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: 14

Title: Source Test Report for Particulate Emissions Twin Impingement Wet Scrubber Number 6 Boiler: Talisman Sugar Corporation

February 1991

SOURCE TEST REPORT
for
PARTICULATE EMISSIONS

TWIN IMPINGEMENT WET SCRUBBERS
NUMBER 6 BOILER

TALISMAN SUGAR CORPORATION
SOUTH BAY, FLORIDA

FEBRUARY 1 and 4, 1991

PREPARED FOR:
TALISMAN SUGAR CORPORATION
SOUTH BAY, FLORIDA

PREPARED BY:
AIR CONSULTING and ENGINEERING, INC.
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air consulting and engineering, Inc.

REPORT CERTIFICATION

To the best of my knowledge, all applicable field and analytical procedures comply with Florida Department of Environmental Regulation requirements and all test data and plant operating data are true and correct.

Stephen L. Neck, P.E.

State of Florida
Registration No. 20020

March 10, 1991
Date

SEAL

2106 N.W. 67th Place, Suite 4 • Gainesville, Florida 32606 • (904) 335-1889

1.0 INTRODUCTION

Personnel from Air Consulting and Engineering, Inc. (ACEI) performed annual source emission compliance testing for the Talisman Sugar Corporation (TSC) on February 1 and February 4, 1991. Testing was performed at the Talisman Sugar Mill Number 6 Boiler wet scrubber outlet.

Testing was designed to fulfill "specific conditions" of the current Florida Department of Environmental Regulation (FDER) operating permit.

Three United States Environmental Protection Agency (USEPA) Method 5 particulate matter (PM) test runs were conducted on each of the two test days while the plant was documented to be operating within 10% of permitted production.

Re-starting after an eleven day outage due to inclimate weather, the Number 6 Boiler achieved full load only minutes before test Run 1 began on Friday, February 1, 1991. The Run 1 probe wash was extremely heavy, indicating a large particle emission from boiler residuals upon achieving high load. Due to this factor, along with the many mill shut-downs during test Run 3, the test series was continued on Monday, February 4, 1991, when the boiler re-achieved high load operating stability.

Mr. Angelo Archbold of TSC served as test coordinator. Mr. Frank Kleeman, P.E. of Kleeman Engineering certified production rates.

Mr. Ken Tucker of the Florida Department of Environmental Regulation and Mr. Ajaya Satyal of the HRS/Palm Beach County Health Department witnessed most of the testing period.

2.0 SUMMARY and DISCUSSION of RESULTS

Results of the emission testing are provided in Table 1. Complete emission data are located in the report appendices.

The source was found to be operating within full compliance of permit conditions after stable operation was achieved. Stack emissions for February 4, 1991, averaged 88.77 pounds per hour (LB/HR) and 0.179 pounds per million btu (LB/MMBTU) heat input against a "process rate" basis allowable emission of 0.200 LB/MMBTU. Permit conditions limit emissions to 0.10 LB/MMBTU from oil and 0.200 LB/MMBTU from bagasse firing. No oil was used during compliance testing. Average stack emissions for the entire six run test series averaged 94.94 LB/HR and 0.197 LB/MMBTU.

Production rate summaries are provided in Appendix A. These data were taken from control room recordings of steam flow, temperature, and pressure as well as feedwater temperature and pressure (Appendix E). Steam integrator readings were recorded at the beginning and end of each particulate test run by Mr Frank Kleeman.

TABLE 1
EMISSION SUMMARY
TALISMAN SUGAR CORPORATION
NUMBER 6 BOILER-SOUTH BAY, FLORIDA
FEBRUARY 1991

RUN NUMBER	TIME	ACTUAL EMISSIONS		ALLOWABLE EMISSIONS	
		LB/HR	LB/MMBTU	LB/HR	LB/MMBTU
February 1, 1991:					
1	0844-1023	108.360	0.234	92.78	0.200
2	1120-1256	96.660	0.206	93.65	0.200
3	1346-1717	98.320	0.208	94.68	0.200
February 4, 1991:					
4	1145-1323	88.138	0.174	101.04	0.200
5	1440-1618	91.236	0.183	99.85	0.200
6	1714-1853	86.942	0.180	96.75	0.200

DATE 4/9/91 FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION
PARTICULATE STACK TEST VERIFICATION
DER METHOD 5

FACILITY NAME: TALISMAN SUGAR CORP. APIS #

COMPANY CONDUCTING TEST: KLEEMAN ENGINEERING TEST DATE 2 4 91

SOURCE DESCRIPTION: BOILER 6

STACK TEST DATA SUMMATION

		RUN1	RUN2	RUN3
1.H2O	(VOL.MEAS.),ML	415	430	415
2.H2O	(MASS MEAS.),GM	12	6	12
3.M'N	PARTICULATE WEIGHT, GM	.2998	.3172	.2925
4.V'M	VOLUME METERED,CF	38.924	40.426	39.557
5.Y	DRY GAS MTR. CALIB.FCTR.	.994	.994	.994
6.RDP	AVG SQR D.P-SAMPLING	1.036	1.049	1.052
7.DH	AVG DELTA H,IN.H2O	.762	.763	.79
8.T'M	AVG MTR. TEMP,DEG.F	82	82	88
9.T'S	AVG STACK TEMP,DEG.F	163	163	163
10.P'S	STACK PRESS,''HG(ABS)	30.2	30.2	30.2
11.P'B	BAROMETRIC PRESS,''HG	30.2	30.2	30.2
13.D'N	ACTUAL NOZZLE DIAM,IN	.175	.175	.175
14.T	ACTUAL SAMPLE TIME,MIN	96	96	96
15.C'P	PITOT TUBE COEFFICIENT	.84	.84	.84
23.S/T	VALUE:SAMPLE PTS/TOT PTS	1	1	1

RUN	VOLUME SAMPLED DSCF	MOISTURE CONTENT PERCENT	STACK VEL FPS	FLOW RATE DSCF/H	PERCENT ISO-KINETIC	ACTUAL EMISS LB/HR	ACTUAL EMISS LB/MBTU	ALLOW EMISS LB/MBTU
1	38.10	34.33	66.42	5,055,642	106.21	87.69	0.177	0.200
2	39.57	34.15	67.23	5,130,774	108.69	90.66	0.183	0.200
3	38.30	34.33	67.45	5,133,722	105.14	86.43	0.174	0.200
MEAN	38.66	34.27	67.03	5,106,713	106.68	88.26	0.178	0.200

SUMMARY

GENERAL:

REVIEWED BY AS
ACTUAL A 'S = 37.651 SQ FT
LAMINAR FLOW ASSUMED (<10 DEG YAW) (OR <20 DER)
ACTUAL EMISS BASED ON HEAT INPUT = 496 MBTU/HR
ALL REQUIRED LEAK TESTS ACCEPTABLE
ASSUMED M 'D=30.0 (COMBUSTION GASES)

COMMENT.....

RUN 1 :

ACTUAL A 'N = .000167 SQ FT
OVERSATURATED CONDITIONS: SATURATION MOISTURE ASSUMED/GIVEN PG.1

COMMENT.....

RUN 2 :

ACTUAL A 'N = .000167 SQ FT

COMMENT.....

RUN 3 :

ACTUAL A 'N = .000167 SQ FT
OVERSATURATED CONDITIONS: SATURATION MOISTURE ASSUMED/GIVEN PG.1

COMMENT.....

3.0 PROCESS DESCRIPTION AND OPERATION

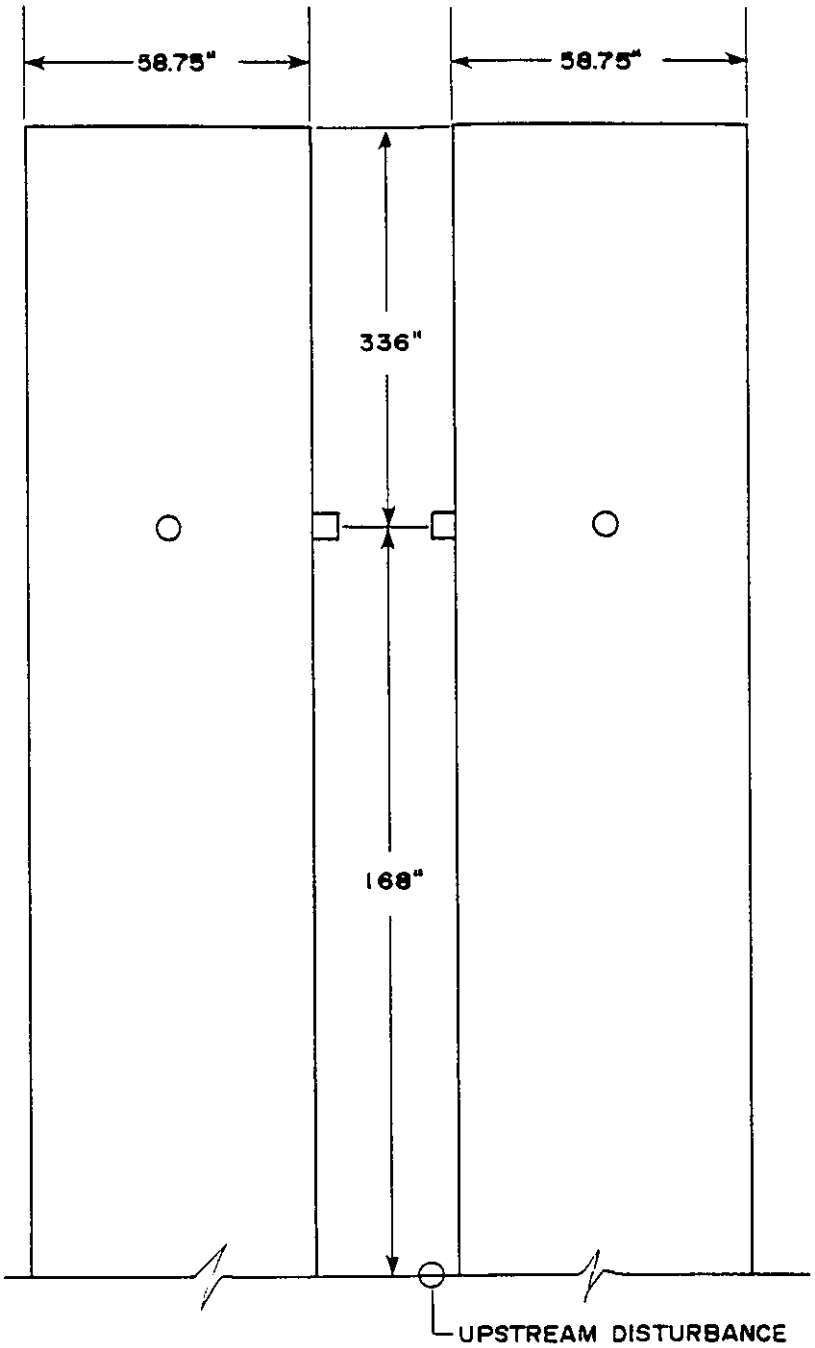
The Number 6 Boiler at the Talisman Sugar Corporation's South Bay plant is a traveling grate stoker design used primarily for bagasse fuel firing. Supplemental oil firing was not used during the emission test series. The boiler averaged 254027 pounds per hour (LBS/HR) steam production over the three run test period on February 4 and 237917 (LBS/HR) for the February 1 series. The higher steam production and improved emission performance on February 4 again demonstrates the atypical performance of February 1 operations.

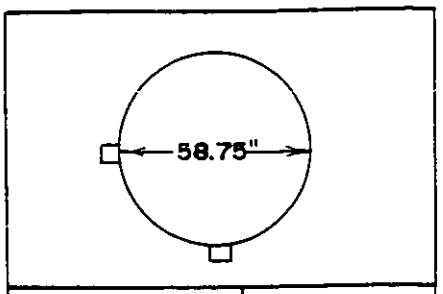
Oil meters, steam integrators, and other production monitoring devices were rigorously calibrated prior to the production season.

4.0 SAMPLING POINT LOCATION

The sampling point location is a dual wet scrubber outlet stack, 58.75" in diameter (both stacks are identical). Each stack has two sampling ports spaced 90 degrees apart. The ports are located 336" from an upstream disturbance and 168" from the outlet.

Forty-eight test points were sampled for each test run. The traverse were located as shown in Figure 1. The configuration of both stacks is such that there is no reason to evaluate the presence of cyclonic flow.





TRAVERSE POINT NUMBER	INCHES INSIDE STACK WALL
1	1.3
2	3.9
3	6.9
4	10.4
5	14.7
6	20.9
7	37.9
8	44.1
9	48.3
10	51.8
11	54.8
12	57.5

NOTE: NOT TO SCALE

FIGURE 1.
SAMPLING POINT LOCATION
BOILER NO. 6
TALISMAN SUGAR CORPORATION
SOUTH BAY, FLORIDA

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5.0 FIELD and ANALYTICAL PROCEDURES- USEPA METHOD 5

Particulate matter samples were collected by the emission measurement method specified by the United States Environmental Protection Agency. A schematic diagram of the sampling train used is provided in Figure 2. All particulate matter captured from the nozzle to and including the filter was included in the calculation of the emission rate of particulate matter.

PREPARATION OF EQUIPMENT

1. FILTERS- Gelman type "A" glass fiber filters were placed in a drying oven for two hours at 105 degrees C, removed and placed in a standard desiccator containing indicating silica gel, allowed to cool for two hours, and weighed to the nearest 0.1 mg. The filters were then re-desiccated for a minimum of six hours and weighed to a constant weight (less than 0.5 mg change from previous weighing). The average of the two constant weights was used as the tare value.

2. NOZZLE, FILTER HOLDER, AND SAMPLING PROBE - The nozzle, filter holder, and sampling probe were washed vigorously with soapy water and brushes, rinsed with distilled water and acetone, and dried pror to the test program. All openings on the equipment were sealed while in transit to the test site.

3. IMPINGERS - The Greenburg-Smith impingers were cleaned, rinsed, and dried as in 2. The impingers were also sealed during transit.

TEST PROCEDURE

Prior to performing the actual particulate matter sample runs, certain stack and stack gas parameters were measured. These preliminary measurements included the average gas temperature, the stack gas velocity head, the stack gas moisture content, and the dimensions at the point where the tests were to be performed. The stack temperature was determined using a bi-metallic thermocouple and calibrated

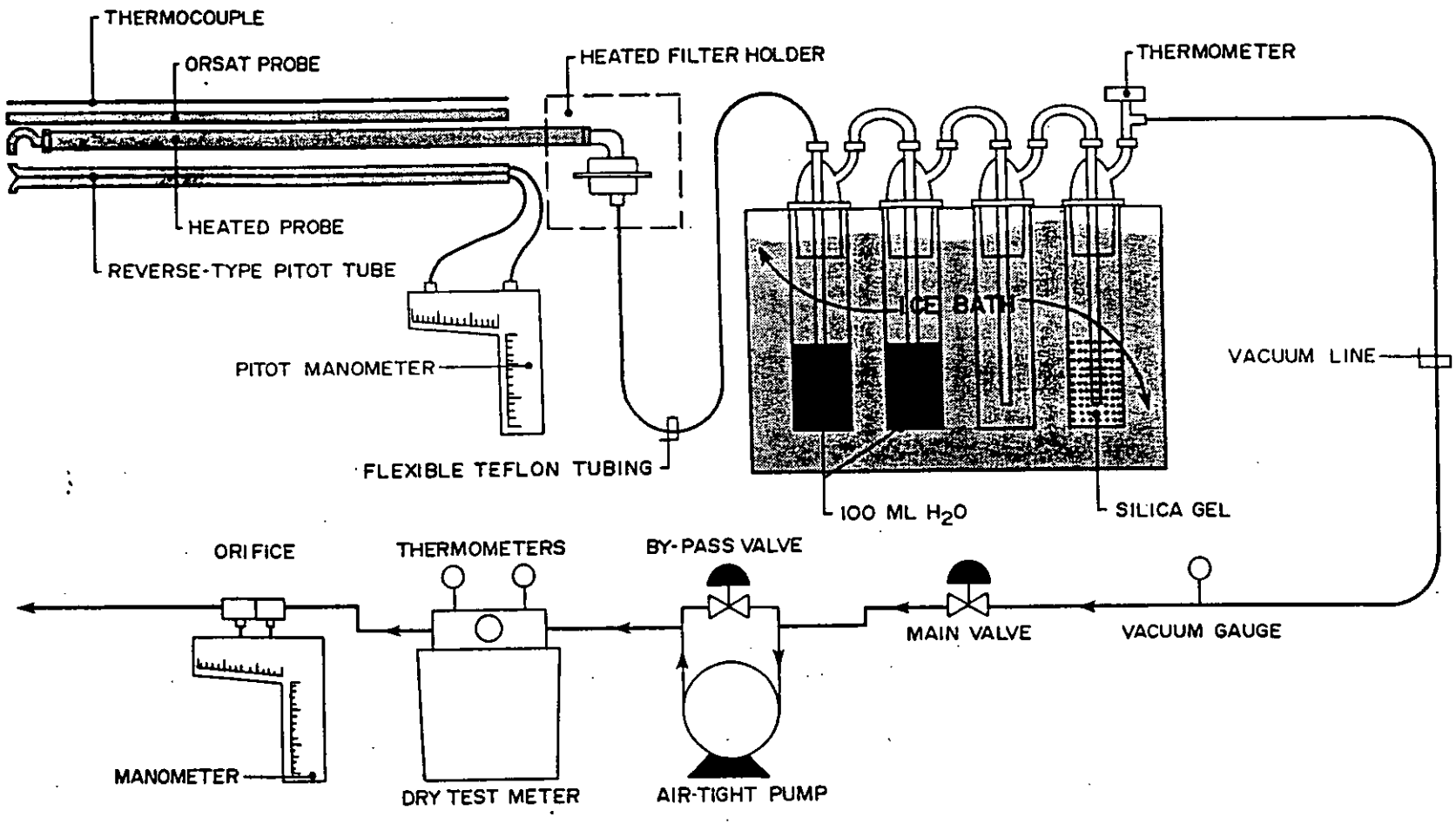

FIGURE 2
EPA METHOD 5 SAMPLING TRAIN

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pyrometer. Velocity head measurements were made with a calibrated type "s" pitot tube and an inclined manometer. Velocity head measurements of 0.05 inches H2O or less were measured using a micromonometer.

The sampling traverse points were selected so that a representative sample could be extracted from the gas stream. The traverse points were located in the center of equal areas, the number of which were dependent upon the distance upstream or downstream from flow disturbances.USEPA Methods 1 and 2 were utilized for this task.

Each particulate matter test run consisted of sampling for a specific amount of time at each point. The type "s" pitot tube was connected to the sampling probe so that an instantaneous velocity head measurement could be made at each traverse point while conducting the test run. The stack gas temperature was also measured at each traverse point. Together with assumed moisture and orsat knowledge as well as known nozzle area, calculations of "isokinetic" (equal energy or velocity) were quickly made and effected for each traverse point during the test run.

The gases sampled passed through the following components: a stainless steel nozzle and glass probe; a glass fiber filter; two impingers charged with 100 ml of distilled water each; one dry impinger; one impinger with 200 grams of silica gel desiccant; a flexible length of tubing; a leak free pump; a calibrated dry gas meter: and, finally, a calibrated flow orifice.

Sample recovery was accomplished in the following manner:

1. The pre-tared filter was removed from its holder and placed in Container 1 and sealed. (This is usually performed in the lab).
2. All sample-exposed surfaces prior to the filter were washed with acetone and placed in Container 2. The container was then sealed and the liquid level marked.
3. The volume of water from the first three impingers was measured for the purpose of calculating the moisture content of the stack gases, then discarded.

4. The silica gel from the fourth impinger was transferred to the original tared container and sealed.

LABORATORY ANALYSIS

The three sample containers from each sample run were analyzed according to the following procedures:

1. The filter was either dried for two hours at 105 degrees C or desiccated for 24 hours at ambient temperature. Following desiccation, the filter was weighed to the nearest 0.1 mg. A minimum of two such weighings six hours apart were made with a variance of less than 0.5 mg.

2. The acetone from Container 2 was transferred to a tared beaker, evaporated to dryness, and weighed in the same manner as above.

3. The used silica gel in its tared container was weighed to the nearest 0.1 gram.

The total sample weight included the weight gains from Sample Containers 1 and 2.

DATA

All relevent field and lab data sheets as well as emission calculations are provided in the report appendices.

APPENDIX A

COMPLETE EMISSION DATA

AND

SAMPLE CALCULATIONS

AIR CONSULTING & ENGINEERING,INC.
Complete Emission Data

PLANT:	TALISMAN SUGAR CORPORATION	DATE:	2-4-91
LOCATION:	SOUTH BAY, FLORIDA	RUN NUMBER	1
SOURCE:	NUMBER 6 BOILER, SCRUBBER OUTLET	TIME:	1145-1323

TIME INTERVAL	96	MINUTES
OIL:		
FINAL OIL	0	
BEGIN OIL	0	
FACTOR	1	
STEAM:		
FINAL STEAM	6066	
BEGIN STEAM	5652	
FACTOR	1000	
TEMPERATURE	579	DEGREES F
PRESSURE	288	PSIG
	303	PSIA
FEEDWATER:		
TEMPERATURE	260	DEGREES F
PRESSURE	440	PSIG
	455	PSIA
HEAT INPUT:		
STEAM	1302.5	BTU/LB
FEEDWATER	228.6	BTU/LB
NET STEAM	1073.9	BTU/LB
STEAM RATE	258750	LB/HR
BOILER EFFICIENCY	55.0	%
TOTAL FUEL HEAT INPUT	505.22	MMBTUH
STEAM CALIBRATION FACTOR	1.00	
OIL	0.00	GPH
OIL	150000	BTU/GAL
TOTAL HEAT INPUT (OIL)	0.00	MMBTUH
TOTAL HEAT INPUT (NON-OIL)	505.22	MMBTUH
ALLOWABLES:		
ALLOWABLE EMISSION (OIL)	.10	LB/MMBTU
ALLOWABLE EMISSION (NON-OIL)	.20	LB/MMBTU
TOTAL ALLOWABLE EMISSION	101.04	LB/HR
TOTAL ACTUAL EMISSION	88.13	LB/HR
TOTAL ALLOWABLE EMISSION	0.200	LB/MMBTU
TOTAL ACTUAL EMISSION	0.174	LB/MMBTU

AIR CONSULTING and ENGINEERING
COMPLETE EMISSION DATA

PLANT: TALISMAN SUGAR CORPORATION
SOURCE: NUMBER 6 BOILER
DATE: 2-4-91

RUN NO.:	1	IMPINGER ml	415
BEGIN TIME:	1145	SILICA GEL gms.	12.0
END TIME:	1323	PERCENT O2	14.90
TOTAL RUN TIME:	96.00 min.	PERCENT CO2	5.40
BAROMETRIC PRESSURE:	30.20 "Hg	"F" FACTOR	0
STACK PRESSURE:	30.20 "Hg.		
NOZZLE DIAMETER:	.175 inches	PARTICULATE	
METER CORR. FACTOR:	.994		
FINAL METER:	728.824 cubic ft.	FILTER mg.	277.8
INITIAL METER:	689.900 cubic ft.	WASH mg.	22.0
STACK AREA:	37.651 sq. ft.		

STACK 1 DATA INPUTS

PORT-POINT	VELOCITY HEAD	SQUARE RT. VEL. HEAD	ORIF. DIFF.	STACK TEMP.	METER TEMP.
1-1	2.500	1.581	1.500	160	80
1-2	2.100	1.449	1.260	162	80
1-3	2.650	1.628	1.590	159	79
1-4	3.250	1.803	1.950	163	80
1-5	2.500	1.581	1.500	162	80
1-6	.240	0.490	.144	163	80
1-7	.420	0.648	.250	162	80
1-8	.310	0.557	.190	163	80
1-9	.270	0.520	.160	164	81
1-10	.420	0.648	.250	165	81
1-11	.520	0.721	.310	162	81
1-12	.370	0.608	.220	159	82
2-1	1.600	1.265	.960	164	83
2-2	2.100	1.449	1.260	164	83
2-3	.990	0.995	.590	165	83
2-4	.450	0.671	.270	166	83
2-5	.570	0.755	.340	166	84
2-6	.530	0.728	.320	166	85
2-7	.260	0.510	.156	165	85
2-8	.650	0.806	.390	165	85
2-9	1.500	1.225	.900	165	86
2-10	1.650	1.285	.990	164	86
2-11	2.200	1.483	1.320	164	86
2-12	2.100	1.449	1.470	156	86
AVERAGES	1.256	1.036	0.762	163	82

EMISSION RESULTS

NOZZLE AREA(FT2)	:0.0001673			
AVG. VELOCITY HEAD	:--------	1.17 "H2O	VOL. FLOW ACFM :	151242
AVG. STACK TEMP.:	--------	163 F	VOL. FLOW SCFMD :	84242
AVG. METER TEMP.:	--------	85 F		
AVG. ORIFICE DIFFERENTIAL:	---	0.70 "H2O	PARTICULATE DATA :	
METER STANDARD CUBIC FEET:	---	37.903		
% H2O VAPOR:	:--------	34.9	POUNDS PER HOUR:	88.138
GAS MOL. WT. DRY:	--------	29.46	POUNDS PER SCF :	0.0000174
GAS MOL. WT. WET:	--------	25.46	GRAINS/SCF:	0.122
% EXCESS AIR:	--------	242.64	GRAINS/SCF @ 8% O2	0.262
AVG. STACK VEL.(FPS)	--------	66.95	GRAINS/SCF @50% EA	0.279
MMBTU INPUT:	--------	505.22	POUNDS PER MMBTU:	0.174
PERCENT ISOKINETIC :	--------	105.50		

NUMBER 6 BOILER-RUN 1 (cont.)

STACK 2 DATA INPUTS

PORT-POINT	VELOCITY HEAD	SQUARE RT. VEL. HEAD	ORIFICE DIFF.	STACK TEMP.	METER TEMP.
1-1	.950	0.975	.570	164	87
1-2	1.100	1.049	.660	164	87
1-3	1.150	1.072	.690	165	87
1-4	1.200	1.095	.720	165	87
1-5	1.250	1.118	.880	166	87
1-6	1.250	1.118	.750	165	87
1-7	1.450	1.204	.870	165	87
1-8	1.350	1.162	.810	149	87
1-9	1.300	1.140	.780	161	87
1-10	1.300	1.140	.780	162	87
1-11	1.350	1.162	.810	164	87
1-12	1.250	1.118	.750	162	87
2-1	1.200	1.095	.480	164	87
2-2	1.200	1.095	.480	162	87
2-3	1.350	1.162	.540	165	88
2-4	1.350	1.162	.540	165	88
2-5	1.350	1.162	.540	165	88
2-6	1.250	1.118	.500	164	88
2-7	1.300	1.140	.520	165	88
2-8	1.350	1.162	.540	164	88
2-9	1.300	1.140	.520	164	88
2-10	1.400	1.183	.500	164	88
2-11	1.350	1.162	.480	164	88
2-12	1.150	1.072	.460	164	88
AVERAGES	1.269	1.125	0.632	163	87

SAMPLE CALCULATIONS - RUN 1

NOZZLE AREA (FT.2)	(Dn/12)!2x3.1416/4	0.000167
AVG.VELOCITY HEAD:	(AVG.SQ.RT.)!2	66.95
METER STND. FT3:	(Mf-Mi)xMCFx(AVG.ORF.DIFF./ 13.6))/29.92)x(528/(Tm+460))	37.899
PERCENT H2O:	((IMP+SG)x(((IMP+SG)x.0474)+ SCF)x100	
Mw DRY:	((O2%x.32)+CO2%x.44)+(100-(O2%+CO2)x.28	29.46
Mw WET:	(Mw DRYx(1-%H2O/100))+%H20x.18	25.46
% EXCESS AIR:	%O2/(((100-(%O2+%CO2))x.264)-%O2)* 100	242.64
STACK VEL.(FPS):	85.49x.84x(AVG.SQ.RT.VEL.HD.)x((Ts +460)/(PsxMwWET))!.5	66.95
% ISOKINETIC:	((Ts+460)xSCFx2992)/(528xFPSxTIMEx An xPs x 60x(1-%O2/100)	105.59
VOL. FLOW (ACFM):	FPS x 60 x As	151244
STND. FLOW(SCFMD):	ACFMx528/(Ts+460)x(1-%H20/100)x (Ps/29.92)	84273
PARTICULATE LB/HR:	PROBE+FILTER mg./453600 x (SCFMD/ SCF) x 60	88.181
PARTICULATE LB/SCF):	PROBE+FILTER mg./453600 /SCF	0.0000174
GRAINS/SCF:	LB/SCF x 7000	0.1221
GR/SCF @ 8% O2:	(12.9/(20.9-%O2))x GR/SCF	0.2625
GR/SCF @ 50% E.A.:	GR/SCF x ((100+ %E.A.)/150)	0.2789
LB/MMBTU:	(LB/HR)/(LB/MMBTUH)	0.174
LB/MMBTU "F" FACTOR:	LB/SCF x "F" FACTOR x (20.9 /20.9-%O2)	0.000

AIR CONSULTING & ENGINEERING,INC.
Complete Emission Data

PLANT:	TALISMAN SUGAR CORPORATION	DATE:	2-4-91
LOCATION:	SOUTH BAY, FLORIDA	RUN NUMBER	2
SOURCE:	NUMBER 6 BOILER, SCRUBBER OUTLET	TIME:	1440-1618

TIME INTERVAL	96	MINUTES
OIL:		
FINAL OIL	0	
BEGIN OIL	0	
FACTOR	1	
STEAM:		
FINAL STEAM	6811	
BEGIN STEAM	6402	
FACTOR	1000	
TEMPERATURE	579	DEGREES F
PRESSURE	290	PSIG
	305	PSIA
FEEDWATER:		
TEMPERATURE	260	DEGREES F
PRESSURE	440	PSIG
	455	PSIA
HEAT INPUT:		
STEAM	1302.7	BTU/LB
FEEDWATER	228.6	BTU/LB
NET STEAM	1074.1	BTU/LB
STEAM RATE	255625	LB/HR
BOILER EFFICIENCY	55.0	%
TOTAL FUEL HEAT INPUT	499.23	MMBTUH
STEAM CALIBRATION FACTOR	1.00	
OIL	0.00	GPH
OIL	150000	BTU/GAL
TOTAL HEAT INPUT (OIL)	0.00	MMBTUH
TOTAL HEAT INPUT (NON-OIL)	499.23	MMBTUH
ALLOWABLES:		
ALLOWABLE EMISSION (OIL)	.10	LB/MMBTU
ALLOWABLE EMISSION (NON-OIL)	.20	LB/MMBTU
TOTAL ALLOWABLE EMISSION	99.85	LB/HR
TOTAL ACTUAL EMISSION	91.23	LB/HR
TOTAL ALLOWABLE EMISSION	0.200	LB/MMBTU
TOTAL ACTUAL EMISSION	0.183	LB/MMBTU

AIR CONSULTING and ENGINEERING
COMPLETE EMISSION DATA

PLANT: TALISMAN SUGAR CORPORATION
SOURCE: NUMBER 6 BOILER
DATE: 2-4-91

RUN NO.:	2	IMPINGER ml	430
BEGIN TIME:	1440	SILICA GEL gms.	6.0
END TIME:	1618	PERCENT O2	14.90
TOTAL RUN TIME:	96.00 min.	PERCENT CO2	5.40
BAROMETRIC PRESSURE:	30.20 "Hg	"F" FACTOR	0
STACK PRESSURE:	30.20 "Hg.		
NOZZLE DIAMETER:	.175 inches	PARTICULATE	
METER CORR. FACTOR:	.994		
FINAL METER:	769.526 cubic ft.	FILTER mg.	285.9
INITIAL METER:	729.100 cubic ft.	WASH mg.	31.3
STACK AREA:	37.651 sq. ft.		

STACK 1 DATA INPUTS

PORT-POINT	VELOCITY HEAD	SQUARE RT. VEL. HEAD	ORIF. DIFF.	STACK TEMP.	METER TEMP.
1-1	1.200	1.095	.720	163	79
1-2	3.000	1.732	1.800	163	79
1-3	3.100	1.761	1.860	163	79
1-4	2.350	1.533	1.410	164	79
1-5	2.250	1.500	1.350	164	80
1-6	.260	0.510	.160	164	80
1-7	.400	0.632	.240	166	80
1-8	.340	0.583	.200	155	80
1-9	.280	0.529	.170	165	80
1-10	.420	0.648	.250	165	81
1-11	.540	0.735	.320	143	81
1-12	.520	0.721	.320	165	81
2-1	1.200	1.095	.720	164	82
2-2	2.400	1.549	1.440	165	82
2-3	1.300	1.140	.780	165	82
2-4	.850	0.922	.510	165	83
2-5	.600	0.775	.360	165	83
2-6	.620	0.787	.370	165	83
2-7	.260	0.510	.156	165	83
2-8	.760	0.872	.460	165	83
2-9	1.300	1.140	.780	165	83
2-10	1.600	1.265	.960	165	84
2-11	2.450	1.565	1.470	165	84
2-12	2.500	1.581	1.500	164	85
AVERAGES	1.271	1.049	0.763	163	82

EMISSION RESULTS

NOZZLE AREA(FT2)	:0.0001673			
AVG. VELOCITY HEAD	:--------	1.20 "H2O	VOL. FLOW ACFM :	153178
AVG. STACK TEMP.:	--------	164 F	VOL. FLOW SCFMD :	85783
AVG. METER TEMP.:	--------	84 F		
AVG. ORIFICE DIFFERENTIAL:	---	0.75 "H2O	PARTICULATE DATA :	
METER STANDARD CUBIC FEET:	---	39.450		
% H2O VAPOR:	:--------	34.4	POUNDS PER HOUR:	91.236
GAS MOL. WT. DRY:	--------	29.46	POUNDS PER SCF :	0.0000177
GAS MOL. WT. WET:	--------	25.51	GRAINS/SCF:	0.124
% EXCESS AIR:	--------	242.64	GRAINS/SCF @ 8% O2	0.267
AVG. STACK VEL.(FPS)	--------	67.81	GRAINS/SCF @50% EA	0.283
MMBTU INPUT:	--------	499.23	POUNDS PER MMBTU:	0.183
PERCENT ISOKINETIC :	--------	107.83		

NUMBER 6 BOILER-RUN 2 (cont.)

STACK 2 DATA INPUTS

PORT-POINT	VELOCITY HEAD	SQUARE RT. VEL. HEAD	ORIFICE DIFF.	STACK TEMP.	METER TEMP.
1-1	1.200	1.095	.720	163	85
1-2	1.200	1.095	.720	164	85
1-3	1.200	1.095	.720	164	85
1-4	1.200	1.095	.720	164	85
1-5	1.250	1.118	.750	164	85
1-6	1.350	1.162	.810	165	86
1-7	1.500	1.225	.900	164	85
1-8	1.350	1.162	.810	164	85
1-9	1.350	1.162	.810	165	86
1-10	1.400	1.183	.840	165	86
1-11	1.400	1.183	.840	164	86
1-12	1.300	1.140	.780	163	86
2-1	1.300	1.140	.780	164	86
2-2	1.100	1.049	.660	164	87
2-3	1.300	1.140	.780	166	87
2-4	1.300	1.140	.780	166	87
2-5	1.350	1.162	.810	166	87
2-6	1.350	1.162	.810	166	87
2-7	1.350	1.162	.810	166	87
2-8	1.350	1.162	.540	165	87
2-9	1.350	1.162	.540	164	87
2-10	1.300	1.140	.520	166	87
2-11	1.400	1.183	.560	167	87
2-12	1.250	1.118	.500	166	87
AVERAGES	1.308	1.143	0.730	165	86

AIR CONSULTING & ENGINEERING,INC.
Complete Emission Data

PLANT:	TALISMAN SUGAR CORPORATION	DATE:	2-4-91
LOCATION:	SOUTH BAY, FLORIDA	RUN NUMBER	3
SOURCE:	NUMBER 6 BOILER, SCRUBBER OUTLET	TIME:	1714-1853

TIME INTERVAL	109	MINUTES
OIL:		
FINAL OIL	0	
BEGIN OIL	0	
FACTOR	1	
STEAM:		
FINAL STEAM	117475	
BEGIN STEAM	117025	
FACTOR	1000	
TEMPERATURE	579	DEGREES F
PRESSURE	290	PSIG
	305	PSIA
FEEDWATER:		
TEMPERATURE	260	DEGREES F
PRESSURE	450	PSIG
	465	PSIA
HEAT INPUT:		
STEAM	1302.7	BTU/LB
FEEDWATER	228.6	BTU/LB
NET STEAM	1074.1	BTU/LB
STEAM RATE	247706	LB/HR
BOILER EFFICIENCY	55.0	%
TOTAL FUEL HEAT INPUT	483.77	MMBTUH
STEAM CALIBRATION FACTOR	1.00	
OIL	0.00	GPH
OIL	150000	BTU/GAL
TOTAL HEAT INPUT (OIL)	0.00	MMBTUH
TOTAL HEAT INPUT (NON-OIL)	483.77	MMBTUH
ALLOWABLES:		
ALLOWABLE EMISSION (OIL)	.10	LB/MMBTU
ALLOWABLE EMISSION (NON-OIL)	.20	LB/MMBTU
TOTAL ALLOWABLE EMISSION	96.75	LB/HR
TOTAL ACTUAL EMISSION	86.94	LB/HR
TOTAL ALLOWABLE EMISSION	0.200	LB/MMBTU
TOTAL ACTUAL EMISSION	0.180	LB/MMBTU

AIR CONSULTING and ENGINEERING
COMPLETE EMISSION DATA

PLANT: TALISMAN SUGAR CORPORATION
SOURCE: NUMBER 6 BOILER
DATE: 2-4-91

RUN NO.:	3	IMPINGER ml	415
BEGIN TIME:	1714	SILICA GEL gms.	12.0
END TIME:	1853	PERCENT O2	14.70
TOTAL RUN TIME:	96.00 min.	PERCENT CO2	5.40
BAROMETRIC PRESSURE:	30.22 "Hg	"F" FACTOR	0
STACK PRESSURE:	30.22 "Hg.		
NOZZLE DIAMETER:	.175 inches	PARTICULATE	
METER CORR. FACTOR:	.994		
FINAL METER:	809.257 cubic ft.	FILTER mg.	263.5
INITIAL METER:	769.700 cubic ft.	WASH mg.	29.0
STACK AREA:	37.651 sq. ft.		

STACK 1 DATA INPUTS

PORT-POINT	VELOCITY HEAD	SQUARE RT. VEL. HEAD	ORIF. DIFF.	STACK TEMP.	METER TEMP.
1-1	2.100	1.449	1.260	135	85
1-2	3.400	1.844	2.040	163	85
1-3	3.500	1.871	2.100	164	85
1-4	2.800	1.673	1.680	164	85
1-5	2.200	1.483	1.380	164	85
1-6	.260	0.510	.160	164	86
1-7	.320	0.566	.190	160	86
1-8	.270	0.520	.160	166	87
1-9	.270	0.520	.160	163	87
1-10	.400	0.632	.240	165	87
1-11	.530	0.728	.320	165	87
1-12	.500	0.707	.300	165	87
2-1	1.500	1.225	.900	164	87
2-2	1.800	1.342	1.080	165	87
2-3	.810	0.900	.490	165	88
2-4	.570	0.755	.340	166	88
2-5	.590	0.768	.350	166	88
2-6	.560	0.748	.340	166	89
2-7	.250	0.500	.150	166	89
2-8	.650	0.806	.390	166	90
2-9	1.500	1.225	.900	166	90
2-10	1.800	1.342	1.080	166	90
2-11	2.500	1.581	1.500	166	91
2-12	2.400	1.549	1.440	148	91
AVERAGES	1.312	1.052	0.790	163	88

EMISSION RESULTS

NOZZLE AREA(FT2)	:0.0001673			
AVG. VELOCITY HEAD	:--------	1.21 "H2O	VOL. FLOW ACFM :	153541
AVG. STACK TEMP.:	--------	163 F	VOL. FLOW SCFMD :	85762
AVG. METER TEMP.:	--------	90 F		
AVG. ORIFICE DIFFERENTIAL:	---	0.76 "H2O	PARTICULATE DATA :	
METER STANDARD CUBIC FEET:	---	38.165		
% H2O VAPOR:	:--------	34.7	POUNDS PER HOUR:	86.942
GAS MOL. WT. DRY:	--------	29.45	POUNDS PER SCF :	0.0000169
GAS MOL. WT. WET:	--------	25.48	GRAINS/SCF:	0.118
% EXCESS AIR:	--------	229.92	GRAINS/SCF @ 8% O2	0.246
AVG. STACK VEL.(FPS)	--------	67.97	GRAINS/SCF @50% EA	0.260
MMBTU INPUT:	--------	483.77	POUNDS PER MMBTU:	0.180
PERCENT ISOKINETIC :	--------	104.34		

NUMBER 6 BOILER-RUN 3 (cont.)

STACK 2 DATA INPUTS

PORT-POINT	VELOCITY HEAD	SQUARE RT. VEL. HEAD	ORIFICE DIFF.	STACK TEMP.	METER TEMP.
1-1	1.100	1.049	.660	162	92
1-2	1.200	1.095	.720	164	92
1-3	1.100	1.049	.660	164	92
1-4	1.100	1.049	.660	164	93
1-5	1.200	1.095	.720	164	93
1-6	1.300	1.140	.780	165	93
1-7	1.500	1.225	.900	164	93
1-8	1.300	1.140	.780	165	93
1-9	1.400	1.183	.840	167	93
1-10	1.400	1.183	.840	166	93
1-11	1.400	1.183	.840	166	93
1-12	1.300	1.140	.780	160	94
2-1	1.300	1.140	.780	164	94
2-2	1.300	1.140	.780	163	93
2-3	1.400	1.183	.840	164	94
2-4	1.400	1.183	.840	160	94
2-5	1.400	1.183	.840	165	94
2-6	1.400	1.183	.840	164	94
2-7	1.200	1.095	.480	164	94
2-8	1.400	1.183	.560	165	94
2-9	1.300	1.140	.520	164	94
2-10	1.500	1.225	.600	164	94
2-11	1.400	1.183	.560	164	94
2-12	1.300	1.140	.520	164	94
AVERAGES	1.317	1.146	0.722	164	93

AIR CONSULTING & ENGINEERING,INC.
Complete Emission Data

PLANT:	TALISMAN SUGAR CORPORATION	DATE:	2-1-91
LOCATION:	SOUTH BAY, FLORIDA	RUN NUMBER	1
SOURCE:	NUMBER 6 BOILER, SCRUBBER OUTLET	TIME:	0844-1020

TIME INTERVAL	96	MINUTES
OIL:		
FINAL OIL	0	
BEGIN OIL	0	
FACTOR	1	
STEAM:		
FINAL STEAM	8165	
BEGIN STEAM	7788	
FACTOR	1000	
TEMPERATURE	590	DEGREES F
PRESSURE	272	PSIG
	287	PSIA
FEEDWATER:		
TEMPERATURE	258	DEGREES F
PRESSURE	460	PSIG
	475	PSIA
HEAT INPUT:		
STEAM	1309.6	BTU/LB
FEEDWATER	226.8	BTU/LB
NET STEAM	1082.8	BTU/LB
STEAM RATE	235625	LB/HR
BOILER EFFICIENCY	55.0	%
TOTAL FUEL HEAT INPUT	463.88	MMBTUH
STEAM CALIBRATION FACTOR	1.00	
OIL	0.00	GPH
OIL	150000	BTU/GAL
TOTAL HEAT INPUT (OIL)	0.00	MMBTUH
TOTAL HEAT INPUT (NON-OIL)	463.88	MMBTUH
ALLOWABLES:		
ALLOWABLE EMISSION (OIL)	.10	LB/MMBTU
ALLOWABLE EMISSION (NON-OIL)	.20	LB/MMBTU
TOTAL ALLOWABLE EMISSION	92.78	LB/HR
TOTAL ACTUAL EMISSION	108.36	LB/HR
TOTAL ALLOWABLE EMISSION	0.200	LB/MMBTU
TOTAL ACTUAL EMISSION	0.234	LB/MMBTU

AIR CONSULTING and ENGINEERING
COMPLETE EMISSION DATA

PLANT: TALISMAN SUGAR CORPORATION
SOURCE: NUMBER 6 BOILER
DATE: 2-1-91

RUN NO.:	1	IMPINGER ml	370
BEGIN TIME:	0844	SILICA GEL gms.	9.3
END TIME:	1023	PERCENT O2	5.75
TOTAL RUN TIME:	96.00 min.	PERCENT CO2	14.25
BAROMETRIC PRESSURE:	30.22 "Hg	"F" FACTOR	0
STACK PRESSURE:	30.22 "Hg.		
NOZZLE DIAMETER:	.175 inches	PARTICULATE	
METER CORR. FACTOR:	.994		
FINAL METER:	584.137 cubic ft.	FILTER mg.	284.2
INITIAL METER:	541.833 cubic ft.	WASH mg.	80.6
STACK AREA:	37.651 sq. ft.		

STACK 1 DATA INPUTS

PORT-POINT	VELOCITY HEAD	SQUARE RT. VEL. HEAD	ORIF. DIFF.	STACK TEMP.	METER TEMP.
1-1	1.000	1.000	.600	162	70
1-2	1.100	1.049	.660	162	70
1-3	1.150	1.072	.690	162	70
1-4	1.100	1.049	.660	163	71
1-5	1.100	1.049	.660	160	71
1-6	1.150	1.072	.690	160	71
1-7	1.100	1.049	.660	163	72
1-8	1.300	1.140	.780	159	72
1-9	1.350	1.162	.810	164	72
1-10	1.500	1.225	.900	166	74
1-11	1.300	1.140	.780	165	75
1-12	1.250	1.118	.750	164	75
2-1	1.350	1.162	.810	163	76
2-2	1.400	1.183	.840	163	76
2-3	1.500	1.225	.900	163	77
2-4	1.400	1.183	.840	164	77
2-5	1.450	1.204	.870	163	78
2-6	1.350	1.162	.810	163	78
2-7	1.300	1.140	.780	164	79
2-8	1.050	1.025	.630	164	79
2-9	1.100	1.049	.660	165	80
2-10	1.050	1.025	.630	165	80
2-11	.920	0.959	.550	165	81
2-12	.850	0.922	.510	156	81
AVERAGES	1.213	1.098	0.728	163	75

EMISSION RESULTS

NOZZLE DIA.(SQ.FT.):	0.0001673		
AVG. VELOCITY HEAD :	1.24 "H2O	VOL. FLOW ACFM :	156536
AVG. STACK TEMP.:	163 F	VOL. FLOW SCFMD :	93478
AVG. METER TEMP.:	80 F		
AVG. ORIFICE DIFFERENTIAL:	0.82 "H2O	PARTICULATE DATA :	
METER STANDARD CUBIC FEET:	41.627		
% H2O VAPOR:	30.2	POUNDS PER HOUR:	108.360
GAS MOL. WT. DRY:	30.51	POUNDS PER SCF :	0.0000193
GAS MOL. WT. WET:	26.73	GRAINS/SCF:	0.135
% EXCESS AIR:	37.41	GRAINS/SCF @ 8% O2	0.115
AVG. STACK VEL.(FPS)	69.29	GRAINS/SCF @50% EA	0.124
MMBTU INPUT:	463.88	POUNDS PER MMBTU:	0.234
PERCENT ISOKINETIC :	104.41		

RUN-1

STACK 2 DATA INPUTS

PORT-POINT	VELOCITY HEAD	SQUARE RT. VEL. HEAD	ORIFICE DIFF.	STACK TEMP.	METER TEMP.
1-1	3.600	1.897	2.160	164	82
1-2	4.250	2.062	2.550	164	82
1-3	2.850	1.688	1.700	164	82
1-4	2.850	1.688	1.700	164	83
1-5	2.500	1.581	1.500	163	83
1-6	.200	0.447	.120	164	83
1-7	.300	0.548	.180	164	78
1-8	.300	0.548	.180	164	84
1-9	.260	0.510	.160	165	84
1-10	.650	0.806	.390	163	84
1-11	.600	0.775	.360	164	84
1-12	.600	0.775	.360	164	84
2-1	1.200	1.095	.720	163	85
2-2	2.000	1.414	1.200	163	85
2-3	1.100	1.049	.660	163	85
2-4	.750	0.866	.450	163	85
2-5	.530	0.728	.320	165	86
2-6	.400	0.632	.240	165	86
2-7	.240	0.490	.140	163	86
2-8	1.000	1.000	.600	163	86
2-9	1.600	1.265	.960	164	87
2-10	2.600	1.612	1.600	165	87
2-11	3.300	1.817	1.800	164	87
2-12	3.300	1.817	1.800	164	87
AVERAGES	1.541	1.130	0.910	164	84

AIR CONSULTING & ENGINEERING,INC.
Complete Emission Data

PLANT:	TALISMAN SUGAR CORPORATION	DATE:	2-1-91
LOCATION:	SOUTH BAY, FLORIDA	RUN NUMBER	2
SOURCE:	NUMBER 6 BOILER, SCRUBBER OUTLET	TIME:	1120-1256

TIME INTERVAL	96	MINUTES
OIL:		
FINAL OIL	0	
BEGIN OIL	0	
FACTOR	1	
STEAM:		
FINAL STEAM	8771	
BEGIN STEAM	8392	
FACTOR	1000	
TEMPERATURE	587	DEGREES F
PRESSURE	273	PSIG
	288	PSIA
FEEDWATER:		
TEMPERATURE	258	DEGREES F
PRESSURE	460	PSIG
	475	PSIA
HEAT INPUT:		
STEAM	1314.0	BTU/LB
FEEDWATER	226.8	BTU/LB
NET STEAM	1087.2	BTU/LB
STEAM RATE	236875	LB/HR
BOILER EFFICIENCY	55.0	%
TOTAL FUEL HEAT INPUT	468.24	MMBTUH
STEAM CALIBRATION FACTOR	1.00	
OIL	0.00	GPH
OIL	150000	BTU/GAL
TOTAL HEAT INPUT (OIL)	0.00	MMBTUH
TOTAL HEAT INPUT (NON-OIL)	468.24	MMBTUH
ALLOWABLES:		
ALLOWABLE EMISSION (OIL)	.10	LB/MMBTU
ALLOWABLE EMISSION (NON-OIL)	.20	LB/MMBTU
TOTAL ALLOWABLE EMISSION	93.65	LB/HR
TOTAL ACTUAL EMISSION	96.66	LB/HR
TOTAL ALLOWABLE EMISSION	0.200	LB/MMBTU
TOTAL ACTUAL EMISSION	0.206	LB/MMBTU

AIR CONSULTING and ENGINEERING
COMPLETE EMISSION DATA

PLANT: TALISMAN SUGAR CORPORATION
SOURCE: NUMBER 6 BOILER
DATE: 2-1-91

RUN NO.:	2	IMPINGER ml	430
BEGIN TIME:	1118	SILICA GEL gms.	5.7
END TIME:	1257	PERCENT O2	5.75
TOTAL RUN TIME:	96.00 min.	PERCENT CO2	14.25
BAROMETRIC PRESSURE:	30.22 "Hg	"F" FACTOR	0
STACK PRESSURE:	30.22 "Hg.		
NOZZLE DIAMETER:	.175 inches	PARTICULATE	
METER CORR. FACTOR:	.994		
FINAL METER:	627.111 cubic ft.	FILTER mg.	309.0
INITIAL METER:	584.490 cubic ft.	WASH mg.	24.9
STACK AREA:	37.651 sq. ft.		

STACK 1 DATA INPUTS

PORT-POINT	VELOCITY HEAD	SQUARE RT. VEL. HEAD	ORIF. DIFF.	STACK TEMP.	METER TEMP.
1-1	3.000	1.732	1.800	158	80
1-2	3.200	1.789	1.960	160	80
1-3	3.000	1.732	1.800	162	80
1-4	3.600	1.897	2.160	163	80
1-5	2.900	1.703	1.750	163	80
1-6	.200	0.447	.120	163	80
1-7	.400	0.632	.240	163	81
1-8	.360	0.600	.200	163	81
1-9	.300	0.548	.180	165	82
1-10	.300	0.548	.180	165	82
1-11	.520	0.721	.310	165	82
1-12	.450	0.671	.270	163	83
2-1	2.000	1.414	1.200	163	83
2-2	2.100	1.449	1.250	164	83
2-3	2.400	1.549	1.440	164	83
2-4	.750	0.866	.450	164	84
2-5	.680	0.825	.410	164	85
2-6	.440	0.663	.260	164	85
2-7	.160	0.400	.100	165	85
2-8	.920	0.959	.550	164	86
2-9	1.450	1.204	.870	164	86
2-10	1.550	1.245	.930	165	86
2-11	1.850	1.360	1.100	166	86
2-12	2.700	1.643	1.600	165	87
AVERAGES	1.468	1.108	0.880	164	83

EMISSION RESULTS

NOZZLE DIA.(SQ.FT.):	0.0001673		
AVG. VELOCITY HEAD :	1.22 "H2O	VOL. FLOW ACFM :	159152
AVG. STACK TEMP.:	164 F	VOL. FLOW SCFMD :	90755
AVG. METER TEMP.:	86 F		
AVG. ORIFICE DIFFERENTIAL:	0.80 "H2O	PARTICULATE DATA :	
METER STANDARD CUBIC FEET:	41.468		
% H2O VAPOR:	33.3	POUNDS PER HOUR:	96.661
GAS MOL. WT. DRY:	30.51	POUNDS PER SCF :	0.0000178
GAS MOL. WT. WET:	26.35	GRAINS/SCF:	0.124
% EXCESS AIR:	37.41	GRAINS/SCF @ 8% O2	0.106
AVG. STACK VEL.(FPS)	70.45	GRAINS/SCF @50% EA	0.114
MMBTU INPUT:	468.24	POUNDS PER MMBTU:	0.206
PERCENT ISOKINETIC :	107.14		

RUN 2

STACK 2 DATA INPUTS

PORT-POINT	VELOCITY HEAD	SQUARE RT. VEL. HEAD	ORIFICE DIFF.	STACK TEMP.	METER TEMP.
1-1	1.100	1.049	.660	164	87
1-2	1.150	1.072	.690	163	87
1-3	1.100	1.049	.660	164	87
1-4	1.100	1.049	.660	164	87
1-5	1.100	1.049	.660	164	88
1-6	1.300	1.140	.780	164	88
1-7	1.350	1.162	.810	164	88
1-8	1.300	1.140	.780	165	88
1-9	1.300	1.140	.780	164	88
1-10	1.300	1.140	.780	165	89
1-11	1.300	1.140	.780	164	89
1-12	1.200	1.095	.720	164	89
2-1	1.100	1.049	.660	163	89
2-2	1.100	1.049	.660	164	89
2-3	1.200	1.095	.720	165	90
2-4	1.200	1.095	.720	165	90
2-5	1.300	1.140	.780	164	90
2-6	1.300	1.140	.780	165	90
2-7	1.200	1.095	.720	163	90
2-8	1.200	1.095	.720	164	90
2-9	1.250	1.118	.750	165	90
2-10	1.250	1.118	.750	165	90
2-11	1.250	1.118	.750	165	90
2-12	1.150	1.072	.690	163	90
AVERAGES	1.213	1.101	0.728	164	89

AIR CONSULTING & ENGINEERING,INC.
Complete Emission Data

PLANT:	TALISMAN SUGAR CORPORATION	DATE:	2-1-91
LOCATION:	SOUTH BAY, FLORIDA	RUN NUMBER	3
SOURCE:	NUMBER 6 BOILER, SCRUBBER OUTLET	TIME:	VARIOUS

TIME INTERVAL	96	MINUTES
OIL:		
FINAL OIL	0	
BEGIN OIL	0	
FACTOR	1	
STEAM:		
FINAL STEAM	386	
BEGIN STEAM	0	
FACTOR	1000	
TEMPERATURE	583	DEGREES F
PRESSURE	276	PSIG
	291	PSIA
FEEDWATER:		
TEMPERATURE	258	DEGREES F
PRESSURE	460	PSIG
	475	PSIA
HEAT INPUT:		
STEAM	1306.1	BTU/LB
FEEDWATER	226.8	BTU/LB
NET STEAM	1079.3	BTU/LB
STEAM RATE	241250	LB/HR
BOILER EFFICIENCY	55.0	%
TOTAL FUEL HEAT INPUT	473.42	MMBTUH
STEAM CALIBRATION FACTOR	1.00	
OIL	0.00	GPH
OIL	150000	BTU/GAL
TOTAL HEAT INPUT (OIL)	0.00	MMBTUH
TOTAL HEAT INPUT (NON-OIL)	473.42	MMBTUH
ALLOWABLES:		
ALLOWABLE EMISSION (OIL)	.10	LB/MMBTU
ALLOWABLE EMISSION (NON-OIL)	.20	LB/MMBTU
TOTAL ALLOWABLE EMISSION	94.68	LB/HR
TOTAL ACTUAL EMISSION	98.32	LB/HR
TOTAL ALLOWABLE EMISSION	0.200	LB/MMBTU
TOTAL ACTUAL EMISSION	0.208	LB/MMBTU

Avg = 482

AIR CONSULTING and ENGINEERING
COMPLETE EMISSION DATA

PLANT: TALISMAN SUGAR CORPORATION
SOURCE: NUMBER 6 BOILER
DATE: 2-1-91

RUN NO.:	3	IMPINGER ml	430
BEGIN TIME:	1348	SILICA GEL gms.	8.3
END TIME:	1717	PERCENT O2	5.75 Mg = 10.3
TOTAL RUN TIME:	96.00 min.	PERCENT CO2	14.25
BAROMETRIC PRESSURE:	30.22 "Hg	"F" FACTOR	0
STACK PRESSURE:	30.22 "Hg.		
NOZZLE DIAMETER:	.175 inches	PARTICULATE	
METER CORR. FACTOR:	.994		
FINAL METER:	668.534 cubic ft.	FILTER mg.	310.6
INITIAL METER:	627.233 cubic ft.	WASH mg.	33.0
STACK AREA:	37.651 sq. ft.		

STACK 1 DATA INPUTS

PORT-POINT	VELOCITY HEAD	SQUARE RT. VEL. HEAD	ORIF. DIFF.	STACK TEMP.	METER TEMP.
1-1	1.750	1.323	1.050	162	83
1-2	2.400	1.549	1.440	162	83
1-3	2.400	1.549	1.440	161	82
1-4	2.100	1.449	1.300	163	81
1-5	2.400	1.549	1.440	163	81
1-6	.240	0.490	.140	164	81
1-7	.360	0.600	.220	164	81
1-8	.320	0.566	.200	164	81
1-9	.280	0.529	.170	165	82
1-10	.420	0.648	.250	165	82
1-11	.520	0.721	.310	165	82
1-12	.600	0.775	.360	165	82
2-1	2.600	1.612	1.550	163	83
2-2	2.600	1.612	1.550	164	83
2-3	1.100	1.049	.660	165	84
2-4	1.200	1.095	.720	166	84
2-5	.680	0.825	.410	164	85
2-6	.440	0.663	.260	164	85
2-7	.200	0.447	,12	165	86
2-8	.750	0.866	.450	164	86
2-9	1.500	1.225	.900	165	86
2-10	1.750	1.323	1.050	165	86
2-11	2.600	1.612	1.600	165	87
2-12	2.900	1.703	1.750	162	87
AVERAGES	1.338	1.074	0.836	164	83

EMISSION RESULTS

NOZZLE DIA.(SQ.FT.):	0.0001673		
AVG. VELOCITY HEAD :	1.20 "H2O	VOL. FLOW ACFM :	154615
AVG. STACK TEMP.:	164 F	VOL. FLOW SCFMD :	87036 87,843
AVG. METER TEMP.:	85 F		
AVG. ORIFICE DIFFERENTIAL:	0.79 "H2O	PARTICULATE DATA :	
METER STANDARD CUBIC FEET:	40.232		
% H2O VAPOR:	34.1	POUNDS PER HOUR:	98.323
GAS MOL. WT. DRY:	30.51	POUNDS PER SCF :	0.0000188
GAS MOL. WT. WET:	26.24	GRAINS/SCF:	0.132
% EXCESS AIR:	37.41	GRAINS/SCF @ 8% O2	0.112
AVG. STACK VEL.(FPS)	68.44	GRAINS/SCF @50% EA	0.121
MMBTU INPUT:	473.42	POUNDS PER MMBTU:	0.208
PERCENT ISOKINETIC :	108.38		

RUN 3

STACK 2 DATA INPUTS

PORT-POINT	VELOCITY HEAD	SQUARE RT. VEL. HEAD	ORIFICE DIFF.	STACK TEMP.	METER TEMP.
1-1	1.000	1.000	.600	163	87
1-2	1.150	1.072	.690	164	88
1-3	1.100	1.049	.660	164	88
1-4	1.100	1.049	.660	165	88
1-5	1.150	1.072	.690	163	86
1-6	1.350	1.162	.810	164	86
1-7	1.450	1.204	.870	164	86
1-8	1.350	1.162	.810	163	86
1-9	1.350	1.162	.810	165	86
1-10	1.300	1.140	.780	165	86
1-11	1.300	1.140	.780	164	86
1-12	1.200	1.095	.720	165	86
2-1	1.100	1.049	.720	166	87
2-2	1.200	1.095	.720	164	87
2-3	1.200	1.095	.720	159	87
2-4	1.300	1.140	.780	165	87
2-5	1.300	1.140	.780	167	87
2-6	1.300	1.140	.780	166	87
2-7	1.300	1.140	.780	166	87
2-8	1.300	1.140	.780	167	88
2-9	1.300	1.140	.780	166	88
2-10	1.300	1.140	.780	166	88
2-11	1.300	1.140	.780	165	88
2-12	1.300	1.140	.780	165	88
AVERAGES	1.250	1.117	0.753	165	87

Avg = 164

APPENDIX B

FIELD DATA SHEETS

STACK SAMPLING FIELD DATA SHEET

KENNETH K. TUCKER
ENGINEER
AIR RESOURCE MANAGEMENT

STATE OF FLORIDA
DEPARTMENT OF
ENVIRONMENTAL REGULATION
2269 BAY STREET
FORT MYERS, FLORIDA 33901-2896

TELEPHONE:
(813) 332-6975
SUNCOM: 748-6975

TEST ID ~~T-1~~ 1-CONT
PAGE 1 OF

PLANT TALISMAN SUGAR
SOURCE No. 6 BOILER
PLANT LOCATION SOUTH BAY, FL.
TYPE OF SAMPLING TRAIN EPA-5
TYPE OF SAMPLES PM
DATE 2/4/91 RUN NO. 1
TIME START ~~1245~~ 1145 TIME END 1323
SAMPLE TIME 48 / 2 (min/pt)= ~~48~~ 96 Total min
ASSUMED MOISTURE 34 % FDA .66
NOMOGRAPH C_f ~~44~~.60 PITOT CORR. .84
P_b 30.20 "Hg P_s 30.20 "Hg
WEATHER CLEAR TEMP. 70's °F
METER BOX NO. 1 H 2.05 Y 0.994
NOZZLE CAL. .175 .175 .175 .175
STACK DIMENSIONS 58.75 X 2
STACK AREA 37.651 ft.² EFFECTIVE ~~37~~.651 ft.²
STACK HEIGHT ____ ft.
STACK DIAMETER: UPSTRM. ✓ DNSTRM. ✓
PORT SIZE ____ in. NIPPLE LENGTH ____ in.
U CORD LENGTH 125'
REMARKS: KENNETH K. TUCKER (DER) OBSERVING
DOCUMENT ALL RUNS - 2 COMPLETE REPORTS

T613.WKS

.60
.44
.69

L PROCESSING RATE ____
METER READINGS: FINAL 728.824 ft.³
689.900 INITIAL ~~668.800~~ ft.³
NET 38.924 ft.³
ER NO. 3085 ~~4040~~ IMP. VOL. GAIN 415 ml.
IEL NO. ~~35+~~ WT. GAIN 12.0 ml.
TOTAL CONDENSATE 427.0 ml.

ORSAT

	1	2	3	4	AVG.
% CO_2					5.8
% O_2					14.3
% CO					
% N_2					

F_O = ____ F_O RANGE = ____
ORSAT ANALYZER HOKE

LEAK CHECKS
PRE 0.00 cfm 24 "Hg POST ____ cfm ____ "Hg
METER BOX/PUMP ✓ GAS SAMPLE SYST. ✓
ORSAT BAG ____
PITOT TUBE NO. 70 PRE-TEST OK
POST-TEST(+) 3.3 / 15 H_2O/Sec
POST-TEST(−) 6.6 / 15 H_2O/Sec
PYROMETER NO. 1
BOX OPERATOR HOKE PROBE HOLDER GTHIZEALX

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL /COMMENTS	CLOCK TIME	GAS METER READING (FT.³)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O) CALC.	ACTUAL	STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. F	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
1-1	O_2	1147	691.08	2.5	1.5	1.5	160	269	51	80	6.0
2	15.0	1149	692.31	2.1	1.26	1.26	162	273	46	80	6.0
3		1151	693.52	2.65	1.59	1.59	159	271	44	79	6.5
4	14.5	1153	694.91	3.25	1.95	1.95	163	255	43	80	8.5
5		1155	696.21	2.50	1.50	1.50	162	272	43	80	8.0
6		1157	696.63	.24	.144	.144	163	270	44	80	3.0

.943

ACE AIR CONSULTING & ENGINEERING, INC.

.70 1145

689.7

BOILER #6

TEST ID 1-COMP.

PAGE 2 OF 3

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL /COMMENTS	CLOCK TIME	GAS METER READING (ft.^{3})	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O) CALC.	METER ORIFICE PRESS. DIFF. ("H_2O) ACTUAL	STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
	O_2	(5.88	6.73)	(1.42)							
7	15.5	1159	697.25	.42	.25	.25	162	262	45	80	3.5
8		1201	697.64	.31	.19	.19	163	261	46	80	3.5
9		1203	698.03	.27	.16	.16	164	260	46	81	3.0
10	14.3	1205	698.53	.42	.25	.25	165	260	46	81	3.5
11		1207	699.07	.52	.31	.31	167	260	46	81	3.5
12		1209	699.54	.37	.22	.22	159	259	46	82	3.5
		(8.55	9.64)	(.617)							
2-1		1211	700.51	1.6	.96	.96	164	268	47	83	7.0
2	14.5	1213	701.61	2.1	1.26	1.26	164	266	45	83	8.5
3	13.7	1215	702.55	.99	.59	.59	165	269	44	83	6.0
4		1217	703.00	.45	.27	.27	166	265	45	83	4.5
5		1219	703.60	.57	.34	.34	166	263	46	84	5.0
6		1221	704.15	.53	.32	.32	166	262	46	85	5.0
	113 →	(12.66	14.25)	(.977)							
7		1223	704.53	.26	.156	.156	165	261	47	85	3.5
8		1225	705.14	.65	.39	.39	165	262	47	85	4.5
9	15.5	1227	706.08	1.50	.90	.90	165	263	46	86	8.5
10	15.0	1229	707.08	1.65	.99	.99	164	267	45	86	9.5
11		1231	708.19	2.20	1.32	1.32	164	267	45	86	10.5
12		1233	709.38	2.10	1.47	1.47	156	265	45	86	13.0
	1.035/1 112 →	(17.40	~~711.0~~ 19.40	(1.26)							
1-1		1236	710.21	.95	.57	.57	164	262	47	87	7.0
2	13.5	1238	711.00	1.1	.66	.66	164	271	47	87	8.5
3		1240	711.83	1.15	.69	.69	165	271	47	87	8.5
4	12.9	1242	712.73	1.20	.72	.72	165	272	47	87	9.5
5		1244	713.68	1.25	.88	.88	166	261	46	87	10.5

1.08 1.256

1.08

ACE AIR CONSULTING & ENGINEERING, INC.

-70
689.9

BOILER #6

TEST ID 1-COMP.

PAGE 3 OF 3

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL /COMMENTS	CLOCK TIME	GAS METER READING (ft.³)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H₂O) CALC.	ACTUAL	STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
6	8	1246	714.62	1.25	.75	.75	165	268	46	87	10.5
	113	(21.88	24.72)	(1.07)							
7	15.5	1244	715.54	1.45	.87	.87	165	268	46	87	11.0
8		1246	716.58	1.35	.81	.81	149	267	47	87	11.0
9	15.3	1248	717.40	1.30	.78	.78	161	266	47	87	11.5
10		1250	718.31	1.30	.78	.78	162	265	47	87	11.5
11		1252	719.23	1.35	.81	.81	164	264	47	87	11.5
12		1254	720.01	1.25	.75	.75	162	266	47	87	11.5
	(Cf = .40)	(26.72	30.11)	(1.154)							
21		1301	720.81	1.20	.48	.48	164	270	48	87	10.0
2	13.3	1303	721.53	1.20	.48	.48	165	263	48	87	10.0
3		1305	722.28	1.35	.54	.54	165	260	48	88	10.0
4	13.3	1307	723.03	1.35	.54	.54	165	259	48	88	10.0
5		1309	723.80	1.35	.54	.54	165	260	48	88	10.5
6		1311	724.51	1.25	.50	.50	164	265	48	88	10.5
		(31.48	34.61)	(1.132)							
7		1313	725.25	1.30	.52	.52	165	268	48	88	11.0
8	13.0	1315	725.99	1.35	.54	.54	164	268	48	88	11.0
9		1317	726.70	1.30	.52	.52	164	268	48	88	11.0
10	13.5	1319	727.41	1.40	.56	.50	164	272	48	88	11.0
11		1321	728.12	1.35	.54	.548	164	270	48	88	11.0
12		1323	728.824	1.15	.46	.46	164	—	—	88	—
		(39.3	)	(1.143)							
		(1.088)(96)(.00016 7)(146)(√623)(545/623)( ) =								.655	
		(1.088)(1-4)(.84)(√623) = (3947.297)(37.651) = (148619.68)(526/623)(.345) = 82501.82									
	V_{STD} =	(.32010/37.710) = (.00018742)(82501.82)(60) = 92.779									SCFMD
							1120/H				

453.6

1.125 1.036

STACK SAMPLING FIELD DATA SHEET

ACE AIR CONSULTING & ENGINEERING, INC.
2106 N. W. 67th PLACE · Suites 9 & 10
GAINESVILLE, FLORIDA · 32606

#6 BOILER TEST ID 2-C
PAGE 1 OF 3

PLANT TALISMAN SUGAR
SOURCE NO. 6 BOILER
PLANT LOCATION SOUTH BAY, FL.
TYPE OF SAMPLING TRAIN EPA-5
TYPE OF SAMPLES PARTICULATE
DATE 2/4/91 RUN NO. 2
TIME START ~~12~~ 1440 TIME END 1618
SAMPLE TIME 48 / 2 (min/pt) = 96 Total min
ASSUMED MOISTURE 34 % FDA .66
NOMOGRAPH C_p .60 PITOT CORR. .84
P_b 30.2620 "Hg P_s 30.20 "Hg
WEATHER CLEAR TEMP. 70's °F
METER BOX NO. 1 H 205 Y 0.994
NOZZLE CAL. .175 .175 .175 = .175
STACK DIMENSIONS 58.75
STACK AREA 37.651 ft.² EFFECTIVE 37.651 ft.²
STACK HEIGHT ____ ft.
STACK DIAMETER: UPSTRM. ✓ DNSTRM. ✓
PORT SIZE ____ in. NIPPLE LENGTH ____ in.
U CORD LENGTH 125'
REMARKS:

FILE ID: P_M → ~~T62AAS~~ T62C.WKS
Boiler → T62B.WKS

MAT'L PROCESSING RATE
GAS METER READINGS: FINAL 769.526 ft.³
INITIAL 729.100 ft.³
NET 40.426 ft.³
FILTER NO. ~~3090~~ 3088 IMP. VOL. GAIN 1430 ml.
SIL GEL NO. 24 WT. GAIN 306 ml.
TOTAL CONDENSATE 436 ml.

ORSAT

	1	2	3	4	AVG.
% CO_2					5.4
% O_2					14.9
% CO					
% N_2					

F_O = ____ F_O RANGE = ____
ORSAT ANALYZER HODGE

LEAK CHECKS
PRE 0.00 cfm 11 "Hg POST 0.00 cfm 15 "Hg
METER BOX/PUMP ✓ GAS SAMPLE SYST. ✓
ORSAT BAG ✓
PITOT TUBE NO. 70 PRE-TEST ok
POST-TEST(+) 6.8 / 15 H_2O/Sec
POST-TEST(−) 3.3 / 15 H_2O/Sec
PYROMETER NO. 1
BOX OPERATOR HODGE PROBE HOLDER GTHIREALX

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL /COMMENTS	CLOCK TIME	GAS METER READING (FT.³)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O) CALC.	ACTUAL	STACK GAS TEMP (°F)	SAMPLE BOX TEMP (°F)	LAST IMPINGER TEMP F	DRY GAS METER TEMP (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
1-1		1442	729.97	1.2	.72	.72	163	260	68	79	4.5
2	14.5	1444	731.21	3.0	1.80	1.80	163	269	57	79	7.0
3		1446	732.50	3.1	1.86	1.86	163	272	52	79	7.5
4	15.0	1448	733.78	2.35	1.41	1.41	164	268	52	79	8.0
5		1450	735.05	2.25	1.35	1.35	164	264	54	80	8.0
6		1452	736.73	~~1.00~~ .26	~~.40~~ .15	.16	164	262	54	80	3.0

ACE AIR CONSULTING & ENGINEERING, INC.

#6 BOILER TEST ID 2-C

729.1

PAGE 2 OF 2

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL /COMMENTS	CLOCK TIME	GAS METER READING (ft³)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H₂O) CALC.	METER ORIFICE PRESS. DIFF. ("H₂O) ACTUAL	STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
		(5.69	6.63)	(1.355)							
7		1454	736.22	.40	.24	.24	166	263	55	80	4.0
8	14.5	1456	736.70	.34	.20	.20	155	277	56	80	3.0
9		1458	737.13	.28	.17	.17	165	264	56	80	3.0
10		1500	737.61	.42	.25	.25	165	282	58	81	3.5
11		1502	738.18	.54	.32	.32	143	263	58	81	4.0
12		1504	738.74	.52	.31	.32	165	272	57	81	4.0
		(~~6.99~~ 8.38	9.64)	(.641)							
2-1		1506	739.60	1.2	.72	.72	164	277	57	82	6.0
2		1508	740.67	2.4	1.44	1.44	165	269	56	82	8.0
3	14.3	1510	741.55	1.3	.78	.78	165	267	56	82	6.5
4		1512	742.30	.85	.51	.51	165	263	56	83	5.0
5		1514	742.91	.60	.36	.36	165	263	56	83	5.0
6		1516	743.52	.62	.37	.37	165	262	56	83	5.0
		(12.77	14.42)	(1.045)							
7		1518	743.90	.26	.156	.156	165	258	58	83	4.0
8	14.5	1520	744.54	.76	.46	.46	165	262	58	83	6.0
9		1522	745.38	1.3	.78	.78	165	262	57	83	7.5
10		1524	746.37	1.6	.96	.96	165	256	56	84	9.0
11	15.0	1526	747.51	2.45	1.47	1.47	165	256	55	84	12.0
12		1528	748.80	2.50	1.50	1.50	164	260	55	85	12.0
		(17.63	19.7)	(1.156)							
1-1		1532	749.65	1.2	.72	.72	163	265	57	85	8.0
2		1534	750.55	1.2	.72	.72	164	262	57	85	8.0
3	16.3	1536	751.42	1.2	.72	.72	164	266	57	85	8.5
4		1538	752.28	1.2	.72	.72	164	270	57	85	8.5
5		1540	753.14	1.25	.75	.75	164	270	58	85	8.5

ACE AIR CONSULTING & ENGINEERING, INC.

92.542

729.1 #6 BOILER

TEST ID 2-C

PAGE 3 OF 3

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL /COMMENTS	CLOCK TIME	GAS METER READING (ft.^{3})	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O) CALC.	ACTUAL	STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
6		1542	754.07	1.35	.81	.81	165	264	58	86	9.5
		(22.29	/ 24.97)	(1.110)							
7	15.3	1544	755.03	1.5	.90	.90	164	272	58	85	10.0
8		1546	756.00	1.35	.81	.81	164	268	57	85	10.5
9		1548	756.97	1.35	.81	.81	165	242	57	86	10.5
10		1550	757.85	1.40	.84	.84	165	272	57	86	10.5
11		1552	758.79	1.40	.84	.84	164	272	58	86	10.5
12		1554	759.67	1.30	.78	.78	163	272	57	86	10.5
		(	/ 30.57)	(1.176)							
2-1		1556	760.53	1.30	.78	.78	164	272	58	86	10.0
2		1558	761.57	1.10	.66	.66	164	276	58	87	11.0
3	15.0	1600	762.20	1.3	.78	.78	166	276	58	87	11.0
4		1602	763.05	1.3	.78	.78	166	270	58	87	11.0
5		1604	763.91	1.35	.81	.81	166	272	58	87	11.0
6		1606	764.83	1.35	.81	.81	166	268	58	87	12.0
		(31.98	/ 35.73)	(1.132)							
7	4 = .40	1608	765.74	1.35	.81	.81	166	270	58	87	12.0
8		1610	766.61	1.35	.81	~~.81~~ .54	165	270	58	87	13.0
9		1612	767.32	1.35	.54	.54	164	271	58	87	10.0
10	15.1	1614	768.09	1.30	.52	.52	166	270	58	87	10.0
11		1616	768.80	1.40	.56	.56	167	270	58	87	11.0
12		1618	769.526	1.25	.50	.50	167	270	58	87	11.0
		(	/)	(1.155)							
		(1.096)(.84)(174)($\sqrt{624}$) = (4001.579)(37.651) = (150663.43)($\frac{528}{624}$)(.66) = 84139.74									
		$\left(\frac{.326}{39.165}\right)$ = (.00001836)( )						(60) =	lbs/H	92.688	
		453.6									

1.271 / 1.049 1260.308 / 2.97

STACK SAMPLING FIELD DATA SHEET

ACE AIR CONSULTING & ENGINEERING, INC.
2106 N. W. 67th PLACE · Suites 9 & 10
GAINESVILLE, FLORIDA 32606

BOILER #6

TEST ID 3-C
PAGE 1 OF 3

PLANT TALISMAN SUGAR
SOURCE NO. 6 BOILER
PLANT LOCATION SOUTH BAY, FL.
TYPE OF SAMPLING TRAIN EPA-5
TYPE OF SAMPLES PARTICULATE
DATE 2/4/91 RUN NO. 3
TIME START 1714 TIME END 1853
SAMPLE TIME 48.2 (min/pt) = 96 Total min
ASSUMED MOISTURE 34 % FDA .66
NOMOGRAPH C_f .60 PITOT CORR. .84
P_b 30.22 "Hg P_s 30.22 "Hg
WEATHER CLEAR TEMP. °F
METER BOX NO. 1 H 2.05 Y .994
NOZZLE CAL. .175 .175 .175 = .175
STACK DIMENSIONS 58.75
STACK AREA 37.651 ft.² EFFECTIVE 37.651 ft.²
STACK HEIGHT ft.
STACK DIAMETER: UPSTRM. ✓ DNSTRM. ✓
PORT SIZE in. NIPPLE LENGTH in.
U CORD LENGTH 125'
REMARKS:

T63C.WKS (Pm)
T61B.WKS (Boiler)

.60
.70

MAT'L PROCESSING RATE
GAS METER READINGS: FINAL 809.257 ft.³
INITIAL 769.700 ft.³
NET 39.557 ft.³
FILTER NO. 3090 IMP. VOL. GAIN 415 ml.
SIL GEL NO. 28 WT. GAIN 12 ml.
TOTAL CONDENSATE 427 ml.

ORSAT

	1	2	3	4	AVG.
% CO_2					5.4
% O_2					14.7
% CO					
% N_2					

F_O = F_O RANGE =
ORSAT ANALYZER HODGE

LEAK CHECKS

PRE cfm "Hg POST cfm "Hg
METER BOX/PUMP ✓ GAS SAMPLE SYST. ✓
ORSAT BAG ✓
PITOT TUBE NO. PRE-TEST OK
POST-TEST(+) 4.7 / 15 H_2O/Sec
POST-TEST(−) 4.3 / 15 H_2O/Sec
PYROMETER NO. 1
BOX OPERATOR HODGE PROBE HOLDER G. THREAUX

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL /COMMENTS	CLOCK TIME	GAS METER READING (FT.³)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O) CALC.	ACTUAL	STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. F	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
1-1	15.0	1716	770.72	2.1	1.26	1.26	135	252	69	85	5.0
2		1718	772.05	3.4	2.04	2.04	163	260	57	85	8.0
3		1720	773.62	3.5	2.10	2.10	164	269	57	85	8.5
4		1722	774.92	2.8	1.68	1.68	164	272	57	85	8.5
5		1724	776.55	2.2	1.38	1.38	164	270	57	85	8.5
6		1726	776.83	.26	.16	.16	164	268		86	3.0

ACE AIR CONSULTING & ENGINEERING, INC.

BOILER #6 TEST ID 3-C

PAGE 3 OF 3

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL /COMMENTS	CLOCK TIME	GAS METER READING (ft^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O) CALC.	ACTUAL	STACK GAS TEMP (°F)	SAMPLE BOX TEMP (°F)	LAST IMPINGER TEMP (°F)	DRY GAS METER TEMP (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
6		1816	794.27	1.3	.78	.78	165	268	54	93	8.5
		(22.20	24.57)	(1.080)							
7		1818	795.04	1.5	.90	.90	164	269	54	93	8.5
8	15.5	1820	795.94	1.3	.78	.78	165	267	54	93	10.0
9		1822	796.83	1.4	.84	.84	167	268	54	93	10.0
10		1824	797.77	1.4	.84	.84	166	267	54	93	11.0
11		1826	798.70	1.4	.84	.84	166	269	54	93	11.0
12		1828	799.61	1.3	.78	.78	160	268	54	94	11.0
	110	(27.14	29.91)	(1.176)							
2-1		1831	800.30	1.3	.78	.78	164	266	55	94	8.0
2		1833	801.21	1.3	.78	.78	163	268	54	93	11.0
3		1835	802.14	1.4	.84	.84	164	228	54	94	12.0
4		1837	803.08	1.4	.84	.84	160	243	54	94	12.0
5		1839	803.99	1.4	.84	.84	165	256	54	94	12.5
6		1841	804.95	1.4	.84	.84	164	263	54	94	13.0
	C_f =	(32.05	35.25)	(1.169)							
7	.4 110	1843	805.68	1.2	.48	.48	164	256	54	94	10.0
8		1845	806.34	1.4	.56	.56	165	261	54	94	10.0
9		1847	807.07	1.3	.52	.52	164	263	54	94	10.5
10	15.0	1849	807.79	1.5	.60	.60	~~128~~ 164	261	53	94	10.5
11		1851	808.52	1.4	.56	.56	164	260	52	94	10.5
12		1853	809.257	1.3	.52	.52	165	275	53	94	11.0
		(	)	( )							
		(1.10)(.84)(174)(√.623) =			(37.651)(4012.964) =			(151092.10)(528/623)		( ) =	
	V_{STD} =	(37.975)									SCFMD
		453.6	(	)	)(	)	(60) =				

ACE AIR CONSULTING & ENGINEERING, INC.

769.7

BOILER #6

TEST ID 3-C

PAGE 2 OF 3

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL /COMMENTS	CLOCK TIME	GAS METER READING (ft.^{3})	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O) CALC.	ACTUAL	STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
		(	/)	(1.471)							
7	13.5	1728	777.00	.32	.19	.19	160	264	55	86	3.0
8		1730	777.73	.27	.16	.16	166	269	55	87	3.0
9	14.0	1732	778.05	.27	.16	.16	163	272	55	87	3.0
10		~~1740~~ 1734	778.55	.40	.24	.24	165	265	55	87	3.5
11	14.5	1736	779.13	.53	.32	.32	165	264	54	87	4.0
12		1738	779.78	.50	.30	.30	165	262	54	87	4.0
	11.5	(8.75	/ 10.08)	(.612)							
2-1		1741	780.64	1.5	.90	.90	164	262	55	87	7.0
2		1743	781.70	1.8	1.08	1.08	165	260	54	87	8.0
3	14.5	1745	782.41	.81	.49	.49	165	265	54	88	5.5
4		1747	783.00	.57	.34	.34	166	271	55	88	5.0
5		1749	783.63	.59	.35	.35	166	271	55	88	5.0
6	14.5	1751	784.20	.56	.34	.34	166	271	55	89	5.0
		(12.76	/ 14.5)	(.956)							
7		1753	784.54	.25	.15	.15	166	257	56	89	5.0
8		1755	785.13	.65	.39	.39	166	257	56	90	5.5
9	15.5	1758	786.07	1.5	.90	.90	166	256	55	90	8.5
10		1800	787.05	1.8	1.08	1.08	166	258	54	90	9.5
11		1802	788.25	2.5	1.50	1.50	166	258	54	91	11.0
12		1804	789.32	2.4	1.44	1.44	168	260	54	91	11.5
		(	/ 19.62)	(1.167)							
1-1		1806	790.27	1.1	.66	.66	162	262	56	92	7.5
2	15.5	1808	791.00	1.2	.72	.72	164	262	55	92	8.0
3		1810	791.83	1.1	.66	.66	164	249	55	92	8.0
4		1812	792.65	1.1	.66	.66	164	270	54	93	8.5
5		1814	793.45	1.2	.72	.72	164	270	54	93	8.5

STACK SAMPLING FIELD DATA SHEET

ACE AIR CONSULTING & ENGINEERING, INC.
2106 N. W. 67th PLACE · Suites 9 & 10
GAINESVILLE, FLORIDA 32606

TEST ID _____
PAGE ____ OF ____

PLANT TALISMAN SUGAR
SOURCE NUMBER 6 BOILER
PLANT LOCATION SOUTH BAY, FLORIDA
TYPE OF SAMPLING TRAIN EPA-5
TYPE OF SAMPLES PM (PARTICULATE MATTER)
DATE 2-1-91 RUN NO. 1
TIME START 0844 TIME END 1023
SAMPLE TIME 48 / 2 (min/pt) = 96 Total min
ASSUMED MOISTURE 28 % FDA .72
NOMOGRAPH C_p 0.6 PITOT CORR. .84
P_b 30.22 "Hg P_s 30.22 "Hg
WEATHER CLEAR TEMP ____ °F
METER BOX NO. 1 H 2.05 Y .994
NOZZLE CAL. .175 .175 .175 = .175
STACK DIMENSIONS 58.75 X 2
STACK AREA 37.651 ft.² EFFECTIVE ____ ft.²
STACK HEIGHT ____ ft.
STACK DIAMETER: UPSTRM. ____ DNSTRM. ____
PORT SIZE ____ in. NIPPLE LENGTH ____ in.
U CORD LENGTH 125
REMARKS:

29.704/100

.6861
.4006

285.5
20

90.745 lb/HR

MAT'L PROCESSING RATE _____
GAS METER READINGS: FINAL 584.137 ft.³
INITIAL 541.833 ft.³
NET ____ ft.³
FILTER NO. 4037 IMP. VOL. GAIN 370 ml.
SIL GEL NO. 16 WT. GAIN 9.3 ml.
TOTAL CONDENSATE 379.3 ml.

ORSAT

	1	2	3	4	AVG.
% CO_2					
% O_2					
% CO					
% N_2					

F_O = ____ F_O RANGE = ____
ORSAT ANALYZER ____

LEAK CHECKS
PRE 0.00 cfm 15 "Hg POST 0.000 cfm 29 "Hg
METER BOX/PUMP ____ GAS SAMPLE SYST. ____
ORSAT BAG ____
PITOT TUBE NO. ____ PRE-TEST O.K.
POST-TEST(+) 5.2 / 15 H_2O/Sec
POST-TEST(−) 3.2 / 15 H_2O/Sec
PYROMETER NO. 1
BOX OPERATOR NECK PROBE HOLDER GAUTHREAUX

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL /COMMENTS	CLOCK TIME	GAS METER READING (FT.³)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O) CALC.	ACTUAL	STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. F	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
N-1-1		0846	542.6	1.0	.60	.60	162	271	47	70	4
2		0848	543.45	1.1	.66	.66	162	273	42	70	4
3		0850	544.35	1.15	.69	.69	162	273	39	70	4
4		0852	545.21	1.1	.66	.66	163	273	38	71	4.5
5		0854	546.06	1.1	.66	.66	160	267	39	71	4.5
6		0856	546.90	1.15	.69	.69	160	268	40	71	5

ACE AIR CONSULTING & ENGINEERING, INC.

TEST ID _____

PAGE ____ OF ____

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL /COMMENTS	CLOCK TIME	GAS METER READING (ft.^{3})	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O) CALC.	ACTUAL	STACK GAS TEMP (°F)	SAMPLE BOX TEMP (°F)	LAST IMPINGER TEMP (°F)	DRY GAS METER TEMP (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
N-1-7		0858	547.77	1.1	.66	.66	268	163	40	72	5
8		0900	548.67	1.3	.78	.78	274	159	40	72	6
9		0902	549.64	1.35	.81	.81	268	164	41	73	6.5
10		0904	550.6	1.5	.9	.9	268	166	41	74	7
11		0906	551.53	1.3	.78	.78	270	165	41	75	6.5
12		0908	552.42	1.25	.75	.75	266	164	41	75	6.5
				~~1.35~~	~~.81~~	.81	~~264~~	163	~~42~~	~~76~~	
N-1-1		0911	553.33	1.35	.81	.81	264	163	42	76	6.5
2	1.098	13	554.27	1.4	.84	.84	271	163	42	76	7
3		15	555.25	1.5	.9	.9	265	163	41	77	7.5
4		17	556 —	1.4	.84	.84	271	164	42	77	7.5
5		19	557.15	1.45	.87	.87	273	163	42	78	7.5
6		21	558.10	1.35	.81	.81	276	163	42	78	7.5
7		23	559.0	1.3	.78	.78	274	164	42	79	7.5
8		25	559.8	1.05	.63	.63	269	164	42	79	7
9		27	560.66	1.1	.66	.66	270	165	42	80	7.5
10		29	561.48	1.05	.63	.63	266	165	42	80	7.5
11		31	562.26	.92	.55	.55	268	165	42	81	7
12		0933	563.0	.85	.51	.51	270	156	42	81	6.5
S-1-1		0936	564.26	3.6	2.16	2.16	268	164	42	82	18
2		0938	565.85	4.25	2.55	2.55	268	164	42	82	22
3		40	567.25	2.85	1.7	1.7	269	164	43	82	16.5
4		42	568.6	2.85	1.7	1.7	264	163	45	83	16.5
5		44	569.85	2.5	1.5	1.5	265	164	46	83	15.5
6		46	570.32	0.2	.12	.12	266	164	46	83	5.5
7		48	570.78	0.3	.18	.18	266	165	46	83	5.5

AIR CONSULTING & ENGINEERING, INC.

TEST ID _____

PAGE ____ OF ____

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL /COMMENTS	CLOCK TIME	GAS METER READING (ft.³)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H₂O) CALC.	ACTUAL	STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
S-1-8		0950	571.25	.30	.18	.18	164	269	45	84	5.5
-9		52	571.67	.26	.16	.16	165	266	45	84	5.5
10		54	572.33	.65	.39	.39	163	270	45	84	8
11		56	572.98	.60	.36	.36	164	271	46	84	8
12		0958	573.75	.60	.36	.36	164	269	46	84	8
S-2-1		1001	574.55	1.2	.72	.72	163	269	46	85	10.0
2		03	575.—	2.0	1.2	1.2	163	273	45	85	13.5
3		05	576.46	1.1	.66	.66	163	273	45	85	10
4	1.13	07	577.16	.75	.45	.45	163	272	46	85	9
5		09	577.77	.53	.32	.32	165	272	46	86	8
6		11	578.32	.40	.24	.24	165	272	47	86	7.5
7		13	578.73	.24	.14	.14	163	274	48	86	5.5
8		15	579.50	1.0	.6	.6	163	273	48	86	10
9		17	580.—	1.6	.96	.96	164	275	47	87	13.5
10		19	581.48	2.6	1.6	1.6	165	275	46	87	18
11		21	582.83	3.3	2	1.8	164	275	46	87	24
12		1023	584.137	3.3	2	1.8	164	271	46	87	24

STACK SAMPLING FIELD DATA SHEET

ACE AIR CONSULTING & ENGINEERING, INC.
2106 N. W. 67th PLACE · Suites 9 & 10
GAINESVILLE, FLORIDA · 32606

TEST ID _____
PAGE ____ OF ____

PLANT TALISMAN SUGAR CORPORATION
SOURCE SOUTH BAY, FLORIDA
PLANT LOCATION NUMBER 6 BOILER
TYPE OF SAMPLING TRAIN EPA-5
TYPE OF SAMPLES PM
DATE 2-1-91 RUN NO. 2
TIME START 1118 TIME END 1257
SAMPLE TIME 48 (2.0) (min/pt) = 96 Total min
ASSUMED MOISTURE 30 % FDA .7
NOMOGRAPH C_p .60 PITOT CORR. .84
P_b 30.22 "Hg P_s 30.22 "Hg
WEATHER CLEAR TEMP. ____ °F
METER BOX NO. 1 H 2.05 Y .994
NOZZLE CAL. _____ = .175
STACK DIMENSIONS 58.25 x 2
STACK AREA 37.651 ft² EFFECTIVE ____ ft²
STACK HEIGHT ____ ft.
STACK DIAMETER: UPSTRM. ____ DNSTRM. ____
PORT SIZE ____ in. NIPPLE LENGTH ____ in.
U CORD LENGTH 125'
REMARKS:

.7104
.4016
.3088
.015
468.24
93.737

MAT'L PROCESSING RATE _____
GAS METER READINGS: FINAL 627.111 ft.³
INITIAL 584.490 ft.³
NET _____ ft.³
FILTER NO. 4038 IMP. VOL. GAIN 430 ml.
SIL GEL NO. 32 WT. GAIN 5.7 ml.
TOTAL CONDENSATE 435.7 ml.

ORSAT

	1	2	3	4	AVG.
% CO_2					
% O_2					
% CO					
% N_2					

F_O = _____ F_O RANGE = _____
ORSAT ANALYZER _____

LEAK CHECKS
PRE 0.00 cfm 29 "Hg POST 0.000 cfm 16 "Hg
METER BOX/PUMP _____ GAS SAMPLE SYST. _____
ORSAT BAG _____
PITOT TUBE NO. _____ PRE-TEST O.K.
POST-TEST(+) 4.71 15 H_2O/Sec
POST-TEST(−) 4.41 15 H_2O/Sec
PYROMETER NO. 1
BOX OPERATOR NICK PROBE HOLDER GERALD

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL /COMMENTS	CLOCK TIME	GAS METER READING (FT.³)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O) CALC.	ACTUAL	STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. F	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
5-1-1		1120	585.8	3.0	1.80	1.80	158	269	64	80	7.0
2		22	587.25	3.2	1.96	1.96	160	252	60	80	8
3		24	588.6	3.0	1.8	1.8	162	253	56	80	8
4		26	590.10	3.6	2.16	2.16	163	262	56	80	9.5
5		28	591.43	2.9	1.75	1.75	163	260	57	80	8.5
6		30	592.48	.2	.12	.12	163	241	57	80	3.0

air consulting and engineering
2106 N.W. 67th PLACE, SUITE 4
GAINESVILLE, FLORIDA 32606

PAGE _____ OF _____
RUN NO. _____

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL (IN.)	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O) CALC.	ACTUAL	STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
1-7		1132	592.94	.40	.24	.24	163	238	62	81	3.5
8		34	593.46	.36	.2	.2	163	242	64	81	3.5
9		36	593.94	.30	.18	.18	165	240	64	82	3.5
10		38	594.4	.30	.18	.18	165	240	64	82	3.5
11		40	595.0	.52	.31	.31	165	229	65	82	4
12		1142	595.5	.45	.27	.27	163	227	65	83	4
2-1		1145	596.6	2.0	1.2	1.2	163	250	61	83	8
2		1147	597.73	2.1	1.25	1.25	164	254	61	83	8.5
3		49	598.9	2.4	1.44	1.44	164	260	60	83	8.5
4		51	599.58	.75	.45	.45	164	265	61	84	6
5		53	600.23	.68	.41	.41	164	266	62	85	5
6		55	—	.44	.26	.26	164	266	64	85	4.5
7		57	601.10	.16	.10	.10	165	265	66	85	9.5
8		59	601.85	.92	.55	.55	164	264	65	86	6.5
9		1201	602.83	1.45	.87	.87	164	266	63	86	8
10		03	603.82	1.55	.93	.93	165	269	62	86	9
11		05	604.85	1.85	1.1	1.1	166	265	61	86	10
12		1207	606.05	2.7	1.6	1.6	165	269	60	87	11.5
3-1		1210	606.9	1.1	.66	.66	164	269	61	87	8
2		12	607.75	1.15	.69	.69	163	268	61	87	8
3		14	608.61	1.1	.66	.66	164	267	61	87	8
4		16	609.44	1.1	.66	.66	164	266	60	87	8
5		18	610.3	1.1	.66	.66	164	264	60	88	8.5
6		20	611.22	1.3	.78	.78	164	265	60	88	10
7		22	612.13	1.35	.81	.81	164	262	60	88	10
8		24	613.03	1.3	.78	.78	165	260	60	88	10
9		26	613.93	1.3	.78	.78	164	257	60	88	10.5

AIR CONSULTING & ENGINEERING, INC.

TEST ID _____

PAGE ____ OF ____

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL /COMMENTS	CLOCK TIME	GAS METER READING (ft.^{3})	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O)		STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
					CALC.	ACTUAL					
1-10		1228	614.83	1.3	.78	.78	165	262	59	89	10.5
11		1230	615.72	1.3	.78	.78	164	264	59	89	10.5
12		1232	616.59	1.2	.72	.72	164	264	60	89	10.5
2-1		1235	617.40	1.1	.66	.66	163	263	61	89	9.5
2		37	618.23	1.1	.66	.66	164	271	61	89	10
3		39	619.—	1.2	.72	.72	165	263	61	90	11
4		41	620.0	1.2	.72	.72	165	264	61	90	11
5		43	620.9	1.3	.78	.78	164	263	60	90	12.5
6		45	621.8	1.3	.78	.78	165	267	60	90	12.5
7		47	622.7	1.2	.72	.72	163	271	60	90	12
8		49	623.58	1.2	.72	.72	164	274	60	90	12.5
9		51	624.48	1.25	.75	.75	165	267	60	90	13
10		53	625.35	1.25	.75	.75	165	267	60	90	13
11		55	626.25	1.25	.75	.75	165	267	59	90	13
12		1257	627.111	1.15	.69	.69	163	265	58	90	13

STACK SAMPLING FIELD DATA SHEET

ACE AIR CONSULTING & ENGINEERING, INC.
2106 N. W. 67th PLACE · Suites 9 & 10
GAINESVILLE, FLORIDA · 32606

TEST ID _____
PAGE ____ OF ____

PLANT: TALISMAN SUGAR CORPORATION
SOURCE: _____
PLANT LOCATION: SOUTH BAY, FLORIDA
TYPE OF SAMPLING TRAIN: EPA-5
TYPE OF SAMPLES: PM
DATE: 2-1-91 RUN NO.: 3
TIME START: 1346 TIME END: 1717
SAMPLE TIME: 48 / 2.0 (min/pt) = 96 Total min
ASSUMED MOISTURE: ____ % FDA: ____
NOMOGRAPH C_f: .6 PITOT CORR.: .84
P_b: 30.22 "Hg P_s: 30.22 "Hg
WEATHER: ____ TEMP.: ____ °F
METER BOX NO.: 1 H: 2.05 Y: .994
NOZZLE CAL.: ____ ____ = .175
STACK DIMENSIONS: 58.75 x 2
STACK AREA: 37.65 ft² EFFECTIVE: ____ ft²
STACK HEIGHT: ____ ft.
STACK DIAMETER: UPSTRM. ____ DNSTRM. ____
PORT SIZE: ____ in. NIPPLE LENGTH: ____ in.
U CORD LENGTH: ____
REMARKS: ④ MILL DOWN

.7135
.4025
.3110
.015

473.42

93.287

MAT'L PROCESSING RATE: ____
GAS METER READINGS: FINAL 627.233 ft³
INITIAL 668.534 ft³
NET ____ ft³
FILTER NO.: 4039 IMP. VOL. GAIN: 430 ml.
SIL GEL NO.: 20 WT. GAIN: 8.3 ml.
TOTAL CONDENSATE: 438.3 ml.

ORSAT

	1	2	3	4	AVG.
% CO_2					
% O_2					
% CO					
% N_2					

F_O = ____ F_O RANGE = ____
ORSAT ANALYZER: ____

LEAK CHECKS
PRE 0.00 cfm 15 "Hg POST 0.00 cfm 19 "Hg
METER BOX/PUMP: ____ GAS SAMPLE SYST.: ____
ORSAT BAG: ____
PITOT TUBE NO.: ____ PRE-TEST: O.K.
POST-TEST(+): 4.7 / 15 H_2O/Sec
POST-TEST(−): 4.1 / 15 H_2O/Sec
PYROMETER NO.: ____
BOX OPERATOR: Mark PROBE HOLDER: Gerard

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL /COMMENTS	CLOCK TIME	GAS METER READING (FT.³)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O) CALC.	ACTUAL	STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. F	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
S-1-1		1348	628.27	1.75	1.05	1.05	162	265	64	83	5
2		50	629.4	2.4	1.44	1.44	162	271	56	83	6
3	④	52	630.63	2.4	1.44	1.44	161	267	51	82	6.5
4	1522	54	631.82	2.1	1.3	1.3	163	248	60	81	6
5		56	633.00	2.4	1.44	1.44	163	264	57	81	7
6		58	633.41	.24	.14	.14	164	273	56	81	3

ACE AIR CONSULTING & ENGINEERING, INC.

TEST ID _____

PAGE ____ OF ____

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL /COMMENTS	CLOCK TIME	GAS METER READING (ft.³)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H₂O) CALC.	METER ORIFICE PRESS. DIFF. ("H₂O) ACTUAL	STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
S-1-7	1528	1600	~~[illegible]~~	.36	.22	.22	164	266	57	81	3
8	30	02	63.85	.32	.20	.20	164	271	57	81	3.5
9	32	04	634.80	.28	.17	.17	165	272	57	82	3.5
10	34	06	635.39	.42	.25	.25	165	270	57	82	4.0
11	36	08	635.96	.52	.31	.31	165	271	56	82	4
12	1538	~~1610~~	636.81	.6	.36	.36	165	265	56	82	5
S-2-1		1541	637.76	2.6	1.55	1.55	163	264	54	83	9.5
2		43	638.99	2.6	1.55	1.55	164	266	54	83	10
3		45	639.86	2.1	1.65	1.65	165	267	54	84	6.5
4		47	640.73	1.2	.72	.72	166	270	55	84	7
5		49	641.4	.68	.41	.41	164	271	56	85	5.5
6		51	641.9	.44	.26	.26	164	265	57	85	4.5
7		53	642.28	.20	.12	.12	165	262	58	86	4
8		55	642.98	.75	.45	.45	164	255	58	86	6
9		57	643.95	1.5	.9	.9	165	255	56	86	9
10		59	645.0	1.75	1.05	1.05	165	255	55	86	10
11		1601	646.2	2.6	1.6	1.6	165	255	54	87	13
12		1603	647.48	2.9	1.75	1.75	162	256	55	87	14
N-1-1		1606	648.26	1.0	.6	.6	163	255	57	87	7.5
2		08	649.10	1.15	.69	.69	164	258	57	88	9
3		10	649.95	1.1	.66	.66	164	256	57	88	9
4	Mill Down (*)	12	650.75	1.1	.66	.66	165	255	57	88	9
5		1638	651.58	1.15	.69	.69	163	262	57	86	9.5
6		40	652.46	1.35	.81	.81	164	269	58	86	10.5
7		42	653.42	1.45	.87	.87	164	264	56	86	11.5
8		~~1644~~	654.4	1.35	.81	.81	163	261	55	86	11

AIR CONSULTING & ENGINEERING, INC.

TEST ID _____

PAGE ____ OF ____

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL /COMMENTS	CLOCK TIME	GAS METER READING (ft.^{3})	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O) CALC.	ACTUAL	STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
1-9		1646	655.73	1.35	.81	.81	165	258	55	86	11.5
1-10		48	656.2	1.3	.78	.78	165	253	56	86	11.5
1-11		50	657.12	1.3	.78	.78	164	259	57	86	11.5
1-12		1652	658.0	1.2	.72	.72	165	257	57	86	11.5
			C	~~1.2~~	~~.72~~	~~.72~~	~~166~~	~~262~~	~~59~~	~~87~~	~~11.5~~
N-2-1		1655	—	1.2	.72	.72	166	262	59	87	11.5
2		57	659.56	1.2	.72	.72	164	269	58	87	12
3		59	660.42	1.2	.72	.72	159	272	57	87	12.5
4		1701	661.34	1.3	.78	.78	165	270	57	87	13
5		03	662.21	1.3	.78	.78	167	271	57	87	14
6		05	663.1	1.3	.78	.78	166	270	57	87	14
7		07	664.0	1.3	.78	.78	166	267	58	87	14
8		09	664.92	1.3	.78	.78	167	268	58	88	15
9		11	665.82	1.3	.78	.78	166	269	58	88	15
10		13	666.72	1.3	.78	.78	166	266	59	88	15.5
11		15	667.62	1.3	.78	.78	165	265	59	88	15.5
12		1717	668.534	1.3	.78	.78	165	265	59	88	15.5

APPENDIX C

LABORATORY ANALYSES

AIR CONSULTING & ENGINEERING, inc.

PARTICULATE LAB DATA

SOURCE TALISMAN - #6 BOILER 2/4/91

PROBE RINSE	RUN 1	RUN 2	RUN 3	BLANK	COMP.
CONTAINER NUMBER	5-4	5-1	5-6 / 5-8	5-23	
TOTAL VOLUME (ml)	200	300	175 / 150	90	LIQUID LEVEL ✓
1st GROSS WEIGHT (g)	106.5081	106.6371	103.1508/104.7650	103.0845	DATE & TIME: 2/4/91-2200
2nd GROSS WEIGHT (g)	106.5076	106.6375	103.1503/104.7647	103.0895	DATE & TIME: 2/6/91-1100
AVERAGE GROSS WEIGHT (g)	106.5079	106.6373	103.1506/104.7649	103.0895	
TARE WEIGHT (g)	106.4859	106.6060	103.1351/104.7516	103.0810	
SUB NET WEIGHT (g)	0.0220	0.0313	0.0155 / 0.0133	0.0005	
ACETONE BLANK (g)	—	—	—	—	
TOTAL NET WEIGHT (mg)	22.0	31.3	15.7 / 13.3	0.5	

NOTE: In no case should a blank residue >0.01 mg/g or 0.001% of the weight of acetone used be subtracted from the sample weight.

FILTER	RUN 1	RUN 2	RUN 3	BLANK	
FILTER NUMBER	3085	3088	3090	4041	
1st GROSS WEIGHT (g)	0.6864	0.6967	0.6767	0.4071	DATE & TIME:
2nd GROSS WEIGHT (g)	0.6862	0.6962	0.6763	0.4072	DATE & TIME:
AVERAGE GROSS WEIGHT (g)	0.6863	0.6965	0.6765	0.4071	
TARE WEIGHT (g)	0.4085	0.4106	0.4120	0.4080	
SUB NET WEIGHT (g)	0.2778	0.2859	0.2635	0.0005	
TOTAL NET WEIGHT (mg)	277.8	285.9	263.5	0.5	

TARE BALANCE CHECK

SEE LAB BOOK

(WEIGHED WARM)

1st GROSS WEIGHT BALANCE CHECK

0 ✓ 10.0g ✓

0.5 g ✓ 100.0g ✓

%RH 47 DATE 2/4/91-2200

Signature C. Th

2nd GROSS WEIGHT BALANCE CHECK

0 ✓ 10.0g ✓

0.5g ✓ 100.0g ✓

%RH 56 DATE 2/6/91

Signature C. Th

AIR CONSULTING & ENGINEERING, inc.

PARTICULATE LAB DATA

SOURCE TALISMAN SUGAR CORP. - No. 6

PROBE RINSE	RUN 1	RUN 2	RUN 3	BLANK	2-1-91
CONTAINER NUMBER	5-7	5-9	5-29	5-35	
TOTAL VOLUME (ml)	210	205	200	200	LIQUID LEVEL ✓
1st GROSS WEIGHT (g)	104.7772	102.6838	103.2301	106.1680	DATE & TIME: 2/2/91-1700
2nd GROSS WEIGHT (g)	104.7767	102.6842	103.2305	106.1684	DATE & TIME: 2/6/91-1612
AVERAGE GROSS WEIGHT (g)	104.7770	102.6840	103.2303	106.1682	
TARE WEIGHT (g)	104.6964	102.6591	103.1973	106.1685	
SUB NET WEIGHT (g)	0.0806	0.0249	0.0330	0.0003	
ACETONE BLANK (g)	—	—	—	—	
TOTAL NET WEIGHT (mg)	80.6	24.9	33.0	0.3	

NOTE: In no case should a blank residue >0.01 mg/g or 0.001% of the weight of acetone used be subtracted from the sample weight.

FILTER	RUN 1	RUN 2	RUN 3	BLANK	
FILTER NUMBER	4037	4038	4039	4041	
1st GROSS WEIGHT (g)	0.6847	0.7103	0.7129	0.4077	DATE & TIME: 2/2/91-1700
2nd GROSS WEIGHT (g)	0.6848	0.7108	0.7132	0.4072	DATE & TIME: 2/6/91-1612
AVERAGE GROSS WEIGHT (g)	0.6848	0.7106	0.7131	0.4075	
TARE WEIGHT (g)	0.4006	0.4016	0.4025	0.4080	
SUB NET WEIGHT (g)	0.2842	0.3090	0.3106	0.0005	
TOTAL NET WEIGHT (mg)	284.2	309.0	310.6	0.5	

TARE BALANCE CHECK

SEE LAB BOOK

1st GROSS WEIGHT BALANCE CHECK

0 ✓ 10.0 g ✓

0.5 g ✓ 100.0 g ✓

%RH 47 DATE 2/2/91

Signature C. Fry

2nd GROSS WEIGHT BALANCE CHECK

0 ✓ 10.0 g ✓

0.5 g ✓ 100.0 g ✓

%RH 38 DATE 2/6/91

Signature C. Fry

APPENDIX D

QUALITY ASSURANCE

AND

CHAIN OF CUSTODY

AIR CONSULTING AND ENGINEERING, Inc.

SAMPLE RECOVERY AND CHAIN OF CUSTODY

PLANT NAME TALISMAN SUGAR CORP. TEST DATE 2/4/91

SOURCE NAME #6 BOILER SAMPLE RECOVERED BY C. HODGE

TYPE OF SAMPLE PART PARTICULATE ANALYSES BY C. HODGE

SAMPLE RECOVERY

RUN NO.	CONTAINER NO.	LIQUID LEVEL MARKED	COLOR	COMMENTS
1	S-4	✓	DK	
1	3085	–	GREY	
2	S-1	✓	"	
2	3088	–	"	
3/3	S-6/S-8	✓ ✓	"	
3	3090	–	"	
ACETONE/WATER BLANK (CIRCLE)	S-23	✓	CLEAR	
FILTER BLANK	4041	–	WH.	

SILICA GEL

RUN NO.	CONTAINER NO.	FINAL WT. (g)	INIT. WT. (g)	NET WT. (g)	COLOR
1	30	212.0	200.0	12.0	PINK
2	24	206.0	200.0	6.0	"
3	28	212.0	200.0	12.0	"
			200.0		
			200.0		
			200.0		
			200.0		
			200.0		

AIR CONSULTING AND ENGINEERING, Inc.

SAMPLE RECOVERY AND CHAIN OF CUSTODY

PLANT NAME TALISMAN S.C. TEST DATE 2/1/91

SOURCE NAME #6 BOILER SAMPLE RECOVERED BY C. HODGE

TYPE OF SAMPLE PART. PARTICULATE ANALYSES BY C. HODGE

SAMPLE RECOVERY

RUN NO.	CONTAINER NO.	LIQUID LEVEL MARKED	COLOR	COMMENTS
1	S-7	✓	DK	
1	4037	–	BLK	
2	S-9	✓	"	
2	4038	–	"	
3	S-29	✓	"	
3	4039	–		
ACETONE / WATER BLANK (CIRCLE)	S-35	✓	CLEAR	
FILTER BLANK	4041	–	WH.	

SILICA GEL

RUN NO.	CONTAINER NO.	FINAL WT. (g)	INIT. WT. (g)	NET WT. (g)	COLOR
1	16	209.3	200.0	9.3	PINK
2	32	205.7	200.0	5.7	"
3	20	208.3	200.0	8.3	"
			200.0		
			200.0		
			200.0		
			200.0		
			200.0		

AIR CONSULTING & ENGINEERING, inc. POST TEST CALIBRATION

DATE 2-11-91 METER BOX NUMBER 1 LEAK CHECK 0.000 CFM at 29 in. Hg.

CLIENT U.S. SUGAR / TALISMAN SOURCE VARIOUS THERMOCOUPLE NUMBER 36 / 160 / PYROMETER NUMBER ~~60~~ 1

FLIGHT SERVICE Pb 30.11 in. Hg. ACE BAROMETER Pb 30.1 in. Hg.

ASTM GLASS THERMOMETER 160 / 160 °F / THERMOCOUPLE 160 / 160 °F ASTM GLASS THERMOMETER 64 °F / METER TEMP 64 °F

ΔHS	AVERAGE ΔHD	GAS VOLUME, STANDARD METER			GAS VOLUME, DRY GAS METER			TEMP. STANDARD METER	TEMP. OF DRY METER	TIME (Minutes)	MAX. VACUUM In. Hg.
		INITIAL	FINAL	ACTUAL ft^3	INITIAL	FINAL	ACTUAL ft^3				
-.5	2.1	513.835	508.00	5.835	193.300	199.452	6.152	~~64~~ 59 ~~66~~ 59	64 66	8	21
-.5	2.1	513.835	522.560	8.725	199.817	209.013	9.196	59 59	66 68	12	21
-.5	2.1	522.560	513.835	7.993	209.013	217.471	8.458	59 59	68 70	11	21

CALIBRATED BY: Stephen Z. Neal

RUN NUMBER	SCFM	STANDARD M.C.F.	DELTA Ha	M.C.F.
1	0.75	1.005	2.135	0.959
2	0.74	1.005	2.140	0.963
3	0.74	1.005	2.135	0.963
AVERAGES	0.74	1.005	2.137	0.962

air consulting and engineering

STANDARD METER CALIBRATION

Air Consulting and Engineering, Inc. (ACE) uses a dry gas meter for the calibration standard. This meter has been calibrated against a wet test meter in triplicate. This data was used to generate a standard meter calibration curve (see next page). Field meter calibrations are corrected to this curve using the following formula:

$$Y_a \times Y_s = Y$$

Y_a = actual ratio of field meter to standard meter

Y_s = ratio of standard meter to wet test meter at a given flow rate (from Calibration Curve)

Y = corrected ratio of field meter

The dry standard meter was calibrated on April 26, 1990, and is checked and/or recalibrated at least annually.

AIR CONSULTING & ENGINEERING — STANDARD METER CALIBRATION

DATE 4-26-90

LEAK CHECK 0.0 CFM at 0.0 In. Hg.

METER BOX NUMBER STD #691751

BAROMETRIC PRESSURE 30.30 In. Hg.

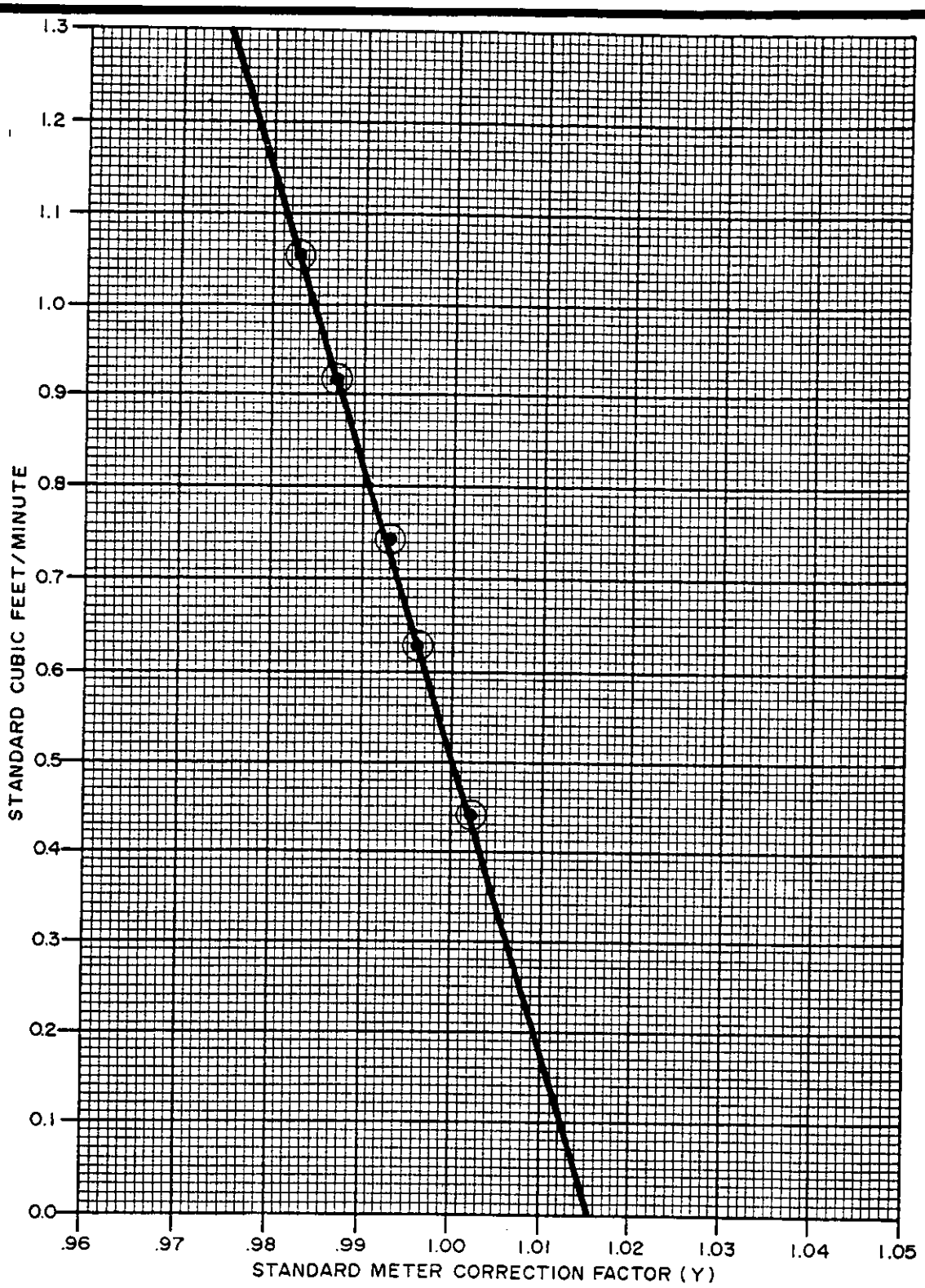
STD GAS METER TEMPERATURE 70 °F/ASTM GLASS THERMOMETER TEMPERATURE 70 °F

WET ΔH	STD ΔH	GAS VOLUME, WET TEST METER			GAS VOLUME, STD GAS METER			TEMP. WET TEST METER (°F)	TEMP. OF STD. METER (°F)	TIME (Minutes)
		INITIAL	FINAL	ACTUAL ft^3	INITIAL	FINAL	ACTUAL ft^3			
-0.2	-1.1	4.020	9.842	5.822	243.643	249.457	5.814	70	70	13
-0.2	-1.1	9.842	15.577	5.735	249.457	255.194	5.737	70.5	71	13
-0.2	-1.1	5.577	11.240	5.663	255.194	260.872	5.678	70.5	71	13
-0.4	-1.8	2.026	7.602	5.576	261.665	267.296	5.631	70.5	72	9
-0.4	-1.8	7.602	13.171	5.569	267.296	272.923	5.627	70.5	72	9
-0.4	-1.8	3.171	8.734	5.563	272.923	278.539	5.616	70.5	72	9
-0.5	-2.2	9.112	14.275	5.163	278.914	284.153	5.239	70.5	72	7
-0.5	-2.2	4.275	9.434	5.159	284.153	289.386	5.233	70.5	72	7
-0.5	-2.2	9.434	14.600	5.166	289.386	294.632	5.246	70.5	72	7
-0.6	-3.1	5.182	10.663	5.481	295.233	300.834	5.601	70.5	72	6
-0.6	-3.1	0.663	6.124	5.461	300.834	306.424	5.590	70.5	72	6
-0.6	-3.1	6.124	11.579	5.455	306.424	311.997	5.573	70.5	72	6
-0.7	-3.7	2.185	7.422	5.237	312.617	317.993	5.376	70.5	71	5
-0.7	-3.7	7.422	12.658	5.236	317.993	323.366	5.373	70.5	71	5
-0.7	-3.7	2.658	7.888	5.230	323.366	328.737	5.371	70.5	71	5

CALIBRATED BY: George F. Gabel

	Y	SCFM	Y	SCFM	Y	SCFM	Y	SCFM	Y	SCFM
Run 1	1.004	0.452	0.996	0.624	0.993	0.743	0.987	0.920	0.983	1.055
Run 2	1.002	0.444	0.995	0.623	0.993	0.742	0.986	0.917	0.983	1.055
Run 3	1.000	0.439	0.996	0.622	0.992	0.743	0.988	0.916	0.983	1.053
Average	1.002	0.445	0.996	0.623	0.993	0.743	0.987	0.918	0.983	1.054

air consulting and engineering



STANDARD METER CALIBRATION CURVE

APRIL 26, 1990

AIR CONSULTING and ENGINEERING

AIR CONSULTING & ENGINEERING — ANNUAL METER CALIBRATION

DATE 6-7-90 LEAK CHECK 0.000 CFM at 12 In. Hg.

METER BOX NUMBER 1 BAROMETRIC PRESSURE 30.02 In. Hg.

DRY GAS METER TEMPERATURE 89 °F/ASTM GLASS THERMOMETER TEMPERATURE 90 °F

ΔHS	AVERAGE ΔHD	GAS VOLUME, STANDARD METER			GAS VOLUME, DRY GAS METER			TEMP. STD. METER	TEMP. OF DRY METER	TIME (Minutes)	TIMER
		INITIAL	FINAL	ACTUAL ft^3	INITIAL	FINAL	ACTUAL ft^3				
-.07	0.5	206.539	214.496	7.957	719.311	727.244	7.933	85	85	21	21
-.15	1.25	215.308	221.239	5.931	728.042	733.952	5.910	85	86	10	
-.22	2.0	221.610	227.578	5.968	734.320	740.265	5.945	85	87	8	
-.32	2.75	228.029	233.291	5.262	740.708	745.940	5.232	86	88	6	
-.40	3.5	233.668	239.592	5.924	746.315	752.205	5.890	87	90	6	
-.50	4.25	240.117	245.527	5.410	752.724	758.112	5.388	87	91	5	

	DELTA H	Ya	SCFM	Ys	Y
	2.004	1.002	0.368	1.004	1.006
	2.041	1.002	0.577	0.998	1.000
	2.061	1.003	0.725	0.993	0.996
	2.054	1.003	0.851	0.989	0.992
	2.063	1.003	0.956	0.985	0.988
	2.082	1.001	1.048	0.983	0.984
MEAN:	2.051	1.002		0.992	0.994

CALIBRATED BY: H. F. Gabel

air consulting and engineering

PITOT TUBE CALIBRATION MEASUREMENTS

DATE CALIBRATED 4-9-90 PITOT TUBE 70

Pitot tube assembly level? ✓ Yes _____ No

Pitot tube openings damaged? _____ Yes (explain below) ✓ No

α_1 = 2 ° (<10°), α_2 = 0 ° (<10°), β_1 = 2 ° (<5°),

β_2 = 1 ° (<5°)

γ = 3 °, θ = 3 °, A = 0.869 in. = (Pa + Pb)

z = A sin γ = 0.045 in.; <0.32 / <1/8 in.

w = A sin θ = 0.045 in.; <0.08 / <1/32 in.

P_a .460 in. P_b .409 in. D_t = .375

Calibration required? _____ Yes ✓ No

THERMOCOUPLE CALIBRATION

Date 4-9-90 Thermocouple No. 70

Source (Specify)	ASTM Glass Thermometer With Mercury (°F)	Pyrometer (°F)	Degree Difference	% Difference
Ambient	72	72	0	0.00
Ice Bath	36	38	2	0.38
Oven	311	310	1	0.19

FDER - Maximum 5° difference

EPA $\left[\frac{(\text{Ref. temp. } ^\circ F + 460) - (\text{Pyrometer temp. } ^\circ F + 460)}{\text{Ref. temp. } ^\circ F + 460}\right] 100 \leq 1.5\%$

Calibrated by S. Carter

AIR CONSULTING & ENGINEERING, INC. PYROMETER CALIBRATION

DATE 7-10-90

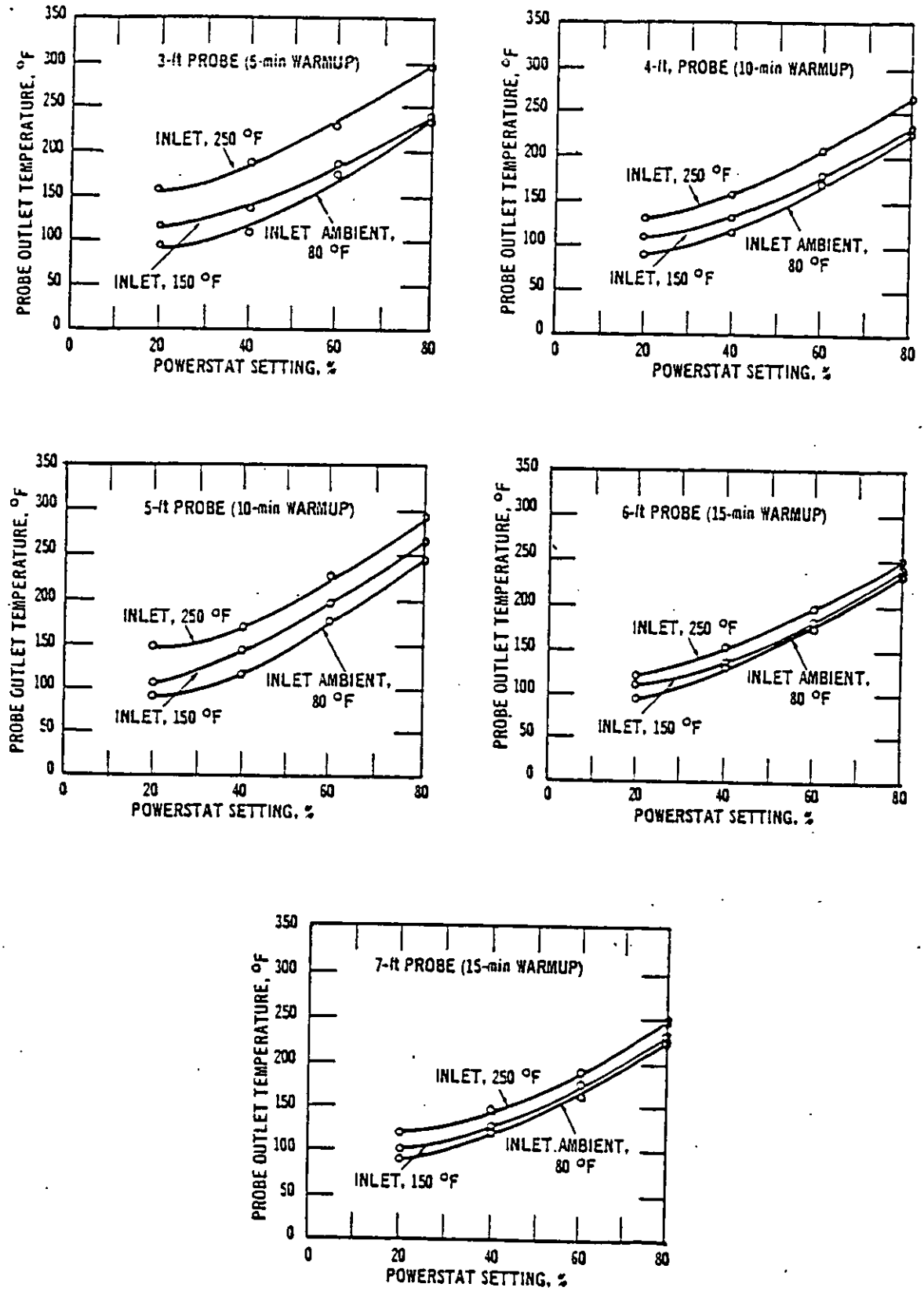
PYROMETER NUMBER METER BOX #1

SOURCE (SPECIFY)	GLASS THERMOMETER WITH NBS MERCURY (°F)	PYROMETER (°F)	DEGREE DIFFERENCE	PERCENT DIFFERENCE
ICE BATH	32°	33°	1	.2%
AMBIENT	94°	96°	2	.4%
HOT OVEN	800°	800°	0	0

FDER - MAXIMUM 5° DIFFERENCE

EPA $\left[\frac{(\text{REF. TEMP. °F} + 460°) - (\text{PYROMETER TEMP. °F} + 460°)}{\text{REF. TEMP. °F} + 460°}\right] 100 \leq 1.5\%$

CALIBRATED BY: Larry L Watts



NOTE: Flow rate held constant at 0.75; 50% change in flow rate has little effect on probe temperature.

Probe temperatures.

APPENDIX E

PRODUCTION RATE CERTIFICATION

BOILER DATA SHEET

COMPANY TALISMAN SUGAR REPORTED BY FRANK KLEEMAN

DATE FEB. 4, 1991

INTEGRATOR FACTOR X 1000 BOILER NO. 6

FUEL OIL USED NO OIL

	TIME	INTEGRATOR	STEAM FLOW X 1000	STEAM PRESSURE	TEMP.	FEED WATER TEMP.	FEED WATER PRESSURE
RUN 1	~~11:45~~	5652	255	290	583	260	440
	12:15	5779	250	290	580	260	440
	12:45	5906	255	290	576	260	440
	1:21	6066	260	280	577	260	440
1.6 HRS.	96 MIN.	414		288	579	260	440 AVE
		414 X 1000 / 1.6 =	258,750 LBS/HR ✓				
RUN 2	2:40	6402	255	290	577	260	440
	3:10	6534	255	290	579	260	440
	3:40	6664	255	290	580	260	440
	4:16	6811	255	290	579	260	440
1.6 HRS.	96 MIN.	409		290	579	260	440 AVG
		409 X 1000 / 1.6 =	255,625 LBS/HR ✓				
RUN 3	~~1710~~ 1707			290	579	260	440
		11702.5		290	577	259	450
	# 1856	11745		285	576	260	450
	109 MIN.			290	579	260	450
1.82 HRS.	53 56 109	450 X 1000 / 1.82 =	247,253 (247,706)				

PROCESS DATA INSTALLATION BOILER 6

COMPANY TALISMAN SUGAR

DATE FEB. 4 1991

TYPE OF INSTALLATION BAGASSE BOILER

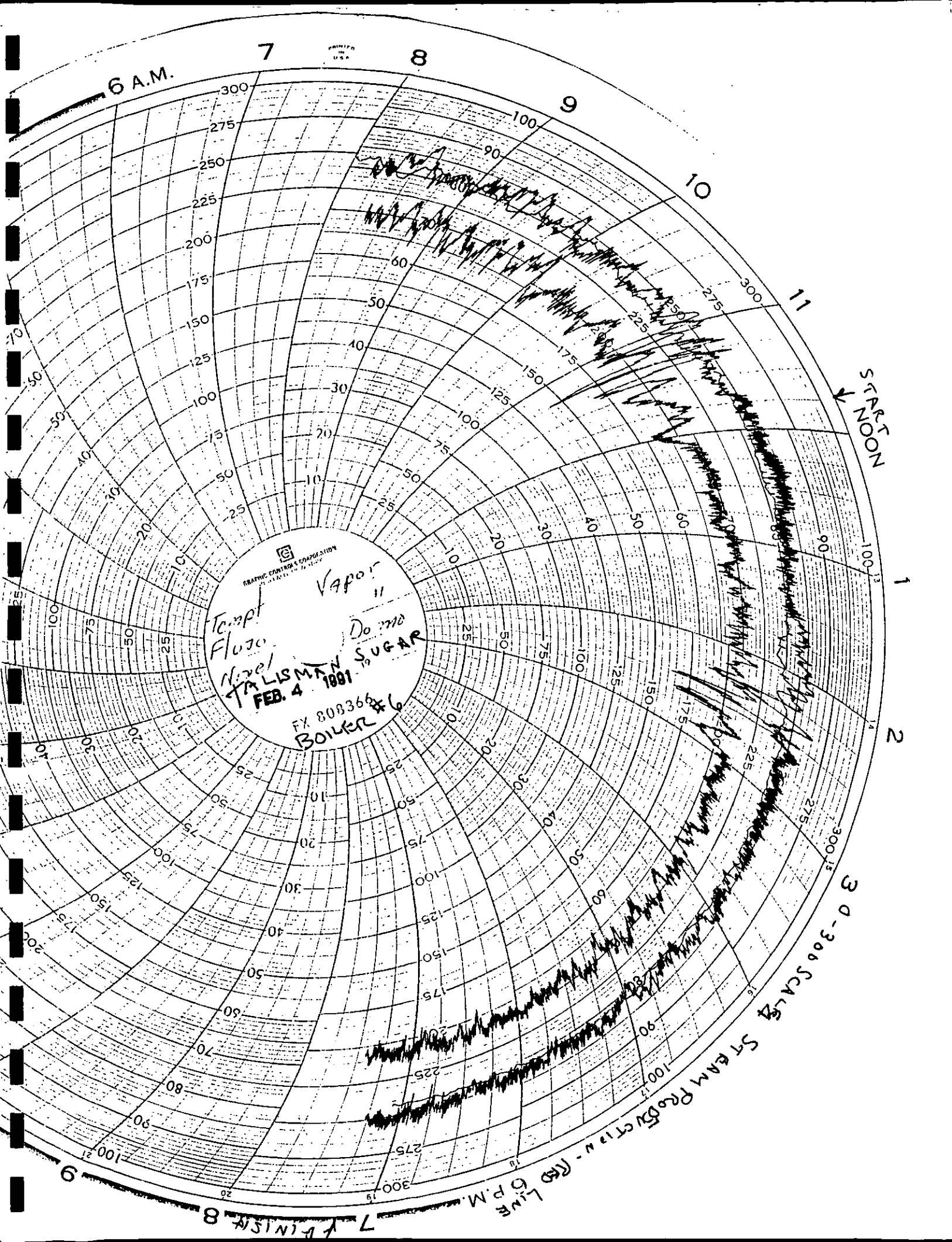
TYPE OF MATERIAL PROCESSED STEAM

TYPE OF FUEL USED BAGASSE

TYPE OF POLLUTION CONTROL SYSTEM DRY COLLECTOR + DUAL VENTURI SCRU

	NORMAL	RUN 1	RUN 2	RUN 3
SCRUBBER WATER FLOW (GPM)	2500	1250 1300	1200 1250	1225 1300
PRESSURE DROP (INCHES)	15	15	15	15

REPORTED BY FRANK KLEEMAN


6 A.M.
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9
10
11
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2
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START NOON
FINISH
6 P.M.
0-300 SCALE
STEAM PRODUCTION - FEB 4 LINE
GRAPHIC CONTROLS CORPORATION
Vapor
Temp
Flow
Domo
Level
TALISMAN SUGAR
1991
FEB. 4
FX 808366 #6
BOILER #6

BOILER DATA SHEET

COMPANY TALISMAN SUGAR REPORTED BY FRANK KLEEMAN

DATE FEB 1, 1991

INTEGRATOR FACTOR X1000 BOILER NO. 6

FUEL OIL USED NO OIL

	TIME	INTEGRATOR	STEAM FLOW X 1000	STEAM PRESSURE	TEMP.	TEMP.	FEED WATER PRESSURE
RUN 1	8:45 AM	7788	235	270	589	258	460
	9:05	7867	235	270	590	258	460
	9:25	7947	240	270	590	258	460
	9:45	8025	235	275	591	258	460
	10:05	8103	240	275	589	258	460
	10:21	8165	235	270	588	258	460
1.6 HRS.	96 MIN.	377		272	590	258	460 AVG
		377 X 1000 / 1.6 = 235,625 LBS/HR					
RUN 2	11:20	8392	235	275	588	258	460
	11:40	8470	240	270	587	258	460
	12:00	8550	245	270	585	258	460
	12:20	8628	235	270	584	258	460
	12:40	8707	245	275	588	258	460
	12:56	8771	240	275	588	258	460
1.6 HRS	96 MIN.	379		273	587	258	460 AVG
		379 X 1000 / 1.6 = 236,875 LBS/HR					
RUN 3	MILL SHUT DOWN 2:45	~~8956~~	~~240~~	~~275~~	~~606~~	~~258~~	~~460~~
MILL SHUT DOWN	2:30	9125	240	275	594	258	460
	2:50	9206	245	275	588	258	460
RUN 3	3:20	9322	245	285	587	258	460
	3:40	9402	235	275	589	258	460
	4:00	9482	240	275	584	258	460
MILL DOWN	STOP → 4:12 52 MIN.	9530	240	275	582	258	460
	START → 4:36	9620	240	275	580	258	460
	5:00	9717	245	275	579	258	460
	5:20	9798	240	275	581	258	460
	44 MIN	178		276	583	258	460 AVG
1.6 HRS.	96 MIN.	386	386 X 1000 / 1.6 = 241,250 LBS/HR				

PROCESS DATA INSTALLATION BOILER #6

COMPANY TALISMAN SUGAR CORP.

DATE FEB. 1, 1991

TYPE OF INSTALLATION BAGASSE BOILER

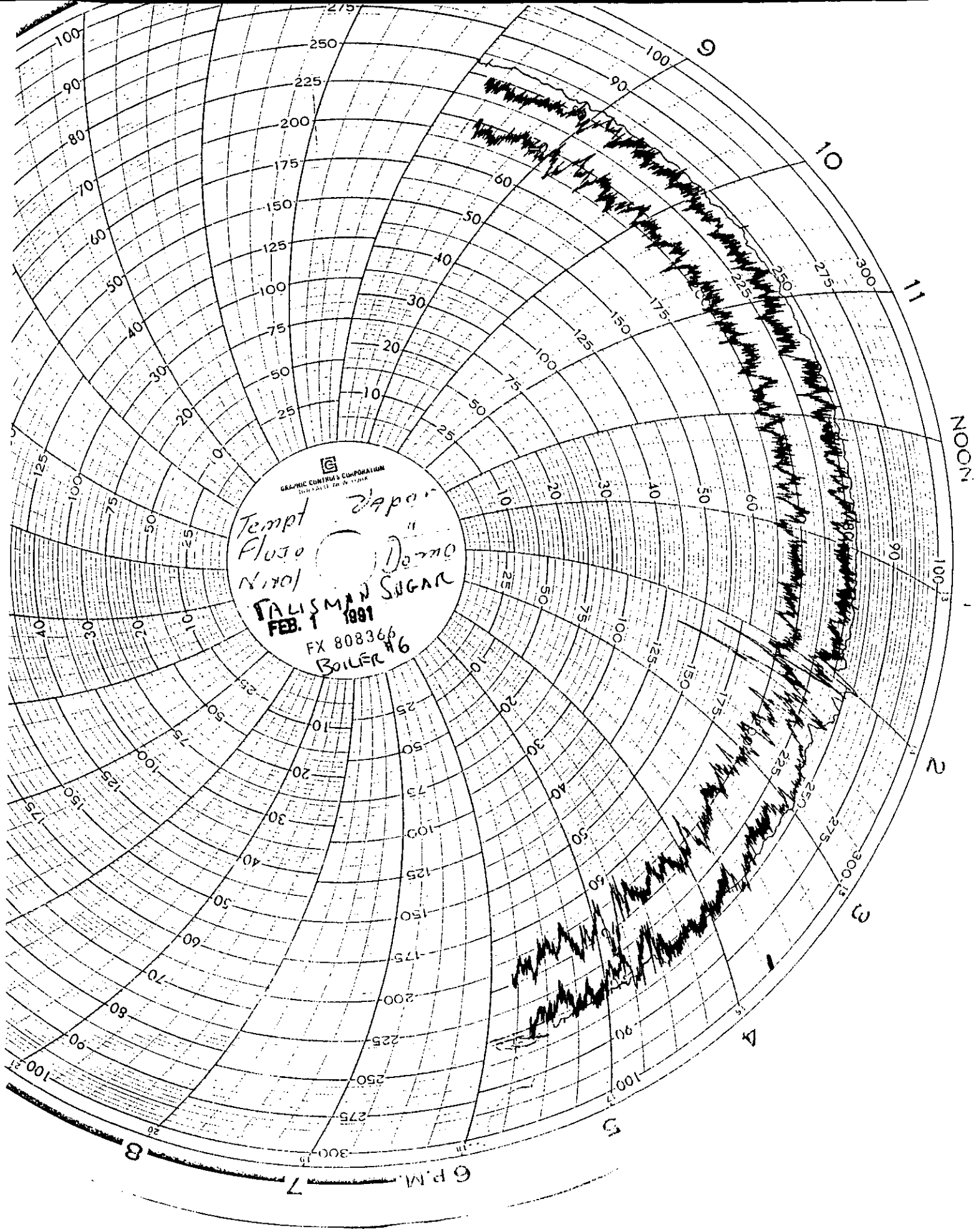
TYPE OF MATERIAL PROCESSED STEAM

TYPE OF FUEL USED BAGASSE

TYPE OF POLLUTION CONTROL SYSTEM DRY COLLECTOR + DUAL VENTURI SCRUBBER:

		NORMAL	RUN 1	RUN 2	RUN 3
SCRUBBER WATER FLOW (GPM)	N	1200	1200	1250	1250
	S	1200	1050	1200	1150
PRESSURE DROP (INCHES)		15.0	15.0	12.5	14.0

REPORTED BY FRANK KLEEMAN


GRAPHIC CONTROLS CORPORATION
Tempt Vapor
Flow Demand
Nirol
TALISMAN SUGAR
FEB. 1 1991
FX 808366
BOILER #6
NOON
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APPENDIX F

PROJECT PARTICIPANTS

PROJECT PARTICIPANTS

ACEI:

STEPHEN L. NECK, P.E.	FIELD TESTING REPORT PREPARATION
J. COLLEEN HODGE	FIELD TESTING
GERARD GAUTHREAUX	FIELD TESTING

TSC:

ANGELO ARCHBOLD	TEST COORDINATOR
FRANK KLEEMAN, P.E.	PRODUCTION RATE VERIFICATION

FL. DEPT. OF ENVIRONMENTAL REGULATION

KEN TUCKER	TEST OBSERVER

PALM BEACH COUNTY HEALTH DEPT.

AJAYA SATYAL	TEST OBSERVER