

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.



P.O. Box 48 Aurora, North Carolina 27806

RECEIVED
WASHINGTON OFFICE

SEP 23 1991

September 20, 1991

D. E. M.

BR-20
AP-42-22
SEP 26 1991
W.A. Schimming
Manager
Environmental Affairs
(919) 322-4111

Jim Mulligan, Regional Supervisor
Washington Regional Office
Division of Environmental Management
N. C. Department of EHNR
P. O. Box 2188
Washington, North Carolina 27889

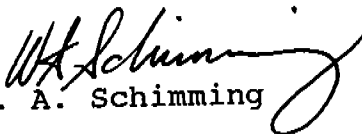
Re: Air Permit No. 2331R10
Calciner No. 2

Dear Jim:

As per the requirements of Air Quality Permit No. 2331R10, Specific Condition and Limitation No. 7, the No. 2 Calciner was compliance tested for particulate emissions on August 21 and 22, 1991. A copy of the compliance test results are attached for your review.

If I may provide any additional information on this subject, please let me know.

Sincerely,


W. A. Schimming

WAS:BAP/re

Enclosure

pc: Vic Copelan - DEM, WRO (w/encl)
Mike Aldridge - DEM, Raleigh (w/encl)
H. M. Breza (w/encl)
J. N. Richardson (w/encl)
J. C. Carrere (w/encl)
00-12-000 (w/o encl)
15-09-026 (w/encl)

SOURCE PERFORMANCE TEST

CALCINER NUMBER 2

TEXASGULF INC.

PHOSPHATE OPERATIONS

AURORA, NC

AUGUST 21 and 22, 1991

PREPARED BY:

**JOHN C. CARRERE, JR.
ENV. DATA COORDINATOR**

REVIEWED BY:

**JIMMY A. HARDY
SR. ENV. TECHNICIAN**

REVIEWED BY:

**B. A. PEACOCK
SR. ENV. ENGINEER**

REVIEWED BY:

**MIKE L. ASBY
ENV. LAB SUPERVISOR**

TEXASGULF INC. PHOSPHATE OPERATIONS

Summary

On August 21 and 22, 1991 sampling and analyses were conducted to determine the particulate emission rate at Texasgulf's Calciner No. 2 using Method 5 w/Backhalf Analysis.

The results of this series of runs showed the average particulate emission rate to be 19.33 pounds per hour. The average dry feed rate during the testing was 92 tons/hour. The average allowable particulate emission rate at this feedrate is 50.67 pounds of particulate/hour. A total of 4 stack samples were taken. Run 2 was aborted due to equipment malfunction.

Performing the stack sampling were Senior Environmental Technicians Jimmy Hardy and Phillip Forest. Environmental Technician Jack Taylor performed the workdown and analyses.

Mr. David Daniel of the North Carolina Division of Environmental was present during the testing as an official observer.

TEXASGULF INC. PHOSPHATE OPERATIONS

Test Summary - Calciner No. 2

Method 5 W/Backhalf	08/21/91	08/22/91	08/22/91
	Run 1	Run 3	Run 4
Stack Volumetric Flow Rate, TSCFM	60,631	63,457	64,031
Sample Volume, DSCF	35.993	38.732	37.914
Lbs. of Particulate/Hr. Total	17.60	23.18	17.21
Lbs. of Particulate/Hr. Front	14.58	17.54	14.22
Lbs. of Particulate/Hr. Back	3.02	5.65	2.99
Percent Isokinetic	98.19	98.41	97.02
Average Lbs of Particulate/Hr.(Total)			19.33
Allowable Lbs/Hr.	50.67	50.67	50.67
Average Allowable Pounds/Hr.			50.67
Dry Feed Rate TPH	92	92	92
Average Dry Feed Rate TPH			92

TEXASGULF INC. PHOSPHATE OPERATIONS

Calcliner No. 2

Stack Data Summary Method 5 w/Backhalf

Date	Time	Run #	Velocity	Volumetric Flow	Average Stac
			FPS	TSCF/Min	Temp (oF)
08/21	11:38	1	42.666	60,631	175
08/22	10:48	3	44.476	63,457	173
08/22	13:38	4	44.771	64,031	172

4

TEXASGULF memo

Date: 09/13/91
To: Mill Superintendent
From: Environmental Affairs
Subject: EPA Method 5 w/Backhalf Isokinetic Sample
Calciner #2 Run 1

Sample Date

08/21/91

Time

11:38

Dry Feed Rate, TPH

92

Stack Volumetric Flow Rate
TSTD Ft³/Min

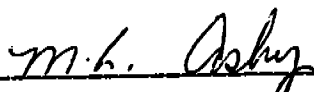
60,631

Lbs. Particulate/Hr.

Total	17.60
Front Half	14.58
Back Half	3.02

Lbs. Particulate/Ton of Product

Total	4.5746
Front Half	3.7884
Back Half	0.7862



Supervisor, Environmental Laboratory

File: ec-15-09-026

The Allowable Emission Rate for Particulate Matter at this Process Rate is
50.67 Lbs.Particulate/Hour.

This stack sample was taken isokinetically. The %I =

98.19

TEXASGULF INC. PHOSPHATE OPERATIONS

Method 5 w/Backhalf
Run 1
Calciner #2

Rpt. Date 09/13/91
Smple Date 08/21/91
Smple Time 11:38

Barometric Pressure	30.10	Initial Dry Gas Mtr	302.400
Stack Static Pressure	0.30	Final Dry Gas Mtr	340.845
Stack Diameter	72	Dry Gas Factor	0.9878
Nozzle Diameter	0.2215	Dry Mole Wt Stk Gas	29.809
Pitot Tube Corr	0.84	Stack Pressure	30.12
Sampling Time in Min.	96	Feed Rate, TPH	102
		Bulk Moisture (Lab Analysis)	9.47
		Feed Rate Dry TPH	92.34
Lbs Coal/Ton of Dry Feed	37.4	Coal Feed TPH	1.73
		Process Weight	94.07

	Pt	Stk oF	Delta P	Delta H	oF In	oF Out
	1	173	0.76	0.84	86	84
	2	177	0.82	0.91	95	84
	3	183	0.68	0.75	101	85
	4	176	0.72	0.80	103	86
	5	178	0.82	0.91	108	91
	6	176	0.60	0.67	109	90
	7	175	0.42	0.47	110	92
	8	177	0.34	0.38	109	93
	9	186	0.18	0.20	109	99
	10	177	0.20	0.22	110	97
	11	174	0.10	0.11	108	97
	12	178	0.14	0.16	109	98
	13	152	0.30	0.33	95	95
	14	170	0.48	0.53	104	95
	15	170	0.66	0.73	108	95
	16	172	0.70	0.78	111	95
	17	173	0.70	0.78	113	95
	18	172	0.64	0.71	114	95
	19	183	0.40	0.44	114	97
	20	182	0.24	0.27	113	99
	21	172	0.30	0.33	114	102
	22	171	0.32	0.36	114	101
	23	171	0.34	0.38	115	101
	24	172	0.28	0.31	115	102

Averages	175	0.46	0.52	108	95
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Stack oR	635	Average Meter Temp oR	561
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Gas Volume Collected	38.445
Corrected Gas Volume	37.976
Gas Volume STP	35.993

08/21/91

Impinger Volumes/Weights

	No. 1 (mls)	No. 2 (mls)	No. 3 (mls)	No. 4 (g) (silica gel)
Initial	100	100	100	647.44
Final	443	130	104	654.86

Totals mls of water collected	377
Increase in grams of silica gel	7.42
Total Gas Volume	54.088
Bws	0.3346
One - Bws	0.6654
Wet Molecular Weight of Stack Gas	25.86

Stack Pressure	30.122
Stack Velocity FPS	42.666
Stack Volumetric Flow Rate TSTD Ft ³ /Min	60631

Particulate Calculations

Inorganic

Large Tare, grams	318.91785
Large Final, grams	318.91975
Mr =	0.00190
Sum Water + MeCl ₂ , Mb (or 5% of mass)	0
Vic =	677
Vb =	0
Mc =	0

Mass of Inorganic, mg, Mrc (Mi) = 1.900

Organic

Small Tare, grams	149.92365
Small Final, grams	149.94215
Mo, mg =	18.5
CPM mg/DSCF =	0.5668
CPM mg/TSCF =	0.3772
CPM mg	20.4000
5% of mass of CPM	1.02
Front Half	
Final Beaker Weight	150.162
Tare Beaker Weight	150.13365
Final Filter Weight	0.5733
Tare Weight of Filter	0.5033
Net Sample Weight	0.0983
Mg Particulate/DSCF	2.7311
Mg Particulate/TSCF	1.8174

Total Particulates	Total	Front Half	Back Half
Lbs Particulate/Day	422.42	349.82	72.60
Lbs Particulate/Hr	17.60	14.58	3.02
Lbs Particulate/Ton of Product	4.5746	3.7884	0.7862

Isokinetic Sampling Rate	98.19
Allowable Part. Emission Rate, Lbs/Hr.	50.67

TEXASGULF memo

Date: 09/13/91
To: Mill Superintendent
From: Environmental Affairs
Subject: EPA Method 5 w/Backhalf Isokinetic Sample
Calciner #2 Run 3

Sample Date

08/22/91

Time

10:48

Dry Feed Rate, TPH

92

Stack Volumetric Flow Rate
TSTD Ft³/Min

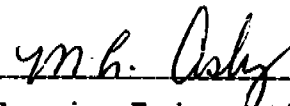
63,457

Lbs. Particulate/Hr.

Total	23.18
Front Half	17.54
Back Half	5.65

Lbs. Particulate/Ton of Product

Total	6.0258
Front Half	4.5583
Back Half	1.4675



Supervisor, Environmental Laboratory

File: ec-15-09-026

The Allowable Emission Rate for Particulate Matter at this Process Rate is
50.67 Lbs.Particulate/Hour.

This stack sample was taken isokinetically. The %I =

98.41

TEXASGULF INC. PHOSPHATE OPERATIONS

Method 5 w/Backhalf
Run 3
Calciner #2

Rpt. Date 09/13/91
Smple Date 08/22/91
Smple Time 10:48

Barometric Pressure	30.2	Initial Dry Gas Mtr	364.000
Stack Static Pressure	-0.30	Final Dry Gas Mtr	405.389
Stack Diameter	72	Dry Gas Factor	0.9878
Nozzle Diameter	0.2242	Dry Mole Wt Stk Gas	29.809
Pitot Tube Corr	0.84	Stack Pressure	30.18
Sampling Time in Min.	96	Feed Rate, TPH	102
		Bulk Moisture (Lab Analysis)	9.47
		Feed Rate Dry TPH	92.34
Lbs Coal/Ton of Dry Feed	37.4	Coal Feed TPH	1.73
		Process Weight	94.07

	Pt	Stk oF	Delta P	Delta H	oF In	oF Out
	1	176	0.90	1.07	87	85
	2	177	1.05	1.25	97	86
	3	178	1.05	1.25	102	89
	4	170	0.90	1.07	105	89
	5	172	0.85	1.01	110	91
	6	174	0.70	0.83	112	93
	7	172	0.40	0.48	113	95
	8	172	0.20	0.24	111	97
	9	175	0.20	0.24	112	98
	10	176	0.20	0.24	111	99
	11	174	0.18	0.21	113	100
	12	174	0.18	0.21	113	100
	13	155	0.35	0.42	99	99
	14	178	0.60	0.71	107	98
	15	176	0.70	0.83	111	98
	16	175	0.80	0.95	114	98
	17	166	0.65	0.77	115	99
	18	176	0.65	0.77	114	100
	19	176	0.28	0.33	114	100
	20	178	0.28	0.33	114	101
	21	170	0.28	0.33	115	102
	22	171	0.32	0.38	116	102
	23	173	0.32	0.38	116	103
	24	173	0.30	0.35	117	103
Averages		173	0.51	0.61	110	97
Stack oR		633		Average Meter Temp oR		563

Gas Volume Collected	41.389
Corrected Gas Volume	40.884
Gas Volume STP	38.732

08/22/91

Impinger Volumes/Weights

	No.1 (mls)	No. 2 (mls)	No.3 (mls)	No. 4 (g) (silica gel)
Initial	100	100	100	639.18
Final	415	185	104	647.24

Totals mls of water collected	404
Increase in grams of silica gel	8.06
Total Gas Volume	58.128
Bws	0.3337
One - Bws	0.6663
Wet Molecular Weight of Stack Gas	25.87

Stack Pressure	30.178
Stack Velocity FPS	44.476
Stack Volumetric Flow Rate TSTD Ft3/Min	63457

Particulate Calculations

Inorganic

Large Tare, grams	271.9097
Large Final, grams	271.912650
Mr =	0.00295
Sum Water + MeCl2, Mb (or 5 % of mass)	0
Vic =	704
Vb =	0
Mc =	0
Mass of Inorganic,mg, Mrc (Mi) =	2.950

Organic

Small Tare,grams	141.6262
Small Final,grams	141.6624
Mo, mg =	36.15
CPM mg/DSCF =	1.0095
CPM mg/TSCF =	0.6727
CPM mg	39.1000
5% of mass of CPM	1.955
Front Half	
Final Beaker Weight	141.6624
Tare Beaker Weight	141.6262
Final Filter Weight	0.5913
Tare Weight of Filter	0.5060
Net Sample Weight	0.12145
Mg Particulate/DSCF	3.1357
Mg Particulate/TSCF	2.0894

Total Particulates	Total	Front Half	Back Half
Lbs Particulate/Day	556.42	420.91	135.51
Lbs Particulate/Hr	23.18	17.54	5.65
Lbs Particulate/Ton of Product	6.0258	4.5583	1.4675

Isokinetic Sampling Rate	98.41
Allowable Part. Emission Rate, Lbs/Hr.	50.67

10

TEXASGULF memo

Date: 09/13/91
To: Mill Superintendent
From: Environmental Affairs
Subject: EPA Method 5 w/Backhalf Isokinetic Sample
Calciner #2 Run 4

Sample Date

08/22/91

Time

13:38

Dry Feed Rate, TPH

92

Stack Volumetric Flow Rate
TSTD Ft³/Min

64,031

Lbs. Particulate/Hr.

Total	17.21
Front Half	14.22
Back Half	2.99

Lbs. Particulate/Ton of Product

Total	4.4736
Front Half	3.6955
Back Half	0.7781

m.b. Ashley
Supervisor, Environmental Laboratory

File: cc-15-09-026

The Allowable Emission Rate for Particulate Matter at this Process Rate is
50.67 Lbs.Particulate/Hour.

This stack sample was taken isokinetically. The %I =

97.02

TEXASGULF INC. PHOSPHATE OPERATIONS

Method 5 w/Backhalf
Run 4
Calciner #2

Rpt. Date 09/13/91
Smple Date 08/22/91
Smple Time 13:38

Barometric Pressure
Stack Static Pressure
Stack Diameter
Nozzle Diameter
Pitot Tube Corr
Sampling Time in Min.

30.20 Initial Dry Gas Mtr 405.902
-0.30 Final Dry Gas Mtr 446.517
72 Dry Gas Factor 0.9878
0.2215 Dry Mole Wt Stk Gas 29.809
0.84 Stack Pressure 30.18
96 Feed Rate, TPH 102
Bulk Moisture (Lab Analysis) 9.47
Feed Rate Dry TPH 92.34
37.4 Coal Feed TPH 1.73
Process Weight 94.07

Lbs Coal/Ton of Dry Feed

		Stk oF	Delta P	Delta H	oF In	oF Out
Pt	1	152	0.55	0.62	92	91
Pt	2	165	0.90	1.02	101	91
Pt	3	168	1.15	1.30	106	91
Pt	4	175	1.00	1.13	109	91
Pt	5	176	0.95	1.07	111	93
Pt	6	172	0.65	0.73	112	96
Pt	7	172	0.35	0.40	113	96
Pt	8	169	0.28	0.32	113	97
Pt	9	168	0.22	0.25	112	98
Pt	10	172	0.20	0.22	111	99
Pt	11	176	0.20	0.22	112	100
Pt	12	176	0.20	0.22	113	100
Pt	13	175	0.45	0.51	102	100
Pt	14	174	0.55	0.62	109	100
Pt	15	173	0.70	0.79	113	100
Pt	16	170	0.75	0.85	116	100
Pt	17	167	0.70	0.79	116	100
Pt	18	176	0.60	0.68	117	101
Pt	19	175	0.35	0.40	116	101
Pt	20	173	0.30	0.34	117	101
Pt	21	177	0.32	0.36	115	102
Pt	22	171	0.32	0.36	115	102
Pt	23	175	0.38	0.43	116	103
Pt	24	174	0.32	0.36	115	103

Averages 172 0.52 0.58 111 98

Stack oR 632 Average Meter Temp oR 565

Gas Volume Collected 40.615
Corrected Gas Volume 40.119
Gas Volume STP 37.914

Page 2
Calcliner #2
Run 4

08/22/91

Impinger Volumes/Weights

	No.1 (mls)	No. 2 (mls)	No.3 (mls)	No. 4 (g) (silica gel)
Initial	100	100	100	627.29
Final	451	131	104	634.91

Totals mls of water collected	386
Increase in grams of silica gel	7.62
Total Gas Volume	56.442
Bws	0.3283
One - Bws	0.6717
Wet Molecular Weight of Stack Gas	25.93

Stack Pressure	30.178
Stack Velocity FPS	44.771
Stack Volumetric Flow Rate TSTD Ft3/Min	64031

Particulate Calculations

Inorganic	
Large Tare, grams	280.1329
Large Final, grams	280.1330
Mr =	0.00010
Sum Water + MeCl2, Mb (or 5% of mass)	0
Vic =	686
Vb =	0
Mc =	0
Mass of Inorganic,mg, Mrc (Mi) =	0.100
Organic	
Small Tare,grams	141.1988
Small Final,grams	141.2186
Mo, mg =	19.85
CPM mg/DSCF =	0.5262
CPM mg/TSCF =	0.3535
CPM mg	19.9500
5% of mass of CPM	0.9975
Front Half	
Final Beaker Weight	162.2257
Tare Beaker Weight	162.2116
Final Filter Weight	0.5848
Tare Weight of Filter	0.5041
Net Sample Weight	0.09475
Mg Particulate/DSCF	2.4991
Mg Particulate/TSCF	1.6787

Total Particulates	Total	Front Half	Back Half
Lbs Particulate/Day	413.09	341.24	71.85
Lbs Particulate/Hr	17.21	14.22	2.99
Lbs Particulate/Ton of Product	4.4736	3.6955	0.7781

Isokinetic Sampling Rate	97.02
Allowable Part. Emission Rate, Lbs/Hr.	50.67

RAW DATA

Box 1

TEXASGULF INC. PHOSPHATE OPERATIONS

CONDENSABLE PARTICULATE MATTER WORKSHEET

Date 8-21-91
Run No. 1

Plant CALCINER #2
Time 1138

	Filter	4 Front Half Beaker	Back Half Inorganic		Organic
			Beaker 2	Beaker 31	Beaker 12
Tare	.5033	150.13365	161.6692	157.24865	149.92365
1st Weight	.5731	150.1619	161.6697	157.2500	149.9423
2nd Weight	.5734	150.1621	161.6698	157.2509	149.9420
3rd Weight				157.2500	
4th Weight					
5th Weight					
6th Weight					
7th Weight					
Averaged Constant	.57325	150.1620	161.66975	157.2500	149.94215
	.06995	.02835	.00055	.00135	.0185

Impingers Volumes/Gel Weights				Silica Gel Weights	
	1st Impinger	2nd Impinger	3rd Impinger	Post (grams)	
Post Volume (mls)	443	130	104		654.86
Pre Volume (mls)	100	100	100	Pre (grams)	647.44

Revised 07/11/91
TGEA027.WR1

7.42

TEXASGULF INC. PHOSPHATE OPERATIONS

CONSOLE WORKSHEET

Plant CAL #2 Date 8-21-91 Time 1138 Run #1
 Mtr Box 4 Meter H@ 1-7404 K Factor 1.11 Barometric 30.10
 Assmd Moist 34% Nozzle Dia. .2215 Dry Gas X .9878 Console Oper JH

PT	Smple Min.	Head Delta P	Orifice Delta H	Meter Ft3	Meter In oF	Meter Out oF	Stack oF	Hot Box oF	Imp. oF	Vacuum "Hg
				302.400						
1	4	.76	.84	304.5	86	84	173	260	-	3.5
2	8	.82	.91	306.7	95	84	177	225	-	4.1
3	12	.64	.75	308.6	101	85	183	265	-	5.4
4	16	.72	.80	310.7	103	86	176	220	-	6.0
5	20	.82	.91	312.8	108	91	178	260	-	6.5
6	24	.60	.67	314.6	109	90	176	270	-	4.0
7	28	.42	.47	316.3	110	92	175	242	-	3.0
8	32	.34	.38	317.7	109	93	177	225	67	2.8
9	36	.18	.20	318.7	109	99	186	230	67	2.0
10	40	.20	.22	319.8	110	85	177	270	70	2.0
11	44	.60	.11	320.7	108	97	174	250	69	2.0
12	48	.14	.16	321.6	109	98	179	225	70	2.0
13	4	.30	.33	322.9	95	95	152	260	-	2.0
14	8	.48	.53	324.5	104	95	170	235	-	4.0
15	12	.66	.73	326.4	108	95	170	245	-	5.0
16	16	.70	.78	328.5	111	95	172	265	-	4.5
17	20	.70	.78	330.8	113	95	173	245	-	4.8
18	24	.64	.71	332.4	114	95	172	230	-	4.5
19	28	.40	.44	334.1	114	97	183	256	-	3.2
20	32	.24	.27	335.6	113	99	182	265	-	3.0
21	36	.30	.33	336.7	114	102	172	267	70	2.0
22	40	.32	.36	338.1	114	101	171	220	68	3.0
23	44	.34	.38	339.5	115	101	171	230	69	3.0
24	48	.28	.31	340.845	115	102	172	235	69	2.8
Total										
Avg										

Probe and Sample Box Operator PF

Pre Leak Check At 10 "Hg = .010 C.F.M. Post Leak Check At 7 "Hg 4.005 C.F.M.

Pitot Leak Check Red Green ✓

$$K = (846.72 \times D_n^4 \times H@ \times C_p^2 \times (1 - Bws)^2 \times (M_d/M_s) \times (P_s/P_m) \times (T_m/R/T_s/R))$$

$$1.11 = (846.72 \times () \times () \times () \times () \times () \times (/) \times (/) \times (/)$$

Box 2

TEXASGULF INC. PHOSPHATE OPERATIONS

CONDENSABLE PARTICULATE MATTER WORKSHEET

Date 8-22-91Plant CALKINER #2Run No. 3Time 1048

	Filter	29 Front Half Beaker	Back Half Inorganic		Organic
			Beaker 11	Beaker 25	Beaker 16
Tare	-5060	141.46915	129.52695	142.38275	141.6262
1st Weight	-5911	141.4823	129.5299	142.3818	141.6626
2nd Weight	-5915	141.4830	129.5296	142.3830	141.6621
3rd Weight		141.4824		142.3828	
4th Weight					
5th Weight					
6th Weight					
7th Weight					
Averaged Constant	-5913	141.48235	129.52975	142.3829	141.66235

Impingers Volumes/Gel Weights

	1st Impinger	2nd Impinger	3rd Impinger	Silica Gel Weights	
Post Volume (mls)	415	185	104	Post (grams)	647.24
Pre Volume (mls)	100	100	100	Pre (grams)	639.18

Revised 07/11/91
TGEA027.WR1

17

Box #2
Property

Plant CAL #2

Date 8-22-91

Time 1048

Run #3 (#20010)

Mtr Box 4

Meter H@ 1.7409

K Factor 1.19

Barometric 30.20

Assmd Moist 34

Nozzle Dia. .2242

Dry Gas X 9878

Console Oper DT

1048

1136

1149

1237

Probe and Sample Box Operator PF

Pre Leak Check At 10 "Hg = 6.005 C.F.M. Post Leak Check At 9 "Hg .005 C.F.M.

Pitot Leak Check Red ✓ Green ✓

$$K = (846.72 \times D_A^4 \times H @ \times C p^2 \times (1 - Bws)^2 \times (M_4 / M_5) \times (P_5 / P_M) \times (T_{mOR} / T_{5OR}))$$

1.19 = (846.72 x ^{0.002527}() x ^{1.7409}() x ^{7.056}() x ^{4.356}() x ^{1.1557}() x () x () x () x () x ()

TGEA021.WR1

$\frac{565}{630}$

TEXASGULF INC. PHOSPHATE OPERATIONS

Box 1

CONDENSABLE PARTICULATE MATTER WORKSHEET

Date 8-22-91

Plant CALCINER #2

Run No. 4

Time 1338

	Filter	Front Half Beaker	Back Half Inorganic		Organic
			Beaker <u>1</u>	Beaker <u>8</u>	Beaker <u>28</u>
Tare	.5041	162.2116	139.2088	140.92405	141.19875
1st Weight	.5845	162.2257	139.2089	140.9240	141.2188
2nd Weight	.5850	162.2257	139.2089	140.9241	141.2184
3rd Weight					
4th Weight					
5th Weight					
6th Weight					
7th Weight					
Averaged Constant	.58475	162.2257	139.2089	140.92405	141.2186

Impingers Volumes/Gel Weights

	1st Impinger	2nd Impinger	3rd Impinger	Silica Gel Weights	
Post Volume (mls)	451	131	104	Post (grams)	634.91
Pre Volume (mls)	100	100	100	Pre (grams)	627.29

14

CONSOLE WORKSHEET

Plant CAL#2 Date 8-22-91 Time 1338 Run #4 (2000)
Mtr Box 4 Meter H@ 1.7409 K Factor 1.13 Barometric 30.20
Assmd Moist 34% Nozzle Dia. .2215 Dry Gas X .9878 Console Oper JH

1338

1436

1573

Probe and Sample Box Operator PK

Pre Leak Check At 10 "Hg = .012 C.F.M. Post Leak Check At 8 "Hg .004 C.F.M.

Pitot Leak Check Red ☒ Green ☒

$$K = (846.72 \times D_n^4 \times H @ \times C_p^2 \times (1 - Bws)^2 \times (M_4/M_5) \times (P_5/P_m) \times (T_{mOR}/T_{5OR}))$$

1.7 = (846.72 x () x () x () x () x () x (/) x (/) x (/))
-002407
568
633

ISOKINETIC WORKSHEET

DATE: 8-21-91 STACK: CAL #2 TIME: _____

METER BOX: 4 OPERATOR _____

1. NOZZLE DIA. (A) 8-.2217 " (B) 14-.2250 " (C) .2217 " .2230 " .2247 "

2. ΔH @ 1.7409 8-.2215
Avg. 14-.2242

3. C_p _____ Assy. # _____

4. BAROMETRIC PRESSURE (P_b) 30.10 "Hg ΔP STATIC -30 "H₂O

5. STACK PRESSURE (P_s) _____ "Hg = $P_b \pm \frac{\text{INCHES H}_2\text{O}}{13.6}$

6. T_d _____ °F

7. T_w _____ °F

8. S. V.P. _____ "Hg

9. V.P. _____ "Hg

10. B_{ws} _____ X 100 = _____ % H₂O

11. M_d 29.809 lb./lb. - MOLE

12. M_s _____ lb./lb. - MOLE

13. T_s _____ °F + 460 = _____ °R

14. T_m _____ °F + 460 = _____ °R

15. P_m _____ "Hg $\left(\frac{\text{AVG. } \Delta H}{13.6} + P_b \right)$

Preliminary	
ΔP	T_s
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	
11.	
12.	

X .9878

$$(2) \quad B_{ws} = \frac{V. P.}{P_s} = \underline{\hspace{2cm}}$$

$$(4) \quad M_s = \left[(M_d) \cdot (1 - B_{ws}) \right] + \left[(18) \cdot (B_{ws}) \right]$$

$$\underline{25794} = \left[() \cdot () \right] + \left[(18) \cdot () \right]$$

$$K = (846.72) \cdot (D_n^4) \cdot (\Delta H@) \cdot (C_p^2) \cdot (1-B_{ws})^2 \cdot \left(\frac{M_d}{M_s} \right) \cdot \left(\frac{P_s}{P_m} \right) \cdot \left(\frac{T_m^{\circ R}}{T_s^{\circ R}} \right)$$

$$(6) \% I = \frac{(T_s^{\circ}R) \cdot (\text{GAS VOL. S.T.P.}) \cdot (P_{\text{std}}) \cdot (100)}{(T_{\text{std}}^{\circ}R) \cdot (V_s \text{ ft./sec.}) \cdot (P_s) \cdot (\text{Sampling Time Min.}) (60) (A_n) (1-B_{ws})}$$

$$\% = \frac{(\text{ }^{\circ}\text{R}) \cdot (\text{stp}) \cdot (29.92) \cdot (100)}{(528^{\circ}\text{R}) \cdot (\text{ft/sec.}) \cdot (\text{"Hg}) \cdot (\text{Min.}) \cdot (60 \frac{\text{Sec.}}{\text{Min.}}) \cdot (\text{ft}^2)}$$

Cyclonic Flow Test

Plant CAL #3

Technician(s) J.H + P.F

Date 8-21-91

Time 1032

PORT SW

Point #	Delta P	Angle Alpha
1	.70	2°
2	.52	9°
3	.84	7°
4	.90	7°
5	.85	2°
6	.58	0°
7	.36	2°
8	.33	12°
9	.24	13°
10	.20	16°
11	.18	10°
12	.11	12
Average		0.00

STATIC
- .30

Average absolute Alpha must not be greater than 20 degrees.

1042

Cyclonic Flow Test

Plant CAL #2

Technician(s) P.F. + JH

Date 8-21-91

Time 1335

NW
Port

Point #	Delta P	Angle Alpha
1	.38	5°
2	.42	0°
3	.66	4°
4	.58	3°
5	.70	0°
6	.70	3°
7	.34	2°
8	.30	5°
9	.26	8°
10	.32	10°
11	.28	12°
12	.32	15°
Average		6.6°

Average absolute Alpha must not be greater than 20 degrees.

2 of 2

Orsat Analyses

Date 8-22-91 Plant CA-2 Technician JT
 Pb Stack Temp Ambient Temp
 Dry Bulb Temp Wet Bulb Temp
 Stack Static Press Stack Press

		CO2	O2	CO+N
Run 1	Burette Reading	7.8	21.8	
	Percent			
Run 2	Burette Reading	7.8	21.8	
	Percent			
Run 3	Burette Reading	7.8	21.9	
	Percent			

$$P_s = (\text{Static Press}/13.6) + P_b$$

$$V.P. = S.V.P. - ((3.67 \times 10^{-4}) * (P_s) * (T_d - T_w) * ((1 + (T_w - 32)/1571)))$$

$$B_{ws} = V.P./P_s$$

$$M_d = ((0.44 * \%CO_2) + (0.32 * \%O_2) + (0.28 * \%CO+N))$$

$$M_s = ((M_d * (1 - B_{ws})) + (18 * B_{ws}))$$

$$V.P. = \underline{\hspace{2cm}}$$

$$B_{ws} = \underline{\hspace{2cm}}$$

$$M_d = \underline{29.609}$$

$$M_s = \underline{\hspace{2cm}}$$

☒ Leak Check performed. No movement for 15 minutes.

Page 3
 Console Calibration
 25-Jul-91

Delta H Setting	1.75	Meter Pressure	30.23
Test Meter Initial	824.700		
Test Meter Final	834.707	Test Dry Gas Volume	10.007
Console Meter Initial	850.901		
Console Meter Final	861.287	Console Dry Gas Volume	10.386
Test Meter oF In	79		
Test Meter oF Out	77	Test Average oR	538
Console Meter oF In	107		
Console Meter oF Out	92	Console Average oR	559.5
Total Time In Mins.	13.58	Corr Test Meter Vol	9.98
Delta Ha=	1.7643	y Factor=	0.9954
Delta H Setting	2.00	Meter Pressure	30.25
Test Meter Initial	835.402		
Test Meter Final	845.436	Test Dry Gas Volume	10.034
Console Meter Initial	862.301		
Console Meter Final	872.699	Console Dry Gas Volume	10.398
Test Meter oF In	79		
Test Meter oF Out	77	Test Average oR	538
Console Meter oF In	108		
Console Meter oF Out	93	Console Average oR	560.5
Total Time In Mins.	12.73	Corr Test Meter Vol	10.01
Delta Ha=	1.7592	y Factor=	0.9981
Average Delta Ha=	1.7409	Average y Factor=	0.9878

TEXASGULF INC. PHOSPHATE OPERATIONS

Console Calibration

POST

09/04/91		Console	4
Technician	Jimmy Hardy	Number of Runs	8
Barometric Pressure	30.23	Test Meter Factor	0.9976
Test Meter No.	699357		
Delta H Setting	0.25	Meter Pressure	30.25
Test Meter Initial	883.500		
Test Meter Final	888.501	Test Dry Gas Volume	5.001
Console Meter Initial	804.207		
Console Meter Final	809.583	Console Dry Gas Volume	5.376
Test Meter oF In	72		
Test Meter oF Out	70	Test Average oR	531
Console Meter oF In	106		
Console Meter oF Out	96	Console Average oR	561
Total Time In Mins.	18.37	Corr Test Meter Vol	4.99
Delta Ha=	1.7864	y Factor=	0.9798
Delta H Setting	0.50	Meter Pressure	30.27
Test Meter Initial	888.501		
Test Meter Final	893.501	Test Dry Gas Volume	5
Console Meter Initial	809.583		
Console Meter Final	814.930	Console Dry Gas Volume	5.347
Test Meter oF In	73		
Test Meter oF Out	71	Test Average oR	532
Console Meter oF In	110		
Console Meter oF Out	97	Console Average oR	563.5
Total Time In Mins.	12.800	Corr Test Meter Vol	4.99
Delta Ha=	1.7342	y Factor=	0.9869
Delta H Setting	0.75	Meter Pressure	30.29
Test Meter Initial	893.701		
Test Meter Final	898.703	Test Dry Gas Volume	5.002
Console Meter Initial	815.149		
Console Meter Final	820.495	Console Dry Gas Volume	5.346
Test Meter oF In	72		
Test Meter oF Out	72	Test Average oR	532
Console Meter oF In	113		
Console Meter oF Out	97	Console Average oR	565
Total Time In Mins.	10.5	Corr Test Meter Vol	4.99
Delta Ha=	1.7444	y Factor=	0.9895

Page 2

Console Calibration

09/04/91

Delta H Setting	1.00	Meter Pressure	30.30
Test Meter Initial	898.703		
Test Meter Final	903.705	Test Dry Gas Volume	5.002
Console Meter Initial	820.495		
Console Meter Final	825.830	Console Dry Gas Volume	5.335
Test Meter oF In	72		
Test Meter oF Out	72	Test Average oR	532
Console Meter oF In	114		
Console Meter oF Out	97	Console Average oR	565.5
Total Time In Mins.	9.070	Corr Test Meter Vol	4.99
Delta Ha=	1.7339	y Factor=	0.9918
Delta H Setting	1.25	Meter Pressure	30.32
Test Meter Initial	903.705		
Test Meter Final	914.009	Test Dry Gas Volume	10.304
Console Meter Initial	825.830		
Console Meter Final	836.779	Console Dry Gas Volume	10.949
Test Meter oF In	72		
Test Meter oF Out	72	Test Average oR	532
Console Meter oF In	115		
Console Meter oF Out	97	Console Average oR	566
Total Time In Mins.	16.78	Corr Test Meter Vol	10.28
Delta Ha=	1.7466	y Factor=	0.9958
Delta H Setting	1.50	Meter Pressure	30.34
Test Meter Initial	914.009		
Test Meter Final	924.004	Test Dry Gas Volume	9.995
Console Meter Initial	836.779		
Console Meter Final	847.388	Console Dry Gas Volume	10.609
Test Meter oF In	72		
Test Meter oF Out	72	Test Average oR	532
Console Meter oF In	117		
Console Meter oF Out	99	Console Average oR	568
Total Time In Mins.	14.9	Corr Test Meter Vol	9.97
Delta Ha=	1.7502	y Factor=	0.9998

Page 3
Console Calibration
04-Sep-91

Delta H Setting	1.75	Meter Pressure	30.36
Test Meter Initial	924.004		
Test Meter Final	934.028	Test Dry Gas Volume	10.024
Console Meter Initial	847.388		
Console Meter Final	858.013	Console Dry Gas Volume	10.625
Test Meter oF In	73		
Test Meter oF Out	72	Test Average oR	532.5
Console Meter oF In	117		
Console Meter oF Out	99	Console Average oR	568
Total Time In Mins.	13.87	Corr Test Meter Vol	10.00
Delta Ha=	1.7624	y Factor=	0.9997
Delta H Setting	2.00	Meter Pressure	30.38
Test Meter Initial	934.028		
Test Meter Final	944.105	Test Dry Gas Volume	10.077
Console Meter Initial	858.013		
Console Meter Final	868.674	Console Dry Gas Volume	10.661
Test Meter oF In	73		
Test Meter oF Out	72	Test Average oR	532.5
Console Meter oF In	116		
Console Meter oF Out	100	Console Average oR	568
Total Time In Mins.	13.03	Corr Test Meter Vol	10.05
Delta Ha=	1.7590	y Factor=	1.0009
Average Delta Ha=	1.7521	Average y Factor=	0.9930

8/11/53

Console Calibration Worksheet

Date 9-4-91

Barometric Press. 30.23

Console # 4

Technician J. Hardy

Circle One: Pre Post

Delta H	Tst Mtr Init	Tst Mtr Final	1st Mtr of In	1st Mtr of Out	Oral Mtr Init	Oral Mtr Final	Oral Mtr of In	Oral Mtr of Out	Time
-.25	888.500	888.501	72	70	804.207	809.583	106	96	18.37
-.50	888.501	893.501	73	71	809.583	914.930	110	97	12.80
-.75	893.701	898.703	72	72	815.149	820.495	113	97	10.50
-1.00	898.703	903.705	72	72	820.495	825.836	114	97	9.07
-1.25	903.705	914.009	72	72	825.836	836.779	115	97	16.78
-1.50	914.009	924.004	72	72	836.779	847.388	117	99	14.80
-1.75	924.004	934.028	73	72	847.388	858.013	117	99	13.87
-2.00	934.028	944.105	73	72	858.013	868.674	118	100	13.03

Leak K ✓ @ 15" Hg = 000 CFM

Test Meter 699357

TEXASGULF INC. PHOSPHATE OPERATIONS

PRE

Temperature Calibrations

Console # 4

Date 6-28 & 7-1-91

Technician D.A. FOREST

Instrument		Indicator oF	Actual oF	Difference oF
Dry Gas Meter In (Must agree: +/- 5.4 oF)	A	48	49.4	1.4
	B	74	74.8	0.8
	C	127	125.9	1.1
Dry Gas Meter Out (Must agree: +/- 5.4 oF)	A	46	46.5	0.5
	B	75	74.8	0.2
	C	126	125.0	1.0
Impinger Thermometer # <u>1</u> (Must agree: +/- 2 oF)	A	42	41.4	0.6
	B	70	70.8	0.8
	C	122	123.2	1.2
Impinger Thermometer # <u>2</u> (Must agree: +/- 2 oF)	A	41	41.4	0.4
	B	70	70.8	0.8
	C	122	123.2	1.2
Impinger Thermometer # <u>3</u> (Must agree: +/- 2 oF)	A	41	41.4	0.4
	B	71	70.8	0.2
	C	122	123.2	1.2
HotBox Thermometer # <u>1</u> (Must agree: +/- 5.4 oF)	A	68	71.0 70.8 ^{PAF}	3.0
	B	121	122.2	1.2
	C	251	252.0	1.0
HotBox Thermometer # <u>2</u> (Must agree: +/- 5.4 oF)	A	68	71.0	3.0
	B	120	122.2	2.2
	C	251	252.0	1.0
HotBox Thermometer # <u>3</u> (Must agree: +/- 5.4 oF)	A	67	71.0	4.0
	B	119	122.2	3.2
	C	249	252.0	3.0

pre

~~11/1/91~~
4

Temperature Calibrations

Please Circle One: Pre Post

Console 4

Technician JT

Date 6-10-91

Instrument		Indicator oF	Actual oF	Difference oF
Dry Gas Meter In	A	32	35.0	3.0
(Must agree: +/-5.4 oF)	B	71	73.0	2.0
	C	174	172.6	1.4
Dry Gas Meter Out	A	32	35.0	3.0
(Must agree: +/-5.4 oF)	B	72	73.0	1.0
	C	175	173.8	1.2
Impinger Thermometer # <u>1</u>	A	36	34.0	2.0
(Must agree: +/-2 oF)	B	74	73.0	1.0
	C	174	175.8	1.8
Impinger Thermometer # <u>2</u>	A	35	34.0	1.0
(Must agree: +/-2 oF)	B	74	73.0	1.0
	C	174	175.8	1.8
Impinger Thermometer # <u>3</u>	A	36	34.0	2.0
(Must agree: +/-2 oF)	B	75	73.0	2.0
	C	175	175.8	0.8
HotBox Thermometer # <u>1</u>	A	70	73.0	3.0
(Must agree: +/-5.4 oF)	B	258	258.5	0.5
HotBox Thermometer # <u>2</u>	A	70	73.0	3.0
(Must agree: +/-5.4 oF)	B	257	260.2	3.2
HotBox Thermometer # <u>3</u>	A	69	73.0	4.0
(Must agree: +/-5.4 oF)	B	256	258.5	2.5
Probe Heater Assy # <u>B</u>		212°F @	75 cfm	
Probe Heater Assy # <u>14</u>		22°F @	175 cfm	
Probe Heater Assy #				

pre

Instrument		Indicator OF	Actual OF	Difference %
Stack Thermocouple Assy # <u>8</u>	A	71	71.5	.6
(Must agree: +/-1.5%)	A	70	71.0	1.4
	A	70	71.0	1.4
	B	131	132.4	1.0
	B	130	130.9	.6
	B	132	133.4	1.0
	C	167	168.8	1.0
	C	168	170.2	1.3
	C	168	170	1.2
Stack Thermocouple Assy # <u>11</u>	A	71	72.0	1.4
(Must agree: +/-1.5%)	A	71	71.5	0.6
	A	70	71.0	1.4
	B	133	134.6	1.2
	B	130	131.8	1.4
	B	129	131.0	1.5
	C	168	169.6	0.9
	C	170	172.6	1.5
	C	170	172.2	1.3
Stack Thermocouple Assy # _____	A			
(Must agree: +/-1.5%)	A			
	A			
	B			
	B			
	B			
	C			
	C			
	C			

TEXASGULF INC. PHOSPHATE OPERATIONS

POST

Temperature Calibrations

Date 9-5-91

Technician J. HARDY

Instrument		Indicator oF	Actual oF	Difference %
Stack Thermocouple Assy # <u>8</u> (Must agree: +/- 1.5 %)	A	70	71.6	2.2
	A	70	72.2	3.0
	A	71	72.6	2.2
	B	149 152	150.8 149.8	0.8
	B	148 150	147 148.2	2.0
	B	152 149 148	152.8 148.4	0.5
	C	220	218	0.9
	C	220	219	0.5
	C	218	217	0.5
Stack Thermocouple Assy # <u>14</u> (Must agree: +/- 1.5 %)	A	72	72.2	0.3
	A	72	72.8	1.1
	A	72	73.2	1.6
	B	149	149.8	0.5
	B	148	148.2	0.1
	B	147	146.4	0.4
	C	218	218	0
	C	218	221	1.4
	C	218	218	0
Stack Thermocouple Assy # _____ (Must agree: +/- 1.5 %)	A			
	A			
	A			
	B			
	B			
	B			
	C			
	C			
	C			
Probe Heater Assy # _____				
Probe Heater Assy # <u>14</u>		220 @ 1.75	CFM	
Probe Heater Assy # <u>8</u>		220 @ 1.75	CFM	

TEXASGULF INC. PHOSPHATE OPERATIONS

934.AH

Temperature Calibrations

POST

Console #4

Date 9-4/5-91

Technician J. HARDY

Instrument		Indicator oF	Actual oF	Difference oF
Dry Gas Meter In (Must agree: +/- 5.4 oF)	A	75	75.6	0.6
	B	64	60.8	3.2
	C	157	159.2	2.2
Dry Gas Meter Out (Must agree: +/- 5.4 oF)	A	75	75.6	0.6
	B	64	60.8	3.2
	C	158	159.2	1.2
Impinger Thermometer # <u>1</u> (Must agree: +/- 2 oF)	A	74	75.6	1.6
	B	176	176	0
	C	212	211.5	0.5
Impinger Thermometer # <u>2</u> (Must agree: +/- 2 oF)	A	74	75.6	1.6
	B	174 174	176	2.0
	C	210	211.5	1.5
Impinger Thermometer # <u>3</u> Rev → (Must agree: +/- 2 oF)	A	70 70.2	75.6 72	7.8
	B	174	176	2
	C	212	211.5	0.5
HotBox Thermometer # <u>1</u> (Must agree: +/- 5.4 oF)	A	75	75.6	0.6
	B	176	176	0
	C	215	211	4
HotBox Thermometer # <u>2</u> (Must agree: +/- 5.4 oF)	A	75	75.6	0.6
	B	175	176	1
	C	210	211	1
HotBox Thermometer # <u>3</u> (Must agree: +/- 5.4 oF)	A	75	75.6	0.6
	B	176	176	0
	C	210	211	1

PRE

2-Calibration

Date 6-28-91Tech P. A. FOREST

Delta H Magnehelic

Leak Check @ 1.92 " H2O for 3 minutes.

	Gauge	Manometer	Delta
POSITIVE	1.92	1.91	0.01
NEGATIVE	1.73	1.72	0.01

Leak Check @ 1.06 " H2O for 3 minutes.

	Gauge	Manometer	Delta
POSITIVE	1.06	1.05	0.01
NEGATIVE	0.99	0.98	0.01

Leak Check @ 0.41 " H2O for 3 minutes.

	Gauge	Manometer	Delta
POSITIVE	0.41	0.40	0.00
NEGATIVE	0.22	0.21	0.01

Delta P Magnehelic

Leak Check @ 1.79 " H2O for 3 minutes.

	Gauge	Manometer	Delta
POSITIVE	1.79	1.78	0.01
NEGATIVE	1.81	1.80	0.01

Leak Check @ 1.01 " H2O for 3 minutes.

	Gauge	Manometer	Delta
POSITIVE	1.01	1.00	0.01
NEGATIVE	0.91	0.92	0.01

Leak Check @ 0.40 " H2O for 3 minutes.

	Gauge	Manometer	Delta
POSITIVE	0.40	0.40	0.00
NEGATIVE	0.40	0.41	0.01

CONSOLE #4

Post-Calibration

Date 9-4-91

Tech J. HARRIS

Delta H Magnehelic

Leak Check @ ☒ " H2O for 3 minutes.

Gauge	Manometer	Delta
185	183	.02

Leak Check @ ☒ " H2O for 3 minutes.

Gauge	Manometer	Delta
97	96	.01

Leak Check @ ☒ " H2O for 3 minutes.

Gauge	Manometer	Delta
25	27	.02

Delta P Magnehelic

Leak Check @ ☒ " H2O for 3 minutes.

Gauge	Manometer	Delta
184 182	181	.01

Leak Check @ ☒ " H2O for 3 minutes.

Gauge	Manometer	Delta
182 106	181 106	0

Leak Check @ ☒ " H2O for 3 minutes.

Gauge	Manometer	Delta
.38	.38	0

ACETONE BLANK WORKSHEET

Lot # 07021

BEAKER WT. INIT.	⑩ 147.7745	FILTER WT. INIT.	
BEAKER WT. FINAL	147.7735	FILTER WT. FINAL	
WT. OF RESIDUE	-.0010	NET FILTER WT.	

200MLS

CONSTANT WTS.		
BEAKER		FILTER
147.7732		
147.7735		

TECHNICIAN: JT

DATE: 8-21-91

SOURCE PERFORMANCE FOR: Calcuwer #2 + 4

MeCl₂

~~ACETONE~~ BLANK WORKSHEET

Lot # 910309

BEAKER WT. INIT.	(38) 139.6226	FILTER WT. INIT.	
BEAKER WT. FINAL	139.6216	FILTER WT. FINAL	
WT. OF RESIDUE	- 0010	NET FILTER WT.	

200mLs

CONSTANT WTS.		
BEAKER		FILTER
139.6218		
139.6216		

TECHNICIAN: JT

DATE: 8-21-91

SOURCE PERFORMANCE FOR: CALIBRATOR #2 & 4

PRODUCTION DATA

45





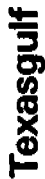
Texasgulf

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16-24-91

TIME	SYSTEM PRESSURE REGULATOR				COLD WATER				WATER TEMPERATURE				AFTER COLD WATER	NO. 1 HOT CUTTING WATER	NO. 2 HOT CUTTING WATER	CUTTING WATER	RED ON PAGE NO. 1	RED ON PAGE NO. 2	
	GAUGE PRESSURE PSI	GAUGE PRESSURE PSI	GAUGE PRESSURE PSI	GAUGE PRESSURE PSI	GAUGE PRESSURE PSI	GAUGE PRESSURE PSI	GAUGE PRESSURE PSI	GAUGE PRESSURE PSI	GAUGE PRESSURE PSI	GAUGE PRESSURE PSI	GAUGE PRESSURE PSI	GAUGE PRESSURE PSI							
12:00	120	22	25	06	40	45	20	56	300	320	900	1400	1070	1070	1140	1140	260	260	4400
12:05	120	22	25	06	40	45	20	56	300	320	900	1400	1070	1070	1140	1140	260	260	4400
12:10	120	22	25	06	40	45	20	56	300	320	900	1400	1070	1070	1140	1140	260	260	4400
12:15	120	22	25	06	40	45	20	56	300	320	900	1400	1070	1070	1140	1140	260	260	4400
12:20	120	22	25	06	40	45	20	56	300	320	900	1400	1070	1070	1140	1140	260	260	4400
12:25	120	22	25	06	40	45	20	56	300	320	900	1400	1070	1070	1140	1140	260	260	4400
12:30	120	22	25	06	40	45	20	56	300	320	900	1400	1070	1070	1140	1140	260	260	4400
12:35	120	22	25	06	40	45	20	56	300	320	900	1400	1070	1070	1140	1140	260	260	4400
12:40	120	22	25	06	40	45	20	56	300	320	900	1400	1070	1070	1140	1140	260	260	4400
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12:50	120	22	25	06	40	45	20	56	300	320	900	1400	1070	1070	1140	1140	260	260	4400
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13:30	120	22	25	06	40	45	20	56	300	320	900	1400	1070	1070	1140	1140	260	260	4400
13:35	120	22	25	06	40	45	20	56	300	320	900	1400	1070	1070	1140	1140	260	260	4400
13:40	120	22	25	06	40	45	20	56	300	320	900	1400	1070	1070	1140	1140	260	260	4400
13:45	120	22	25	06	40	45	20	56	300	320	900	1400	1070	1070	1140	1140	260	260	4400
13:50	120	22	25	06	40	45	20	56	300	320	900	1400	1070	1070	1140	1140	260	260	4400
13:55	120	22	25	06	40	45	20	56	300	320	900	1400	1070	1070	1140	1140	260	260	4400
14:00	120	22	25	06	40	45	20	56	300	320	900	1400	1070	1070	1140	1140	260	260	4400
14:05	120	22	25	06	40	45	20	56	300	320	900	1400	1070	1070	1140	1140	260	260	4400
14:10	120	22	25	06	40	45	20	56	300	320	900	1400	1070	1070	1140	1140	260	260	4400
14:15	120	22	25	06	40	45	20	56	300	320	900	1400	1070	1070	1140	1140	260	260	4400
14:20	120	22	25	06	40	45	20	56	300	320	900	1400	1070	1070	1140	1140	260	260	4400
14:25	120	22	25	06	40	45	20	56	300	320	900	1400	1070	1070	1140	1140	260	260	4400
14:30	120	22	25	06	40	45	20	56	300	320	900	1400	1070	1070	1140	1140	260	260	4400
14:35	120	22	25	06	40	45	20	56	300	320	900	1400	1070	1070	1140	1140	260	260	4400
14:40	120	22	25	06	40	45	20	56	300	320	900	1400	1070	1070	1140	1140	260	260	4400
14:45	120	22	25	06	40	45	20	56	300	320	900	1400	1070	1070	1140	1140	260	260	4400
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14:55	120	22	25	06	40	45	20	56	300	320	900	1400	1070	1070	1140	1140	260	260	4400
15:00	120	22	25	06	40	45	20	56	300	320	900	1400	1070	1070	1140	1140	260	260	4400
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15:30	120	22	25	06	40	45	20	56	300	320	900	1400	1070	1070	1140	1140	260	260	4400
15:35	120	22	25	06	40	45	20	56	300	320	900	1400	1070	1070	1140	1140	260	260	4400
15:40	120	22	25	06	40	45	20	56	300	320	900	1400	1070	1070	1140	1140	260	260	4400
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16:00	120	22	25	06	40	45	20	56	300	320	900	1400	1070	1070	1140	1140	260	260	4400
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16:10	120	22	25	06	40	45	20	56	300	320	900	1400	1070	1070	1140	1140	260	260	4400
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17:35	120	22	25	06	40	45	20	56	300	320	900	1400	1070	1070	1140	1140	260	260	4400
17:40	120	22	25	06	40	45	20	56	300	320	900	1400	1070	1070	1140	1140	260	260	4400
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17:55	120	22	25	06	40	45	20	56	300	320	900	1400	1070	1070	1140	1140	260	260	4400
18:00	120	22	25	06	40	45	20	56	300	320	900	1400	1070	1070	1140	1140	260	260	

00-00-149-200



Texasgulf

Date _____

P. 22.51

TIME	SYSTEM PRESSURE MONITORS				SEWER WATER				P.A.C. SYSTEM TEMPERATURE				NO. 1 DAY CYCLING	NO. 2 DAY CYCLING	NO. 3 DAY CYCLING	NO. 4 DAY CYCLING	NO. 5 DAY CYCLING	NO. 6 DAY CYCLING
	WATER PRESSURE	WATER FLOW	WATER TEMPERATURE	WATER QUALITY	WATER PRESSURE	WATER FLOW	WATER TEMPERATURE	WATER QUALITY	WATER PRESSURE	WATER FLOW	WATER TEMPERATURE	WATER QUALITY						
1 AM	120	24	25	0.2	25	30	20	20	140	100	100	100	110	110	110	110	110	110
2 AM	120	24	25	0.2	25	30	20	20	140	100	100	100	110	110	110	110	110	110
3 AM	120	24	25	0.2	25	30	20	20	140	100	100	100	110	110	110	110	110	110
4 AM	120	24	25	0.2	25	30	20	20	140	100	100	100	110	110	110	110	110	110
5 AM	120	24	25	0.2	25	30	20	20	140	100	100	100	110	110	110	110	110	110
6 AM	120	24	25	0.2	25	30	20	20	140	100	100	100	110	110	110	110	110	110
7 AM	120	24	25	0.2	25	30	20	20	140	100	100	100	110	110	110	110	110	110
8 AM	120	24	25	0.2	25	30	20	20	140	100	100	100	110	110	110	110	110	110
9 AM	120	24	25	0.2	25	30	20	20	140	100	100	100	110	110	110	110	110	110
10 AM	120	24	25	0.2	25	30	20	20	140	100	100	100	110	110	110	110	110	110
11 AM	120	24	25	0.2	25	30	20	20	140	100	100	100	110	110	110	110	110	110
12 M	120	24	25	0.2	25	30	20	20	140	100	100	100	110	110	110	110	110	110

1. **Introduction**

202 676 21 614

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