Note: This is a reference cited in *AP 42, Compilation of Air Pollutant Emission Factors, Volume I Stationary Point and Area Sources.* AP42 is located on the EPA web site at www.epa.gov/ttn/chief/ap42/

The file name refers to the reference number, the AP42 chapter and section. The file name "ref02_c01s02.pdf" would mean the reference is from AP42 chapter 1 section 2. The reference may be from a previous version of the section and no longer cited. The primary source should always be checked.

AP-42 Section Number: 1.8

Reference Number: 51

Title: Okeelanta Corporation Compliance Particulate Emissions Test Report Boiler #10

January 1992

Ref-39
OSWI-004

Eastmount Engineering

Environmental Consultants — Air Quality Specialists

OKEELANTA CORPORATION

COMPLIANCE PARTICULATE EMISSIONS TEST REPORT

BOILER #10

PREPARED FOR: Okeelanta Corporation
Okeelanta Sugar Division
South Bay, Florida 33493

CONCERNING: Particulate Emissions Testing
Okeelanta Corporation
Boiler #10
South Bay Florida Facility
January, 29, 30 & 31, 1992

PREPARED BY: Sean M. MacKay
Project Director
Eastmount Engineering, Inc.
420 Main Street
Walpole, MA 02081

I hereby certify that the information presented in this report is accurate and true to the best of my knowledge.

Sean MacKay

Sean M. MacKay
Project Director

March 5, 1992
Date

39

EPA-5

STACK TEST REVIEW DATA INPUT FORM

TEST DATE: January 29, 92 (30, 31)

South Bay

FACILITY: Okeelanta Corporation Sugar APIS #: 00005

DESCRIPTION: Boiler 10

TESTING FIRM: Eastmount Engineering, Inc

comp-1, 2, 3

01-29-92

PERMIT EMISSION LIMIT: 0.2 LB/MMBTU OR ~~38.78~~ 38.13 LB/HR

AVERAGE HEAT INPUT: 190.53 MMBTU/HR

A's (AREA OF STACK): 44.2 FT2

39.8
38.3
36.3
Average 38.13

Heat Input
198.9
191.4
181.3

MEASURED PARAMETERS

		Run-1	Run-2	Run-3
1.	H2O impingers (V'i), milliliters	242	232	243
2.	H2O filter, grams	18.5	16.8	14.8
3.	M'n (particulate weight), grams	.1375	.1407	.1432
4.	V'm (gas volume metered), FT3	50.88	50.05	48.86
5.	Y (dry gas calibration factor)	.9911	.9911	.9911
6.	RDP (average square root dP)	.89	.88	.85
7.	dH (average delta H), inches H2O	2.55	2.49	2.30
8.	T'm (average meter temperature), F	97.5	99.4	97.1
9.	T's (average stack temperature), F	141.8	140.5	141.8
10.	P's (stack pressure, abs.) inches Hg	29.95 ~~30.00~~	30.03 ~~30.08~~	29.95 ~~30.00~~
11.	P'b (barometric pressure, abs.) inches Hg	30.00	30.08	30.00
13.	D'n (nozzle dia.), inches	.260	.250	.260
14.	Sample Time, minutes	60	60	60
15.	C'p (pitot tube coefficient)	.84	.84	.84
23.	S/T (sample pts./total pts.)	1.00	1.0	1.0

STACK TEST REVIEW DATA INPUT FORM

TEST DATE: January ~~29, 30~~ 31, 1992

CT-10R-2
CT-10R-1
01-31-92

FACILITY: Okeelanta Corpor. South Bay APIS #: _____

DESCRIPTION: Boiler 10

TESTING FIRM: Eastmount

PERMIT EMISSION LIMIT: 0.2 LB/MMBTU OR ~~38.01~~ LB/HR

AVERAGE HEAT INPUT: 186.63 MMBTU/HR

A's (AREA OF STACK): 44.2 FT2

191.2, 188, 180.7 } 186.63

37.6, +36.1, 38.2 } 37.3

MEASURED PARAMETERS

		Run-1	Run-2	Run-3
1.	H2O impingers (V'i), milliliters	204	210	179
2.	H2O filter, grams	13.5	13.0	12.1
3.	M'n (particulate weight), grams	.1339	.1413	.0982
4.	V'm (gas volume metered), FT3	45.408	56.408	43.84
5.	Y (dry gas calibration factor)	.9911	.9911	.9911
6.	RDP (average square root dP)	.79	.82	.78
7.	dH (average delta H), inches H2O	1.99	2.13	1.84
8.	T'm (average meter temperature), F	93.4	94.5	97.1
9.	T's (average stack temperature), F	139.3	138.8	136.6
10.	P's (stack pressure, abs.) inches Hg	~~29.94~~ 29.89	~~29.95~~ 29.90	~~29.96~~ 29.91
11.	P'b (barometric pressure, abs.) inches Hg	29.94	29.95	29.96
13.	D'n (nozzle dia.), inches	.260	.265	.260
14.	Sample Time, minutes	60	60	60
15.	C'p (pitot tube coefficient)	.84	.84	.84
23.	S/T (sample pts./total pts.)	1.0	1.0	1.0

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1.0 COMPENDIUM

Eastmount Engineering conducted a Compliance Particulate Emissions Test Program on Unit #10 at Okeelanta Corporation's South Bay, Florida facility on January 29, 30 and 31, 1992. The test program was an EPA first class audit and consisted of two series of three EPA Method 5 test runs.

All testing was conducted in strict accordance with the Environmental Protection Agency's Reference Methods 1 through 5 as found in the Federal Register (40 CFR 60) as amended and were consistent with the State of Florida Department of Environmental Regulation's guidelines.

The purpose of this test was to determine compliance with the rules of the Department of Environmental Regulation, Chapter 17-2.600 Air Pollution, Section 2.05 Prohibitive Acts, Subsection 6, Stationary Sources, Table II, Emission Limiting Standards.

While testing the boiler was burning bagasse as fuel. Boiler #10 has a maximum rated capacity of 125,000 pounds of steam per hour. During run #3 of the first series of tests, performed on January 30, 1992, soot blowers No. 1 and No. 2 for Boiler No. 10 were stuck in the open position. Considering this malfunction, The steam flow production is directly affected by the loss of heat in the economizer due to the excess air used to blow soot off the economizer tubes. It is the opinion of Okeelanta corporation and Eastmount Engineering that the process conditions of run #3 were not normal operating procedures. The malfunction in the soot blower is recorded in the control room log book and is presented in Appendix XI of this report.

Results of the test program are presented in the table on the following page which summarizes the emission results, the emission standards, and the boiler operating conditions. The data for run #3 is included in the summary table for reporting purposes however, it is not included in the average for the test series. The two averages that are presented represent runs 1,2, and 1R and runs 1,2,1R,2R and 3R.

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1.0 COMPENDIUM (cont)

SUMMARY OF RESULTS
COMPLIANCE PARTICULATE TESTING
UNIT NO. 10

RUN #	DATE	EMISSION RATE LB/MMBtu	EMISSION RATE LB/HR	ALLOWABLE LB/MMBtu	ALLOWABLE LB/HR	LOAD LB/HR-125	% OF KPPH
1	01-29-92	.194	38.51	.20	39.78	97,754	78.2%
2	01-29-92	.207	39.70	.20	38.28	93,600	74.9%
3*	01-30-92	.219	39.77	.20	36.26	88,645	70.4%
1R	01-31-92	.196	37.49	.20	38.24	93,138	74.5%
2R	01-31-92	.180	33.86	.20	37.60	91,754	73.4%
3R	01-31-92	.160	28.87	.20	36.13	88,062	70.4%
AVERAGE RUNS 1,2 & 1R		.199	38.57	.20	38.78	94,831	75.9%
AVERAGE RUNS 1,2,1R,2R & 3R		.187	35.69	.20	38.01	92,862	74.3%

* - represents run with soot blowers stuck open

Sean MacKay, Project Director, was in charge of and responsible for all stack testing, conducted all calculations and maintained chain of custody of all samples. Brian Gibson operated the meter box and assisted in the field laboratory. Pat Wildman located the probe at the proper traverse point locations and assisted where required. Michael Wayt of South Florida Environmental Services performed the analysis on all filters and washes. Mr. Kenneth Tucker of the Florida Department of Environmental Regulation observed the stack testing and boiler operations as well as Mr. Ajay Satyel and Mr. Jeff Koerner of the Palm Beach County Public Health Unit. Mr. Alberto Padrone was the boiler room superintendent and acted as liaison between Okeelanta Corporation and the Florida DER and county. Mr. George Devane was responsible for boiler operations and acquisition of all pertinent process data.

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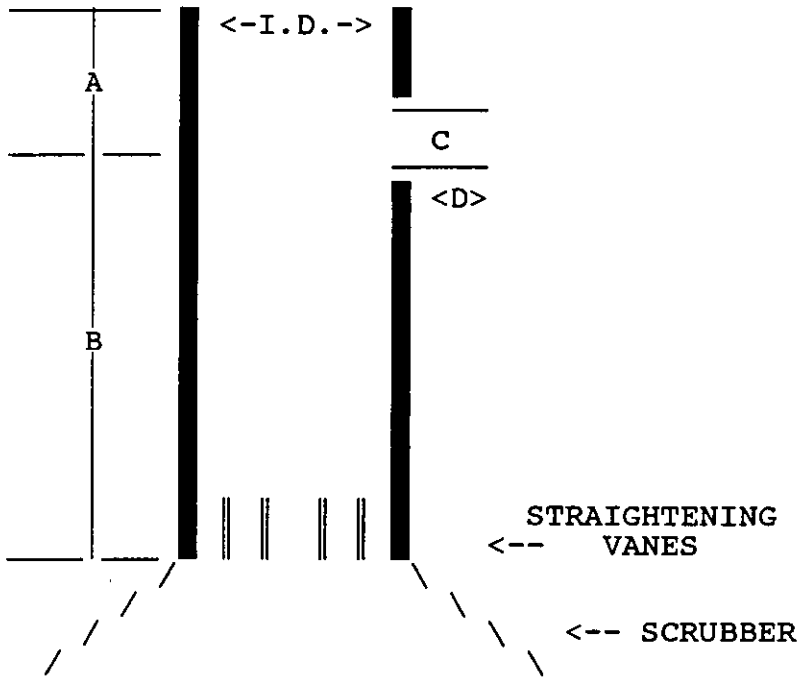
2.0 STACK SCHEMATIC

OKEELANTA CORPORATION
Boiler #10
South Bay, Florida Facility

The following is a schematic of the stack which services Boiler #10 at Okeelanta Corporation's South Bay, Florida facility.

Defined are the sampling port locations, interior stack dimensions and distances from the ports to the nearest upstream and downstream interferences.



DISTANCE UPSTREAM FROM FLOW DISTURBANCE (A)	4'
DISTANCE DOWNSTREAM FROM FLOW DISTURBANCE (B)	16'
DIAMETER OF PORT SLEEVE (C)	4"
LENGTH OF PORT SLEEVE (D)	3.5"
NUMBER OF PORTS	2
INTERNAL DIAMETER OF STACK AT SAMPLING PORTS	7.5'

SCHEMATIC NOT TO SCALE

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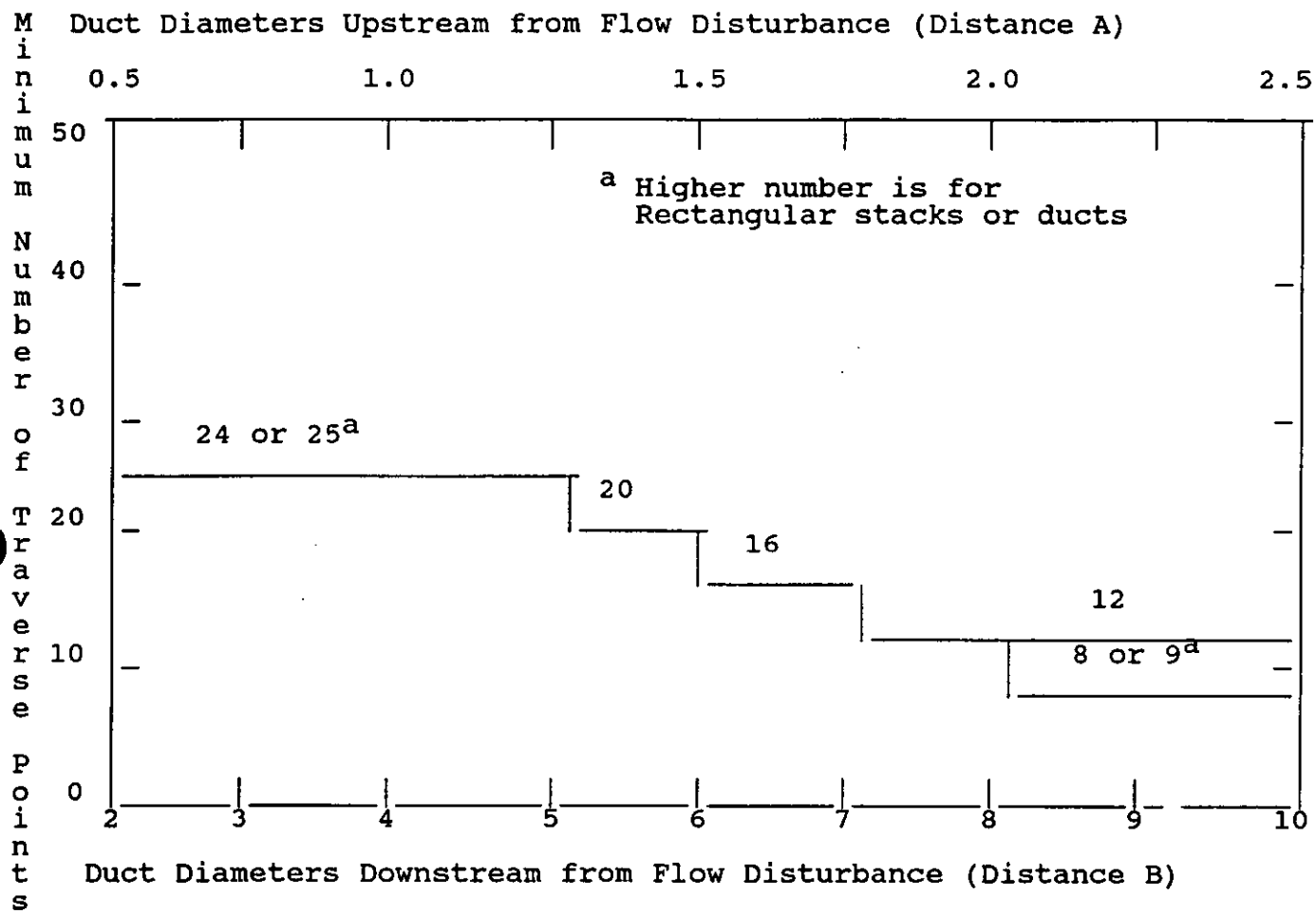
3.0 TRAVERSE POINT LOCATIONS AND SAMPLING TIME PER POINT

OKEELANTA CORPORATION
Boiler #10
South Bay, Florida Facility



Minimum number of traverse points for particulate traverses.

Distance A = 4' or 0.5 diameters.

Distance B = 16' or 2.1 diameters.

In accordance with Method 1, 24 traverse points are needed.

In order to sample for a minimum of one hour and draw at least 30 cubic feet, each traverse point was sampled for 2.5 minutes.

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3.0 TRAVERSE POINT LOCATIONS AND SAMPLING TIME PER POINT (cont)

OKEELANTA CORPORATION
Boiler #10
South Bay, Florida Facility

DIAMETER OF STACK: 7.5 FEET
PORT SLEEVE LENGTH: 3.5 INCHES

TRAVERSE POINT	DISTANCE % OF DIAMETER	DISTANCE (INCHES)	PROBE MARKING (INCHES)
1	2.1	1.9	5.4
2	6.7	6.0	9.5
3	11.8	10.6	14.1
4	17.7	15.9	19.4
5	25.0	22.5	26.0
6	35.6	32.0	35.5
7	64.4	57.9	61.5
8	75.0	67.5	71.0
9	82.3	74.1	77.6
10	88.2	79.4	82.9
11	93.3	84.0	87.5
12	97.9	88.1	91.6

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4.0 SAMPLING TRAIN AND ANALYTICAL TEST PROCEDURES

The following is a description of the sampling train and specifications of particulate collection media used in the tests.

4.1 EMISSION SAMPLING EQUIPMENT

The specific train used during this test is one manufactured by Research Appliance Company (RAC). The design specifications of this train meets all the requirements of Environmental Protection Agency's Method 5 as found in the Federal Regulations under Section 40 CFR 60 as amended. The following is a description of the individual pieces of equipment used:

Nozzle - The nozzle was of seamless stainless steel tubing construction of the button hook design. A range of sizes suitable for isokinetic sampling was available. All nozzles were calibrated before testing. A nozzle calibration sheet may be found in the calibration section of this report.

Probe - An 10 foot steel probe with a stainless steel liner was used.

Heating System - The filter temperature was maintained by enclosing the filter in a hot box capable of maintaining the temperature at 248 °F ±25°F. This temperature was monitored by use of a thermocouple in the hot box.

Pitot Tube - A type S pitot tube attached to the probe was used to monitor the stack gas velocity. Since the pitot tube meets all the dimensional criteria set forth in Method 2 of 40 CFR 60, a coefficient of 0.84 has been used.

Filter Holder - A borosilicate glass type filter holder with frit support was used.

Condenser - Four impingers connected in series, with ground glass leak-free fittings were used as the condenser. The first, third and fourth impingers were of the Greenburg-Smith design, modified by replacing the tip with a 1/2" glass tube extending to about 1/2" from the bottom of the flask. The second impinger was of the Greenburg-Smith design with the standard tip.

Metering System - A vacuum gauge, micromanometer, inclined manometer, leak-free pump, calibrated thermocouples and a calibrated dry gas meter were the basic components used to meter the dry gas through the system.

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4.0 SAMPLING TRAIN AND ANALYTICAL TEST PROCEDURES (cont.)

Gas Density Determination - An ORSAT type combustion analyzer, capable of measuring CO_2, O_2 and CO was used to determine the molecular weight of the flue gas. An integrated proportional sample was taken at each of the traverse points in order to assure that the total test span was covered. The ORSAT analysis was conducted immediately following each test run.

4.2 SAMPLING AND ANALYTICAL PROCEDURES

All sampling and analytical procedures were conducted in strict accordance with the methods prescribed in Methods 1 through 5 of the Code of Federal Regulations as found in 40 CFR 60 as amended. The following is the sequence of events that occur both prior to and during the actual stack test.

Traverse Points - The traverse points were calculated in accordance with Method 1 and the probe was marked accordingly.

Static Pressure - The static pressure was checked and recorded.

Preliminary Traverse - A preliminary traverse was conducted. Readings included the pressure drops and stack gas temperatures.

Nomograph - Once all of the above information had been obtained, the nomograph was set up for the actual test to correlate the isokinetic relation ships.

Barometric Pressure - Barometric pressure was obtained by use of an aneroid barometer at the test site.

Sampling Train Set-Up

(a) The pre-weighed filter was placed in the filter holder and visually checked.
(b) 100 ml of water was placed in the first two impingers.
(c) Approximately 200 grams of silica gel was placed in the fourth impinger. (Exact weights were logged on the field data sheets).
(d) Crushed ice was placed around the impingers.
(e) Once assembly of the entire train was completed, the probe and heater box were turned on.

Pre-test Leak Check - Once the heater box was at the desired temperature for testing, the system was leak checked at 15 inches of vacuum. A leakage rate of less than 0.02 CFM had to be achieved before testing commenced.

Final Check - Once everything was ready to go, the plant was checked to assure that it was running at desired capacity.

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4.0 SAMPLING TRAIN AND ANALYTICAL TEST PROCEDURES (cont.)

Sampling - Isokinetic sampling as described in Method 5 then took place.

Post-test Leak Check - Upon completion of each test run, the system was leak checked at the highest vacuum recorded during that run. All leak checks were less than 0.02 CFM and considered acceptable.

Sample Recovery - Because of the importance of proper sample recovery procedures, details of the sample recovery can be found in the Quality Control Procedures Section of this report.

Isokinetics - Once all sample recovery was completed and the amount of moisture collected had been determined, calculations were conducted to determine the percent isokinetics of the test run.

Operating Data Sheets - All pertinent operating data were logged throughout the testing period by plant personnel.

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5.0 QUALITY CONTROL PROCEDURES

The following is a description of the procedures used for maintaining the integrity of samples collected, including the chain of custody and quality control assurance of filters and acetone wash.

Pre-test preparation consisted of the filters being desiccated at 68°± 10°F at ambient pressure for at least twenty four (24) hours. At intervals of at least six (6) hours, the filters were re-weighed until a constant weight was achieved ± 0.5 mg change from the previous weighing. These pre-marked filters were then put into petri dishes and sealed. All filters used during testing were put into a carrying case for transport to the job site. A list of the filters and tare weights was available prior to testing.

After each test run, the filter and any particles which may have adhered to the filter holder gasket were carefully removed from the filter holder and placed into its identified petri dish container. This container was then labeled with the run number and date.

Taking care to see that particulate on the outside of the probe or other exterior surface did not get into the sample, particulate matter from the probe liner, nozzle, probe fittings, and front half of the filter holder were acetone washed into a sample container. This container was then sealed. The run number, date, and a mark indicating the level of the acetone wash in the bottle was recorded on the bottle.

Both the petri dish containing the filter and the bottle containing the acetone wash were transported to Eastmount Engineering's laboratory.

Once at the laboratory, each filter was weighed and then put back into its individual container. The container was then placed in a desiccator for at least twenty four (24) hours and then weighed. At intervals of at least six (6) hours, the filters were re-weighed until a constant weight was achieved ± 0.5 mg change from the previous weighing.

The levels marked on the bottles containing the acetone wash were checked to confirm that no leakage occurred during transport. The contents were then transferred into a pre-tared beaker and evaporated to dryness. Once this had been accomplished, the beaker was placed in a desiccator for at least twenty four (24) hours and then weighed. At intervals of at least six (6) hours, the beaker was re-weighed until a constant weight of ± 0.5 mg change from the previous weighing was achieved.

All calculations were conducted in strict accordance with 40 CFR 60 (See Calculation Sheets in report).

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APPENDIX I

COMPUTER INPUT SHEETS

INPUT DATA SHEET

PLANT: OKEELANTA
LOCATION: UNIT 10

RUN #: COMP-1
DATE : 01-29-92

Ds (FT)	7.5
Dn (IN)	.260
FILTER#	4441
PIT COEFF	.84
IMP-1 (INT)	100
IMP-2 (INT)	100
IMP-3 (INT)	0
IMP-4 (INT)	500.0
IMP-1 (FIN)	308
IMP-2 (FIN)	130
IMP-3 (FIN)	4
IMP-4 (FIN)	518.5
% CO2	7.9
% O2	12.5
% CO	0
P BAR	30.00
P STK	-.68
NO. PTS	24
TEST LNGTH	60
END METER	74.862
INT METER	23.982
BEGIN TIME:	08:00
END TIME:	09:05

TRAV PT	VEL HEAD	SQ ROOT	DELTA H	DRYGAS IN	DRYGAS OUT	STACK TEMP
A1	1.50	1.22	4.50	84	75	147
2	1.50	1.22	4.50	90	75	146
3	1.10	1.05	3.30	102	76	145
4	1.00	1.00	3.00	107	77	143
5	.93	.96	2.79	110	78	142
6	.63	.79	1.89	111	78	141
7	.34	.58	1.02	109	79	140
8	.34	.58	1.02	106	79	140
9	.34	.58	1.02	107	80	140
10	.47	.69	1.41	108	81	139
11	.70	.84	2.10	109	81	139
12	.88	.94	2.64	114	81	138
B1	1.60	1.26	4.80	106	82	140
2	1.50	1.22	4.50	120	83	142
3	1.20	1.10	3.60	125	83	142
4	.99	.99	2.97	129	85	142
5	.69	.83	2.07	125	85	142
6	.33	.57	.99	123	86	142
7	.22	.47	.66	120	86	142
8	.69	.83	2.07	119	86	142
9	.73	.85	2.19	120	86	142
10	.85	.92	2.55	123	86	141
11	.85	.92	2.55	124	87	142
12	.99	.99	2.97	125	88	143
AVERAGE	.85	.89	2.55	113.2	81.8	141.8

INPUT DATA SHEET

PLANT: OKEELANTA
LOCATION: UNIT 10

RUN #: COMP-2
DATE : 01-29-92

Ds (FT)	7.5
Dn (IN)	.250
FILTER#	4442
PIT COEFF	.84
IMP-1 (INT)	100
IMP-2 (INT)	100
IMP-3 (INT)	0
IMP-4 (INT)	500.0
IMP-1 (FIN)	304
IMP-2 (FIN)	126
IMP-3 (FIN)	2
IMP-4 (FIN)	516.8
% CO2	8.8
% O2	11.5
% CO	0
P BAR	30.08
P STK	-.68
NO. PTS	24
TEST LNGTH	60
END METER	125.246
INT METER	75.200
BEGIN TIME:	10:15
END TIME:	11:20

TRAV PT	VEL HEAD	SQ ROOT	DELTA H	DRYGAS IN	DRYGAS OUT	STACK TEMP
B1	1.70	1.30	5.10	84	79	143
2	1.50	1.22	4.50	90	80	145
3	1.30	1.14	3.90	100	80	145
4	1.10	1.05	3.30	105	81	143
5	.67	.82	2.01	109	81	141
6	.47	.69	1.41	109	81	141
7	.25	.50	.75	108	82	139
8	.35	.59	1.05	108	82	139
9	.56	.75	1.68	108	82	140
10	.72	.85	2.16	112	83	140
11	.94	.97	2.82	116	83	141
12	.98	.99	2.94	120	84	141
A1	1.40	1.18	4.20	111	84	140
2	1.40	1.18	4.20	122	85	140
3	1.20	1.10	3.60	127	86	140
4	1.10	1.05	3.30	130	87	140
5	.90	.95	2.70	130	88	139
6	.65	.81	1.95	128	89	139
7	.27	.52	.81	125	88	139
8	.24	.49	.72	120	88	139
9	.34	.58	1.02	118	88	139
10	.50	.71	1.50	118	89	139
11	.64	.80	1.92	120	89	140
12	.76	.87	2.28	123	89	140
AVERAGE	.83	.88	2.49	114.2	84.5	140.5

INPUT DATA SHEET

PLANT: OKEELANTA
LOCATION: UNIT 10

RUN #: COMP-3
DATE : 01-30-92

Ds (FT)	7.5
Dn (IN)	.260
FILTER#	4443
PIT COEFF	.84
IMP-1 (INT)	100
IMP-2 (INT)	100
IMP-3 (INT)	0
IMP-4 (INT)	500.0
IMP-1 (FIN)	310
IMP-2 (FIN)	128
IMP-3 (FIN)	5
IMP-4 (FIN)	514.8
% CO2	7.9
% O2	12.5
% CO	0
P BAR	30.00
P STK	-.68
NO. PTS	24
TEST LNGTH	60
END METER	174.856
INT METER	126.000
BEGIN TIME:	13:10
END TIME:	14:12

TRAV PT	VEL HEAD	SQ ROOT	DELTA H	DRYGAS IN	DRYGAS OUT	STACK TEMP
A1	1.40	1.18	4.20	78	75	141
2	1.30	1.14	3.60	86	75	144
3	1.10	1.05	3.30	91	76	144
4	.90	.95	2.70	99	77	144
5	.68	.82	2.04	104	77	145
6	.36	.60	1.08	104	77	147
7	.22	.47	.66	103	78	147
8	.36	.60	1.08	104	78	141
9	.60	.77	1.80	107	78	142
10	.76	.87	2.28	111	80	143
11	.95	.97	2.85	117	81	143
12	1.10	1.05	3.30	118	81	143
B1	1.10	1.05	3.30	113	83	142
2	1.10	1.05	3.30	120	83	142
3	1.10	1.05	3.30	123	84	141
4	.97	.98	2.91	126	85	140
5	.80	.89	2.40	128	87	140
6	.54	.73	1.62	127	87	140
7	.20	.45	.60	122	87	139
8	.29	.54	.87	120	88	140
9	.42	.65	1.26	119	87	140
10	.55	.74	1.65	120	88	138
11	.80	.89	2.40	124	88	138
12	.93	.96	2.79	127	89	138
AVERAGE	.77	.85	2.30	112.1	82.0	141.8

INPUT DATA SHEET

PLANT: OKEELANTA
LOCATION: UNIT 10

RUN #: CT-10R-1
DATE : 01-31-92

Ds (FT)	7.5
Dn (IN)	.260
FILTER#	4457
PIT COEFF	.84
IMP-1 (INT)	100
IMP-2 (INT)	100
IMP-3 (INT)	0
IMP-4 (INT)	500.0
IMP-1 (FIN)	280
IMP-2 (FIN)	120
IMP-3 (FIN)	4
IMP-4 (FIN)	513.5
% CO2	9.1
% O2	11.2
% CO	0
P BAR	29.94
P STK	-.68
NO. PTS	24
TEST LNGTH	60
END METER	220.604
INT METER	175.201
BEGIN TIME:	09:00
END TIME:	10:05

TRAV PT	VEL HEAD	SQ ROOT	DELTA H	DRYGAS IN	DRYGAS OUT	STACK TEMP
B1	1.10	1.05	3.30	79	77	139
2	1.10	1.05	3.30	83	75	139
3	.85	.92	2.55	93	76	140
4	.71	.84	2.13	96	76	140
5	.46	.68	1.38	100	77	140
6	.27	.52	.81	100	77	141
7	.21	.46	.63	100	77	141
8	.38	.62	1.14	100	77	139
9	.53	.73	1.59	104	77	141
10	.66	.81	1.98	106	78	141
11	.82	.91	2.46	111	79	141
12	.86	.93	2.58	113	80	141
A1	1.10	1.05	3.30	106	80	140
2	1.05	1.02	3.15	111	81	138
3	.95	.97	2.85	118	82	139
4	.85	.92	2.55	120	82	136
5	.72	.85	2.16	121	83	137
6	.47	.69	1.41	119	83	138
7	.24	.49	.72	114	84	138
8	.22	.47	.66	111	83	139
9	.37	.61	1.11	111	84	139
10	.46	.68	1.38	112	84	139
11	.73	.85	2.19	115	84	139
12	.79	.89	2.37	119	84	138
AVERAGE	.66	.79	1.99	106.8	80.0	139.3

INPUT DATA SHEET

PLANT: OKEELANTA
LOCATION: UNIT 10

RUN #: CT-10R-2
DATE : 01-31-92

Ds (FT)	7.5
Dn (IN)	.265
FILTER#	4458
PIT COEFF	.84
IMP-1 (INT)	100
IMP-2 (INT)	100
IMP-3 (INT)	0
IMP-4 (INT)	500.0
IMP-1 (FIN)	286
IMP-2 (FIN)	122
IMP-3 (FIN)	2
IMP-4 (FIN)	513.0
% CO2	8.6
% O2	11.7
% CO	0
P BAR	29.95
P STK	-.68
NO. PTS	24
TEST LNGTH	60
END METER	267.504
INT METER	211.101
BEGIN TIME:	11:00
END TIME:	12:05

TRAV PT	VEL HEAD	SQ ROOT	DELTA H	DRYGAS IN	DRYGAS OUT	STACK TEMP
B1	1.30	1.14	3.90	81	78	140
2	1.30	1.14	3.90	90	78	141
3	1.05	1.02	3.15	96	79	140
4	.92	.96	2.76	102	78	138
5	.53	.73	1.59	104	79	138
6	.31	.56	.93	103	79	139
7	.24	.49	.72	102	79	139
8	.35	.59	1.05	102	80	138
9	.52	.72	1.56	103	80	137
10	.65	.81	1.95	108	80	138
11	.84	.92	2.52	111	81	138
12	.92	.96	2.76	115	81	139
A1	1.30	1.14	3.60	104	81	139
2	1.30	1.14	3.60	111	82	139
3	1.10	1.05	3.30	116	83	138
4	.94	.97	2.82	119	84	139
5	.70	.84	2.10	120	84	139
6	.42	.65	1.26	116	84	139
7	.15	.39	.45	113	84	139
8	.23	.48	.69	111	84	140
9	.35	.59	1.05	111	84	139
10	.47	.69	1.41	112	84	138
11	.64	.80	1.92	114	84	139
12	.69	.83	2.07	116	84	139
AVERAGE	.72	.82	2.13	107.5	81.4	138.8

INPUT DATA SHEET

PLANT: OKEELANTA
LOCATION: UNIT 10

RUN #: CT-10R-3
DATE : 01-31-92

Ds (FT)	7.5
Dn (IN)	.260
FILTER#	4471
PIT COEFF	.84
IMP-1 (INT)	100
IMP-2 (INT)	100
IMP-3 (INT)	0
IMP-4 (INT)	500.0
IMP-1 (FIN)	260
IMP-2 (FIN)	118
IMP-3 (FIN)	1
IMP-4 (FIN)	512.1
% CO2	7.9
% O2	12.5
% CO	0
P BAR	29.96
P STK	-.68
NO. PTS	24
TEST LNGTH	60
END METER	311.658
INT METER	267.821
BEGIN TIME:	13:05
END TIME:	14:10

TRAV PT	VEL HEAD	SQ ROOT	DELTA H	DRYGAS IN	DRYGAS OUT	STACK TEMP
B1	1.10	1.05	3.08	87	78	138
2	1.05	1.02	2.94	98	78	138
3	.89	.94	2.49	106	79	139
4	.71	.84	1.99	110	80	138
5	.45	.67	1.26	111	80	137
6	.27	.52	.76	110	80	138
7	.18	.42	.50	107	81	137
8	.25	.50	.70	106	81	136
9	.53	.73	1.48	108	81	138
10	.69	.83	1.93	110	81	137
11	.88	.94	2.46	116	82	136
12	.97	.98	2.72	117	83	136
A1	1.05	1.02	2.94	109	83	136
2	1.05	1.02	2.94	116	83	137
3	.97	.98	2.72	118	84	137
4	.88	.94	2.46	120	83	136
5	.68	.82	1.90	122	86	137
6	.42	.65	1.18	119	86	136
7	.20	.45	.56	118	86	135
8	.20	.45	.56	113	86	135
9	.35	.59	.98	111	85	134
10	.45	.67	1.26	113	86	134
11	.68	.82	1.90	116	86	136
12	.85	.92	2.38	118	86	137
AVERAGE	.66	.78	1.84	111.6	82.7	136.6

APPENDIX II

ISOKINETIC CALCULATION SHEETS

ISOKINETIC CALCULATION SHEET

PLANT: OKEELANTA
LOCATION: UNIT 10

RUN #: COMP-1
DATE : 01-29-92

TS (`F)=	141.8	% CO2=	7.9	VM (CF) =	50.880
TS (`R)=	601.8	% O2=	12.5	DELTA H (ABS)=	30.19
TM (`F)=	97.5	% CO=	0	PS (ABS) =	29.95
TM (`R)=	557.5	% N2=	79.6	SQRT DELTA P =	.893508
VI(TOT)=	260.5	CP=	.84	AREA NOZZLE =	.000369

Y = .9911

VM STD = $17.64 \frac{(VM)(Y)(DELTA\ H\ ABS)}{(TM)}$ = 48.17 DSCF

VW STD = .04707 (VI TOT) = 12.26 CF

BWO = $\frac{VW\ STD}{VW\ STD + VM\ STD}$ = .203

BWO = MOISTURE FROM STEAM TABLES = .206

VI TOT = ADJUSTED TO SATURATION VOLUME= N/A ML

1-BWO = 1 - BWO = .797

Md (DRY) = .44 (% CO2) +.32 (% O2) +.28 (% CO) +.28 (% N2) = 29.76 LBS/LB MOLE

Ms (WET) = MD (1-BWO) + 18 (BWO) = 27.38 LBS/LB MOLE

G = SQRT (TS / PS / MS) = .86

VS = 85.49(CP)(G)(SQRT DELTA P) = 55.0 FPS

H = 0.002669 (VI TOT) = .70

J = (DELTA H ABS)(VM)(Y) /(TM) = 2.73

K = (H) + (J) = 3.43

% ISO = $\frac{(TS)\ (K)\ (1.667)}{(TIME)\ (VS)\ (PS)\ (AN)}$ = 94.4

ISOKINETIC CALCULATION SHEET

PLANT: OKEELANTA
LOCATION: UNIT 10

RUN #: COMP-2
DATE : 01-29-92

TS (`F)=	140.5	% CO2=	8.8	VM (CF) =	50.046
TS (`R)=	600.5	% O2=	11.5	DELTA H (ABS)=	30.26
TM (`F)=	99.4	% CO=	0	PS (ABS) =	30.03
TM (`R)=	559.4	% N2=	79.7	SQRT DELTA P =	.879446
VI(TOT)=	248.8	CP=	.84	AREA NOZZLE =	.000341

Y = .9911

VM STD = $17.64 \frac{(VM)(Y)(DELTA\ H\ ABS)}{(TM)}$ = 47.34 DSCF

VW STD = .04707 (VI TOT) = 11.71 CF

BWO = $\frac{VW\ STD}{VW\ STD + VM\ STD}$ = .198

BWO = MOISTURE FROM STEAM TABLES = .198

VI TOT = ADJUSTED TO SATURATION VOLUME= 248.8 ML

1-BWO = 1 - BWO = .802

Md (DRY) = .44 (% CO2) +.32 (% O2) +.28 (% CO) +.28 (% N2) = 29.87 LBS/LB MOLE

Ms (WET) = MD (1-BWO) + 18 (BWO) = 27.52 LBS/LB MOLE

G = SQRT (TS / PS / MS) = .85

VS = 85.49(CP)(G)(SQRT DELTA P) = 53.8 FPS

H = 0.002669 (VI TOT) = .66

J = (DELTA H ABS)(VM)(Y) /(TM) = 2.68

K = (H) + (J) = 3.35

% ISO = $\frac{(TS)\ (K)\ (1.667)}{(TIME)\ (VS)\ (PS)\ (AN)}$ = 101.3

ISOKINETIC CALCULATION SHEET

PLANT: OKEELANTA
LOCATION: UNIT 10

RUN #: COMP-3
DATE : 01-30-92

TS (`F)=	141.8	% CO2=	7.9	VM (CF) =	48.856
TS (`R)=	601.8	% O2=	12.5	DELTA H (ABS)=	30.17
TM (`F)=	97.1	% CO=	0	PS (ABS) =	29.95
TM (`R)=	557.1	% N2=	79.6	SQRT DELTA P =	.853301
VI(TOT)=	257.8	CP=	.84	AREA NOZZLE =	.000369

Y = .9911

VM STD	=	17.64 (VM)(Y)(DELTA H ABS) / (TM)	=	46.26	DSCF
VW STD	=	.04707 (VI TOT)	=	12.13	CF
BWO	=	VW STD / (VW STD + VM STD)	=	.208	
BWO	=	MOISTURE FROM STEAM TABLES	=	.206	
VI TOT	=	ADJUSTED TO SATURATION VOLUME	=	254.3	ML
1-BWO	=	1 - BWO	=	.794	
Md (DRY)	=	.44 (% CO2) +.32 (% O2) +.28 (% CO) +.28 (% N2)	=	29.76	LBS/LB MOLE
Ms (WET)	=	MD (1-BWO) + 18 (BWO)	=	27.34	LBS/LB MOLE
G	=	SQRT (TS / PS / MS)	=	.86	
VS	=	85.49(CP)(G)(SQRT DELTA P)	=	52.5	FPS
H	=	0.002669 (VI TOT)	=	.68	
J	=	(DELTA H ABS)(VM)(Y) /(TM)	=	2.62	
K	=	(H) + (J)	=	3.30	
% ISO	=	(TS) (K) (1.667) / (TIME) (VS) (PS) (AN)	=	95.1	

ISOKINETIC CALCULATION SHEET

PLANT: OKEELANTA
LOCATION: UNIT 10

RUN #: CT-10R-1
DATE : 01-31-92

TS (`F)=	139.3	% CO2=	9.1	VM (CF) =	45.403
TS (`R)=	599.3	% O2=	11.2	DELTA H (ABS)=	30.09
TM (`F)=	93.4	% CO=	0	PS (ABS) =	29.89
TM (`R)=	553.4	% N2=	79.7	SQRT DELTA P =	.791706
VI(TOT)=	217.5	CP=	.84	AREA NOZZLE =	.000369

Y = .9911

VM STD = $17.64 \dfrac{(VM)(Y)(DELTA\ H\ ABS)}{(TM)}$ = 43.16 DSCF

VW STD = .04707 (VI TOT) = 10.24 CF

BWO = $\dfrac{VW\ STD}{VW\ STD + VM\ STD}$ = .192

BWO = MOISTURE FROM STEAM TABLES = .193

VI TOT = ADJUSTED TO SATURATION VOLUME= N/A ML

1-BWO = 1 - BWO = .808

Md (DRY) = .44 (% CO2) +.32 (% O2) +.28 (% CO) +.28 (% N2) = 29.91 LBS/LB MOLE

Ms (WET) = MD (1-BWO) + 18 (BWO) = 27.62 LBS/LB MOLE

G = SQRT (TS / PS / MS) = .85

VS = 85.49(CP)(G)(SQRT DELTA P) = 48.4 FPS

H = 0.002669 (VI TOT) = .58

J = (DELTA H ABS)(VM)(Y) /(TM) = 2.45

K = (H) + (J) = 3.03

% ISO = $\dfrac{(TS)\ (K)\ (1.667)}{(TIME)\ (VS)\ (PS)\ (AN)}$ = 94

ISOKINETIC CALCULATION SHEET

PLANT: OKEELANTA
LOCATION: UNIT 10

RUN #: CT-10R-2
DATE : 01-31-92

TS (`F)=	138.8	% CO2=	8.6	VM (CF) =	56.403
TS (`R)=	598.8	% O2=	11.7	DELTA H (ABS)=	30.11
TM (`F)=	94.5	% CO=	0	PS (ABS) =	29.90
TM (`R)=	554.5	% N2=	79.7	SQRT DELTA P =	.816320
VI(TOT)=	223.0	CP=	.84	AREA NOZZLE =	.000383

Y = .9911

VM STD	=	17.64 (VM)(Y)(DELTA H ABS) / (TM)	=	53.54	DSCF
VW STD	=	.04707 (VI TOT)	=	10.50	CF
BWO	=	VW STD / VW STD + VM STD	=	.164	
BWO	=	MOISTURE FROM STEAM TABLES	=	.191	
VI TOT	=	ADJUSTED TO SATURATION VOLUME	=	N/A	ML
1-BWO	=	1 - BWO	=	.836	
Md (DRY)	=	.44 (% CO2) +.32 (% O2) +.28 (% CO) +.28 (% N2)	=	29.85	LBS/LB MOLE
Ms (WET)	=	MD (1-BWO) + 18 (BWO)	=	27.91	LBS/LB MOLE
G	=	SQRT (TS / PS / MS)	=	.85	
VS	=	85.49(CP)(G)(SQRT DELTA P)	=	49.7	FPS
H	=	0.002669 (VI TOT)	=	.60	
J	=	(DELTA H ABS)(VM)(Y) /(TM)	=	3.04	
K	=	(H) + (J)	=	3.63	
% ISO	=	(TS) (K) (1.667) / (TIME) (VS) (PS) (AN)	=	106	

ISOKINETIC CALCULATION SHEET

PLANT: OKEELANTA
LOCATION: UNIT 10

RUN #: CT-10R-3
DATE : 01-31-92

TS (`F)=	136.6 Avg = 134	% CO2=	7.9 Avg = 11.9	VM (CF) =	43.837
TS (`R)=	596.6	% O2=	12.5	DELTA H (ABS)=	30.10
TM (`F)=	97.1	% CO=	0	PS (ABS) =	29.91
TM (`R)=	557.1	% N2=	79.6	SQRT DELTA P =	.783514
VI(TOT)=	191.1	CP=	.84	AREA NOZZLE =	.000369

Y = .9911

VM STD	=	17.64 (VM)(Y)(DELTA H ABS) / (TM)	= 41.40	DSCF
VW STD	=	.04707 (VI TOT)	= 9.00	CF
BWO	=	VW STD / VW STD + VM STD	= .178	
BWO	=	MOISTURE FROM STEAM TABLES	= .180	
VI TOT	=	ADJUSTED TO SATURATION VOLUME	= N/A	ML
1-BWO	=	1 - BWO	= .822	
Md (DRY)	=	.44 (% CO2) +.32 (% O2) +.28 (% CO) +.28 (% N2)	= 29.76	LBS/LB MOLE
Ms (WET)	=	MD (1-BWO) + 18 (BWO)	= 27.66	LBS/LB MOLE
G	=	SQRT (TS / PS / MS)	= .85	
VS	=	85.49(CP)(G)(SQRT DELTA P)	= 47.8	FPS
H	=	0.002669 (VI TOT)	= .51	
J	=	(DELTA H ABS)(VM)(Y) /(TM)	= 2.35	
K	=	(H) + (J)	= 2.86	
% ISO	=	(TS) (K) (1.667) / (TIME) (VS) (PS) (AN)	= 90	

APPENDIX III

ENTHALPY CALCULATION SHEETS

ENTHALPY CALCULATION SHEET

PLANT : OKEELANTA
LOCATION: UNIT 10

RUN #: COMP-1
DATE : 01-29-92

STEAM PRESSURE	STEAM TEMPERATURE	FEED WATER TEMPERATURE
408	670	260
348	670	
343	670	
354	670	
348	670	

AVERAGE	360.2 PSIG	670.0	260.0
P ABS =	374.9 PSIA		

ENTHALPY @	700	'F AND	370	PSIA =	1363.6
ENTHALPY @	600	'F AND	370	PSIA =	1309.1
ENTHALPY @	670.0	'F AND	370	PSIA =	1347.3

ENTHALPY OF FEED WATER = 228.76

AVERAGE ENTHALPY = 1118.5 BTU/LB OF STEAM

ENTHALPY CALCULATION SHEET

PLANT : OKEELANTA
LOCATION: UNIT 10

RUN #: COMP-2
DATE : 01-29-92

STEAM PRESSURE	STEAM TEMPERATURE	FEED WATER TEMPERATURE
336	670	260
348	680	
348	680	
348	680	
348	680	

AVERAGE	345.6 PSIG	678.0	260.0
P ABS =	360.3 PSIA		

ENTHALPY @	700	'F AND	360	PSIA =	1365.6
ENTHALPY @	600	'F AND	360	PSIA =	1310.6
ENTHALPY @	678.0	'F AND	360	PSIA =	1353.5

ENTHALPY OF FEED WATER = 228.76

AVERAGE ENTHALPY = 1124.7 BTU/LB OF STEAM

ENTHALPY CALCULATION SHEET

PLANT : OKEELANTA
LOCATION: UNIT 10

RUN #: COMP-3
DATE : 01-30-92

STEAM PRESSURE	STEAM TEMPERATURE	FEED WATER TEMPERATURE
348	690	260
348	700	
360	680	
348	670	
354	670	

AVERAGE	351.6 PSIG	682.0	260.0
P ABS =	366.3 PSIA		

ENTHALPY @	700	'F AND	370	PSIA =	1363.6
ENTHALPY @	600	'F AND	370	PSIA =	1309.1
ENTHALPY @	682.0	'F AND	370	PSIA =	1353.8

ENTHALPY OF FEED WATER = 228.76

AVERAGE ENTHALPY = 1125.0 BTU/LB OF STEAM

ENTHALPY CALCULATION SHEET

PLANT : OKEELANTA
LOCATION: UNIT 10

RUN #: CT-10R-1
DATE : 01-31-92

STEAM PRESSURE	STEAM TEMPERATURE	FEED WATER TEMPERATURE
342	680	260
378	690	
354	690	
390	690	
354	690	

AVERAGE	363.6 PSIG	688.0	260.0
P ABS =	378.3 PSIA		

ENTHALPY @	700	'F AND	380	PSIA =	1364.5
ENTHALPY @	600	'F AND	380	PSIA =	1309.0
ENTHALPY @	688.0	'F AND	380	PSIA =	1357.8

ENTHALPY OF FEED WATER = 228.76

AVERAGE ENTHALPY = 1129.1 BTU/LB OF STEAM

ENTHALPY CALCULATION SHEET

PLANT : OKEELANTA
LOCATION: UNIT 10

RUN #: CT-10R-2
DATE : 01-31-92

STEAM PRESSURE	STEAM TEMPERATURE	FEED WATER TEMPERATURE
354	680	260
384	690	
360	680	
342	680	
370	690	

AVERAGE	362.0 PSIG	684.0	260.0
P ABS =	376.7 PSIA		

ENTHALPY @	700	'F AND	380	PSIA =	1364.5
ENTHALPY @	600	'F AND	380	PSIA =	1309.0
ENTHALPY @	684.0	'F AND	380	PSIA =	1355.6

ENTHALPY OF FEED WATER = 228.76

AVERAGE ENTHALPY = 1126.9 BTU/LB OF STEAM

ENTHALPY CALCULATION SHEET

PLANT : OKEELANTA
LOCATION: UNIT 10

RUN #: CT-10R-3
DATE : 01-31-92

	STEAM PRESSURE	STEAM TEMPERATURE	FEED WATER TEMPERATURE
	354	690	260
	354	690	
	354	690	
	354	690	
	342	680	
AVERAGE	351.6 PSIG	688.0	260.0

P ABS = 366.3 PSIA

ENTHALPY @	700	'F AND	370	PSIA =	1363.6
ENTHALPY @	600	'F AND	370	PSIA =	1309.1
ENTHALPY @	688.0	'F AND	370	PSIA =	1357.1

ENTHALPY OF FEED WATER = 228.76

AVERAGE ENTHALPY = 1128.3 BTU/LB OF STEAM

APPENDIX IV

HEAT INPUT CALCULATION SHEETS

HEAT INPUT CALCULATION SHEET

PLANT: OKEELANTA
LOCATION: UNIT 10

RUN #: COMP-1
DATE : 01-29-92

	STEAM INTEGRATOR READINGS	TIME	INTEGRATOR FACTOR
			100
END	847769	9: 5	LBS/HR STEAM
BEGIN	846710	8: 0	
NET	1059	65	97754

NET: 1059 X 100 / 65 MINS = 97754

97754 LBS/HR STEAM / 55% EFF. = 177734 EQUIV.

177734 LBS/HR STEAM X 1118 BTU/LB = 198.8 BTU(e6)/HR

	OIL INTEGRATOR READINGS		TIME		GALS/HR
END	0		9: 5		
BEGIN	0		8: 0		
NET	0	GALLONS	65	MINS =	0 GPH

0 GPH X 150,000 BTU/GAL (EST) = 0 BTU(e6)/HR

ALLOWABLE EMISSIONS

BAGASSE	198.8	-	0	X	.2	=	39.8	LBS/HR
OIL			0	X	.1	=	.0	LBS/HR
TOTAL						=	39.8	LBS/HR
							.200	LB/MMBTU

HEAT INPUT CALCULATION SHEET

PLANT: OKEELANTA
LOCATION: UNIT 10

RUN #: COMP-2
DATE : 01-29-92

	STEAM INTEGRATOR READINGS				TIME		INTEGRATOR FACTOR	
							100	
END	849961				11: 20			
BEGIN	848947				10: 15		LBS/HR STEAM	
NET	1014	X	100	/	65	MINS =		93600

93600 LBS/HR STEAM / 55% EFF. = 170182 EQUIV.

170182 LBS/HR STEAM X 1125 BTU/LB = 191.4 BTU(e6)/HR

	OIL INTEGRATOR READINGS		TIME		GALS/HR	
END	0		11: 20			
BEGIN	0		10: 15			
NET	0	GALLONS	65	MINS =	0	GPH

0 GPH X 150,000 BTU/GAL (EST) = 0 BTU(e6)/HR

ALLOWABLE EMISSIONS

BAGASSE	191.4	-	0	X	.2	=	38.3	LBS/HR
OIL			0	X	.1	=	.0	LBS/HR
TOTAL						=	38.3	LBS/HR
							.200	LB/MMBTU

HEAT INPUT CALCULATION SHEET

PLANT: OKEELANTA
LOCATION: UNIT 10

RUN #: COMP-3
DATE : 01-30-92

	STEAM INTEGRATOR READINGS					TIME		INTEGRATOR FACTOR	
								100	
END	869697					14: 12		LBS/HR STEAM	
BEGIN	868781					13: 10			
NET	916	X	100	/	62	MINS	=	88645	

88645 LBS/HR STEAM / 55% EFF. = 161173 EQUIV.

161173 LBS/HR STEAM X 1125 BTU/LB = 181.3 BTU(e6)/HR

	OIL INTEGRATOR READINGS		TIME		GALS/HR	
END	0		14: 12			
BEGIN	0		13: 10			
NET	0	GALLONS	62	MINS =	0	GPH

0 GPH X 150,000 BTU/GAL (EST) = 0 BTU(e6)/HR

ALLOWABLE EMISSIONS

BAGASSE	181.3	-	0	X	.2	=	36.3	LBS/HR
OIL			0	X	.1	=	.0	LBS/HR
TOTAL						=	36.3	LBS/HR
							.200	LB/MMBTU

HEAT INPUT CALCULATION SHEET

PLANT: OKEELANTA
LOCATION: UNIT 10

RUN #: CT-10R-1
DATE : 01-31-92

	STEAM INTEGRATOR READINGS				TIME			INTEGRATOR FACTOR	
								100	
END	886796				10: 5				
BEGIN	885787				9: 0			LBS/HR STEAM	
NET	1009	X	100	/	65	MINS	=	93138	

93138 LBS/HR STEAM / 55% EFF. = 169343 EQUIV.

169343 LBS/HR STEAM X 1129 BTU/LB = 191.2 BTU(e6)/HR

	OIL INTEGRATOR READINGS		TIME			GALS/HR	
END	0		10: 5				
BEGIN	0		9: 0				
NET	0	GALLONS	65	MINS	=	0	GPH

0 GPH X 150,000 BTU/GAL (EST) = 0 BTU(e6)/HR

ALLOWABLE EMISSIONS

BAGASSE	191.2	-	0	X	.2	=	38.2	LBS/HR
OIL			0	X	.1	=	.0	LBS/HR
TOTAL						=	38.2	LBS/HR
							.200	LB/MMBTU

HEAT INPUT CALCULATION SHEET

PLANT: OKEELANTA
LOCATION: UNIT 10

RUN #: CT-10R-2
DATE : 01-31-92

	STEAM INTEGRATOR READINGS					TIME		INTEGRATOR FACTOR	
								100	
END	888583					12: 5		LBS/HR STEAM	
BEGIN	887589					11: 0			
NET	994	X	100	/	65	MINS	=	91754	

91754 LBS/HR STEAM / 55% EFF. = 166825 EQUIV.

166825 LBS/HR STEAM X 1127 BTU/LB = 188.0 BTU(e6)/HR

	OIL INTEGRATOR READINGS		TIME			GALS/HR	
END	0		12: 5				
BEGIN	0		11: 0				
NET	0	GALLONS	65	MINS	=	0	GPH

0 GPH X 150,000 BTU/GAL (EST) = 0 BTU(e6)/HR

ALLOWABLE EMISSIONS

BAGASSE	188.0	-	0	X	.2	=	37.6	LBS/HR
OIL			0	X	.1	=	.0	LBS/HR
TOTAL						=	37.6	LBS/HR
							.200	LB/MMBTU

HEAT INPUT CALCULATION SHEET

PLANT: OKEELANTA
LOCATION: UNIT 10

RUN #: CT-10R-3
DATE : 01-31-92

	STEAM INTEGRATOR READINGS	TIME	INTEGRATOR FACTOR
END	890528	14: 10	100
BEGIN	889574	13: 5	LBS/HR STEAM
NET	954 X 100	/ 65	MINS = 88062

88062 LBS/HR STEAM / 55% EFF. = 160112 EQUIV.

160112 LBS/HR STEAM X 1128 BTU/LB = 180.7 BTU(e6)/HR

	OIL INTEGRATOR READINGS	TIME	GALS/HR
END	0	14: 10	
BEGIN	0	13: 5	
NET	0 GALLONS	65	MINS = 0 GPH

0 GPH X 150,000 BTU/GAL (EST) = 0 BTU(e6)/HR

ALLOWABLE EMISSIONS

BAGASSE	180.7	-	0	X	.2	=	36.1	LBS/HR
OIL			0	X	.1	=	.0	LBS/HR
TOTAL						=	36.1	LBS/HR
							.200	LB/MMBTU

APPENDIX V

PARTICULATE EMISSION CALCULATION SHEETS

PARTICULATE
EMISSION CALCULATION SHEET

PLANT: OKEELANTA
LOCATION: UNIT 10

RUN #: COMP-1
DATE : 01-29-92

	SAMPLES		BLANKS	
	FILTER	BEAKER	FILTER	ACETONE
NO. :	4441	11	4423	221
FINAL:	.7189	71.6990	.6177	76.7835
TARE :	.5975	71.6809	.6177	76.7822
NET :	.1214	.0181	.0000	.0013/200ML

VOLUME OF RINSE 300

WEIGHT = 139.50
RESIDUE = - 1.95

Mn = 137.55 Mg

AS = 44.2 SQ FT

Qs = 3600(1-BWO)(VS)(AS)(17.64)(PS)/(TS) = 6116610 DSCFH

CS = (2.205 X 10-6) (Mn) / (VM STD) = 6.297e-6 LBS/SCF

CS' = 0.0154 (Mn) / (VM STD) = .04 GRAINS /SCF

PMR = (QS) (CS) = 38.51 LBS/HR

LOAD= MILLIONS OF BTU / HOUR INPUT = 198.9 BTU e6 / HR

E = LBS / MILLION BTu = .194 LBS/ BTu e6

ALLOWABLE = 39.78 LBS/HR

= .20 LBS/ BTu e6

PARTICULATE
EMISSION CALCULATION SHEET

PLANT: OKEELANTA
LOCATION: UNIT 10

RUN #: COMP-2
DATE : 01-29-92

	SAMPLES		BLANKS	
	FILTER	BEAKER	FILTER	ACETONE
NO. :	4442	115	4423	221
FINAL:	.7220	65.4121	.6177	76.7835
TARE :	.5984	65.3930	.6177	76.7822
NET :	.1236	.0191	.0000	.0013/200ML

VOLUME OF RINSE 300

WEIGHT = 142.70
RESIDUE = - 1.95

Mn = 140.75 Mg

AS = 44.2 SQ FT

Qs = 3600(1-BWO)(VS)(AS)(17.64)(PS)/(TS) = 6055332 DSCFH

CS = (2.205 X 10-6) (Mn) / (VM STD) = 6.556e-6 LBS/SCF

CS' = 0.0154 (Mn) / (VM STD) = .05 GRAINS /SCF

PMR = (QS) (CS) = 39.70 LBS/HR

LOAD= MILLIONS OF BTU / HOUR INPUT = 191.4 BTU e6 / HR

E = LBS / MILLION BTu = .207 LBS/ BTu e6

ALLOWABLE = 38.28 LBS/HR

= .20 LBS/ BTu e6

PARTICULATE
EMISSION CALCULATION SHEET

PLANT: OKEELANTA
LOCATION: UNIT 10

RUN #: COMP-3
DATE : 01-30-92

	SAMPLES		BLANKS	
	FILTER	BEAKER	FILTER	ACETONE
NO. :	4443	204	4423	221
FINAL:	.7200	77.8755	.6177	76.7835
TARE :	.5909	77.8601	.6177	76.7822
NET :	.1291	.0154	.0000	.0013/200ML

VOLUME OF RINSE 200

WEIGHT = 144.50
RESIDUE = - 1.30

Mn = 143.20 Mg

AS = 44.2 SQ FT

Qs = 3600(1-BWO)(VS)(AS)(17.64)(PS)/(TS) = 5826873 DSCFH

CS = (2.205 X 10-6) (Mn) / (VM STD) = 6.826e-6 LBS/SCF

CS' = 0.0154 (Mn) / (VM STD) = .05 GRAINS /SCF

PMR = (QS) (CS) = 39.77 LBS/HR

LOAD= MILLIONS OF BTU / HOUR INPUT = 181.3 BTU e6 / HR

E = LBS / MILLION BTu = .219 LBS/ BTu e6

ALLOWABLE = 36.26 LBS/HR

= .20 LBS/ BTu e6

PARTICULATE
EMISSION CALCULATION SHEET

PLANT: OKEELANTA
LOCATION: UNIT 10

RUN #: CT-10R-1
DATE : 01-31-92

	SAMPLES		BLANKS	
	FILTER	BEAKER	FILTER	ACETONE
NO. :	4457	206	4423	221
FINAL:	.7294	77.9223	.6177	76.7835
TARE :	.6037	77.9125	.6177	76.7822
NET :	.1257	.0098	.0000	.0013/200ML

VOLUME OF RINSE 240

WEIGHT = 135.50
RESIDUE = - 1.56

Mn = 133.94 Mg

AS = 44.2 SQ FT

Qs = 3600(1-BWO)(VS)(AS)(17.64)(PS)/(TS) = 5478177 DSCFH

CS = (2.205 X 10-6) (Mn) / (VM STD) = 6.843e-6 LBS/SCF

CS' = 0.0154 (Mn) / (VM STD) = .05 GRAINS /SCF

PMR = (QS) (CS) = 37.49 LBS/HR

LOAD= MILLIONS OF BTU / HOUR INPUT = 191.2 BTU e6 / HR

E = LBS / MILLION BTu = .196 LBS/ BTu e6

ALLOWABLE = 38.24 LBS/HR

= .20 LBS/ BTu e6

PARTICULATE
EMISSION CALCULATION SHEET

PLANT: OKEELANTA
LOCATION: UNIT 10

RUN #: CT-10R-2
DATE : 01-31-92

	SAMPLES		BLANKS	
	FILTER	BEAKER	FILTER	ACETONE
NO. :	4458	209	4423	221
FINAL:	.7335	76.3183	.6177	76.7835
TARE :	.6088	76.3000	.6177	76.7822
NET :	.1247	.0183	.0000	.0013/200ML

VOLUME OF RINSE 250

WEIGHT = 143.00
RESIDUE = - 1.63

Mn = 141.38 Mg

AS = 44.2 SQ FT

Qs = 3600(1-BWO)(VS)(AS)(17.64)(PS)/(TS) = 5816246 DSCFH

CS = (2.205 X 10-6) (Mn) / (VM STD) = 5.822e-6 LBS/SCF

CS' = 0.0154 (Mn) / (VM STD) = .04 GRAINS /SCF

PMR = (QS) (CS) = 33.86 LBS/HR

LOAD= MILLIONS OF BTU / HOUR INPUT = 188.0 BTU e6 / HR

E = LBS / MILLION BTu = .180 LBS/ BTu e6

ALLOWABLE = 37.60 LBS/HR

= .20 LBS/ BTu e6

PARTICULATE
EMISSION CALCULATION SHEET

PLANT: OKEELANTA
LOCATION: UNIT 10

RUN #: CT-10R-3
DATE : 01-31-92

	SAMPLES		BLANKS	
	FILTER	BEAKER	FILTER	ACETONE
NO. :	4471	211	4423	221
FINAL:	.6848	79.1400	.6177	76.7835
TARE :	.5948	79.1304	.6177	76.7822
NET :	.0900	.0096	.0000	.0013/200ML

VOLUME OF RINSE 220

WEIGHT = 99.60
RESIDUE = - 1.43

Mn = 98.17 Mg

AS = 44.2 SQ FT

Qs = 3600(1-BWO)(VS)(AS)(17.64)(PS)/(TS) = 5520664 DSCFH

Avg = 5,797,406

CS = (2.205 X 10-6) (Mn) / (VM STD) = 5.229e-6 LBS/SCF

CS' = 0.0154 (Mn) / (VM STD) = .04 GRAINS /SCF

PMR = (QS) (CS) = 28.87 LBS/HR

Avg = 1900

LOAD= MILLIONS OF BTU / HOUR INPUT = 180.7 BTU e6 / HR

E = LBS / MILLION BTu = .160 LBS/ BTu e6

ALLOWABLE = 36.13 LBS/HR

= .20 LBS/ BTu e6

APPENDIX VI

NOMENCLATURE SHEETS

NOMENCLATURE SHEET

PARTICULATE EMISSIONS TEST

Ar	Acetone residue - result of Blank evaporation.
AREA NOZZLE	Area of the nozzle in square feet.
AS	Area of the stack in square feet.
BDL	Below detectable limits
BWO	The amount of moisture in the flue gas.
% CO	Percent of carbon monoxide in the flue gas.
% CO2	Percent of carbon dioxide in the flue gas.
Cp	Pitot tube coefficient.
CS	The concentration in the stack in pounds per standard cubic foot.
Cs'	The concentration in the stack in grains per standard cubic foot.
DELTA H	The meter orifice differential.
DELTA H(ABS)	The meter orifice differential, absolute conditions in inches of mercury.
Dn (IN)	Diameter of the nozzle in inches.
DRY GAS IN	Temperature of the dry gas meter inlet degrees Farenheight.
DRY GAS OUT	Temperature of the dry gas meter outlet degrees Farenheight.
Ds (FT)	Diameter of the stack in feet.
E	The emission rate in pounds per million Btu derived by using F-Factor.
E (Heat Input)	The emission rate in pounds per million Btu derived by use of calculated heat input.
END METER	The dry gas meter reading at the end of the test.
F factor	The theoretical amount of air in dry standard cubic feet (DSCF) needed to combust a million Btu's worth of fuel.

NOMENCLATURE (cont'd)

Filter Catch	The amount of particulate captured on the filter during testing.
INT METER	The dry gas meter reading at the beginning of the test.
Md (DRY)	The dry molecular weight of the flue gas in pounds per pound mole.
MN	The amount of particulate collected by washing the nozzle, probe, and front half of the glassware, reported in milligrams.
MN'	The milligrams of particulate collected minus the blank.
Ms (WET)	Wet or actual molecular weight of the flue gas in pounds per pound mole.
% N2	The percent of nitrogen in the flue gas.
NO PTS	Number of traverse points.
% O2	Percent of oxygen in the flue gas.
P BAR	Barometric pressure at test location.
P STK	Static pressure of the stack in inches of water.
PMR	The emission rate in pounds per hour.
PS (ABS)	Absolute pressure conditions in the stack in inches of mercury.
Qs	The volumetric flow rate of the flue gas in dry standard cubic feet per hour.
SQ ROOT	The square root of each velocity head measurement.
SQRT DELTA P	The average of the square roots of the measured pressure drops.
Stack Temp or TS (`F)	The temperature of the stack in degrees Faren-height.
TS (`R)	The temperature of the stack in degrees Rankine.
T (Hot Box)	Temperature around the filter box, degrees Farenheight.
TM (`F)	Average temperature of the dry gas meter in degrees Farenheight.

NOMENCLATURE (cont'd)

TM (`R)	Average temperature of the dry gas meter in degrees Rankine.
VEL HEAD	The pressure drop measured across the pitot tubes.
VI (TOT)	The amount of water collected in the impingers in milliliters.
VM (CF)	The volume sampled through the dry gas meter in cubic feet.
VM STD	Volume sampled through the dry gas meter corrected to standard conditions.
VS	Velocity of the stack gas in feet per second.
VW STD	The amount of moisture collected, converted to standard cubic feet.
Y	Meter box calibration factor.
o	Sampling time in minutes.

APPENDIX VII

FIELD DATA SHEETS - UNIT OPERATING CONDITIONS

740
620
70

Kentucky
FDER
01/29/92

CAPACITY 125,000
INT. FACTOR 100
RUN # 10-1

BOILER # 10

POLLUTION COMPLIANCE TESTING
DATE: 1-29-90
TESTED BY: Eastmount Eng

TIME	STEAM INTERGRATOR	OIL METER NORTH	OIL METER SOUTH	STEAM PRESS.	STEAM TEMP.	STEAM READING LBS/HR.	FEED WATER PRESS.	FEED WATER TEMP.
AM 8:00	846710	1323650	1033702	408	620	97,500	700	260°
8:15	846972			348	670	97,500	600	260°
8:30	847202			343	670	102,000	600	260
8:45	847439			354	670	96,000	620	260
9:05	847769	1323650	1033702	348	670	97,500	610	260

BOILER PRESSURE DROP				
OVERFIRE AIR PRESS.				
AIR HEATER AIR OUT				
UNDERGRATE AIR PRESS.				
WIND BOX PRESSURE				
FURNACE PRESSURE	0	0	0	0
BLR. OUTLET PRESSURE				
DUST COLLECTOR OUT.	9.0	9.0	9.0	9.0
SCRUBBER DIFF.	21.5	21.5	22.0	22.0

BOILER TEMPERATURE				
BOILER OUTLET	660	660	650	640
AIR HEATER GAS OUT				
AIR HEATER AIR OUT	424	416	400	400
I.D. FAN				
S.H. STEAM TEMP.	670	670	670	670

PANEL SETTINGS				
FURNACE PRESSURE				
F.D. FAN PRESSURE	35	35	35	35
BAGASSE FEED				
UNDERGRATE AIR				
OVERFIRE AIR				

TEST RESULTS		
OIL USED	None	GALS.
TOTAL TEST TIME	65	MINS.
INTERGRATOR TIME	1059	COUNT
INTERGRATOR STEAM	97,774	P.P.H.
CHART READING	490,500	TOTAL
CHART AVERAGE	98,100	P.P.H.
I.D. FAN TURBINE	4800	RPM
STACK TEMPERATURE	145	°F
GRATE TEMPERATURE	None	°F
SCRUBBER WATER EST	1000	G.P.M.

COMMENTS:

	"A"	"B"	
(1) Mill speed	85	85	F.P.M.

(2) using no oil burner
(3) Adjusted chart SH. steam temp @ 8:55

Allowed =

Actual =

PLANT READINGS BY [signature]

% OF CAPACITY

CAPACITY - 125,000
INT. FACTOR 100
RUN # 10-2

BOILER # 10

POLLUTION COMPLIANCE TESTING
DATE: 1-29-92
TESTED BY: Eastmount Eng

TIME	STEAM INTERGRATOR	OIL METER NORTH	OIL METER SOUTH	STEAM PRESS.	STEAM TEMP.	CHART READING LBS/HR.	FEED WATER PRESS.	FEED WATER TEMP.
10:15	848947	1323650	1033702	336	670	97,500	620	260
10:30	849204			348	680	97,500	620	260
10:45	849437			348	680	90,000	610	260
11:00	849672			348	680	90 000	610	260
11:20	849961	1323650	1033702	348	680	82,500	610	260

BOILER PRESSURE DROP

OVERFIRE AIR PRESS.				
AIR HEATER AIR OUT				
UNDERGRATE AIR PRESS.				
WIND BOX PRESSURE				
FURNACE PRESSURE	0	0	0	0
BLR. OUTLET PRESSURE	[illegible]			
DUST COLLECTOR OUT.	8.9	9.0	9.0	9.0
SCRUBBER DIFF.	21.5	21.5	21.5	22.0

BOILER TEMPERATURE

BOILER OUTLET	650	650	640	650
AIR HEATER GAS OUT				
AIR HEATER AIR OUT	416	416	400	400
I.D. FAN				
S.H. STEAM TEMP.	670	680	680	680

PANEL SETTINGS

FURNACE PRESSURE				
F.D. FAN PRESSURE	32	32	32	32
BAGASSE FEED				
UNDERGRATE AIR				
OVERFIRE AIR				

TEST RESULTS

OIL USED	None	GALS.
TOTAL TEST TIME	65	MINS.
INTERGATOR TIME	1014	COUNT
INTERGRATOR STEAM	93,600	P.P.H.
CHART READING 458,500	458,500	TOTAL
CHART AVERAGE	91,700	P.P.H.
I.D. FAN TURBINE	4800	RPM
STACK TEMPERATURE	143	°F
GRATE TEMPERATURE	None	°F
SCRUBBER WATER Est	1000	G.P.M.

COMMENTS:

	"A"	"B"	
(1) Mill speed	85	85	F.P.M.

(2) Using no oil burners

Allowed =

Actual =

K. Tucker 01/29/92

PLANT READINGS BY George [illegible]

% OF CAPACITY

CAPACITY - 125,000
INT. FACTOR 100
RUN # 10-3

BOILER # 10

POLLUTION COMPLIANCE TESTING
DATE: 1-30-92
TESTED BY: Eastmount Eng

TIME	STEAM INTERGRATOR	OIL METER		STEAM PRESS.	STEAM TEMP.	CHART READING LBS/HR.	FEED WATER PRESS.	FEED WATER TEMP.
		MAGEA	SOUTH					
1:10	868781	1323960	10337022	348	690	81,000	600	260
1:25	868980			348	700	82,500	690	"
1:40	869219			360	680	92,500	590	"
1:55	869461			348	670	92,500	590	"
2:12	869697	1323960	10337022	354	670	98,000	610	"

BOILER PRESSURE DROP						O_2
OVERFIRE AIR PRESS.						
AIR HEATER AIR OUT						11.2 %
UNDERGRATE AIR PRESS.						
WIND BOX PRESSURE						12.1
FURNACE PRESSURE						
BLR. OUTLET PRESSURE						
DUST COLLECTOR OUT.	8.5	8.5	8.5	8.5		
SCRUBBER DIFF.	19.0	19.0	18.5	18.5		

BOILER TEMPERATURE					
BOILER OUTLET					
AIR HEATER GAS OUT					
AIR HEATER AIR OUT					
I.D. FAN					
S.H. STEAM TEMP.	690	700	680	670	

PANEL SETTINGS					
FURNACE PRESSURE					
F.D. FAN PRESSURE	40%	40%			
BAGASSE FEED	[illegible]				
UNDERGRATE AIR					
OVERFIRE AIR					

Boxed

TEST RESULTS

OIL USED	None	GALS.
TOTAL TEST TIME	57	MINS.
INTERGRATOR TIME	916	COUNT
INTERGRATOR STEAM	86,42	P.P.H.
CHART READING	448,500	TOTAL
CHART AVERAGE	89,700	P.P.H.
I.D. FAN TURBINE	4500	RPM
STACK TEMPERATURE	143	°F
GRATE TEMPERATURE	—	°F
SCRUBBER WATER Eff	1000	G.P.M.

COMMENTS:

	"A"	"B"
(1) Mill speed	85	85 F.P.M.

(2) using no oil burner.
(3)

Gary Schyd
K. Tucker
FTER
01/30/92

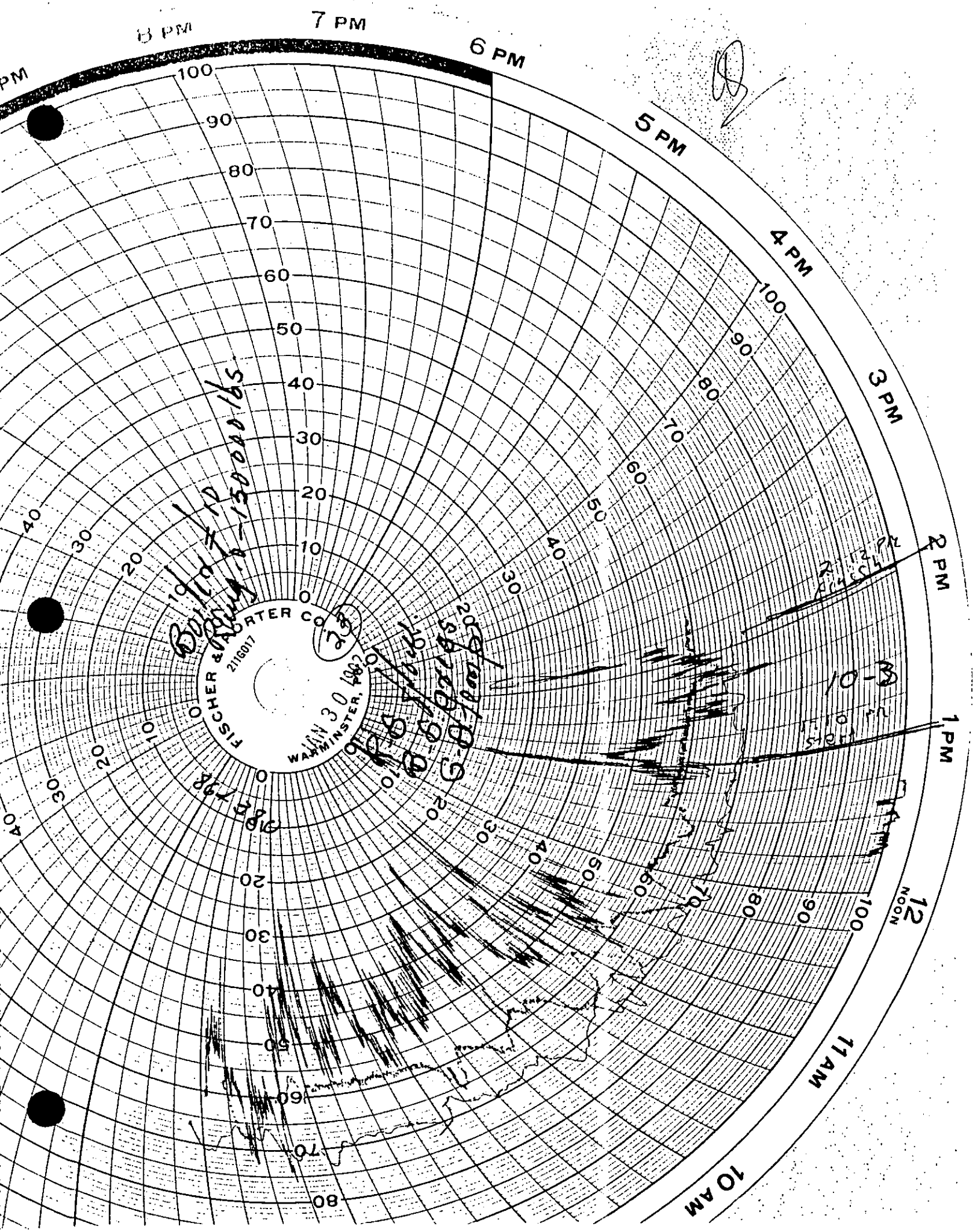
Allowed =

Actual =

PLANT READINGS BY Gary Debo

% OF CAPACITY

4 PM
1 PM
12 NOON
11 AM
10 AM
7 AM
6 AM
5 AM
FISCHER & PORTER CO.
JAN 29



8 PM
7 PM
6 PM
5 PM
4 PM
3 PM
2 PM
1 PM
12 NOON
11 AM
10 AM
FISCHER & PORTER CO.
WARMINSTER, PA.
2116017
JAN 30 1962
10-3

CAPACITY 125,000
INT. FACTOR 100
RUN # 10 - 1R

BOILER # 10

POLLUTION COMPLIANCE TESTING
DATE: 1-31-92
TESTED BY: Eastmount Eng

TIME	STEAM INTERGRATOR	OIL METER North	OIL METER South	STEAM PRESS.	STEAM TEMP.	CHART READING LBS/HR.	FEED WATER PRESS.	FEED WATER TEMP.
AM 9:00	885767	1323980	10337044	342	680	88,500	600	260°
9:15	886019			378	690	87,000	650	"
9:30	886268			354	690	97,500	620	"
9:45	886487			390	690	88,500	650	"
(15) 10:05	886796	1323980	10337044	354	690	90,000	600	"

BOILER PRESSURE DROP				
OVERFIRE AIR PRESS.				
AIR HEATER AIR OUT				
UNDERGRATE AIR PRESS.				
WIND BOX PRESSURE				
FURNACE PRESSURE	0			
BLR. OUTLET PRESSURE	1.0	1.0	1.0	1.0
DUST COLLECTOR OUT.	7.9	7.9	7.8	7.9
SCRUBBER DIFF.	23"	23"	23"	23"

BOILER TEMPERATURE				
BOILER OUTLET				
AIR HEATER GAS OUT				
AIR HEATER AIR OUT				
I.D. FAN				
S.H. STEAM TEMP.	680	690	690	690

PANEL SETTINGS				
FURNACE PRESSURE				
F.D. FAN PRESSURE				
BAGASSE FEED				
UNDERGRATE AIR				
OVERFIRE AIR				

TEST RESULTS		
OIL USED	None	GALS.
TOTAL TEST TIME	65	MINS.
INTERGATOR TIME	1009	COUNT
INTERGRATOR STEAM	93,138	P.P.H.
CHART READING	451,000	TOTAL
CHART AVERAGE	90,300	P.P.H.
I.D. FAN TURBINE	4700	RPM
STACK TEMPERATURE	140	°F
GRATE TEMPERATURE	None	°F
SCRUBBER WATER ESI	1000	G.P.M.

COMMENTS: "A" "B"
(1) Mill speed 85 85 F.P.M.
(2) using no oil burners.

K. Tucker
FDER
01/31/92

Allowed =
Actual =

PLANT READINGS BY [signature]
% OF CAPACITY

CAPACITY 125,000
INT. FACTOR 100
RUN # 10-2R

BOILER # 10

POLLUTION COMPLIANCE TESTING
DATE: 1-31-92
TESTED BY: Eastmount Eng

TIME	STEAM INTERGRATOR	OIL METER North	OIL METER South	STEAM PRESS.	STEAM TEMP.	CHART READING LBS/HR.	FEED WATER PRESS.	FEED WATER TEMP.
AM 11:00	887589	1323980	10337044	354	680	94,500	600	260
11:15	887820			384	690	90,000	620	"
11:30	888039			360	680	88,500	620	"
11:45	888270			342	680	88,500	600	"
PM 12:05	888583	1323980	10337044	370	690	94,500	620	"

BOILER PRESSURE DROP				
OVERFIRE AIR PRESS.				
AIR HEATER AIR OUT				
UNDERGRATE AIR PRESS.				
WIND BOX PRESSURE				
FURNACE PRESSURE	0	0	0	0
BLR. OUTLET PRESSURE	1.0	1.1	1.1	1.0
DUST COLLECTOR OUT.	7.8	7.9	7.8	7.8
SCRUBBER DIFF.	23"	23"	23"	23"

BOILER TEMPERATURE				
BOILER OUTLET				
AIR HEATER GAS OUT				
AIR HEATER AIR OUT				
I.D. FAN				
S.H. STEAM TEMP.	680	690	680	680

PANEL SETTINGS				
FURNACE PRESSURE				
F.D. FAN PRESSURE				
BAGASSE FEED				
UNDERGRATE AIR				
OVERFIRE AIR				

TEST RESULTS		
OIL USED	None	GALS.
TOTAL TEST TIME	65	MINS.
INTERGATOR TIME	994	COUNT
INTERGRATOR STEAM	91,753	P.P.H.
CHART READING	456,000	TOTAL
CHART AVERAGE	91,200	P.P.H.
I.D. FAN TURBINE	4700	RPM
STACK TEMPERATURE	140	°F
GRATE TEMPERATURE	None	°F
SCRUBBER WATER EST	1000	G.P.M.

COMMENTS:
(1) Mill speed "A" 65 "B" 65 F.P.M.
(2) Using no oil burners.

K. Tucker
FDER
01/31/92

Allowed =
Actual =

PLANT READINGS BY [signature]
% OF CAPACITY

CAPACITY 125,000
INT. FACTOR 100
RUN # 10-3R

BOILER # 10

POLLUTION COMPLIANCE TESTING
DATE: 1-31-92
TESTED BY: Eastmount Eng

TIME	STEAM INTERGRATOR	OIL METER North	OIL METER South	STEAM PRESS.	STEAM TEMP.	CHART READING LBS/HR.	FEED WATER PRESS.	FEED WATER TEMP.
PM 1:05	889574	1323980	10337044	354	690	99,000	600	260
1:20	889811			354	690	91,500	590	"
1:35	890037			354	690	90,000	600	"
1:50	890249			354	690	88,500	590	"
(15) 2:10	890528	1323980	10337044	342	680	88,500	590	"

BOILER PRESSURE DROP

OVERFIRE AIR PRESS.					
AIR HEATER AIR OUT					
UNDERGRATE AIR PRESS.					
WIND BOX PRESSURE					
FURNACE PRESSURE	0	0	0	0	0
BLR. OUTLET PRESSURE	1.0	1.0	1.0	1.1	1.0
DUST COLLECTOR OUT.	7.8	7.5	7.6	7.5	7.8
SCRUBBER DIFF.	23"	23"	23.5	23.5	23"

BOILER TEMPERATURE

BOILER OUTLET					
AIR HEATER GAS OUT					
AIR HEATER AIR OUT					
I.D. FAN					
S.H. STEAM TEMP.	690	690	690	690	690

PANEL SETTINGS

FURNACE PRESSURE					
F.D. FAN PRESSURE					
BAGASSE FEED					
UNDERGRATE AIR					
OVERFIRE AIR					

TEST RESULTS

OIL USED	None	GALS.
TOTAL TEST TIME	65	MINS.
INTERGATOR TIME	954	COUNT
INTERGRATOR STEAM	88,062	P.P.H.
CHART READING	457,500	TOTAL
CHART AVERAGE	91,500	P.P.H.
I.D. FAN TURBINE	4700	RPM
STACK TEMPERATURE	138	°F
GRATE TEMPERATURE	None	°F
SCRUBBER WATER EST	1000	G.P.M.

COMMENTS:
(1) Mill speed "A" 85 "B" 85 F.P.M.
(2) Using no oil burners

Allowed =
Actual =

K. Tucker FDER 01/31/92

PLANT READINGS BY George Devan
% OF CAPACITY

5 PM
4 PM
3 PM
2 PM
1 PM
12 NOON
11 AM
10 AM
9 AM
8 AM
7 AM
FISCHER & PORTER CO.
WARMINSTER, PA.
2115017

APPENDIX VIII

FIELD DATA SHEETS - STACK TESTING

FIELD DATA SHEET

GENERAL INFORMATION

Plant:	OKEELANTA	Run #:	Comp-1
Location:	UNIT 10	Date:	29 JAN92
Ds (ft):	7.5	No. Points:	24
Dn (in):	.260	Test Length:	60 MIN
Filter #:	4441	End Meter Reading:	~~48.678~~ 74.862
Cp:	.84	Int Meter Reading:	23.982
P bar:	30.00	Begin Time:	08:00
P stack:	-.68	End Time:	09:05
IMP-1 (INT)	100 ML	IMP-1 (FINAL)	308
IMP-2 (INT)	100 ML	IMP-2 (FINAL)	130
IMP-3 (INT)	0 ML	IMP-3 (FINAL)	4
IMP-4 (INT)	500.0g	IMP-4 (FINAL)	518.5

	TEST 1	TEST 2	TEST 3
% CO2	8.1	7.9	8.0
% O2	12.4	12.5	12.5
% CO	0	0	0

Project Director:	S. MacKay	Field Laboratory:	MacKay/Gibson
Meter Box Operator:	B. Gibson	Chain of Custody:	S. MacKay
Probe Operator:	P. Wiloman	Plant Coordinator:	G. Devane
Orsat Analyst:	S. MacKay	Agency Rep:	K. Tucker A.J. Satyal Jeff Koerner

Comments:

Eastmount Engineering, Inc. 420 Main Street, Walpole, MA 02081

K. Tucker FDER 01/29/92

FIELD DATA SHEET
TRAVERSE POINT INFORMATION

PAGE 1 OF 2

SAMPLING TIME PER POINT 2.5 min

PLANT Okeelanta

RUN # Comp - 1

LOCATION Unit # 10

DATE 29 JAN 92

TRAV. NO.	DELTA P	DELTA H	23982 METER READING	DGM IN	DGM OUT	HOT BOX	IMPG TEMP	STACK TEMP	VAC	
A 1	1.5	4.5	26.8	84	75	260	60	147	8	
2	1.5	4.5	29.6	90	75	261	61	146	9	11.2
3	1.1	3.3	32.1	102	76	265	63	145	6	
4	1.0	3.0	34.4	107	77	265	63	143	5	11.5
5	.93	2.79	36.6	110	78	263	63	142	5	
6	.63	1.89	38.6	111	78	264	62	141	3	12.0
7	.34	1.02	40.1	109	79	263	61	140	2	
8	.34	1.02	41.5	106	79	267	61	140	2	12.5
9	.34	1.02	43.0	107	80	264	61	140	2	
10	.47	1.41	44.5	108	81	261	61	139	2	12.8
11	.70	2.10	46.5	109	81	261	61	139	4	
12	.88	2.64	48.678	114	81	261	61	138	5	12.5

COMMENTS: DELTA P * 3.0 = DELTA H

BOX # 11 Y = .9911 DELTA H @ = 1.80

START TIME : 0800

END TIME : 09:03

INITIAL LEAK CHECK .002 AT 15 INCHES HG

FINAL LEAK CHECK .001 AT 15 INCHES HG

Pre Pito 0.0 ≥ ± 4.5 in H_2O

K. Tucker
FDER
01/29/92

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FIELD DATA SHEET
TRAVERSE POINT INFORMATION

PAGE 2 OF 2 SAMPLING TIME PER POINT 2.5

PLANT Okeelanta RUN # Comp-1

LOCATION Unit 10 DATE 29 JAN 92

TRAV. NO.	DELTA P	DELTA H	METER READING	DGM IN	DGM OUT	HOT BOX	IMPG TEMP	STACK TEMP	VAC	
B 1	1.6	4.8	51.6	106	82	255	60	140	13	
2	1.5	4.5	54.5	120	83	255	60	142	12	13.Ø
3	1.2	3.6	57.Ø	125	83	257	63	142	10	
4	.99	2.97	59.5	129	85	256	64	142	7	12.Ø
5	.69	2.07	61.5	125	85	255	64	142	5	
6	.33	.99	63.Ø	123	86	256	64	142	2	12.Ø
7	.22	.66	64.2	120	86	258	64	142	1	
8	.69	2.07	66.1	119	86	260	63	142	5	12.Ø
9	.73	2.19	68.2	120	86	263	63	142	5	
10	.85	2.55	70.3	123	86	264	63	141	7	11.8
11	.85	2.55	72.4	124	87	264	64	142	7	
12	.99	2.97	74.862	125	88	266	65	143	9	11.8

COMMENTS: DELTA P * 3.Ø = DELTA H

BOX # 11 Y = .9911 DELTA H @ = 1.80

START TIME : 0800

END TIME : 0903

INITIAL LEAK CHECK .002 AT 15 INCHES HG

FINAL LEAK CHECK .001 AT 15 INCHES HG ~~(9 inhg)~~

Post Pito Ø.Ø > $\pm^{7.6}_{5}$ inh$_2$O

K. Tucker FDER Ø1/29/92

Port Change 3 min Ø sec

FIELD DATA SHEET

GENERAL INFORMATION

Plant:	OKEELANTA	Run #:	Comp-2
Location:	UNIT 10	Date:	29 JAN 92
Ds (ft):	7.5	No. Points:	24
Dn (in):	.250	Test Length:	60 MIN
Filter #:	~~4443~~ 4442	End Meter Reading:	125.246
Cp:	.84	Int Meter Reading:	75.200
P bar:	30.08	Begin Time:	10:15
P stack:	-.68	End Time:	11:20
IMP-1 (INT)	100 mL	IMP-1 (FINAL)	304
IMP-2 (INT)	100 mL	IMP-2 (FINAL)	126
IMP-3 (INT)	0	IMP-3 (FINAL)	2
IMP-4 (INT)	500.0g	IMP-4 (FINAL)	516.8

	TEST 1	TEST 2	TEST 3
% CO2	8.8	8.8	
% O2	11.5	11.5	
% CO	0	0	

Project Director:	S. MACKAY	Field Laboratory:	MACKAY/GIBSON
Meter Box Operator:	B. GIBSON	Chain of Custody:	S. MACKAY
Probe Operator:	P. WILDMAN	Plant Coordinator:	G. DEVANE
Orsat Analyst:	S. MACKAY	Agency Rep:	K. TUCKER FDER A.J. ~~SAYTAL~~ SATYAL P.B. County JEFF KOERNER P.B. County

Comments:

Eastmount Engineering, Inc. 420 Main Street, Walpole, MA 02081

K. Tucker FDER 01/29/92

Ajay Satyal

FIELD DATA SHEET
TRAVERSE POINT INFORMATION

PAGE 1 OF 2

SAMPLING TIME PER POINT 2.5

PLANT Wheelabrator

RUN # Comp - 2

LOCATION Unit 10

DATE 29 JAN 92

75.200

TRAV. NO.	DELTA P	DELTA H	METER READING	DGM IN	DGM OUT	HOT BOX	IMPG TEMP	STACK TEMP	VAC	
B 1	1.7	5.1	78.3	84	79	267	59	143	7	10.7
2	1.5	4.5	81.1	90	80	266	59	145	6	
3	1.3	3.9	83.8	100	80	267	63	145	5	10.3
4	1.1	3.3	86.2	105	81	266	65	143	5	
5	.67	2.01	88.2	109	81	267	62	141	3	11.5
6	.47	1.41	89.9	109	81	264	61	141	2	
7	.25	.75	91.1	108	82	260	61	139	2	12.6
8	.35	1.05	92.6	108	82	263	60	139	2	
9	.56	1.68	94.4	108	82	264	60	140	3	11.5
10	.72	2.16	96.3	112	93	264	61	140	3	
11	.94	2.82	98.6	116	83	260	61	141	4	11.5
12	.98	2.94	100.968	120	84	259	62	141	5	

COMMENTS: DELTA P * 5.0 = DELTA H

BOX # 11 Y = .9911 DELTA H @ = 1.80

START TIME : 1015

END TIME :

INITIAL LEAK CHECK .007 AT 16 INCHES HG

FINAL LEAK CHECK _____ AT _____ INCHES HG

Pre ± > 4 in H_2O

1/29

K. Tucker FTER 01/29/92

FIELD DATA SHEET
TRAVERSE POINT INFORMATION

PAGE 2 OF 2

PLANT Okeelanta

LOCATION Unit 10

SAMPLING TIME PER POINT 2.5

RUN # Comp-2

DATE 27 JAN 92

TRAV. NO.	DELTA P	DELTA H	METER READING	DGM IN	DGM OUT	HOT BOX	IMPG TEMP	STACK TEMP	VAC	
A 1	1.4	4.2	103.6	111	84	262	62	140	7	11.5
2	1.4	4.2	106.4	122	85	264	61	140	8	
3	1.2	3.6	109.0	127	86	260	62	140	7	11.5
4	1.1	3.3	111.4	130	87	256	63	140	6	
5	.90	2.7	113.7	130	88	251	63	139	5	12.0
6	.65	1.95	115.6	128	89	253	63	139	3	
7	.27	.81	117.0	125	88	253	63	139	2	12.3
8	.24	.72	118.2	120	88	255	63	139	2	
9	.34	1.02	119.6	118	88	254	63	139	2	12.3
10	.50	1.50	121.3	118	89	254	62	139	2	
11	.64	1.92	123.2	120	89	250	62	140	4	12.0
12	.76	2.28	BEG ~~125.346~~ 125.246	123	89	251	62	140	5	

COMMENTS: DELTA P x 3.0 = DELTA H

BOX # 11 Y = .9911 DELTA H @ = 1.80

START TIME : ~~0900~~ 1015

END TIME :

INITIAL LEAK CHECK .007 AT 15 INCHES HG

FINAL LEAK CHECK .005 AT 10 INCHES HG

Post Pitot ≥ ± 7/4

Post change 4.0 min

Reviewed 1/29

K Jackson FDER 1 01/29/92

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FIELD DATA SHEET

GENERAL INFORMATION

Plant:	OKEELANTA	Run #:	comp-3
Location:	UNIT 10	Date:	30 JAN 92
Ds (ft):	7.5	No. Points:	24
Dn (in):	.260	Test Length:	60
Filter #:	4443	End Meter Reading:	174,856
Cp:	.84	Int Meter Reading:	126.000
P bar:	30.00	Begin Time:	13:10
P stack:	-.68	End Time:	14:12
IMP-1 (INT)	100 ml	IMP-1 (FINAL)	310
IMP-2 (INT)	100 ml	IMP-2 (FINAL)	128
IMP-3 (INT)	0 ml	IMP-3 (FINAL)	5
IMP-4 (INT)	500.0g	IMP-4 (FINAL)	514.8

	TEST 1	TEST 2	TEST 3
% CO2	7.9		
% O2	12.5		
% CO	0		

Project Director:	S. MacKay	Field Laboratory:	MacKay/Gibson
Meter Box Operator:	B. Gibson	Chain of Custody:	S. MacKay
Probe Operator:	P. Wilomaw	Plant Coordinator:	G. Devane
Orsat Analyst:	S. MacKay	Agency Rep:	K. Tucker FIA DER A.J. Satyal P.B. County Jeff Koerner P.B. County

Comments:

Eastmount Engineering, Inc. 420 Main Street, Walpole, MA 02081

K. Tucker FDER 01/30/92

FIELD DATA SHEET
TRAVERSE POINT INFORMATION

PAGE 1 OF 2 SAMPLING TIME PER POINT 2.5

PLANT Okeelanta RUN # Comp-3

LOCATION Unit 10 DATE 30 JAN 92

TRAV. NO.	DELTA P	DELTA H	126.000 METER READING	DGM IN	DGM OUT	HOT BOX	IMPG TEMP	STACK TEMP	VAC	
A 1	1.4	4.2	128.8	78	75	267	68	141	8	13.7
2	1.3	3.6	131.3	86	75	262	68	144	7	
3	1.1	3.3	133.7	91	76	263	66	144	6	12.5
4	.90	2.70	136.1	99	77	263	66	144	5	
5	.68	2.04	138.1	104	77	263	66	145	5	12.3
6	.36	1.08	139.6	104	77	262	64	147	2	
7	.22	.66	140.8	103	78	266	64	147	2	11.7
8	.36	1.08	142.3	104	78	266	63	141	2	
9	.60	1.80	144.1	107	78	262	62	142	3	12.0
10	.76	2.28	146.2	111	80	264	62	143	5	
11	.95	2.85	148.4	117	81	266	63	143	7	11.7
12	1.1	3.3	150.8	118	81	266	63	143	9	

COMMENTS: DELTA P = 3.0 = DELTA H

BOX # 11 Y = .9911 DELTA H @ = 1.80

START TIME : 1310

END TIME : 14:12

INITIAL LEAK CHECK .005 AT 18 INCHES HG

FINAL LEAK CHECK _____ AT _____ INCHES HG

≥ ± 4

K. Tucker FDER 01/30/92

FIELD DATA SHEET
TRAVERSE POINT INFORMATION

PAGE 2 OF 2

SAMPLING TIME PER POINT 2.5

PLANT Okeelanta

RUN # Comp -3

LOCATION Unit 10

DATE 30 JAN 92

TRAV. NO.	DELTA P	DELTA H	METER READING	DGM IN	DGM OUT	HOT BOX	IMPG TEMP	STACK TEMP	VAC	
B 1	1.1	3.3	153.3	113	83	257	65	142	9	12.0
2	1.1	3.3	155.8	120	83	255	64	142	9	
3	1.1	3.3	158.2	123	84	256	67	141	10	12.2
4	.97	2.91	160.6	126	85	252	68	140	9	
5	.80	2.4	162.8	128	87	249	64	140	6	12.7
6	.54	1.62	164.6	127	87	252	62	140	4	
7	.20	.60	165.7	122	87	252	62	139	2	12.5
8	.29	.87	167.0	120	88	264	63	140	2	
9	.42	1.26	168.6	119	87	259	62	140	3	12.5
10	.55	1.65	170.4	120	88	258	62	138	5	
11	.80	2.4	172.6	124	88	262	62	138	8	13.5
12	.93	2.79	174.856	127	89	260	63	138	9	

COMMENTS: DELTA P * 3.0 = DELTA H

BOX # 11 Y = .9911 DELTA H @ = 1.80

START TIME : 1310

END TIME : 1413

INITIAL LEAK CHECK .005 AT 18 INCHES HG

FINAL LEAK CHECK .000 AT 12 INCHES HG (9)

[signature]

[signature] FDER 01/30/92

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FIELD DATA SHEET

GENERAL INFORMATION

Plant:	OKEELANTA	Run #:	CT-10R-1
Location:	UNIT 10	Date:	31 JAN 92
Ds (ft):	7.5	No. Points:	24
Dn (in):	.260	Test Length:	60 MIN
Filter #:	4457	End Meter Reading:	175.201
Cp:	.84	Int Meter Reading:	220.604
P bar:	29.94	Begin Time:	09:00
P stack:	-.68	End Time:	10:05
IMP-1 (INT)	100 mL	IMP-1 (FINAL)	280
IMP-2 (INT)	100 mL	IMP-2 (FINAL)	120
IMP-3 (INT)	0	IMP-3 (FINAL)	4
IMP-4 (INT)	500.0g	IMP-4 (FINAL)	513.5

	TEST 1	TEST 2	TEST 3
% CO2	SM ~~9~~ 9.1		
% O2	SM ~~9.1~~ 8.2		
% CO	0		

Project Director:	S. MacKay	Field Laboratory:	S. MacKay/B. Gibson
Meter Box Operator:	B. Gibson	Chain of Custody:	S. MacKay
Probe Operator:	P. Wilman	Plant Coordinator:	G. Devane
Orsat Analyst:	S. MacKay	Agency Rep:	K. Tucker

Comments:

Eastmount Engineering, Inc. 420 Main Street, Walpole, MA 02081

K. Tucker FDER 01/31/92

FIELD DATA SHEET
TRAVERSE POINT INFORMATION

PAGE 1 OF 2 SAMPLING TIME PER POINT 2.5

PLANT Okeelanta RUN # CT10R-1

LOCATION Unit 10 DATE 31 JAN 92

TRAV. NO.	DELTA P	DELTA H	METER READING (175.201)	DGM IN	DGM OUT	HOT BOX	IMPG TEMP	STACK TEMP	VAC	
B 1	1.1	3.3	177.7	79	77	261	60	139	5	
2	1.1	3.3	180.1	83	75	254	56	139	6	10.7
3	.85	2.55	182.3	93	76	253	56	140	4	
4	.71	2.13	184.3	96	76	251	58	140	3	10.7
5	.46	1.38	186.0	100	77	253	59	140	2	
6	.27	.81	187.3	100	77	251	59	141	2	10.7
7	.21	.63	188.5	100	77	254	60	141	2	
8	.38	1.14	189.9	100	77	254	59	139	2	11.3
9	.53	1.59	191.6	104	77	250	60	141	2	
10	.66	1.98	193.5	106	78	254	60	141	4	11.0
11	.82	2.46	195.7	111	79	255	60	141	4	
12	.86	2.58	197.835	113	80	256	62	141	6	10.7

COMMENTS: DELTA P X 3.0 = DELTA H

BOX # 11 Y = .9911 DELTA H @ = 1.80

START TIME : 0900

END TIME :

INITIAL LEAK CHECK .001 AT 15 INCHES HG

FINAL LEAK CHECK ____ AT ____ INCHES HG

K. Lucas FDER 01/31/92

FIELD DATA SHEET
TRAVERSE POINT INFORMATION

PAGE 2 OF 2

SAMPLING TIME PER POINT 2.5

PLANT Okeelanta

RUN # CT-10R-1

LOCATION Unit 10

DATE 31 JAN 92

TRAV. NO.	DELTA P	DELTA H	METER READING	DGM IN	DGM OUT	HOT BOX	IMPG TEMP	STACK TEMP	VAC	
A 1	1.1	3.3	200.3	106	80	252	60	140	8	
2	1.05	3.15	202.7	111	81	255	58	138	8	12.0
3	.95	2.85	205.0	118	82	249	59	139	7	
4	.85	2.55	207.3	120	82	249	60	136	7	12.7
5	.72	2.16	209.3	121	83	241	60	137	5	
6	.47	1.41	211.1	119	83	256	62	138	4	12.5
7	.24	.72	212.3	114	84	246	63	138	2	
8	.22	.66	213.5	111	83	249	64	139	2	11.5
9	.37	1.11	215.0	111	84	249	64	139	2	
10	.46	1.38	216.6	112	84	265	65	139	3	11.5
11	.73	2.19	218.5	115	84	261	66	139	6	~~11~~
12	.79	2.37	220.604	119	84	249	68	138	7	11.7

COMMENTS: DELTA P x 3.0 = DELTA H

BOX # 11 Y = .9911 DELTA H @ = 1.80

START TIME : 0900

END TIME : 1003

INITIAL LEAK CHECK .001 AT 15 INCHES HG

FINAL LEAK CHECK .015 AT 15 INCHES HG 6

K. Tucker FDEP 01/31/92

FIELD DATA SHEET

GENERAL INFORMATION

Plant:	OKEELANTA	Run #:	CP-10R-2
Location:	UNIT 10	Date:	31 JAN 92
Ds (ft):	7.5	No. Points:	24
Dn (in):	SM ~~.265~~ .265	Test Length:	60 MIN
Filter #:	4458	End Meter Reading:	267.504
Cp:	.84	Int Meter Reading:	211.101
P bar:	29.95	Begin Time:	0 11:00
P stack:	-.68	End Time:	12:05
IMP-1 (INT)	100 ML	IMP-1 (FINAL)	286
IMP-2 (INT)	100 ML	IMP-2 (FINAL)	122
IMP-3 (INT)	0	IMP-3 (FINAL)	2
IMP-4 (INT)	500.0g	IMP-4 (FINAL)	513.0

	TEST 1	TEST 2	TEST 3
% CO2	8.6		
% O2	11.7		
% CO	0		

Project Director:	S. MacKay	Field Laboratory:	MacKay/Gibson
Meter Box Operator:	B. GIBSON	Chain of Custody:	S. MacKay
Probe Operator:	P. WILDMAN	Plant Coordinator:	G. DEVANE
Orsat Analyst:	S. MacKay	Agency Rep:	K. TUCKER DER D. BROWN P.B. County

Comments:

Eastmount Engineering, Inc. 420 Main Street, Walpole, MA 02081

K. Tucker FDER 01/31/92

FIELD DATA SHEET
TRAVERSE POINT INFORMATION

PAGE 1 OF 2

PLANT Okeelanta

LOCATION Unit 10

SAMPLING TIME PER POINT 2.5

RUN # C-10R-2

DATE 31 JAN 92

TRAV. NO.	DELTA P	DELTA H	METER READING (211.101)	DGM IN	DGM OUT	HOT BOX	IMPG TEMP	STACK TEMP	VAC	
B 1	1.3	3.9	223.8	81	78	261	63	140	4	
2	1.3	3.9	226.4	90	78	255	61	141	4	11.0
3	1.05	3.15	228.7	96	79	258	62	140	3	
4	.92	2.76	231.0	102	78	251	62	138	3	11.7
5	.53	1.59	232.7	104	79	252	63	138	2	
6	.31	.93	234.1	103	79	254	63	139	2	11.5
7	.24	.72	235.3	102	79	252	62	139	2	
8	.35	1.05	236.7	102	80	258	63	138	2	11.7
9	.52	1.56	238.5	103	80	258	62	137	2	
10	.65	1.95	240.3	108	80	258	62	138	2	12.3
11	.84	2.52	242.4	111	81	247	62	138	3	
12	.92	2.76	244.701	115	81	253	62	139	4	12.0

COMMENTS: DELTA P x 3.0 = DELTA H

BOX # 11 Y = .99 DELTA H @ = 11

START TIME : 1100

END TIME : _____

INITIAL LEAK CHECK .005 AT 16 INCHES HG

FINAL LEAK CHECK _____ AT _____ INCHES HG

P ≥ ± 4.5

K. Tucker FDER 01/31/92

FIELD DATA SHEET
TRAVERSE POINT INFORMATION

PAGE 2 OF 2

PLANT Okeelanta

LOCATION Unit 10

SAMPLING TIME PER POINT 25

RUN # C-10R-2

DATE 31 JAN 92

TRAV. NO.	DELTA P	DELTA H	METER READING	DGM IN	DGM OUT	HOT BOX	IMPG TEMP	STACK TEMP	VAC	
A 1	1.3	3.6	247.3	104	81	240	60	139	5	12.0
2	1.3	3.6	249.8	111	82	248	57	139	6	
3	1.1	3.3	252.3	116	83	261	58	138	5	12.0
4	.94	2.82	254.6	119	84	254	58	139	5	
5	.70	2.10	256.6	120	84	256	59	139	4	12.0
6	.42	1.26	258.3	116	84	252	60	139	2	
7	.15	.45	259.3	113	84	258	64	139	2	11.7
8	.23	.69	260.5	111	84	265	63	140	2	
9	.35	1.05	262.0	111	84	256	60	139	2	11.0
10	.47	1.41	263.6	112	84	258	60	138	2	
11	.64	1.92	265.5	114	84	244	60	139	4	11.0
12	.69	2.07	267.504	116	84	260	60	139	4	

COMMENTS: DELTA P = 3.0 = DELTA H

BOX # 11 Y = .9911 DELTA H @ = 1.80

START TIME : 1100

END TIME : 12:05

INITIAL LEAK CHECK .005 AT 16 INCHES HG

FINAL LEAK CHECK .000 AT 8 INCHES HG (4)(6)

Final Pitot leak check - good @ 5" H2O

F. Nuchos FDER 01/31/92

FIELD DATA SHEET

GENERAL INFORMATION

Plant:	OKEELANTA	Run #:	CT-10R-3
Location:	UNIT 10	Date:	31 JAN 92
Ds (ft):	7.5	No. Points:	24
Dn (in):	.260	Test Length:	60
Filter #:	4471	End Meter Reading:	311.658
Cp:	.84	Int Meter Reading:	267.821
P bar:	29.96	Begin Time:	13:05
P stack:	-.68	End Time:	14:10
IMP-1 (INT)	100 ML	IMP-1 (FINAL)	260
IMP-2 (INT)	100 ML	IMP-2 (FINAL)	118
IMP-3 (INT)	0	IMP-3 (FINAL)	1
IMP-4 (INT)	500.0g	IMP-4 (FINAL)	512.1

	TEST 1	TEST 2	TEST 3
% CO2	7.9		
% O2	12.5		
% CO	0		

Project Director:	S. MacKay	Field Laboratory:	MacKay/Gibson
Meter Box Operator:	B. Gibson	Chain of Custody:	S. MacKay
Probe Operator:	P. Wildman	Plant Coordinator:	G. Devane
Orsat Analyst:	S. MacKay	Agency Rep:	K. Tucker FLA DER D. Brown PB County

Comments:

Eastmount Engineering, Inc. 420 Main Street, Walpole, MA 02081

K. Tucker FDER 01/31/92

FIELD DATA SHEET
TRAVERSE POINT INFORMATION

PAGE 1 OF 2

SAMPLING TIME PER POINT 2.5

PLANT Okeelanta

RUN # CT-10R-3

LOCATION Unit 10

DATE 31 JAN 92

TRAV. NO.	DELTA P	DELTA H	METER READING (267.821)	DGM IN	DGM OUT	HOT BOX	IMPG TEMP	STACK TEMP	VAC	
B 1	1.1	3.08	270.2	87	78	255	64	138	4	13.0
2	1.05	2.94	272.5	98	78	264	61	138	4	
3	.89	2.49	274.7	106	79	263	63	139	3	11.7
4	.71	1.99	276.7	110	80	265	64	138	3	
5	.45	1.26	278.3	111	80	260	66	137	2	12.0
6	.27	.76	279.6	110	80	257	66	138	2	
7	.18	.50	280.5	107	81	253	67	137	2	12.0
8	.25	.70	281.8	106	81	252	67	136	2	
9	.53	1.48	283.4	108	81	256	59	138	2	12.7
10	.69	1.93	285.4	110	81	260	58	137	3	
11	.88	2.46	287.5	116	82	260	59	136	4	12.5
12	.97	2.72	289.7	117	83	263	60	136	5	

COMMENTS: DELTA P x 2.8 = DELTA H

BOX # 11 Y = .9911 DELTA H @ = 1.80

START TIME : ~~1305~~ 1305

END TIME :

INITIAL LEAK CHECK .002 AT 16 INCHES HG

FINAL LEAK CHECK ____ AT ____ INCHES HG

K. Andrew FDEP 01/31/92

EASTMOUNT ENGINEERING INC. • 420 MAIN STREET • MALPOLE, MA 02081 • (508) 668-9005

FIELD DATA SHEET
TRAVERSE POINT INFORMATION

PAGE 2 OF 2

PLANT Okeelanta

LOCATION Unit 10

SAMPLING TIME PER POINT 2.5 min

RUN # CT-10R-3

DATE 31 JAN. 92

TRAV. NO.	DELTA P	DELTA 2.94	METER READING	DGM IN	DGM OUT	HOT BOX	IMPG TEMP	STACK TEMP	VAC	
A 1	1.05	2.94	292.0	109	83	245	63	136	5	13.0
2	1.05	2.94	294.4	116	83	253	59	137	6	
3	.97	2.72	296.7	118	84	240	61	137	6	12.8
4	.88	2.46	298.8	120	83	258	62	136	5	
5	.68	1.90	300.8	122	86	250	63	137	4	12.5
6	.42	1.18	302.1	119	86	268	64	136	3	
7	.20	.56	303.7	118	86	265	65	135	2	12.5
8	.20	.56	304.7	113	86	251	61	135	2	
9	.35	.98	306.1	111	85	261	62	134	2	13.1
10	.45	1.26	307.7	113	86	245	62	134	2	
11	.68	1.90	309.6	116	86	252	60	136	4	13.3
12	.85	2.38	311.658	118	86	264	61	137	6	

COMMENTS: DELTA P x 2.8 = DELTA H

BOX # 11 Y = .9911 DELTA H @ = 1.80

START TIME : 1305

END TIME : 1410

INITIAL LEAK CHECK .002 AT 16 INCHES HG

FINAL LEAK CHECK .001 AT 7 INCHES HG (5)(6)

Page 2 ±

K Tucker FDER 4/31/92

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APPENDIX IX

LABORATORY RESULTS

South Florida
Environmental Services

LABORATORY

SUMMARY OF RESULTS

PROJECT NUMBER: 91-102
PROJECT NAME: OKEELANTA CORPORATION
BOILER #10

ANALYST: M. WAYT
ANALYSIS: EPA METHOD 5

FILTER

SAMPLE DESCRIPTION	FILTER #	TEST DATE	TARE WEIGHT (g)	FINAL* WEIGHT (g)
C-1	4441	1-29-92	0.5975	0.7189
C-2	4442	1-29-92	0.5984	0.7220
C-3	4443	1-30-92	0.5909	0.7200
BLANK	4423	1-31-92	0.6177	0.6177

WASH

SAMPLE DESCRIPTION	BKR#	TEST DATE	TARE WEIGHT (g)	FINAL WEIGHT (g)	VOLUME (ml)
C-1	11	1-29-92	71.6809	71.6990	300
C-2	115	1-29-92	65.3930	65.4121	300
C-3	204	1-30-92	77.8601	77.8755	200
BLANK	221	1-31-92	76.7822	76.7835	200

- Filters heated at 220 degrees(F) for 2.5 hours

6821 Vista Parkway North, West Palm Beach, FL 33411
Tel: 407-687-5300 Fax: 407-687-3676

South Florida Environmental Services

LABORATORY

SUMMARY OF RESULTS

PROJECT NUMBER: 91-102
PROJECT NAME: OKEELANTA CORPORATION
BOILER #10

ANALYST: M. WAYT
ANALYSIS: EPA METHOD 5

FILTER

SAMPLE DESCRIPTION	FILTER #	TEST DATE	TARE WEIGHT (g)	FINAL* WEIGHT (g)
CT-10R-1	4457	1-31-92	0.6037	0.7294
CT-10R-2	4458	1-31-92	0.6088	0.7335
CT-10R-3	4471	1-31-92	0.5948	0.6848
BLANK	4423	1-31-92	0.6177	0.6177

WASH

SAMPLE DESCRIPTION	BKR#	TEST DATE	TARE WEIGHT (g)	FINAL WEIGHT (g)	VOLUME (ml)
CT-10R-1	206	1-31-92	77.9125	77.9223	240
CT-10R-2	209	1-31-92	76.3000	76.3183	250
CT-10R-3	211	1-31-92	79.1304	79.1400	220
BLANK	221	1-31-92	76.7822	76.7835	200

- Filters heated at 220 degrees(F) for 2.5 hours

6821 Vista Parkway North, West Palm Beach, FL 33411
Tel: 407-687-5300 Fax: 407-687-3676

APPENDIX X

EQUIPMENT CALIBRATION SHEETS

POST
METER BOX CALIBRATION SHEET

BOX #: 11 DATE: 02-07-92
PRES BAR: 29.77 VACUUM: 12 IN HG

RUN #	VOLUME WET	VOLUME DRY	DELTA H	DELTA H /13.6	PRES BAR (ABS)	TIME (MINS)
1	10.00	10.245	2.00	.147	29.92	13.11
2	10.00	10.553	2.00	.147	29.92	13.10
3	10.00	10.452	2.00	.147	29.92	13.10

RUN #	TEMP WET	TEMP DRY INLET	TEMP DRY OUTLET	TEMP DRY (AVG)	Y	DELTA H @
1	66.0	107.3	70.0	88.7	1.0131	1.85
2	66.0	117.3	75.7	96.5	.99762	1.82
3	66.0	120.7	79.7	100.2	1.0140	1.81
				AVERAGE	1.0082	1.82

ACTUAL % DEVIATION = 1.06 %

ALLOWABLE % DEVIATION = 2.0 %

PRE CALIBRATION Y = .9911

ACTUAL % DIFFERENCE = 1.70 %

ALLOWABLE DIFFERENCE = 5.0 %

FORMULAS:

Y=

$$\frac{(V\ w)\ (P\ b)\ (T\ d)}{(V\ d)\ (P\ b\ \ ABS)\ (T\ w)}$$

DELTA H @=

$$\frac{0.0317\ (DELTA\ H)}{(P\ b)\ (T\ d)} * \left[\frac{(T\ w)\ (TIME)}{(V\ w)}\right]$$

CALIBRATION BY: Patrick M. Wildman
Pat Wildman

METER BOX CALIBRATION SHEET

BOX NUMBER: 11
PRESS BAR : 30.19

DATE: 15 OCT 91
DUE: 15 APR 92

RUN #	VOLUME WET	VOLUME DRY	DELTA H	DELTA H /13.6	PRES BAR (ABS)	TIME (MINS)
1	5	5.168	.50	.0368	30.23	12.48
2	5	5.195	1.00	.0735	30.26	8.97
3	10	10.456	1.50	.1103	30.30	14.83
4	10	10.539	2.00	.1471	30.34	13.28
5	10	10.581	3.00	.2206	30.41	10.82
6	10	10.613	4.00	.2941	30.48	9.50

RUN #	TEMP WET (`F)	TEMP DRY INLET	TEMP DRY OUT	TEMP DRY (AVG)	Y	DELTA H @
1	71.0	82.7	76.0	79.3	.9815	1.71
2	69.7	95.3	77.0	86.2	.9900	1.73
3	69.0	107.0	79.0	93.0	.9961	1.75
4	69.0	114.7	82.7	98.7	.9972	1.86
5	69.0	114.3	85.0	99.7	.9926	1.84
6	68.7	114.7	86.3	100.5	.9893	1.89
				AVERAGE	.9911	1.80

MAX % DEVIATION .97
ALLOWABLE % DEV 2.00

FORMULAS:

Y=

$$\frac{(V\ w)\ (P\ b)\ (T\ d)}{(V\ d)\ (P\ b\ \ ABS)\ (T\ w)}$$

DELTA H @=

$$\frac{0.0317\ (DELTA\ H)}{(P\ b)\ (T\ d)} * \left[\frac{(T\ w)\ (TIME)}{(V\ w)}\right]^2$$

CALIBRATION BY: JIM JARDIN

Sean

Eastmount Engineering

Environmental Consultants — Air Quality Specialists

WET TEST METER CALIBRATION

WET TEST METER:- Model AL-19, Serial No. P-468

BELL PROVER :- Chain Compensated Gasometer
Warren E. Collins Inc.
Serial NO. 2874
Factor 133.2 cc/mm

(Maintained by E.P.A. region 1)

CALIBRATED BY :- Anthony Stratton and Kieran Nolan

DATE CALD. :- March 28 1991

DATE DUE :- March 28 1992

RESULTS :-

RUN #	C.F.M.	% DIFF.
1	.55	+.31
2	.55	+.20
3	.55	+.10
AVERAGE :-	.55	+.20

NOZZLE CALIBRATION SHEET

PROJECT NAME: OKEELANTA Corp PROJECT NUMBER: 91-102

POINT#	NOZZLE# 1/4-5	NOZZLE # 1/4-13	NOZZLE# 5/16-14	NOZZLE # 5/16-3
1	.265	.260	.310	.315
2	.264	.258	.310	.314
3	.266	.261	.310	.313
AVG.	.265	.260	.310	.314

Sean MacKay

CALIBRATED BY:

Dec 9, 1991

DATE:

TRANSCAT

"CAL-LAB"

Certificate of Calibration

TRANSCAT certifies that this instrument has been calibrated to manufacturer's specifications using measurement standards traceable to the National Institute of Standards and Technology (NIST) and as required by The National Research Council of Canada, Division of Physics, within the limitations of the Council's calibrations services. TRANSCAT's calibration system meets or exceeds the requirements of MIL-STD-45662A.

Complete records of all work performed is maintained by TRANSCAT and is available upon request.

TEMPERATURE 68° F. RELATIVE HUMIDITY OF 59%.

Customer : EASTMONT ENGINEERING
Manufacturer : TRANSMATION
Model Number : 1061
Serial Number : 8277
Description : THERMOCOUPLE CALIBRA
Calibrated : 08/02/91
Date Due : 08/01/92
Repair Number : 17-7047-00

ITEM RECEIVED IN TOLERANCE

ASSETS	MANUFACTURER	MODEL	DESCRIPTION	CALIBRATED	DATE DUE
2485	DATA PRECISION	8200	DC CALIB.	01/02/91	01/01/92
2486	FLUKE	8842A	DMM	03/19/91	03/19/92
2471	KATE	140-4	ICE PT. REF.	03/14/91	03/13/92
2482	NBS	172144-K	STD THERMOCOUPLE	04/19/91	04/19/93

CAL-LAB MANAGER

1144 Lexington Ave. • Rochester • NY 14606 • 800-828-1470 - FAX 716-458-0543
P.O. Box 456 • Station A • Rexdale • Ontario M9W 5L4 • 800-268-4739 • FAX 416-675-1445

TEMPERATURE INDICATOR CALIBRATION FORM

INDICATOR S/N: 650 - 6 CAL DATE: 8 AUG 91

REFERENCE S/N:1061-8277 DUE DATE: 8 AUG 92

CHANNEL NO.	REFERENCE SET POINT 0	32	200	250	320	600	800	1000
1	0	33	199	249	320	600	800	1000
2	0	32	199	249	320	599	800	1000
3	0	32	199	249	320	599	800	1000
4	0	32	199	249	320	600	800	1001
5	0	32	199	250	320	600	800	1000
6	0	32	199	249	320	599	800	1000
7								
8								
9								
10								

% DIFF: .06

CALIBRATED BY____KIERAN NOLAN KN

TEMPERATURE INDICATOR CALIBRATION FORM

INDICATOR S/N: 650 - 7 CAL DATE: 13 SEP 91

REFERENCE S/N:1061-8277 DUE DATE: 13 SEP 92

CHANNEL NO.	REFERENCE SET POINT 0	32	200	250	320	600	800	1000
1	1	32	199	249	320	599	798	999
2	1	32	200	250	320	599	799	999
3	1	33	200	250	320	599	799	999
4	1	32	200	250	320	599	799	999
5	0	32	199	249	320	600	799	998
6	0	32	199	250	320	599	799	998
7								
8								
9								
10								

% DIFF: .04

CALIBRATED BY____KIERAN NOLAN KN

THERMOCOUPLE CALIBRATION SHEET

SET #: METER BOX 11-IN DATE: 08-11-86

STANDARD ('F)	THERMOCOUPLE ('F)	% DEVIATION OF ABSOLUTE
34	29	1.01
211	210	.15
404	403	.12
	MAXIMUM	1.01
	ALLOWABLE	1.50

SET #: METER BOX 11-OUT DATE: 08-11-86

STANDARD ('F)	THERMOCOUPLE ('F)	% DEVIATION OF ABSOLUTE
34	28	1.21
211	210	.15
404	401	.35
	MAXIMUM	1.21
	ALLOWABLE	1.50

CALIBRATION BY: G. ZWILLING

THERMOCOUPLE CALIBRATION SHEET

TC #: RAC - 2 - 170 DATE: 1/11/91

STANDARD ('F)	THERMOCOUPLE ('F)	% DIFFERENCE (ABSOLUTE)
32.0	32	.00
516.2	519	.29
212	213	.15
	MAXIMUM	.29
	ALLOWABLE	1.50

CALIBRATION BY: Kieran Nolan

KIERAN NOLAN

THERMOCOUPLE CALIBRATION SHEET

SET #: 7.75' - 9 DATE 3/6/91

STANDARD ('F)	THERMOCOUPLE ('F)	% DIFFERENCE (ABSOLUTE)
32	32	.00
212	213	.15
466	479	1.43
	MAXIMUM	1.43
	ALLOWABLE	1.50

CALIBRATION BY: Kieran Nolan

KIERAN NOLAN

THERMOCOUPLE CALIBRATION SHEET

SET #: 8.5' - 6 DATE: 07/07/89

STANDARD ('F)	THERMOCOUPLE ('F)	% DIFFERENCE (ABSOLUTE)
87	86	.18
212	211	.15
430	436	.67
	MAXIMUM	.67
	ALLOWABLE	1.50

CALIBRATION BY: S. MacKay

THERMOCOUPLE CALIBRATION SHEET

TC #: 4THIMP-210 DATE: 2/27/91

STANDARD ('F)	THERMOCOUPLE ('F)	% DIFFERENCE (ABSOLUTE)
32.0	32	.00
157.1	157	.02
212	214	.30
	MAXIMUM	.30
	ALLOWABLE	1.50

CALIBRATION BY: Kieran Nolan

KIERAN NOLAN

APPENDIX XI

PAGES 202, 203 FROM CONTROL ROOM LOG BOOK

1-29-92 11:00 - 7:00

11:00 PM = BLOW SOOT ON BLR. =

" " " 5286 - ALBERTO RODRIGUEZ - DID NOT REPORT TO WORK. = (CHANGED SHIFT)

" " " 4863 - ALPHONSO PRUITT = WORKED 8 HRS. = B.F.M. =

NOTE = 6735 ORLANDO RODRIGUEZ = WORKED 8 HRS. W.C.P.O.

" " 4920 = JOSE F. RODRIGUEZ = WORKED 8 HRS. UT. W.C.P.

" " 4973 - ANGEL MARIO CRESPO - WORKED 8 HRS. B.C.L.

" " 7304 - JUAN GALVAN = WORKED 8 HRS. B.C.L. =

12:00 AM - CLEANED STOKER GRATE # 5 BLR. -

12:10 " A MILL STOP = 12:15 START -

1:30 " CLEANED FURNACES = # 6 BLR. + 5 = # 4 BLR + 4.

3:00 " START CLEANING FURNACES # 1-2-3-4-5 ON # 10 BOILER = 5:00 AM. = FINISH =

" " " W.C. PLANT PLUGED-UP = 3:40 OK = BACK TO OPERATION

NOTE = 5479 - ANGELO GARCIA - DID NOT REPORT TO WORK = (SICK)

4:45 " A MILL STOP - START = 6:30 =

5:30 " ADDED = 2 1/2 BUCKETS - (100 LBS.) CAUSTIC SODA -

" 1 BUCKET (40 LBS.) # 227 -

" 1 GALON # 219

" 1 CUP # 271. =

W.C. LOADS = 35 (B)

O. USED = 3661 -

G.M. READ = 0674 0434 =

J M N.

1-30-92 7-3

Blow Soot ON Boilers @

Cleaned Grate Ashes Boiler 5 @

Alfonso Pruitt did not work this Shift change shift

Alberto Rodrigue worked BFM 8 hrs

Note Soot Blowers # 1-2 Boiler 10 is Stuck IN OPEN Position - IN # 1 the Valve Turns But the Hammer [illegible]

#10

(#3) Started P.T. # 10-3 @ 1 10/p

Added 2½ Bucket (100 lbs) Soda
" " (40 lbs) 227
1 Gal. # 219
1 Cup # 271

1 30/p

O m 6744875
O used 4,441 Gal.
W Chips 40 Loads 2 00/p

Note Main ~~line~~ line To Soot Blower North + South Side is Closed ~~#~~ At Drum because The Soot Blower Supply Valve will Not Close Completly, So when the Soot is Blown Those Valves will have to Be Open in order to Blow Soot on That Boiler # 10 And Close Back when Finished

(#2:12) Finished P.T. #10-3

1-30-92 3-11

3:00 Blew soot 0 blrs.
3:10 Cleaned Grate ashes # ~~5~~ 5 blrs.
Manuel Herrera did not report to worked injured
#4892 Lauro Trevino 8 hrs. P.L.O.
4:00 Cleaned Furnaces #10-3 6-3 4-2 4-3 blrs.
4:00 Added #204 10 lb.
Felip Carrillo did not report to worked sick
#4965 Jose Prendes. W.C. P.L.O.
5:00 Cleaned All ashes hopper
Albiro Camelo did not report to worked Death in the Family
#5310 R. Lopez 8 hrs. B.F.M.
#7383 C. Perez 4 hrs. W.C. Plant
#4920 Jose Rodriguez 4 hrs. W.C. Plant
8:00 ~~[illegible]~~ Cleaned burners # 5 3+4
9:30 Added 2½ Bucket Caustic soda 100 lb.
1 " # 227 40 lb.
1 Gal. # 219