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: 9.10.1.2

Reference Number: 24

Title: Particulate Emission Study for Michigan Sugar Company, Croswell, Michigan

Swanson Environmental, Inc.

Swanson Environmental, Inc.

November 1990

AP-42 Section 9.10.1.2
Reference 24
Report Sect.
Reference

PARTICULATE EMISSION STUDY

MICHIGAN SUGAR COMPANY
CROSWELL, MICHIGAN

Report Prepared For:

Michigan Sugar Company
P. O. Box 1348
Saginaw, Michigan 48605

November 19, 1990
MA-6482

SWANSON ENVIRONMENTAL INC.

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SWANSON ENVIRONMENTAL INC.

PARTICULATE EMISSION STUDY
MICHIGAN SUGAR COMPANY
CROSWELL, MICHIGAN
NOVEMBER 19, 1990
MA-6482

EXECUTIVE SUMMARY

Swanson Environmental, Inc. (SEI) was retained by Michigan Sugar Company to perform a particulate emissions study on the exhaust gases discharged from the Pulp Drier at their Croswell, Michigan facility.

The study took place on November 13, 1990 and was conducted in accordance with U.S. EPA Methods 1, 2, 3, 4 and MDNR Method 5B for the purpose of fulfilling compliance requirements. The results of the study are as follows:

Drier Exhaust

Test No.	Test Date	Stack Gas Flow Rate (DSCFM)	Lbs/1000 Lbs EG @ (Dry)	Lbs/1000 Lbs dry 50%E A*	Lbs/1000 Lbs EG @	Lbs/ Hour
P-1	11-13-90	32426	0.110	0.262	0.078	16.175
P-2	11-13-90	34044	0.102	0.263	0.072	15.819
P-3	11-13-90	33804	0.099	0.275	0.070	15.152
Average		33425	0.104	0.267	0.073	15.715

EA * = Excess Air

EG @ = Exhaust Gas

PARTICULATE EMISSION STUDY
MICHIGAN SUGAR COMPANY
CROSWELL, MICHIGAN
NOVEMBER 19, 1990
MA-6482

1.0 INTRODUCTION

Swanson Environmental, Inc. (SEI) was retained by Michigan Sugar Company to conduct a total particulate emissions study on the exhaust gases discharged from the Pulp Drier at their Croswell, Michigan facility.

The purpose of the study was to determine the total particulate emissions, as required by the Michigan Department of Natural Resources (MDNR), in accordance with Michigan Sugar's permit conditions. The testing procedures used for the study were conducted in accordance with those outlined in U.S. EPA Methods 1, 2, 3, 4 and MDNR Method 5B.

The emission tests were conducted on November 13, 1990 by Mr. Bruce Montagne, Mr. Doug Groves and Mr. Tom Wilk of Swanson Environmental, Inc.

2.0 PRELIMINARY TESTS AND CALCULATIONS

Prior to testing, the emission stack was measured for stack length and inner diameter. The number of traverse points was determined in accordance with U.S. EPA Method 1-Sample and Velocity Traverse for Stationary Sources. A total of twenty-four (24) sampling points were selected.

3.0 PARTICULATE SAMPLING EQUIPMENT/PROCEDURE

The sampling train for the exhaust stack followed the guidelines detailed in Method 5B of the MDNR "In-Stack Filtration Method". The sampling train components (Figure 1) were:

1. Appropriately sized stainless steel sample nozzle.
2. Alundum thimble and thimble holder.
3. Type "A/E", 47mm diameter, fiberglass filter and filter holder.
4. Six-foot long stainless steel sample probe.
5. One-half inch diameter flexible PVC sample line.
6. Four impingers placed in an insulated ice water bath in the following sequence:
   a. Modified impinger containing 100 ml of distilled water;
   b. Modified impinger containing 100 ml of distilled water;
   c. Standard Smith-Greenburg impinger containing no collecting media to serve as a dry condensate trap; and
   d. Modified impinger containing approximately 300 grams of predried silica gel and glass fiber.

Sample gas measuring train containing the following components in sequence:

a. Umbilical sampling line;

b. Leakless, oil type pump;

c. Calibrated dry test gas meter; and

d. Calibrated gas flow orifice.

Prior to each test, the first and second impingers were filled with 100 ml of distilled water. The third impinger remained empty. The fourth impinger was filled with approximately 300 grams of silica gel and glass fiber, and weighed. After the sample train was assembled, a pretest leak check was performed at a vacuum of 15" Hg. During sampling, the gas flow conditions and sample rate were monitored, adjusted, and recorded. A post-test leak check was performed at a vacuum equal to or greater than the highest system vacuum incurred during the test period. Upon the completion of testing, the sampling train was disassembled for transfer of the collected materials. The impingers were remeasured to determine the amount of moisture collected. The filters were placed in their sample containers and the filter holder and nozzle were brushed and flushed with acetone.

Orsat

During the course of particulate sampling, Orsat samples were extracted with an Orsat pump into Tedlar bags. Three subsequent orsat analyses were performed to determine the

composition of the exhaust gas, specifically, carbon dioxide, nitrogen, and oxygen concentrations in accordance with U.S. EPA Method 3.

4.0 ANALYTICAL PROCEDURES

Filters

The preweighed filters used in this study were desiccated for 24 hours, weighed and desiccated for an additional 16 hours prior to final weighing. The initial and final weights were determined on the same analytical balance, accurate to 0.1 milligram.

Acetone Rinses

All acetone flushing solutions were placed in individual preweighed aluminum containers and the acetone was evaporated at 75° F. The aluminum containers were then desiccated for 24 hours, weighed and desiccated for an additional 16 hours prior to final weighing. The initial and final weights were determined on the same analytical balance, accurate to 0.1 milligram.

5.0 RESULTS OF TESTING

The results of the study conducted on November 13, 1990 are in Tables 1 and 2. All field sampling data, velocity traverse data and calibration sheets are located in the appendices.

6.0 CONCLUSION

The Michigan Sugar Company Pulp Drier at the Croswell, Michigan facility had an average emission rate of 0.073 pounds of particulate per 1000 pounds of exhaust gas.

REPORT PREPARED BY:

Tom Wilk

Tom Wilk
Staff Environmental Scientist

REPORT REVIEWED BY:

Michael W. Roth

Michael W. Roth
Assistant Director

WP/NG/SM/MICH-SUGAR.A02

SWANSON ENVIRONMENTAL, INC.

TABLE 1
PLANT: MICHIGAN SUGAR
LOCATION: CROSWELL

DATE: NOVEMBER 19, 1990

TEST NO.	TEST DATE	STACK GAS FLOW RATE (DSCFM)	GRAIN PER DSCF	EMISSION CONC. RATE LBS/1000 LBS DRY-GAS	EMISSION CONC. RATE LBS/1000 LBS DRY 50%E A*	EMISSION RATE LBS/ HOUR
P-1	11-13-90	32426	0.058	0.110	0.262	16.175
P-2	11-13-90	34044	0.054	0.102	0.263	15.819
P-3	11-13-90	33804	0.052	0.099	0.275	15.152

* EA = Excess Air

TABLE 2

PLANT: MICHIGAN SUGAR
LOCATION: CROSWELL
DATE: 10-20-90

EXHAUST GAS COMPOSITION (PERCENT)

TEST NO	%O2	%CO2	%N2
P-1	15.4	4.0	80.6
P-2	15.8	4.2	80.0
P-3	16.2	3.8	80.0

APPENDIX A

Figures

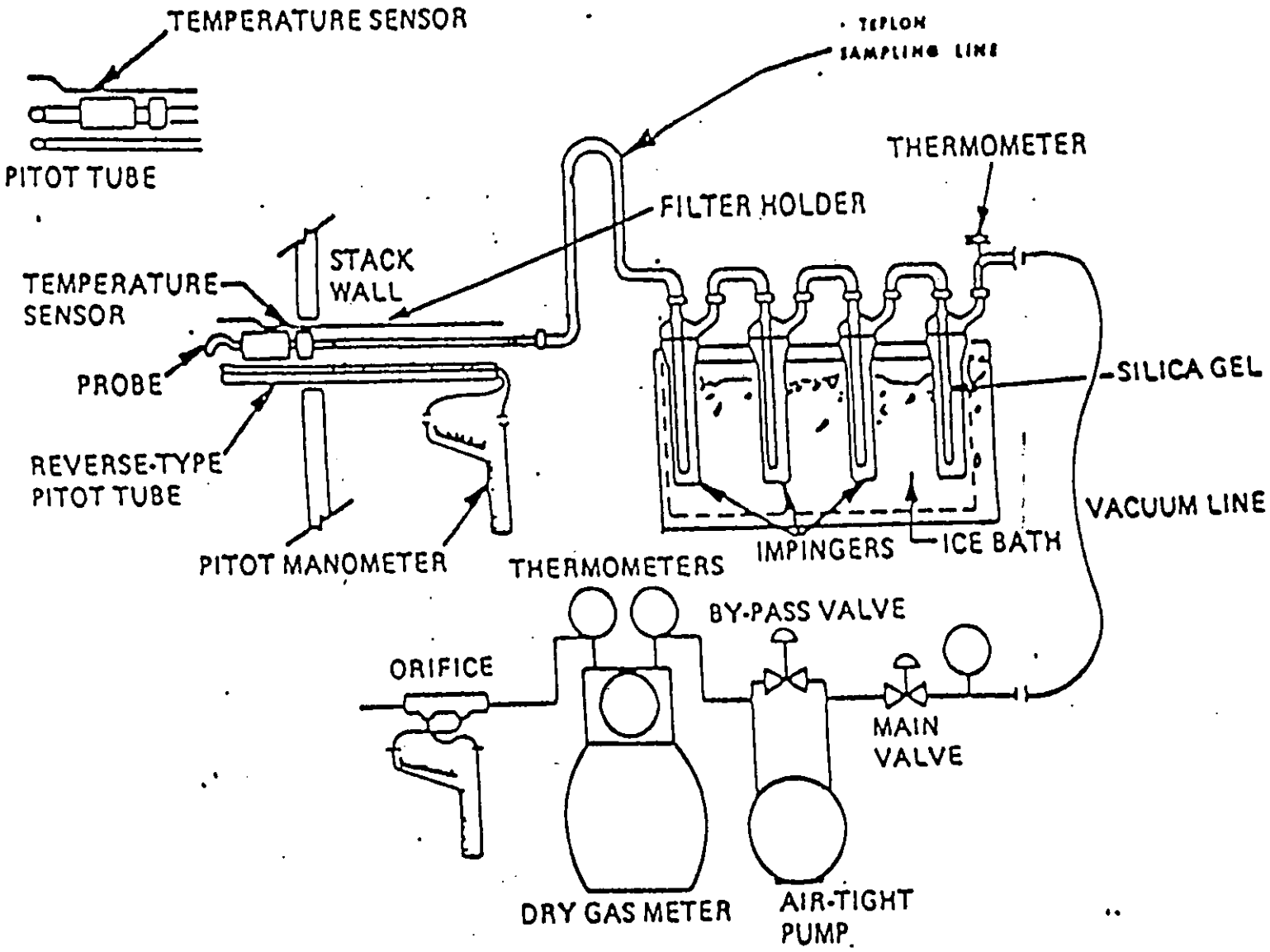

FIGURE 1. METHOD 5B IN-STACK FILTRATION
MICHIGAN SUGAR COMPANY

APPENDIX B

Calculations

SWANSON ENVIRONMENTAL, INC.
PARTICULATE SAMPLING DATA AND CALCULATIONS

PLANT: MI SUGAR SOURCE: DRYER EXH.
DATE: 11-13-90

	CLOCK TIME:	60.00	60.00	60.00
	1.00 NUMBER	P-1	P-2	P-3
B.	STACK DIAMETER, In	72.000	72.000	72.000
C.	STACK AREA, Sq.Ft	28.27	28.27	28.27
D.	No. SAMPLE POINTS	24.00	24.00	24.00
E.	TOTAL SAMPLE TIME, MIN.	60.00	60.00	60.00
F.	NOZZLE DIAMETER, In.	0.357	0.357	0.357
G.	NOZZLE AREA, Sq.Ft.	0.00070	0.00070	0.00070
H.	CALIBRATION FACTORS:			
	PITOT TUBE, Cp	0.8090	0.8090	0.8090
	GAS METER, y	0.970	0.970	0.970
I.	BAROMETRIC PRESSURE, In.Hg.	30.49	30.52	30.54
J.	STACK STATIC PRESSURE In.H20	0.32	0.32	0.32
K.	STACK GAS TEMP.	279.54	270.79	276.96
L.	AVG. Sq. Rt. VEL. HEAD	0.64	0.67	0.67
M.	AVG. METER TEMP.	76.75	77.50	77.38
N.	AVG. METER PRESS., H2O	2.16	2.43	2.36
O.	METER VOL., ACTUAL Cu. Ft.	47.29	50.51	46.81
P.	METER VOL., @STP	46.41	49.59	45.99
Q.	LIQUID VOL., H20 COND., Ml.	646.10	714.90	651.20
R.	VAPOR VOL., H20 COND., @STP, Cu.Ft.	30.63	33.89	30.87
S.	TOTAL GAS SAMPLED, @ STP, Cu.Ft.	77.04	83.47	76.85
T.	%MOISTURE IN EXHAUST GAS			
	1) AT TEST LOCATION	39.75	40.60	40.16
	2) BEFORE COLLECTOR	0.00	0.00	0.00
U.	DRY GAS COMP. %O2	15.4	15.8	16.2
	%CO2	4.0	4.2	3.8
	%CO	0.0	0.0	0.0
	%N2	80.6	80.0	80.0
V.	DENSITY & MOL. Wt. -STACK GAS			
	1)DRY, @ STP,Lbs/Cu.Ft.	0.0756	0.0758	0.0756
	2)WET, @ STP,Lbs/Cu.Ft.	0.0641	0.0639	0.0639
	3)WET @ STACK,Lbs/Cu.Ft.	0.0468	0.0473	0.0469
	4)MOL.Wt., @ STP,Lb/MOLE	29.26	29.31	29.26
W.	WEIGHT OF GAS SAMPLED:			
	1)DRY GAS,Lbs	3.51	3.76	3.48
	2)WET GAS,Lbs	4.93	5.33	4.91
X.	TOTAL PARTICULATE COLLECTED (GRAMS)	0.1752	0.1743	0.1560

Y. AVERAGE GAS VELOCITY, FPM	2607	2740	2722
Z. STACK GAS FLOW RATE			
1)AT STACK, Qa, ACFM	73698	77469	76959
2)AT Std.,Qstd, SCFM	53822	57310	56494
3)Std. DRY,Qdg, SCFM	32426	34044	33804
AA. PERCENT EXCESS AIR	262	297	329
BB. CONCENTRATION CONVERSION FACTORS:			
1)50% E.A.,AFTER COLLECTOR	1.70	1.76	1.83
2)50% E.A.,BEFORE COLLECTOR	3.35	3.66	3.93
3)MOISTURE BEFORE COLLECTOR	1.41	1.42	1.41
CC. PARTICULATE CONCENTRATION:			
1)Lbs/1000 Lbs., ACTUAL	0.078	0.072	0.070
2)Lbs/1000 Lbs., DRY	0.110	0.102	0.099
3)Lbs/1000 Lbs., WET @ 50%E.A	0.133	0.127	0.128
4)Lbs/1000 Lbs., DRY @ 50%E.A	0.262	0.263	0.275
5)GRAINS / DSCF	0.058	0.054	0.052
6)POUNDS / HOUR	16.175	15.819	15.152
DD. PERCENT ISOKINETIC	96.9	98.6	92.1

++

SWANSON ENVIRONMENTAL, INC.

PLANT: MI SUGAR TEST DATE: 11-13-90 TEST No.:P-1
SOURCE: DRYER EXH. WTS. DATE: DATE

****

FRACTION A ACETONE RINSES AND FILTERS — FRACTION A TOTAL WTS (mg) = 16.40

	ACE. RINSE (mg)	ACE BLANK (mg)	CONT. BLANK (mg)	5A FILTER RINS (mg)
LIQUID VL	112.00	45.00		0.00
CONT. No.	00814-86	00814-90	00814-89	0
FIN. WTS.	1702.80	1564.50	1692.00	1.00
INT. WTS.	1689.80	1569.10	1693.70	1.00
NET WTS.	13.00	-4.60	-1.70 mg	0.00
CONT CORR	-1.70	-1.70		-1.70
NET WTS.	14.70	0.00 mg		1.70
ACE CORR.	0.00			0.00
FINAL WTS	16.40 mg			mg 1.70

FRACTION B THIMBLES — FRACTION B TOTAL WTS (mg) = 158.78

	TEST THIMBLE	BLANK THIMBLE
THIMBLE No	00703-7	00703-10
FINAL WT.	56570.50	57491.90
INT. WT.	56413.00	57493.20
NET WT.	157.50	-1.30 mg
BLK. CORR	-1.28	
FINAL WT.	158.78 mg	

FRACTION C BACK UP FILTER — FRACTION C TOTAL WTS (mg) = 0.00

		BLANK
FILTER No	0	0
FINAL WT.	0.00	1.00
INT. WT.	0.00	1.00
NET WT.	0.00	0.00 mg
BLK. CORR	0.00	
FINAL WT.	0.00 mg	

TOTAL WEIGHTS (mg) = 175.18
TOTAL WEIGHTS (g) = 0.1752

(1) DO NOT APPLY ANY WEIGHT LOSS CORRECTION FOR LIQUID BLANKS.

*BLANK CORR. WT.= FINAL USED WT./INITIAL BLANK WT * NET CHANGE IN BLANK
*ACE. CORR. WT.= RINSE LIQ./BLANK LIQ. * BLANK LIQ. GAIN IN WT.

****

SWANSON ENVIRONMENTAL, INC.

PLANT: MI SUGAR TEST DATE: 11-13-90 TEST No: P-2
SOURCE: DRYER EXH. WTS. DATE: DATE

****

FRACTION A ACETONE RINSES AND FILTERS — FRACTION A TOTAL WTS (mg) = 8.60

	ACE. RINSE (mg)	ACE BLANK (mg)	CONT. BLANK (mg)	5A FILTER RINSE (mg)
LIQUID VL	103.00	45.00		0.00
CONT. No.	00814-87	00814-90	00814-89	0
FIN. WTS.	1696.80	1564.50	1692.00	0.00
INT. WTS.	1691.60	1569.10	1693.70	0.00
NET WTS.	5.20	-4.60	-1.70 mg	0.00
CONT CORR	-1.70	-1.70		-1.70
NET WTS.	6.90	0.00 mg		1.70
ACE CORR.	0.00			0.00
FINAL WTS	8.60 mg			mg 1.70

FRACTION B THIMBLES — FRACTION B TOTAL WTS (mg) = 165.74

	TEST THIMBLE	BLANK THIMBLE
THIMBLE No	00703-9	00703-10
FINAL WT.	63478.80	57491.90
INT. WT.	63314.50	57493.20
NET WT.	164.30	-1.30 mg
BLK. CORR	-1.44	
FINAL WT.	165.74 mg	

FRACTION C BACK UP FILTER — FRACTION C TOTAL WTS (mg) = 0.00

		BLANK
FILTER No	0	0
FINAL WT.	0.00	1.00
INT. WT.	0.00	1.00
NET WT.	0.00	0.00 mg
BLK. CORR	0.00	
FINAL WT.	0.00 mg	

TOTAL WEIGHTS (mg) = 174.34
TOTAL WEIGHTS (g) = 0.1743

(1) DO NOT APPLY ANY WEIGHT LOSS CORRECTION FOR LIQUID BLANKS.

*BLANK CORR. WT.= FINAL USED WT./INITIAL BLANK WT * NET CHANGE IN BLANI
*ACE. CORR. WT.= RINSE LIQ./BLANK LIQ. * BLANK LIQ. GAIN IN WT.

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SWANSON ENVIRONMENTAL, INC.

PLANT: MI SUGAR TEST DATE: 11-13-90 TEST No: P-3
SOURCE: DRYER EXH. WTS. DATE: DATE

****

FRACTION A ACETONE RINSES AND FILTERS — FRACTION A TOTAL WTS (mg) = 12.30

	ACE. RINSE (mg)	ACE BLANK (mg)	CONT. BLANK (mg)	5A FILTER RINS (mg)
LIQUID VL	73.00	45.00		0.00
CONT. No.	00814-88	00814-90	00814-89	0
FIN. WTS.	1695.40	1564.50	1692.00	0.00
INT. WTS.	1686.50	1569.10	1693.70	0.00
NET WTS.	8.90	-4.60	-1.70 mg	0.00
CONT CORR	-1.70	-1.70		-1.70
NET WTS.	10.60	0.00 mg		1.70
ACE CORR.	0.00			0.00
FINAL WTS	12.30 mg			mg 1.70

FRACTION B THIMBLE — FRACTION B TOTAL WTS (mg) = 143.67

	TEST THIMBLE	BLANK THIMBLE
THIMBLE No	00703-8	00703-10
FINAL WT.	60604.40	57491.90
INT. WT.	60462.10	57493.20
NET WT.	142.30	-1.30 mg
BLK. CORR	-1.37	
FINAL WT.	143.67 mg	

FRACTION C BACK UP FILTER — FRACTION C TOTAL WTS (mg) = 0.00

		BLANK
FILTER No	0	0
FINAL WT.	0.00	1.00
INT. WT.	0.00	1.00
NET WT.	0.00	0.00 mg
BLK. CORR	0.00	
FINAL WT.	0.00 mg	

TOTAL WEIGHTS (mg) = 155.97
TOTAL WEIGHTS (g) = 0.1560

(1) DO NOT APPLY ANY WEIGHT LOSS CORRECTION FOR LIQUID BLANKS.

*BLANK CORR. WT.= FINAL USED WT./INITIAL BLANK WT * NET CHANGE IN BLANK
*ACE. CORR. WT.= RINSE LIQ./BLANK LIQ. * BLANK LIQ. GAIN IN WT.

****

APPENDIX C

Field Data Sheets

SWANSON ENVIRONMENTAL, INC.

PITOT TRAVERSE DATA

PLANT:	MI SUGAR	PITOT No.	13	STACK PRES. In. H20	0.32
DATE:	11-13-90	STACK DIA.	72.00	STACK TEMP. F.	274.75
TIME:	1000	B.P. In.Hg.	30.47	STACK AREA Sq.Ft.	28.27
WB. TEMP	0.00	DB. TEMP.	0.00	SAMPLE POINTS	24.00
% H2O VOL	40.17	Cp :	0.81	Ps:	30.49

SAMPLE POINTS	SQRT PITOT DELTA	PITOT DELTA	STACK TEMP
1	0.53	0.28	277.00
2	0.60	0.36	278.00
3	0.64	0.41	280.00
4	0.70	0.49	283.00
5	0.75	0.56	286.00
6	0.77	0.60	291.00
7	0.78	0.61	292.00
8	0.77	0.59	293.00
9	0.62	0.39	294.00
10	0.59	0.35	285.00
11	0.59	0.35	273.00
12	0.57	0.33	264.00
13	0.61	0.37	239.00
14	0.63	0.40	242.00
15	0.64	0.41	248.00
16	0.66	0.44	255.00
17	0.67	0.45	261.00
18	0.71	0.50	268.00
19	0.71	0.51	273.00
20	0.73	0.54	277.00
21	0.75	0.56	280.00
22	0.74	0.55	283.00
23	0.71	0.50	285.00
24	0.54	0.29	287.00
AVERAGES:	0.67		274.75

****

1). Vs= 2725.74 (Gs= 0.858)

2). Qs= 77068.60

3). Qscfm= 56657.83 SCFM DRY=33897.84

Vs = 2.9 Cp 60 SQRT(Ts,ave+460)*AVE.SQRT(DELTA-P)*SQRT(29.92/Ps*1/Gs)

Qs = Vs*As AND Qscfm=Qs*530/(Ts+460)*Ps/29.92

==========

SWANSON ENVIRONMENTAL INC.

TEST No.: P-1

PLANT:	MI SUGAR	PITOT No:	13	CALIBRATION PITOT:	0.8090
DATE:	11-13-90	METER BOX:	n-2	NOZ. DIA. Inches :	0.3570
LOCATION:	CROSWELL	AMB TEMP F.	36.00	STACK DIA. Inches :	72.0000
OPERATOR:	TGW	B.P. In.Hg.	30.49	STACK PRESS In. H2O:	0.3200
SOURCE:	DRYER EXH.	ASSUMED %M:	37.0	H20 VOL. Ml. :	646.100
LEAK TST:	0.007	METER DEL-H	1.85	METER f:	7.295
Hg INT.:	16	Kiso:	1728.893	Yd:	0.970
LEAK TST:	0.010	PROBE LEN:	84	SAMPLE PTS:	24
Hg FIN.:	13.00	W.B.TEMP F.	0.00	TOT.TIME:	60.00

SAMPLE POINTS	PITOT SQRT	ORIFICE No.	DRY GAS	METER TEMP F	STACK TEMP F	PITOT DELTA
1	0.58	1.96	553.12	75.00	216.00	0.34
2	0.54	1.53	555.00	75.00	282.00	0.29
3	0.56	1.61	556.70	75.00	293.00	0.31
4	0.58	1.77	558.26	76.00	293.00	0.34
5	0.59	1.82	559.97	76.00	293.00	0.35
6	0.64	2.13	561.81	76.00	292.00	0.41
7	0.68	2.39	563.75	76.00	292.00	0.46
8	0.68	2.39	565.85	76.00	292.00	0.46
9	0.69	2.45	568.00	77.00	291.00	0.47
10	0.66	2.29	569.91	77.00	288.00	0.43
11	0.62	1.99	572.12	77.00	289.00	0.38
12	0.55	1.68	573.94	77.00	241.00	0.30
13	0.52	1.51	575.62	77.00	239.00	0.27
14	0.58	1.81	577.16	77.00	276.00	0.34
15	0.61	1.94	579.07	77.00	289.00	0.37
16	0.63	2.09	580.98	77.00	291.00	0.40
17	0.69	2.46	582.91	77.00	289.00	0.47
18	0.71	2.61	585.33	77.00	290.00	0.50
19	0.71	2.67	587.30	77.00	288.00	0.51
20	0.69	2.47	589.61	78.00	288.00	0.47
21	0.69	2.47	591.70	78.00	287.00	0.47
22	0.70	2.58	593.93	78.00	284.00	0.49
23	0.73	2.85	596.11	78.00	283.00	0.54
24	0.65	2.34	598.28	78.00	243.00	0.42
			600.41			
FINAL #	0.64	2.16	47.29	76.75	279.54	

SWANSON ENVIRONMENTAL INC.

TEST No.: P-2

PLANT:	MI SUGAR	PITOT No:	13	CALIBRATION PITOT:	0.8090
DATE:	11-13-90	METER BOX:	n-2	NOZ. DIA. Inches :	0.3570
LOCATION:	CROSWELL	AMB TEMP F.	36.00	STACK DIA. Inches :	72.0000
OPERATOR:	TGW	B.P. In.Hg.	30.52	STACK PRESS In. H2O:	0.3200
SOURCE:	DRYER EXH.	ASSUMED %M:	37.00	H20 VOL. Ml. :	714.900
LEAK TST:	0.007	METER DEL-H	1.85	METER f:	7.295
Hg INT.:	16	Kiso:	1728.893	Yd:	0.970
LEAK TST:	0.002	PROBE LEN:	84	SAMPLE PTS:	24
Hg FIN.:	15	W.B.TEMP F.	0.00	TOT. TIME:	60.00

SAMPLE POINTS	PITOT SQRT	ORIFICE No.	DRY GAS	METER TEMP	STACK TEMP	PITOT DELTA
1	0.65	2.44	600.72	75.00	212.00	0.42
2	0.57	1.75	602.84	76.00	279.00	0.33
3	0.63	2.11	604.69	76.00	282.00	0.40
4	0.69	2.52	606.42	77.00	284.00	0.48
5	0.71	2.63	608.31	77.00	285.00	0.50
6	0.73	2.84	610.50	77.00	286.00	0.54
7	0.74	2.89	612.77	77.00	286.00	0.55
8	0.70	2.57	614.98	77.00	287.00	0.49
9	0.69	2.52	617.36	78.00	288.00	0.48
10	0.66	2.27	619.52	78.00	283.00	0.43
11	0.59	1.88	621.58	78.00	269.00	0.35
12	0.61	2.13	623.57	78.00	222.00	0.37
13	0.68	2.76	625.37	78.00	194.00	0.46
14	0.61	2.01	627.67	78.00	264.00	0.37
15	0.64	2.17	629.68	78.00	281.00	0.41
16	0.68	2.43	631.41	77.00	282.00	0.46
17	0.68	2.44	633.71	78.00	284.00	0.46
18	0.72	2.74	635.80	78.00	285.00	0.52
19	0.71	2.68	638.18	78.00	286.00	0.51
20	0.73	2.80	640.38	78.00	284.00	0.53
21	0.71	2.69	642.67	78.00	284.00	0.51
22	0.68	2.44	644.81	78.00	281.00	0.46
23	0.64	2.20	647.20	78.00	271.00	0.41
24	0.66	2.47	649.10	79.00	240.00	0.44
			651.23			
FINAL #	0.67	2.43	50.51	77.50	270.79	

SWANSON ENVIRONMENTAL INC.

TEST No.: P-3

PLANT:	MI SUGAR	PITOT No:	13	CALIBRATION PITOT:	0.8090
DATE:	11-13-90	METER BOX:	n-2	NOZ. DIA. Inches :	0.3570
LOCATION:	CROSWELL	AMB TEMP F.	39.00	STACK DIA. Inches :	72.0000
OPERATOR:	TGW	B.P. In.Hg.	30.54	STACK PRESS In. H2O:	0.3200
SOURCE:	DRYER EXH.	ASSUMED %M:	37.00	H20 VOL. Ml. :	651.200
LEAK TST:	0.002	METER DEL-H	1.85	METER f:	7.295
Hg INT.:	15	Kiso:	1728.89	Yd:	0.970
LEAK TST:	0.002	PROBE LEN:	84	SAMPLE PTS:	24
Hg FIN.:	12	W.B.TEMP F.	0.00	TOT. TIME:	60.00

SAMPLE POINTS	PITOT SQRT	ORIFICE No.	DRY GAS	METER TEMP	STACK TEMP	PITOT DELTA
1	0.63	2.27	651.49	75.00	221.00	0.40
2	0.61	2.12	653.47	75.00	220.00	0.37
3	0.62	2.05	655.51	76.00	284.00	0.39
4	0.64	2.15	657.51	76.00	285.00	0.41
5	0.66	2.31	659.69	76.00	286.00	0.44
6	0.70	2.57	661.50	77.00	286.00	0.49
7	0.69	2.52	663.80	77.00	287.00	0.48
8	0.73	2.77	666.11	77.00	287.00	0.53
9	0.73	2.77	667.91	77.00	287.00	0.53
10	0.69	2.47	670.08	77.00	284.00	0.47
11	0.70	2.59	672.12	77.00	281.00	0.49
12	0.64	2.17	674.07	77.00	279.00	0.41
13	0.60	1.96	675.98	77.00	259.00	0.36
14	0.63	2.14	677.42	77.00	272.00	0.40
15	0.65	2.22	679.20	78.00	282.00	0.42
16	0.67	2.38	681.00	78.00	283.00	0.45
17	0.69	2.48	682.90	78.00	284.00	0.47
18	0.72	2.74	684.80	78.00	285.00	0.52
19	0.70	2.58	686.77	79.00	286.00	0.49
20	0.70	2.58	688.80	79.00	286.00	0.49
21	0.66	2.32	690.78	79.00	285.00	0.44
22	0.66	2.32	692.69	79.00	284.00	0.44
23	0.62	2.07	694.72	79.00	280.00	0.39
24	0.61	1.98	696.42	79.00	274.00	0.37
			698.30			
FINAL #	0.67	2.36	46.81	77.38	276.96	

SWH BULLEN ENVIRONMENTAL INC.

PITOT TRAVERSE DATA

SOURCE: [illegible] SUGAR CROSSWELL [illegible] EXHAUST

DATE	TIME	PITOT NUMBER	STACK DIMENSION
11/13/90	1005	13	72"

BAROMETRIC (P_b)	STATIC (P_s)	Θ_s	STACK TEMP. T_s	C_p	STACK AREA A_s	WB TEMP T_w	BWO
30.17	.32			.809	28.274		

SAMPLING POINT	PITOT (in)	STACK TEMP
1	.26	277
2	.36	278
3	.41	280
4	.49	283
5	.56	286
6	.60	291
7	.61	292
8	.59	293
9	.39	294
10	.35	285
11	.35	273
12	.33	264

SAMPLING POINT	PITOT (in)	STACK TEMP
1	.37	239
2	.40	242
3	.41	248
4	.44	253
5	.45	261
6	.50	268
7	.51	273
8	.54	277
9	.56	280
10	.55	283
11	.50	285
12	.29	281

$V_s = 2.9\, C_p \Delta p \sqrt{T_s \cdot \Delta p \sqrt{\frac{29.92}{P_s} \cdot \frac{1}{\Theta_s}}}$ $\qquad Q_s = V_s \cdot A_s$

$Q_{std} = Q_s \cdot \frac{530}{T_s} \cdot \frac{P_s}{29.92}$

SMALL BOILER

FIELD DATA SHEET

Plant MF SUGAR

Date 11-13-90

Location CROSWELL

Operator JGW

Stack No. DRYER EX

Run No. PART. NO / PORT 1

PITOT TUBE NO. 13 C_p 0.84

Meter Box No. SGI-3500-N-2

Ambient Temperature 36

Barometric Pressure P_b "H_g 30.49

Assumed Moisture, % WV 37%

Probe Length, in. 84"

Nozzle Diameter, in. D 1.354" 1.354" 1.354"

Stack Diameter, in. 72"

Stack Pressure, in H_2O P_s .32

Sampling train LEAK TEST Initial 0.007 @ 16. Final 0.010 @ 13

Meter ΔH@ 1.85417 m 1.2949

K 1728.8929 Y_d .97033

WET BULB TEMPERATURE

Volume of Liquid Water Collected	Impinger Volume, ml 1	2	3	4	Silica Gel Weight 9
Final	353	332	148		837.7
Initial	100	100	Dry	—	824.6
Liquid Collected	253	232	148		13.1

V_{lc} Total 646.1

	SAMPLING POINT	TIME θ	PITOT ΔP	ORIFICE ΔH	DRY GAS METER V_m	METER TEMP T_m °F	VACUUM	STACK TEMP T_s °F	FILTER TEMP	IMPINGER TEMP
	1		.34	1.96	55312	75	4	276		
	2		.29	1.53	55500	75	4	282		
	3		.31	1.61	55670	75	4	293		
	4		.34	1.77	55866	76	5	293		
	5		.35	1.82	55997	76	6	293		
	6		.41	2.13	56181	76	7	292		
	7		.46	2.39	56375	76	7	292		
	8		.46	2.39	56565	76	8	292		
	9		.47	2.45	56800	77	9	291		
	10		.43	2.29	56991	77	9	266		
	11		.38	1.96	57212	77	8	289		
	12		.30	1.68	57394	77	10	291		
					57562					

Orsat Measurement					
Test	Time	CO_2	O_2	CO	N_2
1		4.0	15.4		
2					
3					
4					

Filter No. F 00703-7

Filter No. F 91219-19

PITOT TUBE LEAK TEST Initial O_2 0 Final O_2 0

COMMENTS: Sampling train —

$$\Delta H = K_{1s0}\, C_p^2\, D^4 \left(1-\frac{WV}{100}\right)^2 \frac{G_m}{G_s}\, \frac{P_s}{P_m}\, \frac{T_m}{T_s}\, \Delta P_s$$

FIELD DATA SHEET

Plant _____ Ambient Temperature _____ Meter $\Delta H@$ M_1 7.2949

Date _____ Barometric Pressure P_b "Hg _____ K iso _____ Y_d _____

Location CRISWELL

Operator TGW

Stack No. DRYER EXH.

Run No. PART. NO / POTE2

PITOT TUBE NO. ____ C_p 0.

Meter Box No. 501 - 5500 -

Assumed Moisture, % WV _____

Probe Length, in. _____

Nozzle Diameter, in. D _____

Stack Diameter, in. _____

Stack Pressure, in H_2O P_s _____

Sampling train LEAK TEST Initial Q_2 0 Final Q_2 0

WET BULB TEMPERATURE _____

Volume of Liquid Water Collected	Impinger Volume, ml 1	2	3	4	Silica Gel Weight 5
Final					
Initial					
Liquid Collected					

V_{lc} Total _____

	SAMPLING POINT	TIME	PITOT ΔP_s	ORIFICE ΔH	DRY GAS METER V_m	METER TEMP T_m °F	VACUUM	STACK TEMP T_s °F	FILTER TEMP	IMPINGER TEMP
	1		.27	.151	57562	77	6	239		
	2		.34	.181	57716	77	65	276		
	3		.37	.194	57907	77	7	289		
	4		.46	.249	58048	77	8	291		
	5		.47	.246	58271	77	85	289		
	6		.50	.261	58533	77	9	290		
	7		.51	.267	58730	77	10	288		
	8		.47	.247	58961	78	10	288		
	9		.47	.247	59170	78	11	287		
	10		.49	.258	59393	78	11	284		
	11		.54	.285	59611	78	11	283		
	12		.42	.234	59828	78	105	243		
					60041					

Orsat Measurement					
Test	Time	CO_2	O_2	CO	N_2
1					
2					
3					
4					

Filter No. _____

Filter No. _____

PITOT TUBE LEAK TEST Initial Q_2 0 Final Q_2 0

COMMENTS: Sampling train —

$$\Delta H = K_{iso} C_p^2 D^4 \left(1 - \frac{WV}{100}\right)^2 \frac{C_m}{C_s} \frac{P_s}{P_m} \frac{T_m}{T_s} \Delta P_s$$

FIELD DATA SHEET

Plant: MI SUGAR
Date: 11-13-90
Location: CROSWELL
Operator: TGW
Stack No.: DRYER EX
Run No.: PART. NO 2 part 1
PITOT TUBE NO. 13 C_p 0.809
Meter Box No. 501-5500-N-2

Ambient Temperature: 36
Barometric Pressure P_b "Hg: 30.52
Assumed Moisture, % WV: 37%
Probe Length, in.: 84
Nozzle Diameter, in. D: .357
Stack Diameter, in.: 72"
Stack Pressure, in H_2O P_s: .32
Sampling train LEAK TEST: Initial Q_i 0.0016; Final Q_f 0.0025

Meter $\Delta H@$: M_1 7.2949
K_{iso}: Y_d:
WET BULB TEMPERATURE:

Volume of Liquid Water Collected	Impinger Volume, ml 1	2	3	4	Silica Gel Weight 0
Final	326	356	216	—	798.7
Initial	200	100	DRY	—	781.8
Liquid Collected	226	256	216		16.9

V_{lc} Total 714.9

	Sampling Point	Time	Pitot ΔP_s	Orifice ΔH	Dry Gas Meter V_m	Meter Temp T_m °F	Vacuum	Stack Temp T_s °F	Filter Temp	Impinger Temp
	1		.42	2.44	600.72	75	7	272		
	2		.33	1.75	602.84	76	7	279		
	3		.40	2.11	604.69	76	8	282		
	4		.48	2.52	606.42	77	7.5	284		
	5		.50	2.63	608.31	77	9	285		
	6		.54	2.84	610.50	77	9	286		
	7		.55	2.89	612.77	77	10	286		
	8		.49	2.57	614.98	77	10	287		
	9		.48	2.52	617.36	78	10	288		
	10		.43	2.27	619.52	78	10	283		
	11		.35	1.88	621.58	78	9	269		
	12		.37	2.13	623.57	78	10	222		
					625.37					

Orsat Measurement					
Test	Time	CO_2	O_2	CO	N_2
1		4.2	15.8		
2					
3					
4					

COMMENTS: Sampling train —

Filter No. T-00703-9
Filter No. F-91219-18

PITOT TUBE LEAK TEST: Initial Q_i 0; Final Q_f 0

$$\Delta H = K_{iso} C_p^2 D^4 \left(1 - \frac{WV}{100}\right)^2 \frac{C_m}{G_s} \frac{P_s}{P_m} \frac{T_m}{T_s} \Delta P_s$$

FIELD DATA SHEET

Plant: MI SUGAR
Date: 11-13-90
Location: CROSWELL
Operator: TGW
Stack No.: DRYER EXH
Run No.: PART. NO 2 PORT 2
PITOT TUBE NO. ____ C_p 0.
Meter Box No.: 501-5500-

Ambient Temperature ____
Barometric Pressure P_b ____ "Hg
Assumed Moisture, % WV ____
Probe Length, in. ____
Nozzle Diameter, in. D ____
Stack Diameter, in. ____
Stack Pressure, in H_2O P_s ____
Sampling train LEAK TEST Initial Q_s 0 ; Final Q_s 0

Meter $\Delta H@$ ____ M_1 7.2949
K ___ ____ Y_d ____
WET BULB TEMPERATURE ____

Volume of Liquid Water Collected	Impinger Volume ml 1	2	3	4	Silica Gel Weight 0
Final					
Initial					
Liquid Collected					

V_{lc} Total ____

	SAMPLING POINT	TIME θ	PITOT ΔP_s	ORIFICE ΔH	DRY GAS METER V_m	T_m	METER TEMP °F	VACUUM	STACK TEMP T_s °F	FILTER TEMP	IMPINGER TEMP
	1		.46	2.76	625.37		78	12	194		
	2		.37	2.01	627.67		78	15	264		
	3		.41	2.17	629.68		78	9	281		
	4		.46	2.43	631.91		77	9.5	282		
	5		.46	2.44	633.71		78	10	284		
	6		.52	2.74	635.80		78	10.5	285		
	7		.51	2.68	638.18		78	12	286		
	8		.53	2.80	640.38		78	12	284		
	9		.51	2.69	642.67		78	12.5	284		
	10		.46	2.44	644.81		78	11.5	281		
	11		.41	2.20	647.20		78	11	271		
	12		.44	2.47	649.10		79	11	240		
					651.23						

Orsat Measurement					
Test	Time	CO_2	O_2	CO	N_2
1					
2					
3					
4					

Filter No. ____

Filter No. ____

PITOT TUBE LEAK TEST Initial Q_s 0 ; Final Q_s 0

COMMENTS: Sampling train —

$$\Delta H = K_{100} C_p^2 D^4 \left(1 - \frac{WV}{100}\right)^2 \frac{C_m}{C_s} \frac{P_s}{P_m} \frac{T_m}{T_s} \Delta P_s$$

FIELD DATA SHEET

Plant: MI SUGAR
Date: 11-13-90
Location: CROSWELL
Operator: TGW
Stack No.: DRYER EXH.
Run No.: PART. NO 3 part 1
PITOT TUBE NO. 13 C_p 0.889
Meter Box No. ~~S01 - S300~~ N-2

Ambient Temperature: 39
Barometric Pressure P_b "Hg: 30.54
Assumed Moisture, % WV: 37%
Probe Length, in.: 84
Nozzle Diameter, in. D: .357
Stack Diameter, in.: 72
Stack Pressure, in H_2O P_s: .32
Sampling Train LEAK TEST: Initial Q_i 0.002515; Final Q_f 0.002272

Meter ΔH@: M_1 7.2949
K_{iso}: ____ Y_d: ____
WET BULB TEMPERATURE: ____

Volume of Liquid Water Collected	Impinger Volume, ml 1	2	3	4	Silica Gel Weight g
Final	400	396	39	—	804.7
Initial	100	100	dry	—	788.5
Liquid Collected	300	296	39	—	16.2

V_{lc} Total 651.2

	Sampling Point	Time	Pitot ΔP	Orifice ΔH	Dry Gas Meter V_m	Meter Temp T_m °F	Vacuum	Stack Temp T_s °F	Filter Temp	Impinger Temp			
	1		.40	2.27	65.149	75	6	221					
	2		.37	2.12	65.397	75	6	220					
	3		.39	2.05	65.551	76	7	284					
	4		.41	2.15	65.751	76	7	285					
	5		.44	2.31	65.969	76	8	286					
	6		.49	2.57	66.150	77	8	286					
	7		.48	2.52	66.380	77	9	287					
	8		.53	2.77	66.611	77	9	287					
	9		.53	2.77	66.791	77	9	287					
	10		.47	2.47	67.008	77	9	284					
	11		.49	2.59	67.212	77	8	281					
	12		.41	2.17	67.407	77	85	279					
					67.598								

Orsat Measurement					
Test	Time	CO_2	O_2	CO	N_2
1		3.8	16.2		
2					
3					
4					

COMMENTS: Sampling train —

Filter No. T-00703-B
Filter No. F-91219-20

PITOT TUBE LEAK TEST: Initial Q_i ____ ∅; Final Q_f ____ ∅

$$\Delta H = K_{iso} C_p^2 D^4 \left(1 - \frac{WV}{100}\right)^2 \frac{C_m}{Q_s} \frac{P_s}{P_m} \frac{T_m}{T_s} \Delta P_s$$

SWANSON ENVIRONMENTAL

FIELD DATA SHEET

Plant: MI SUGAR
Date: 11-13-90
Location: CRAWELL
Operator: TGW
Stack No.: DRYER EXH.
Run No.: PART. NO 3 PORE 2
PITOT TUBE NO.: ____ C_p 0.
Meter Box No.: 501-5500-

Ambient Temperature ____
Barometric Pressure P_b ____ "Hg
Assumed Moisture, % WV ____
Probe Length, in. ____
Nozzle Diameter, in. D ____
Stack Diameter, in. ____
Stack Pressure, in H_2O ____
Sampling Train LEAK TEST Initial O_2 0 ; Final O_2 0

Meter $\Delta H@$ ____ M_1 7.2949
K ___ ____ Y_d ____
WET BULB TEMPERATURE ____

Volume of Liquid Water Collected	Impinger Volume ml 1	2	3	4	Silica Gel Weight 0
Final					
Initial					
Liquid Collected					

V_{lc} Total ____

	SAMPLING POINT	TIME	PITOT ΔP_s	ORIFICE ΔH	DRY GAS METER V_m	METER TEMP T_m °F	VACUUM	STACK TEMP T_s °F	FILTER TEMP	IMPINGER TEMP
	1		.36	1.96	67598	77	7	259		
	2		.40	2.17	67742	77	7	272		
	3		.42	2.22	67920	78	8	282		
	4		.45	2.38	68100	78	8	283		
	5		.47	2.48	68290	78	8	284		
	6		.52	2.74	68480	78	9	285		
	7		.49	2.58	68677	79	10	286		
	8		.49	2.58	68880	79	9.5	286		
	9		.44	2.32	69078	79	10	285		
	10		.44	2.32	69269	79	10	284		
	11		.39	2.07	69472	79	10	280		
	12		.37	1.98	69642	79	9	274		
					69830					

Orsat Measurement					
Test	Time	CO_2	O_2	CO	N_2
1					
2					
3					
4					

Filter No. ____

Filter No. ____

PITOT TUBE LEAK TEST Initial O_2 0 ; Final O_2 0

COMMENTS: Sampling train —

$$= K_{100} C_p^2 D^4 \left(1 - \frac{WV}{100}\right)^2 \frac{C_m}{C_s} \frac{P_s}{P_m} \frac{T_m}{T_s} \Delta P_s$$

APPENDIX D

Calibration Data

E: _____ Ids _____ BAROMETRIC PRESSURE (P_b): 29.6 in. Hg

TER BOX IDENTIFICATION: N-2

OTE: NTER F INTO ROGRAM- ONVERTS O OR OR YOU	ORIFICE READING (ΔH) in. H_2O	CALIBRATION METER GAS VOLUME (V_{ds}) ft^3	METER BOX METER GAS VOLUME (V_d) ft^3	TEMPERATURE CALIBRATION METER AVERAGE (t_{ds}) °F	TEMPERATURE METER BOX METER AVERAGE (t_d) °F	DRY GAS METER PRESSURE (Δp) in. H_2O	FLOW RATE (Q) cfm	TIME (Θ) min.	METER BOX METER COEFFICIENT (Y_d)	K_d
Stop		150.055	87.901	67.1	73					
Start	.5	.035	82.503	67.1	72.5	.60	0.39042	13.45	0.99076	0.13211
Average		5.298	5.398	67.1	72.75					
Stop		150.175	93.358	67.1	73					
Start	1.0	.055	87.901	67.1	73	.95	0.53614	9.80	0.97985	0.12833
Average		5.301	5.457	67.1	73					
Stop		150.115	98.849	67.1	73.5					
Start	1.5	.175	93.358	67.1	73	1.25	0.64792	8.10	0.97193	0.12668
Average		5.295	5.491	67.1	73.25					
Stop		150.160	104.370	67.1	74					
Start	2.0	.115	98.849	67.1	73.5	1.55	0.72947	7.20	0.96710	0.12356
Average		5.299	5.521	67.1	73.75					
Stop		150.255	109.949	66.2	74					
Start	2.5	.175	104.370	67.1	74	1.75	0.81506	6.45	0.95721	0.12347
Average		5.300	5.579	66.7	74					
Stop		150.265	115.520	66.2	73					
Start	3.0	.255	109.949	66.2	74	2.00	0.87669	6.00	0.95514	0.12121
Average		5.298	5.571	66.2	73.5					
								Average	0.97033	0.12589

$$Q = 17.55 \cdot \frac{V_{ds}}{\Theta} \cdot \frac{P_b}{(t_{ds}+460)}$$

$$K_d = \frac{V_{ds}}{\Theta} \sqrt{\frac{P_{ds}}{T_{ds}\ H}} \qquad P_{ds} = \left(P_b + \frac{\Delta p}{13.6}\right)$$

$$Y_d = Y_{ds} \frac{V_{ds}\ (t_d+460)}{(t_{ds}+460)} \frac{P_b}{\left(P_b + \frac{\Delta H}{13.6}\right)}$$

$$K_{iso} = \frac{27.40}{(K_d)^2} = \frac{27.40}{(\quad)^2} = 1728.89292$$

$\Delta H_@ = 1.85417$

1 ℓ = 0.0353146 ft^3

1 ft^3 = 141.58425 ℓ

SWANSON ENVIRONMENTAL INC

24158 Hoopsty Road

PITOT TUBE CALIBRATION

Pitot tube calibration number 13 6' Date 11-1-90

Calibrated by DG / BM

A Side Calibration

Run No.	Δp_{std} cm H_2O (in. H_2O)	Δp_s cm H_2O (in. H_2O)	$C_{p(s)}$	Deviation $C_{p(s)}-\bar{C}_{p(A)}$
1	.325	.540	.775	.001
2	.330	.545	.778	.004
3	.330	.555	.771	.003
		$\bar{C}_{p(side\ A)}$	.774	

B Side Calibration

Run No.	Δp_{std} cm H_2O (in. H_2O)	Δp_s cm H_2O (in. H_2O)	$C_{p(s)}$	Deviation $C_{p(s)}-\bar{C}_{p(B)}$
1	.320	.450	.843	.002
2	.330	.460	.846	.001
3	.335	.465	.848	.003
		$\bar{C}_{p(side\ B)}$	.845	

$\bar{X} = .809$

Figure 4-10. Pitot tube calibration data.

APPENDIX E

Dryer Operating Data

Michigan Sugar Company

Pulp Drier Data

Date: 11-12-90

Operator:

Location: Croswell

Equip. No.:

Fuel Type: oil

*Gallons on Oil, SCFH on Natural Gas
**If Applicable

Time	Slice Rate (Tons/Hr)	Totalizer Fuel Reading (Gallons)*	Fuel Rate (GPH)*	Furnace Temp. (°F)	Exit Temp. (°F)	Pressure Differential Across The Drum (In. Of Water)	Pressure Differential Across The Collector (In. Of Water)	FGR Flow Rate (ACFH)	Pressed Pulp Moisture (Feed) (% Water)	Dried Pulp Moisture (Product) % Water	**Feed Screw Speed Drier #1 (RPM)	**Feed Screw Speed Drier #2 (RPM)
12:45	157	57918	9.4	1580	263	1.08	7.8	1198	26.8	10.9	2530	.14
AM 1:00	156	58030	7.5	1580	268	.89	7.7	1194	75.0	10.0	2480	.13
1:15	146	58172	9.5	1580	275	.98	7.9	1195	72.0	9.1	2530	.14
1:30	162	58295	8.2	1600	277	.93	8.0	1184	68.5	6.9	2530	.14
1:45	154	58399	6.9	1680	270	.89	6.2	1182	71.1	5.8	2230	.14
2:00	152	58504	7.0	1650	270	.95	6.4	1172	715	3.5	2280	.14
2:15	153	58625	8.1	1560	268	1.17	8.0	1142	72.3	2.8	2540	.15
2:30	162	58755	8.7	1560	259	1.02	8.0	1155	75.4	6.5	2530	.14
2:45	151	58891	9.1	1570	264	.93	7.9	1165	77.2	9.7	2520	.13
3:00	148	59020	8.6	1600	276	.86	7.6	1171	77.7	8.9	2450	.13
3:15	153	59140	8.0	1560	275	.88	7.6	1200	76.4	5.0	2430	.14
3:30	159	59262	8.1	1520	273	1.02	7.8	1190	75.9	4.9	2500	.15
3:45	156	59390	8.5	1530	271	.95	7.7	1182	69.8	4.1	2440	.15
4:00	154	59481	6.1	1530	272	.86	7.8	1177	74.6	4.1	2490	.15
4:15	159	59600	7.9	1540	269	.94	7.9	1194	74.3	6.4	2540	.15
4:30	161	59710	7.3	1520	260	1.09	7.8	1190	73.2	7.8	2470	.14
4:45	156	59880	11.3	1560	266	.96	8.0	1176	79.4	11.1	2520	.15
5:00	160	59990	7.3	1580	267	.99	8.0	1159	77.5	10.5	2540	.15
5:15	158	60122	8.8	1590	276	.84	7.9	1195	79.6	9.9	2530	.16
5:30	163	60230	7.2	1590	277	.96	8.0	1188	80.2	7.8	2540	.14
5:45	160	60384	10.3	1590	266	.96	8.1	1180	74.1	7.4	2550	.15

FORMP IRS 9-24-90

Michigan Sugar Company

Pulp Drier Data

Pulp Test

*Gallons on Oil, SCFH on Natural Gas
**If Applicable

Date: Nov. 12 1990

Operator:

Location: Croswell

Equip. No.:

Fuel Type: #6 oil

Time	Slice Rate (Tons/Hr)	Totalizer Fuel Reading (Gallons)*	Fuel Rate (GPH)*	Furnace Temp. (°F)	Exit Temp. (°F)	Pressure Differential Across The Drum (In. Of Water)	Pressure Differential Across The Collector (In. Of Water)	FGR Flow Rate (ACFH)	Pressed Pulp Moisture (Feed) (% Water)	Dried Pulp Moisture (Product) % Water	**Feed Screw Speed Drier #1 (RPM)	**Feed Screw Speed Drier #2 (RPM)
AM 07:00		51970		1520	264	.95	8.4	1208	74.7	8.9	2580	.20
07:15		52054	5.6	1530	265	.99	8.4	1180	75.9	7.9	2580	.23
07:30		[illegible]	11.9	1540	263	.95	7.8	1204	74.2	6.2	2460	.19
07:45		52304	4.7	1520	265	.81	7.1	1210	75.3	4.7	2360	.17
08:00		52406	6.8	1600	256	.83	6.3	1270	84.6	3.4	2230	.18
08:15		52536	8.7	1550	266	.94	8.4	1190	75.2	4.7	2590	.19
08:30		52655	7.9	1580	264	.54	5.0	1257	75.8	4.9	1990	.16
08:45		52748	6.2	1570	254	.99	8.3	1175	79.9	5.7	2580	.16
09:00		52849	6.7	1460	257	.36	4.2	1246	75.1	6.3	1650	.14
09:15		52958	4.6	1470	244	.50	4.8	1232	72.2	4.1	1870	.18
09:30		53008	5.8	1280	241	.30	4.1	1248	71.7	4.1	1730	.15
09:45		53058	3.5	1240	242	.36	4.0	1249	71.4	3.4	1680	.16
10:00		53112	3.6						72.9	4.1		
10:15		53134	1.5	590	166	.37	.19	750	72.4	4.2	1190	.19
10:30		53138	0.3						72.1	2.6		
10:45		53165	1.5						72.0	4.1		
11:00		53185	1.6	560	198	.25	3.8	1268	73.1	4.1	1620	.195
11:15		53205	1.3						73.6	3.4		
11:30		53236	2.1						72.6	2.1		
11:45		53260	1.6	850	285	.12	1.9	1201	72.0	2.2	1090	.14
12:00									72.4	0		

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Michigan Sugar Company

Pulp Drier Data

Date: Nov 12-1990

Operator:

Location: Croswell

Equip. No.:

Fuel Type: ~~#~~ 6 oil

*Gallons on Oil, SCFH on Natural Gas
**If Applicable

Time	Slice Rate (Tons/Hr)	Totalizer Fuel Reading (Gallons)*	Fuel Rate (GPH)*	Furnace Temp. (°F)	Exit Temp. (°F)	Pressure Differential Across The Drum (In. Of Water)	Pressure Differential Across The Collector (In. Of Water)	FGR Flow Rate (ACFH)	Pressed Pulp Moisture (Feed) (% Water)	Dried Pulp Moisture (Product) % Water	**Feed Screw Speed Drier #1 (RPM)	Drier #2 (RPM)
pm 12:15									73.8			
12:30									72.4			
12:45									72.4			
13:00									73.1			
13:15		~~53391~~							72.2			
3:30	154	53371		990	245	052	048	1177	74.0		1846	30
3:45	152	53463	6.1	1210	261	1.05	7.3	1205	72.0	4.9	2380	18
4:00	145	53589	8.4	1280	245	0.99	6.9	1221	73.7	9.3	2310	13
4:15	159	53691	6.8	1370	264	.80	6.6	1197	72.0	13.1	2280	13
4:30	146	53806	7.7	1400	261	.89	6.8	1201	72.2	14.5	2330	13
4:45	151	53928	8.1	1400	269	.78	6.8	1189	74.0	12.4	2330	13
5:00	144	54054	8.4	1401	260	.86	6.9	1200	69.8	9.0	2330	13
5:15	143	54166	7.5	1460	255	1.03	6.9	1198	71.9	8.1	2380	12
5:30	162	54294	8.5	1470	266	.81	6.8	1203	74.7	9.5	2360	13
5:45	155	54412	7.9	1510	263	.99	7.1	1190	76.9	10.1	2380	12
6:00	160	54532	8.0	1550	263	.99	6.9	1205	78.2	11.0	2380	11
6:15	150	54682	10.0	1590	268	.81	8.3	1185	77.3	9.7	2580	12
6:30	145	54803	8.1	1610	269	1.07	7.7	1171	78.1	9.6	2510	12
6:45	153	54924	8.1	1640	266	1.13	7.8	1180	71.2	9.4	2520	11
7:00	150	55065	9.4	1650	258	1.11	7.7	1196	74.4	10.1	2520	11
7:15	150	55185	8.0	1640	265	.95	7.5	1178	72.9	10.1	2[illegible]	11

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Michigan Sugar Company

Pulp Drier Data

Date: 11-12-90

Operator:

Location: C. Roswell

Equip. No.:

Fuel Type: oil

*Gallons on Oil, SCFH on Natural Gas
**If Applicable

Time	Slice Rate (Tons/Hr)	Totalizer Fuel Reading (Gallons)*	Fuel Rate (GPH)*	Furnace Temp. (°F)	Exit Temp. (°F)	Pressure Differential Across The Drum (In. Of Water)	Pressure Differential Across The Collector (In. Of Water)	FGR Flow Rate (ACFH)	Pressed Pulp Moisture (Feed) (% Water)	Dried Pulp Moisture (Product) % Water	**Feed Screw Speed Drier #1 (RPM)	**Feed Screw Speed Drier #2 (RPM)
pm 730	155	55326	9.4	1650	262	0.94	07.6	1181	74.9	11.2	2480	11
745	158	55433	7.1	1660	261	1.04	7.7	1179	75.3	10.0	2480	11
800	148	55578	9.7	1680	264	.88	7.6	1184	72.9	10.2	2490	11
815	152	55717	9.3	1680	270	.93	7.8	1173	75.7	8.7	2440	11
830	155	55816	7.3	1800	270	.40	4.3	1222	78.7	8.4	1840	13
845	145	55913	5.8	1550	260	1.24	17.8	1127	78.3	6.6	2510	12
900	150	56052	9.3	1580	250	1.13	7.6	1173	75.1	4.4	2480	11
915	156	56163	7.4	1580	248	1.10	7.6	1183	75.0	9.3	2470	11
930	163	56302	9.3	1590	224	.85	7.7	1164	73.4	13.6	2550	11
945	155	56485	7.5	1590	267	.84	7.7	1129	73.4	12.8	2500	12
1000	160	56553	9.2	1600	262	1.03	7.9	1144	78.8	10.0	2530	12
1015	165	56680	8.5	1620	266	1.03	7.8	1132	78.6	9.8	2540	12
1030	157	56816	9.1	1660	269	1.00	7.9	1142	73.8	10.3	2530	12
1045	155	56947	8.7	1650	268	1.00	7.9	1113	74.6	10.6	2550	13
1100	157	57040	8.2	1650	263	1.00	7.8	1101	74.3	9.0	2520	.13
1115	156	57170	6.7	1650	260	1.00	7.8	1132	71.0	9.6	2520	.12
1130	150	57300	8.7	1650	270	.92	7.8	1116	72.3	10.3	2500	.13
1145	153	57443	9.7	1800	272	.53	4.5	1179	71.5	8.1	1880	.14
1200	152	57555	7.3	1570	268	1.14	7.9	1207	74.3	5.1	2540	.14
1215	148	57676	8.1	1560	262	1.13	7.7	1206	71.9	4.3	2520	.14
12[illegible]	164	57777	6.7	1570	260	.99	7.8	1205	74.0	7.8	252[illegible]	.15

FORMP[illegible] HRS 9-24-90

Michigan Sugar Company

Pulp Drier Data

Date: 11-13-90

Operator:

Location: Croswell

Equip. No.:

Fuel Type: #6 oil

*Gallons on Oil, SCFH on Natural Gas
**If Applicable

Time	Slice Rate (Tons/Hr)	Totalizer Fuel Reading (Gallons)*	% Fuel Rate (GPH)*	Furnace Temp. (°F)	Exit Temp. (°F)	Pressure Differential Across The Drum (In. Of Water)	Pressure Differential Across The Collector (In. Of Water)	Flue gas recirculation FGR Flow Rate (ACFH)	Pressed Pulp Moisture (Feed) (% Water)	Dried Pulp Moisture (Product) % Water	**Feed Screw Speed Drier #1 (RPM)	**Feed Screw Speed Drier #2 (RPM)
600	168	60503	7.9	1590	266	1.03	8.1	11770	74.1	8.1	2530	.15
615	163	60630	8.5	1620	280	.80	7.7	11360	74.9	11.1	2410	.14
630	157	60726	6.5	1720	271	.60	5.2	12160	75.1	10.1	2010	.16
645	152	60838	7.3	1530	271	1.19	8.0	11930	73.8	3.7	2550	.16
700	156	60970	8.8	1530	250	1.25	8.2	11700	76.4	5.2	2560	.15
715	150	61083	7.5	1530	253	.93	7.9	11190	77.5	13.3	2510	.14
730	150	61224	9.4	1610	279	.80	8.3	11700	78.3	16.5	2560	.15
745	145	61332	7.2	1610	284	.92	8.2	11750	75.9	12.9	2550	.16
800	150	61447	7.7	1620	285	.94	8.2	11510	75.6	8.9	2570	.15
815	140	61590	9.5	1670	285	.95	8.2	11550	72.8	7.1	2600	.15
830	140	61690	6.7	1670	285	.95	8.2	11550	73.9	8.4	2600	.15
845	147	61862	11.5	1640	284	.89	7.6	12570	73.7	6.5	2510	.13
900	146	61990	8.5	1580	274	.95	7.4	12760	74.4	3.5	2470	.13
915	140	62128	9.2	1630	266	1.20	7.8	12600	74.5	6.9	2510	.15
930	143	62216	5.9	1610	268	.95	7.9	12510	77.2	8.9	2520	.15
945	150	62350	8.9	1580	266	.97	7.7	12760	75.9	11.2	2500	.14
1000	145	62514	10.9	1590	276	.96	7.6	12560	74.0	11.1	2480	.15
1015	153	62617	6.9	1620	274	.81	6.1	12850	74.0	3.4	2200	.14
1030	153	62714	6.5	1560	271	.77	6.3	12480	68.1	2.8	2260	.14
1045	149	62828	7.6	1540	267	.103	6.8	12840	69.3	3.2	2[illegible]	.13
1100	141	62942	7.6	1690	273	.90	7.0	12[illegible]	[illegible]	[illegible]		

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Michigan Sugar Company

Pulp Drier Data

Date: 11-13-90

Operator:

Location: Croswell

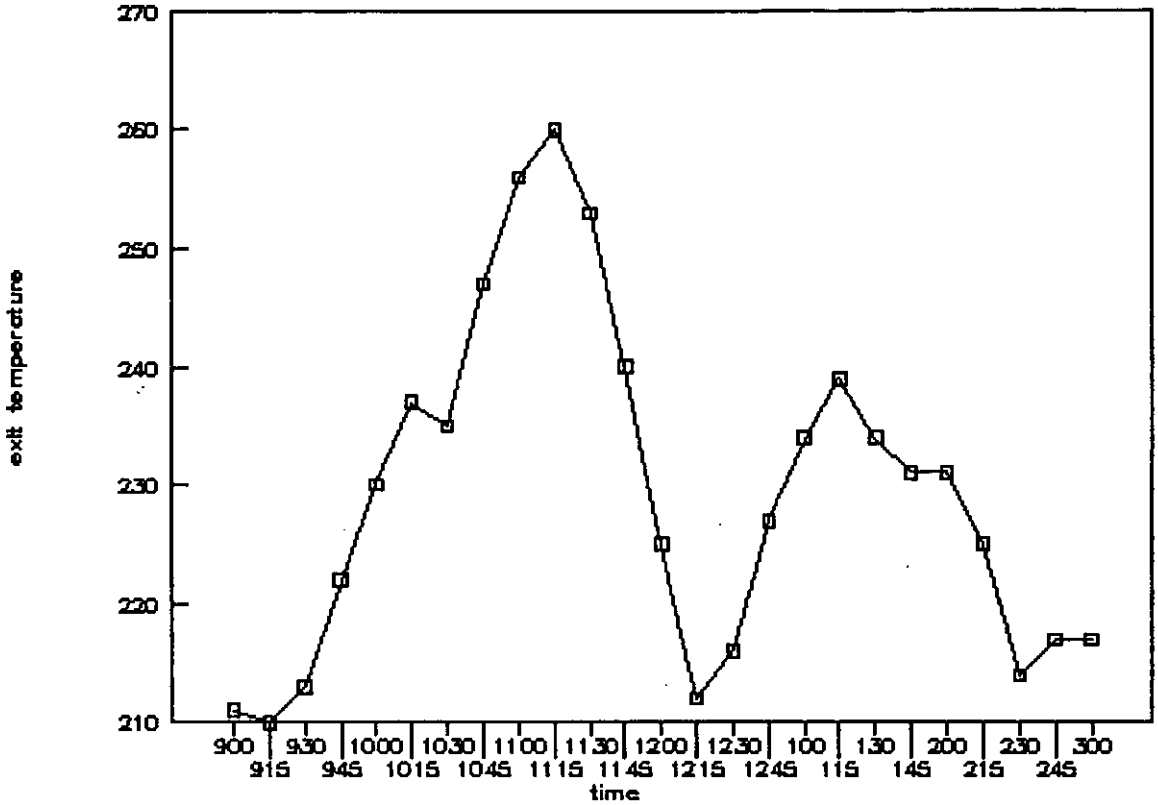
Equip. No.:

Fuel Type: #6 Oil

*Gallons on Oil, SCFH on Natural Gas
**If Applicable

	Time	Slice Rate (Tons/Hr)	Totalizer Fuel Reading (Gallons)*	Fuel Rate (GPH)*	Furnace Temp. (°F)	Exit Temp. (°F)	Pressure Differential Across The Drum (In. Of Water)	Pressure Differential Across The Collector (In. Of Water)	FGR Flow Rate (ACFM)	Pressed Pulp Moisture (Feed) (% Water)	Dried Pulp Moisture (Product) % Water	**Feed Screw Speed Drier #1 (RPM)	Drier #2 (RPM)
AM	11:15	139	63057	7.7	1810	272	.72	5.1	12590	68.1	4.1	2010	.14
	11:30	147	63153	6.4	1780	268	9.0	5.5	12590	72.1	3.3	2090	.14
	11:45	140	63263	7.3	1770	269	.79	5.4	12550	73.3	2.2	2080	.15
	12:00	142	63378	7.7	1760	259	.94	5.7	12570	75.6	2.2	2160	.14
	12:15	136	63505	8.5	1750	265	.94	7.5	13200	73.9	4.8	2450	.16
	12:30	145	63608	6.9	1720	260	.78	4.8	13270	73.7	6.3	1950	.16
	12:45	138	63710	6.8	1630	259	.90	6.6	13310	69.0	3.2	2320	.14
PM	1:00	130	63835	8.3	1650	267	.73	5.7	13260	75.2	2.6	2130	.15
	1:15	144	63944	7.3	1630	262	.78	6.2	13620	69.1	3.3	2220	.14
	1:30	140	64061	7.8	1550	262	.85	6.2	13200	74.1	2.5	2230	.14
	1:45	140	64177	7.7	1630	263	.76	6.2	13500	73.5	2.5	2210	.14
	2:00	140	64280	6.9	1690	264	.89	5.9	13590	74.1	2.5	2190	.15
	2:15	147	64390	7.3	1680	264	.82	6.0	13840	73.2	2.5	2200	.14
	2:30	151	64504	7.6	1710	265	.88	6.1	13700	73.4	2.2	2200	.14
	2:45	146	64610	7.1	1670	264	.80	6.0	13720	72.4	2.2	2100	.14
	3:00	142	64748	9.2	1650	262	.96	6.2	13600	72.7	2.2	2280	.14
	3:15	147	64832	5.6	1630	259	.82	6.6	13640	73.3	2.5	2260	.14
	3:30	133	64953	8.1	1650	260	.91	6.4	13470	72.0	3.3	2250	.14
	4:00	138	40277		1370	260	.94	6.3	1400	OFF		2240	.18
	5:00	160	40337		1530	270	.73	6.2	1411			2230	.15
	6:00	142	40408		1520	263	.77	6.3	1370			2210	.15

FORM HRS 9-24-90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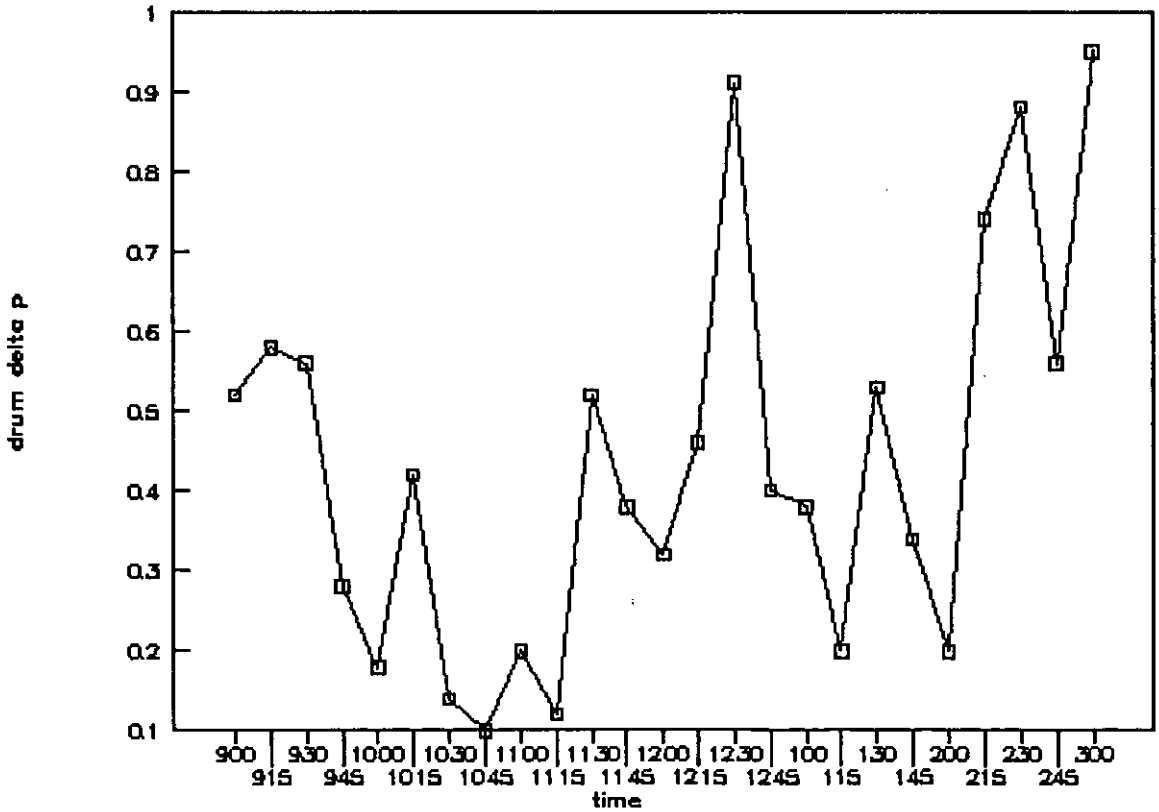
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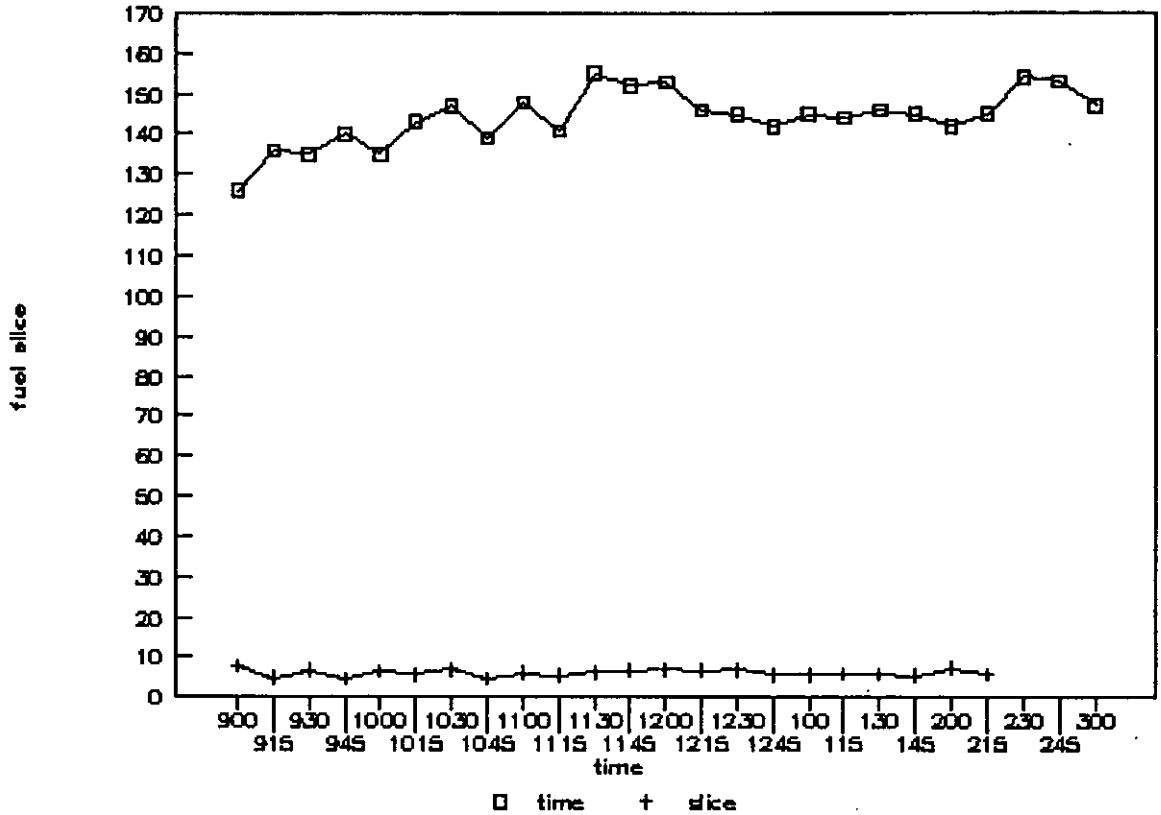
300
time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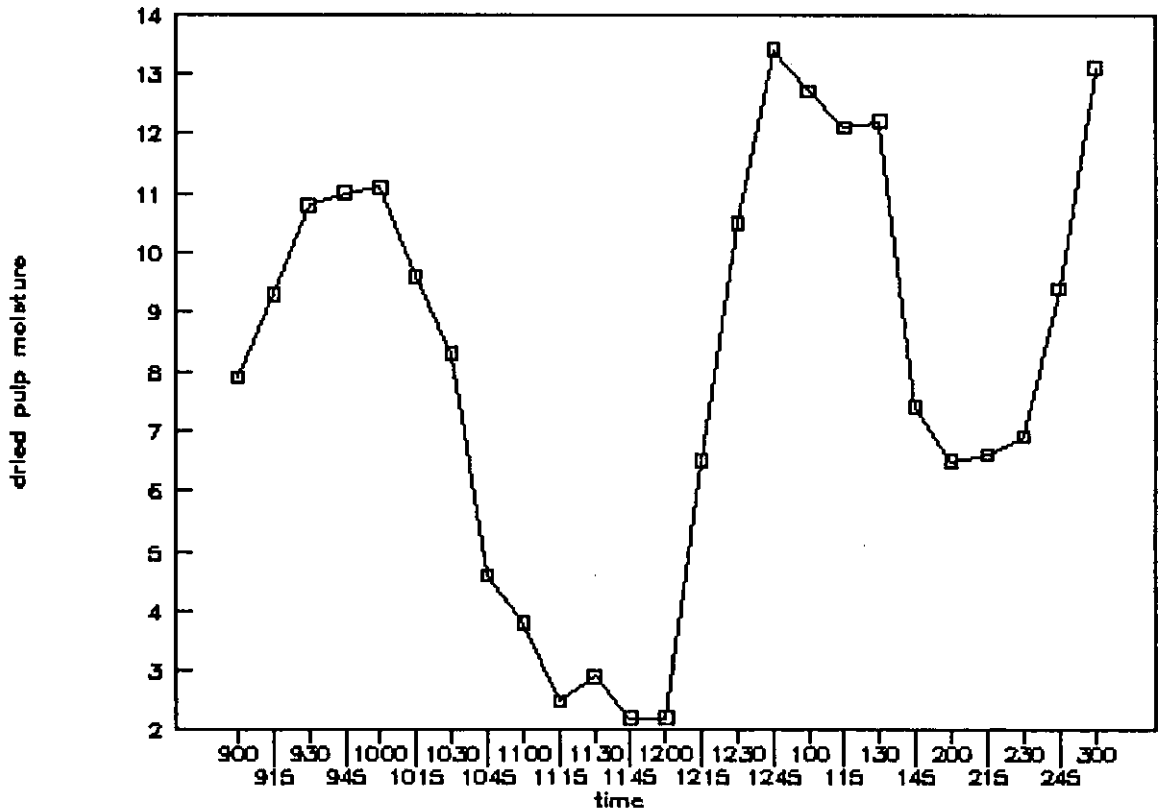
time
time
slice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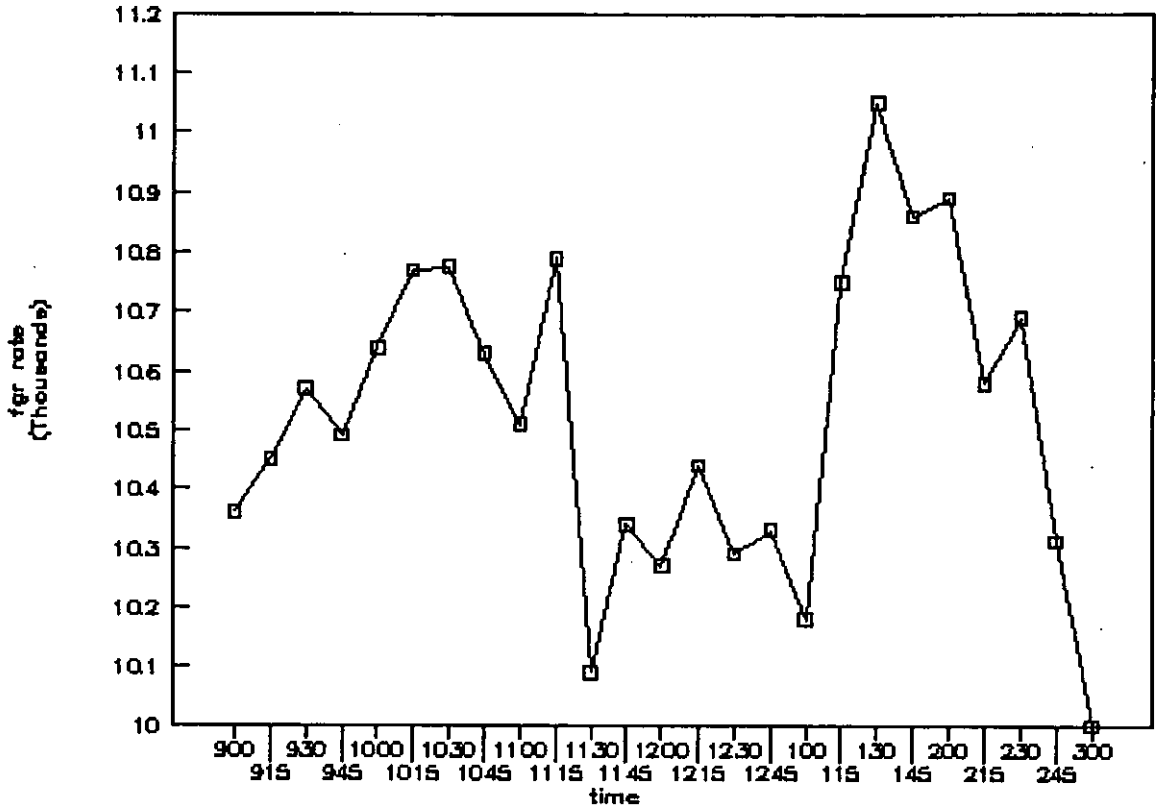
time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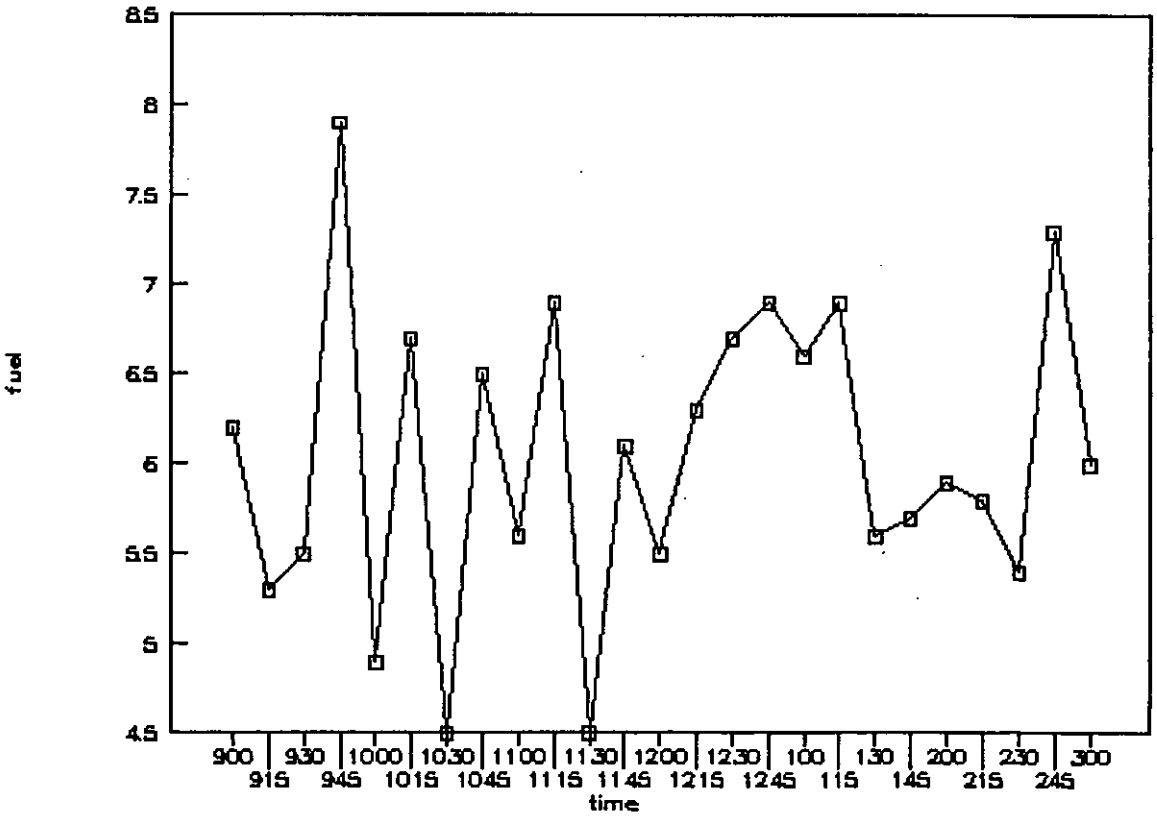
time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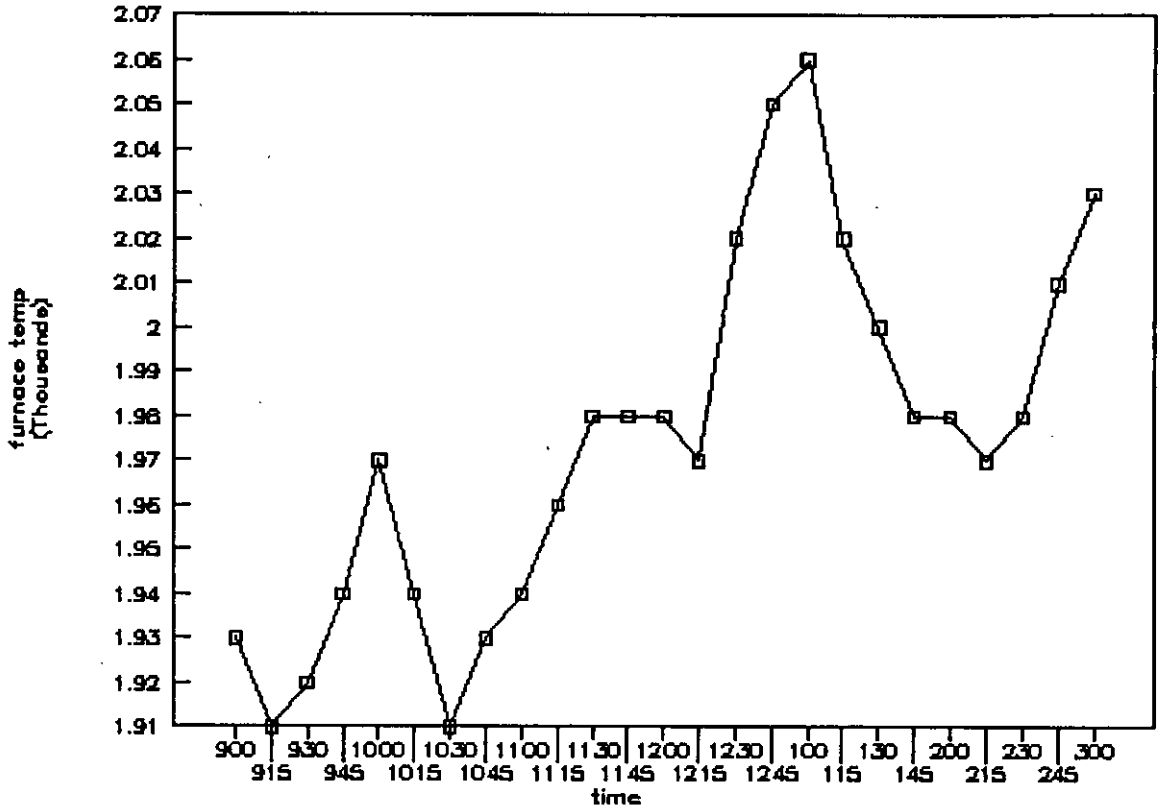
time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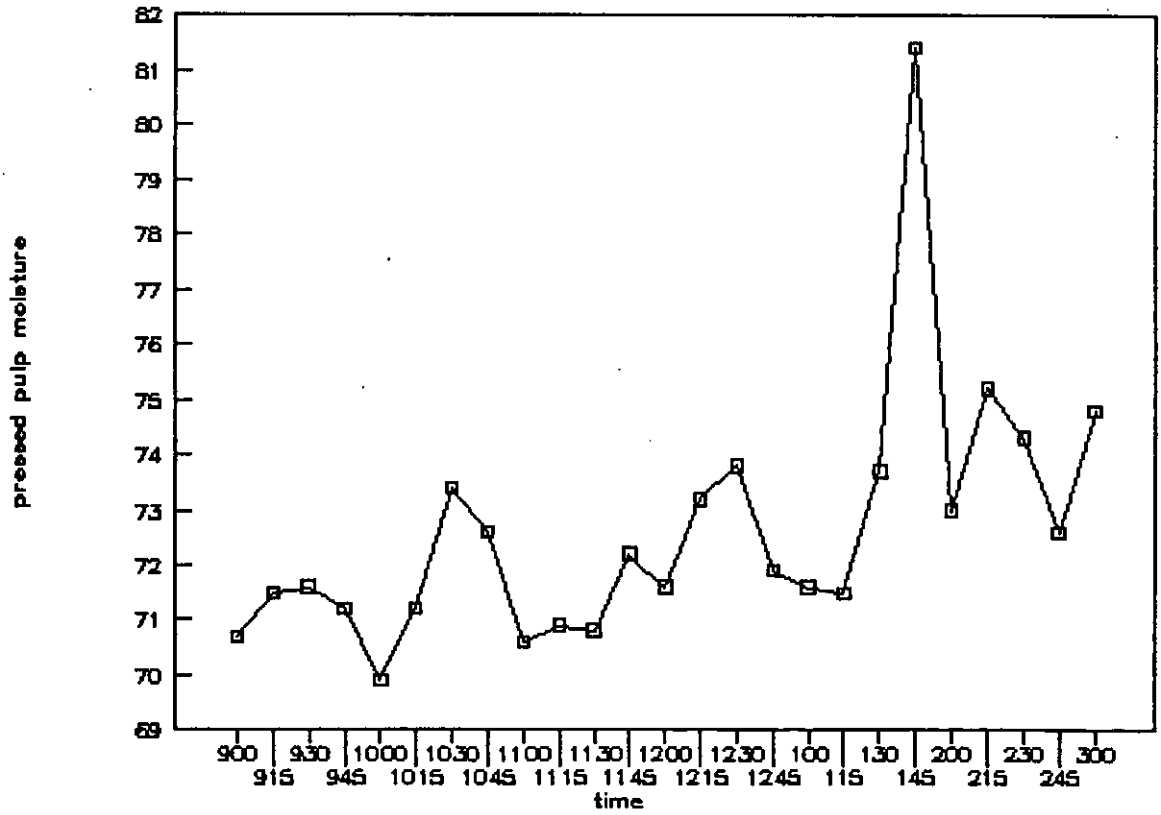
(Thousands)
2.07
2.06
2.05
2.04
2.03
2.02
2.01
2
1.99
1.98
1.97
1.96
1.95
1.94
1.93
1.92
1.91
900 930 1000 1030 1100 1130 1200 1230 100 130 200 230 300
915 945 1015 1045 1115 1145 1215 1245 115 145 215 245
time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81
80
79
78
77
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69
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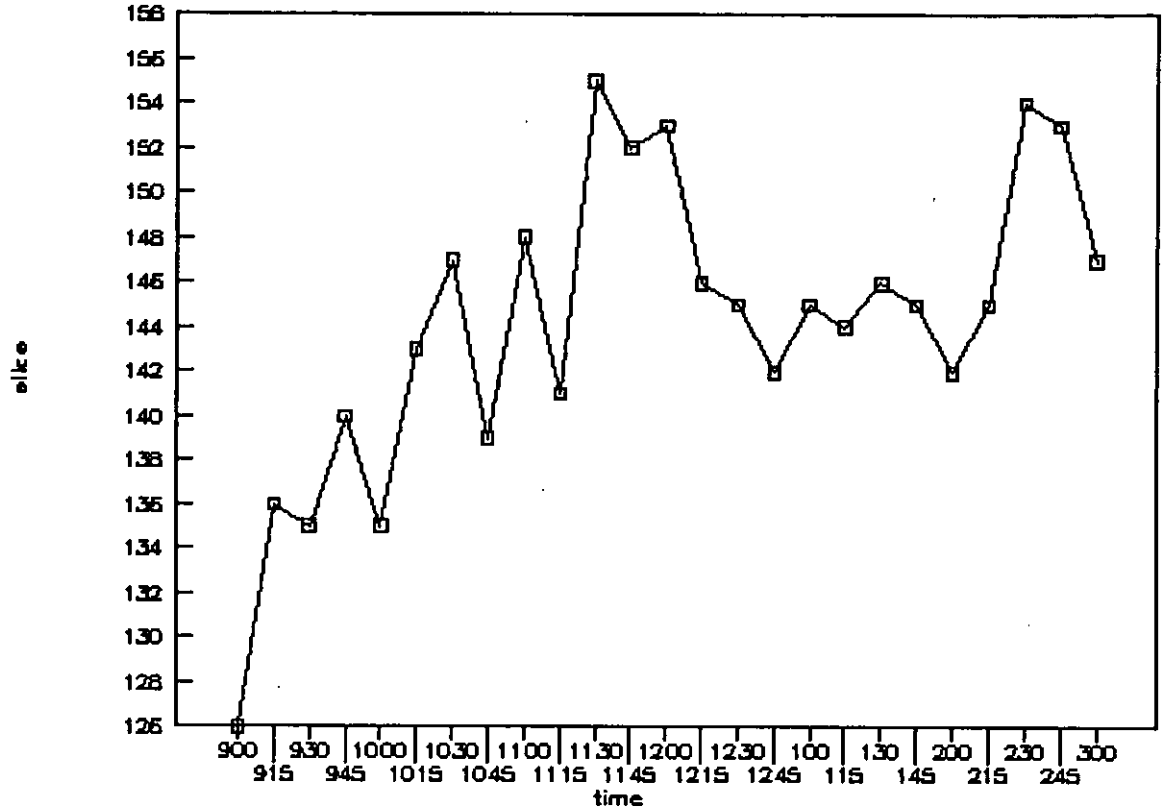
915 945 1015 1045 1115 1145 1215 1245 115 145 215 245
time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1015
1030
1045
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115
130
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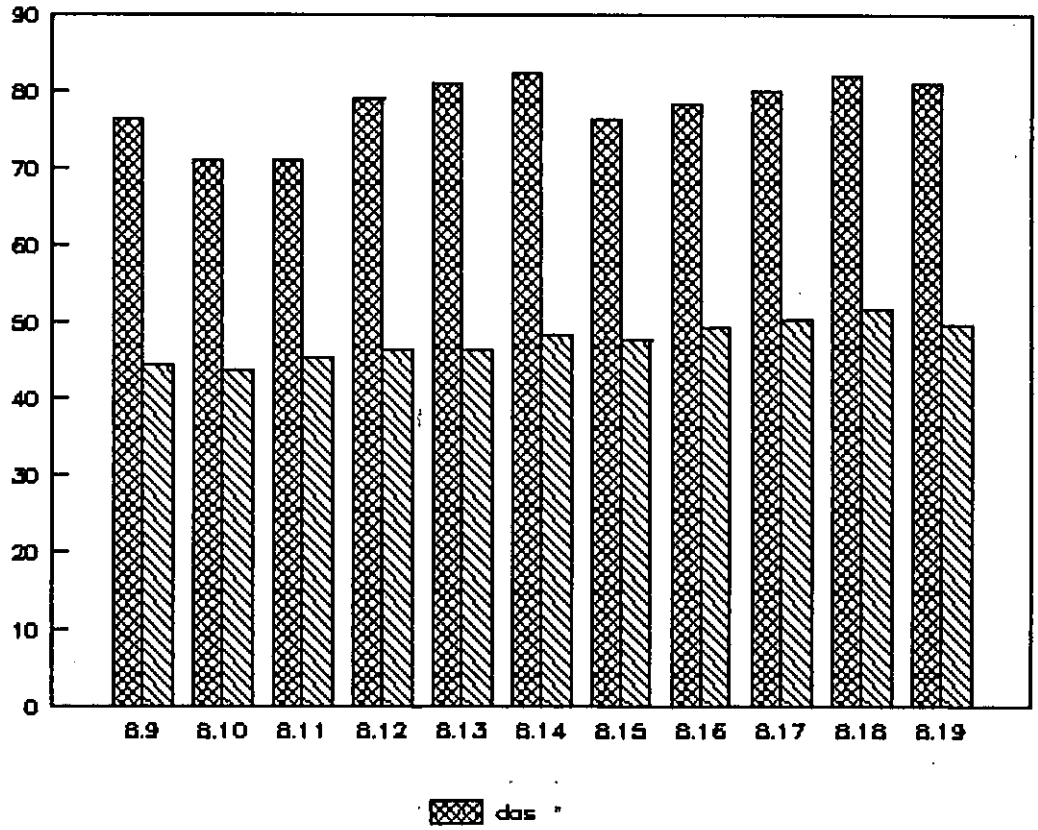
200
215
230
245
300
time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50
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30
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0
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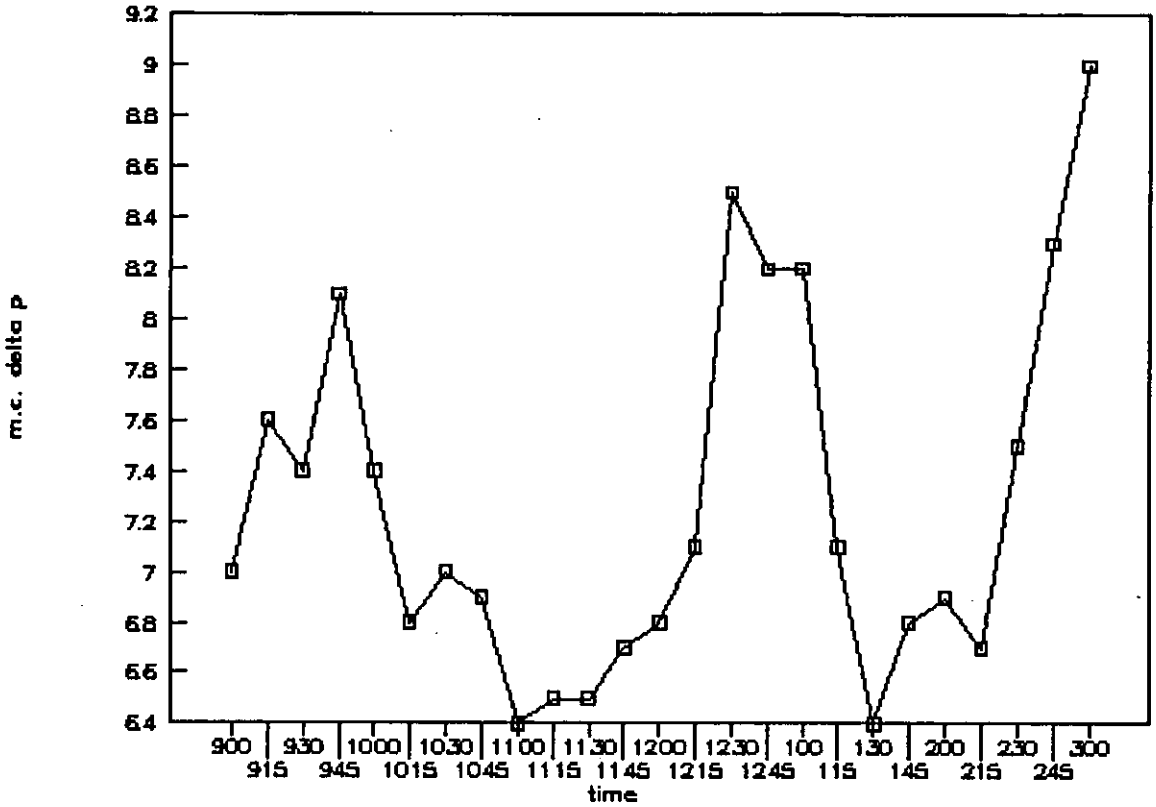
8.14
8.15
8.16
8.17
8.18
8.19
das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8.8
8.6
8.4
8.2
8
7.8
7.6
7.4
7.2
7
6.8
6.6
6.4
900
915
930
945
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1015
1030
1045
1100
1115
1130
1145
1200
1215
1230
1245
100
115
130
145
200
215
230
245
300
time

Michigan Sugar Company

Pulp Drier Data

Pulp Test

Date: Nov. 12 1990

Operator:

Location: Croswell

Equip. No.:

Fuel Type: #6 oil

*Gallons on Oil, SCFH on Natural Gas
**If Applicable

Time	Slice Rate (Tons/Hr)	Totalizer Fuel Reading (Gallons)*	Fuel Rate (GPH)*	Furnace Temp. (°F)	Exit Temp. (°F)	Pressure Differential Across The Drum (In. Of Water)	Pressure Differential Across The Collector (In. Of Water)	FGR Flow Rate (ACFH)	Pressed Pulp Moisture (Feed) (% Water)	Dried Pulp Moisture (Product) % Water	**Feed Screw Speed Drier #1 (RPM)	**Feed Screw Speed Drier #2 (RPM)
AM 07:00		51970		1520	264	.95	8.4	1208	74.7	8.9	2580	.20
07:15		52054	5.6	1530	265	.99	8.4	1180	75.9	7.9	2580	.23
07:30		[illegible]	11.9	1540	263	.95	7.8	1204	74.2	6.2	2460	.19
07:45		52304	4.7	1520	265	.81	7.1	1210	75.3	4.7	2360	.17
08:00		52406	6.8	1600	256	.83	6.3	1270	84.6	3.4	2230	.18
08:15		52536	8.7	1550	266	.94	8.4	1190	75.2	4.7	2590	.19
08:30		52655	7.9	1580	264	.54	5.8	1257	75.8	4.9	1990	.16
08:45		52748	6.2	1570	254	.99	8.3	1175	79.9	5.7	2580	.16
09:00		52849	6.7	1460	257	.36	4.2	1246	75.1	6.3	1650	.14
09:15		52918	4.6	1470	244	.50	4.8	1232	72.2	4.1	1870	.18
09:30		53005	5.8	1280	241	.30	4.1	1248	71.7	4.1	1730	.15
09:45		53055	3.5	1240	242	.36	4.0	1249	71.4	3.4	1680	.16
10:00		53112	3.6						72.9	4.1		
10:15		53134	1.5	590	166	.37	1.9	750	72.4	4.2	1190	.19
10:30		53138	0.3						72.1	2.6		
10:45		53161	1.5						72.0	4.1		
11:00		53185	1.6	560	198	.25	3.8	1268	73.1	4.1	1620	.15
11:15		53205	1.3						73.6	3.4		
11:30		53236	2.1						72.6	2.1		
11:45		53260	1.6	850	285	.12	1.9	1201	72.0	2.2	1090	.14
12:00									72.4	0		

FORM:PUDR.HRS;9-24-90

Michigan Sugar Company

Pulp Drier Data

Date: Nov 12-1990

Operator:

Location: Croswell

Equip. No.:

Fuel Type: ~~#~~ 6 oil

*Gallons on Oil, SCFH on Natural Gas
**If Applicable

Time	Slice Rate (Tons/Hr)	Totalizer Fuel Reading (Gallons)*	Fuel Rate (GPH)*	Furnace Temp. (°F)	Exit Temp. (°F)	Pressure Differential Across The Drum (In. Of Water)	Pressure Differential Across The Collector (In. Of Water)	FGR Flow Rate (ACFH)	Pressed Pulp Moisture (Feed) (% Water)	Dried Pulp Moisture (Product) % Water	**Feed Screw Speed Drier #1 (RPM)	**Feed Screw Speed Drier #2 (RPM)
pm 12:15												
12:30									73.8			
12:45									72.4			
13:00									72.4			
13:15		~~53391~~							73.1			
3:30	154	53371		990	245	052	048	1177	72.2			
3:45	152	53463	6.1	1210	261	1.05	7.3	1205	74.0		1840	30
4:00	145	53589	8.4	1280	245	0.99	6.9	1221	72.0	4.9	2380	18
4:15	159	53691	6.8	1370	264	.80	6.6	1197	73.7	9.3	2310	13
4:30	146	53806	7.7	1400	261	.89	6.8	1201	72.0	13.1	2280	13
4:45	151	53928	8.1	1400	269	.78	6.8	1189	72.2	14.5	2330	13
5:00	144	54054	8.4	1401	260	.86	6.9	1200	74.0	12.4	2330	13
5:15	143	54166	7.5	1460	255	1.03	6.9	1198	69.8	9.0	2330	13
5:30	162	54294	8.5	1470	266	81	6.8	1203	71.9	8.1	2380	12
5:45	155	54412	7.9	1510	263	99	7.1	1190	74.7	9.5	2360	13
6:00	160	54537	8.0	1550	263	99	6.9	1205	76.9	10.1	2380	12
6:15	150	54682	10.0	1590	268	81	8.3	1185	78.2	11.0	2380	11
6:30	145	54803	8.1	1610	269	1.07	7.7	1171	77.3	9.7	2580	12
6:45	153	54924	8.1	1640	266	1.13	7.8	1180	78.1	9.6	2510	12
7:00	150	55065	9.4	1650	258	1.11	7.7	1196	71.2	9.4	2520	11
7:15	150	55185	8.0	1640	265	.95	7.5	1178	74.4	10.1	2520	11
									72.9	10.1	2460	11

FORMPUDR.HRS. 9-24-90

Michigan Sugar Company

Pulp Drier Data

Date: 11-12-90

Operator:

Location: Croswell

Equip. No.:

Fuel Type: oil

*Gallons on Oil, SCFH on Natural Gas
**If Applicable

Time	Slice Rate (Tons/Hr)	Totalizer Fuel Reading (Gallons)*	Fuel Rate (GPH)*	Furnace Temp. (°F)	Exit Temp. (°F)	Pressure Differential Across The Drum (In. Of Water)	Pressure Differential Across The Collector (In. Of Water)	FGR Flow Rate (ACFM)	Pressed Pulp Moisture (Feed) (% Water)	Dried Pulp Moisture (Product) % Water	**Feed Screw Speed Drier #1 (RPM)	**Feed Screw Speed Drier #2 (RPM)
pm 730	155	55326	9.4	1650	262	0.94	07.6	1181	74.9	11.2	2480	11
745	158	55433	7.1	1660	261	1.04	7.7	1179	75.3	10.0	2480	11
800	148	55578	9.7	1680	264	.88	7.6	1184	72.9	10.2	2490	11
815	152	55717	9.3	1680	270	.93	7.8	1173	75.7	8.7	2440	11
830	155	55826	7.3	1800	270	.40	4.3	1222	78.7	8.4	1840	13
845	145	55913	5.8	1550	260	1.24	7.8	1127	78.3	6.6	2510	12
900	150	56052	9.3	1580	250	1.13	7.6	1173	75.1	4.4	2480	11
915	156	56163	7.4	1580	248	1.10	7.6	1187	75.0	9.3	2470	11
930	163	56302	9.3	1590	265	.85	7.7	1164	73.4	13.6	2550	11
945	155	56485	7.5	1590	267	.84	7.7	1129	73.4	12.8	2500	12
1000	160	56553	9.2	1600	262	1.03	7.9	1144	78.8	10.0	2530	12
1015	165	56680	8.5	1620	266	1.03	7.8	1132	78.6	9.8	2490	12
1030	157	56816	9.1	1660	269	1.00	7.9	1142	73.8	10.3	2530	12
1045	155	56947	8.7	1650	268	1.00	7.9	1113	74.6	10.6	2550	13
1100	157	57040	8.2	1650	263	1.00	7.8	1101	74.3	9.0	2520	.13
1115	156	57170	6.7	1650	260	1.00	7.8	1132	71.0	9.6	2520	.12
1130	150	57300	8.7	1650	270	.92	7.8	1116	72.3	10.3	2500	.13
1145	153	57443	9.7	1800	272	.53	4.5	1179	71.5	8.1	1880	.14
1200	152	57555	7.3	1570	268	1.14	7.9	1207	74.3	5.1	2540	.14
1215	149	57676	8.1	1560	262	1.13	7.7	1206	71.9	4.3	2520	.14
1230	164	57757	6.7	1570	260	.99	7.9	1205	74.0	7.8	2530	.15

FORMPUDR.MRS 9-24-90

Michigan Sugar Company

Pulp Drier Data

Date: 11-12-90

Operator:

Location: Croswell

Equip. No.:

Fuel Type: oil

*Gallons on Oil, SCFH on Natural Gas
**If Applicable

Time	Slice Rate (Tons/Hr)	Totalizer Fuel Reading (Gallons)*	Fuel Rate (GPH)*	Furnace Temp. (°F)	Exit Temp. (°F)	Pressure Differential Across The Drum (In. Of Water)	Pressure Differential Across The Collector (In. Of Water)	FGR Flow Rate (ACFM)	Pressed Pulp Moisture (Feed) (% Water)	Dried Pulp Moisture (Product) % Water	**Feed Screw Speed Drier #1 (RPM)	**Feed Screw Speed Drier #2 (RPM)
12:45	157	57918	9.4	1580	263	1.08	7.8	1198	76.8	10.9	2530	.14
AM 1:00	156	58030	7.5	1580	268	.89	7.7	1194	75.0	10.0	2480	.13
1:15	146	58172	9.5	1580	275	.98	7.9	1195	72.0	9.1	2530	.14
1:30	162	58295	8.2	1600	277	.93	8.0	1184	68.5	6.9	2530	.14
1:45	154	58399	6.9	1680	270	.89	6.2	1182	71.1	5.8	2230	.14
2:00	152	58504	7.0	1650	270	.95	6.4	1172	715	3.5	2280	.14
2:15	153	58625	8.1	1560	268	1.17	8.0	1142	72.3	2.8	2540	.15
2:30	162	58755	8.7	1560	259	1.02	8.0	1155	75.4	6.5	2530	.14
2:45	151	58891	9.1	1570	264	.93	7.9	1165	77.2	9.7	2520	.13
3:00	148	59020	8.6	1600	276	.86	7.6	1171	77.7	8.9	2450	.13
3:15	153	59140	80	1560	275	.88	7.6	1200	76.4	5.0	2430	.14
3:30	159	59262	8.1	1520	273	1.02	7.8	1190	75.9	4.9	2500	.15
3:45	156	59390	8.5	1530	271	.95	7.7	1182	69.8	4.1	2490	.15
4:00	154	59481	6.1	1530	272	.86	7.8	1177	74.6	4.1	2490	.15
4:15	159	59600	7.9	1540	269	.94	7.9	1194	74.3	6.4	2540	.15
4:30	161	59710	7.3	1520	260	1.09	7.8	1190	73.2	7.8	2470	.14
4:45	156	59880	11.3	1560	266	.96	8.0	1176	79.4	11.1	2520	.15
5:00	160	59990	7.3	1580	267	.99	8.0	1159	77.5	10.5	2540	.15
5:15	158	60122	8.8	1590	276	.84	7.9	1195	79.6	9.9	2530	.16
5:30	163	60250	7.2	1590	277	.96	8.0	1188	80.2	7.8	2540	.14
5:45	160	60384	10.3	1590	266	.96	8.1	1180	74.1	7.4	2550	.15

FORMPUDR.HRS 9-24-90

Michigan Sugar Company

Pulp Drier Data

Date: 11-13-90

Operator:

Location: Croswell

Equip. No.:

Fuel Type: #6 oil

*Gallons on Oil, SCFH on Natural Gas
**If Applicable

Time	Slice Rate (Tons/Hr)	Totalizer Fuel Reading (Gallons)*	% Fuel Rate (GPH)*	Furnace Temp. (oF)	Exit Temp. (oF)	Pressure Differential Across The Drum (In. Of Water)	Pressure Differential Across The Collector (In. Of Water)	FGR Flow Rate (ACFM)	Pressed Pulp Moisture (Feed) (% Water)	Dried Pulp Moisture (Product) % Water	**Feed Screw Speed Drier #1 (RPM)	**Feed Screw Speed Drier #2 (RPM)
600	168	60503	7.9	1590	266	1.03	8.1	11770	74.1	8.1	2530	.15
6:15	163	60630	8.5	1620	280	.80	7.7	11360	74.9	11.1	2440	.14
6:30	157	60726	6.5	1720	271	.60	5.2	12160	75.1	10.1	2010	.16
6:45	152	60838	7.3	1530	271	1.19	8.0	11930	73.8	3.7	2550	.16
AM 7:00	156	60970	8.8	1530	250	1.25	8.2	11700	76.4	5.2	2560	.15
7:15	150	61083	7.5	1530	253	.93	7.9	11190	77.5	13.3	2510	.14
7:30	150	61224	9.4	1610	279	.80	8.3	11700	78.3	16.5	2560	.15
7:45	145	61332	7.2	1610	284	.92	8.2	11750	75.9	12.9	2530	.16
8:00	150	61447	7.7	1620	285	.94	8.2	11510	75.6	8.9	2570	.15
8:15	140	61590	9.5	1670	285	.95	8.2	11550	72.8	7.1	2600	.15
8:30	140	61690	6.7	1670	285	.95	8.2	11550	73.9	8.4	2600	.15
8:45	147	61862	11.5	1640	284	.89	7.6	12570	73.7	6.5	2510	.13
9:00	146	61990	8.5	1580	274	.95	7.4	12760	74.4	3.5	2470	.13
9:15	140	62128	9.2	1630	266	1.20	7.8	12600	74.5	6.9	2510	.15
9:30	143	62216	5.9	1610	268	.95	7.9	12510	77.2	8.9	2520	.15
9:45	150	62350	8.9	1540	266	.97	7.7	12760	75.9	11.2	2500	.14
10:00	145	62514	10.9	1590	276	.96	7.6	12560	74.0	11.1	2480	.15
10:15	153	62617	6.9	1620	274	.81	6.1	12850	74.0	3.4	2200	.14
10:30	153	62714	6.5	1560	271	.77	6.3	12480	68.1	2.8	2260	.14
10:45	149	62828	7.6	1540	267	1.03	6.8	12840	69.3	3.2	2340	.13
11:00	141	62942	7.6	1690	273	.90	7.0	12070	68.7	3.4	2390	.13

FORMPUDR.HRS 9-24-90

Michigan Sugar Company

Pulp Drier Data

Date: 11-13-90

Operator:

Location: Croswell

Equip. No.:

Fuel Type: #6 Oil

*Gallons on Oil, SCFH on Natural Gas
**If Applicable

	Time	Slice Rate (Tons/Hr)	Totalizer Fuel Reading (Gallons)*	Fuel Rate (GPH)*	Furnace Temp. (°F)	Exit Temp. (°F)	Pressure Differential Across The Drum (In. Of Water)	Pressure Differential Across The Collector (In. Of Water)	FGR Flow Rate (ACFH)	Pressed Pulp Moisture (Feed) (% Water)	Dried Pulp Moisture (Product) % Water	**Feed Screw Speed (RPM) Drier #1	Drier #2
AM	11:15	139	63057	7.7	1810	272	.72	5.1	12590	68.1	4.1	2010	.14
	11:30	147	63153	6.4	1780	268	9.0	5.5	12590	72.1	3.3	2090	.14
	11:45	140	63263	7.3	1770	269	.79	5.4	12550	73.3	2.2	2080	.15
	12:00	142	63378	7.7	1760	259	.94	5.7	12570	75.6	2.2	2160	.14
	12:15	136	63505	8.5	1750	265	.94	7.5	13200	73.9	4.8	2450	.16
	12:30	145	63608	6.9	1720	260	.74	4.8	13270	73.7	6.3	1950	.16
	12:45	138	63710	6.8	1630	259	.90	6.6	13310	69.0	3.2	2320	.14
PM	1:00	130	63835	8.3	1650	267	.73	5.7	13260	75.2	2.6	2130	.15
	1:15	144	63944	7.3	1630	262	.78	6.2	13620	69.1	3.3	2220	.14
	1:30	140	64061	7.8	1550	262	.85	6.2	13200	74.1	2.5	2230	.14
	1:45	140	64177	7.7	1630	263	.76	6.2	13500	73.5	2.5	2210	.14
	2:00	140	64280	6.9	1690	264	.89	5.9	13590	74.1	2.5	2190	.15
	2:15	147	64390	7.3	1680	264	.82	6.0	13840	73.2	2.5	2200	.14
	2:30	151	64504	7.6	1710	265	.88	6.1	13700	73.4	2.2	2200	.14
	2:45	146	64610	7.1	1670	264	.80	6.0	13720	72.4	2.2	2100	.14
	3:00	142	64748	9.2	1650	262	.96	6.2	13600	72.7	2.2	2280	.14
	3:15	147	64832	5.6	1630	259	.82	6.6	13640	73.3	2.5	2260	.14
	3:30	133	64953	8.1	1650	260	.91	6.4	13470	72.0	3.3	2250	.14
	4:00	138	40277		1370	260	.94	6.3	1400	GAS		2240	.18
	5:00	160	40337		1530	270	.73	6.2	1411			2230	.15
	6:00	142	40408		1520	263	.77	6.3	1370			2210	.15

FORMPUDR.HRS 9-24-90

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9 0 1991

DATE	DAYS	DIFFUSER #1 SHIFTS 1ST	2ND	3RD	DIFFUSER #2 SHIFTS 1ST	2ND	3RD	BEETS SLICED TOTAL DAY	TONS SLICED TODATE	AVE.	SUGAR IN COSSETES % SUGAR DAY	TODATE	TONS SUGAR DAY	TODATE	STEAM ON BEETS TEMP C BTS	COSS	% STEAM DAY	TD	PRODUCT DAY	TD
10/26	32.00	571	540	570	370	510	494	3055	93507	2922	16.96	15.63	518.13	14614.87						
10/27	33.00	604	610	692	499	557	638	3600	97107	2943	16.81	15.67	605.16	15220.03						
10/28	34.00	616	525	626	505	492	573	3337	100444	2954	17.19	15.72	573.63	15793.66						
10/29	35.00	655	633	635	504	568	570	3565	104009	2972	17.09	15.77	609.26	16402.92						
10/30	36.00	547	668	614	554	510	495	3388	107397	2983	16.98	15.81	575.28	16978.20						
10/31	37.00	605	487	614	545	516	478	3245	110642	2990	16.59	15.83	538.35	17516.55						
11/01	38.00	467	503	538	231	206	357	2302	112944	2972	16.51	15.85	380.06	17896.61						
WK 5								22492		3213	16.89		3799.87							
TD									112944	2972		15.85		17896.61						
11/02	39.00	566	529	561	509	493	494	3152	116096	2977	16.18	15.85	509.99	18406.60						
11/03	40.00	575	599	590	530	524	447	3265	119361	2984	16.80	15.88	548.52	18955.12						
11/04	41.00	554	622	521	477	527	192	2893	122254	2982	16.74	15.90	484.29	19439.41						
11/05	42.00	618	606	552				1776	124030	2953	16.33	15.91	290.02	19729.43						
11/06	43.00	647	587	627				1861	125891	2928	16.94	15.92	315.25	20044.68						
11/07	44.00	672	654	557			340	2223	128114	2912	16.79	15.94	373.24	20417.92						
11/08	45.00	406	559	540	344	499	515	2863	130977	2911	16.60	15.95	475.26	20893.18						
WK 6								18033		2576	16.62		2996.57							
TD									130977	2911		15.95		20893.18						
11/09	46.00	597	597	600	530	524	507	3355	134332	2920	16.78	15.97	562.97	21456.15						
11/10	47.00	598	509	565	539	486	490	3187	137519	2926	17.23	16.00	549.12	22005.27						
11/11	48.00	398	545	560	466	511	459	2939	140458	2926	16.33	16.01	479.94	22485.21						
11/12	49.00	589	623	654	244	555	533	3198	143656	2932	16.74	16.02	535.35	23020.56						
11/13	50.00	584	594	601	514	473	534	3300	146956	2939	17.00	16.05	561.00	23581.56						
11/14	51.00	407	640	665	377	502	520	3111	150067	2942	17.31	16.07	538.51	24120.07						
11/15	52.00	649	652	634	523	495	476	3429	153496	2952	16.95	16.09	581.22	24701.29						
WK 7								22519		3217	16.91		3808.11							
TD									153496	2952		16.09		24701.29						
11/16	53.00	619	584	635	468	160	428	2894	156390	2951	16.90	16.11	489.09	25190.38						
11/17	54.00	602	605	597	281	451	484	3020	159410	2952	17.32	16.13	523.06	25713.44						
11/18	55.00	577	539	583	483	389	449	3020	162430	2953	16.95	16.15	511.89	26225.33						
11/19	56.00	567	551	522	474	530	413	3057	165487	2955	17.68	16.17	540.48	26765.81						
11/20	57.00	503	376	557	499	499	475	2909	168396	2954	17.00	16.19	494.53	27260.34						
11/21	58.00	603	600	591	470	494	484	3242	171638	2959	16.78	16.20	544.01	27804.35						
11/22	59.00				614	632	580	1826	173464	2940	17.23	16.21	314.62	28118.97						
WK 8								19968		2853	17.12		3417.68							
TD									173464	2940		16.21		28118.97						

1991

		DIFFUSION JUICE						DRAFT BY		THICK JUICE						THIN JUICE		
		BRIX			PURITY			SUGAR CONTENT		BRIX			PURITY			BRIX		
DATE	DAYS	DAY	TOTAL	TODATE	DAY	TOTAL	TODATE	DAY	TODATE	DAY	TOTAL	TODATE	DAY	TOTAL	TODATE	DAY	TOTAL	TODATE
10/26	32.00	13.49	411.66	12.86	90.22	2863.10	89.47	136.89	132.72	53.5	1486.5	46.5	93.16	2943.05	91.97	12.7	369.1	11.5
10/27	33.00	13.95	425.61	12.90	90.02	2953.12	89.49	131.39	132.62	49.2	1535.7	46.5	92.96	3036.01	92.00	13.4	382.5	11.6
10/28	34.00	13.98	439.59	12.93	90.06	3043.18	89.51	133.59	132.72	47.3	1583.0	46.6	92.36	3128.37	92.01	12.8	395.3	11.6
10/29	35.00	13.80	453.39	12.95	90.00	3133.18	89.52	134.14	132.93	47.6	1630.6	46.6	92.62	3220.99	92.03	13.3	408.6	11.7
10/30	36.00	13.82	467.21	12.98	90.00	3223.18	89.53	133.30	132.95	49.1	1679.7	46.7	92.99	3313.98	92.06	13.1	421.7	11.7
10/31	37.00	13.55	480.76	12.99	89.97	3313.15	89.54	133.38	133.00	48.0	1727.7	46.7	93.21	3407.19	92.09	12.9	434.6	11.7
11/01	38.00	13.26	494.02	13.00	90.09	3403.24	89.56	134.86	133.04	46.2	1773.9	46.7	92.46	3499.65	92.10	12.0	446.6	11.8
WK 5		13.69			90.05			134.09		48.7			92.82			12.9		
TD				13.00			89.56		133.04			46.7			92.10			11.8
11/02	39.00	13.62	507.64	13.02	89.89	3493.13	89.57	128.73	132.82	47.9	1821.8	46.7	93.24	3592.89	92.13	13.0	459.6	11.8
11/03	40.00	13.31	520.95	13.02	89.99	3583.12	89.58	136.67	133.07	48.8	1870.6	46.8	92.71	3685.60	92.14	12.9	472.5	11.8
11/04	41.00	13.42	534.37	13.03	89.93	3673.05	89.59	135.81	133.12	50.9	1921.5	46.9	91.88	3777.48	92.13	12.8	485.3	11.8
11/05	42.00	12.02	546.39	13.01	90.36	3763.41	89.61	146.48	133.38	49.3	1970.8	46.9	91.71	3869.19	92.12	9.4	494.7	11.8
11/06	43.00	13.58	559.97	13.02	90.09	3853.50	89.62	135.44	133.35	48.1	2018.9	47.0	92.04	3961.23	92.12	10.5	505.2	11.7
11/07	44.00	12.87	572.84	13.02	90.24	3943.74	89.63	141.99	133.51	53.2	2072.1	47.1	92.60	4053.83	92.13	11.6	516.8	11.7
11/08	45.00	14.19	587.03	13.05	90.09	4033.83	89.64	127.11	133.27	54.6	2126.7	47.3	91.99	4145.82	92.13	12.5	529.3	11.8
WK 6		13.29			90.08			135.65		50.4			92.31			11.8		
TD				13.05			89.64		133.27			47.3			92.13			11.8
11/09	46.00	13.53	600.56	13.06	90.04	4123.87	89.65	135.19	133.32	49.7	2176.4	47.3	92.76	4238.58	92.14	12.9	542.2	11.8
11/10	47.00	13.55	614.11	13.07	90.04	4213.91	89.66	138.19	133.46	47.6	2224.0	47.3	92.54	4331.12	92.15	13.2	555.4	11.8
11/11	48.00	13.04	627.15	13.07	90.15	4304.06	89.67	135.09	133.53	51.8	2275.8	47.4	92.82	4423.94	92.17	12.4	567.8	11.8
11/12	49.00	13.95	641.10	13.08	90.10	4394.16	89.68	129.68	133.42	50.6	2326.4	47.5	91.90	4515.84	92.16	13.1	580.9	11.9
11/13	50.00	13.94	655.04	13.10	89.94	4484.10	89.68	132.88	133.55	56.2	2382.6	47.7	93.14	4608.98	92.18	13.3	594.2	11.9
11/14	51.00	13.55	668.59	13.11	89.57	4573.67	89.68	139.58	133.54	51.9	2434.5	47.7	92.08	4701.06	92.18	12.7	606.9	11.9
11/15	52.00	13.96	682.55	13.13	90.00	4663.67	89.69	131.09	133.49	55.3	2489.8	47.9	93.27	4794.33	92.20	13.2	620.1	11.9
WK 7		13.65			89.98			134.50		51.8			92.64			13.0		
TD				13.13			89.69		133.49			47.9			92.20			11.9
11/16	53.00	13.27	695.82	13.13	90.15	4753.82	89.69	137.34	133.66	55.4	2545.2	48.0	92.39	4886.72	92.20	12.7	632.8	11.9
11/17	54.00	13.23	709.05	13.13	89.36	4843.18	89.69	143.29	133.83	53.3	2598.5	48.1	93.57	4980.29	92.23	13.0	645.8	12.0
11/18	55.00	13.07	722.12	13.13	89.88	4933.06	89.69	141.14	134.00	55.9	2654.4	48.3	93.34	5073.63	92.25	12.8	658.6	12.0
11/19	56.00	13.33	735.45	13.13	90.08	5023.14	89.70	143.91	134.15	54.4	2708.8	48.4	92.64	5166.27	92.25	12.8	671.4	12.0
11/20	57.00	12.96	748.41	13.13	89.72	5112.86	89.70	141.56	134.32	53.0	2761.8	48.5	92.57	5258.84	92.26	11.8	683.2	12.0
11/21	58.00	13.26	761.67	13.13	89.93	5202.79	89.70	137.11	134.41	49.0	2810.8	48.5	93.03	5351.87	92.27	12.8	696.0	12.0
11/22	59.00	13.90	775.57	13.15	89.62	5292.41	89.70	133.98	134.20	50.3	2861.1	48.5	92.88	5444.75	92.28	9.3	705.3	12.0
WK 8		13.29			89.82			139.73		53.0			92.92			12.2		
TD				13.15			89.70		134.20			48.5			92.28			12.0

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		LIME ROCK BURNED				COKE BURNED				CAO INTRODUCED				LIME CAKE		SUGAR LOST IN CAKE				SUGAR LOST, SEWER				CO2
		--TONS--		ZON BEETS		--TON--		ZON ROCKS		---TONS---		ZON BEETS		----TONS----		--TONS--		ZON BTS		--TONS-		ZON BEETS		%
DATE	DAY	DAY	TD	DAY	TD	DAY	TD	DAY	TD	DAY	TD	DAY	TD	DAY	TODATE	DAY	TD	DAY	TD	DAY	TD	DAY	TD	GAS
10/26	32	121	4516	3.96	4.83	11	410	9.09	9.08	60.5	2258.0	1.98	2.41	308.7	11213.0	1.73	93.54	.06	.10					31
10/27	33	170	4686	4.72	4.83	15	425	8.82	9.07	85.0	2343.0	2.36	2.41	445.0	11658.0	4.01	97.55	.11	.10					30
10/28	34	148	4834	4.44	4.81	13	438	8.78	9.06	74.0	2417.0	2.22	2.41	406.6	12064.6	2.11	99.66	.06	.10					31
10/29	35	135	4969	3.79	4.78	12	450	8.89	9.06	67.5	2484.5	1.89	2.39	381.4	12446.0	2.71	102.37	.08	.10					33
10/30	36	145	5114	4.28	4.76	13	463	8.97	9.05	72.5	2557.0	2.14	2.38	381.6	12827.6	3.70	106.07	.11	.10					30
10/31	37	139	5253	4.28	4.75	12	475	8.63	9.04	69.5	2626.5	2.14	2.37	377.7	13205.3	3.02	109.09	.09	.10					31
11/01	38	144	5397	6.26	4.78	13	488	9.03	9.04	72.0	2698.5	3.13	2.39	367.3	13572.6	3.27	112.36	.14	.10					30
WK 5		1002		4.45		89		8.88								20.55		.09						31
TD			5397		4.78		488		9.04								112.36		.10					
11/02	39	145	5542	4.60	4.77	13	501	8.97	9.04	72.5	2771.0	2.30	2.39	385.6	13958.2	4.63	116.99	.15	.10					31
11/03	40	137	5679	4.20	4.76	12	513	8.76	9.03	68.5	2839.5	2.10	2.38	349.5	14307.7	2.62	119.61	.08	.10					30
11/04	41	142	5821	4.91	4.76	13	526	9.15	9.04	71.0	2910.5	2.45	2.38	375.7	14683.4	1.54	121.15	.05	.10					32
11/05	42	114	5935	6.42	4.79	10	536	8.77	9.03	57.0	2967.5	3.21	2.39	278.0	14961.4	.58	121.73	.03	.10					31
11/06	43	116	6051	6.23	4.81	10	546	8.62	9.02	58.0	3025.5	3.12	2.40	325.8	15287.2	1.66	123.39	.09	.10					32
11/07	44	137	6188	6.16	4.83	12	558	8.76	9.02	68.5	3094.0	3.08	2.42	314.2	15601.4	1.38	124.77	.06	.10					31
11/08	45	149	6337	5.20	4.84	13	571	8.72	9.01	74.5	3168.5	2.60	2.42	361.7	15963.1	3.73	128.50	.13	.10					31
WK 6		940		5.21		83		8.83								16.14		.09						31
TD			6337		4.84		571		9.01								128.50		.10					
11/09	46	137	6474	4.08	4.82	12	583	8.76	9.01	68.5	3237.0	2.04	2.41	374.3	16337.4	2.36	130.86	.07	.10					28
11/10	47	142	6616	4.46	4.81	13	596	9.15	9.01	71.0	3308.0	2.23	2.41	349.8	16687.2	4.55	135.41	.14	.10					30
11/11	48	166	6782	5.65	4.83	15	611	9.04	9.01	83.0	3391.0	2.82	2.41	468.9	17156.1	2.44	137.85	.08	.10					30
11/12	49	135	6917	4.22	4.81	12	623	8.89	9.01	67.5	3458.5	2.11	2.41	334.2	17490.3	2.24	140.09	.07	.10					30
11/13	50	149	7066	4.52	4.81	13	636	8.72	9.00	74.5	3533.0	2.26	2.40	378.2	17868.5	4.08	144.17	.12	.10					29
11/14	51	161	7227	5.18	4.82	15	651	9.32	9.01	80.5	3613.5	2.59	2.41	439.9	18308.4	4.40	148.57	.14	.10					29
11/15	52	164	7391	4.78	4.82	15	666	9.15	9.01	82.0	3695.5	2.39	2.41	422.7	18731.1	4.57	153.14	.13	.10					30
WK 7		1054		4.68		95		9.01								24.64		.11						29
TD			7391		4.82		666		9.01								153.14		.10					
11/16	53	155	7546	5.36	4.83	14	680	9.03	9.01	77.5	3773.0	2.68	2.41	401.6	19132.7	1.77	154.91	.06	.10					29
11/17	54	141	7687	4.67	4.82	13	693	9.22	9.02	70.5	3843.5	2.33	2.41	381.1	19513.8	3.47	158.38	.11	.10					30
11/18	55	147	7834	4.87	4.82	13	706	8.84	9.01	73.5	3917.0	2.43	2.41	382.8	19896.6	2.56	160.94	.08	.10					28
11/19	56	146	7980	4.78	4.82	13	719	8.90	9.01	73.0	3990.0	2.39	2.41	361.4	20258.0	4.81	165.75	.16	.10					30
11/20	57	139	8119	4.78	4.82	12	731	8.63	9.00	69.5	4059.5	2.39	2.41	369.7	20627.7	2.44	168.19	.08	.10					32
11/21	58	132	8251	4.07	4.81	12	743	9.09	9.00	66.0	4125.5	2.04	2.40	354.8	20982.5	4.51	172.70	.14	.10					30
11/22	59	121	8372	6.63	4.83	11	754	9.09	9.01	60.5	4186.0	3.31	2.41	281.4	21263.9	2.81	175.51	.15	.10					31
WK 8		981		4.91		88		8.97								22.37		.11						30
TD			8372		4.83		754		9.01								175.51		.10					

DATE	DAY	ALKALINITY 1ST CARB	ALKALINITY 2ND CARB	LIME SALTS THIN JUICE	LIME SALTS STND LIQU	PH PRE. LIME	PH 2ND CARB	PH THIN JUICE	PH THICK JUICE	PH STND LIQU	SULPHUR POUNDS DAY	SULPHUR POUNDS TD	SULPHUR #/TON DAY	SULPHUR #/TON TD	SODA ASH POUNDS DAY	SODA ASH POUNDS TD	SODA ASH #/TON DAY	SODA ASH #/TON TD	FILTER AIDS POUNDS DAY	FILTER AIDS POUNDS TD	FILTER AIDS #/TON DAY	FILTER AIDS #/TON TD	PH DIFF # 1	PH JUICE # 2
10/26	32	.082	.027	.091	.103	11.5	9.7	9.1	8.6	8.4		12000			899	28861	6.1	6.2						
10/27	33	.088	.024	.075	.129	11.4	9.4	9.1	9.1	8.7		12000			1149	30010	6.1	6.2						
10/28	34	.088	.025	.067	.101	11.5	9.6	9.1	9.2	8.9		12000			741	30751	6.1	6.1						
10/29	35	.097	.025	.077	.100	11.8	9.6	9.3	9.2	8.9		12000			1080	31831	6.2	6.2						
10/30	36	.095	.026	.084	.067	11.8	9.5	9.0	9.0	8.8		12000			881	32712	6.2	6.1						
10/31	37	.096	.024	.078	.094	12.0	9.6	9.2	9.1	8.8		12000			722	33434	6.2	6.3						
11/01	38	.085	.026	.096	.091	12.0	9.4	9.2	8.9	8.5	2000	14000			881	34315	6.2	6.1						
WK 5		.090	.025	.081	.098	11.7	9.5	9.1	9.0	8.7	2000		.09						6353		.28		6.2	6.2
TD		.086	.024	.127	.136	11.8	9.6	9.1	8.8	8.5		14000		.12						34315		.30		
11/02	39	.092	.027	.092	.090	11.9	9.5	9.2	8.7	8.5		14000							923	35238			6.1	6.2
11/03	40	.094	.027	.096	.087	11.8	9.6	9.1	8.5	8.2		14000							1037	36275			6.2	6.2
11/04	41	.069	.050	.091	.076	11.5	9.6	9.3	8.5	8.1		14000							698	36973			6.0	6.2
11/05	42	.081	.030	.130	.140	11.6	9.9	9.0	7.8	7.7		14000							880	37853			6.2	
11/06	43	.088	.029	.150	.119	11.7	9.8	9.2	8.2	7.9		14000							1014	38867			6.0	
11/07	44	.097	.027	.149	.133	11.9	9.8	9.1	8.2	7.7		14000							880	39747			5.9	6.2
11/08	45	.097	.028	.171	.122	11.9	9.6	9.3	8.3	8.0	3000	17000							881	40628			6.2	5.9
WK 6		.088	.031	.126	.110	11.8	9.7	9.2	8.3	8.0	3000		.17						6313		.35		6.1	6.1
TD		.086	.025	.127	.132	11.8	9.6	9.1	8.7	8.4		17000		.13						40628		.31		
11/09	46	.093	.026	.134	.136	11.6	9.5	9.2	8.6	8.3		17000							948	41576			6.0	6.0
11/10	47	.089	.028	.149	.176	11.6	9.7	9.3	8.6	8.2		17000							973	42549			6.0	6.1
11/11	48	.085	.029	.094	.145	11.7	9.8	9.1	8.7	8.3		17000							968	43517			6.1	6.1
11/12	49	.087	.028	.091	.101	11.7	9.8	9.1	8.8	8.5		17000							948	44465			6.2	6.2
11/13	50	.086	.025	.142	.132	11.7	9.7	9.2	8.5	8.3		17000							947	45412			6.1	6.1
11/14	51	.088	.023	.174	.105	12.0	9.7	9.4	8.7	8.4		17000							993	46405			6.1	6.1
11/15	52	.096	.025	.139	.101	11.7	9.6	9.3	8.6	8.4	3000	20000							1056	47461			6.1	6.2
WK 7		.089	.026	.132	.128	11.7	9.7	9.2	8.6	8.3	3000		.13						6833		.30		6.1	6.1
TD		.086	.025	.127	.131	11.8	9.6	9.1	8.7	8.4		20000		.13						47461		.31		
11/16	53	.079	.022	.160	.113	12.0	9.5	9.1	8.3	8.0		20000							785	48246			6.0	6.0
11/17	54	.073	.032	.201	.212	11.6	9.5	9.0	8.3	7.9		20000							851	49097			5.9	6.0
11/18	55	.102	.024	.152	.147	12.0	9.8	9.4	8.7	8.2		20000							990	50087			6.1	6.1
11/19	56	.091	.024	.151	.113	11.8	9.7	9.2	8.4	8.1		20000							966	51053			6.0	5.9
11/20	57	.089	.027	.178	.187	11.8	9.7	9.5	8.7	8.4		20000							943	51996			6.1	5.1
11/21	58	.090	.028	.202	.218	11.8	9.7	9.4	8.9	8.6		20000							922	52918			6.0	5.9
11/22	59	.084	.025	.328	.181	11.9	9.7	9.2	8.2	7.8	3000	23000							986	53904				6.1
WK 8		.087	.026	.196	.167	11.8	9.7	9.3	8.5	8.1	3000		.15						6443		.32		6.0	5.9
TD		.086	.025	.136	.136	11.8	9.6	9.1	8.7	8.4		23000		.13						53904		.31		

DATE	DAY	PULP PRODUCED ---TONS--- DAY	TODATE	% ON BEETS DAY	TD	AVE	PRESSED PULP -----% MOISTURE----- DAY	TOTAL	TODATE	DRY PULP -----% MOISTURE----- DAY	TOTAL	TODATE	PELLET PULP -----% MOISTURE----- DAY	TOTAL	TODATE	% SUGAR IN PRESSED PULP -% SUGAR- DAY	TD	---TONS--- DAY	TD
10/26	32	122	4279	3.99	4.58	134	74.48	2210.24	73.67	11.35	291.30	9.71	11.56	328.86	10.96	.30	.36	9.17	334.80
10/27	33	180	4459	5.00	4.59	135	73.26	2283.50	73.66	9.15	300.45	9.69	12.24	341.10	11.00	.31	.36	11.16	345.96
10/28	34	150	4609	4.50	4.59	136	73.85	2357.35	73.67	9.75	310.20	9.69	11.32	352.42	11.01	.37	.36	12.35	358.31
10/29	35	178	4787	4.99	4.60	137	75.93	2433.28	73.74	9.83	320.03	9.70	12.18	364.60	11.05	.43	.36	15.33	373.64
10/30	36	152	4939	4.49	4.60	137	76.85	2510.13	73.83	11.23	331.26	9.74	11.78	376.38	11.07	.40	.36	13.55	387.19
10/31	37	146	5085	4.50	4.60	137	73.16	2583.29	73.81	10.05	341.31	9.75	10.19	386.57	11.04	.33	.36	10.71	397.90
11/01	38	92	5177	4.00	4.58	136	71.66	2654.95	73.75	9.50	350.81	9.74	11.14	397.71	11.05	.40	.36	9.21	407.11
WK 5		1020		4.53			74.17			10.12			11.49			.36		81.48	
TD			5177		4.58				73.75			9.74			11.05		.36		407.11
11/02	39	158	5335	5.01	4.60	137	73.90	2728.85	73.75	10.22	361.03	9.76	11.26	408.97	11.05	.42	.36	13.24	420.35
11/03	40	163	5498	4.99	4.61	137	75.24	2804.09	73.79	9.53	370.56	9.75	11.39	420.36	11.06	.43	.36	14.04	434.39
11/04	41	145	5643	5.01	4.62	138	74.23	2878.32	73.80	10.10	380.66	9.76	11.65	432.01	11.08	.35	.36	10.13	444.52
11/05	42	88	5731	4.95	4.62	136	76.60	2954.92	73.87	8.43	389.09	9.73	10.96	442.97	11.07	.42	.36	7.46	451.98
11/06	43	93	5824	5.00	4.63	135	74.98	3029.90	73.90	9.09	398.18	9.71	11.06	454.03	11.07	.37	.36	6.89	458.87
11/07	44	111	5935	4.99	4.63	135	69.55	3099.45	73.80	8.12	406.30	9.67	11.38	465.41	11.08	.30	.36	6.67	465.54
11/08	45	85	6020	2.97	4.60	134	67.55	3167.00	73.65	7.26	413.56	9.62	10.96	476.37	11.08	.35	.36	10.02	475.56
WK 6		843		4.67			73.15			8.96			11.24			.38		68.45	
TD			6020		4.60				73.65			9.62			11.08		.36		475.56
11/09	46	168	6188	5.01	4.61	135	70.48	3237.48	73.58	9.03	422.59	9.60	10.58	486.95	11.07	.31	.36	10.40	485.96
11/10	47	159	6347	4.99	4.62	135	73.86	3311.34	73.59	10.15	432.74	9.62	11.34	498.29	11.07	.37	.36	11.79	497.75
11/11	48	132	6479	4.49	4.61	135	74.74	3386.08	73.61	9.17	441.91	9.61	10.51	508.80	11.06	.45	.36	13.23	510.98
11/12	49	144	6623	4.50	4.61	135	74.81	3460.89	73.64	9.93	451.84	9.61	10.86	519.66	11.06	.44	.37	14.07	525.05
11/13	50	165	6788	5.00	4.62	136	73.70	3534.59	73.64	9.94	461.78	9.62	10.74	530.40	11.05	.34	.36	11.22	536.27
11/14	51	155	6943	4.98	4.63	136	72.92	3607.51	73.62	9.87	471.65	9.63	11.62	542.02	11.06	.37	.37	11.51	547.78
11/15	52	171	7114	4.99	4.63	137	73.72	3681.23	73.62	9.97	481.62	9.63	11.48	553.50	11.07	.48	.37	16.46	564.24
WK 7		1094		4.86			73.46			9.72			11.02			.39		88.68	
TD			7114		4.63				73.62			9.63			11.07		.37		564.24
11/16	53	144	7258	4.98	4.64	137	75.05	3756.28	73.65	10.11	491.73	9.64	10.32	563.82	11.06	.47	.37	13.60	577.84
11/17	54	151	7409	5.00	4.65	137	70.40	3826.68	73.59	8.13	499.86	9.61	10.96	574.78	11.05	.38	.37	11.48	589.32
11/18	55	151	7560	5.00	4.65	137	75.36	3902.04	73.62	9.31	509.17	9.61	11.22	586.00	11.06	.37	.37	11.17	600.49
11/19	56	152	7712	4.97	4.66	138	74.39	3976.43	73.64	9.84	519.01	9.61	11.81	597.81	11.07	.40	.37	12.23	612.72
11/20	57	145	7857	4.98	4.67	138	73.27	4049.70	73.63	8.41	527.42	9.59	10.56	608.37	11.06	.54	.37	15.71	628.43
11/21	58	160	8017	4.94	4.67	138	72.94	4122.64	73.62	7.81	535.23	9.56	11.16	619.53	11.06	.43	.37	13.94	642.37
11/22	59	90	8107	4.93	4.67	137	74.23	4196.87	73.63	6.66	541.89	9.51	10.59	630.12	11.05	.54	.38	9.86	652.23
WK 8		993		4.97			73.66			8.61			10.95			.44		87.99	
TD			8107		4.67				73.63			9.51			11.05		.38		652.23

1991

MOLASSES PRODUCED

DATE	DAY	TONS DAY	TONS TODATE	% ON BEETS DAY	% ON BEETS TD	% SUGAR DAY	% SUGAR TD	TONS SUGAR DAY	TONS SUGAR TODATE	SUGAR % BEETS DAY	SUGAR % BEETS TD	BRIX DAY	BRIX TOTAL	BRIX TD	PURITY DAY	PURITY TOTAL	PURITY TODATE	PH
10/26	32	180	3181	5.89	3.40	53.57	52.43	96.43	1667.90	3.16	1.78	87.2	2229.8	85.8	62.37	1580.74	60.80	7.3
10/27	33	180	3361	5.00	3.46	53.95	52.51	97.11	1765.01	2.70	1.82	86.5	2316.3	85.8	62.47	1643.21	60.86	7.7
10/28	34	150	3511	4.50	3.50	55.20	52.63	82.80	1847.81	2.48	1.84	85.8	2402.1	85.8	64.35	1707.56	60.98	7.8
10/29	35	128	3639	3.59	3.50	53.63	52.66	68.65	1916.46	1.93	1.84	83.9	2486.0	85.7	63.55	1771.11	61.07	8.0
10/30	36	120	3759	3.54	3.50	54.07	52.71	64.88	1981.34	1.91	1.84	84.7	2570.7	85.7	63.83	1834.94	61.16	8.4
10/31	37	157	3916	4.84	3.54	56.49	52.86	88.69	2070.03	2.73	1.87	85.5	2656.2	85.7	66.10	1901.04	61.32	8.4
11/01	38	179	4295	7.78	3.80	56.30	53.00	100.78	2276.53	4.38	2.02	85.3	2741.5	85.7	66.00	1967.04	61.47	8.4
WK 5		1094		4.86				599.34				85.6			64.10			8.0
TD			4295		3.80				2276.53					85.7			61.47	7.3
11/02	39	117	4412	3.71	3.80	55.85	53.08	65.34	2341.87	2.07	2.02	85.3	2826.8	85.7	65.47	2032.51	61.59	8.3
11/03	40	121	4533	3.71	3.80	61.28	53.30	74.15	2416.02	2.27	2.02	86.5	2913.3	85.7	65.15	2097.66	61.70	8.1
11/04	41	149	4682	5.15	3.83	54.71	53.34	81.52	2497.54	2.82	2.04	84.7	2998.0	85.7	64.63	2162.29	61.78	7.9
11/05	42	113	4795	6.36	3.87	51.88	53.31	58.62	2556.16	3.30	2.06	82.8	3080.8	85.6	62.67	2224.96	61.80	7.6
11/06	43	90	4885	4.84	3.88	50.24	53.25	45.22	2601.38	2.43	2.07	82.7	3163.5	85.5	60.76	2285.72	61.78	7.2
11/07	44	103	4988	4.63	3.89	51.05	53.21	52.58	2653.96	2.37	2.07	83.4	3246.9	85.4	61.25	2346.97	61.76	7.5
11/08	45	95	5083	3.32	3.88	51.25	53.17	48.69	2702.65	1.70	2.06	84.6	3331.5	85.4	60.57	2407.54	61.73	7.2
WK 6		788		4.37				426.12				84.3			62.93			7.7
TD			5083		3.88				2702.65					85.4			61.73	7.4
11/09	46	124	5207	3.70	3.88	50.63	53.11	62.78	2765.43	1.87	2.06	85.3	3416.8	85.4	59.35	2466.89	61.67	6.8
11/10	47	102	5309	3.20	3.86	51.29	53.07	52.32	2817.75	1.64	2.05	85.6	3502.4	85.4	59.96	2526.85	61.63	6.8
11/11	48	95	5404	3.23	3.85	49.76	53.02	47.27	2865.02	1.61	2.04	83.0	3585.4	85.4	59.98	2586.83	61.59	6.8
11/12	49	113	5517	3.53	3.84	49.90	52.95	56.39	2921.41	1.76	2.03	80.9	3666.3	85.3	61.57	2648.40	61.59	7.1
11/13	50	130	5647	3.94	3.84	51.52	52.92	66.98	2988.39	2.03	2.03	83.6	3749.9	85.2	61.63	2710.03	61.59	7.3
11/14	51	183	5830	5.88	3.88	51.42	52.87	94.10	3082.49	3.02	2.05	80.4	3830.3	85.1	63.98	2774.01	61.64	7.4
11/15	52	90	5920	2.62	3.86	55.67	52.92	50.10	3132.59	1.46	2.04	86.5	3916.8	85.1	64.15	2838.16	61.70	7.5
WK 7		837		3.72				429.94				83.6			61.52			7.1
TD			5920		3.86				3132.59					85.1			61.70	7.3
11/16	53	120	6040	4.15	3.86	55.47	52.97	66.56	3199.15	2.30	2.05	88.1	4004.9	85.2	62.82	2900.98	61.72	7.4
11/17	54	120	6160	3.97	3.86	54.10	52.99	64.92	3264.07	2.15	2.05	85.6	4090.5	85.2	63.18	2964.16	61.75	7.4
11/18	55	108	6268	3.58	3.86	56.73	53.05	61.27	3325.34	2.03	2.05	88.4	4178.9	85.3	64.12	3028.28	61.80	7.3
11/19	56	158	6426	5.17	3.88	54.30	53.08	85.79	3411.13	2.81	2.06	86.6	4265.5	85.3	62.85	3091.13	61.82	7.1
11/20	57	93	6519	3.20	3.87	54.30	53.10	50.50	3461.63	1.74	2.06	88.2	4353.7	85.4	61.60	3152.73	61.82	7.1
11/21	58	93	6612	2.87	3.85	53.70	53.11	49.94	3511.57	1.54	2.05	86.1	4439.8	85.4	62.37	3215.10	61.83	7.1
11/22	59	80	6692	4.38	3.86	53.47	53.11	42.78	3554.35	2.34	2.05	84.3	4524.1	85.4	63.40	3278.50	61.86	6.9
WK 8		772		3.87				421.76				86.8			62.91			7.2
TD			6692		3.86				3554.35					85.4			61.86	7.3

TEMPERATURES

DATE	DAY	DIFF FEED WATER DAY	DIFF FEED WATER TOTAL	DIFF FEED WATER TD	PRESS WATER DAY	PRESS WATER TOTAL	PRESS WATER TD	RAW JUICE IN DAY	RAW JUICE IN TOTAL	RAW JUICE IN TD	RJ AFTER SPIRAL DAY	RJ AFTER SPIRAL TOTAL	RJ AFTER SPIRAL TD	TO 1ST CARB DAY	TO 1ST CARB TOTAL	TO 1ST CARB TD	TO 2ND CARB DAY	TO 2ND CARB TOTAL	TO 2ND CARB TD	TO EVAPORATOR DAY	TO EVAPORATOR TOTAL	TO EVAPORATOR TD	STANDARD LIQUOR DAY	STANDARD LIQUOR TOTAL	STANDARD LIQUOR TD
10/26	32	55	1892	61	74	2313	75	45	1189	44				84	2392	80	95	2734	91	111	3301	118	87	2500	89
10/27	33	54	1946	61	71	2384	75	45	1234	44				87	2479	80	98	2832	91	110	3411	118	90	2590	89
10/28	34	52	1998	61	73	2457	74	40	1274	44				83	2562	80	94	2926	91	106	3517	117	87	2677	89
10/29	35	50	2048	60	73	2530	74	40	1314	44				82	2644	80	92	3018	91	104	3621	117	87	2764	89
10/30	36	50	2098	60	73	2603	74	40	1354	44				83	2727	80	93	3111	92	107	3728	117	89	2853	89
10/31	37	49	2147	60	73	2676	74	44	1398	44				83	2810	80	93	3204	92	131	3859	117	87	2940	89
11/01	38	53	2200	59	76	2752	74	43	1441	44				81	2891	80	90	3294	92	133	3992	117	87	3027	89
WK 5		52			73			42						83			94			115			88		
TD				59			74			44						80			92			117			89
11/02	39	52	2252	59	75	2827	74	45	1486	44				81	2972	80	93	3387	92	135	4127	118	86	3113	89
11/03	40	52	2304	59	76	2903	74	47	1533	44				82	3054	80	93	3480	92	135	4262	118	87	3200	89
11/04	41	49	2353	59	73	2976	74	46	1579	44				82	3136	80	92	3572	92	132	4394	119	86	3286	89
11/05	42	51	2404	59	75	3051	74	45	1624	44				84	3220	81	96	3668	92	138	4532	119	89	3375	89
11/06	43	55	2459	59	71	3122	74	43	1667	44				81	3301	81	88	3756	92	137	4669	120	86	3461	89
11/07	44	56	2515	58	75	3197	74	42	1709	44				85	3386	81	95	3851	92	137	4806	120	88	3549	89
11/08	45	49	2564	58	72	3269	74	39	1748	44				81	3467	81	91	3942	92	136	4942	121	85	3634	89
WK 6		52			74			44						82			93			136			87		
TD				58			74			44						81			92			121			89
11/09	46	61	2625	58	74	3343	74	41	1789	44				84	3551	81	89	4031	92	141	5083	121	85	3719	89
11/10	47	59	2684	58	76	3419	74	43	1832	44				76	3627	81	83	4114	91	129	5212	121	80	3799	88
11/11	48	59	2743	58	73	3492	74	41	1873	44				80	3707	81	84	4198	91	136	5348	122	87	3886	88
11/12	49	57	2800	58	73	3565	74	37	1910	43				83	3790	81	89	4287	91	135	5483	122	84	3970	88
11/13	50	64	2864	58	75	3640	74	40	1950	43				82	3872	81	92	4379	91	134	5617	122	88	4058	88
11/14	51	57	2921	58	75	3715	74	41	1991	43				83	3955	81	91	4470	91	132	5749	122	88	4146	88
11/15	52	58	2979	58	74	3789	74	40	2031	43				83	4038	81	92	4562	91	135	5884	123	82	4228	88
WK 7		59			74			40						82			89			135			85		
TD				58			74			43						81			91			123			88
11/16	53	53	3032	58	73	3862	74	40	2071	43				82	4120	81	93	4655	91	136	6020	123	84	4312	88
11/17	54	55	3087	58	77	3939	74	40	2111	43				83	4203	81	93	4748	91	135	6155	123	83	4395	88
11/18	55	54	3141	58	76	4015	74	40	2151	43				84	4287	81	94	4842	91	135	6290	123	83	4478	88
11/19	56	54	3195	58	77	4092	74	44	2195	43				85	4372	81	95	4937	91	136	6426	124	87	4565	88
11/20	57	51	3246	58	72	4164	74	46	2241	43				84	4456	81	93	5030	91	135	6561	124	87	4652	88
11/21	58	53	3299	58	73	4237	74	40	2281	43				83	4539	81	93	5123	91	133	6694	124	83	4735	88
11/22	59	60	3359	58	75	4312	74		2281	43				85	4624	81	96	5219	92	136	6830	124	89	4824	88
WK 8		54			75			42						84			94			135			85		
TD				58			74			43						81			92			124			88

1991

		STANDARD LIQUOR					WHITE PAN							HIGH GREEN				HIGH WASH			
		BRIX			PURITY	NO.	BRIX			PURITY				BRIX	PURITY			BRIX	PURITY		
DATE	DAY	DAY	TOTAL	TD		DAYS	DAY	TOTAL	TD	DAY	TOTAL	TD	PH	DAY	DAY	TOTAL	TD	DAY	DAY	TOTAL	TD
10/26	32	71.3	2136.7	66.7	94.6	30	91.7	2751.0	91.7	93.2	2783.2	92.8	7.6	79.3	86.8	2573.2	85.8	78.3	94.1	2773.0	92.4
10/27	33	70.6	2207.3	66.8	94.3	31	92.6	2843.6	91.7	93.5	2876.7	92.8	7.8	78.5	86.8	2660.0	85.8	78.9	92.7	2865.7	92.4
10/28	34	70.1	2277.4	66.9	94.2	32	91.8	2935.4	91.7	92.9	2969.6	92.8	8.3	78.8	87.4	2747.4	85.9	78.8	93.0	2958.7	92.5
10/29	35	70.8	2348.2	67.0	94.3	33	91.0	3026.4	91.7	93.7	3063.3	92.8	8.7	79.8	86.3	2833.7	85.9	78.8	92.5	3051.2	92.5
10/30	36	70.3	2418.5	67.1	93.5	34	91.7	3118.1	91.7	93.2	3156.5	92.8	8.8	79.2	86.6	2920.3	85.9	78.6	91.5	3142.7	92.4
10/31	37	68.1	2486.6	67.2	94.2	35	91.6	3209.7	91.7	93.5	3250.0	92.9	8.7	79.1	85.9	3006.2	85.9	78.5	92.0	3234.7	92.4
11/01	38	66.7	2553.3	67.1	94.0	36	90.9	3300.6	91.7	93.3	3343.3	92.9	8.5	78.3	87.4	3093.6	85.9	79.3	92.0	3326.7	92.4
WK 5		69.7			94.2		91.6			93.3			8.3	79.0	86.7			78.7	92.5		
TD				67.1					91.7			92.9					85.9				92.4
11/02	39	68.8	2622.1	67.2	93.7	37	92.0	3392.6	91.7	93.6	3436.9	92.9	8.5	79.6	86.2	3179.8	85.9	79.2	91.6	3418.3	92.4
11/03	40	69.5	2691.6	67.2	94.3	38	92.4	3485.0	91.7	92.8	3529.7	92.9	8.3	79.4	85.2	3265.0	85.9	80.0	90.7	3509.0	92.3
11/04	41	73.4	2765.0	67.4	93.5	39	91.9	3576.9	91.7	92.6	3622.3	92.9	8.1	79.8	84.7	3349.7	85.9	79.7	90.2	3599.2	92.3
11/05	42	69.9	2834.9	67.5	93.8	40	92.3	3669.2	91.7	92.7	3715.0	92.9	7.7	79.9	85.1	3434.8	85.9	80.2	90.4	3689.6	92.2
11/06	43	69.4	2904.3	67.5	93.8	41	92.0	3761.2	91.7	92.7	3807.7	92.9	7.8	80.3	85.7	3520.5	85.9	77.8	92.5	3782.1	92.2
11/07	44	72.0	2976.3	67.6	93.3	42	92.3	3853.5	91.8	92.6	3900.3	92.9	7.6	79.8	85.4	3605.9	85.9	79.0	92.2	3874.3	92.2
11/08	45	69.8	3046.1	67.6	93.3	43	91.3	3944.8	91.7	92.9	3993.2	92.9	7.9	79.2	86.2	3692.1	85.9	78.0	92.6	3966.9	92.3
WK 6		70.4			93.7		92.0			92.8			8.0	79.7	85.5			79.1	91.5		
TD				67.6					91.7			92.9					85.9				92.3
11/09	46	67.4	3113.5	67.6	93.8	44	92.1	4036.9	91.7	93.0	4086.2	92.9	8.2	79.7	85.6	3777.7	85.9	79.8	91.1	4058.0	92.2
11/10	47	68.9	3182.4	67.7	94.0	45	91.9	4128.8	91.8	92.9	4179.1	92.9	8.2	79.1	85.8	3863.5	85.9	79.9	90.6	4148.6	92.2
11/11	48	70.7	3253.1	67.7	94.0	46	91.7	4220.5	91.8	92.4	4271.5	92.9	8.2	79.7	86.2	3949.7	85.9	79.7	90.6	4239.2	92.2
11/12	49	72.1	3325.2	67.8	93.5	47	92.7	4313.2	91.8	93.1	4364.6	92.9	8.5	80.6	86.3	4036.0	85.9	80.2	91.9	4331.1	92.2
11/13	50	74.5	3399.7	67.9	94.1	48	92.4	4405.6	91.8	93.5	4458.1	92.9	8.5	79.8	87.6	4123.6	85.9	79.9	93.6	4424.7	92.2
11/14	51	70.5	3470.2	68.0	94.0	49	91.2	4496.8	91.8	93.6	4551.7	92.9	8.3	79.7	87.0	4210.6	85.9	79.4	91.5	4516.2	92.2
11/15	52	73.6	3543.8	68.1	94.7	50	92.2	4589.0	91.8	93.6	4645.3	92.9	8.3	80.3	87.1	4297.7	86.0	80.6	92.2	4608.4	92.2
WK 7		71.1			94.0		92.0			93.2			8.3	79.8	86.5			79.9	91.6		
TD				68.1					91.8			92.9					86.0				92.2
11/16	53	72.6	3616.4	68.2	94.0	51	91.8	4680.8	91.8	93.3	4738.6	92.9	7.9	79.9	86.8	4384.5	86.0	79.7	92.1	4700.5	92.2
11/17	54	70.5	3686.9	68.2	94.0	52	92.4	4773.2	91.8	93.4	4832.0	92.9	8.0	79.7	86.3	4470.8	86.0	79.7	92.2	4792.7	92.2
11/18	55	72.3	3759.2	68.3	94.1	53	91.7	4864.9	91.8	93.7	4925.7	92.9	8.0	80.7	86.4	4557.2	86.0	80.0	91.7	4884.4	92.2
11/19	56	72.7	3831.9	68.4	93.8	54	91.6	4956.5	91.8	93.1	5018.8	92.9	7.9	79.9	86.0	4643.2	86.0	80.3	90.7	4975.1	92.1
11/20	57	70.1	3902.0	68.4	93.8	55	92.1	5048.6	91.8	92.6	5111.4	92.9	8.0	79.6	85.8	4729.0	86.0	80.0	90.4	5065.5	92.1
11/21	58	68.5	3970.5	68.4	93.7	56	92.3	5140.9	91.8	92.7	5204.1	92.9	8.7	79.2	85.2	4814.2	86.0	79.5	91.3	5156.8	92.1
11/22	59	68.8	4039.3	68.4	93.5	57	92.0	5232.9	91.8	92.8	5296.9	92.9	7.9	79.5	84.9	4899.1	85.9	78.8	90.5	5247.3	92.1
WK 8		70.8			93.8		92.0			93.1			8.1	79.8	85.9			79.7	91.3		
TD				68.4					91.8			92.9					85.9				92.1

1991

		INTERMEDIATE (HIGH RAW) PAN							INTERMEDIATE SYRUP					LOW RAW PAN						
		BRIX			PURITY				BRIX	PURITY				BRIX			PURITY			
DATE	DAY	DAY	TOTAL	TD	DAY	TOTAL	TD	PH	DAY	DAY	TOTAL	TD	NO. DAYS	DAY	TOTAL	TD	DAY	TOTAL	TD	PH
10/26	30	90.5	2769.1	92.3	87.7	2584.3	86.1	7.7	83.0	77.2	2255.9	75.2	29	94.3	2715.9	93.7	74.84	2147.08	74.04	7.5
10/27	31	92.6	2861.7	92.3	86.2	2670.5	86.1	7.8	84.3	76.7	2332.6	75.2	30	94.0	2809.9	93.7	74.36	2221.44	74.05	7.5
10/28	32	91.2	2952.9	92.3	86.7	2757.2	86.2	8.6	84.0	77.0	2409.6	75.3	31	94.3	2904.2	93.7	76.10	2297.54	74.11	8.0
10/29	33	91.9	3044.8	92.3	86.9	2844.1	86.2	8.7	83.2	78.0	2487.6	75.4	32	95.4	2999.6	93.7	75.93	2373.47	74.17	8.7
10/30	34	91.5	3136.3	92.2	86.4	2930.5	86.2	8.7	84.9	76.1	2563.7	75.4	33	93.2	3092.8	93.7	75.74	2449.21	74.22	8.5
10/31	35	91.5	3227.8	92.2	85.1	3015.6	86.2	8.6	85.2	75.4	2639.1	75.4	34	93.2	3186.0	93.7	75.08	2524.29	74.24	8.5
11/01	36	90.8	3318.6	92.2	87.0	3102.6	86.2	8.5	83.8	77.8	2716.9	75.5	35	94.8	3280.8	93.7	74.85	2599.14	74.26	8.4
WK 5		91.4			86.6			8.4	84.1	76.9				94.2			75.27			8.2
TD				92.2			86.2					75.5				93.7			74.26	
11/02	37	91.4	3410.0	92.2	85.9	3188.5	86.2	8.2	83.2	75.9	2792.8	75.5	36	94.7	3375.5	93.8	75.73	2674.87	74.30	8.1
11/03	38	91.6	3501.6	92.1	84.8	3273.3	86.1	8.2	85.7	74.0	2866.8	75.4	37	95.4	3470.9	93.8	73.95	2748.82	74.29	8.1
11/04	39	91.4	3593.0	92.1	84.8	3358.1	86.1	8.0	83.6	74.8	2941.6	75.4	38	94.4	3565.3	93.8	72.76	2821.58	74.25	7.7
11/05	40	92.3	3685.3	92.1	84.7	3442.8	86.1	7.7	83.6	74.5	3016.1	75.4	39	95.8	3661.1	93.9	73.45	2895.03	74.23	7.5
11/06	41	91.5	3776.8	92.1	85.2	3528.0	86.0	7.8	83.2	74.0	3090.1	75.4	40	96.0	3757.1	93.9	74.03	2969.06	74.23	7.6
11/07	42	91.4	3868.2	92.1	85.9	3613.9	86.0	7.5	84.0	75.1	3165.2	75.4	41	94.6	3851.7	93.9	77.10	3046.16	74.30	7.3
11/08	43	90.7	3958.9	92.1	85.8	3699.7	86.0	7.6	83.4	76.3	3241.5	75.4	42	94.7	3946.4	94.0	74.83	3120.99	74.31	7.3
WK 6		91.5			85.3			7.9	83.8	74.9				95.1			74.55			7.7
TD				92.1			86.0					75.4				94.0			74.31	
11/09	44	91.7	4050.6	92.1	85.8	3785.5	86.0	7.9	84.8	74.8	3316.3	75.4	43	95.1	4041.5	94.0	73.42	3194.41	74.29	7.4
11/10	45	92.0	4142.6	92.1	85.8	3871.3	86.0	8.1	83.7	75.3	3391.6	75.4	44	95.6	4137.1	94.0	73.02	3267.43	74.26	7.8
11/11	46	91.8	4234.4	92.1	85.7	3957.0	86.0	8.1	83.8	75.5	3467.1	75.4	45	94.9	4232.0	94.0	74.30	3341.73	74.26	7.7
11/12	47	92.0	4326.4	92.1	86.5	4043.5	86.0	8.3	84.1	76.5	3543.6	75.4	46	95.5	4327.5	94.1	75.76	3417.49	74.29	7.9
11/13	48	91.3	4417.7	92.0	87.9	4131.4	86.1	8.5	84.1	78.8	3622.4	75.5	47	95.1	4422.6	94.1	78.28	3495.77	74.38	8.2
11/14	49	91.7	4509.4	92.0	87.1	4218.5	86.1	8.1	82.4	76.8	3699.2	75.5	48	93.4	4516.0	94.1	76.75	3572.52	74.43	7.7
11/15	50	91.7	4601.1	92.0	87.0	4305.5	86.1	8.2	84.6	77.5	3776.7	75.5	49	95.4	4611.4	94.1	76.84	3649.36	74.48	7.9
WK 7		91.7			86.5			8.2	83.9	76.5				95.0			75.48			7.8
TD				92.0			86.1					75.5				94.1			74.48	
11/16	51	91.2	4692.3	92.0	86.8	4392.3	86.1	7.9	83.4	76.6	3853.3	75.6	50	94.9	4706.3	94.1	75.36	3724.72	74.49	7.7
11/17	52	91.0	4783.3	92.0	85.9	4478.2	86.1	7.7	83.9	75.8	3929.1	75.6	51	94.4	4800.7	94.1	73.70	3798.42	74.48	7.4
11/18	53	91.5	4874.8	92.0	85.5	4563.7	86.1	7.8	85.2	75.5	4004.6	75.6	52	94.1	4894.8	94.1	74.30	3872.72	74.48	7.5
11/19	54	91.5	4966.3	92.0	85.9	4649.6	86.1	7.7	85.1	75.9	4080.5	75.6	53	93.2	4988.0	94.1	74.73	3947.45	74.48	7.5
11/20	55	91.3	5057.6	92.0	86.0	4735.6	86.1	7.9	84.7	75.4	4155.9	75.6	54	94.2	5082.2	94.1	75.96	4023.41	74.51	7.5
11/21	56	91.6	5149.2	92.0	85.3	4820.9	86.1	8.5	84.7	73.9	4229.8	75.5	55	93.3	5175.5	94.1	74.64	4098.05	74.51	7.9
11/22	57	90.5	5239.7	91.9	85.6	4906.5	86.1	8.0	83.6	74.8	4304.6	75.5	56	93.9	5269.4	94.1	74.70	4172.75	74.51	7.8
WK 8		91.2			85.9			7.9	84.4	75.4				94.0			74.77			7.6
TD				91.9			86.1					75.5				94.1			74.51	

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	WHITE PANS								INTERMEDIATE PANS						LOW RAW PANS					
DATE	NO PANS DAY	NO PANS TD	C/F MASSECUITE DAY	C/F MASSECUITE TODATE	BAGS DAY	C/F TD	C/F DAY	T.B. TD	NO PANS DAY	NO PANS TD	C/F MASSECUITE DAY	C/F MASSECUITE TODATE	C/F DAY	T.B. TD	NO PANS DAY	NO PANS TD	C/F MASSECUITE DAY	C/F MASSECUITE TODATE	C/F DAY	T.B. TODATE
10/26	13	367	17411	523205	37.8	41.2	5.7	5.6	8	187	5157	151441	1.7	1.6	5	120	3506	83752	1.1	.9
10/27	16	383	23997	547202	40.1	41.2	6.7	5.6	8	195	6875	158316	1.9	1.6	7	127	4902	88654	1.4	.9
10/28	15	398	22444	569646	44.2	41.3	6.7	5.7	8	203	6808	165124	2.0	1.6	5	132	3510	92164	1.1	.9
10/29	15	413	22441	592087	38.1	41.2	6.3	5.7	8	211	6890	172014	1.9	1.7	6	138	4202	96366	1.2	.9
10/30	16	429	23903	615990	42.9	41.2	7.1	5.7	8	219	6619	178633	2.0	1.7	5	143	3547	99913	1.0	.9
10/31	14	443	20552	636542	41.7	42.2	6.3	5.8	7	226	5788	184421	1.8	1.7	6	149	4221	104134	1.3	.9
11/01	14	457	19570	656112	37.6	42.0	8.5	5.8	9	235	6904	191325	3.0	1.7	6	155	4214	108348	1.8	1.0
WK 5	103		150318		40.5		6.7		56		45041		2.0		6		28102		1.2	
TD		457		656112		42.0		5.8		235		191325		1.7		155		108348		1.0
11/02	14	471	21114	677226	41.6	42.0	6.7	5.8	7	242	5813	197138	1.8	1.7	6	161	4199	112547	1.3	1.0
11/03	14	485	20975	698201	44.1	42.1	6.4	5.8	8	250	6620	203758	2.0	1.7	6	167	4223	116770	1.3	1.0
11/04	15	500	22615	720816	40.3	42.0	7.8	5.9	8	258	6629	210387	2.3	1.7	7	174	4925	121695	1.7	1.0
11/05	10	510	14831	735647	52.8	42.2	8.4	5.9	6	264	4989	215376	2.8	1.7	4	178	2810	124505	1.6	1.0
11/06	8	518	11813	747460	40.5	42.2	6.3	5.9	4	268	3311	218687	1.8	1.7	3	181	2107	126612	1.1	1.0
11/07	9	527	13369	760829	36.8	42.1	6.0	5.9	5	273	4209	222896	1.9	1.7	3	184	2125	128737	1.0	1.0
11/08	13	540	19321	780150	39.2	42.1	6.7	6.0	7	280	5780	228676	2.0	1.7	4	188	2832	131569	1.0	1.0
WK 6	83		124038		42.1		6.9		45		37351		2.1		5		23221		1.3	
TD		540		780150		42.1		6.0		280		228676		1.7		188		131569		1.0
11/09	14	554	20719	800869	42.5	42.1	6.2	6.0	7	287	5811	234487	1.7	1.7	5	193	3521	135090	1.0	1.0
11/10	14	568	20910	821779	40.3	42.0	6.6	6.0	8	295	6636	241123	2.1	1.8	4	197	3521	138611	1.1	1.0
11/11	14	582	21113	842892	40.3	42.0	7.2	6.0	7	302	5769	246892	2.0	1.8	4	201	2807	141418	1.0	1.0
11/12	15	597	22426	865318	42.8	42.0	7.0	6.0	8	310	6646	253538	2.1	1.8	5	206	3508	144926	1.1	1.0
11/13	16	613	22463	887781	45.3	42.1	6.8	6.0	9	319	6662	260200	2.0	1.8	6	212	4196	149122	1.3	1.0
11/14	14	627	21005	908786	41.9	42.1	6.8	6.1	7	326	5794	265994	1.9	1.8	4	216	2809	151931	.9	1.0
11/15	15	642	22279	931065	41.1	42.1	6.5	6.1	8	334	6451	272445	1.9	1.8	5	221	3496	155427	1.0	1.0
WK 7	102		150915		42.0		6.7		54		43769		1.9		5		23858		1.1	
TD		642		931065		42.1		6.1		334		272445		1.8		221		155427		1.0
11/16	14	656	19391	950456	45.7	42.1	6.7	6.1	9	343	7419	279864	2.6	1.8	5	226	3505	158932	1.2	1.0
11/17	14	670	20493	970949	39.7	42.1	6.8	6.1	7	350	5702	285566	1.9	1.8	5	231	3575	162507	1.2	1.0
11/18	14	684	20761	991710	39.1	42.0	6.9	6.1	9	359	7156	292722	2.4	1.8	6	237	4206	166713	1.4	1.0
11/19	14	698	22199	1013909	43.0	42.0	7.3	6.1	9	368	7359	300081	2.4	1.8	6	243	4217	170930	1.4	1.0
11/20	14	712	19266	1033175	49.5	42.2	6.6	6.1	7	375	5772	305853	2.0	1.8	5	248	3506	174436	1.2	1.0
11/21	13	725	19343	1052518	39.9	42.1	6.0	6.1	6	381	4913	310766	1.5	1.8	5	253	3552	177988	1.1	1.0
11/22	12	737	16400	1068918	42.8	42.1	9.0	6.2	6	387	4962	315728	2.7	1.8	4	257	2804	180792	1.5	1.0
WK 8	95		137853		42.7		6.9		53		43283		2.2		4		25365		1.3	
TD		737		1068918		42.1		6.2		387		315728		1.8		257		180792		1.0

DATE	DAY	SUGAR SACKED CWTS. DAY	SUGAR SACKED CWTS. TODATE	GROSS EXTRACTION % ON BEETS DAY	GROSS EXTRACTION % ON BEETS TODATE	GROSS EXTRACTION % ON SUGAR DAY	GROSS EXTRACTION % ON SUGAR TODATE	GROSS EXTRACTION POUNDS DAY	GROSS EXTRACTION POUNDS TODATE	LAST YEARS SUGAR INTRODUCED % ON BEETS DAY	LAST YEARS SUGAR INTRODUCED % ON BEETS TD	LAST YEARS SUGAR INTRODUCED % ON SUGAR DAY	LAST YEARS SUGAR INTRODUCED % ON SUGAR TD	NET EXTRACTION % ON BEETS DAY	NET EXTRACTION % ON BEETS TD	NET EXTRACTION % ON SUGAR DAY	NET EXTRACTION % ON SUGAR TD
10/26	32	6575	215667	10.76	11.53	63.45	73.78		122500	.00	.07	.00	.42	10.76	11.47	63.45	73.36
10/27	33	9630	225297	13.38	11.60	79.57	74.03		122500	.00	.06	.00	.40	13.38	11.54	79.57	73.63
10/28	34	9930	235227	14.88	11.71	86.55	74.49	5000	127500	.07	.06	.44	.40	14.80	11.65	86.12	74.0[illegible]
10/29	35	8550	243777	11.99	11.72	70.17	74.31		127500	.00	.06	.00	.39	11.99	11.66	70.17	73.94
10/30	36	10250	254027	15.13	11.83	89.09	74.80		127500	.00	.06	.00	.38	15.13	11.77	89.09	74.43
10/31	37	8570	268472	13.20	12.13	79.60	76.64	17500	145000	.27	.07	1.63	.41	12.94	12.07	77.97	76.23
11/01	38	7355	275827	15.98	12.21	96.76	77.04		145000	.00	.06	.00	.40	15.98	12.15	96.76	76.63
WK 5		60860						22500									
TD			275827						145000								
11/02	39	8775	284602	13.92	12.26	86.03	77.33		145000	.00	.06	.00	.39	13.92	12.19	86.03	76.94
11/03	40	9240	293842	14.15	12.31	84.23	77.51		145000	.00	.06	.00	.38	14.15	12.25	84.23	77.13
11/04	41	9120	302962	15.76	12.39	94.16	77.93	15000	160000	.26	.07	1.55	.41	15.50	12.33	92.61	77.52
11/05	42	7830	310792	22.04	12.53	134.99	78.75		160000	.00	.06	.00	.41	22.04	12.46	134.99	78.34
11/06	43	4780	315572	12.84	12.53	75.81	78.73		160000	.00	.06	.00	.40	12.84	12.47	75.81	78.33
11/07	44	4925	320497	11.08	12.51	65.98	78.47		160000	.00	.06	.00	.39	11.08	12.45	65.98	78.08
11/08	45	7575	328072	13.23	12.52	79.69	78.52	45000	205000	.79	.08	4.73	.49	12.44	12.45	74.96	78.03
WK 6		52245						60000									
TD			328072						205000								
11/09	46	8800	336872	13.11	12.54	78.16	78.51		205000	.00	.08	.00	.48	13.11	12.46	78.16	78.04
11/10	47	8425	345297	13.22	12.55	76.71	78.47		205000	.00	.07	.00	.47	13.22	12.48	76.71	78.00
11/11	48	8513	353810	14.48	12.59	88.69	78.67		205000	.00	.07	.00	.46	14.48	12.52	88.69	78.21
11/12	49	9605	363415	15.02	12.65	89.71	78.96		205000	.00	.07	.00	.45	15.02	12.58	89.71	78.51
11/13	50	10165	373580	15.40	12.71	90.60	79.19	27500	232500	.42	.08	2.45	.49	14.98	12.63	88.15	78.70
11/14	51	8800	382380	14.14	12.74	81.71	79.28		232500	.00	.08	.00	.48	14.14	12.66	81.71	78.80
11/15	52	9150	391530	13.34	12.75	78.71	79.27		232500	.00	.08	.00	.47	13.34	12.68	78.71	78.79
WK 7		63458						27500									
TD			391530						232500								
11/16	53	8860	400390	15.31	12.80	90.58	79.46		232500	.00	.07	.00	.46	15.31	12.73	90.58	79.00
11/17	54	8131	408521	13.46	12.81	77.72	79.44		232500	.00	.07	.00	.45	13.46	12.74	77.72	78.99
11/18	55	8114	416635	13.43	12.83	79.26	79.41		232500	.00	.07	.00	.44	13.43	12.75	79.26	78.97
11/19	56	9540	426175	15.60	12.88	88.26	79.63		232500	.00	.07	.00	.43	15.60	12.81	88.26	79.20
11/20	57	9530	435705	16.38	12.94	96.35	79.91		232500	.00	.07	.00	.43	16.38	12.87	96.35	79.48
11/21	58	7725	443430	11.91	12.92	71.00	79.74		232500	.00	.07	.00	.42	11.91	12.85	71.00	79.32
11/22	59	7025	450455	19.24	12.98	111.64	80.10	50000	282500	1.37	.08	7.95	.50	17.87	12.90	103.70	79.60
WK 8		58925						50000									
TD			450455						282500								

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		PULP DRIER GAS				PULP DRIER OIL				GAS + OIL			
		---CUBIC FEET--		----TONS 10K----		----GALLONS----		-----TONS 10K----		----TONS 10K----		--% ON BEETS--	
DATE	DAY	TODAY	TODATE	TODAY	TODATE	TODAY	TODATE	TODAY	TODATE	TODAY	TODATE	TODAY	TODATE
10/26	32	1518.0	29077.0	75.90	1453.65	0	58533	.00	434.33	75.90	1887.98	2.48	2.02
10/27	33	1673.0	30750.0	83.65	1537.30	0	58533	.00	434.33	83.65	1971.63	2.32	2.03
10/28	34	1757.0	32507.0	87.85	1625.15	0	58533	.00	434.33	87.85	2059.48	2.63	2.05
10/29	35	1810.0	34317.0	90.50	1715.65	0	58533	.00	434.33	90.50	2149.98	2.54	2.07
10/30	36	1749.0	36066.0	87.45	1803.10	0	58533	.00	434.33	87.45	2237.43	2.58	2.08
10/31	37	999.0	37065.0	49.95	1853.05	0	58533	.00	434.33	49.95	2287.38	1.54	2.07
11/01	38	306.0	37371.0	15.30	1868.35	0	58533	.00	434.33	15.30	2302.68	.66	2.04
WK 5		9812.0		490.60		0		.00		490.60		2.18	
TD			37371.0		1868.35		58533		434.33		2302.68		2.04
11/02	39	1332.0	39513.0	66.60	1975.45	0	58533	.00	434.33	66.60	2409.78	2.11	2.08
11/03	40	222.0	39735.0	11.11	1986.56	8420	66953	62.48	496.81	73.59	2483.37	2.25	2.08
11/04	41	.0	39735.0	.00	1986.56	10080	77033	74.79	571.60	74.79	2558.16	2.59	2.09
11/05	42	350.0	40085.0	17.50	2004.06	2620	79653	19.44	591.04	36.94	2595.10	2.08	2.09
11/06	43	812.0	40897.0	40.60	2044.66	0	79653	.00	591.04	40.60	2635.70	2.18	2.09
11/07	44	957.0	41854.0	47.85	2092.51	0	79653	.00	591.04	47.85	2683.55	2.15	2.09
11/08	45	736.0	42590.0	36.80	2129.31	0	79653	.00	591.04	36.80	2720.35	1.29	2.08
WK 6		4409.0		220.46		21120		156.71		377.17		2.09	
TD			42590.0		2129.31		79653		591.04		2720.35		2.08
11/09	46	1419.0	44009.0	70.95	2200.26	0	79653	.00	591.04	70.95	2791.30	2.11	2.08
11/10	47	1629.0	45638.0	81.45	2281.71	0	79653	.00	591.04	81.45	2872.75	2.56	2.09
11/11	48	.0	45638.0	.00	2281.71	7720	87373	57.28	648.32	57.28	2930.03	1.95	2.09
11/12	49	.0	45638.0	.00	2281.71	9010	96383	66.85	715.17	66.85	2996.88	2.09	2.09
11/13	50	1054.0	46692.0	52.70	2334.41	3954	100337	29.34	744.51	82.04	3078.92	2.49	2.10
11/14	51	1324.0	48016.0	66.65	2401.06	0	100337	.00	744.51	66.65	3145.57	2.14	2.10
11/15	52	1444.0	49460.0	72.20	2473.26	0	100337	.00	744.51	72.20	3217.77	2.11	2.10
WK 7		6870.0		343.95		20684		153.47		497.42		2.21	
TD			49460.0		2473.26		100337		744.51		3217.77		2.10
11/16	53	1352.0	50812.0	67.60	2540.86	0	100337	.00	744.51	67.60	3285.37	2.34	2.10
11/17	54	1341.0	52153.0	67.05	2607.91	0	100337	.00	744.51	67.05	3352.42	2.22	2.10
11/18	55	1417.0	53570.0	70.85	2678.76	0	100337	.00	744.51	70.85	3423.27	2.35	2.11
11/19	56	1291.0	54861.0	64.55	2743.31	0	100337	.00	744.51	64.55	3487.82	2.11	2.11
11/20	57	1274.0	56135.0	63.70	2807.01	0	100337	.00	744.51	63.70	3551.52	2.19	2.11
11/21	58	1347.0	57482.0	67.35	2874.36	0	100337	.00	744.51	67.35	3618.87	2.08	2.11
11/22	59	1019.0	58501.0	50.95	2925.31	0	100337	.00	744.51	50.95	3669.82	2.79	2.12
WK 8		9041.0		452.05		0		.00		452.05		2.26	
TD			58501.0		2925.31		100337		744.51		3669.82		2.12

		BOILER OIL				BOILER GAS				BOILER COAL				ALL BOILERS			
		GALLONS		--TONS 10K--		CUBIC FEET		--TONS 10K---		-----TONS-----		--TONS 10K--		----TONS 10K---		% ON BEETS	
DATE	DAY	DAY	TODATE	DAY	TODATE	DAY	TODATE	DAY	TODATE	DAY	TODATE	DAY	TODATE	DAY	TODATE	DAY	TD
10/26	32	0	0	.00	.00	1386.0	29024.0	69.30	1451.10	125.1	3937.0	165.17	5196.86	234.47	6647.96	7.67	7.11
10/27	33	0	0	.00	.00	1352.0	30376.0	67.60	1518.70	137.7	4074.7	181.82	5378.68	249.42	6897.38	6.93	7.10
10/28	34	0	0	.00	.00	1337.0	31713.0	66.85	1585.55	140.6	4215.3	185.59	5564.27	252.44	7149.82	7.56	7.12
10/29	35	0	0	.00	.00	1341.0	33054.0	67.05	1652.60	142.6	4357.9	188.23	5752.50	255.28	7405.10	7.16	7.12
10/30	36	0	0	.00	.00	1058.0	34112.0	52.90	1705.50	143.6	4501.5	189.50	5942.00	242.40	7647.50	7.15	7.12
10/31	37	0	0	.00	.00	1330.0	35442.0	66.50	1772.00	137.7	4639.2	181.76	6123.76	248.26	7895.76	7.65	7.14
11/01	38	0	0	.00	.00	1239.0	36681.0	61.95	1833.95	135.8	4775.0	179.26	6303.02	241.21	8136.97	10.48	7.20
WK 5				.00				452.15				1271.33		1723.48		7.66	
TD					.00				1833.95				6303.02		8136.97		7.20
11/02	39	0	0	.00	.00	1243.0	36991.0	62.15	1849.45	135.8	4910.8	179.26	6482.28	241.41	8331.73	7.66	7.18
11/03	40	0	0	.00	.00	1371.0	38362.0	68.55	1918.00	130.9	5041.7	172.85	6655.13	241.40	8573.13	7.39	7.18
11/04	41	0	0	.00	.00	1272.0	39634.0	63.60	1981.60	130.9	5172.6	172.79	6827.92	236.39	8809.52	8.17	7.21
11/05	42	0	0	.00	.00	1091.0	40725.0	54.55	2036.15	105.7	5278.3	139.52	6967.44	194.07	9003.59	10.93	7.26
11/06	43	0	0	.00	.00	689.0	41414.0	34.45	2070.60	115.4	5393.7	152.33	7119.77	186.78	9190.37	10.04	7.30
11/07	44	0	0	.00	.00	720.0	42134.0	36.00	2106.60	114.5	5508.2	151.14	7270.91	187.14	9377.51	8.42	7.32
11/08	45	0	0	.00	.00	1158.0	43292.0	57.90	2164.50	109.6	5617.8	144.67	7415.58	202.57	9580.08	7.08	7.31
WK 6				.00				377.20				1112.56		1489.76		8.26	
TD					.00				2164.50				7415.58		9580.08		7.31
11/09	46	0	0	.00	.00	1242.0	44534.0	62.10	2226.60	126.1	5743.9	166.45	7582.03	228.55	9808.63	6.81	7.30
11/10	47	0	0	.00	.00	1074.0	45608.0	53.70	2280.30	126.1	5870.0	166.45	7748.48	220.15	10028.78	6.91	7.29
11/11	48	0	0	.00	.00	1097.0	46705.0	54.85	2335.15	132.9	6002.9	175.43	7923.91	230.28	10259.06	7.84	7.30
11/12	49	0	0	.00	.00	1340.0	48045.0	67.00	2402.15	137.7	6140.6	181.76	8105.67	248.76	10507.82	7.78	7.31
11/13	50	0	0	.00	.00	1144.0	49189.0	57.20	2459.35	136.8	6277.4	180.54	8286.21	237.74	10745.56	7.20	7.31
11/14	51	0	0	.00	.00	1067.0	50256.0	53.35	2512.70	129.9	6407.3	171.47	8457.68	224.82	10970.38	7.23	7.31
11/15	52	0	0	.00	.00	1539.0	51795.0	76.95	2589.65	119.3	6526.6	157.48	8615.16	234.43	11204.81	6.84	7.30
WK 7				.00				425.15				1199.58		1624.73		7.21	
TD					.00				2589.65				8615.16		11204.81		7.30
11/16	53	0	0	.00	.00	1233.0	53028.0	61.65	2651.30	119.3	6645.9	157.48	8772.64	219.13	11423.94	7.57	7.30
11/17	54	0	0	.00	.00	1228.0	54256.0	61.40	2712.70	122.2	6768.1	161.33	8933.97	222.73	11646.67	7.38	7.31
11/18	55	0	0	.00	.00	1258.0	55514.0	62.90	2775.60	125.1	6893.2	165.13	9099.10	228.03	11874.70	7.55	7.31
11/19	56	0	0	.00	.00	1100.0	56614.0	55.00	2830.60	124.2	7017.4	163.94	9263.04	218.94	12093.64	7.16	7.31
11/20	57	0	0	.00	.00	1451.0	58065.0	72.55	2903.15	109.6	7127.0	144.68	9407.72	217.23	12310.87	7.47	7.31
11/21	58	0	0	.00	.00	1684.0	59749.0	84.20	2987.35	97.9	7224.9	129.23	9536.95	213.43	12524.30	6.58	7.30
11/22	59	0	0	.00	.00	777.0	60526.0	38.85	3026.20	112.5	7337.4	148.50	9685.45	187.35	12711.65	10.26	7.33
WK 8				.00				436.55				1070.29		1506.84		7.55	
TD					.00				3026.20				9685.45		12711.65		7.33

MIDWEST RESEARCH INSTITUTE

Project/Acct. No. 4602-03 Date/Time 12/9/94

Project Title Sugar Beet Processing AP-42

Signature [illegible] Verified by _____ (signature/date)

Phone Contact ☐
Meeting Notes ☐
Work Sheet ☒

Croswell, Michigan Facility

Test Date: 11/13/90

Test No.	Time (estimated)*
P-1	11:00 - 12:00
P-2	12:15 - 1:15
P-3	2:00 - 3:00

* Estimated based on 60 minutes per test run and indicated times on pulp drier data sheets for 11-13-90

Total Dry Pulp Produced on 11/13/90 = 165 tons = 6.9 tons/hr. Average

Average over 60 Minute Test Run

Test No.	Slice Rate (tons/hr)	Pressed Pulp Moisture (%)	Dried Pulp Moisture (%)
P-1	142	72.3	3.0
P-2	139	71.8	3.9
P-3	147	72.9	2.3

$$\% \text{ Solids} = \frac{\text{Dry Pulp Produced} - \text{Dry Pulp Moisture} * \text{Pulp Produced}}{\text{Beets Sliced}}$$

P-1: $\% \text{ Solids} = \frac{6.9 - (0.03 * 6.9)}{142} = \frac{6.69}{142} \times 100 = 4.7\%$

P-2: $\% \text{ Solids} = \frac{6.9 - (0.039 * 6.9)}{139} = \frac{6.63}{139} \times 100 = 4.8\%$

P-3: $\% \text{ Solids} = \frac{6.9 - (0.023 * 6.9)}{147} = \frac{6.74}{147} \times 100 = 4.6\%$

MRI

MIDWEST RESEARCH INSTITUTE

Project/Acct. No. 4602-03 Date/Time 12/9/94

Project Title Sugar Beet Processing AP-42

Signature [illegible] Verified by _____ (signature/date)

Phone Contact ☐
Meeting Notes ☐
Work Sheet ☒

$$\text{Process Rate (tons/hr)} = \frac{\text{Beets Sliced} * \%\ \text{Solids}}{1 - \left(\frac{\text{wet pulp moisture (\%)}}{100}\right)}$$

P-1: $\text{Rate} = \frac{142 * 0.047}{1 - \left(\frac{72.3}{100}\right)} = \frac{6.67}{0.277} = 24.1$ tons/hr.

P-2: $\text{Rate} = \frac{139 * 0.048}{1 - \left(\frac{71.8}{100}\right)} = \frac{6.67}{0.282} = 23.7$ tons/hr.

P-3: $\text{Rate} = \frac{147 * 0.046}{1 - \left(\frac{72.9}{100}\right)} = \frac{6.76}{0.271} = 24.9$ tons/hr.

MRI