.6	14506	4.05
11/03/93	1004	13	8.93	2.29	11285	10.27	2.63	12972	38.3	51.4	14457	4.06
11/04/93	1084	13.56	8.71	2.21	11291	10.08	2.56	13062	38.4	51.5	14527	3.91
11/28/93	435	13.48	8.76	2.26	11188	10.12	2.61	12931	38.8	51.1	14387	4.04
11/29/93	837	12.91	9.34	2.24	11280	10.72	2.57	12952	38.3	51	14507	3.97
12/01/93	494	12.95	9.48	2.56	11239	10.89	2.94	12911	39.1	50	14488	4.56
12/02/93	1292	13	9.66	2.6	11216	11.1	2.99	12892	39	49.9	14502	4.64
12/03/93	976	12.9	9.71	2.56	11172	11.15	2.94	12827	39	49.9	14436	4.58
12/04/93	759	12.41	9.63	2.47	11307	11	2.82	12909	38.8	50.2	14504	4.37
12/05/93	930	13.65	9.53	2.38	11160	11.04	2.75	12924	38.7	50.2	14528	4.27
12/06/93	772	11.9	9.77	2.51	11352	11.09	2.85	12886	39	50	14493	4.42
12/07/93	695	12.23	9.86	2.46	11.338	11.23	2.8	12918	38.8	50	14552	4.34
12/08/93	991	12.63	9.92	2.43	11237	11.35	2.78	122862	38.7	50	14509	4.32
12/09/93	792	12.01	9.78	2.5	11367	11.13	2.84	12919	38.8	50	14537	4.4
12/10/93	613	13.67	9.32	2.29	11203	10.8	2.65	12976	38.7	50.5	14547	4.09
12/11/93	1122	13.43	9.48	2.31	11206	10.95	2.67	12945	38.7	50.4	14536	4.12
12/12/93	825	12.67	9.75	2.41	11279	11.16	2.76	12916	38.4	50.4	14538	4.27
12/13/93	1143	12.43	9.9	2.45	11233	11.31	2.8	12827	38.3	50.4	1446	34.36

Plant Yates CT-121 Demonstration Project Proximate Coal Analyses

BURN DATE	TONNAGE	As Burned				Dry Basis					M&A FREE	SO_2
		MOIST	ASH	SULFUR	BTU/lb	ASH	SULFUR	BTU/lb	VOL	FIXED C	BTU/lb	lb/MMBTU
12/14/93	351	12.09	9.13	2.47	11435	10.39	2.8	13008	38.8	50.8	14517	4.32
12/15/93	717	13.29	9.27	2.6	11217	10.69	3	12937	38.7	50.7	14485	4.64
12/16/93	837	12.5	9.35	2.54	11225	10.69	2.91	12827	39	50.3	14363	4.53
12/17/93	569	12.44	9.3	2.53	11368	10.62	2.88	12983	39	50.4	14526	4.45
12/18/93	1522	12.89	9.02	2.54	11324	10.36	2.92	13001	39.2	50.4	14503	4.49
12/19/93	676	12.88	9.17	2.58	11340	10.52	2.96	13017	39.2	50.3	14547	4.55
12/20/93	896	13.12	9.2	2.55	11162	10.59	2.94	12848	39.1	50.3	14369	4.57
12/21/93	1339	13.58	9.06	2.62	11187	10.48	3.03	12946	39.5	50	14462	4.68
12/22/93	621	13.77	9.23	2.56	11175	10.7	2.96	12959	39.5	49.8	14511	4.58
12/23/93	438	14.25	9.12	2.5	10978	10.63	2.92	12802	39.5	49.9	14325	4.55
12/25/93	98	13.75	9.33	2.52	11140	10.82	2.92	12916	39.1	50.1	14483	4.52
12/26/93	897	13.79	9.17	2.44	11145	10.64	2.83	12928	39.3	50.1	14467	4.38
12/27/93	506	12.26	10.07	2.49	11348	11.48	2.84	12934	38.6	50	14611	4.39
12/28/93	666	12.42	10.12	2.5	11228	11.55	2.86	12821	38.4	50	14495	4.45
12/29/93	487	12.17	10.3	2.39	11287	11.73	2.72	12851	38.4	49.9	14559	4.23
12/30/93	689	12.02	9.65	2.39	11291	10.97	2.72	12834	39	50.1	14415	4.23
12/31/93	932	12.15	9.67	2.38	11265	11.01	2.71	12823	38.8	50.2	14409	4.23
01/02/94	1229	12.48	9.71	2.25	11252	11.09	2.57	12857	38.3	50.6	14461	4
01/03/94	331	12.83	10.01	2.23	11163	11.48	2.56	12807	38.2	50.3	14468	4
01/05/94	501	14.07	9.43	2.28	11056	10.97	2.66	12866	38.3	50.7	14451	4.12
01/06/94	666	14.98	9.4	2.27	10919	11.06	2.67	12844	38.3	50.6	14441	4.16
01/07/94	832	14.04	9.48	2.29	10997	11.03	2.66	12793	38.6	50.4	14379	4.16
01/08/94	661	14.44	9.47	2.26	10913	11.07	2.65	12755	38.5	50.4	14342	4.14
01/09/94	685	13.81	9.84	2.22	10847	11.42	2.57	12585	38.3	50.3	14207	4.09
01/10/94	620	12.75	9.76	2.36	11116	11.19	2.71	12740	38.6	50.3	14346	4.25
01/11/94	418	12.8	9.47	2.37	11086	10.86	2.72	12714	38.5	50.6	14263	4.28
01/12/94	913	14.92	9.36	2.29	10869	11	2.69	12775	37.9	51.1	14354	4.21
01/12/00	720	13.23	9.83	2.14	11169	11.33	2.47	12872	37.1	51.5	14516	3.83
01/14/94	641	13.85	9.91	2.26	10959	11.5	2.63	12721	37.9	50.6	14374	4.12
01/15/94	1352	14.05	9.7	2.23	10968	11.28	2.59	12760	38.1	50.6	14382	4.07
01/16/94	817	11.94	10.58	2.2	11266	12.02	2.5	12793	37.2	50.7	14541	3.91
01/17/94	666	12.59	10.7	2.31	11003	12.24	2.65	12588	38	49.8	14344	4.2
01/18/94	846	13.01	10.53	2.39	11056	12.1	2.75	12710	38.5	49.4	14459	4.32
01/19/94	744	12.67	10.25	2.36	11152	11.74	2.71	12770	37.9	50.3	14469	4.23
01/20/94	604	9.93	10.69	1.95	11716	11.87	2.17	13008	37.1	51	14760	3.33
01/21/94	540	8.98	10.13	1.71	12058	11.13	1.88	13249	35.9	52.9	14908	2.84
01/24/94	208	12.22	10.8	1.99	11185	12.3	2.27	12742	37.3	50.5	14529	3.56
01/25/94	331	8.18	9.89	3.59	12058	10.77	3.91	13132	40.7	48.6	14717	5.95
01/26/94	480	7.87	9.99	4.49	12122	10.84	4.87	13158	41.9	47.3	14758	7.41
01/27/94	1060	7.56	10.07	4.38	12141	10.89	4.73	13134	42	47.1	14740	7.22
01/28/94	780	10.85	9.65	4.23	11745	10.82	4.74	13175	42.3	46.8	14774	7.2

Plant Yates CT-121 Demonstration Project Proximate Coal Analyses

BURN DATE	TONNAGE	As Burned				Dry Basis					M&A FREE	SO_2
		MOIST	ASH	SULFUR	BTU/lb	ASH	SULFUR	BTU/lb	VOL	FIXED C	BTU/lb	lb/MMBTU
01/29/94	417	9.54	9.74	4.22	11913	10.77	4.67	13169	42.5	46.7	14758	7.08
01/30/94	478	9.2	9.79	4.17	11941	10.78	4.59	13150	42.5	46.7	14739	6.98
02/01/94	980	8.14	10.04	4.2	12049	10.93	4.57	13117	42.1	47	14727	6.97
02/02/94	761	8.06	10.08	4.2	12052	10.96	4.57	13108	41.4	47.7	14722	6.97
02/03/94	747	7.94	9.96	4.4	12045	10.82	4.78	13084	41.7	47.5	14671	7.31
02/04/94	526	7.7	9.9	4.36	12071	10.73	4.73	13078	41.4	47.9	14650	7.22
02/05/94	493	10.8	9.77	4.19	11670	10.95	4.69	13083	41.1	47.9	14692	7.18
02/06/94	453	9.55	9.74	4.28	11843	10.77	4.73	13094	41.4	47.8	14675	7.23
02/07/94	650	9.01	9.74	4.32	11950	10.7	4.75	13133	41.1	47.9	14707	7.23
02/08/94	834	9.16	9.86	4.28	11862	10.85	4.71	13058	42.5	46.6	14647	7.22
02/09/94	795	8.73	9.94	4.28	11953	10.89	4.69	13096	41.3	47.9	14696	7.16
02/10/94	574	9.28	9.58	4.31	11820	10.56	4.75	13029	41.6	47.8	14567	7.29
02/11/94	734	10.83	9.43	4.21	11746	10.57	4.72	13173	41.6	47.8	14730	7.17
02/12/94	749	9.97	10.05	4.4	11769	11.16	4.88	13073	41.4	47.4	14715	7.48
02/13/94	645	8.63	10.09	4.43	11981	11.04	4.85	13112	41.5	47.4	14740	7.4
02/14/94	587	9.01	9.79	4.24	11922	10.76	4.66	13102	40.8	48.4	14682	7.11
02/15/94	481	7.19	10.62	4.38	12118	11.44	4.72	13057	40.6	48	14743	7.23
02/16/94	962	9.23	9.64	4.02	11935	10.62	4.43	13149	40.7	48.7	4711	6.74
02/17/94	656	7.75	9.79	4.15	12094	10.61	4.5	13111	41	48.4	14667	6.86
02/18/94	1057	7.93	10.2	4.02	11977	11.08	4.37	13009	40.4	48.5	14630	6.71
02/19/94	946	10.23	10.57	3.12	11530	11.78	3.47	12844	38.7	49.5	14559	5.41
03/01/94	1928	9.88	11.88	3.22	11429	13.18	3.57	12682	38.5	48.4	14608	5.63
03/02/94	787	14.09	10.26	3.14	11005	11.94	3.66	12810	39	49	14547	5.71
03/03/94	1086	11.02	9.97	3.27	11539	11.2	3.68	12969	38.7	50.1	14604	5.67
03/04/94	472	10.84	9.43	2.47	22564	10.58	2.77	12970	38.7	50.7	14505	4.27
03/05/94	1302	11.48	9.44	2.43	11435	10.66	2.75	12918	38.8	50.6	14460	4.25
03/06/94	1382	11.15	9.68	2.45	11428	10.89	2.76	12863	38.7	50.4	14435	4.29
03/07/94	771	11.63	9.33	2.33	11420	10.56	2.64	12922	38.6	50.8	14447	4.08
03/08/94	548	11.27	9.44	2.34	11508	10.64	2.63	12970	38.5	50.8	14514	4.07
03/11/94	521	11.97	9.37	2.39	11405	10.64	2.71	12956	39.1	50.2	14499	4.19
03/12/94	792	13.4	9.07	2.39	11195	10.47	2.76	12927	39.5	50.1	14439	4.27
03/13/94	890	13.39	9.22	2.38	11200	10.65	2.74	12931	39.3	50.1	14473	4.25
03/14/94	607	12.52	9.47	2.41	11333	10.82	2.76	12955	39.5	49.7	14526	4.25
03/15/94	831	12.11	9.28	2.44	11361	10.56	2.78	12926	39.7	49.7	14453	4.3
03/16/94	1022	12.1	9.53	2.53	11309	10.84	2.87	12866	39.4	49.8	14431	4.47
03/17/94	376	11.6	9.75	2.52	11311	11.03	2.85	12796	39.4	49.5	14382	4.46
03/18/94	485	11.65	9.41	2.47	11409	10.65	2.79	12913	39.5	49.9	14452	4.33
03/19/94	732	12	9.27	2.45	11329	10.54	2.78	12875	39.4	50.1	14391	4.33
03/20/94	1134	11.87	9.23	2.37	11394	10.47	2.69	12928	39.5	50.1	14440	4.16
03/21/94	1016	12.01	9.25	2.41	11387	10.51	2.74	12941	39.5	50	14461	4.23
03/22/94	1105	11.79	9.43	2.41	11368	10.69	2.74	12888	39.5	49.8	14430	4.24

Plant Yates CT-121 Demonstration Project Proximate Coal Analyses

BURN DATE	TONNAGE	As Burned MOIST	ASH	SULFUR	BTU/lb	Dry Basis ASH	SULFUR	BTU/lb	VOL	FIXED C	M&A FREE BTU/lb	SO_2 lb/MMBTU
03/23/94	1137	11.73	9.52	2.33	11388	10.78	2.64	12902	39.2	50	14461	4.09
04/12/94	509	12.85	8.93	2.49	11307	10.25	2.86	12974	38.7	51.1	14456	4.4
04/13/94	1032	14.59	9.06	2.37	11004	10.61	2.77	12885	38.4	51	14414	4.31
04/14/94	205	8.76	9.94	4.2	11905	10.89	4.6	13048	40.6	48.5	14643	7.06
04/18/94	397	12.33	9.39	2.42	11260	10.71	2.76	12844	38.4	50.9	14385	4.3
04/19/94	943	12.31	9.21	2.57	11249	10.5	2.93	12827	38.5	51	14332	4.57
04/20/94	905	12.72	9.24	2.67	11222	10.59	3.06	12858	39.1	50.3	14381	4.76
04/21/94	976	12.02	9.38	2.59	11291	10.66	2.94	12834	38.7	50.6	14365	4.59
04/22/94	673	12.21	9.42	2.54	11294	10.73	2.89	12865	38.4	50.9	14411	4.5
04/23/94	470	11.97	9.63	2.5	11306	10.94	2.84	12843	38.5	50.6	14420	4.42
04/24/94	696	11.75	9.65	2.54	11367	10.93	2.88	12881	38	51	14462	4.47
04/25/94	508	11.61	9.52	2.45	11418	10.77	2.77	12918	38.4	50.8	14477	4.29
04/26/94	435	11.83	9.65	2.41	11341	10.95	2.73	12864	37.7	51.4	14446	4.25
04/27/94	639	12.87	9.29	2.42	11228	10.66	2.78	12886	38.4	51	14423	4.31
04/28/94	1259	12.61	9.28	2.45	11312	10.62	2.8	12943	38.2	51.2	14481	4.33
04/29/94	1274	12.38	9.37	2.4	11319	10.69	2.74	12918	38.4	50.9	14464	4.24
04/30/94	868	12.2	9.32	2.42	11267	10.62	2.75	12833	38.6	50.8	14358	4.3
05/01/94	916	12.32	9.17	2.79	11282	10.46	3.18	12868	39.7	49.8	14371	4.95
05/02/94	779	11.65	9.43	2.67	11334	10.67	3.02	12829	39.1	50.3	14361	4.71
05/03/94	543	13.09	9.18	2.47	11201	10.56	2.84	12888	39.1	50.3	14410	4.41
05/04/94	1140	13.86	9.28	2.43	11091	10.77	2.82	12876	38.5	50.8	14430	4.38
05/05/94	850	14.08	9.17	2.37	11101	10.67	2.75	12920	38.4	51	14463	4.27
05/06/94	922	12.81	9.4	2.45	11211	10.78	2.81	12858	38.6	50.6	14411	4.37
05/07/94	1036	11.73	9.99	2.44	11285	11.32	2.77	12785	38.3	50.4	14417	4.32
05/08/94	338	14.38	9.56	2.32	10996	11.17	2.71	12842	38.7	50.2	14457	4.22
05/09/94	898	14.11	9.34	2.44	10990	10.87	2.84	12795	38.3	50.9	14356	4.44
05/10/94	693	13.01	9.26	2.73	11174	10.65	3.13	12845	38.8	50.5	14376	4.89
05/11/94	634	13.09	9.13	2.73	11119	10.5	3.14	12794	39	50.5	14295	4.91
05/12/94	518	11.93	9.3	2.8	11267	10.56	3.18	12794	38.6	50.8	14304	4.97
05/13/94	708	12.13	9.44	2.74	11229	10.74	3.12	12779	39.4	49.9	14316	4.88
05/14/94	931	11.97	9.32	2.75	11292	10.59	3.12	12827	39.4	50	14346	4.87
05/15/94	1096	13.47	9.2	2.65	11131	10.63	3.06	12863	39.2	50.1	14393	4.76
05/16/94	1332	12.74	9.26	2.55	11313	10.61	2.92	12964	38.2	51.2	14503	4.51
05/17/94	1243	12.33	9.11	2.49	11381	10.39	2.84	12982	38.3	51.3	14487	4.38
05/18/94	799	11.73	9.38	2.52	11376	10.63	2.86	12887	38.7	50.7	14420	4.43
05/20/94	778	10.93	9.51	2.58	11491	10.68	2.9	12902	39	50.4	14445	4.49
05/21/94	1070	11.31	9.37	2.56	11407	10.57	2.88	12861	38.8	50.6	14382	4.49
05/22/94	1036	11.11	9.4	2.49	11457	10.58	2.8	12889	38.4	51	14414	4.35
05/23/94	1313	11.19	9.56	2.56	11428	10.77	2.89	12868	39.2	50	14421	4.48
05/24/94	902	10.91	9.6	2.63	11439	10.78	2.95	12839	38.6	50.7	14391	4.6
05/25/94	751	11.88	9.23	2.68	11311	10.48	3.04	12836	39.2	50.3	14339	4.74

Plant Yates CT-121 Demonstration Project Proximate Coal Analyses

BURN DATE	TONNAGE	As Burned				Dry Basis					M&A FREE	SO_2
		MOIST	ASH	SULFUR	BTU/lb	ASH	SULFUR	BTU/lb	VOL	FIXED C	BTU/lb	lb/MMBTU
05/26/94	1083	11.76	9.53	2.61	11307	10.8	2.95	12814	39	50.2	14365	4.62
05/31/94	978	12.15	9.37	2.42	11327	10.66	2.75	12893	38.7	50.7	14431	4.27
06/01/94	337	11.69	9.49	2.4	11362	10.75	2.72	12866	38.8	50.5	14416	4.22
06/06/94	111	11.98	9.12	2.38	11398	10.36	2.71	12950	38.5	51.2	14446	4.18
06/07/94	450	12.14	9.23	2.43	11318	10.5	2.76	12882	38.7	50.8	14393	4.29
06/08/94	901	13.15	9.03	2.41	11218	10.4	2.78	12916	38.8	50.8	14415	4.3
06/09/94	666	12.17	9.25	2.4	11339	10.53	2.73	12909	38.9	50.5	14429	4.23
06/10/94	567	11.69	9.25	2.39	11418	10.47	2.71	12928	38.5	51	14440	4.19
06/11/94	652	11.53	9.33	2.37	11374	10.54	2.68	12856	38.7	50.8	14371	4.17
06/12/94	707	11.34	9.27	2.48	11384	10.45	2.8	12839	38.5	51.1	14337	4.36
06/13/94	658	11.23	9.36	2.42	11417	10.55	2.73	12862	38.6	50.8	14379	4.24
06/14/94	272	11.87	9.34	2.42	11353	10.6	2.75	12883	38.7	50.7	14410	4.26
06/15/94	870	11.53	9.7	2.52	11360	10.96	2.84	12840	38.5	50.5	14420	4.44
06/16/94	930	12.23	9.36	2.43	11338	10.66	2.77	12918	38.8	50.6	14460	4.29
06/17/94	654	12.56	8.43	2.26	11383	9.64	2.59	13018	39	51.3	0	3.97
06/20/94	943	11.49	8.61	2.24	11534	9.73	2.53	13031	38.5	51.8	14436	3.88
06/21/94	705	10.62	9.29	2.25	11596	10.39	2.52	12975	38.4	51.2	14479	3.88
06/22/94	1141	12.5	8.93	2.43	11318	10.21	2.77	12935	38.7	51.1	14406	4.29
06/23/94	817	12.16	8.93	2.26	11314	10.17	2.57	12880	39.1	50.8	14338	4
06/24/94	463	13.11	8.97	2.31	11255	10.32	2.66	12954	39	50.6	14444	4.1
06/25/94	788	12.57	9.1	2.43	11325	10.41	2.78	12953	39.3	50.3	14458	4.29
06/26/94	541	11.88	9.23	2.41	11272	10.47	2.73	12791	39.1	50.4	14287	4.28
06/27/94	699	11.83	9.27	2.42	11402	10.51	2.74	12932	39	50.5	14451	4.24
06/28/94	627	11.55	9.49	2.45	11413	10.73	2.77	12903	38.5	50.7	14453	4.29
06/29/94	854	11.36	9.43	2.42	11449	10.64	2.74	12916	38.4	50.9	14454	4.23
06/30/94	525	13.59	8.99	2.41	11172	10.4	2.79	12930	38.8	50.8	14430	4.31
07/01/94	586	11.5	9.26	2.5	11382	10.46	2.83	12860	38.9	50.7	14362	4.39
07/02/94	714	12	9.58	2.49	11315	10.89	2.84	12858	38.4	50.7	14429	4.4
07/03/94	101	10.62	9.4	2.4	11600	10.52	2.68	12979	38.5	51	14504	4.14
07/06/94	158	10.52	10.17	2.04	11735	11.37	2.28	13115	36.8	51.8	14798	3.48
07/07/94	653	13.42	8.61	2.18	11264	9.95	2.52	13010	38.5	51.6	14447	3.87
07/08/94	553	13.37	8.72	2.21	11260	10.07	2.55	12997	38.5	51.5	14453	3.93
07/09/94	641	12.99	9.14	2.65	11261	10.5	3.05	12942	39.7	49.8	14460	4.71
07/10/94	631	14.11	8.62	2.12	11205	10.04	2.47	13045	38.3	51.6	14501	3.78
07/12/94	503	14.05	8.68	2.07	11180	10.1	2.4	13008	37.8	52.1	14470	3.7
07/13/94	744	14.58	8.65	2.03	11110	10.13	2.37	13006	38.2	51.7	14471	3.65
07/14/94	534	13.23	8.95	2.12	11249	10.31	2.44	12964	38.3	51.4	14454	3.77
07/15/94	1166	12.25	9.54	2.41	11329	10.87	2.74	12910	38.9	50.2	14485	4.25
07/16/94	376	13.34	8.98	2.26	11221	10.36	2.61	12949	38.6	51	14445	4.03
07/17/94	537	11.73	9.22	2.28	11438	10.44	2.58	12958	38.4	51.2	14468	3.99
07/18/94	682	12	9.04	2.25	11412	10.27	2.56	12968	38.6	51.2	14452	3.94

Plant Yates CT-121 Demonstration Project Proximate Coal Analyses

BURN DATE	TONNAGE	As Burned				Dry Basis					M&A FREE	SO_2
		MOIST	ASH	SULFUR	BTU/lb	ASH	SULFUR	BTU/lb	VOL	FIXED C	BTU/lb	lb/MMBTU
07/19/94	742	13.14	9.05	2.33	11245	10.42	2.68	12946	38.8	50.8	14452	4.14
07/20/94	634	14.66	9.05	2.25	11058	10.61	2.64	12957	38.3	51.1	14495	4.07
07/21/94	791	12.66	9.12	2.21	11291	10.44	2.54	12927	38.2	51.3	14434	3.91
07/22/94	544	12.97	8.92	2.15	11311	10.25	2.47	12996	38.5	51.3	14481	3.8
07/23/94	828	13.8	8.8	2.09	11204	10.21	2.43	12998	38.6	51.2	14476	3.73
07/24/94	603	12.38	8.88	2.14	11391	10.13	2.44	13000	38.6	51.3	14465	3.76
07/25/94	895	12	8.78	2.14	11481	9.98	2.44	13046	38.5	51.5	14492	3.73
07/26/94	579	12.66	8.8	2.17	11359	10.08	2.49	13006	38.6	51.3	14464	3.82
07/27/94	326	13.55	8.92	2.15	11248	10.32	2.48	13010	38.8	50.9	14508	3.82
07/28/94	772	15.07	8.7	2.23	11009	10.24	2.62	12962	38.2	51.6	14441	4.05
07/30/94	574	12.66	9.14	2.32	11322	10.46	2.66	12963	38.7	50.9	14477	4.1
07/31/94	557	13.29	9.17	2.35	11155	10.58	2.71	12865	38.4	51	14387	4.21
08/01/94	833	12.82	9.15	2.37	11335	10.49	2.72	13002	38.3	51.2	14525	4.18
08/02/94	675	12.29	9.31	2.37	11463	10.62	2.7	13070	38.6	50.8	14622	4.14
08/03/94	654	12.19	9.4	2.46	11357	10.71	2.81	12933	38.8	50.5	14485	4.33
08/04/94	735	13.52	9.31	2.23	11209	10.77	2.58	12962	38.3	50.9	14527	3.98
08/05/94	551	12.13	8.81	2.23	11383	10.03	2.54	12955	38.2	51.8	14399	3.92
08/06/94	500	11.68	9.07	2.19	11435	10.27	2.48	12948	38	51.8	14430	3.83
08/07/94	848	11.47	8.94	2.23	11467	10.1	2.51	12952	38	51.8	14407	3.89
08/09/94	123	10.31	9.15	2.19	11696	10.2	2.44	13041	37.8	52	14522	3.74
08/10/94	661	10.77	9.17	2.19	11634	10.28	2.45	13038	38.1	51.6	14531	3.76
08/11/94	639	10.98	9.02	2.14	11549	10.13	2.4	12974	38.3	51.6	14436	3.71
08/12/94	707	11.62	8.94	2.2	11510	10.12	2.49	13022	38.4	51.5	14488	3.82
08/13/94	731	11.96	9.02	2.17	11450	10.25	2.46	13006	38.2	51.5	14491	3.79
08/14/94	701	11.61	8.97	2.22	11473	10.15	2.51	12980	38.6	51.3	14447	3.87
08/15/94	602	11.99	9.12	2.21	11403	10.36	2.51	12957	38.1	51.5	14455	3.88
08/16/94	426	13.3	8.97	2.18	11235	10.35	2.51	12959	38.1	51.5	14456	3.88
08/17/94	504	13.07	9.6	2.12	11207	11.04	2.44	12891			14490	3.78
08/18/94	917	12.12	9.87	2.14	11311	11.23	2.44	12870			14499	3.78
08/19/94	463	12.32	11.14	2.16	11100	12.7	2.46	12659	37.1	50.2	14501	3.89
08/20/94	585	10.06	11.99	2.11	11375	13.33	2.34	12647	36.8	49.8	14592	3.71
08/21/94	710	9.93	12.3	2.12	11450	13.66	2.35	12712	36.5	49.8	14724	3.7
08/22/94	377	10.12	11.13	2.12	11560	12.38	2.36	12861	37.4	50.2	14679	3.67
08/23/94	841	11.15	11.75	2.34	11308	13.22	2.63	12727	37.8	49	14665	4.14
08/24/94	887	9.95	11.91	2.25	11479	13.23	2.5	12748	37.2	49.6	14691	3.92
08/25/94	920	10.75	11.96	2.39	11288	13.4	2.68	12647	37.8	48.8	14605	4.23
08/26/94	625	10.66	12.56	2.25	11152	14.06	2.51	12483	37.2	48.7	14526	4.04
08/27/94	648	8.89	11.6	2.04	11727	12.73	2.24	12871	37.8	50.5	14748	3.48
08/28/94	631	9.41	12	2.2	11491	13.25	2.43	12685	37.8	50	14622	3.83
09/08/94	684	11.57	12.28	2.43	11037	13.89	2.75	12480	38.1	48	14493	4.4
09/09/94	1532	6.5	10.41	1.17	12570	11.13	1.25	13444	34.3	54.6	15128	1.86

Plant Yates CT-121 Demonstration Project Proximate Coal Analyses

BURN DATE	TONNAGE	As Burned				Dry Basis					M&A FREE	SO_2
		MOIST	ASH	SULFUR	BTU/lb	ASH	SULFUR	BTU/lb	VOL	FIXED C	BTU/lb	lb/MMBTU
09/10/94	978	6.38	9.46	1.22	12769	10.1	1.3	13639	35.1	54.8	15171	1.91
09/11/94	987	5.77	9.89	1.14	12763	10.5	1.21	13544	35.1	54.4	15133	1.79
09/12/94	685	4.75	9.43	1.43	13178	9.9	1.5	13835	34.4	55.7	15356	2.17
09/13/94	604	4.69	9.7	1.39	13048	10.18	1.46	13689	34.7	55.2	15241	2.13
09/14/94	1123	4.55	9.61	1.35	13084	10.07	1.42	13708	34.8	55.2	15243	2.06
09/15/94	736	5.07	9.28	1.24	12915	9.78	1.31	13604	35.4	54.8	15079	1.92
09/16/94	552	6.54	10.11	1.14	12607	10.82	1.22	13490	34.9	54.3	15127	1.81
09/17/94	506	9.28	9.44	1.15	12309	10.4	1.27	13568	35.2	54.4	15143	1.87
09/18/94	551	7.31	10.23	1.39	12575	11.04	1.5	13567	34.4	54.5	15251	2.21
09/19/94	748	6.53	10.96	1.16	12425	11.73	1.24	13292	34.6	53.7	15059	1.87
09/20/94	395	6.62	10.22	1.3	12580	10.94	1.39	13471	35.3	53.8	15126	2.07
09/21/94	546	6.19	10.36	1.31	12665	11.04	1.39	13501	34.5	54.5	15176	2.07
09/22/94	214	5.94	9.89	1.28	12802	10.52	1.36	13611	34.5	55	15211	2
09/29/94	611	5.74	9.96	1.28	12701	10.57	1.36	13474	35.4	54	15067	2.02
10/02/94	392	6.78	11.15	1.36	12372	11.96	1.46	13272	34.4	53.6	15075	2.2
10/03/94	1096	12.91	8.27	2.91	11532	9.5	3.34	13241	40	50.5	14631	5.05
10/04/94	1158	13.05	8.09	3.39	11490	9.3	3.9	13214	41.6	49.1	14569	5.9
10/05/94	1075	12.89	8.13	3.46	11459	9.33	3.97	13155	41.4	49.3	14508	6.04
10/06/94	1077	12.77	7.89	3.54	11543	9.04	4.06	13232	42	48.9	14547	6.13
10/07/94	987	12.94	7.82	3.54	11537	8.98	4.07	13253	42.2	48.8	14560	6.14
10/08/94	393	12.43	8.09	3.4	11605	9.24	3.88	13251	41.5	49.2	14600	5.86
10/09/94	1054	12.57	7.95	3.45	11569	9.09	3.95	13233	42.1	48.8	14556	5.96
10/12/94	454	14.9	7.5	3.36	11271	8.81	3.95	13245	42.4	48.8	14525	5.96
10/13/94	1125	13.93	7.59	3.38	11410	8.82	3.93	13257	42.2	49	14539	5.92
10/14/94	804	14.92	7.35	3.46	11294	8.64	4.06	13275	42.7	48.7	14530	6.13
10/15/94	624	14.09	7.53	3.47	11389	8.77	4.03	13258	42.1	49.2	14532	6.09
10/16/94	819	12.94	7.57	3.54	11524	8.69	4.07	13237	42.4	48.9	14497	6.14
10/17/94	1280	12.71	7.45	3.44	11606	8.53	3.94	13296	42.6	48.9	14535	5.93
10/18/94	537	12.43	7.65	3.39	11627	8.73	3.87	13276	42.1	49.2	14546	5.83
10/19/94	553	12.6	7.8	3.52	11508	8.92	4.02	13167	41.9	49.2	14457	6.12
10/20/94	1088	12.34	7.95	3.32	11592	9.07	3.79	13223	41.4	49.5	14542	5.73
10/21/94	1025	12.99	7.63	3.47	11551	8.77	3.99	13276	42.4	48.8	14552	6.01
10/22/94	603	13.85	7.86	3.41	11374	9.12	3.95	13203	42.3	48.6	14528	6
10/23/94	704	14.15	8.16	3.23	11260	9.51	3.76	13116	41.6	4839	14495	5.74
10/24/94	989	12.94	7.58	3.38	11545	8.71	3.88	13261	42.3	49	14526	5.86
10/25/94	1083	12.47	7.95	3.22	11552	9.08	3.68	13197	41.6	49.3	14515	5.57
10/26/94	845	11.9	8.73	2.96	11550	9.91	3.36	13110	40.3	49.8	14553	5.13
10/28/94	76	9.63	9.83	2.06	11797	10.88	2.28	13054	37.2	52	14647	3.49
11/20/94	1272	6.1	10.1	1.27	12715	10.76	1.36	13541	34.8	54.4	5174	2
11/22/94	662	5.89	9.84	1.22	12714	10.46	1.3	13510	36.6	53	15088	1.92
11/23/94	1563	5.51	9.64	1.22	12755	10.2	1.29	13499	36.4	53.4	15032	1.91

Plant Yates CT-121 Demonstration Project Proximate Coal Analyses

BURN DATE	TONNAGE	As Burned				Dry Basis					M&A FREE	SO_2
		MOIST	ASH	SULFUR	BTU/lb	ASH	SULFUR	BTU/lb	VOL	FIXED C	BTU/lb	lb/MMBTU
11/25/94	900	5.26	10.54	1.26	12786	11.13	1.33	13497	35	53.8	15187	1.97
11/26/94	797	6.39	9.94	1.28	12678	10.62	1.37	13543	35.6	53.8	15153	2.02
12/01/94	858	8.41	9.56	1.18	12380	10.44	1.29	13516	35.7	53.8	15092	1.91
12/02/94	903	7.69	9.45	1.16	12445	10.24	1.26	13482	36	53.7	15020	1.86
12/03/94	1021	7.54	9.61	1.14	12483	10.39	1.23	13501	35.8	53.8	15067	1.83
12/04/94	848	9.02	9.24	1.13	12289	10.16	1.24	13507	36.6	53.3	15035	1.84
12/05/94	1091	9.49	9.62	1.18	12172	10.63	1.3	13448	35.8	53.6	15048	1.94
12/06/94	778	8.02	9.78	1.18	12408	10.63	1.28	13491	35.9	53.5	15095	1.9
12/07/94	621	7.9	9.55	1.18	12431	10.37	1.29	13498	35.9	53.7	15060	1.9
12/08/94	217	7.08	9.8	1.18	12534	10.55	1.27	13488	35.6	53.8	15079	1.88
12/09/94	535	7.59	9.65	1.13	12478	10.44	1.22	13503	36.1	53.4	15077	1.81
12/10/94	641	8.35	9.49	1.13	12391	10.35	1.24	13520	35.9	53.7	15081	1.82
12/11/94	1001	8.76	9.26	1.09	12254	10.15	1.2	13431	35.7	54.1	14949	1.78
12/12/94	1039	7.89	9.76	1.19	12436	10.6	1.29	13501	35.5	54	15102	1.91
12/13/94	829	8.6	9.49	1.27	12249	10.38	1.39	13402	35.8	53.8	14954	2.07
12/14/94	1133	8.45	9.42	1.02	12435	10.29	1.11	13582	34.9	54.8	15140	1.64

Appendix C2

Ultimate Analyses

General Test Laboratory
Building Number 8
P.O. Box 2641
Birmingham, Al. 35291

Alabama Power

Certificate of Analysis

TO : MS. MONA BROWNING
ADDRESS: PLANT YATES
GEORGIA POWER CO.

REPORT DATE : 02/10/93
SAMPLE DATE : 01/22/93
SAMPLE NUMBER : 930201-0003
FRS NUMBER :
TONNAGE :

DESCRIPTION: GPCO, PLANT YATES UNIT 1 SCRUBBER AIR TOXIC TEST

TEST	REFERENCE	RESULT	UNITS
DRY BASIS DATA			
Ash, Dry	ASTM D 3180	12.91	% by Wt.
Heat of Combustion, Dry	ASTM D 3180	12608.	BTU/lb
Carbon, Total, Dry	ASTM D 3180	70.51	% by Wt.
Carbon, Fixed, Dry	ASTM D 3180	49.64	% by Wt.
Chlorine, Total, Dry	ASTM D 4208/EPA 300.	1147.	mg/kg
Fluorine, Total, Dry	ASTM D 3761	35.	mg/kg
Hydrogen, Total, Dry	ASTM D 3180	4.66	% by Wt.
Nitrogen, Total, Dry	ASTM D 3180	1.32	% by Wt.
Oxygen, Total, Dry	ASTM D 3180	7.63	% by Wt.
Volatiles, Dry	ASTM D 3180	37.45	% by Wt.
Sulfur, Dry	ASTM D 3180	2.85	% by Wt.
Sulfur, Pounds per million BTU, Dry	ASTM D 3180	2.26	
Sulfur, Pyritic, Dry Basis	ASTM D 2492	1.04	% by Wt.
Sulfur, Sulfate, Dry Basis	ASTM D 2492	0.03	% by Wt.
Sulfur, Organic, Dry Basis	ASTM D 2492	1.78	% by Wt.
AS RECEIVED BASIS			
Moisture, Total	ASTM D 3302	13.88	% by Wt.
Ash, As Received	ASTM D 3180	11.12	% by Wt.
Heat of Combustion, As Received	ASTM D 3180	10858.	BTU/lb
Carbon, Total, As Received	ASTM D 3180	60.72	% by Wt.
Carbon, Fixed, As Received	ASTM D 3180	42.75	% by Wt.
Chlorine, Total, As Received	ASTM D 4208/EPA 300.	988.	mg/kg
Fluorine, Total, As Received	ASTM D 3761	29.	mg/kg
Hydrogen, Total, As Received	ASTM D 3180	4.01	% by Wt.
Nitrogen, Total, As Received	ASTM D 3180	1.19	% by Wt.

Low Particulate
Parametric Test

Chemist	Quality Control	Supv. Chemist	Page
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General Test Laboratory
Building Number 8
P.O. Box 2641
Birmingham, Al. 35291

Alabama Power

Certificate of Analysis

TO : MS. MONA BROWNING
ADDRESS: PLANT YATES
GEORGIA POWER CO.

REPORT DATE : 02/10/93
SAMPLE DATE : 01/22/93
SAMPLE NUMBER : 930201-0003
FRS NUMBER :
TONNAGE :

DESCRIPTION: GPCO. PLANT YATES UNIT 1 SCRUBBER AIR TOXIC TEST

TEST	REFERENCE	RESULT	UNITS
AS RECEIVED BASIS			
Oxygen, Total, As Received	ASTM D 3176	6.62	% by Wt.
Volatiles, As Received	ASTM D 3180	32.25	% by Wt.
Sulfur, As Received	ASTM D 3180	2.45	% by Wt.
Sulfur, Pounds per million BTU, As Rec.	ASTM D 3180	2.26	#/mmBTU
Sulfur, Pyritic, As Received Basis	ASTM D 2492	0.88	% by Wt.
Sulfur, Sulfate, As Received Basis	ASTM D 2492	0.03	% by Wt.
IGNITED BASIS, ELEMENTAL FORM			
Aluminum, Ignited Basis	ASTM D 3682	11.40	% by Wt.
Calcium, Ignited Basis	ASTM D 3682	2.02	% by Wt.
Cobalt, Ignited Basis	ASTM D 3683	65.	mg/kg
Copper, Ignited Basis	ASTM D 3683	77.	mg/kg
Iron, Ignited Basis	ASTM D 3682	8.17	% by Wt.
Lead, Ignited Basis	ASTM D 3683	119.	mg/kg
Magnesium, Ignited Basis	ASTM D 3682	0.56	% by Wt.
Manganese, Ignited Basis	ASTM D 3682	0.02	% by Wt.
Potassium, Ignited Basis	ASTM D 3682	2.61	% by Wt.
Silica, Ignited Basis	ASTM D 3682	26.47	% by Wt.
Sodium, Ignited Basis	ASTM D 3682	3.57	% by Wt.
Titanium, Ignited Basis	ASTM D 3682	0.56	% by Wt.
IGNITED BASIS, OXIDE FORM			
Aluminum Oxide (Al2O3), Ignited Basis	ASTM D 3682	21.55	% by Wt.
Calcium Oxide (CaO), Ignited Basis	ASTM D 3682	2.83	% by Wt.
Cobalt Oxide (Co2O3), Ignited Basis	ASTM D 3683	73.	mg/kg

Low Particulate
Parametric Test

Chemist	Quality Control	Supv. Chemist DW	Page 2 of

5-2790 Rev. 8/85

General Test Laboratory
Building Number 8
P.O. Box 2641
Birmingham, Al. 35291

Alabama Power

Certificate of Analysis

TO : MS. MONA BROWNING
ADDRESS: PLANT YATES
GEORGIA POWER CO.

REPORT DATE : 02/10/93
SAMPLE DATE : 01/22/93
SAMPLE NUMBER : 930201-0003
FRS NUMBER :
TONNAGE :

DESCRIPTION: GPCO. PLANT YATES UNIT 1 SCRUBBER AIR TOXIC TEST

TEST	REFERENCE	RESULT	UNITS
IGNITED BASIS, OXIDE FORM			
Copper Oxide (CuO), Ignited Basis	ASTM D 3683	96.	mg/kg
Iron Oxide (Fe2O3), Ignited Basis	ASTM D 3682	11.68	% by Wt.
Lead Oxide (PbO2), Ignited Basis	ASTM D 3683	137.	mg/kg
Magnesium Oxide (MgO), Ignited Basis	ASTM D 3682	0.93	% by wt.
Manganese Oxide (MnO2), Ignited Basis	ASTM D 3682	0.03	% by Wt.
Potassium Oxide (K2O), Ignited Basis	ASTM D 3682	3.13	% by wt.
Silica Oxide (SiO2), Ignited Basis	ASTM D 3682	56.65	% by Wt.
Sodium Oxide (Na2O), Ignited Basis	ASTM D 3682	0.77	% by wt.
Titanium Oxide (TiO2), Ignited Basis	ASTM D 3682	0.94	% by Wt.
Sum of Ignited Basis Oxides		99.51	% by wt.
GENERAL			
Heat of Combustion, Moisture Ash Free	ASTM D 3180	14477.	BTU/lb

This Certificate is for the physical and/or chemical characteristics of the sample as submitted.
The laboratory cannot attest to the origin and representation of the sample.

CC: MR. W. S. HILL

Low Particulate
Parametric Test

Chemist	Quality Control	Supv. Chemist	Page
	VICKY MOON	DONNA WILSON DW	3 of

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FILE: CO

General Test Laboratory
Building Number 8
P.O. Box 2641
Birmingham, Al. 35291

Alabama Power

Certificate of Analysis

TO : MR. DAVID BURFORD
ADDRESS: BIN B873
SCS, BIRMINGHAM

REPORT DATE : 07/20/93
SAMPLE DATE : 06/22/93
SAMPLE NUMBER : 930623-0050
FRS NUMBER :
TONNAGE :

DESCRIPTION: SCS, APCO, PLANT YATES UNIT 1

TEST	REFERENCE	RESULT	UNITS
DRY BASIS DATA			
Ash, Dry	ASTM D 3180	11.25	% by Wt.
Heat of Combustion, Dry	ASTM D 3180	12698.	BTU/lb
Loss on Ignition At 750C	ASTM D 3180	88.75	% by Wt.
Carbon, Total, Dry	ASTM D 3180	72.76	% by Wt.
Carbon, Fixed, Dry	ASTM D 3180	49.53	% by Wt.
Chlorine, Total, Dry	ASTM D 4208/EPA 300.	1328.	mg/kg
Chromium, Dry Basis	ASTM D 3683	23.	mg/kg
Fluorine, Total, Dry	ASTM D 3761/EPA 300.	18.	mg/kg
Hydrogen, Total, Dry	ASTM D 3180	4.89	% by Wt.
Nickel, Dry Basis	ASTM D 3683	19.	mg/kg
Nitrogen, Total, Dry	ASTM D 3180	1.46	% by Wt.
Oxygen, Total, Dry	ASTM D 3180	6.78	% by Wt.
Volatiles, Dry	ASTM D 3180	39.20	% by Wt.
Aluminum, Dry Basis	ASTM D 3682	1.45	% by Wt.
Antimony, Dry Basis	ASTM D 3683	< 1.	mg/kg
Arsenic, Dry Basis	Spec. Chem. Acta. 448	2.0	mg/kg
Arsenic, Pentavalent, Dry	Spec. Chem. Acta. 448	< 1.1	mg/kg
Arsenic, Trivalent, Dry	Spec. Chem. Acta. 448	2.0	mg/kg
Barium, Dry Basis	ASTM D 3683	47.	mg/kg
Beryllium, Dry Basis	ASTM D 3684	3.	mg/kg
Cadmium, Dry Basis	ASTM D 3683	1.2	mg/kg
Calcium, Dry Basis	ASTM D 3682	0.45	% by Wt.
Chromium, Hexavalent, Dry	NIOSH 7600	< 1.	mg/kg
Chromium, Trivalent, Dry Basis	NIOSH 7600	23.	mg/kg
Cobalt, Dry Basis	ASTM D 3683	8.	mg/kg
Copper, Dry Basis	ASTM D 3683	15.	mg/kg
Iron, Dry Basis	ASTM D 3682	0.89	% by Wt.

Low Particulate
Long-Term Test Block

Chemist	Quality Control	Senior Chemist	Page
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General Test Laboratory
Building Number 8
P.O. Box 2641
Birmingham, Al. 35291

Alabama Power

Certificate of Analysis

TO : MR. DAVID BURFORD
ADDRESS: BIN B873
SCS, BIRMINGHAM

REPORT DATE : 07/20/93
SAMPLE DATE : 06/22/93
SAMPLE NUMBER : 930623-0050
FRS NUMBER :
TONNAGE :

DESCRIPTION: SCS, GPCD, PLANT YATES UNIT 1

TEST	REFERENCE	RESULT	UNITS
DRY BASIS DATA			
Lead, Dry Basis	ASTM D 3683	12.	mg/kg
Lithium, Dry Basis	ASTM D 3683	11.	mg/kg
Magnesium, Dry Basis	ASTM D 3682	0.07	% by Wt.
Manganese, Dry Basis	ASTM D 3683	40.	mg/kg
Mercury, Dry Basis	ASTM D 3684	0.03	mg/kg
Molybdenum, Ignited Basis	ASTM D 3683	4.	mg/kg
Phosphorus, Dry Basis	ASTM D 3682	0.03	% by Wt.
Potassium, Dry Basis	ASTM D 3682	0.24	% by Wt.
Selenium, Dry Basis	Spec. Chem. Acta 44B	< 2.	mg/kg
Silica, Dry Basis	ASTM D 3682	2.73	% by Wt.
Sodium, Dry Basis	ASTM D 3682	0.03	% by Wt.
Strontium, Dry Basis	ASTM D 3683	34.	mg/kg
Sulfur, Dry	ASTM D 3180	2.85	% by Wt.
Sulfur, Pounds per million BTU, Dry	ASTM D 3180	2.25	
Sulfur, Pyritic, Dry Basis	ASTM D 2492	0.92	% by Wt.
Titanium, Dry Basis	ASTM D 3682	0.07	% by Wt.
Vanadium, Dry Basis	ASTM D 3683	38.	mg/kg
Zinc, Dry Basis	ASTM D 3683	69.	mg/kg
AS RECEIVED BASIS			
Moisture, Total	ASTM D 3302	11.64	% by Wt.
Ash, As Received	ASTM D 3180	9.94	% by Wt.
Heat of Combustion, As Received	ASTM D 3180	11220.	BTU/lb
Carbon, Total, As Received	ASTM D 3180	64.29	% by Wt.
Carbon, Fixed, As Received	ASTM D 3180	13.78	% by Wt.
Chlorine, Total, As Received	ASTM D 4208/EPA 300.	1173.	mg/kg

Low Particulate
Long-Term Test Block

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General Test Laboratory
Building Number 8
P.O. Box 2641
Birmingham, Al. 35291

Alabama Power

Certificate of Analysis

TO : MR. DAVID BURFORD
ADDRESS: BIN B873
SCS, BIRMINGHAM

REPORT DATE : 07/28/93
SAMPLE DATE : 06/22/93
SAMPLE NUMBER : 930623-0050
FAS NUMBER :
TONNAGE :

DESCRIPTION: SCS, SPCD, PLANT YATES UNIT 1

TEST	REFERENCE	RESULT	UNITS
AS RECEIVED BASIS			
Chromium, As Received	ASTM D 3683	20.	mg/kg
Fluorine, Total, As Received	ASTM D 3761/EPA 300.	15.	mg/kg
Hydrogen, Total, As Received	ASTM D 3180	4.32	% by Wt.
Nickel, As Received Basis	ASTM D 3683	17.	mg/kg
Nitrogen, Total, As Received	ASTM D 3180	1.29	% by Wt.
Oxygen, Total, As Received	ASTM D 3176	5.99	% by Wt.
Volatiles, As Received	ASTM D 3180	34.64	% by Wt.
Aluminum, As Received Basis	ASTM D 3682	1.28	% by Wt.
Antimony, As Received Basis	ASTM D 3683	< 1.	mg/kg
Arsenic, As Received Basis	Spec. Chem. Acta.44B	1.8	mg/kg
Arsenic, Pentavalent, As Received	Spec. Chem. Acta44B	< 1.8	mg/kg
Arsenic, Trivalent, As Received	Spec. Chem. Acta.44B	1.8	mg/kg
Barium, As Received Basis	ASTM D 3633	41.	mg/kg
Beryllium, As Received Basis	ASTM D 3683	3.	mg/kg
Cadmium, As Received Basis	ASTM D 3683	1.0	mg/kg
Calcium, As Received Basis	ASTM D 3682	0.40	% by Wt.
Chromium, Hexavalent, As Received Basis	NIOSH 7600	< 1.	mg/kg
Chromium, Trivalent, As Received Basis	NIOSH 7600	20.	mg/kg
Cobalt, As Received Basis	ASTM D 3683	7.	mg/kg
Copper, As Received Basis	ASTM D 3683	14.	mg/kg
Iron, As Received Basis	ASTM D 3682	0.79	% by Wt.
Lead, As Received Basis	ASTM D 3683	11.	mg/kg
Lithium, As Received Basis	ASTM D 3683	10.	mg/kg
Magnesium, As Received Basis	ASTM D 3682	0.06	% by Wt.
Manganese, As Received Basis	ASTM D 3683	35.	mg/kg
Mercury, As Received Basis	ASTM D 3684	0.03	mg/kg
Molybdenum, As Received Basis	ASTM D 3683	4.	mg/kg

Low Particulate
Long-Term Test Block

Chemist	Quality Control	Supv. Chemist	Page 3 of 6

General Test Laboratory
Building Number 8
P.O. Box 2641
Birmingham, Al. 35291

Alabama Power

Certificate of Analysis

TO : MR. DAVID BURFORD
ADDRESS: DIN D073
SCS, BIRMINGHAM

REPORT DATE : 07/20/93
SAMPLE DATE : 06/22/93
SAMPLE NUMBER : 930623-0050
FAS NUMBER :
TONNAGE :

DESCRIPTION: SCS, GPCD, PLANT YATES UNIT 1

TEST	REFERENCE	RESULT	UNITS
AS RECEIVED BASIS			
Phosphorus, As Received Basis	ASTM D 3682	0.03	% by Wt.
Potassium, As Received Basis	ASTM D 3682	0.22	% by Wt.
Selenium, As Received Basis	Spec.Chem. Acta. 44B	< 2.	mg/kg
Silica, As Received Basis	ASTM D 3682	2.41	% by Wt.
Sodium, As Received Basis	ASTM D 3682	0.07	% by Wt.
Strontium, As Received Basis	ASTM D 3683	30.	mg/kg
Sulfur, As Received	ASTM D 3180	2.53	% by Wt.
Sulfur, Pounds per million BTU, As Rec.	ASTM D 3180	2.25	#/mmBTU
Sulfur, Pyritic, As Received Basis	ASTM D 2492	0.77	% by Wt.
Titanium, As Received Basis	ASTM D 3682	0.07	% by Wt.
Vanadium, As Received Basis	ASTM D 3683	34.	mg/kg
Zinc, As Received Basis	ASTM D 3683	61.	mg/kg
IGNITED BASIS, ELEMENTAL FORM			
Aluminum, Ignited Basis	ASTM D 3682	12.87	% by Wt.
Antimony, Ignited Basis	ASTM D 3683	7.	mg/kg
Barium, Ignited Basis	ASTM D 3683	416.	mg/kg
Beryllium, Ignited Basis	ASTM D 3683	30.	mg/kg
Cadmium, Ignited Basis	ASTM D 3683	11.	mg/kg
Calcium, Ignited Basis	ASTM D 3682	4.04	% by Wt.
Chromium, Ignited Basis	ASTM D 3683	200.	mg/kg
Cobalt, Ignited Basis	ASTM D 3683	72.	mg/kg
Copper, Ignited Basis	ASTM D 3683	136.	mg/kg
Iron, Ignited Basis	ASTM D 3682	7.94	% by Wt.
Lead, Ignited Basis	ASTM D 3683	110.	mg/kg
Lithium, Ignited Basis	ASTM D 3683	99.	mg/kg

Low Particulate
Long-Term Test Block

Chemist	Quality Control	Supv. Chemist	Page 4 of 6

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General Test Laboratory
Building Number 8
P.O. Box 2641
Birmingham, Al. 35291

Alabama Power

Certificate of Analysis

TO : MR. DAVID BURFORD
ADDRESS: BIN 8673
SCS, BIRMINGHAM

REPORT DATE : 07/20/93
SAMPLE DATE : 06/22/93
SAMPLE NUMBER : 930623-0850
FAS NUMBER :
TONNAGE :

DESCRIPTION: SCS, GPCO, PLANT YATES UNIT 1

TEST	REFERENCE	RESULT	UNITS
IGNITED BASIS, ELEMENTAL FORM			
Magnesium, Ignited Basis	ASTM D 3682	0.64	% by Wt.
Manganese, Ignited Basis	ASTM D 3683	355.	mg/kg
Molybdenum, Ignited Basis	ASTM D 3683	39.	mg/kg
Nickel, Ignited Basis	ASTM D 3683	178.	mg/kg
Phosphorus, Ignited Basis	ASTM D 3682	0.30	% by Wt.
Potassium, Ignited Basis	ASTM D 3682	2.17	% by Wt.
Silica, Ignited Basis	ASTM D 3682	24.26	% by Wt.
Sodium, Ignited Basis	ASTM D 3682	0.68	% by Wt.
Strontium, Ignited Basis	ASTM D 3683	382.	mg/kg
Sulfur, Ignited Basis	ASTM D 1757	2.64	% by Wt.
Titanium, Ignited Basis	ASTM D 3682	0.66	% by Wt.
Vanadium, Ignited Basis	ASTM D 3683	341.	mg/kg
Zinc, Ignited Basis	ASTM D 3683	612.	mg/kg
IGNITED BASIS, OXIDE FORM			
Aluminum Oxide (Al2O3), Ignited Basis	ASTM D 3682	24.32	% by Wt.
Antimony Oxide (Sb2O5), Ignited Basis	ASTM D 3683	9.	mg/kg
Barium Oxide (BaO), Ignited Basis	ASTM D 3683	466.	mg/kg
Beryllium Oxide (BeO), Ignited Basis	ASTM D 3683	99.	mg/kg
Cadmium Oxide (CdO), Ignited Basis	ASTM D 3683	12.	mg/kg
Calcium Oxide (CaO), Ignited Basis	ASTM D 3682	5.56	% by Wt.
Chromium Oxide (CrO), Ignited Basis	ASTM D 3683	252.	mg/kg
Cobalt Oxide (Co2O3), Ignited Basis	ASTM D 3683	81.	mg/kg
Copper Oxide (CuO), Ignited Basis	ASTM D 3683	178.	mg/kg
Iron Oxide (Fe2O3), Ignited Basis	ASTM D 3682	11.35	% by Wt.
Lead Oxide (PbO2), Ignited Basis	ASTM D 3683	127.	mg/kg

Low Particulate
Long-Term Test Block

Chemist	Quality Control	Supv. Chemist	Page
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General Test Laboratory
Building Number 8
P.O. Box 2641
Birmingham, Al. 35291

Alabama Power

Certificate of Analysis

TO : MR. DAVID BURFORD
ADDRESS: BIN B873
SCS, BIRMINGHAM

DESCRIPTION: SCS, GPCD, PLANT YATES UNIT 1

REPORT DATE : 07/20/93
SAMPLE DATE : 06/22/93
SAMPLE NUMBER : 930623-0050
FRS NUMBER :
TONNAGE :

TEST	REFERENCE	RESULT	UNITS
IGNITED BASIS, OXIDE FORM			
Lithium Oxide (Li2O), Ignited Basis	ASTM D 3682	327.	mg/kg
Magnesium Oxide (MgO), Ignited Basis	ASTM D 3682	1.06	% by Wt.
Manganese Oxide (MnO2), Ignited Basis	ASTM D 3682	458.	mg/kg
Molybdenum Oxide (MoO3), Ignited Basis	ASTM D 3682	48.	mg/kg
Nickel Oxide (NiO), Ignited Basis	ASTM D 3682	216.	mg/kg
Phosphorus(as P2O5), Ignited Basis	ASTM D 3682	0.69	% by Wt.
Potassium Oxide (K2O), Ignited Basis	ASTM D 3682	2.60	% by Wt.
Silica Oxide (SiO2), Ignited Basis	ASTM D 3682	51.92	% by Wt.
Sodium Oxide (Na2O), Ignited Basis	ASTM D 3682	0.92	% by Wt.
Strontium Oxide (SrO), Ignited Basis	ASTM D 3682	356.	mg/kg
Sulfur Trioxide (SO3), Ignited Basis	ASTM D 1757	6.60	% by Wt.
Titanium Oxide (TiO2), Ignited Basis	ASTM D 3682	1.10	% by Wt.
Vanadium Oxide (V2O5), Ignited Basis	ASTM D 3682	611.	mg/kg
Zinc Oxide (ZnO), Ignited Basis	ASTM D 3682	765.	mg/kg
Sum of Ignited Basis Oxides		105.53	% by Wt.
GENERAL			
Heat of Combustion, Moisture Ash Free	ASTM D 3180	14388.	BTU/lb
Ash Fusion			
Initial	ASTM D 1857	2865.0	Deg F
Softening	ASTM D 1857	2192.0	Deg F
Hemispherical	ASTM D 1857	2230.0	Deg F
Fluid	ASTM D 1857	2425.0	Deg F

This Certificate is for the physical and/or chemical characteristics of the sample as submitted.
The laboratory cannot attest to the origin and representation of the sample.

CC: MR. W. S. HILL

Low Particulate
Long-Term Test Block

Chemist	Quality Control	Supv. Chemist	Page
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S-2750 Rev. 6/86
FILE: CO

General Test Laboratory
Building Number 8
P.O. Box 2641
Birmingham, Al. 35291

Alabama Power

Certificate of Analysis

TO : MS. MONA BROWNING
ADDRESS:

REPORT DATE : 11/02/93
SAMPLE DATE : 10/13/93
SAMPLE NUMBER : 931015-0005
FRS NUMBER :
TONNAGE :

DESCRIPTION: SPCO, PLANT YATES UNIT 1 COAL SAMPLE - SCRUBBER TEST

TEST	REFERENCE	RESULT	UNITS
DRY BASIS DATA			
Ash, Dry	ASTM D 3180	10.37	% by Wt.
Heat of Combustion, Dry	ASTM D 3180	12886.	BTU/lb
Carbon, Total, Dry	ASTM D 3180	73.10	% by Wt.
Fluorine, Total, Dry	ASTM D 3761/EPA 300.	69.	mg/kg
Hydrogen, Total, Dry	ASTM D 3180	4.94	% by Wt.
Nitrogen, Total, Dry	ASTM D 3180	1.45	% by Wt.
Oxygen, Total, Dry	ASTM D 3180	7.43	% by Wt.
Sulfur, Dry	ASTM D 3180	2.71	% by Wt.
Sulfur, Pounds per million BTU, Dry	ASTM D 3180	2.10	
AS RECEIVED BASIS			
Moisture, Total	ASTM D 3302	11.47	% by Wt.
Ash, As Received	ASTM D 3180	9.18	% by Wt.
Heat of Combustion, As Received	ASTM D 3180	11408.	BTU/lb
Carbon, Total, As Received	ASTM D 3180	64.72	% by Wt.
Fluorine, Total, As Received	ASTM D 3761/EPA 300.	58.	mg/kg
Hydrogen, Total, As Received	ASTM D 3180	4.37	% by Wt.
Nitrogen, Total, As Received	ASTM D 3180	1.28	% by Wt.
Oxygen, Total, As Received	ASTM D 3176	6.58	% by Wt.
Sulfur, As Received	ASTM D 3180	2.40	% by Wt.
Sulfur, Pounds per million BTU, As Rec.	ASTM D 3180	2.10	#/mmBTU
IGNITED BASIS, ELEMENTAL FORM			
Aluminum, Ignited Basis	ASTM D 3682	12.70	% by Wt.
Calcium, Ignited Basis	ASTM D 3682	2.35	% by Wt.

Low Particulate
Auxiliary Test Block

High Removal Test

Chemist	Quality Control	Supv. Chemist	Page
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General Test Laboratory
Building Number 8
P.O. Box 2641
Birmingham, Al. 35291

Alabama Power

Certificate of Analysis

TO : MS. MONA BROWNING
ADDRESS:

REPORT DATE : 11/02/93
SAMPLE DATE : 10/13/93
SAMPLE NUMBER : 931015-0005
FRS NUMBER :
TONNAGE :

DESCRIPTION: GPCO, PLANT YATES UNIT 1 COAL SAMPLE - SCRUBBER TEST

TEST	REFERENCE	RESULT	UNITS
IGNITED BASIS, ELEMENTAL FORM			
Iron, Ignited Basis	ASTM D 3682	11.01	% by Wt.
Magnesium, Ignited Basis	ASTM D 3682	0.61	% by Wt.
Manganese, Ignited Basis	ASTM D 3682	0.03	% by Wt.
Potassium, Ignited Basis	ASTM D 3682	2.80	% by Wt.
Silica, Ignited Basis	ASTM D 3682	25.04	% by Wt.
Sodium, Ignited Basis	ASTM D 3682	0.72	% by Wt.
Titanium, Ignited Basis	ASTM D 3682	0.75	% by Wt.
IGNITED BASIS, OXIDE FORM			
Aluminum Oxide (Al2O3), Ignited Basis	ASTM D 3682	24.00	% by Wt.
Calcium Oxide (CaO), Ignited Basis	ASTM D 3682	3.29	% by Wt.
Iron Oxide (Fe2O3), Ignited Basis	ASTM D 3682	15.74	% by Wt.
Magnesium Oxide (MgO), Ignited Basis	ASTM D 3682	1.01	% by Wt.
Manganese Oxide (MnO2), Ignited Basis	ASTM D 3682	0.04	% by Wt.
Potassium Oxide (K2O), Ignited Basis	ASTM D 3682	3.36	% by Wt.
Silica Oxide (SiO2), Ignited Basis	ASTM D 3682	53.59	% by Wt.
Sodium Oxide (Na2O), Ignited Basis	ASTM D 3682	0.97	% by Wt.
Titanium Oxide (TiO2), Ignited Basis	ASTM D 3682	1.25	% by Wt.
Sum of Ignited Basis Oxides		103.25	% by Wt.
GENERAL			
Heat of Combustion, Moisture Ash Free	ASTM D 3180	14377.	BTU/lb

This Certificate is for the physical and/or chemical characteristics of the sample as submitted.
The laboratory cannot attest to the origin and representation of the sample.

CC: MR. W. S. HILL

Low Particulate
Auxiliary Test Block

High Removal Test

Chemist	Quality Control	Supv. Chemist	Page
	VICKY MOON	DONNA WILSON DW	2 of 2

General Test Laboratory
Building Number 8
P.O. Box 2641
Birmingham, Al. 35291

Alabama Power

Certificate of Analysis

TO : MS. MONA BROWNING
ADDRESS:

REPORT DATE : 01/31/94
SAMPLE DATE : 01/09/94
SAMPLE NUMBER : 940117-0004
FRS NUMBER :
TONNAGE :

DESCRIPTION: GPCO, PLANT YATES UNIT 1

TEST	REFERENCE	RESULT	UNITS
DRY BASIS DATA			
Ash, Dry	ASTM D 3180	10.77	% by Wt.
Heat of Combustion, Dry	ASTM D 3180	12877.	BTU/lb
Carbon, Total, Dry	ASTM D 3180	72.09	% by Wt.
Fluorine, Total, Dry	ASTM D 3761/EPA 300.	88.	mg/kg
Hydrogen, Total, Dry	ASTM D 3180	4.79	% by Wt.
Nitrogen, Total, Dry	ASTM D 3180	1.44	% by Wt.
Oxygen, Total, Dry	ASTM D 3180	8.31	% by Wt.
Sulfur, Dry	ASTM D 3180	2.60	% by Wt.
Sulfur, Pounds per million BTU, Dry	ASTM D 3180	2.02	
AS RECEIVED BASIS			
Moisture, Total	ASTM D 3302	13.26	% by Wt.
Ash, As Received	ASTM D 3180	9.34	% by Wt.
Heat of Combustion, As Received	ASTM D 3180	11170.	BTU/lb
Carbon, Total, As Received	ASTM D 3180	62.53	% by Wt.
Fluorine, Total, As Received	ASTM D 3761/EPA 300.	75.	mg/kg
Hydrogen, Total, As Received	ASTM D 3180	4.15	% by Wt.
Nitrogen, Total, As Received	ASTM D 3180	1.25	% by Wt.
Oxygen, Total, As Received	ASTM D 3176	7.21	% by Wt.
Sulfur, As Received	ASTM D 3180	2.26	% by Wt.
Sulfur, Pounds per million BTU, As Rec.	ASTM D 3180	2.02	#/mmBTU
IGNITED BASIS, ELEMENTAL FORM			
Aluminum, Ignited Basis	ASTM D 3682	13.18	% by Wt.

Low Particulate
Auxiliary Test Block

Alternate Limestone Test

Chemist	Quality Control	Supv. Chemist	Page
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5-2790 Rev. 8/85

General Test Laboratory
Building Number 8
P.O. Box 2641
Birmingham, Al. 35291

Alabama Power

Certificate of Analysis

TO : MS. MONA BROWNING
ADDRESS:

REPORT DATE : 01/31/94
SAMPLE DATE : 01/09/94
SAMPLE NUMBER : 940117-0004
FRS NUMBER :
TONNAGE :

DESCRIPTION: GPCO, PLANT YATES UNIT 1

TEST	REFERENCE	RESULT	UNITS
IGNITED BASIS, OXIDE FORM			
Aluminum Oxide (Al2O3), Ignited Basis	ASTM D 3682	24.91	% by Wt.
GENERAL			
Heat of Combustion, Moisture Ash Free	ASTM D 3180	14431.	BTU/lb

This Certificate is for the physical and/or chemical characteristics of the sample as submitted.
The laboratory cannot attest to the origin and representation of the sample.

CC: MR. W. S. HILL

Alternate Limestone Test

Low Particulate
Auxiliary Test Block

Chemist	Quality Control	Supv. Chemist	Page
	VICKY MOON	DONNA WILSON DW	2 of 2

5-2790 Rev. 8/85

General Test Laboratory
Building Number 8
P.O. Box 2641
Birmingham, Al. 35291

Alabama Power

Certificate of Analysis

TO : MR. DAVID BURFORD
ADDRESS: BIN B873
SCS, BIRMINGHAM

DESCRIPTION: GPCO, PLANT YATES UNIT 1

REPORT DATE : 02/07/94
SAMPLE DATE : 01/27/94
SAMPLE NUMBER : 940201-0020
FRS NUMBER :
TONNAGE :

TEST	REFERENCE	RESULT	UNITS
DRY BASIS DATA			
Ash, Dry	ASTM D 3180	10.57	% by Wt.
Heat of Combustion, Dry	ASTM D 3180	13176.	BTU/lb
Carbon, Total, Dry	ASTM D 3180	72.46	% by Wt.
Chlorine, Total, Dry	ASTM D 4208/EPA 300.	798.	mg/kg
Fluorine, Total, Dry	ASTM D 3761/EPA 300.	101.	mg/kg
Hydrogen, Total, Dry	ASTM D 3180	5.09	% by Wt.
Nitrogen, Total, Dry	ASTM D 3180	1.26	% by Wt.
Oxygen, Total, Dry	ASTM D 3180	5.98	% by Wt.
Sulfur, Dry	ASTM D 3180	4.64	% by Wt.
Sulfur, Pounds per million BTU, Dry	ASTM D 3180	3.52	
AS RECEIVED BASIS			
Moisture, Total	ASTM D 3302	7.67	% by Wt.
Ash, As Received	ASTM D 3180	9.76	% by Wt.
Heat of Combustion, As Received	ASTM D 3180	12165.	BTU/lb
Carbon, Total, As Received	ASTM D 3180	66.90	% by Wt.
Chlorine, Total, As Received	ASTM D 4208/EPA 300.	737.	mg/kg
Fluorine, Total, As Received	ASTM D 3761/EPA 300.	92.	mg/kg
Hydrogen, Total, As Received	ASTM D 3180	4.70	% by Wt.
Nitrogen, Total, As Received	ASTM D 3180	1.16	% by Wt.
Oxygen, Total, As Received	ASTM D 3176	5.52	% by Wt.
Sulfur, As Received	ASTM D 3180	4.28	% by Wt.
Sulfur, Pounds per million BTU, As Rec.	ASTM D 3180	3.52	#/mmBTU

Low Particulate
Auxiliary Test Block

Alternate Coal Test

Chemist	Quality Control	Supv. Chemist	Page
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5-2790 Rev. 8/85

General Test Laboratory
Building Number 8
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Alabama Power

Certificate of Analysis

TO : MR. DAVID BURFORD
ADDRESS: BIN B873
SCS, BIRMINGHAM

DESCRIPTION: GPCO, PLANT YATES UNIT 1

REPORT DATE : 02/07/94
SAMPLE DATE : 01/27/94
SAMPLE NUMBER : 940201-0020
FRS NUMBER :
TONNAGE :

TEST	REFERENCE	RESULT	UNITS
IGNITED BASIS, ELEMENTAL FORM			
Aluminum, Ignited Basis	ASTM D 3682	10.56	% by Wt.
IGNITED BASIS, OXIDE FORM			
Aluminum Oxide (Al2O3), Ignited Basis	ASTM D 3682	19.96	% by Wt.
GENERAL			
Heat of Combustion, Moisture Ash Free	ASTM D 3180	14733.	BTU/lb

This Certificate is for the physical and/or chemical characteristics of the sample as submitted.
The laboratory cannot attest to the origin and representation of the sample.

CC: MR. W. S. HILL

Low Particulate
Auxiliary Test Block

Alternate Coal Test

Chemist	Quality Control	Supv. Chemist	Page
	VICKY MOON	DONNA WILSON DW	2 of 2

5-2790 Rev. 8/85

General Test Laboratory
Building Number 8
P.O. Box 2641
Birmingham, Al. 35291

Alabama Power

Certificate of Analysis

TO : MR. J. SPRAYBERRY
ADDRESS: GEORGIA POWER CO
PLANT YATES

REPORT DATE : 04/04/94
SAMPLE DATE : 02/22/94
SAMPLE NUMBER : 940301-0099
FRS NUMBER :
TONNAGE :

DESCRIPTION: GPCO, PLANT YATES UNIT 1 PERFORMANCE TEST

TEST	REFERENCE	RESULT	UNITS
DRY BASIS DATA			
Ash, Dry	ASTM D 3180	10.58	% by Wt.
Heat of Combustion, Dry	ASTM D 3180	13074.	BTU/lb
Loss on Ignition At 750C	ASTM D 3180	89.42	% by Wt.
Carbon, Total, Dry	ASTM D 3180	72.09	% by Wt.
Carbon, Fixed, Dry	ASTM D 3180	46.84	% by Wt.
Chlorine, Total, Dry	ASTM D 4208/EPA 300.	1027.	mg/kg
Fluorine, Total, Dry	ASTM D 3761/EPA 300.	100.	mg/kg
Hydrogen, Total, Dry	ASTM D 3180	5.12	% by Wt.
Nitrogen, Total, Dry	ASTM D 3180	1.23	% by Wt.
Oxygen, Total, Dry	ASTM D 3180	6.27	% by Wt.
Volatiles, Dry	ASTM D 3180	42.58	% by Wt.
Aluminum, Dry Basis	ASTM D 3682	1.16	% by Wt.
Antimony, Dry Basis	ASTM D 3683	< 1.	mg/kg
Arsenic, Dry Basis	Spec. Chem. Acta.44B	1.3	mg/kg
Barium, Dry Basis	ASTM D 3683	43.	mg/kg
Beryllium, Dry Basis	ASTM D 3683	3.	mg/kg
Cadmium, Dry Basis	ASTM D 3683	< 1.0	mg/kg
Calcium, Dry Basis	ASTM D 3682	0.23	% by Wt.
Chromium, Dry Basis	ASTM D 3683	18.	mg/kg
Cobalt, Dry Basis	ASTM D 3683	7.	mg/kg
Copper, Dry Basis	ASTM D 3683	8.	mg/kg
Iron, Dry Basis	ASTM D 3682	2.05	% by Wt.
Lead, Dry Basis	Spec. Chem. Acta.44B	2.	mg/kg
Lithium, Dry Basis	ASTM D 3683	9.	mg/kg
Magnesium, Dry Basis	ASTM D 3682	0.05	% by Wt.
Manganese, Dry Basis	ASTM D 3683	27.	mg/kg
Mercury, Dry Basis	ASTM D 3684	0.14	mg/kg

Alternate Coal Test

Low Particulate
Auxiliary Test Block

Chemist	Quality Control	Supv. Chemist	Page 1 of 6

5.2700 Rev. 9/85

General Test Laboratory
Building Number 8
P.O. Box 2641
Birmingham, Al. 35291

Alabama Power

Certificate of Analysis

TO : MR. J. SPRAYBERRY
ADDRESS: GEORGIA POWER CO
PLANT YATES

REPORT DATE : 04/04/94
SAMPLE DATE : 02/22/94
SAMPLE NUMBER : 940301-0099
FRS NUMBER :
TONNAGE :

DESCRIPTION: GPCO, PLANT YATES UNIT 1 PERFORMANCE TEST

TEST	REFERENCE	RESULT	UNITS
DRY BASIS DATA			
Molybdenum, Dry Basis	ASTM D 3683	2.	mg/kg
Nickel, Dry Basis	ASTM D 3683	12.	mg/kg
Phosphorus, Dry Basis	ASTM D 3682	0.02	% by Wt.
Potassium, Dry Basis	ASTM D 3682	0.13	% by Wt.
Selenium, Dry Basis	Spec.Chem. Acta 44B	< 2.	mg/kg
Silica, Dry Basis	ASTM D 3682	2.36	% by Wt.
Sodium, Dry Basis	ASTM D 3682	0.05	% by Wt.
Strontium, Dry Basis	ASTM D 3683	56.	mg/kg
Sulfur, Dry	ASTM D 3180	4.71	% by Wt.
Sulfur, Pounds per million BTU, Dry	ASTM D 3180	3.60	
Titanium, Dry Basis	ASTM D 3682	0.06	% by Wt.
Vanadium, Dry Basis	ASTM D 3683	24.	mg/kg
Zinc, Dry Basis	ASTM D 3683	13.	mg/kg
AS RECEIVED BASIS			
Moisture, Total	ASTM D 3302	6.43	% by Wt.
Ash, As Received	ASTM D 3180	9.90	% by Wt.
Heat of Combustion, As Received	ASTM D 3180	12233.	BTU/lb
Carbon, Total, As Received	ASTM D 3180	67.45	% by Wt.
Carbon, Fixed, As Received	ASTM D 3180	43.83	% by Wt.
Chlorine, Total, As Received	ASTM D 4208/EPA 300.	961.	mg/kg
Fluorine, Total, As Received	ASTM D 3761/EPA 300.	93.	mg/kg
Hydrogen, Total, As Received	ASTM D 3180	4.79	% by Wt.
Nitrogen, Total, As Received	ASTM D 3180	1.15	% by Wt.
Oxygen, Total, As Received	ASTM D 3176	5.87	% by Wt.
Volatiles, As Received	ASTM D 3180	39.84	% by Wt.

Low Particulate
Auxiliary Test Block

Alternate Coal Test

Chemist	Quality Control	Supv. Chemist	Page
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5-2790 Rev. 8/85

General Test Laboratory
Building Number 8
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Birmingham, Al. 35291

Alabama Power

Certificate of Analysis

TO : MR. J. SPRAYBERRY
ADDRESS: GEORGIA POWER CO
PLANT YATES

DESCRIPTION: GPCO, PLANT YATES UNIT 1 PERFORMANCE TEST

REPORT DATE : 04/04/94
SAMPLE DATE : 02/22/94
SAMPLE NUMBER : 940301-0099
FRS NUMBER :
TONNAGE :

TEST	REFERENCE	RESULT	UNITS
AS RECEIVED BASIS			
Aluminum, As Received Basis	ASTM D 3682	1.09	% by Wt.
Antimony, As Received Basis	ASTM D 3683	(1.	mg/kg
Arsenic, As Received Basis	Spec. Chem. Acta.44B	1.2	mg/kg
Barium, As Received Basis	ASTM D 3683	40.	mg/kg
Beryllium, As Received Basis	ASTM D 3683	3.	mg/kg
Cadmium, As Received Basis	ASTM D 3683	(1.0	mg/kg
Calcium, As Received Basis	ASTM D 3682	0.21	% by Wt.
Chromium, As Received	ASTM D 3683	17.	mg/kg
Cobalt, As Received Basis	ASTM D 3683	7.	mg/kg
Copper, As Received Basis	ASTM D 3683	7.	mg/kg
Iron, As Received Basis	ASTM D 3682	1.91	% by Wt.
Lead, As Received Basis	Spec. Chem. Acta.44B	2.	mg/kg
Lithium, As Received Basis	ASTM D 3683	8.	mg/kg
Magnesium, As Received Basis	ASTM D 3682	0.05	% by Wt.
Manganese, As Received Basis	ASTM D 3683	25.	mg/kg
Mercury, As Received Basis	ASTM D 3684	0.13	mg/kg
Molybdenum, As Received Basis	ASTM D 3683	2.	mg/kg
Nickel, As Received Basis	ASTM D 3683	11.	mg/kg
Phosphorus, As Received Basis	ASTM D 3682	0.01	% by Wt.
Potassium, As Received Basis	ASTM D 3682	0.12	% by Wt.
Selenium, As Received Basis	Spec.Chem. Acta. 44B	(2.	mg/kg
Silica, As Received Basis	ASTM D 3682	2.21	% by Wt.
Sodium, As Received Basis	ASTM D 3682	0.05	% by Wt.
Strontium, As Received Basis	ASTM D 3683	53.	mg/kg
Sulfur, As Received	ASTM D 3180	4.41	% by Wt.
Sulfur, Pounds per million BTU, As Rec.	ASTM D 3180	3.61	#/mmBTU
Titanium, As Received Basis	ASTM D 3682	0.06	% by Wt.

Low Particulate
Auxiliary Test Block

Alternate Coal Test

Chemist	Quality Control	Supv. Chemist	Page 3 of 6

General Test Laboratory
Building Number 8
P.O. Box 2641
Birmingham, Al. 35291

Alabama Power

Certificate of Analysis

TO : MR. J. SPRAYBERRY
ADDRESS: GEORGIA POWER CO
PLANT YATES

REPORT DATE : 04/04/94
SAMPLE DATE : 02/22/94
SAMPLE NUMBER : 940301-0099
FRS NUMBER :
TONNAGE :

DESCRIPTION: GPCO, PLANT YATES UNIT 1 PERFORMANCE TEST

TEST	REFERENCE	RESULT	UNITS
AS RECEIVED BASIS			
Vanadium, As Received Basis	ASTM D 3683	23.	mg/kg
Zinc, As Received Basis	ASTM D 3683	12.	mg/kg
IGNITED BASIS, ELEMENTAL FORM			
Aluminum, Ignited Basis	ASTM D 3682	11.01	% by Wt.
Antimony, Ignited Basis	ASTM D 3683	5.	mg/kg
Barium, Ignited Basis	ASTM D 3683	483.	mg/kg
Beryllium, Ignited Basis	ASTM D 3683	26.	mg/kg
Cadmium, Ignited Basis	ASTM D 3683	4.	mg/kg
Calcium, Ignited Basis	ASTM D 3682	2.13	% by Wt.
Chromium, Ignited Basis	ASTM D 3683	170.	mg/kg
Cobalt, Ignited Basis	ASTM D 3683	70.	mg/kg
Copper, Ignited Basis	ASTM D 3683	71.	mg/kg
Iron, Ignited Basis	ASTM D 3682	19.34	% by Wt.
Lead, Ignited Basis	Spec. Chem. Acta.448	17.	mg/kg
Lithium, Ignited Basis	ASTM D 3683	82.	mg/kg
Magnesium, Ignited Basis	ASTM D 3682	0.48	% by Wt.
Manganese, Ignited Basis	ASTM D 3683	257.	mg/kg
Molybdenum, Ignited Basis	ASTM D 3683	20.	mg/kg
Nickel, Ignited Basis	ASTM D 3683	109.	mg/kg
Phosphorus, Ignited Basis	ASTM D 3682	0.15	% by Wt.
Potassium, Ignited Basis	ASTM D 3682	1.22	% by Wt.
Silica, Ignited Basis	ASTM D 3682	22.33	% by Wt.
Sodium, Ignited Basis	ASTM D 3682	0.47	% by Wt.
Strontium, Ignited Basis	ASTM D 3683	531.	mg/kg
Sulfur, Ignited Basis	ASTM D 1757	0.89	% by Wt.

Low Particulate
Auxiliary Test Block

Alternate Coal Test

Chemist	Quality Control	Supv. Chemist	Page 4 of 6

F 2700 Rev. 8/85

General Test Laboratory
Building Number 8
P.O. Box 2641
Birmingham, Al. 35291

Alabama Power

Certificate of Analysis

TO : MR. J. SPRAYBERRY
ADDRESS: GEORGIA POWER CO
PLANT YATES

REPORT DATE : 04/04/94
SAMPLE DATE : 02/22/94
SAMPLE NUMBER : 940301-0099
FRS NUMBER :
TONNAGE :

DESCRIPTION: GPCD, PLANT YATES UNIT 1 PERFORMANCE TEST

TEST	REFERENCE	RESULT	UNITS
IGNITED BASIS, ELEMENTAL FORM			
Titanium, Ignited Basis	ASTM D 3682	0.58	% by Wt.
Vanadium, Ignited Basis	ASTM D 3683	228.	mg/kg
Zinc, Ignited Basis	ASTM D 3683	123.	mg/kg
IGNITED BASIS, OXIDE FORM			
Aluminum Oxide (Al2O3), Ignited Basis	ASTM D 3682	20.81	% by Wt.
Antimony Oxide (Sb2O5), Ignited Basis	ASTM D 3683	7.	mg/kg
Barium Oxide (BaO), Ignited Basis	ASTM D 3683	451.	mg/kg
Beryllium Oxide (BeO), Ignited Basis	ASTM D 3683	79.	mg/kg
Cadmium Oxide (CdO), Ignited Basis	ASTM D 3683	5.	mg/kg
Calcium Oxide (CaO), Ignited Basis	ASTM D 3682	2.98	% by Wt.
Chromium Oxide (CrO), Ignited Basis	ASTM D 3683	223.	mg/kg
Cobalt Oxide (Co2O3), Ignited Basis	ASTM D 3683	78.	mg/kg
Copper Oxide (CuO), Ignited Basis	ASTM D 3683	89.	mg/kg
Iron Oxide (Fe2O3), Ignited Basis	ASTM D 3682	27.66	% by Wt.
Lead Oxide (PbO2), Ignited Basis	Spec. Chem. Acta. 44B	20.	mg/kg
Lithium Oxide (Li2O), Ignited Basis	ASTM D 3683/EPA200.7	270.	mg/kg
Magnesium Oxide (MgO), Ignited Basis	ASTM D 3682	0.80	% by Wt.
Manganese Oxide (MnO2), Ignited Basis	ASTM D 3683	331.	mg/kg
Molybdenum Oxide (MO2O5), Ignited Basis	ASTM D 3683	24.	mg/kg
Nickel Oxide (NiO), Ignited Basis	ASTM D 3683	139.	mg/kg
Phosphorus(as P2O5), Ignited Basis	ASTM D 3682	0.34	% by Wt.
Potassium Oxide (K2O), Ignited Basis	ASTM D 3682	1.46	% by Wt.
Silica Oxide (SiO2), Ignited Basis	ASTM D 3682	47.79	% by Wt.
Sodium Oxide (Na2O), Ignited Basis	ASTM D 3682	0.63	% by Wt.
Strontium Oxide (SrO), Ignited Basis	ASTM D 3683	626.	mg/kg

Low Particulate
Auxiliary Test Block

Alternate Coal Test

Chemist	Quality Control	Supv. Chemist	Page 5 of 6

5-2780 Rev. 8/95

General Test Laboratory
Building Number 8
P.O. Box 2641
Birmingham, Al. 35291

Alabama Power

Certificate of Analysis

TO : MR. J. SPRAYBERRY
ADDRESS: GEORGIA POWER CO
PLANT YATES

REPORT DATE : 04/04/94
SAMPLE DATE : 02/22/94
SAMPLE NUMBER : 940301-0099
FRS NUMBER :
TONNAGE :

DESCRIPTION: GPCO, PLANT YATES UNIT 1 PERFORMANCE TEST

TEST	REFERENCE	RESULT	UNITS
IGNITED BASIS, OXIDE FORM			
Sulfur Trioxide (SO3), Ignited Basis	ASTM D 1757	2.22	% by Wt.
Titanium Oxide (TiO2), Ignited Basis	ASTM D 3682	0.97	% by Wt.
Vanadium Oxide (V2O5), Ignited Basis	ASTM D 3683	408.	mg/kg
Zinc Oxide (ZnO), Ignited Basis	ASTM D 3683	154.	mg/kg
Sum of Ignited Basis Oxides		105.36	% by Wt.
GENERAL			
Grindability Index	ASTM D 409	51.5	SU
Heat of Combustion, Moisture Ash Free	ASTM D 3180	14621.	BTU/lb
Ash Fusion			
Initial	ASTM D 1857	1920.0	Deg F
Softening	ASTM D 1857	1980.0	Deg F
Hemispherical	ASTM D 1857	2005.0	Deg F
Fluid	ASTM D 1857	2250.0	Deg F

This Certificate is for the physical and/or chemical characteristics of the sample as submitted.
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CC: MR. W. S. HILL

Low Particulate
Auxiliary Test Block

Alternate Coal Test

Chemist	Quality Control	Supv Chemist	Page
	VICKY MOON	DONNA WILSON	6 of 6

General Test Laboratory
Building Number 8
P.O. Box 2641
Birmingham, Al. 35291

Alabama Power

Certificate of Analysis

TO : MR. J. SPRAYBERRY
ADDRESS: GEORGIA POWER CO
PLANT YATES

DESCRIPTION: GPCO, PLANT YATES UNIT 1, PERFORMANCE TEST

REPORT DATE : 04/18/94
SAMPLE DATE : 03/14/94
SAMPLE NUMBER : 940322-0058
FRS NUMBER :
TONNAGE :

TEST	REFERENCE	RESULT	UNITS
DRY BASIS DATA			
Ash, Dry	ASTM D 3180	10.41	% by Wt.
Heat of Combustion, Dry	ASTM D 3180	12942.	BTU/lb
Loss on Ignition At 750C	ASTM D 3180	89.59	% by Wt.
Carbon, Total, Dry	ASTM D 3180	72.72	% by Wt.
Carbon, Fixed, Dry	ASTM D 3180	50.92	% by Wt.
Chlorine, Total, Dry	ASTM D 4208/EPA 300.	1742.	mg/kg
Fluorine, Total, Dry	ASTM D 3761/EPA 300.	54.	mg/kg
Hydrogen, Total, Dry	ASTM D 3180	4.93	% by Wt.
Nitrogen, Total, Dry	ASTM D 3180	1.47	% by Wt.
Oxygen, Total, Dry	ASTM D 3180	7.70	% by Wt.
Volatiles, Dry	ASTM D 3180	38.67	% by Wt.
Aluminum, Dry Basis	ASTM D 3682	1.25	% by Wt.
Antimony, Dry Basis	ASTM D 3683	< 1.	mg/kg
Arsenic, Dry Basis	Spec. Chem. Acta.44B	3.1	mg/kg
Barium, Dry Basis	ASTM D 3683	43.	mg/kg
Beryllium, Dry Basis	ASTM D 3683	3.	mg/kg
Cadmium, Dry Basis	ASTM D 3683	< 1.0	mg/kg
Calcium, Dry Basis	ASTM D 3682	0.35	% by Wt.
Chromium, Dry Basis	ASTM D 3683	25.	mg/kg
Cobalt, Dry Basis	ASTM D 3683	9.	mg/kg
Copper, Dry Basis	ASTM D 3683	11.	mg/kg
Iron, Dry Basis	ASTM D 3682	1.17	% by Wt.
Lead, Dry Basis	Spec. Chem. Acta.44B	6.	mg/kg
Lithium, Dry Basis	ASTM D 3683	6.	mg/kg
Magnesium, Dry Basis	ASTM D 3682	0.07	% by Wt.
Manganese, Dry Basis	ASTM D 3683	29.	mg/kg
Mercury, Dry Basis	ASTM D 3684	0.04	mg/kg

High Particulate
Parametric Test Block

Chemist	Quality Control	Supv. Chemist	Page
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5-2790 Rev. 8/85

General Test Laboratory
Building Number 8
P.O. Box 2641
Birmingham, Al. 35291

Alabama Power

Certificate of Analysis

TO : MR. J. SPRAYBERRY
ADDRESS: GEORGIA POWER CO
PLANT YATES

REPORT DATE : 04/18/94
SAMPLE DATE : 03/14/94
SAMPLE NUMBER : 940322-0058
FRS NUMBER :
TONNAGE :

DESCRIPTION: GPCO. PLANT YATES UNIT 1, PERFORMANCE TEST

TEST	REFERENCE	RESULT	UNITS
DRY BASIS DATA			
Molybdenum, Dry Basis	ASTM D 3683	1.	mg/kg
Nickel, Dry Basis	ASTM D 3683	18.	mg/kg
Phosphorus, Dry Basis	ASTM D 3682	0.01	% by Wt.
Potassium, Dry Basis	ASTM D 3682	0.26	% by Wt.
Selenium, Dry Basis	Spec.Chem. Acta 44B	2.3	mg/kg
Silica, Dry Basis	ASTM D 3682	2.40	% by Wt.
Sodium, Dry Basis	ASTM D 3682	0.08	% by Wt.
Strontium, Dry Basis	ASTM D 3683	32.	mg/kg
Sulfur, Dry	ASTM D 3180	2.77	% by Wt.
Sulfur, Pounds per million BTU, Dry	ASTM D 3180	2.14	
Titanium, Dry Basis	ASTM D 3682	0.07	% by Wt.
Vanadium, Dry Basis	ASTM D 3683	35.	mg/kg
Zinc, Dry Basis	ASTM D 3683	48.	mg/kg
AS RECEIVED BASIS			
Moisture, Total	ASTM D 3302	12.67	% by Wt.
Ash, As Received	ASTM D 3180	9.09	% by Wt.
Heat of Combustion, As Received	ASTM D 3180	11302.	BTU/lb
Carbon, Total, As Received	ASTM D 3180	63.51	% by Wt.
Carbon, Fixed, As Received	ASTM D 3180	44.47	% by Wt.
Chlorine, Total, As Received	ASTM D 4208/EPA 300.	1521.	mg/kg
Fluorine, Total, As Received	ASTM D 3761/EPA 300.	45.	mg/kg
Hydrogen, Total, As Received	ASTM D 3180	4.31	% by Wt.
Nitrogen, Total, As Received	ASTM D 3180	1.28	% by Wt.
Oxygen, Total, As Received	ASTM D 3176	6.72	% by Wt.
Volatiles, As Received	ASTM D 3180	33.77	% by Wt.

High Particulate
Parametric Test Block

Chemist	Quality Control	Supv. Chemist	Page
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General Test Laboratory
Building Number 8
P.O. Box 2641
Birmingham, Al. 35291

Alabama Power

Certificate of Analysis

TO : MR. J. SPRAYBERRY
ADDRESS: GEORGIA POWER CO
PLANT YATES

DESCRIPTION: GPCO, PLANT YATES UNIT 1, PERFORMANCE TEST

REPORT DATE : 04/18/94
SAMPLE DATE : 03/14/94
SAMPLE NUMBER : 940322-0058
FRS NUMBER :
TONNAGE :

AS RECEIVED BASIS

TEST	REFERENCE	RESULT	UNITS
Aluminum, As Received Basis	ASTM D 3682	1.10	% by Wt.
Antimony, As Received Basis	ASTM D 3683	< 1.	mg/kg
Arsenic, As Received Basis	Spec. Chem. Acta.44B	2.7	mg/kg
Barium, As Received Basis	ASTM D 3683	37.	mg/kg
Beryllium, As Received Basis	ASTM D 3683	2.	mg/kg
Cadmium, As Received Basis	ASTM D 3683	< 1.0	mg/kg
Calcium, As Received Basis	ASTM D 3682	0.30	% by Wt.
Chromium, As Received	ASTM D 3683	22.	mg/kg
Cobalt, As Received Basis	ASTM D 3683	8.	mg/kg
Copper, As Received Basis	ASTM D 3683	10.	mg/kg
Iron, As Received Basis	ASTM D 3682	1.02	% by Wt.
Lead, As Received Basis	Spec. Chem. Acta.44B	5.	mg/kg
Lithium, As Received Basis	ASTM D 3683	5.	mg/kg
Magnesium, As Received Basis	ASTM D 3682	0.06	% by Wt.
Manganese, As Received Basis	ASTM D 3683	25.	mg/kg
Mercury, As Received Basis	ASTM D 3684	0.03	mg/kg
Molybdenum, As Received Basis	ASTM D 3683	1.	mg/kg
Nickel, As Received Basis	ASTM D 3683	16.	mg/kg
Phosphorus, As Received Basis	ASTM D 3682	0.01	% by Wt.
Potassium, As Received Basis	ASTM D 3682	0.23	% by Wt.
Selenium, As Received Basis	Spec.Chem. Acta. 44B	2.0	mg/kg
Silica, As Received Basis	ASTM D 3682	2.09	% by Wt.
Sodium, As Received Basis	ASTM D 3682	0.07	% by Wt.
Strontium, As Received Basis	ASTM D 3683	28.	mg/kg
Sulfur, As Received	ASTM D 3180	2.42	% by Wt.
Sulfur, Pounds per million BTU, As Rec.	ASTM D 3180	2.14	#/mmBTU
Titanium, As Received Basis	ASTM D 3682	0.07	% by Wt.

High Particulate
Parametric Test Block

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PLANT YATES

REPORT DATE : 04/18/94
SAMPLE DATE : 03/14/94
SAMPLE NUMBER : 940322-0058
FRS NUMBER :
TONNAGE :

DESCRIPTION: GPCO, PLANT YATES UNIT 1, PERFORMANCE TEST

TEST	REFERENCE	RESULT	UNITS
AS RECEIVED BASIS			
Vanadium, As Received Basis	ASTM D 3683	30.	mg/kg
Zinc, As Received Basis	ASTM D 3683	42.	mg/kg
IGNITED BASIS, ELEMENTAL FORM			
Aluminum, Ignited Basis	ASTM D 3682	12.05	% by Wt.
Antimony, Ignited Basis	ASTM D 3683	4.	mg/kg
Barium, Ignited Basis	ASTM D 3683	411.	mg/kg
Beryllium, Ignited Basis	ASTM D 3683	26.	mg/kg
Cadmium, Ignited Basis	ASTM D 3683	5.	mg/kg
Calcium, Ignited Basis	ASTM D 3682	3.32	% by Wt.
Chromium, Ignited Basis	ASTM D 3683	240.	mg/kg
Cobalt, Ignited Basis	ASTM D 3683	83.	mg/kg
Copper, Ignited Basis	ASTM D 3683	106.	mg/kg
Iron, Ignited Basis	ASTM D 3682	11.26	% by Wt.
Lead, Ignited Basis	Spec. Chem. Acta.44B	55.	mg/kg
Lithium, Ignited Basis	ASTM D 3683	56.	mg/kg
Magnesium, Ignited Basis	ASTM D 3682	0.67	% by Wt.
Manganese, Ignited Basis	ASTM D 3683	279.	mg/kg
Molybdenum, Ignited Basis	ASTM D 3683	12.	mg/kg
Nickel, Ignited Basis	ASTM D 3683	175.	mg/kg
Phosphorus, Ignited Basis	ASTM D 3682	0.12	% by Wt.
Potassium, Ignited Basis	ASTM D 3682	2.52	% by Wt.
Silica, Ignited Basis	ASTM D 3682	23.04	% by Wt.
Sodium, Ignited Basis	ASTM D 3682	0.79	% by Wt.
Strontium, Ignited Basis	ASTM D 3683	306.	mg/kg
Sulfur, Ignited Basis	ASTM D 1757	1.30	% by Wt.

High Particulate
Parametric Test Block

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PLANT YATES

REPORT DATE : 04/18/94
SAMPLE DATE : 03/14/94
SAMPLE NUMBER : 940322-0058
FRS NUMBER :
TONNAGE :

DESCRIPTION: GPCO, PLANT YATES UNIT 1, PERFORMANCE TEST

TEST	REFERENCE	RESULT	UNITS
IGNITED BASIS, ELEMENTAL FORM			
Titanium, Ignited Basis	ASTM D 3682	0.72	% by Wt.
Vanadium, Ignited Basis	ASTM D 3683	332.	mg/kg
Zinc, Ignited Basis	ASTM D 3683	459.	mg/kg
IGNITED BASIS, OXIDE FORM			
Aluminum Oxide (Al2O3), Ignited Basis	ASTM D 3682	22.77	% by Wt.
Antimony Oxide (Sb2O5), Ignited Basis	ASTM D 3683	5.	mg/kg
Barium Oxide (BaO), Ignited Basis	ASTM D 3683	460.	mg/kg
Beryllium Oxide (BeO), Ignited Basis	ASTM D 3683	77.	mg/kg
Cadmium Oxide (CdO), Ignited Basis	ASTM D 3683	6.	mg/kg
Calcium Oxide (CaO), Ignited Basis	ASTM D 3682	4.65	% by Wt.
Chromium Oxide (CrO), Ignited Basis	ASTM D 3683	315.	mg/kg
Cobalt Oxide (Co2O3), Ignited Basis	ASTM D 3683	93.	mg/kg
Copper Oxide (CuO), Ignited Basis	ASTM D 3683	132.	mg/kg
Iron Oxide (Fe2O3), Ignited Basis	ASTM D 3682	16.10	% by Wt.
Lead Oxide (PbO2), Ignited Basis	Spec. Chem. Acta.44B	63.	mg/kg
Lithium Oxide (Li2O), Ignited Basis	ASTM D 3683/EPA200.7	184.	mg/kg
Magnesium Oxide (MgO), Ignited Basis	ASTM D 3682	1.11	% by Wt.
Manganese Oxide (MnO2), Ignited Basis	ASTM D 3683	360.	mg/kg
Molybdenum Oxide (MO2O5), Ignited Basis	ASTM D 3683	15.	mg/kg
Nickel Oxide (NiO), Ignited Basis	ASTM D 3683	222.	mg/kg
Phosphorus(as P2O5), Ignited Basis	ASTM D 3682	0.27	% by Wt.
Potassium Oxide (K2O), Ignited Basis	ASTM D 3682	3.02	% by Wt.
Silica Oxide (SiO2), Ignited Basis	ASTM D 3682	49.31	% by Wt.
Sodium Oxide (Na2O), Ignited Basis	ASTM D 3682	1.07	% by Wt.
Strontium Oxide (SrO), Ignited Basis	ASTM D 3683	361.	mg/kg

High Particulate
Parametric Test Block

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Certificate of Analysis

TO : MR. J. SPRAYBERRY
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PLANT YATES

REPORT DATE : 04/18/94
SAMPLE DATE : 03/14/94
SAMPLE NUMBER : 940322-0058
FRS NUMBER :
TONNAGE :

DESCRIPTION: GPCO. PLANT YATES UNIT 1, PERFORMANCE TEST

TEST	REFERENCE	RESULT	UNITS
IGNITED BASIS, OXIDE FORM			
Sulfur Trioxide (SO3), Ignited Basis	ASTM D 1757	3.25	% by Wt.
Titanium Oxide (TiO2), Ignited Basis	ASTM D 3682	1.20	% by Wt.
Vanadium Oxide (V2O5), Ignited Basis	ASTM D 3683	594.	mg/kg
Zinc Oxide (ZnO), Ignited Basis	ASTM D 3683	574.	mg/kg
Sum of Ignited Basis Oxides		102.52	% by Wt.
GENERAL			
Heat of Combustion, Moisture Ash Free	ASTM D 3180	14446.	BTU/lb
Ash Fusion			
Initial	ASTM D 1857	2060.0	Deg F
Softening	ASTM D 1857	2110.0	Deg F
Hemispherical	ASTM D 1857	2175.0	Deg F
Fluid	ASTM D 1857	2375.0	Deg F

This Certificate is for the physical and/or chemical characteristics of the sample as submitted.
The laboratory cannot attest to the origin and representation of the sample.

CC: MR. W. S. HILL

High Particulate
Parametric Test Block

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FILE: CO

General Test Laboratory
Building Number 8
P.O. Box 2641
Birmingham, Al. 35291

Alabama Power

Certificate of Analysis

TO : MR. J. SPRAYBERRY
ADDRESS: GEORGIA POWER CO
PLANT YATES

DESCRIPTION: GPCO, PLANT YATES UNIT 1

REPORT DATE : 08/15/94
SAMPLE DATE : 06/01/94
SAMPLE NUMBER : 940805-0001
FRS NUMBER :
TONNAGE :

TEST	REFERENCE	RESULT	UNITS
DRY BASIS DATA			
Ash, Dry	ASTM D 3174	10.91	% by Wt.
Heat of Combustion, Dry	ASTM D 1989	12900.	BTU/lb
Carbon, Total, Dry	ASTM D 5373	72.91	% by Wt.
Carbon, Fixed, Dry	ASTM D 3175	51.03	% by Wt.
Chlorine, Total, Dry	ASTM D 4208/EPA 300.	1258.	mg/kg
Fluorine, Total, Dry	ASTM D 3761/EPA 300.	92.	mg/kg
Hydrogen, Total, Dry	ASTM D 5373	4.94	% by Wt.
Nitrogen, Total, Dry	ASTM D 5373	1.48	% by Wt.
Oxygen, Total, Dry	ASTM D 3176	7.07	% by Wt.
Volatiles, Dry	ASTM D 3175	38.06	% by Wt.
Arsenic, Dry Basis	Spec. Chem. Acta.44B	1.5	mg/kg
Mercury, Dry Basis	ASTM D 3684	0.06	mg/kg
Selenium, Dry Basis	Spec.Chem. Acta 44B	1.6	mg/kg
Sulfur, Dry	ASTM D 4239	2.69	% by Wt.
Sulfur, Pounds per million BTU, Dry	ASTM D 3180	2.09	
AS RECEIVED BASIS			
Moisture, Total	ASTM D 3302	11.20	% by Wt.
Ash, As Received	ASTM D 3174	9.69	% by Wt.
Heat of Combustion, As Received	ASTM D 1989	11455.	BTU/lb
Carbon, Total, As Received	ASTM D 5373	64.74	% by Wt.
Carbon, Fixed, As Received	ASTM D 3175	45.31	% by Wt.
Chlorine, Total, As Received	ASTM D 4208/EPA 300.	1117.	mg/kg
Fluorine, Total, As Received	ASTM D 3761/EPA 300.	78.	mg/kg
Hydrogen, Total, As Received	ASTM D 5373	4.39	% by Wt.
Nitrogen, Total, As Received	ASTM D 5373	1.31	% by Wt.

High Particulate
Long-Term Test Block

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General Test Laboratory
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Alabama Power

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TO : MR. J. SPRAYBERRY
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PLANT YATES

DESCRIPTION: GPCO. PLANT YATES UNIT 1

REPORT DATE : 08/15/94
SAMPLE DATE : 06/01/94
SAMPLE NUMBER : 940805-0001
FRS NUMBER :
TONNAGE :

TEST	REFERENCE	RESULT	UNITS
AS RECEIVED BASIS			
Oxygen, Total, As Received	ASTM D 3176	6.28	% by Wt.
Volatiles, As Received	ASTM D 3175	33.80	% by Wt.
Arsenic, As Received Basis	Spec. Chem. Acta.44B	1.3	mg/kg
Mercury, As Received Basis	ASTM D 3684	0.05	mg/kg
Selenium, As Received Basis	Spec.Chem. Acta. 44B	1.4	mg/kg
Sulfur, As Received	ASTM D 4239	2.39	% by Wt.
Sulfur, Pounds per million BTU, As Rec.	ASTM D 3180	2.09	#/mmBTU
IGNITED BASIS, ELEMENTAL FORM			
Aluminum, Ignited Basis	ASTM D 3682	11.47	% by Wt.
Antimony, Ignited Basis	ASTM D 3683	8.5	mg/kg
Beryllium, Ignited Basis	ASTM D 3683	23.	mg/kg
Cadmium, Ignited Basis	ASTM D 3683	1.7	mg/kg
Calcium, Ignited Basis	ASTM D 3682	2.39	% by Wt.
Chromium, Ignited Basis	ASTM D 3683	234.	mg/kg
Cobalt, Ignited Basis	ASTM D 3683	82.	mg/kg
Copper, Ignited Basis	ASTM D 3683	101.	mg/kg
Iron, Ignited Basis	ASTM D 3682	10.29	% by Wt.
Lead, Ignited Basis	Spec. Chem. Acta.44B	45.0	mg/kg
Magnesium, Ignited Basis	ASTM D 3682	0.58	% by Wt.
Manganese, Ignited Basis	ASTM D 3683	261.	mg/kg
Molybdenum, Ignited Basis	ASTM D 3683	39.9	mg/kg
Nickel, Ignited Basis	ASTM D 3683	149.	mg/kg
Potassium, Ignited Basis	ASTM D 3682	2.59	% by Wt.
Silica, Ignited Basis	ASTM D 3682	26.94	% by Wt.
Sodium, Ignited Basis	ASTM D 3682	0.74	% by Wt.

High Particulate
Long-Term Test Block

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TO : MR. J. SPRAYBERRY
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PLANT YATES

DESCRIPTION: GPCO. PLANT YATES UNIT 1

REPORT DATE : 08/15/94
SAMPLE DATE : 06/01/94
SAMPLE NUMBER : 940805-0001
FRS NUMBER :
TONNAGE :

TEST	REFERENCE	RESULT	UNITS
IGNITED BASIS, ELEMENTAL FORM			
Titanium, Ignited Basis	ASTM D 3682	0.66	% by Wt.
Vanadium, Ignited Basis	ASTM D 3683	337.	mg/kg
Zinc, Ignited Basis	ASTM D 3683	325.	mg/kg
IGNITED BASIS, OXIDE FORM			
Aluminum Oxide (Al2O3), Ignited Basis	ASTM D 3682	21.68	% by Wt.
Antimony Oxide (Sb2O5), Ignited Basis	ASTM D 3683	11.3	mg/kg
Beryllium Oxide (BeO), Ignited Basis	ASTM D 3683	68.	mg/kg
Cadmium Oxide (CdO), Ignited Basis	ASTM D 3683	1.9	mg/kg
Calcium Oxide (CaO), Ignited Basis	ASTM D 3682	3.35	% by Wt.
Chromium Oxide (CrO), Ignited Basis	ASTM D 3683	307.	mg/kg
Cobalt Oxide (Co2O3), Ignited Basis	ASTM D 3683	92.	mg/kg
Copper Oxide (CuO), Ignited Basis	ASTM D 3683	126.	mg/kg
Iron Oxide (Fe2O3), Ignited Basis	ASTM D 3682	14.71	% by Wt.
Lead Oxide (PbO2), Ignited Basis	Spec. Chem. Acta.44B	51.8	mg/kg
Magnesium Oxide (MgO), Ignited Basis	ASTM D 3682	0.96	% by Wt.
Manganese Oxide (MnO2), Ignited Basis	ASTM D 3683	337.	mg/kg
Molybdenum Oxide (MO2O5), Ignited Basis	ASTM D 3683	48.7	mg/kg
Nickel Oxide (NiO), Ignited Basis	ASTM D 3683	189.	mg/kg
Potassium Oxide (K2O), Ignited Basis	ASTM D 3682	3.11	% by Wt.
Silica Oxide (SiO2), Ignited Basis	ASTM D 3682	57.65	% by Wt.
Sodium Oxide (Na2O), Ignited Basis	ASTM D 3682	1.00	% by Wt.
Titanium Oxide (TiO2), Ignited Basis	ASTM D 3682	1.10	% by Wt.
Vanadium Oxide (V2O5), Ignited Basis	ASTM D 3683	604.	mg/kg
Zinc Oxide (ZnO), Ignited Basis	ASTM D 3683	406.	mg/kg
Sum of Ignited Basis Oxides		103.60	% by Wt.

High Particulate
Long-Term Test Block

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REPORT DATE : 08/15/94
SAMPLE DATE : 06/01/94
SAMPLE NUMBER : 940805-0001
FRS NUMBER :
TONNAGE :

TEST	REFERENCE	RESULT	UNITS
GENERAL			
Heat of Combustion, Moisture Ash Free	ASTM D 3286	14480.	BTU/lb
Ash Fusion			
Initial	ASTM D 1857	2095.0	Deg F
Softening	ASTM D 1857	2165.0	Deg F
Hemispherical	ASTM D 1857	2245.0	Deg F
Fluid	ASTM D 1857	2480.0	Deg F

This Certificate is for the physical and/or chemical characteristics of the sample as submitted.
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CC: MR. W. S. HILL

High Particulate
Long-Term Test Block

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	VICKY MOON	DONNA WILSON	4 of 4

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General Test Laboratory
Building Number 8
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Alabama Power

Certificate of Analysis

TO : MR. J. SPRAYBERRY
ADDRESS: GEORGIA POWER CO
PLANT YATES

DESCRIPTION: GPCO, PLANT YATES UNIT 1

REPORT DATE : 07/21/94
SAMPLE DATE : 07/07/94
SAMPLE NUMBER : 940711-0061
FRS NUMBER :
TONNAGE :

TEST	REFERENCE	RESULT	UNITS
DRY BASIS DATA			
Ash, Dry	ASTM D 3180	9.90	% by Wt.
Heat of Combustion, Dry	ASTM D 3180	13003.	BTU/lb
Carbon, Total, Dry	ASTM D 3180	73.84	% by Wt.
Carbon, Fixed, Dry	ASTM D 3180	52.11	% by Wt.
Hydrogen, Total, Dry	ASTM D 3180	4.94	% by Wt.
Nitrogen, Total, Dry	ASTM D 3180	1.47	% by Wt.
Oxygen, Total, Dry	ASTM D 3180	7.39	% by Wt.
Volatiles, Dry	ASTM D 3180	37.99	% by Wt.
Sulfur, Dry	ASTM D 3180	2.46	% by Wt.
Sulfur, Pounds per million BTU, Dry	ASTM D 3180	1.89	
AS RECEIVED BASIS			
Moisture, Total	ASTM D 3302	13.61	% by Wt.
Ash, As Received	ASTM D 3180	8.55	% by Wt.
Heat of Combustion, As Received	ASTM D 3180	11233.	BTU/lb
Carbon, Total, As Received	ASTM D 3180	63.79	% by Wt.
Carbon, Fixed, As Received	ASTM D 3180	45.02	% by Wt.
Hydrogen, Total, As Received	ASTM D 3180	4.27	% by Wt.
Nitrogen, Total, As Received	ASTM D 3180	1.27	% by Wt.
Oxygen, Total, As Received	ASTM D 3176	6.38	% by Wt.
Volatiles, As Received	ASTM D 3180	32.82	% by Wt.
Sulfur, As Received	ASTM D 3180	2.13	% by Wt.
Sulfur, Pounds per million BTU, As Rec.	ASTM D 3180	1.90	#/mmBTU

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Certificate of Analysis

TO : MR. J. SPRAYBERRY
ADDRESS: GEORGIA POWER CO
PLANT YATES

DESCRIPTION: GPCO, PLANT YATES UNIT 1

REPORT DATE : 07/21/94
SAMPLE DATE : 07/07/94
SAMPLE NUMBER : 940711-0061
FRS NUMBER :
TONNAGE :

TEST	REFERENCE	RESULT	UNITS
IGNITED BASIS, ELEMENTAL FORM			
Aluminum, Ignited Basis	ASTM D 3682	12.11	% by Wt.
Calcium, Ignited Basis	ASTM D 3682	2.79	% by Wt.
Iron, Ignited Basis	ASTM D 3682	10.10	% by Wt.
Magnesium, Ignited Basis	ASTM D 3682	0.63	% by Wt.
Manganese, Ignited Basis	ASTM D 3682	0.03	% by Wt.
Potassium, Ignited Basis	ASTM D 3682	1.57	% by Wt.
Silica, Ignited Basis	ASTM D 3682	26.24	% by Wt.
Sodium, Ignited Basis	ASTM D 3682	0.79	% by Wt.
Titanium, Ignited Basis	ASTM D 3682	0.72	% by Wt.
IGNITED BASIS, OXIDE FORM			
Aluminum Oxide (Al2O3), Ignited Basis	ASTM D 3682	22.89	% by Wt.
Calcium Oxide (CaO), Ignited Basis	ASTM D 3682	3.91	% by Wt.
Iron Oxide (Fe2O3), Ignited Basis	ASTM D 3682	14.44	% by Wt.
Magnesium Oxide (MgO), Ignited Basis	ASTM D 3682	1.05	% by Wt.
Manganese Oxide (MnO2), Ignited Basis	ASTM D 3682	0.04	% by Wt.
Potassium Oxide (K2O), Ignited Basis	ASTM D 3682	1.89	% by Wt.
Silica Oxide (SiO2), Ignited Basis	ASTM D 3682	56.15	% by Wt.
Sodium Oxide (Na2O), Ignited Basis	ASTM D 3682	1.07	% by Wt.
Titanium Oxide (TiO2), Ignited Basis	ASTM D 3682	1.20	% by Wt.
Sum of Ignited Basis Oxides		102.64	% by Wt.
GENERAL			
Heat of Combustion, Moisture Ash Free	ASTM D 3180	14432.	BTU/lb

High Particulate
Long-Term Test Block

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General Test Laboratory
Building Number 8
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Alabama Power

Certificate of Analysis

TO : MR. J. SPRAYBERRY
ADDRESS: GEORGIA POWER CO
PLANT YATES

DESCRIPTION: GPCD, PLANT YATES UNIT 1

REPORT DATE : 07/21/94
SAMPLE DATE : 07/07/94
SAMPLE NUMBER : 940711-0061
FRS NUMBER :
TONNAGE :

TEST	REFERENCE	RESULT	UNITS
GENERAL			
Ash Fusion			
Initial	ASTM D 1857	2060.0	Deg F
Softening	ASTM D 1857	2120.0	Deg F
Hemispherical	ASTM D 1857	2170.0	Deg F
Fluid	ASTM D 1857	2380.0	Deg F

This Certificate is for the physical and/or chemical characteristics of the sample as submitted.
The laboratory cannot attest to the origin and representation of the sample.

CC: MR. W. S. HILL

High Particulate
Long-Term Test Block

Chemist	Quality Control	Supv. Chemist	Page
	VICKY MOON	DONNA WILSON DW	3 of 3

5-2790 Rev. 8/85
FILE: CO

THIS SAMPLE HAS BEEN PRINTED PRIOR TO COMPLETION OF ALL SCHEDULED TESTS. AN UPDATED CERTIFICATE WILL BE ISSUED UPON COMPLETION.

TO: MR. J. SPRAYBERRY
ADDRESS: GEORGIA POWER CO
PLANT YATES

REPORT DATE: / /
SAMPLE DATE: 09/15/94
SAMPLE NUMBER: 940921-0015
FRS NUMBER:
TONNAGE:

DESCRIPTION: GPCO, PLANT YATES, UNIT 1

TEST	REFERENCE	RESULT	UNITS
Ignited Basis, Oxide Form			
Barium Oxide (BaO)	ASTM D 3683	1742	mg/kg
Beryllium Oxide (BeO)	ASTM D 3683	73	mg/kg
Cadmium Oxide (CdO)	ASTM D 3683	0.4	mg/kg
Calcium Oxide (CaO)	ASTM D 3682	1.69	% by Wt.
Chromium Oxide (CrO)	ASTM D 3683	204	mg/kg
Cobalt Oxide (Co203)	ASTM D 3683	115	mg/kg
Copper Oxide (CuO)	ASTM D 3683	194	mg/kg
Iron Oxide (Fe203)	ASTM D 3682	11.7	% by Wt.
Lead Oxide (Pb02)	Spec. Chem. Acta. 44B	54.9	mg/kg
Lithium Oxide (Li20)	ASTM D 3683/EPA 200.7		mg/kg
Magnesium Oxide (MgO)	ASTM D 3682	1.11	% by Wt.
Manganese Oxide (Mn02)	ASTM D 3683	216	mg/kg
Nickel Oxide (NiO)	ASTM D 3683	158	mg/kg
Phosphorus (as P205)	ASTM D 3682	0.48	% by Wt.
Potassium Oxide (K20)	ASTM D 3682	3.55	% by Wt.
Silica Oxide (Si02)	ASTM D 3682	57.89	% by Wt.
Sodium Oxide (Na20)	ASTM D 3682	0.86	% by Wt.
Strontium Oxide (SrO)	ASTM D 3683		mg/kg
Sulfur Trioxide (SO3)	ASTM D 5016	0.92	% by Wt.
Titanium Oxide (Ti02)	ASTM D 3682	1.49	% by Wt.
Vanadium Oxide (V205)	ASTM D 3683	583	mg/kg
Zinc Oxide (ZnO)	ASTM D 3683	118	mg/kg
GENERAL			
Heat of Combustion Moisture Ash Free	ASTM D 3180	15126	BTU/lb

High-Particulate Auxiliary
Test Block (Alternate Coal Tests)

THIS SAMPLE HAS BEEN PRINTED PRIOR TO COMPLETION OF ALL SCHEDULED TESTS. AN UPDATED CERTIFICATE WILL BE ISSUED UPON COMPLETION.

TO: MR. J. SPRAYBERRY
ADDRESS: GEORGIA POWER CO
PLANT YATES

REPORT DATE: / /
SAMPLE DATE: 09/15/94
SAMPLE NUMBER: 940921-0015
FRS NUMBER:
TONNAGE:

DESCRIPTION: GPCO, PLANT YATES, UNIT 1

TEST	REFERENCE	RESULT	UNITS
DRY BASIS DATA			
Phosphorus	ASTM D 3682	0.02	% by Wt.
Potassium	ASTM D 3682	0.31	% by Wt.
Selenium	Spec. Chem. Acta. 44B	2.4	mg/kg
Silica	ASTM D 3682	2.02	% by Wt.
Sodium	ASTM D 3682	0.07	% by Wt.
Sulfur	ASTM D 4239	1.35	% by Wt.
Sulfur, lbs. per million BTU	ASTM D 3180	1.00	#/mmBTU
Titanium	ASTM D 3682	0.09	% by Wt.
Vanadium	ASTM D 3683	31	mg/kg
Zinc	ASTM D 3683	10	mg/kg
AS RECEIVED BASIS			
Moisture, Total	ASTM D 3302	5.21	% by Wt.
Ash	ASTM F 3174	9.87	% by Wt.
Heat of Combustion	ASTM D 1989	12845	BTU/lb
Carbon, Total	ASTM D 5373	73.04	% by Wt.
Carton, Fixed	ASTM D 3175	52.27	% by Wt.
Chlorine, Total	ASTM D 4208/EPA 300	573	mg/kg
Fluorine, Total	ASTM F 3761/EPA 300	76	mg/kg
Hydrogen, Total	ASTM D 5373	4.71	% by Wt.
Nitrogen, Total	ASTM D 5373	1.36	% by Wt.
Oxygen, Total	ASTM D 3176	4.53	% by Wt.
Volatiles	ASTM D 3175	32.66	% by Wt.
Aluminum	ASTM D 3682	1.5	% by Wt.
Antimony	ASTM D 3683	1.0	mg/kg
Arsenic	Spec. Chem. Acta. 44B	10.0	mg/kg

High-Particulate Auxiliary
Test Block (Alternate Coal Tests)

THIS SAMPLE HAS BEEN PRINTED PRIOR TO COMPLETION OF ALL SCHEDULED TESTS. AN UPDATED CERTIFICATE WILL BE ISSUED UPON COMPLETION.

TO: MR. J. SPRAYBERRY
ADDRESS: GEORGIA POWER CO
PLANT YATES

REPORT DATE: / /
SAMPLE DATE: 09/15/94
SAMPLE NUMBER: 940921-0015
FRS NUMBER:
TONNAGE:

DESCRIPTION: GPCO, PLANT YATES, UNIT 1

TEST	REFERENCE	RESULT	UNITS
DRY BASIS DATA			
Ash	ASTM F 3174	10.41	% by Wt.
Heat of Combustion	ASTM D 1989	13551	BTU/lb
Loss on Ignition at 75°C	ASTM D 3174	89.59	% by Wt.
Carbon, Total	ASTM D 5373	77.05	% by Wt.
Carbon, Fixed	ASTM D 3175	55.14	% by Wt.
Chlorine, Total	ASTM D 4208/EPA 300	605	mg/kg
Fluorine, Total	ASTM D 3761/EPA 300	. 81	mg/kg
Hydrogen, Total	ASTM D 5373	4.97	% by Wt.
Nitrogen, Total	ASTM D 5373	1.44	% by Wt.
Oxygen, Total	ASTM D 3176	4.78	% by Wt.
Volatiles	ASTM D 3175	34.45	% by Wt.
Aluminum	ASTM D 3682	1.58	% by Wt.
Antimony	ASTM D 3683	1.1	mg/kg
Arsenic	Spec. Chem. Acta. 44B	10.5	mg/kg
Barium	ASTM D 3683	248	mg/kg
Beryllium	ASTM D 3683	3	mg/kg
Cadmium	ASTM D 3683	0.04	mg/kg
Calcium	ASTM F 3682	0.13	% by Wt.
Chromium	ASTM D 3683	16	mg/kg
Cobalt	ASTM F 3683	11	mg/kg
Copper	ASTM D 3683	16	mg/kg
Iron	ASTM F 3682	0.85	% by Wt.
Lead	Spec. Chem. Acta. 44B	5.0	mg/kg
Magnesium	ASTM D 3682	0.07	% by Wt.
Manganese	ASTM D 3683	17	mg/kg
Mercury	ASTM D 3684	0.08	mg/kg
Nickel	ASTM D 3683	13	mg/kg

Appendix D

Variable Operating Costs

Test Descriptor Code Definitions

P1-X	Low-Particulate Parametric Testing
L1-X	Low-Particulate Long-Term Testing
HR1-X	Low-Particulate High Removal Testing
AL1-X	Low-Particulate Alternate Limestone Testing
P1B1-X	Low-Particulate Alternate Limestone "clean" JBR Parametric Tests
AC1-X	Low-Particulate Alternate Coal Tests
P2-X	High-Particulate Parametric Testing
L2-X	High-Particulate Long-Term Testing
HR2-X	High-Particulate High Removal Testing
AL2-X	High-Particulate Alternate Limestone Testing
AC2-X	High-Particulate Alternate Coal Tests

Note: Data for tests L1-X and L2-X are shown as 24-hour averages since each test was conducted over an extended period of time. All other test period entries are for the entire test period.

CT-121 DEMONSTRATION PROJECT SUMMARY OF VARIABLE COSTS

Test ID	Reagent Use (lb/hr)	I.D. Fan Power (kW)[1]	MCC Power (kW)	Switchgear Power (kW)	Normalized Mill Power (kW)	Auxiliary Power (kW)[2]	Credited Fan Cost $/ton SO_2	Aux. Power Cost $/ton SO_2	Reagent Cost $/ton SO_2	Total Cost $/ton SO_2
P1-1	5513	487	162	563	61	725	$5.0	$7.4	$30.6	$43.6
P1-2	6786	684	171	472	75	643	$5.7	$5.3	$30.6	$42.2
P1-3	7246	873	165	440	80	605	$6.8	$4.7	$30.6	$42.7
P1-4	4885	358	173	528	54	701	$4.2	$8.2	$31.3	$44.3
P1-5	5631	534	172	559	62	731	$5.4	$7.4	$31.3	$44.7
P1-6	5927	663	165	554	66	719	$6.4	$6.9	$31.3	$45.2
P1-7	4107	215	165	542	45	707	$2.9	$9.6	$30.3	$43.4
P1-8	4420	352	162	546	49	708	$4.4	$8.9	$30.3	$44.2
P1-9	4602	519	170	537	51	707	$6.3	$8.5	$30.3	$45.7
P1-10	4201	212	165	550	46	715	$2.8	$9.4	$30.3	$43.2
P1-11	4428	349	163	542	49	705	$4.4	$8.8	$30.3	$44.1
P1-12	4417	506	166	535	49	721	$6.4	$9.1	$30.3	$46.3
P1-13	3582	229	162	526	40	688	$3.6	$10.7	$30.3	$45.1
P1-14	4211	348	162	531	47	693	$4.6	$9.1	$30.3	$44.6
P1-15	4259	497	164	532	47	696	$6.5	$9.1	$30.3	$46.5

1. Credited 1.6 MW at 100% MRC, 1.18 MW at 75% MRC, and 0.88 MW at 50% MRC.
2. Auxiliary Power is the sum of the MCC, Switchgear, and Normalized Ball Mill Power consumptions.

CT-121 DEMONSTRATION PROJECT SUMMARY OF VARIABLE COSTS

Test ID	Reagent Use (lb/hr)	I.D. Fan Power (kW) [1]	MCC Power (kW)	Switchgear Power (kW)	Normalized Mill Power (kW)	Auxiliary Power (kW)[2]	Credited Fan Cost $/ton SO_2	Aux. Power Cost $/ton SO_2	Reagent Cost $/ton SO_2	Total Cost $/ton SO_2
P1-16	4173	281	162	534	46	696	$3.7	$9.2	$30.0	$43.5
P1-17	5138	453	168	538	57	706	$4.8	$7.6	$30.0	$43.0
P1-18	5316	603	168	532	59	700	$6.2	$7.2	$30.0	$44.1
P1-19	5045	277	166	542	56	708	$3.1	$7.9	$30.6	$42.2
P1-20	6317	479	185	550	70	735	$4.3	$6.5	$30.6	$42.0
P1-21	6262	566	179	536	69	715	$5.1	$6.4	$30.6	$42.7
P1-22	5345	454	183	455	59	638	$4.8	$6.7	$30.6	$42.7
P1-23	6990	604	179	456	77	635	$4.8	$5.1	$30.6	$41.2
P1-24	7582	817	173	454	84	627	$6.0	$4.6	$30.6	$41.9
P1-25	5016	436	169	547	56	716	$4.9	$8.1	$30.9	$44.6
P1-26	6053	610	168	538	67	706	$5.7	$6.6	$30.9	$43.9
P1-27	6921	783	171	539	77	710	$6.4	$5.8	$30.9	$43.8
P1-28	4870	384	164	546	54	710	$4.3	$8.0	$30.0	$42.9
P1-29	5819	609	168	542	64	710	$5.8	$6.7	$30.0	$43.1
P1-30	6454	813	170	528	71	698	$6.9	$5.9	$30.0	$43.5

1. Credited 1.6 MW at 100% MRC, 1.18 MW at 75% MRC, and 0.88 MW at 50% MRC.
2. Auxiliary Power is the sum of the MCC, Switchgear, and Normalized Ball Mill Power consumptions.

CT-121 DEMONSTRATION PROJECT SUMMARY OF VARIABLE COSTS

Test ID	Reagent Use (lb/hr)	I.D. Fan Power (kW) [1]	MCC Power (kW)	Switchgear Power (kW)	Normalized Mill Power (kW)	Auxiliary Power (kW)[2]	Credited Fan Cost $/ton SO_2	Aux. Power Cost $/ton SO_2	Reagent Cost $/ton SO_2	Total Cost $/ton SO_2
P1-19R	4606	306	166	533	51	699	$3.8	$8.6	$30.9	$43.9
P1-20R	5840	515	165	548	65	713	$5.0	$6.9	$30.9	$43.5
P1-21R	5270	671	178	473	58	651	$7.2	$7.0	$30.9	$45.8
L1-1	106.0	584	154	418	42	571	$7.7	$7.5	$30.2	$45.9
L1-1	116.9	466	164	425	42	589	$6.1	$7.7	$30.2	$44.6
L1-1	115.5	434	160	428	43	588	$5.6	$7.5	$30.2	$43.9
L1-1	107.9	441	161	426	43	587	$5.6	$7.5	$30.2	$43.8
L1-1	99.0	528	168	470	45	638	$6.4	$7.7	$30.2	$44.9
L1-1	97.6	488	157	425	40	582	$6.7	$8.0	$30.2	$45.4
L1-1	95.2	355	160	423	36	584	$5.4	$8.9	$30.2	$45.0
L1-1	98.2	353	154	423	39	577	$4.9	$8.0	$30.2	$43.7
L1-2	97.9	769	145	363	23	508	$18.3	$12.0	$30.2	$61.0
L1-2	119.8	522	153	374	48	528	$6.0	$6.0	$30.2	$42.7
L1-2	124.7	528	159	376	44	536	$6.5	$6.6	$30.2	$43.9

1. Credited 1.6 MW at 100% MRC, 1.18 MW at 75% MRC, and 0.88 MW at 50% MRC.
2. Auxiliary Power is the sum of the MCC, Switchgear, and Normalized Ball Mill Power consumptions.

CT-121 DEMONSTRATION PROJECT SUMMARY OF VARIABLE COSTS

Test ID	Reagent Use (lb/hr)	I.D. Fan Power (kW)[1]	MCC Power (kW)	Switchgear Power (kW)	Normalized Mill Power (kW)	Auxiliary Power (kW)[2]	Credited Fan Cost $/ton SO_2	Aux. Power Cost $/ton SO_2	Reagent Cost $/ton SO_2	Total Cost $/ton SO_2
L1-2	126.6	531	155	373	42	527	$6.9	$6.9	$30.2	$44.5
L1-2	140.5	637	160	371	49	531	$7.2	$6.0	$30.7	$44.5
L1-2	134.1	589	162	369	48	531	$6.9	$6.2	$30.7	$44.3
L1-2	135.5	604	158	386	49	544	$6.8	$6.2	$30.7	$44.3
L1-2	138.4	614	165	428	51	593	$6.7	$6.5	$30.7	$44.4
L1-2	128.9	576	162	382	46	544	$6.9	$6.5	$30.7	$44.7
L1-2	122.2	540	159	379	44	538	$6.8	$6.7	$30.7	$44.8
L1-2	119.2	477	165	376	42	541	$6.3	$7.1	$30.9	$44.9
L1-2	129.7	567	165	369	48	534	$6.6	$6.3	$30.9	$44.3
L1-2	122.2	514	164	400	40	564	$7.1	$7.8	$30.9	$46.4
L1-2	112.9	502	160	461	33	621	$8.5	$10.5	$30.9	$50.4
L1-3	144.3	753	153	453	63	606	$6.5	$5.3	$30.3	$42.7
L1-3	141.9	746	148	453	61	601	$6.7	$5.4	$30.3	$43.0
L1-3	134.0	735	151	455	60	606	$6.7	$5.5	$30.3	$43.1
L1-3	122.9	528	146	455	44	602	$6.6	$7.6	$30.5	$45.3

1. Credited 1.6 MW at 100% MRC, 1.18 MW at 75% MRC, and 0.88 MW at 50% MRC.
2. Auxiliary Power is the sum of the MCC, Switchgear, and Normalized Ball Mill Power consumptions.

CT-121 DEMONSTRATION PROJECT SUMMARY OF VARIABLE COSTS

Test ID	Reagent Use (lb/hr)	I.D. Fan Power (kW) [1]	MCC Power (kW)	Switchgear Power (kW)	Normalized Mill Power (kW)	Auxiliary Power (kW)[2]	Credited Fan Cost $/ton SO_2	Aux. Power Cost $/ton SO_2	Reagent Cost $/ton SO_2	Total Cost $/ton SO_2
L1-3	114.5	502	153	450	37	603	$7.5	$9.0	$30.5	$47.6
L1-3	127.4	621	157	450	50	607	$6.9	$6.8	$30.5	$44.8
L1-3	128.8	603	158	449	50	606	$6.7	$6.7	$30.5	$44.5
L1-3	134.9	653	154	448	53	602	$6.9	$6.3	$30.5	$44.3
L1-3	133.1	583	151	489	48	640	$6.8	$7.5	$31.1	$46.0
L1-3	132.8	598	160	475	55	636	$6.1	$6.5	$31.1	$44.3
L1-3	132.0	609	157	495	57	651	$6.1	$6.5	$31.1	$44.2
L1-3	119.4	515	157	543	46	700	$6.3	$8.6	$31.1	$46.5
L1-3	121.7	565	151	474	48	625	$6.6	$7.3	$31.1	$45.6
L1-3	132.9	634	153	509	50	661	$7.0	$7.3	$30.2	$45.0
L1-3	142.7	648	151	528	52	680	$6.9	$7.2	$30.2	$44.8
L1-3	150.7	756	157	540	59	697	$7.0	$6.5	$30.2	$44.3
L1-3	138.5	625	161	542	52	702	$6.6	$7.4	$30.2	$44.8
L1-3	134.3	608	160	542	53	702	$6.3	$7.3	$30.2	$44.3
L1-3	126.5	572	157	540	51	697	$6.2	$7.5	$30.2	$44.4

1. Credited 1.6 MW at 100% MRC, 1.18 MW at 75% MRC, and 0.88 MW at 50% MRC.
2. Auxiliary Power is the sum of the MCC, Switchgear, and Normalized Ball Mill Power consumptions.

CT-121 DEMONSTRATION PROJECT SUMMARY OF VARIABLE COSTS

Test ID	Reagent Use (lb/hr)	I.D. Fan Power (kW)[1]	MCC Power (kW)	Switchgear Power (kW)	Normalized Mill Power (kW)	Auxiliary Power (kW)[2]	Credited Fan Cost $/ton SO_2	Aux. Power Cost $/ton SO_2	Reagent Cost $/ton SO_2	Total Cost $/ton SO_2
L1-3	129.4	537	156	540	51	696	$5.8	$7.5	$30.2	$44.0
L1-3	151.4	685	161	539	63	701	$5.9	$6.1	$30.2	$42.7
L1-3	147.0	732	162	488	65	650	$6.3	$5.6	$30.9	$43.3
L1-3	147.0	707	165	453	66	618	$6.0	$5.2	$30.9	$42.6
L1-3	129.4	691	163	479	60	642	$6.4	$6.0	$30.9	$43.9
L1-3	137.4	659	164	487	64	651	$5.8	$5.7	$30.9	$43.0
L1-3	311.5	705	168	498	25	666	$6.0	$5.1	$30.9	$42.6
L1-3	144.8	764	164	498	65	662	$6.4	$5.5	$30.2	$42.7
L1-3	149.2	766	164	566	66	730	$6.4	$6.1	$30.2	$43.2
L1-3	143.2	711	160	563	60	723	$6.4	$6.5	$30.2	$43.7
L1-3	125.7	549	156	570	48	726	$6.3	$8.3	$30.2	$45.4
L1-3	129.2	558	160	575	48	735	$6.3	$8.3	$30.2	$45.4
L1-3	116.6	476	155	573	44	728	$6.0	$9.1	$30.2	$45.8
L1-3	136.5	634	158	571	55	728	$6.2	$7.2	$30.1	$44.1
L1-3	129.0	590	164	559	55	723	$5.8	$7.1	$30.1	$43.6

1. Credited 1.6 MW at 100% MRC, 1.18 MW at 75% MRC, and 0.88 MW at 50% MRC.
2. Auxiliary Power is the sum of the MCC, Switchgear, and Normalized Ball Mill Power consumptions.

CT-121 DEMONSTRATION PROJECT SUMMARY OF VARIABLE COSTS

Test ID	Reagent Use (lb/hr)	I.D. Fan Power (kW)[1]	MCC Power (kW)	Switchgear Power (kW)	Normalized Mill Power (kW)	Auxiliary Power (kW)[2]	Credited Fan Cost $/ton SO_2	Aux. Power Cost $/ton SO_2	Reagent Cost $/ton SO_2	Total Cost $/ton SO_2
L1-3	125.1	533	160	568	55	728	$5.3	$7.2	$30.1	$43.1
L1-3	126.9	507	157	548	56	704	$5.0	$6.9	$30.1	$42.5
L1-3	124.7	546	156	571	51	727	$5.9	$7.8	$30.1	$44.3
L1-3	119.7	535	154	573	49	727	$5.9	$8.1	$30.1	$44.7
L1-3	130.7	570	156	570	56	725	$5.6	$7.1	$30.0	$43.2
L1-3	136.6	640	161	573	57	733	$6.1	$7.0	$30.0	$43.7
L1-3	128.7	607	161	576	51	737	$6.5	$7.9	$30.0	$44.9
L1-3	118.4	620	162	572	51	734	$6.6	$7.8	$30.0	$45.0
L1-3	124.1	602	161	571	50	731	$6.5	$7.9	$30.0	$45.0
L1-3	129.2	625	154	570	52	724	$6.5	$7.5	$30.0	$44.6
L1-3	134.5	647	160	574	59	734	$6.0	$6.8	$30.0	$43.3
L1-3	141.7	720	172	568	61	740	$6.4	$6.6	$30.1	$43.7
L1-3	145.7	748	167	568	60	735	$6.9	$6.7	$30.1	$44.2
L1-3	142.9	700	159	569	56	728	$6.9	$7.1	$30.1	$44.7
L1-3	139.5	672	165	566	57	731	$6.4	$7.0	$30.1	$44.1

1. Credited 1.6 MW at 100% MRC, 1.18 MW at 75% MRC, and 0.88 MW at 50% MRC.
2. Auxiliary Power is the sum of the MCC, Switchgear, and Normalized Ball Mill Power consumptions.

CT-121 DEMONSTRATION PROJECT SUMMARY OF VARIABLE COSTS

Test ID	Reagent Use (lb/hr)	I.D. Fan Power (kW)[1]	MCC Power (kW)	Switchgear Power (kW)	Normalized Mill Power (kW)	Auxiliary Power (kW)[2]	Credited Fan Cost $/ton SO_2	Aux. Power Cost $/ton SO_2	Reagent Cost $/ton SO_2	Total Cost $/ton SO_2
L1-3	124.7	575	160	565	49	726	$6.3	$8.0	$30.1	$45.0
L1-3	127.6	632	161	584	52	745	$6.6	$7.8	$30.1	$45.0
L1-3	133.3	583	177	609	53	786	$6.0	$8.0	$30.1	$44.7
L1-3	147.0	772	164	562	66	726	$6.4	$6.0	$30.1	$43.1
L1-3	132.9	680	162	484	56	646	$6.6	$6.3	$30.1	$43.6
L1-3	121.4	626	158	522	51	680	$6.6	$7.2	$30.1	$44.5
L1-3	117.3	541	151	572	51	722	$5.8	$7.8	$30.1	$44.3
L1-3	104.1	471	156	579	40	735	$6.4	$10.0	$30.1	$47.1
L1-3	99.3	526	155	571	42	726	$6.8	$9.4	$30.0	$46.7
L1-3	102.3	469	154	568	39	722	$6.6	$10.1	$30.0	$47.1
L1-3	103.0	459	154	566	38	720	$6.5	$10.2	$30.0	$47.2
L1-3	103.0	451	148	569	36	717	$6.9	$10.9	$30.0	$48.3
L1-3	116.3	527	152	465	43	617	$6.6	$7.7	$30.0	$44.8
L1-3	111.3	509	157	469	44	626	$6.4	$7.8	$30.4	$45.2
L1-3	103.9	494	150	469	38	619	$7.2	$9.1	$30.4	$47.3

1. Credited 1.6 MW at 100% MRC, 1.18 MW at 75% MRC, and 0.88 MW at 50% MRC.
2. Auxiliary Power is the sum of the MCC, Switchgear, and Normalized Ball Mill Power consumptions.

CT-121 DEMONSTRATION PROJECT SUMMARY OF VARIABLE COSTS

Test ID	Reagent Use (lb/hr)	I.D. Fan Power (kW)[1]	MCC Power (kW)	Switchgear Power (kW)	Normalized Mill Power (kW)	Auxiliary Power (kW)[2]	Credited Fan Cost $/ton SO_2	Aux. Power Cost $/ton SO_2	Reagent Cost $/ton SO_2	Total Cost $/ton SO_2
L1-3	122.1	567	157	469	48	626	$6.6	$7.2	$30.4	$44.8
L1-3	121.4	567	157	469	45	626	$7.0	$7.7	$30.4	$45.6
L1-3	113.2	532	160	468	39	628	$7.6	$8.9	$30.4	$47.5
L1-3	109.3	539	156	455	38	611	$7.8	$8.8	$30.4	$47.6
L1-3	117.6	563	154	466	43	621	$7.2	$8.0	$30.4	$46.2
L1-3	109.9	501	163	471	37	634	$7.4	$9.4	$30.5	$47.9
L1-3	115.7	589	157	461	46	618	$7.1	$7.4	$30.5	$45.6
L1-3	114.9	606	162	462	45	624	$7.4	$7.6	$30.5	$46.1
L1-3	110.3	515	160	462	42	621	$6.8	$8.2	$30.5	$46.1
L1-3	103.8	617	158	561	37	718	$9.2	$10.7	$30.5	$50.9
L1-3	116.6	622	164	565	48	729	$7.0	$8.3	$29.9	$45.8
L1-3	102.3	477	151	562	41	713	$6.3	$9.4	$29.9	$46.2
L1-3	89.9	475	152	462	44	614	$5.8	$7.5	$29.9	$43.8
L1-3	108.1	499	157	461	45	617	$6.0	$7.4	$29.9	$43.8
L1-3	111.4	551	157	461	44	618	$6.8	$7.7	$29.9	$45.0

1. Credited 1.6 MW at 100% MRC, 1.18 MW at 75% MRC, and 0.88 MW at 50% MRC.
2. Auxiliary Power is the sum of the MCC, Switchgear, and Normalized Ball Mill Power consumptions.

CT-121 DEMONSTRATION PROJECT SUMMARY OF VARIABLE COSTS

Test ID	Reagent Use (lb/hr)	I.D. Fan Power (kW)[1]	MCC Power (kW)	Switchgear Power (kW)	Normalized Mill Power (kW)	Auxiliary Power (kW)[2]	Credited Fan Cost $/ton SO_2	Aux. Power Cost $/ton SO_2	Reagent Cost $/ton SO_2	Total Cost $/ton SO_2
L1-3	103.8	494	162	460	41	621	$6.5	$8.2	$29.9	$45.2
L1-3	99.6	445	160	464	40	623	$6.1	$8.5	$30.0	$45.1
L1-3	110.3	590	159	463	45	622	$7.2	$7.5	$30.0	$45.2
L1-3	116.7	652	161	463	46	624	$7.7	$7.4	$30.0	$45.5
L1-3	121.3	653	157	462	47	620	$7.5	$7.1	$30.0	$45.1
L1-3	123.3	650	160	462	49	621	$7.3	$6.9	$30.0	$44.7
L1-3	115.0	543	163	464	43	627	$6.8	$7.9	$30.0	$45.2
L1-3	102.0	465	154	463	37	617	$6.8	$9.0	$30.0	$46.3
L1-3	103.4	479	152	539	35	691	$7.4	$10.6	$30.0	$48.6
L1-3	104.7	513	159	495	35	654	$7.9	$10.1	$30.0	$48.5
AC1-1	4795	250	173	551	79	803	$2.9	$9.4	$30.7	$43.0
AC1-2	5739	501	183	559	94	836	$4.9	$8.2	$30.7	$43.8
AC1-3	7019	383	169	589	115	873	$3.0	$7.0	$30.5	$40.5
AC1-4	7518	567	181	544	123	848	$4.2	$6.3	$30.5	$41.0

1. Credited 1.6 MW at 100% MRC, 1.18 MW at 75% MRC, and 0.88 MW at 50% MRC.
2. Auxiliary Power is the sum of the MCC, Switchgear, and Normalized Ball Mill Power consumptions.

CT-121 DEMONSTRATION PROJECT SUMMARY OF VARIABLE COSTS

Test ID	Reagent Use (lb/hr)	I.D. Fan Power (kW)[1]	MCC Power (kW)	Switchgear Power (kW)	Normalized Mill Power (kW)	Auxiliary Power (kW)[2]	Credited Fan Cost $/ton SO_2	Aux. Power Cost $/ton SO_2	Reagent Cost $/ton SO_2	Total Cost $/ton SO_2
AC1-5	5628	585	188	552	92	832	$5.8	$8.3	$30.5	$44.6
AC1-6	7478	686	190	563	123	876	$5.1	$6.5	$30.5	$42.2
AC1-7	6263	589	180	572	103	855	$5.3	$7.6	$30.5	$43.4
AC1-8	4481	389	167	568	74	809	$4.9	$10.1	$30.5	$45.4
AC1-9	5606	697	214	572	92	878	$6.9	$8.8	$30.5	$46.2
AC1-10	6617	537	175	563	109	847	$4.5	$7.2	$30.5	$42.2
AC1-11	7558	676	180	562	124	866	$5.1	$6.6	$31.3	$42.9
AC1-12	4514	292	186	564	74	824	$3.7	$10.4	$31.3	$45.4
AC1-13	6079	598	163	552	100	815	$5.6	$7.7	$31.3	$44.6
HR1-1	6632	807	154	564	41	759	$6.8	$6.4	$30.7	$43.9
HR1-2	5645	623	156	548	35	739	$6.2	$7.4	$30.7	$44.2
HR1-3	3710	581	157	547	23	727	$8.8	$11.0	$30.8	$50.6
HR1-4	5685	923	160	525	36	721	$9.1	$7.1	$30.8	$47.1

1. Credited 1.6 MW at 100% MRC, 1.18 MW at 75% MRC, and 0.88 MW at 50% MRC.
2. Auxiliary Power is the sum of the MCC, Switchgear, and Normalized Ball Mill Power consumptions.

CT-121 DEMONSTRATION PROJECT SUMMARY OF VARIABLE COSTS

Test ID	Reagent Use (lb/hr)	I.D. Fan Power (kW)[1]	MCC Power (kW)	Switchgear Power (kW)	Normalized Mill Power (kW)	Auxiliary Power (kW)[2]	Credited Fan Cost $/ton SO_2	Aux. Power Cost $/ton SO_2	Reagent Cost $/ton SO_2	Total Cost $/ton SO_2
AL1-1	3967	603	180	595	58	825	$8.4	$11.5	$30.3	$50.3
AL1-2	3061	420	182	564	30	784	$7.6	$14.2	$30.3	$52.1
P1B-1R2	5976	912	171	586	76	827	$8.6	$7.8	$30.6	$46.9
P1B-2	3923	587	143	534	0	723	$8.4	$10.3	$30.6	$49.3
P1B-2R	3321	608	156	571	55	766	$10.3	$12.9	$30.6	$53.8
P1B-3	3669	362	156	542	0	741	$5.5	$11.3	$30.6	$47.5
P1B-4	6681	885	163	535	91	776	$7.4	$6.5	$30.6	$44.5
P1B-5	3448	555	148	525	67	713	$9.0	$11.6	$30.6	$51.2
P1B-6	6787	915	177	533	41	789	$7.6	$6.5	$30.6	$44.7
P1B-6R2	7024	1071	183	585	158	850	$8.5	$6.8	$30.6	$45.9
P1B-7	3403	438	164	572	38	776	$7.2	$12.8	$30.6	$50.6
P1B-8R2	6370	842	158	575	140	807	$7.4	$7.1	$30.6	$45.1
P1B-9	3827	614	145	570	2	760	$9.0	$11.1	$30.6	$50.7
P1B-9R3	3695	600	153	577	69	773	$9.1	$11.7	$30.6	$51.4

1. Credited 1.6 MW at 100% MRC, 1.18 MW at 75% MRC, and 0.88 MW at 50% MRC.
2. Auxiliary Power is the sum of the MCC, Switchgear, and Normalized Ball Mill Power consumptions.

CT-121 DEMONSTRATION PROJECT SUMMARY OF VARIABLE COSTS

Test ID	Reagent Use (lb/hr)	I.D. Fan Power (kW)[1]	MCC Power (kW)	Switchgear Power (kW)	Normalized Mill Power (kW)	Auxiliary Power (kW)[2]	Credited Fan Cost $/ton SO_2	Aux. Power Cost $/ton SO_2	Reagent Cost $/ton SO_2	Total Cost $/ton SO_2
P1B-10	5707	719	168	598	87	832	$7.1	$8.2	$30.6	$45.8
P1B-10R	5509	999	170	581	0	815	$10.2	$8.3	$30.6	$49.1
P1B-11	6395	934	155	580	106	809	$8.2	$7.1	$30.6	$45.9
P1B-12	3143	352	178	598	43	813	$6.3	$14.5	$30.6	$51.4
P1B-13	5724	822	169	582	11	818	$8.1	$8.0	$30.6	$46.7
P2-1	3515	1278	160	571	51	782	$6.8	$13.4	$32.9	$53.2
P2-2	3822	1421	155	556	55	766	$8.5	$12.1	$32.9	$53.6
P2-3	5974	1974	163	565	86	814	$3.8	$8.2	$32.9	$45.0
P2-4	6861	2242	166	553	99	818	$5.6	$7.2	$32.9	$45.8
P2-5	7023	2276	162	583	101	846	$6.3	$7.9	$36.0	$50.3
P2-6	4371	2015	159	547	63	769	$5.3	$9.9	$30.7	$45.9
P2-7	5777	2320	154	557	83	794	$7.0	$7.7	$30.7	$45.4
P2-8	2858	1121	161	476	41	678	$4.7	$13.3	$30.7	$48.8
P2-9	3316	1345	156	519	48	723	$7.9	$12.3	$30.7	$50.8

1. Credited 1.6 MW at 100% MRC, 1.18 MW at 75% MRC, and 0.88 MW at 50% MRC.
2. Auxiliary Power is the sum of the MCC, Switchgear, and Normalized Ball Mill Power consumptions.

CT-121 DEMONSTRATION PROJECT SUMMARY OF VARIABLE COSTS

Test ID	Reagent Use (lb/hr)	I.D. Fan Power (kW)[1]	MCC Power (kW)	Switchgear Power (kW)	Normalized Mill Power (kW)	Auxiliary Power (kW)[2]	Credited Fan Cost $/ton SO_2	Aux. Power Cost $/ton SO_2	Reagent Cost $/ton SO_2	Total Cost $/ton SO_2
P2-10	3626	1326	161	464	52	677	$7.0	$10.7	$31.3	$49.0
P2-11	5322	1722	160	469	77	706	$5.8	$7.6	$31.3	$44.7
P2-12	6307	2368	164	472	91	727	$7.0	$6.6	$31.3	$44.9
P2-13	3407	1213	158	473	49	680	$5.4	$11.1	$30.3	$46.8
P2-14	3502	1319	156	484	51	691	$7.0	$10.9	$30.3	$48.2
P2-15	3419	1386	166	555	49	770	$8.2	$12.5	$30.3	$51.0
P2-16	2921	1238	152	561	42	755	$6.7	$14.2	$30.0	$50.9
P2-17	3455	1346	160	558	50	768	$7.4	$12.2	$30.0	$49.6
P2-18	3653	1453	160	551	53	764	$8.6	$11.5	$30.0	$50.1
P2-19	4477	1524	157	581	65	803	$4.4	$10.2	$31.2	$45.8
P2-20	5033	1682	154	578	73	805	$5.7	$9.1	$31.2	$46.0
P2-21	4998	1817	155	569	72	796	$7.3	$9.1	$31.2	$47.5
P2-22	4096	1540	160	576	59	795	$5.2	$11.5	$32.4	$49.2
P2-23	4778	1668	152	570	69	791.	$6.1	$9.8	$32.4	$48.3
P2-24	5080	1710	162	560	73	795	$6.2	$9.3	$32.4	$47.9

1. Credited 1.6 MW at 100% MRC, 1.18 MW at 75% MRC, and 0.88 MW at 50% MRC.
2. Auxiliary Power is the sum of the MCC, Switchgear, and Normalized Ball Mill Power consumptions.

CT-121 DEMONSTRATION PROJECT SUMMARY OF VARIABLE COSTS

Test ID	Reagent Use (lb/hr)	I.D. Fan Power (kW)[1]	MCC Power (kW)	Switchgear Power (kW)	Normalized Mill Power (kW)	Auxiliary Power (kW)[2]	Credited Fan Cost $/ton SO_2	Aux. Power Cost $/ton SO_2	Reagent Cost $/ton SO_2	Total Cost $/ton SO_2
P2-25	4054	2097	149	561	59	769	$6.9	$10.6	$30.7	$48.2
P2-26	5342	2269	152	571	77	800	$7.0	$8.4	$30.7	$46.1
P2-27	5929	2428	159	581	86	826	$7.8	$7.8	$30.7	$46.3
P2-28	4078	2083	152	573	59	784	$6.9	$11.2	$31.9	$50.0
P2-29	5184	2168	166	580	75	821	$6.4	$9.2	$31.9	$47.5
P2-30	6121	2303	150	568	88	806	$6.7	$7.7	$31.9	$46.3
P2-31	3575	2033	162	559	52	773	$6.9	$12.3	$31.0	$50.1
P2-32	5356	2374	164	576	77	817	$8.2	$8.6	$30.9	$47.7
P2-33	6009	2461	170	579	87	836	$8.1	$7.9	$31.0	$47.0
P2-33R	5503	2303	150	568	80	798	$7.2	$9.9	$30.9	$49.5
L2-2	4764	586	163	568	73	803	$6.8	$9.4	$30.3	$46.5
L2-2	4080	629	160	577	62	799	$8.5	$10.9	$30.3	$49.7
L2-2	3776	515	161	580	58	799	$7.6	$11.7	$30.3	$49.6
L2-2	3804	569	161	586	58	805	$8.3	$11.7	$30.3	$50.3

1. Credited 1.6 MW at 100% MRC, 1.18 MW at 75% MRC, and 0.88 MW at 50% MRC.
2. Auxiliary Power is the sum of the MCC, Switchgear, and Normalized Ball Mill Power consumptions.

CT-121 DEMONSTRATION PROJECT SUMMARY OF VARIABLE COSTS

Test ID	Reagent Use (lb/hr)	I.D. Fan Power (kW) [1]	MCC Power (kW)	Switchgear Power (kW)	Normalized Mill Power (kW)	Auxiliary Power (kW) [2]	Credited Fan Cost $/ton SO_2	Aux. Power Cost $/ton SO_2	Reagent Cost $/ton SO_2	Total Cost $/ton SO_2
L2-2	3930	651	166	535	60	761	$9.2	$10.7	$30.3	$50.2
L2-2	5162	907	154	483	79	716	$9.7	$7.7	$30.3	$47.7
L2-2	5591	610	163	541	85	790	$6.1	$7.8	$30.3	$44.2
L2-2	4030	376	162	486	62	710	$5.2	$9.8	$30.3	$45.2
L2-2	3961	381	161	483	60	705	$5.3	$9.9	$30.3	$45.5
L2-2	4848	878	173	551	74	798	$10.0	$9.1	$30.3	$49.5
L2-2	4457	784	164	557	68	790	$9.8	$9.8	$30.3	$49.9
L2-2	4184	602	165	554	64	783	$8.0	$10.4	$30.3	$48.7
L2-2	4044	541	163	554	62	778	$7.4	$10.7	$30.3	$48.4
L2-2	3483	559	161	557	53	771	$8.9	$12.3	$30.3	$51.5
L2-2	3376	511	156	553	52	761	$8.4	$12.5	$30.3	$51.2
L2-2	3773	658	155	556	58	769	$9.5	$11.1	$29.9	$50.5
L2-2	3369	653	164	556	51	771	$10.6	$12.5	$29.9	$53.0
L2-2	4209	581	167	547	64	778	$7.5	$10.1	$29.9	$47.5
L2-2	3377	410	162	566	52	779	$6.6	$12.6	$29.9	$49.1

1. Credited 1.6 MW at 100% MRC, 1.18 MW at 75% MRC, and 0.88 MW at 50% MRC.
2. Auxiliary Power is the sum of the MCC, Switchgear, and Normalized Ball Mill Power consumptions.

CT-121 DEMONSTRATION PROJECT SUMMARY OF VARIABLE COSTS

Test ID	Reagent Use (lb/hr)	I.D. Fan Power (kW)[1]	MCC Power (kW)	Switchgear Power (kW)	Normalized Mill Power (kW)	Auxiliary Power (kW)[2]	Credited Fan Cost $/ton SO_2	Aux. Power Cost $/ton SO_2	Reagent Cost $/ton SO_2	Total Cost $/ton SO_2
L2-2	3454	521	164	564	53	780	$8.3	$12.4	$29.9	$50.5
L2-2	3549	548	164	555	54	773	$8.4	$11.9	$29.9	$50.2
L2-2	3550	573	155	559	54	769	$8.8	$11.8	$29.9	$50.5
L2-2	3157	555	158	551	48	757	$9.8	$13.4	$30.5	$53.8
L2-2	3313	561	162	549	51	762	$9.5	$12.9	$30.5	$52.9
L2-2	3386	565	159	553	52	763	$9.3	$12.6	$30.5	$52.5
L2-2	3637	579	154	552	56	762	$8.9	$11.7	$30.5	$51.2
L2-2	3480	703	158	554	53	766	$11.2	$12.2	$30.4	$53.8
L2-2	3374	663	160	555	52	767	$10.9	$12.6	$30.4	$53.9
L2-2	3068	469	159	505	47	711	$8.5	$12.9	$30.4	$51.7
L2-2	3226	558	160	530	49	739	$9.6	$12.7	$30.4	$52.7
L2-2	3194	444	166	468	49	683	$7.7	$11.9	$30.4	$50.0
L2-2	3348	501	163	465	51	679	$8.3	$11.3	$30.4	$50.0
L2-2	3692	523	155	454	56	665	$7.9	$10.0	$30.4	$48.3
L2-2	3585	491	156	460	55	671	$7.6	$9.8	$30.4	$47.3

1. Credited 1.6 MW at 100% MRC, 1.18 MW at 75% MRC, and 0.88 MW at 50% MRC.
2. Auxiliary Power is the sum of the MCC, Switchgear, and Normalized Ball Mill Power consumptions.

CT-121 DEMONSTRATION PROJECT SUMMARY OF VARIABLE COSTS

Test ID	Reagent Use (lb/hr)	I.D. Fan Power (kW)[1]	MCC Power (kW)	Switchgear Power (kW)	Normalized Mill Power (kW)	Auxiliary Power (kW)[2]	Credited Fan Cost $/ton SO_2	Aux. Power Cost $/ton SO_2	Reagent Cost $/ton SO_2	Total Cost $/ton SO_2
L2-2	4000	496	162	463	61	686	$6.9	$10.1	$30.4	$47.7
L2-2	4180	495	166	467	64	698	$6.6	$10.3	$30.4	$47.9
L2-2	4545	651	163	466	69	699	$8.0	$10.3	$30.4	$50.2
L2-2	3781	418	164	515	58	737	$6.1	$10.8	$30.4	$47.3
L2-2	3233	501	159	546	49	754	$8.6	$11.1	$30.4	$48.8
L2-2	3906	571	158	545	60	763	$8.1	$11.3	$30.4	$50.2
L2-2	3393	624	159	561	52	771	$10.2	$11.7	$30.4	$51.5
L2-2	3337	631	160	569	51	780	$10.5	$11.8	$30.4	$51.8
L2-2	3169	463	163	566	48	777	$8.1	$11.8	$30.4	$49.2
L2-2	3183	440	156	543	49	748	$7.7	$11.5	$30.4	$48.6
L2-2	3159	465	155	549	48	752	$8.2	$11.6	$30.4	$49.2
L2-2	3133	469	151	573	48	771	$8.3	$12.0	$30.4	$49.7
L2-2	3148	489	152	570	48	770	$8.6	$12.0	$30.4	$50.0
L2-2	3084	526	150	576	47	774	$9.5	$12.1	$30.4	$50.6
L2-2	3108	509	159	581	47	788	$9.0	$12.3	$29.9	$50.1

1. Credited 1.6 MW at 100% MRC, 1.18 MW at 75% MRC, and 0.88 MW at 50% MRC.
2. Auxiliary Power is the sum of the MCC, Switchgear, and Normalized Ball Mill Power consumptions.

CT-121 DEMONSTRATION PROJECT SUMMARY OF VARIABLE COSTS

Test ID	Reagent Use (lb/hr)	I.D. Fan Power (kW)[1]	MCC Power (kW)	Switchgear Power (kW)	Normalized Mill Power (kW)	Auxiliary Power (kW)[2]	Credited Fan Cost $/ton SO_2	Aux. Power Cost $/ton SO_2	Reagent Cost $/ton SO_2	Total Cost $/ton SO_2
L2-2	3563	407	167	554	54	775	$6.3	$12.1	$29.9	$48.4
L2-2	3350	465	158	560	51	769	$7.6	$12.0	$29.9	$49.2
L2-2	3502	395	158	557	53	768	$6.2	$12.0	$29.9	$48.2
L2-2	3163	517	157	574	48	779	$9.0	$12.2	$29.9	$50.2
L2-2	3318	389	153	519	51	723	$6.4	$11.3	$29.9	$47.3
L2-2	3184	537	151	574	49	774	$9.3	$12.1	$29.9	$50.5
L2-2	3169	612	160	553	48	762	$10.7	$11.9	$30.2	$51.7
L2-2	3497	488	169	557	53	779	$7.7	$12.2	$30.2	$50.0
L2-2	3164	513	157	560	48	765	$9.0	$11.9	$30.2	$50.1
L2-2	3050	495	164	555	47	766	$9.0	$11.9	$30.4	$50.0
L2-2	2981	465	160	558	46	762	$8.7	$11.9	$30.4	$49.5
L2-2	3595	476	167	555	55	777	$7.4	$12.1	$30.4	$49.9
L2-2	3364	270	168	567	51	786	$4.5	$12.2	$30.4	$46.8
L2-2	3137	484	156	570	48	774	$8.6	$12.0	$30.4	$49.9
L2-2	3663	680	157	562	56	774	$10.4	$11.9	$30.4	$52.8

1. Credited 1.6 MW at 100% MRC, 1.18 MW at 75% MRC, and 0.88 MW at 50% MRC.
2. Auxiliary Power is the sum of the MCC, Switchgear, and Normalized Ball Mill Power consumptions.

CT-121 DEMONSTRATION PROJECT SUMMARY OF VARIABLE COSTS

Test ID	Reagent Use (lb/hr)	I.D. Fan Power (kW)[1]	MCC Power (kW)	Switchgear Power (kW)	Normalized Mill Power (kW)	Auxiliary Power (kW)[2]	Credited Fan Cost $/ton SO_2	Aux. Power Cost $/ton SO_2	Reagent Cost $/ton SO_2	Total Cost $/ton SO_2
L2-2	2640	388	158	562	40	760	$8.2	$11.7	$30.4	$48.1
L2-2	2792	458	160	566	43	769	$9.2	$11.8	$30.5	$49.3
L2-2	3296	606	163	559	50	773	$10.3	$11.8	$30.5	$51.6
L2-2	3272	610	163	540	50	753	$10.4	$11.6	$30.5	$51.4
L2-2	3330	616	159	569	51	778	$10.3	$12.0	$30.5	$51.9
L2-2	3658	425	160	463	56	679	$6.5	$10.5	$30.5	$47.5
L2-2	3807	581	160.2	541.5	58	755	$8.4	$11.3	$30.3	$49.8
HR2-1	2730	934	157	589	30	776	$18.8	$15.6	$29.1	$63.5
HR2-2	2266	818	151	576	25	752	$20.0	$18.4	$29.5	$67.9
HR2-3	1671	669	154	587	19	760	$22.8	$25.9	$30.3	$79.0
HR2-4	1620	788	156	564	18	738	$27.6	$25.8	$30.1	$83.5
AC2-1	7817	711	185	586	117	888	$5.2	$6.5	$22.1	$33.8
AC2-2	6570	540	178	608	98	884	$4.7	$7.7	$22.1	$34.5

1. Credited 1.6 MW at 100% MRC, 1.18 MW at 75% MRC, and 0.88 MW at 50% MRC.
2. Auxiliary Power is the sum of the MCC, Switchgear, and Normalized Ball Mill Power consumptions.

CT-121 DEMONSTRATION PROJECT SUMMARY OF VARIABLE COSTS

Test ID	Reagent Use (lb/hr)	I.D. Fan Power (kW)[1]	MCC Power (kW)	Switchgear Power (kW)	Normalized Mill Power (kW)	Auxiliary Power (kW)[2]	Credited Fan Cost $/ton SO_2	Aux. Power Cost $/ton SO_2	Reagent Cost $/ton SO_2	Total Cost $/ton SO_2
AC2-3	4675	443	179	589	70	838	$5.4	$10.2	$22.1	$37.8
AC2-4	5924	621	175	611	89	875	$6.0	$8.4	$22.1	$36.5
AC2-5	5583	407	169	593	84	846	$4.2	$8.7	$22.2	$35.0
AC2-6	4319	305	170	599	65	834	$4.0	$11.0	$22.2	$37.3
AC2-7	8700	951	173	600	130	903	$6.3	$5.9	$22.2	$34.4
AC2-8	6886	762	172	598	103	873	$6.4	$7.3	$22.3	$35.9
AC2-9	4795	578	173	599	72	844	$6.9	$10.1	$22.3	$39.3
AC2-10	5736	721	174	593	86	853	$7.2	$8.6	$22.3	$38.1
AC2-5R	5334	408	172	589	80	841	$4.4	$7.9	$22.3	$34.0
AL2-1	2866	868	147	589	59	795	$16.8	$15.4	$21.6	$53.8
AL2-1R	2841	834	153	604	59	816	$16.3	$16.0	$21.6	$53.9
AL2-2	2627	451	139	594	55	788	$9.5	$16.7	$21.6	$47.8
AL2-3	1574	564	163	596	33	792.	$19.9	$27.9	$21.5	$69.3
AL2-3R	1509	528	143	601	31	775	$19.4	$28.5	$21.5	$69.4

1. Credited 1.6 MW at 100% MRC, 1.18 MW at 75% MRC, and 0.88 MW at 50% MRC.
2. Auxiliary Power is the sum of the MCC, Switchgear, and Normalized Ball Mill Power consumptions.

CT-121 DEMONSTRATION PROJECT SUMMARY OF VARIABLE COSTS

Test ID	Reagent Use (lb/hr)	I.D. Fan Power (kW)[1]	MCC Power (kW)	Switchgear Power (kW)	Normalized Mill Power (kW)	Auxiliary Power (kW)[2]	Credited Fan Cost $/ton SO_2	Aux. Power Cost $/ton SO_2	Reagent Cost $/ton SO_2	Total Cost $/ton SO_2
AL2-4	1698	250	148	588	35	771	$10.4	$32.0	$27.3	$69.7
AL2-5	2186	729	157	622	45	824	$18.9	$21.4	$22.0	$69.7
AL2-6	1494	377	157	629	31	817	$14.7	$31.9	$22.6	$69.2
AL2-7	2155	476	154	623	45	822	$12.5	$21.6	$22.0	$56.1
AL2-8	2654	657	162	617	55	834	$13.9	$17.7	$21.8	$53.5
AL2-9	2584	467	151	616	54	821	$10.2	$17.9	$21.8	$49.9
AL2-10	1923	290	148	613	40	801	$8.5	$23.4	$21.8	$53.8
AL2-11	1310	255	150	618	27	795	$11.1	$34.8	$22.2	$68.1
AL2-12	1440	555	167	616	30	813	$21.8	$31.9	$21.9	$75.6
AL2-13	1740	764	158	618	36	812	$24.8	$26.4	$21.9	$73.1
AL2-14	2615	954	168	618	54	840	$20.5	$18.1	$21.8	$60.5

1. Credited 1.6 MW at 100% MRC, 1.18 MW at 75% MRC, and 0.88 MW at 50% MRC.
2. Auxiliary Power is the sum of the MCC, Switchgear, and Normalized Ball Mill Power consumptions.

Appendix E

Statistical Methods Used in Regression Model Development

E.1 INTRODUCTION

A systematic approach was used to develop statistical models that relate the SO_2 removal efficiency to JBR operating parameters and flue gas SO_2 concentration. Pitts Consulting, Inc. (PCI) chose to use models based on a simple linear combination of these parameters rather that a more complicated process that used non-linear relationships based on semi-empirical and theoretical chemical engineering relationships. The reasoning behind this approach was that the fundamental theoretical relationship that governs the performance of the JBR is not well understood. Any model building process, therefore, was limited by the need to approximate an unknown relationship.

The philosophy behind the systematic approach to model building was to first identify the operating variables that were believed to influence SO_2 removal efficiency in the JBR. These variables can be classified into two categories: ones that can be controlled and ones that can only be observed. The JBR ΔP boiler load, and inlet pH are examples of controllable variables. The inlet SO_2 concentration is determined by the sulfur content of the coal, and can only be controlled (and to a limited extent) by specifying the sulfur content of the coal during the procurement process.

The first step in the model building process was to develop a test matrix in which a selected number of controllable variables is varied in accordance with a pre-arranged test sequence. This was commonly done using experimental design techniques. Experimental design techniques can be set up in such a manner as to allow for a systematic collection of data while, at the same time, guarding against such pitfalls as always having two variables be changed in the same direction. For example, load and JBR ΔP both increasing in one series of tests and decreases in another. If this happens, then the effect of changes in load and ΔP cannot be separately determined. When this happens, the effects are said to be confounded. With proper experimental design, effects can be estimated with maximum efficiency.

The next step in the model building process was the actual development of the predictive model. As mentioned earlier, PCI elected to use a polynomial type model(s) to predict SO_2 removal efficiency.

A systematic approach was used to develop the regression model. The goal was to have a regression model in which all of the regression terms are both statistically significant and made sense from a technical point of view.

The general approach to the development of a polynomial model is to predict the coefficients of a model of the type shown as equation E-1.

$$Y = A + B * X1 + C * X2 + D * X1^2 + E * X! * X2 \ldots\ldots \quad \text{(E-1)}$$

In equation E-1, Y is the dependent variable, X1 and X2 are the independent variables, and A, B, C, D, and E are coefficients that are to be determined.

The ultimate goal of the model building process is to first have a model which has good explanatory power, and, second, to have a model in which all terms are significantly different from zero. The explanatory power can be judged in several ways. The way most familiar to engineers is the correlation coefficient, or R. The square of this term (R^2) is a measure of the degree to which the predictive model explains the observed values. An R^2 of 1 means that the predicted values and the observed values agree exactly, and an R^2 of zero means that the predictive model does not explain any thing at all. R^2 is usually called the coefficient of determination or goodness of fit.

The second goal of the model building process is to have a model in which each term is statistically significant. The statistical significance of a particular term is determined by (1) the magnitude of the estimate, and (2) the standard error in the estimate of the term. As an example, consider the situation in which the estimated value of the parameter is 1.0, and the standard error of its estimate is 0.6. A two sided 95 percent confidence interval about the estimate is 1.0 +/- (1.96)*(0.6), or 1.0 +/- 1.18 (where 1.96 is the student "t" factor). Since zero is contained in this confidence interval, we can not say that the estimated value is statistically different from zero. In this situation, we can conclude that the parameter should not be in the regression model. Some regression software packages automatically provide a test for significance.

A situation can occur in which one develops a model in which all parameters are statistically significant, but the model does not explain much of the variation in the data. As an example, one would be content with a model in which all terms are statistically significant and that explains 95 % of the variation (R^2= 0.95), but would not be comfortable with a model that only explains 10 % of the variation (R^2 =0.10). The latter is an example of a situation in which one has a model that is statistically significant, but has little explanatory power.

The model building was guided by the desire to meet several assumptions implicit in regression analysis. The degree to which these assumptions are satisfied affects standard errors in the parameter estimates, which in turn affects the conclusions whether a particular variable is statistically significant. All of these assumptions are concerned with the behavior of the residuals from the regression analysis. The residuals are simply the differences between each observed value and the value that is predicted by the regression model.

The first assumption is that the residuals are not autocorrelated. If the residuals are not autocorrelated, then residuals plotted against the test sequence number will be independent variations about the mean (the residuals should have a mean of 0). If the residuals are autocorrelated, then the residuals will appear to be clustered. That is, if one residual is above the mean, then the next residual will also tend to be above the mean as well. If the residuals are autocorrelated, then the standard errors for the estimates of the regression coefficients are invalid. Since the standard errors are used to determine if a particular regression coefficient is statistically significant (i.e., the coefficient is non zero), then the interpretation of standard regression analysis outputs is difficult for the case of autocorrelated residuals. Some regression packages will provide a test statistic, called the Durbin-Watson D statistic, that can be used to test for autocorrelation among the residuals. In addition, some regression packages will allow for an autocorrelated residual series, and can use an option to eliminate non-significant autoregressive terms. If all of the terms are eliminated, then the residuals are deemed to be non-autocorrelated.

The second assumption is that the residuals are normally distributed. Many regression packages provide a mechanism to test the residuals for normality. This is preferable to a visual examination of a empirical distribution of the residuals, since the visual examination is subject to the interpretation

of person examining the plots. A violation of this assumption is not as important as a violation of independence in the residuals. It is also important for the residuals to have constant variance. This can be observed in a plot of the residuals. If the residuals do not have constant variance, then, as an example, their dispersion about the mean may tend to increase as the test sequence increases.

PCI used SAS (a statistical software package) to develop the parametric equations that relate the SO_2 removal efficiency to various explanatory variables. SAS is a family of statistical analysis modules, and is produced by SAS Institute, Cary, NC. The regression results from a SAS run provides the parameter estimates, their standard errors, a test to determine if the parameter estimates are statistically significant from zero, and a diagnostic test for autocorrelation among the residuals. The residuals from the regression analysis can be output to a data set for examination for normality and can be plotted against the independent variables to see if the variation in the residuals are stable (i.e., variance in the residuals is roughly constant).

One SAS procedure, called PROC AUTOREG, will allow for the model to contain an autoregressive error structure. This procedure contains an option that will allow for the step-wise elimination of the autoregressive terms, and if all terms are eliminated, then the model is assumed to have non-autocorrelated residuals. The SAS AUTOREG procedure was used to conduct all regression analyses since it not only conducts the basic regression analysis, it also simplifies checking for autocorrelation among the residuals.

E.2 Model Building

PCI developed several models that describe the SO_2 removal efficiency of the CT-121 process at Plant Yates. The first model was based on the Low-Particulate Parametric Test block data. A series of models were then developed based on the successive addition of additional test data. All of the models were conducted using the number of transfer units (NTU[1]) as the independent variable.

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[1]NTU= log(100/(100 - % efficiency)), where log is the natural logarithm, and % efficiency is the SO_2 removal efficiency in percent.

E.2. 1 Low-Particulate Parametric Test Data

The Low-Particulate Parametric Test block data contained 33 observations. One of these observations, Test P1-28, appeared to be an outlier early in the model building process and was eliminated. Table E-1 contains the estimates for the parameters for the regression. Note that all of the terms in the model are statistically significant ($P< 0.05$). In addition, all of the autoregressive terms were eliminated by the SAS. This indicates that the residuals are non-autocorrelated. The analysis of the residuals for this model did not reject the hypothesis that the residuals were normally distributed. Thus the model is well behaved since (1) parameter estimates were statistically significant, (2) the residuals were not autocorrelated, and (3) the residuals appeared to be normally distributed.

Table E-1. Results of Regression Analysis of Low-Particulate Parametric Test Data

Regression Model Term	Value	P<0.05[1]
Intercept	-28.336748	0.0001
Load	0.075780	0.0106
pH	10.928432	0.0001
JBR ΔP	-0.201416	0.0034
Inlet SO_2	0.002564	0.0175
pH^2	-1.271390	0.0001
ΔP * pH	0.100021	0.0001
Load * Inlet SO_2	-0.000041	0.0023

[1]since P<0.05, all terms are statistically significant at the 0.05 level.

The predicted SO_2 removal efficiency versus observed SO_2 removal efficiency values are shown in Figure E-1 (the predicted efficiency values were calculated from the predicted NTU values). Plots of the residuals versus the test sequence is shown in Figure E-2. Note that the residuals appear to be evenly and randomly scattered, both in the positive and negative direction. Plots of the residuals versus the independent parameters of load (LD), pH, JBR ΔP, and inlet SO_2 (SN) are shown in Figures E-3, E-4, E-5, and E-6, respectively. All of the residual plots except for JBR ΔP appear to

be normal. The residuals for the ΔP plot tend to fan out as ΔP increases. This is an indication of non constant variance, which is to be avoided if possible.

E.2.2 Models Fit to Additional Parametric Test Data Sets

PCI also fit a series of models to data sets that included the Low-Particulate Parametric Test data, low-ash "clean" JBR parametric test data, and low-ash and high-ash high-sulfur coal test data. A model that only included the High-Particulate Alternate Limestone test period, and a model that contained all of the parametric test data collected during the demonstration project were also developed.

The form of the regression model, the model R^2, and the estimates of the model parameters for each model are provided in Section 4.8 of this report. All of these regression models were well behaved in the sense that the residuals were non-autocorrelated. In addition, most of the model terms were statistically significant to the 0.05 level (the 0.05 level is commonly used as a rejection point) concluding that the estimates are significantly different from zero. There is nothing magic about this criterion, and acceptance levels of 0.1 are sometimes used as well.

On occasion, a regression analysis will result in a model in which some of the parameter estimates not significantly different from zero at the 0.05 level. One situation that can occur is when a model contains higher order terms, such as a square term, or the product of two linear terms (e.g., the product of the load times the inlet SO_2). In this situation, the higher order terms can be significant (load times inlet SO_2), but the linear terms (load and/or SO_2) are not significant. It is considered to be good statistical practice in these situations to include the linear terms in the model, even though they may not be statistically significant[1].

E.3 References

1. Rawlings, John, "Applied Regression Analysis: A Research Tool", Wadsworth & Brooks, p. 384.

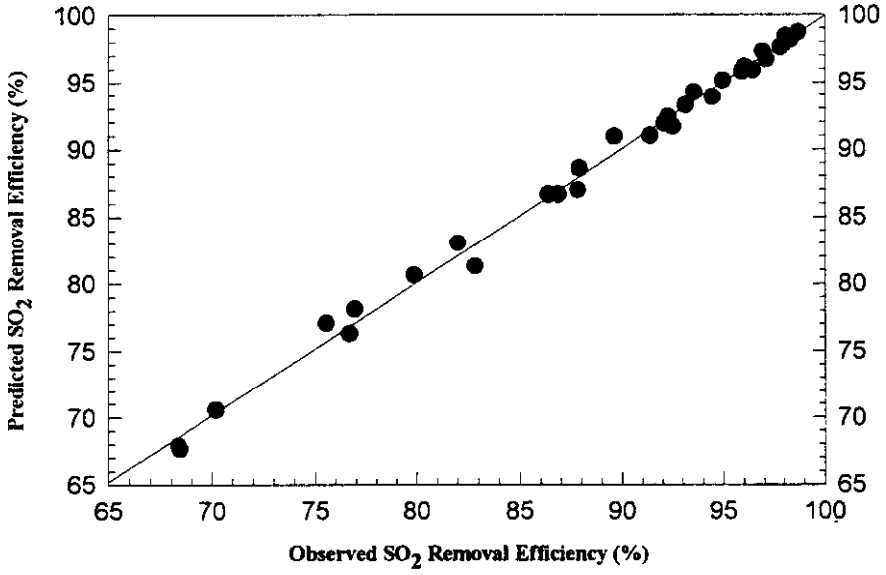

Figure E-1. Predicted SO_2 Removal Efficiency - Low-Ash Parametric Test Data

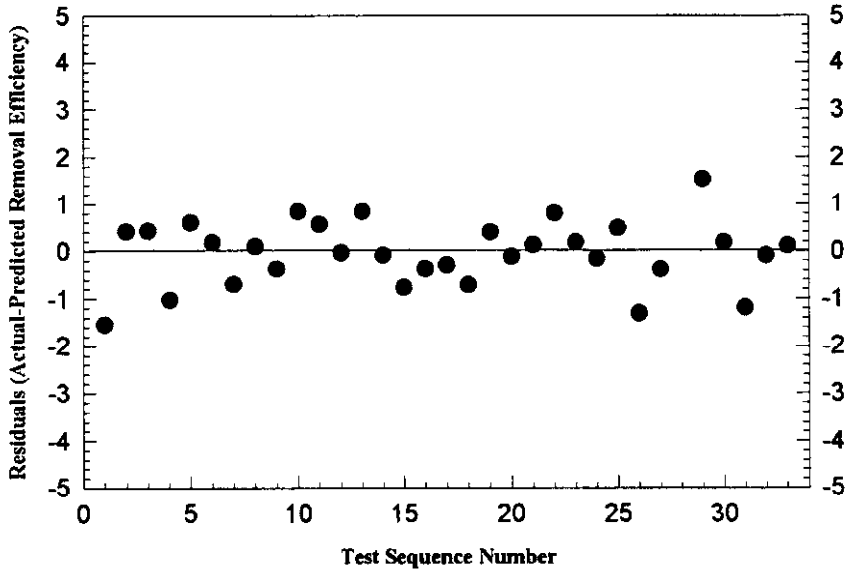

Figure E-2. Regression Model Residuals vs. Test Sequence Number

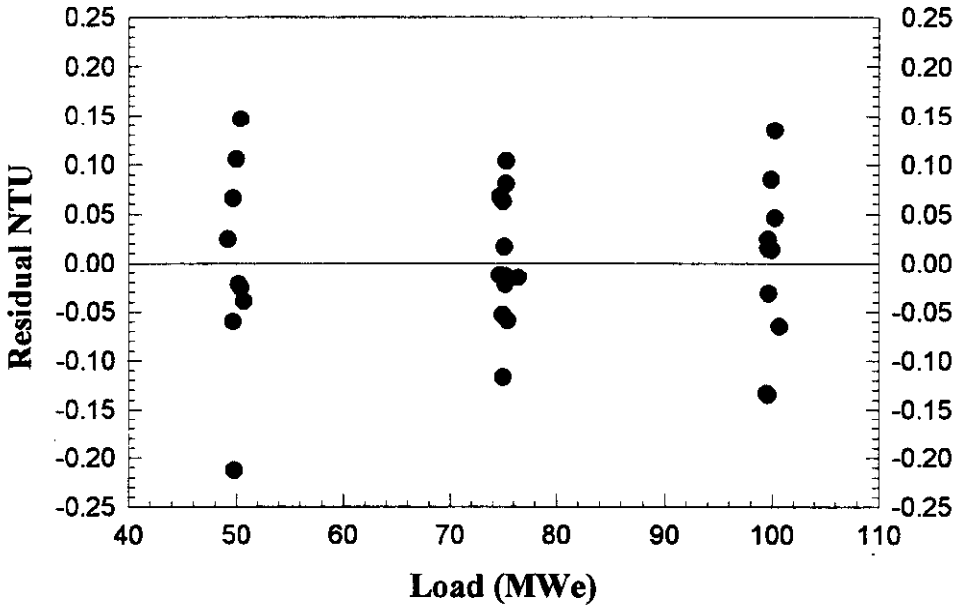

Figure E-3. Residual NTU vs. Load

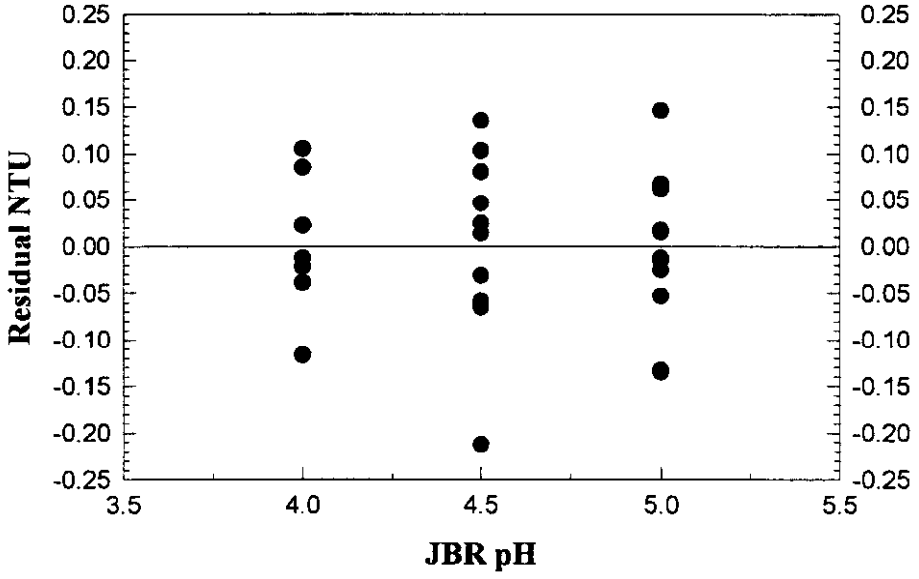

Figure E-4. Residual NTU vs. pH

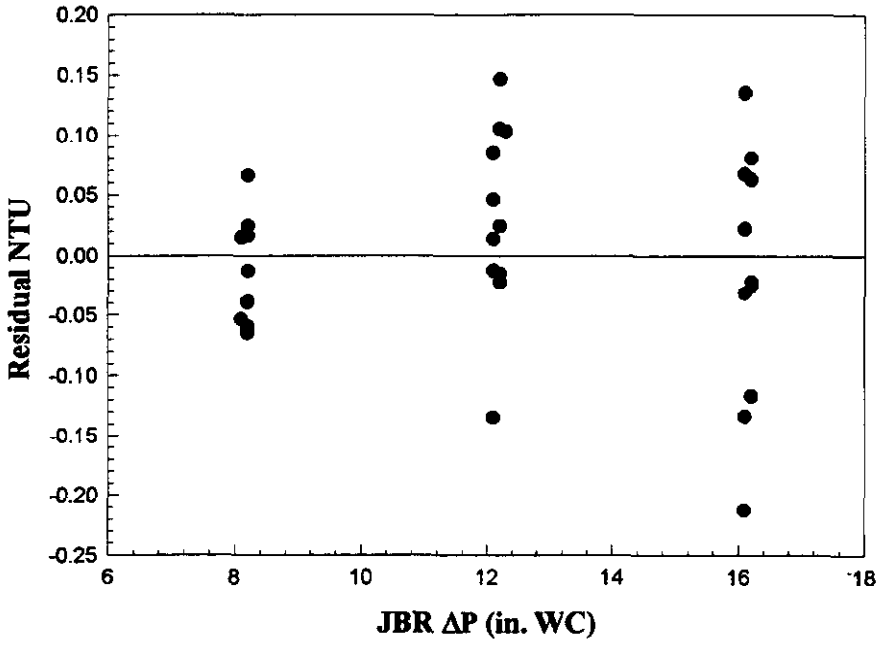

Figure E-5. Residual NTU vs. DP

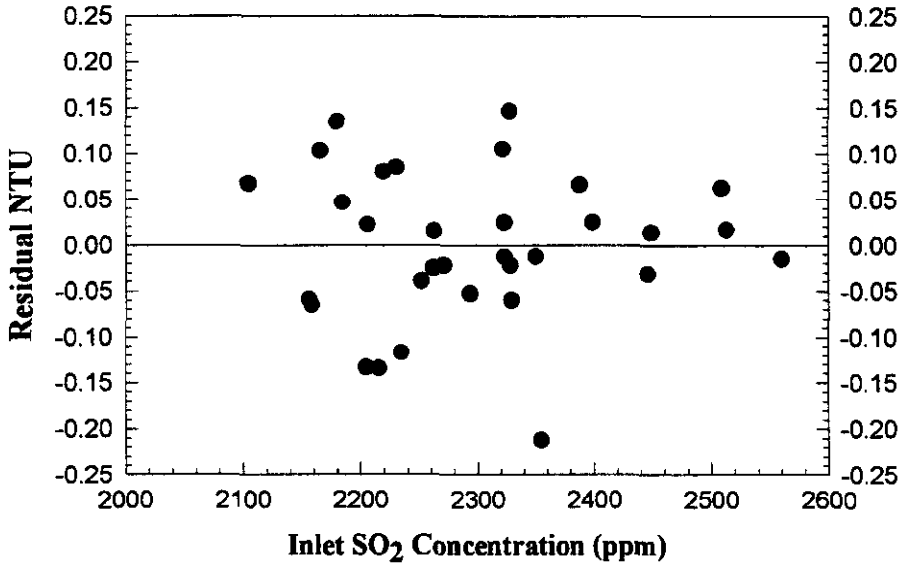

Figure E-6. Residual NTU vs. Inlet SO_2 Concentration

Appendix F

DOE-Sponsored Air Toxics Testing
Detailed Analytical Results

Table F-1. Gas Process Stream Data Summary

Analyte Group/ Specie	Units	ESP Inlet Average	ESP Inlet 95% CI	ESP Outlet Average	ESP Outlet 95% CI	Stack Average	Stack 95% CI
Particulate Loading	g/Nm³	8.95	1.5	0.142	0.05	0.0145	0.01
Reduced Species							
Ammonia as N	µg/Nm³	29	7.4	27	16	11	17
Hydrogen Cyanide	µg/Nm³	0.15	0.24	0.9	1.7	28	94
Anions-Vapor							
Chloride	µg/Nm³	112000	34300	136000	67000	540	820
Fluoride	µg/Nm³	8300	1400	7900	3200	124	66
Sulfate	µg/Nm³	7460000	432000	6900000	1500000	680000	160000
Anions-Particulate							
Chloride	µg/Nm³	6100	9100	45	94	210	310
Fluoride	µg/Nm³	1.3	2.4	0.12	0.21	0.051	0.041
Sulfate	µg/Nm³	79000	98000	4200	760	5900	8700
Anions-Total							
Chloride	µg/Nm³	118000	31000	136000	67000	750	800
Fluoride	µg/Nm³	8300	1400	7900	3200	124	66
Sulfate	µg/Nm³	7500000	417000	6900000	1500000	690000	170000
Radionuclides							
Actinium-228 @ 338 KeV	pCi/g	25	36				
Actinium-228 @ 911 KeV	pCi/g	20	15				
Actinium-228 @ 968 KeV	pCi/g	29	41				
Bismuth-212 @ 727 KeV	pCi/g	<39	--				
Bismuth-214 @ 1120.4 KeV	pCi/g	<24	--				
Bismuth-214 @ 1764.7 KeV	pCi/g	49	71				
Bismuth-214 @ 609.4 KeV	pCi/g	28	17				
K-40 @ 1460 KeV	pCi/g	230	317	73	31	<56	--
Lead-210 @ 46 KeV	pCi/g	79	33				
Lead-212 @ 238 KeV	pCi/g	19	19				
Lead-214 @ 295.2 KeV	pCi/g	24	20				
Lead-214 @ 352.0 KeV	pCi/g	25	8				
Radium-226 @ 186.0 KeV	pCi/g	130	50				
Thallium-208 @ 583 KeV	pCi/g	17	11				
Thallium-208 @ 860 KeV	pCi/g	<67	--				
Thorium-234 @ 1001 KeV	pCi/g	79	35				
Thorium-234 @ 63.3 KeV	pCi/g	69	43				
Uranium-235 @ 143 KeV	pCi/g	69	43				
Part Metals by Wt.							
Aluminum	µg/g	97000	11000	101000	--	13800	7300
Antimony	µg/g	3.6	2.4	2.7	0.65	3.8	5.7
Arsenic	µg/g	45	12	117	48	81	71
Barium	µg/g	490	106	620	--	210	1100
Beryllium	µg/g	10	0.57	14	--	2.9	2.1
Cadmium	µg/g	2.7	1.4	8.9	--	41	79
Calcium	µg/g	18100	3900	14800	--	18600	31000
Chromium	µg/g	320	500	190	--	330	3000
Cobalt	µg/g	31	0.83	37	--	<150	--

Table F-1 (continued)

Analyte Group/ Specie	Units	ESP Inlet Average	ESP Inlet 95% CI	ESP Outlet Average	ESP Outlet 95% CI	Stack Average	Stack 95% CI
Copper	µg/g	86	2.6	116	35	56	49
Iron	µg/g	91000	27000	61000	14000	11700	22000
Lead	µg/g	79	19	153	--	36	20
Magnesium	µg/g	4690	480	5500	--	2800	10700
Manganese	µg/g	237	32	243	68	490	2600
Mercury	µg/g	0.79	0.59	0.9	0.3	0.57	5.2
Molybdenum	µg/g	35	39	58	31	73	120
Nickel	µg/g	230	250	157	25	2500	27000
Phosphorus	µg/g	230	150	830	--	<220	--
Potassium	µg/g	17500	1900	17900	--	2900	1600
Selenium	µg/g	15	7	570	860	1700	3500
Sodium	µg/g	5120	190	6700	--	4200	1900
Strontium	µg/g	324	12	360	--	106	53
Titanium	µg/g	6140	790	5400	1600	910	1700
Vanadium	µg/g	308	5.7	381	93	112	46
Part Metals by Vol							
Aluminum	µg/Nm³	870000	240000	12100	--	190	260
Antimony	µg/Nm³	33	26	0.39	0.11	0.052	0.019
Arsenic	µg/Nm³	400	170	16	6.6	1.1	0.24
Barium	µg/Nm³	4400	1700	74	--	2.8	10
Beryllium	µg/Nm³	93	16	1.7	--	0.041	0.047
Cadmium	µg/Nm³	24	15	1.1	--	0.59	2.2
Calcium	µg/Nm³	161300	7200	1800	--	270	920
Chromium	µg/Nm³	2900	4600	23	--	5.1	50
Cobalt	µg/Nm³	275	48	4.5	--	<0.6	--
Copper	µg/Nm³	770	130	16	1.2	0.77	0.76
Iron	µg/Nm³	808000	99000	8500	1100	170	600
Lead	µg/Nm³	710	290	18	--	0.5	0.64
Magnesium	µg/Nm³	42000	11000	660	--	41	220
Manganese	µg/Nm³	2120	120	34	3.7	7.2	49
Mercury	µg/Nm³	7.1	5.6	0.126	0.037	0.007	0.057
Molybdenum	µg/Nm³	320	390	8.1	1.3	1.4	2.6
Nickel	µg/Nm³	2000	2300	22	5.7	39	440
Phosphorus	µg/Nm³	2100	1600	100	--	<2.6	--
Potassium	µg/Nm³	157000	43000	2150	--	40	53
Selenium	µg/Nm³	133	73	82	130	26	58
Sodium	µg/Nm³	45800	6200	800	--	59	140
Strontium	µg/Nm³	2910	570	43	--	1.5	3.5
Titanium	µg/Nm³	55000	16000	760	230	12.5	0.59
Vanadium	µg/Nm³	2760	430	54	11	1.6	0.47
Metals, Vapor							
Aluminum	µg/Nm³	150	940	58	48	<8.7	--
Antimony	µg/Nm³	0.56	6.5	0.021	0.0096	0.012	0.002
Arsenic	µg/Nm³	<0.17	--	<0.18	--	<0.18	--
Barium	µg/Nm³	1.5	7.9	1	1.1	<0.14	--
Beryllium	µg/Nm³	0.06	0.25	<0.16	--	<0.17	--

Table F-1 (continued)

Analyte Group/ Specie	Units	ESP Inlet Average	ESP Inlet 95% CI	ESP Outlet Average	ESP Outlet 95% CI	Stack Average	Stack 95% CI
Boron	µg/Nm³	6400	12000	6900	1200	440	70
Cadmium	µg/Nm³	0.11	0.93	0.1	0.31	<0.064	--
Calcium	µg/Nm³	300	110	184	87	<40	--
Chromium	µg/Nm³	11	140	<0.73	--	<0.67	--
Cobalt	µg/Nm³	<0.74	--	<1.0	--	0.39	0.77
Copper	µg/Nm³	1.1	1.6	1.1	1.2	1.2	2.4
Iron	µg/Nm³	140	120	50	78	<1.8	--
Lead	µg/Nm³	<0.21	--	0.4	1.1	<0.22	--
Magnesium	µg/Nm³	20	18	12	6.4	<7.0	--
Manganese	µg/Nm³	<0.10	--	<0.11	--	<0.11	--
Mercury	µg/Nm³	5.5	5.6	5.6	1.1	3	0.27
Molybdenum	µg/Nm³	<1.4	--	<1.4	--	0.12	0.048
Nickel	µg/Nm³	7	7%	<2.9	--	<2.6	--
Phosphorus	µg/Nm³	<16	--	<17	--	<16	--
Potassium	µg/Nm³	10	130	20	100	37	96
Selenium	µg/Nm³	<0.22	--	<0.23	--	0.8	1.6
Sodium	µg/Nm³	240	360	290	280	<11	--
Strontium	µg/Nm³	2	4	1.4	0.28	<0.045	--
Titanium	µg/Nm³	9	71	2.5	3.4	<0.27	--
Vanadium	µg/Nm³	1.2	3	1	1.3	0.55	0.57
Total Metals							
Aluminum	µg/Nm³	870000	240000	12200	--	200	250
Antimony	µg/Nm³	33	25	0.41	0.12	0.065	0.026
Arsenic	µg/Nm³	410	170	17	6.6	1.2	0.24
Barium	µg/Nm³	4400	1700	75	--	2.9	10
Beryllium	µg/Nm³	93	16	1.7	--	0.099	0.29
Boron (vapor only)	µg/Nm³	6600	2500	6900	1200	440	70
Cadmium	µg/Nm³	24	15	1.3	--	0.63	2.2
Calcium	µg/Nm³	163300	6200	1900	--	290	830
Chromium	µg/Nm³	2900	4700	23	--	5.4	50
Cobalt	µg/Nm³	276	48	5	--	0.74	4
Copper	µg/Nm³	770	130	17	1.9	2	1.8
Iron	µg/Nm³	809000	98000	8600	1100	170	600
Lead	µg/Nm³	710	290	19	--	0.61	0.54
Magnesium	µg/Nm³	42000	11200	670	--	45	230
Manganese	µg/Nm³	2120	130	34	3.7	7.3	49
Mercury	µg/Nm³	13	5.6	5.7	1.1	3.1	0.44
Molybdenum	µg/Nm³	320	390	8.7	1.4	1.5	2.4
Nickel	µg/Nm³	2100	2300	24	6.3	41	430
Phosphorus	µg/Nm³	2100	1600	110	--	<10	--
Potassium	µg/Nm³	157000	43000	2200	--	79	540
Selenium	µg/Nm³	133	73	80	130	27	57
Sodium	µg/Nm³	46100	6200	1000	--	65	130
Strontium	µg/Nm³	2920	580	45	--	1.5	3.5

Table F-1 (continued)

Analyte Group/ Specie	Units	ESP Inlet Average	ESP Inlet 95% CI	ESP Outlet Average	ESP Outlet 95% CI	Stack Average	Stack 95% CI
Titanium	µg/Nm³	55000	16000	760	230	13	0.26
Vanadium	µg/Nm³	2770	440	55	10	2.2	1
Hg Vapor, Bloom							
Mercury, Elemental	µg/Nm³	2	1.8	2.5	0.28	2.8	1.1
Mercury II	µg/Nm³	4.1	1.4	4.2	2	0.47	0.33
Mercury, Methyl	µg/Nm³	0.31	0.59	0.63	0.45	0.044	0.041
Mercury, Total	µg/Nm³	6.4	1.1	7.3	2.4	3.3	0.88
Hexavalent Chromium							
Chromium VI	µg/Nm³					<0.190	--
Total Chromium	µg/Nm³					<0.560	--
Extract Metals, Nitric							
Antimony	µg/g	2.7	1	3.2	3.4	5.8	--
Arsenic	µg/g	43	45	98	40	160	--
Barium	µg/g	220	145	318	8.4	350	--
Beryllium	µg/g	4.1	2.3	5.4	5.8	10	--
Boron	µg/g	1520	857	1900	1200	<15	--
Cadmium	µg/g	2.2	5	10	18	67	--
Chromium	µg/g	29	30	64	61	44	--
Cobalt	µg/g	5	10	17	3.8	<0.90	--
Copper	µg/g	32	36	98	32	120	--
Lead	µg/g	39	52	116	31	91	--
Manganese	µg/g	120	87	1000	3500	330	--
Mercury	µg/g	80	230	4	11	<7.0	--
Molybdenum	µg/g	43	59	72	21	51	--
Nickel	µg/g	45	30	84	46	390	--
Selenium	µg/g	<23	--	<23	--	<87	--
Vanadium	µg/g	150	160	270	260	390	--
Extract Metals, Gastric							
Antimony	µg/g	0.71	0.095	1	0.4	3.4	--
Arsenic	µg/g	<0.68	--	<0.66	--	<2.5	--
Barium	µg/g	103	55	125	22	210	--
Beryllium	µg/g	1.1	0.61	2.7	0.66	4.2	--
Boron	µg/g	698	4.6	822	88	150	--
Cadmium	µg/g	1.8	3	5.9	3.2	12	--
Chromium	µg/g	27	13	54	18	85	--
Cobalt	µg/g	1.8	1.4	5.5	2	11	--
Copper	µg/g	10	5.3	33	9.3	51	--
Lead	µg/g	9.4	9.6	33	7.1	66	--
Manganese	µg/g	60	65	46	11	350	--
Mercury	µg/g	1.9	3	0.38	0.22	<0.15	--
Molybdenum	µg/g	29	22	61	12	49	--
Nickel	µg/g	10	21	38	22	170	--
Selenium	µg/g	<0.88	--	18	6.8	140	--
Vanadium	µg/g	<0.36	--	122	79	<1.3	--

Table F-1 (continued)

Analyte Group/ Specie	Units	ESP Inlet Average	ESP Inlet 95% CI	ESP Outlet Average	ESP Outlet 95% CI	Stack Average	Stack 95% CI
Extract Metals, Acetic							
Antimony	µg/g	0.8	1.1	0.88	0.38	<0.03	--
Arsenic	µg/g	1	0.63	3.4	3.9	<0.5	--
Barium	µg/g	48	30	44	13	17	--
Beryllium	µg/g	0.32	0.54	0.98	0.53	2.9	--
Boron	µg/g	1010	240	910	280	<0.82	--
Cadmium	µg/g	1.6	2.9	10	27	5.9	--
Chromium	µg/g	7.4	1	19	7.2	36	--
Cobalt	µg/g	1.5	0.87	6	7.4	7.5	--
Copper	µg/g	11	14	18	4.9	64	--
Lead	µg/g	0.21	0.35	1.5	0.98	20	--
Manganese	µg/g	51	52	39	8.5	470	--
Mercury	µg/g	0.7	1.9	0.13	0.38	<0.38	--
Molybdenum	µg/g	1.5	5.3	4	12	3.5	--
Nickel	µg/g	8.6	5.6	23	1	66	--
Selenium	µg/g	<0.54	--	4.1	3.3	61	--
Vanadium	µg/g	1.5	1	5	10	<0.19	--
Metals by Size, >10 µm							
Percent of Total Mass	%	57		16			
Aluminum	µg/g	109000	35000	72000	16000		
Antimony	µg/g	2	1.1	3.2	1		
Arsenic	µg/g	26	8.4	49	21		
Barium	µg/g	520	130	390	100		
Beryllium	µg/g	10	5.6	10	18		
Cadmium	µg/g	1.7	0.88	3.6	1.8		
Calcium	µg/g	22100	10000	14000	3900		
Chromium	µg/g	184	4.3	213	35		
Cobalt	µg/g	32	4.4	32	18		
Copper	µg/g	87	23	102	33		
Iron	µg/g	102000	2500	160000	140000		
Lead	µg/g	51	19	72	31		
Magnesium	µg/g	5400	2000	3700	1600		
Manganese	µg/g	238	17	700	1100		
Mercury	µg/g	0.5	0.47	0.55	0.21		
Molybdenum	µg/g	16	20	43	13		
Nickel	µg/g	121	34	129	96		
Phosphorus	µg/g	<72	--	<71	--		
Potassium	µg/g	18500	2700	14600	2900		
Selenium	µg/g	11	1	160	210		
Silicon	µg/g	218000	20000	175000	77000		
Sodium	µg/g	4600	1900	5500	4000		
Strontium	µg/g	357	97	294	58		
Titanium	µg/g	6150	560	5300	2000		
Vanadium	µg/g	293	45	290	120		

Table F-1 (continued)

Analyte Group/ Specie	Units	ESP Inlet Average	ESP Inlet 95% CI	ESP Outlet Average	ESP Outlet 95% CI	Stack Average	Stack 95% CI
Metals by Size, 3-10 µm							
Percent of Total Mass	%	27		44			
Aluminum	µg/g	118000	23000	105000	63000		
Antimony	µg/g	4.8	2.7	8.6	1.1		
Arsenic	µg/g	71	31	127	11		
Barium	µg/g	630	250	629	85		
Beryllium	µg/g	13	8.1	18	15		
Cadmium	µg/g	5.8	3.6	11	2.4		
Calcium	µg/g	19000	17000	14000	1600		
Chromium	µg/g	218	16	275	65		
Cobalt	µg/g	43	5.6	51	10		
Copper	µg/g	142	22	170	39		
Iron	µg/g	64000	19000	63000	14000		
Lead	µg/g	119	82	191	5.2		
Magnesium	µg/g	6350	520	5000	4200		
Manganese	µg/g	226	34	280	110		
Mercury	µg/g	0.47	0.54	<0.48	--		
Molybdenum	µg/g	46	34	80	25		
Nickel	µg/g	152	69	211	73		
Phosphorus	µg/g	<73	--	228	100		
Potassium	µg/g	21800	3300	21300	7200		
Selenium	µg/g	3.1	7.3	45	33		
Silicon	µg/g	231000	14000	218000	20000		
Sodium	µg/g	6700	2600	7900	1500		
Strontium	µg/g	384	11	370	120		
Titanium	µg/g	6830	960	6860	850		
Vanadium	µg/g	390	190	509	91		
Metals by Size, <3 µm							
Percent of Total Mass	%	16		40			
Aluminum	µg/g	135000	18000	122000	10000		
Antimony	µg/g	10	5.7	13	0.94		
Arsenic	µg/g	160	110	202	54		
Barium	µg/g	780	400	758	85		
Beryllium	µg/g	17	9.8	15	5		
Cadmium	µg/g	15	12	21	8		
Calcium	µg/g	19000	13000	16200	2100		
Chromium	µg/g	246	65	290	84		
Cobalt	µg/g	63	28	64	15		
Copper	µg/g	195	52	250	180		
Iron	µg/g	58600	4700	67900	5100		
Lead	µg/g	180	120	220	230		
Magnesium	µg/g	7500	1500	6700	3500		
Manganese	µg/g	267	79	319	29		
Mercury	µg/g	0.63	0.25	0.39	0.15		
Molybdenum	µg/g	103	72	118	49		
Nickel	µg/g	202	49	235	52		

Table F-1 (continued)

Analyte Group/ Specie	Units	ESP Inlet Average	ESP Inlet 95% CI	ESP Outlet Average	ESP Outlet 95% CI	Stack Average	Stack 95% CI
Phosphorus	µg/g	<499	--	820	790		
Potassium	µg/g	24500	2600	22700	5700		
Selenium	µg/g	<8.0	--	60	43		
Silicon	µg/g	223000	38000	207000	18000		
Sodium	µg/g	8000	2300	8300	2800		
Strontium	µg/g	430	120	429	91		
Titanium	µg/g	6970	480	6890	170		
Vanadium	µg/g	2700	9100	770	230		
Organics, Aldehydes							
Acetaldehyde	µg/Nm³	130	170	1.2	2.8	8.7	9.2
Formaldehyde	µg/Nm³	61	56	0.5	1.1	24	35
Organics, Semivolatile							
2-Methylphenol(o-cresol)	ng/Nm³	1500	4500	5000	11000	3000	3700
4-Methylphenol(p-cresol)	ng/Nm³	1100	2700	1730	780	960	2000
Acetophenone	ng/Nm³	2400	5000	3260	750	3300	710
Benzoic acid	ng/Nm³	140000	100000	130000	70000	119000	5000
Benzyl alcohol	ng/Nm³	2300	9100	4000	18000	2800	1100
Butylbenzylphthalate	ng/Nm³	<230	--	340	170	300	130
Dibutylphthalate	ng/Nm³	2600	10000	<160	--	170	260
Diethylphthalate	ng/Nm³	260	360	190	530	240	140
Dimethylphthalate	ng/Nm³	<110	--	<96	--	180	560
Naphthalene	ng/Nm³	900	460	1100	1000	1500	980
Phenol	ng/Nm³	8000	11000	9000	15000	9300	8700
bis(2-Ethylhexyl)phthalate	ng/Nm³	1400	1700	15000	41000	1400	1400
Organics, Volatile							
1,1,1-Trichloroethane	ng/Nm³	700	270	690	190	640	810
Acetone	ng/Nm³	16000	63000	<2,600	--	3600	6300
Benzene	ng/Nm³	1100	680	1470	240	1310	360
Carbon Disulfide	ng/Nm³	7000	25000	3400	7700	2300	1200
Chloromethane	ng/Nm³	<460	--	<530	--	6000	13000
Methylene Chloride	ng/Nm³	170000	540000	33000	37000	130000	280000
Tetrachloroethene	ng/Nm³	1000	800	820	470	1500	2300
Toluene	ng/Nm³	1200	2000	1200	1100	2000	1000
Trichlorofluoromethane	ng/Nm³	9000	27000	<540	--	1100	1700
m,p-Xylene	ng/Nm³			<540	--		
Dioxins/Furans							
Total TCDD	ng/Nm³					0.007	0.008

Table F-2. FGD System Summary

	Limestone Slurry		JBR Underflow Slurry		ESP Outlet	Stack
Specie	Aqueous (µg/mL)	Solids (µg/g)	Aqueous (µg/mL)	Solids (µg/g)	Total (µg/Nm³)	Total (µg/Nm³)
Aluminum	0.26	760	12	1,100	12,000	200
Antimony	<0.24	0.019	<0.19	0.073	0.53	0.41
Arsenic	0.07	<0.33	0.2	<0.4	17	1.9
Barium	4	5.4	3.4	4	75	3.2
Beryllium	<0.0055	0.14	0.0069	0.13	2.4	0.43
Boron	1,400	200	1,400	430	6,900	440
Cadmium	0.0067	0.61	0.46	0.25	1.3	1.2
Calcium	7,100	390,000	17,000	255,000	1,900	300
Chromium	0.063	13	0.07	11	24	6.4
Cobalt	0.09	1.5	0.3	0.99	6	0.74
Copper	0.04	3.7	0.24	2.7	18	2
Iron	<0.06	2,500	<0.05	2,200	8,600	170
Lead	0.0017	0.98	0.013	0.84	19	1.3
Magnesium	1,900	1,400	1,800	810	670	47
Manganese	40	430	310	100	35	7.9
Mercury	6.0e-05	<0.012	0.001	0.18	5.7	3.1
Molybdenum	0.21	0.23	0.064	1.5	9.1	1.5
Nickel	0.8	4	1.5	2.8	25	42
Phosphorus	0.16	110	0.72	88	120	<19
Potassium	140	340	120	310	2,200	80
Selenium	0.13	8.4	0.5	26	80	27
Silicon	7	370	42	450		
Sodium	290	55	240	84	1,000	71
Strontium	40	110	33	74	45	2.1
Titanium	0.5	<0.16	0.82	21	760	13
Vanadium	0.19	6.7	0.24	9.9	55	2.2

Table F-3. Coal Data

Analyte Group	Specie	Units	Feed Coal Average	Feed Coal 95% CI	Raw Coal Average	Raw Coal 95% CI	Pulverizer Rejects Average	Pulverizer Rejects 95% CI
Anions	Chloride	µg/g	1400	90	1350	220	510	100
	Fluoride	µg/g	100	0	123	38	323	29
Metals	Aluminum	µg/g	14500	1400	14300	3100	27200	9600
	Antimony	µg/g	0.61	0.16	0.62	0.33	1.2	0.45
	Arsenic	µg/g	2.3	1.4	3	0	47	45
	Barium	µg/g	80	51	112	19	330	520
	Beryllium	µg/g	1.1	0	1.13	0.14	1.5	1.9
	Boron	µg/g	100	0	110	25	120	120
	Bromine	µg/g	7.44	0.53	7.4	1	4.3	1.5
	Cadmium	µg/g	0.3	0	0.53	0.72	4.1	8.6
	Calcium	µg/g	2100	1300	3000	1300	12700	6500
	Chlorine	µg/g	1240	100	1210	140	590	130
	Chromium	µg/g	24.8	2.9	25.8	0.37	64	14
	Cobalt	µg/g	3.5	1.9	4.08	0.19	7.8	0.8
	Copper	µg/g	36	62	42	50	68	85
	Iron	µg/g	11400	1100	12800	1700	127000	17000
	Lead	µg/g	8	2.5	9	4.3	37	32
	Magnesium	µg/g	570	170	660	58	1370	320
	Manganese	µg/g	23.4	3.3	24.4	5.9	99	53
	Mercury	µg/g	0.077	0.029	0.043	0.014	0.13	0.29
	Molybdenum	µg/g	22.3	6.1	18	11	13	20
	Nickel	µg/g	30	6.4	40	14	<120	--
	Phosphorus	µg/g	84	16	100	120	1500	2200
	Potassium	µg/g	3300	720	3100	2300	2700	6600
	Selenium	µg/g	2.3	1.4	2.3	1.4	8.7	3.8
	Silver	µg/g	<0.52	--	<0.41	--	<1.9	--
	Sodium	µg/g	631	82	679	89	1110	240
	Strontium	µg/g	74.9	9.3	88	14	450	460
	Tin	µg/g	<16	--	<17	--	<31	--
	Titanium	µg/g	890	170	850	170	1980	110
	Uranium	µg/g	1.8	0.6	1.6	0.37	4.1	1.9
	Vanadium	µg/g	39.4	1.2	37.7	6.3	59.8	8.2
Ultimate/Proximate	% Ash	%	11.1	1.4	12.2	2.5		
	% Carbon	%	72	0.52	70.8	1.2	38.5	4.2
	% Hydrogen	%	4.83	0.014	4.76	0.17		
	% Moisture	%			11.7	2.2		
	% Nitrogen	%	1.52	0.14	1.45	0.052		
	% Oxygen (diff.)	%	7.74	0.62	7.92	0.93		
	% Sulfur	%	2.74	0.29	2.9	0.36	16	2.3
	Fixed Carbon	%	50.8	2.5	50.7	0.74		
	Higher Heating Value	Btu/lb	12697	64	12590	270		
	Heating Value (MAF)	MAF Btu	14290	160	14330	150		
	Volatile Matter	%	37	2.7	37.1	1.9		

Table F-3 (continued)

Analyte Group	Specie	Units	Feed Coal Average	Feed Coal 95% CI	Raw Coal Average	Raw Coal 95% CI	Pulverizer Rejects Average	Pulverizer Rejects 95% CI
Radionuclides	Actinium-228 @ 338 KeV	pCi/g	0.33	0.29				
	Actinium-228 @ 911 KeV	pCi/g	0.33	0.14				
	Actinium-228 @ 968 KeV	pCi/g	0.07	0.29				
	Bismuth-212 @ 727 KeV	pCi/g	ND	--				
	Bismuth-214 @ 1120.4 KeV	pCi/g	0.93	0.38				
	Bismuth-214 @ 1764.7 KeV	pCi/g	0.1	0.43				
	Bismuth-214 @ 609.4 KeV	pCi/g	0.67	0.14				
	K-40 @ 1460 KeV	pCi/g	1.4	3.6				
	Lead-210 @ 46 KeV	pCi/g	1.3	0.9				
	Lead-212 @ 238 KeV	pCi/g	0.2	0				
	Lead-214 @ 295.2 KeV	pCi/g	0.63	0.14				
	Lead-214 @ 352.0 KeV	pCi/g	0.63	0.14				
	Radium-226 @ 186.0 KeV	pCi/g	1.17	0.72				
	Thallium-208 @ 583 KeV	pCi/g	0.3	0.25				
	Thallium-208 @ 860 KeV	pCi/g	ND	--				
	Thorium-234 @ 63.3 KeV	pCi/g	1	1.4				
	Thorium-234 @ 92.6 KeV	pCi/g	0.67	0.38				
	Uranium-235 @ 143 KeV	pCi/g	0.07	0.29				

Table F-4. Boiler Process Solids Data

Analyte Group	Specie	Units	Bottom Ash		Sluiced Fly Ash	
			Average	95% CI	Average	95% CI
Anions	Chloride	µg/g	130	170	<100	--
	Fluoride	µg/g	32	26	99	67
Metals	Aluminum	µg/g	76000	11000	98000	8000
	Antimony	µg/g	1.14	0.2	3.39	2.04
	Arsenic	µg/g	7.2	6.2	61	37
	Barium	µg/g	457	66	496	87
	Beryllium	µg/g	7.7	2.9	11.1	3.1
	Boron	µg/g	280	170	470	230
	Cadmium	µg/g	0.32	0.39	4.1	3
	Calcium	µg/g	20300	3400	13800	2000
	Chromium	µg/g	192	18	185	21
	Cobalt	µg/g	31.6	4.3	36.9	5.8
	Copper	µg/g	77	18	104	23
	Iron	µg/g	130000	31000	89000	22000
	Lead	µg/g	20	3.8	83	40
	Magnesium	µg/g	3610	820	4880	350
	Manganese	µg/g	270	56	245	46
	Mercury	µg/g	<0.011	--	0.15	0.12
	Molybdenum	µg/g	<3.0	--	<14	--
	Nickel	µg/g	131	15	143	32
	Phosphorus	µg/g	400	210	70	140
	Potassium	µg/g	14200	1100	18210	1000
	Selenium	µg/g	<1	--	12	11
	Silicon	µg/g	213000	11000	219000	7600
	Sodium	µg/g	3610	580	5100	1200
	Strontium	µg/g	280	41	322	30
	Titanium	µg/g	5550	560	6330	750
	Vanadium	µg/g	277	29	327	58
Ultimate/Proximate	% Carbon	%	2.3	4.2	4.5	2.7
	% Sulfur	%	0.15	0.41	0.134	0.041
Radionuclides	Actinium-228 @ 338 KeV	pCi/g	2.1	0	2.37	0.14
	Actinium-228 @ 911 KeV	pCi/g	2.2	0.25	2.33	0.14
	Actinium-228 @ 968 KeV	pCi/g	2.2	1	2.5	0.25
	Bismuth-212 @ 727 KeV	pCi/g	3	1.2	2.6	0.99
	Bismuth-214 @ 1120.4 KeV	pCi/g	7.4	1.3	6.5	2.4
	Bismuth-214 @ 1764.7 KeV	pCi/g	6.8	2.2	5.9	1.8
	Bismuth-214 @ 609.4 KeV	pCi/g	7.1	1.5	6.5	1.4
	K-40 @ 1460 KeV	pCi/g	16.7	2.9	18	2.5
	Lead-210 @ 46 KeV	pCi/g	1.37	0.52	6.4	2.7
	Lead-212 @ 238 KeV	pCi/g	2.03	0.72	2.2	0.25

Table F-4 (continued)

Analyte Group	Specie	Units	Bottom Ash		Sluiced Fly Ash	
			Average	95% CI	Average	95% CI
Radionuclides (Cont'd)	Lead-214 @ 295.2 KeV	pCi/g	7.3	1.9	6.5	1.4
	Lead-214@ 352.0 KeV	pCi/g	7.6	1.8	6.6	1.3
	Radium-226 @ 186.0 KeV	pCi/g	10.3	1.5	9.9	2.9
	Thallium-208 @ 583 KeV	pCi/g	2.2	0.43	2.23	0.29
	Thallium-208 @ 860 KeV	pCi/g	1.9	4.2	2.97	0.14
	Thorium-234 @ 63.3 KeV	pCi/g	5.77	0.76	6.6	4.3
	Thorium-234 @ 92.6 KeV	pCi/g	5	1.3	5	2.2
	Uranium-235 @ 143 KeV	pCi/g	0.31	0.16	0.22	0.15
Organics, Semivolatile	2-Methylnaphthalene	ng/g	34	97	<26	--
	bis(2-Ethylhexyl)phthalate	ng/g	<86	--	230	520

Table F-5. ESP Hopper Ash

Analyte Group	Specie	Units	ESP Hopper Ash-Field 1		ESP Hopper Ash-Field 2	
			Average	95% CI	Average	95% CI
Anions	Chloride	µg/g	350	650	<100	--
	Fluoride	µg/g	90	49	125	91
Metals	Aluminum	µg/g	97000	51000	89000	11000
	Antimony	µg/g	2.99	1.01	4.19	1.38
	Arsenic	µg/g	46	11	71.9	9.8
	Barium	µg/g	490	150	493	98
	Beryllium	µg/g	10.9	3.3	17.2	3.4
	Cadmium	µg/g	3.26	0.72	5.42	0.69
	Calcium	µg/g	17900	6400	15640	960
	Chromium	µg/g	183	31	220	110
	Cobalt	µg/g	34	4.1	42	6
	Copper	µg/g	98	26	150	150
	Iron	µg/g	90000	17000	80000	8600
	Lead	µg/g	72	11	96	20
	Magnesium	µg/g	4600	2700	4100	1000
	Manganese	µg/g	219	52	216	25
	Mercury	µg/g	0.119	0.087	0.18	0.18
	Molybdenum	µg/g	25	19	49	32
	Nickel	µg/g	127	28	158	31
	Phosphorus	µg/g	100	140	<72	--
	Potassium	µg/g	17400	3100	18100	1100
	Selenium	µg/g	9.3	4.7	16.6	3.3
	Silicon	µg/g	223000	35000	215000	15000
	Sodium	µg/g	5200	1200	6000	1400
	Strontium	µg/g	320	120	327	41
	Titanium	µg/g	6120	190	6450	290
	Vanadium	µg/g	305	37	357	55
Radionuclides	Actinium-228 @ 338 KeV	pCi/g	2.13	0.38	2.17	0.38
	Actinium-228 @ 911 KeV	pCi/g	2.1	0.43	2.2	0.5
	Actinium-228 @ 968 KeV	pCi/g	2.43	0.87	2.63	0.14
	Bismuth-212 @ 727 KeV	pCi/g	2.8	1.6	2.8	1.3
	Bismuth-214 @ 1120.4 KeV	pCi/g	6.1	2.6	6.27	0.76
	Bismuth-214 @ 1764.7 KeV	pCi/g	5.9	2.3	5.7	0.9
	Bismuth-214 @ 609.4 KeV	pCi/g	6.2	2.1	6	1.9
	K-40 @ 1460 KeV	pCi/g	17	4.3	17.3	1.4
	Lead-210 @ 46 KeV	pCi/g	5.43	0.72	7.8	1.4
	Lead-212 @ 238 KeV	pCi/g	2.1	0.75	1.87	0.76
	Lead-214 @ 295.2 KeV	pCi/g	6.1	1.5	6	1.2
	Lead-214 @ 352.0 KeV	pCi/g	6.2	2.1	6.1	1.1
	Radium-226 @ 186.0 KeV	pCi/g	9	2.2	9.7	2.8

Table F-5 (continued)

Analyte Group	Specie	Units	ESP Hopper Ash-Field 1 Average	ESP Hopper Ash-Field 1 95% CI	ESP Hopper Ash-Field 2 Average	ESP Hopper Ash-Field 2 95% CI
Radionuclides (Cont'd)						
	Thallium-208 @ 583 KeV	pCi/g	2.07	0.29	2.17	0.38
	Thallium-208 @ 860 KeV	pCi/g	2.1	1.9	2.2	4.8
	Thorium-234 @ 63.3 KeV	pCi/g	5.6	2.2	5.5	1.6
	Thorium-234 @ 92.6 KeV	pCi/g	4.3	1.6	4.8	1.6
	Uranium-235 @ 143 KeV	pCi/g	0.22	0.17	0.9	2.8
Organics, Semivolatile	bis(2-Ethylhexyl)phthalate	ng/g	190	780	200	590

Table F-6. FGD Process Solids Data

Analyte Group	Specie	Units	JBR Underflow Slurry Solids		Limestone Slurry Solids		Raw Limestone	
			Average	95% CI	Average	95% CI	Average	95% CI
Anions	Chloride	µg/g	9550	720	4100	2900	179	47
	Fluoride	µg/g	750	140	85	46	59	19
	Sulfate	µg/g	496300	8700				
	Sulfite	µg/g	<240	--				
Metals	Aluminum	µg/g	1100	190	760	320	980	160
	Antimony	µg/g	0.073	0.03	0.019	0	0.007	0
	Arsenic	µg/g	<0.41	--	<0.33	--	<0.33	--
	Barium	µg/g	4.02	0.94	5.39	0.66	4.87	0.59
	Beryllium	µg/g	0.129	0.07	0.143	0.02	0.137	0
	Boron	µg/g	425	43	202	88	3.5	1.3
	Cadmium	µg/g	0.247	0.04	0.608	0.04	0.332	0
	Calcium	µg/g	255000	15000	392000	27000	395000	9000
	Chromium	µg/g	11.3	2.5	13.4	2.3	9.8	0.64
	Cobalt	µg/g	0.99	0.43	1.48	0.51	1.3	0.62
	Copper	µg/g	2.73	0.81	3.71	0.48	1.5	1.1
	Iron	µg/g	2190	370	2510	670	1787	57
	Lead	µg/g	0.84	0.21	0.98	0.11	1.1	0.2
	Magnesium	µg/g	810	100	1390	190	1233	29
	Manganese	µg/g	103	11	429	33	207	6.6
	Mercury	µg/g	0.178	0.06	<0.012	--	0.005	0
	Molybdenum	µg/g	1.48	0.56	0.23	0.4	<0.222	--
	Nickel	µg/g	2.8	1.3	4	2.5	3.16	0.88
	Phosphorus	µg/g	88	29	110	10	108	31
	Potassium	µg/g	310	160	338	86	363	45
	Selenium	µg/g	25.5	1.2	8.4	2.8	3.9	2
	Silicon	µg/g	447	73	370	220	440	110
	Sodium	µg/g	84.1	7.8	55	19	20.9	2.5
	Strontium	µg/g	73.8	7.4	112	5.3	108	2.5
	Titanium	µg/g	20.9	7.1	<0.16	--	30	110
	Vanadium	µg/g	9.9	2.1	6.7	4.3	8.13	0.41
Moisture	Percent Moisture	wt%					8.7	1.4
Radionuclides	Actinium-228 @ 338 KeV	pCi/g	ND	--			0.3	0.19
	Actinium-228 @ 911 KeV	pCi/g	0.05	0.23			0.17	0.38
	Actinium-228 @ 968 KeV	pCi/g	ND	--			ND	--

Table F-6 (continued)

Analyte Group	Specie	Units	JBR Underflow Slurry Solids Average	JBR Underflow Slurry Solids 95% CI	Limestone Slurry Solids Average	Limestone Slurry Solids 95% CI	Raw Limestone Average	Raw Limestone 95% CI
	Bismuth-212 @ 727 KeV	pCi/g	ND	--			ND	--
	Bismuth-214 @ 1120.4 KeV	pCi/g	0.25	0.54			ND	--
	Bismuth-214 @ 1764.7 KeV	pCi/g	0.11	0.27			0.32	0.32
	Bismuth-214 @ 609.4 KeV	pCi/g	0.11	0.23			0.15	0.14
	K-40 @ 1460 KeV	pCi/g	ND	--			0.39	0.86
	Lead-210 @ 46 KeV	pCi/g	0.3	1.1			0.2	1.1
	Lead-212 @ 238 KeV	pCi/g	0.09	0.05			0.113	0
	Lead-214 @ 295.2 KeV	pCi/g	0.05	0.23			0.19	0.11
	Lead-214 @ 352.0 KeV	pCi/g	0.14	0.08			0.193	0.1
	Radium-226 @ 186.0 KeV	pCi/g	0.33	0.72			0.42	0.91
	Thallium-208 @ 583 KeV	pCi/g	0.2	0.21			0.07	0.3
	Thallium-208 @ 860 KeV	pCi/g	ND	--			ND	--
	Thorium-234 @ 63.3 KeV	pCi/g	0.19	0.8			0.12	0.53
	Thorium-234 @ 92.6 KeV	pCi/g	0.2	0.44			0.08	0.36
	Uranium-235 @ 143 KeV	pCi/g	ND	--			ND	--
Aldehydes	Acetaldehyde	µg	<0.10	--				
	Formaldehyde	µg	<0.10	--				
Organics, Semivolatile	bis(2-Ethylhexyl) phthalate	ng/g	100	350				

Table F-7. Liquid Ash Sluice System Data Summary

Analyte Group	Specie	Units	Ash Pond Water		Bottom Ash Sluice Filtrate		ESP Fly Ash Sluice Filtrate	
			Average	95% CI	Average	95% CI	Average	95% CI
Reduced Species	Cyanide	µg/mL	0.0019	0.0024	0.002	0.001	0.0015	1.6e-03
	Ammonia as N	µg/mL	0.2	0.12	0.45	0.43	0.38	0.08
Anions	Chloride	µg/mL	8.9	1.9	7.9	1.1	10.4	1.6
	Fluoride	µg/mL	0.43	0.11	0.281	0.046	0.74	0.57
	Phosphate	µg/mL	<0.014	--	0.025	0.037	0.023	0.047
	Sulfate	µg/mL	113	12	81	34	340	510
Metals, Soluble	Aluminum	µg/mL	0.014	0.012	0.31	0.31	1	3.3
	Antimony	µg/mL	<0.024	--	<0.024	--	<0.024	--
	Arsenic	µg/mL	<0.00066	--	0.024	0.088	0.017	0.049
	Barium	µg/mL	0.155	0.028	0.102	0.084	0.24	0.16
	Beryllium	µg/mL	<0.00055	--	<0.00055	--	<0.00055	--
	Boron	µg/mL	1.08	0.23	0.87	0.64	10	15
	Cadmium	µg/mL	0.0011	0.001	0.0011	0.002	0.0027	4.0e-03
	Calcium	µg/mL	32.8	3.5	39	23	140	170
	Chromium	µg/mL	<0.0025	--	0.0031	0.003	0.048	0.051
	Cobalt	µg/mL	<0.0034	--	<0.0034	--	<0.0034	--
	Copper	µg/mL	0.0044	0.0049	0.018	0.047	0.0026	1.5e-03
	Iron	µg/mL	5.4	3.8	0.028	0.034	0.006	0.015
	Lead	µg/mL	0.008	0.011	0.01	0.013	0.0048	3.6e-03
	Magnesium	µg/mL	3.11	0.17	2.3	1.6	4.5	2
	Manganese	µg/mL	0.56	0.21	0.05	0.12	0.02	0.045
	Mercury	µg/mL	6.0e-05	4.3e-05	4.0e-05	7.0e-05	<0.00004	--
	Molybdenum	µg/mL	0.035	0.021	0.072	0.083	0.62	0.98
	Nickel	µg/mL	0.0197	0.0055	0.005	0.014	0.024	0.026
	Phosphorus	µg/mL	0.07	0.18	0.11	0.13	0.14	0.26
	Potassium	µg/mL	5.34	0.78	4.4	2.7	12	17
	Selenium	µg/mL	0.0019	0.0037	0.0039	9.0e-04	0.035	0.04
	Silicon	µg/mL	3.45	0.7	4.7	0.5	4.1	2.7
	Sodium	µg/mL	12.4	0.75	9.4	2.2	22	25
	Strontium	µg/mL	0.342	0.02	0.28	0.31	0.62	0.66
	Tin	µg/mL	<0.014	--	<0.014	--	0.004	0.015
	Titanium	µg/mL	<0.0024	--	0.0013	0.002	0.016	0.067
	Vanadium	µg/mL	0.005	0.016	0.029	0.049	0.07	0.12
Metals, Total	Aluminum	µg/mL	0.18	0.39				
	Antimony	µg/mL	0.018	0.012				
	Arsenic	µg/mL	0.0007	0.0014				
	Barium	µg/mL	0.153	0.032				
	Beryllium	µg/mL	0.0003	0.001				
	Boron	µg/mL	1.03	0.16				

Table F-7 (continued)

Analyte Group	Specie	Units	Ash Pond Water		Bottom Ash Sluice Filtrate		ESP Fly Ash Sluice Filtrate	
			Average	95% CI	Average	95% CI	Average	95% CI
Metals, Total (Cont'd)	Cadmium	µg/mL	0.0018	0.0039				
	Calcium	µg/mL	33.7	2.7				
	Chromium	µg/mL	0.0016	0.0011				
	Cobalt	µg/mL	0.00638	0.001				
	Copper	µg/mL	0.0073	0.0051				
	Iron	µg/mL	10.2	5.4				
	Lead	µg/mL	0.017	0.057				
	Magnesium	µg/mL	3.17	0.2				
	Manganese	µg/mL	0.56	0.21				
	Mercury	µg/mL	5.0e-05	7.0e-05				
	Molybdenum	µg/mL	0.084	0.034				
	Nickel	µg/mL	0.024	0.013				
	Phosphorus	µg/mL	0.027	0.052				
	Potassium	µg/mL	5.74	0.83				
	Selenium	µg/mL	0.0048	0.0026				
	Silicon	µg/mL	3.7	0.73				
	Sodium	µg/mL	12.8	1.9				
	Strontium	µg/mL	0.34	0.026				
	Tin	µg/mL	<0.014	--				
	Titanium	µg/mL	0.0007	0.001				
	Vanadium	µg/mL	0.024	0.011				
Aldehydes	Acetaldehyde	µg/mL	0.08	0.17	0.08	0.16	0.04	0.11
	Formaldehyde	µg/mL	0.015	0.021	0.023	0.036	0.03	0.048
Organics, Semivolatile	Diethylphthalate	µg/L	<0.39	--	0.5	1.3	<0.38	--
Organics, Volatile	Methylene Chloride	µg/L	<5.0	--	<5.0	--	4.9	2.9

Table F-8. Liquid FGD Process Stream Data Summary

Analyte Group	Specie	Units	Gypsum Pond Water		JBR Underflow Slurry Filtrate		Limestone Slurry Filtrate	
			Average	95% CI	Average	95% CI	Average	95% CI
Reduced Species	Cyanide	µg/mL	0.049	0.005	0.082	0.1	0.05	0.1
	Ammonia as N	µg/mL	15	3	<40	--	14.1	2.4
Anions	Chloride	µg/mL	16400	4100	26100	4200	13100	2100
	Fluoride	µg/mL	14.9	3.1	31	16	1.84	0.95
	Phosphate	µg/mL	0.033	0.021	0.05	0.15	<0.020	--
	Sulfate	µg/mL	980	140	712	65	780	160
	Sulfite	µg/mL	--		0.033	0.038	--	--
Metals, Soluble	Aluminum	µg/mL	0.76	0.68	12.3	4.7	0.26	0.85
	Antimony	µg/mL	<0.24	--	<0.19	--	<0.24	--
	Arsenic	µg/mL	0.127	0.027	0.2	0.26	0.07	0.13
	Barium	µg/mL	1.19	0.057	3.39	0.29	4	11
	Beryllium	µg/mL	<0.0055	--	0.007	4.7e-03	<0.0055	--
	Boron	µg/mL	533	89	1400	190	1400	4100
	Cadmium	µg/mL	0.149	0.035	0.456	0.065	0.0067	2.6e-03
	Calcium	µg/mL	8100	2100	17000	10000	7070	190
	Chromium	µg/mL	0.101	0.03	0.07	0.091	0.063	0.047
	Cobalt	µg/mL	0.11	0.13	0.304	2.9e-03	0.09	0.3
	Copper	µg/mL	0.057	0.048	0.239	0.086	0.04	0.11
	Iron	µg/mL	<0.060	--	<0.048	--	<0.060	--
	Lead	µg/mL	0.0022	0.007	0.013	0.01	0.0017	1.3e-03
	Magnesium	µg/mL	690	120	1800	100	1900	5600
	Manganese	µg/mL	120	20	307	41	40	110
	Mercury	µg/mL	2.4e-04	2.2e-04	1.0e-03	1.1e-03	5.7e-05	1.0e-05
	Molybdenum	µg/mL	0.087	0.068	0.064	0.016	0.21	0.63
	Nickel	µg/mL	0.62	0.14	1.52	0.32	0.8	2.3
	Phosphorus	µg/mL	0.34	0.13	0.72	0.13	0.16	0.19
	Potassium	µg/mL	52	12	123	8.6	140	420
	Selenium	µg/mL	0.36	0.23	0.5	1	0.128	0.049
	Silicon	µg/mL	15.8	2.7	42	6	7	21
	Sodium	µg/mL	97	16	244	5	290	860
	Strontium	µg/mL	13.2	2.1	32.9	4.3	40	110
	Tin	µg/mL	0.18	0.6	<0.14	--	<0.14	--
	Titanium	µg/mL	2.19	0.45	0.82	0.13	0.5	1
	Vanadium	µg/mL	0.322	0.065	0.24	0.22	0.19	0.23
Metals, Total	Aluminum	µg/mL	2.04	0.69				
	Antimony	µg/mL	<0.14	--				
	Arsenic	µg/mL	0.127	0.031				
	Barium	µg/mL	1.19	0.25				
	Beryllium	µg/mL	<0.0055	--				
	Boron	µg/mL	540	150				

Table F-8 (continued)

Analyte Group	Specie	Units	Gypsum Pond Water Average	Gypsum Pond Water 95% CI	JBR Underflow Slurry Filtrate Average	JBR Underflow Slurry Filtrate 95% CI	Limestone Slurry Filtrate Average	Limestone Slurry Filtrate 95% CI
Metals, Total (Cont'd)	Calcium	µg/mL	9500	6000				
	Cadmium	µg/mL	0.177	0.018				
	Chromium	µg/mL	0.075	0.094				
	Cobalt	µg/mL	0.143	0.065				
	Copper	µg/mL	0.053	0.029				
	Iron	µg/mL	0.68	0.73				
	Lead	µg/mL	0.0036	0.005				
	Magnesium	µg/mL	720	210				
	Manganese	µg/mL	123	39				
	Mercury	µg/mL	0	0				
	Molybdenum	µg/mL	0.076	0.012				
	Nickel	µg/mL	0.63	0.18				
	Phosphorus	µg/mL	0.236	0.024				
	Potassium	µg/mL	52	13				
	Selenium	µg/mL	0.27	0.17				
	Silicon	µg/mL	18.4	3.2				
	Sodium	µg/mL	102	25				
	Strontium	µg/mL	13.7	4.6				
	Tin	µg/mL	<0.086	--				
	Titanium	µg/mL	1.1	2.8				
	Vanadium	µg/mL	0.22	0.28				
Aldehydes	Acetaldehyde	µg/mL	0.05	0.11	0.06	0.12	0.05	0.1
	Formaldehyde	µg/mL	0.023	0.027	0.08	0.26	0.021	0.025
Organics, Semivolatile	Dimethylphthalate	µg/L	1.3	2.2	2.1	4.2	<0.36	--
	bis(2-Ethylhexyl)phthalate	µg/L	8	81	4.4	1.5	140	560
Organics, Volatile	Acetone	µg/L	<10	--	<10	--	22.3	7.2