P.O. Drawer L.
Plant City, Florida 33564-9007
Telephone: 813/782-1591

CF Industries Inc.
Plant City Phosphate Complex

March 8, 2007

Mr. Chris Bradley
Florida Department of
Environmental Protection
13051 N. Telecom Parkway
Temple Terrace, Florida 33637-0926

Subject: CF Industries, Inc.
Plant City Phosphate Complex
Permit No. 0570005-017-AV
"D" Sulfuric Acid Unit
Emissions Unit ID No. 008
CEMS Certifications and Compliance Test Report

Dear Mr. Bradley:

In accordance with Permit No. 0570005-017-AV, enclosed are copies of the Sulfur Dioxide and Oxygen CEMS Certifications Test Reports for the testing conducted on our "D" Sulfuric Acid Unit on January 29, 30, and 31, 2007. Also, enclosed is the Calibration Drift Report.

If there are any questions concerning the results, please give Michael Messina a call at (813) 364-5639.

Sincerely,

Thomas A. Edwards
Superintendent,
Environmental Affairs

TAE/JMM/gem
U:\ENVRPT\167063a.doc

CC: Trina L. Vielhauer/Chief Bureau of Air Regulation FDEP
Lynn Robinson/HCEPC
J.M. Messina/Envir. Files
Frank Dlugos

PERMIT NO. 0570005-017-AV

Emission Unit 008

RELATIVE ACCURACY TESTING

CF INDUSTRIES, INC.

PLANT CITY PHOSPHATE COMPLEX

"D" SULFURIC ACID PLANT

PLANT CITY, FLORIDA

JANUARY 29, 30 & 31, 2007

TEST CONDUCTED BY:

ENVIRONMENTAL LABORATORY
CF Industries, Inc.
Plant City Phosphate Complex
Plant City, Florida 33564

Table of Contents

1.0 INTRODUCTION

The Environmental Laboratory of CF Industries, Inc., Plant City Phosphate Complex, conducted relative accuracy (RA) at the "D" Unit Sulfuric Acid Plant in Plant City, Florida on January 19, 30 & 31, 2007. Testing was performed to determine conformance with EPA Performance Specification 2 and 4.

2.0 CONTINUOUS EMISSION MONITOR DESCRIPTION

The "D" Unit Sulfuric Acid Plant is equipped with a continuous emission monitoring system (CEMS) utilizing an Ametek 4000 Photometric SO_2 analyzer. This is an extractive sampler with a range of 0 to 1000 ppm. The analyzer is equipped with an automatic zero adjustment and adjusts the zero point at one hour intervals. The plant is also equipped with a Yokogawa continuous oxygen monitoring system. This is an extractive sampler with a range of 0 to 24 percent O_2. Gas concentrations are recorded by a data acquisition system in the control room. The SO_2 and O_2 data are utilized to determine the source SO_2 emission in pounds of SO_2 per ton of 100 percent sulfuric acid produced.

3.0 TEST RESULTS

Results of the SO_2 relative accuracy tests are summarized in Table 1. In order to be in conformance with Performance Specification 2, the relative accuracy of the SO_2 CEMS must be no greater than 20 percent of the mean value of the reference method test data in terms of the units of the emission standard or 10 percent of the applicable standard, whichever is greater. The relative accuracy is the absolute mean difference between the emission rate determined by the CEMS and the value determined by the reference method plus the 2.5 percent error confidence coefficient of a series of tests divided by the mean of the reference tests or the applicable emission limit. The relative accuracy of this CEMS, based upon the mean value of the reference method test data was 9.92 percent. The relative accuracy was therefore within the allowable limits.

Results of the O_2 relative accuracy tests are summarized in Table 2. The average difference between the reference method and the CEMS data of the nine data sets constitute the relative accuracy. In order to be in conformance with Performance Specification 3, the relative accuracy of the O_2 CEMS must be no greater than 1.0 percent O_2. The relative accuracy of the O_2 CEMS, based upon the above definition, was 0.44 percent. The relative accuracy was therefore within the allowable limits.

4.0 TEST PROCEDURES

4..1 Methods

The SO_2 relative accuracy test was conducted in accordance with Performance Specification 2 – Specifications and Test Procedures for SO_2 and NO_2 Continuous Emission Monitoring Systems in Stationary Sources, 40 CFR 60, Appendix B. The relative accuracy test procedures require that a minimum of nine sets of reference method tests be conducted. Nine sets of data were collected concurrently with the CEMS. Relative accuracy testing was performed in conjunction with a compliance test. Therefore, three runs were performed for a period of 60 minutes per run and six runs were performed for a period of 21 minutes per run. Reference method samples were collected and analyzed in accordance with EPA Method 8 – Determination of Sulfuric Acid Mist and Sulfur Dioxide Emissions from Stationary Sources, 40 CFR 60, Appendix A.

The O_2 relative accuracy test was conducted in accordance with Performance Specification 3 – Specifications and Test Procedures for O_2 and CO_2 Continuous Emission Monitoring Systems, 40 CFR 60, Appendix B. The relative accuracy test procedures require that a minimum of nine sets of reference method tests be conducted. Nine sets of data were collected concurrently with the O_2 CEMS. Oxygen sampling was performed simultaneously with SO_2 sampling in accordance with EPA Method 3B – Gas Analysis for the Determination of Emission Rate Correction Factor or Excess Air, 40 CFR 60, Appendix A.

4.2 Test Locations

During the three runs utilized for the EPA Method 8 compliance test, twenty four sample points were utilized. During the six runs utilized for relative accuracy only, three sample points were utilized for collecting the reference method sulfur dioxide and oxygen samples. The points were located along a measurement line that passed through the centroidal area of the stack. The three sample points were located on the line at 16.7, 50.0, and 83.3 percent of the stack diameter. Velocity traverses were performed at twenty four points during each of these runs for determination of flow rate. The locations of the sampling ports are shown in Figure 1.

4.3 Sampling Train

The sulfur dioxide sampling train consisted of a stainless steel nozzle, a Napp Corporation heated borosilicate glass-lined probe, a glass filter bypass tube, a glass fiber filter, and four impingers arranged as shown in Figure 2. The first impinger was charged with 100 milliliters of 80 percent isopropanol. The second and third impingers were each charged with 100 milliliters of 3 percent hydrogen peroxide and the fourth impinger charged with indicating silica gel desiccant. The impingers were cooled in an ice and

water bath during sampling. A Lear Siegler control console was used to monitor the gas flow rates and stack conditions during sampling.

The oxygen sampling train consisted of a stainless steel probe, sample line, pump, and Tedlar sampling bag as shown in Figure 3.

4.4 Sample Collection

Prior to sulfur dioxide sampling, the pitot tubes were checked for leaks and the manometers were zeroed. A pretest leak check of the sample line was conducted by sealing the nozzle and applying a 15" vacuum. A leak rate of less than 0.02 cubic feet per minute (CFM) was considered acceptable.

4.5 Sample Recovery

A post test leak check of the sulfur dioxide sampling train was performed at the completion of the run by sealing the nozzle and applying a vacuum equal to or greater than the maximum value reached during the sample run. A leak rate of less than 0.02 CFM or 4 percent of the average sampling rate (whichever is less) was considered acceptable. The probe was then disconnected, the ice bath drained, and the remaining part of the sample train was purged by drawing air through the system for fifteen minutes at the average flow rate used during sampling. The second and third impingers, associated connecting glassware, and back half of the filter holder were rinsed with distilled, deionized water into a 500 milliliter volumetric flask.

5.0 Analytical Procedure

5.1 Pretest Preparation

The 3 percent hydrogen peroxide solution was prepared from 30 percent reagent grade hydrogen peroxide and deionized water on the morning of the test. The 80 percent isopropanol solution was prepared from 100 percent reagent grade isopropanol and deionized water. The impingers were charged as described in section 4.3.

5.2 Analysis

After recovery, the samples were analyzed using procedures outline in EPA Method 8 – Determination of Sulfuric Acid Mist and Sulfur Dioxide Emissions from Stationary Sources, 40 CFR 60, Appendix A. Duplicate results were obtained in milliliters of barium perchlorate titrant. The average of these titration values were used to compute the sulfur dioxide concentrations.

Table 1. SULFUR DIOXIDE RELATIVE ACCURACY TEST RESULTS

Company: CF Industries, Inc., Plant City Phosphate Complex
Source: "D" Sulfuric Acid Plant
Date: 1/29-31/07

Run No.	Date	Time	Reference Method (PPM SO2)	CEM (PPM SO2)	Difference (PPM SO2)
1	1/29/07	13:22 - 13:53	352	373	21
2	1/30/07	10:42 - 11:03	308	363	55
3	1/30/07	11:35 - 13:01	339	358	19
4	1/30/07	13:17 - 14:26	341	360	19
5	1/30/07	14:54 - 16:21	339	362	23
6	1/31/07	10:36 - 10:57	349	367	18
7	1/31/07	11:55 - 12:16	343	358	15
8	1/31/07	12:58 - 13:19	345	362	17
9	1/31/07	13:45 - 14:06	332	362	30
Average			339	363	24.1

Std. Dev. 12.364

2.5% Error Confidence Coefficient (CC)= $t_{0.975}$ *Sd/sq.rt. N
CC = 9.479
n = 9
$t_{0.975}$ =2.3 for n = 9

Relative Accuracy (RA) = (mean of difference) + CC)/Avg RM
RA = 9.92 %

In order to be in conformance with Performance Specification 2, the relative accuracy of the SO2 CEMS must be no greater than 20 percent of the mean value of the reference method test data in terms of the units of the emission standard or 10 percent of the applicable standard, whichever is greater.

The relative accuracy of the continuous monitoring system for this plant, based upon the mean value of the reference method, was 9.92%. This value is within the allowable limits

Table 2. OXYGEN RELATIVE ACCURACY TEST RESULTS

Company: CF Industries, Inc., Plant City Phosphate Complex
Source: "D" Sulfuric Acid Plant
Date: 1/29-31/2007

Run No.	Date	Time	Reference Method (%O2)	CEM (%O2)	Difference (%O2)
1	1/29/07	13:22 - 13:53	3.18	3.45	0.27
2	1/30/07	10:42 - 11:03	3.70	3.50	-0.20
3	1/30/07	11:35 - 13:01	3.70	3.48	-0.22
4	1/30/07	13:17 - 14:26	3.97	3.49	-0.48
5	1/30/07	14:54 - 16:21	4.10	3.37	-0.73
6	1/31/07	10:36 - 10:57	4.03	3.38	-0.65
7	1/31/07	11:55 - 12:16	4.10	3.37	-0.73
8	1/31/07	12:58 - 13:19	4.00	3.38	-0.62
9	1/31/07	13:45 - 14:06	4.00	3.39	-0.61
Average			3.86	3.42	-0.44

In order to be in conformance with Performance Specification 3, the relative accuracy of the O2 CEMS must be no greater than 1.0 percent O2. The relative accuracy of the O2 CEMS, based upon the above definition was 0.44 percent O2 . The relative accuracy was therefore within the allowable limits.

Appendix

Project Participants

Emissions Test Summaries

Process Operational Data

Laboratory Data

Field Data Sheets

Gas Analysis Forms

Calibration Data

Source Sampling Nomenclature Sheet

Calculations

PROJECT PARTICIPANTS
CF INDUSTRIES, INC.
PLANT CITY PHOSPHATE COMPLEX

H.E. Morris	General Manager
R.C. May	Engineering Manager
T.A. Edwards	Supt., Environmental Affairs
J.M. Messina	Chief of Environmental Affairs
J.H. Falls	Chief Chemist, Laboratory
F.J. Dlugos	Environmental Supervisor
E. Kretschmar	Analyst II
L. Camp	"A" Class Technician
W. Cherry	"A" Class Technician
N. Grant	Operator
M. Andrews	Operator

CEMS SO2 Data - SO2 PPM

Run No.	Time of RATA Run Date	Time	CEMS (PPM SO2)	Avg
1	01/29/07 13:22 - 13:53	1315	365	
		1330	375	
		1345	370	
		1400	380	373
2	01/30/07 10:42 - 11:03	1045	361	
		1100	364	363
3	01/30/07 11:35 - 13:01	1130	358	
		1145	362	
		1200	355	
		1215	355	
		1230	358	
		1245	360	
		1300	360	358
4	01/30/07 13:17 - 14:26	1315	353	
		1330	362	
		1345	360	
		1400	367	
		1415	357	
		1430	363	360
5	01/30/07 14:54 - 16:21	1500	360	
		1515	358	
		1530	365	
		1545	360	
		1600	362	
		1615	362	
		1630	368	362
6	01/31/07 10:36 - 10:57	1030	373	
		1045	364	
		1100	363	367
7	01/31/07 11:55 - 12:16	1200	358	
		1215	358	358
8	01/31/07 12:58 - 13:19	1300	363	
		1315	360	362
9	01/31/07 13:45 - 14:06	1345	360	
		1400	363	362

CEMS O2 Data - % O2

Run No.	Time of RATA Run Date	CEMS Time	%O2	Avg
1	01/29/07 13:22 - 13:53	1315	3.51	
		1330	3.42	
		1345	3.50	
		1400	3.37	3.45
2	01/30/07 10:42 - 11:03	1045	3.47	
		1100	3.52	3.50
3	01/30/07 11:35 - 13:01	1130	3.43	
		1145	3.55	
		1200	3.50	
		1215	3.45	
		1230	3.44	
		1245	3.49	
		1300	3.47	3.48
4	01/30/07 13:17 - 14:26	1315	3.48	
		1330	3.44	
		1345	3.55	
		1400	3.39	
		1415	3.48	
		1430	3.45	3.47
5	01/30/07 14:54 - 16:21	1500	3.56	
		1515	3.55	
		1530	3.52	
		1545	3.47	
		1600	3.45	
		1615	3.55	
		1630	3.51	3.52
6	01/31/07 10:36 - 10:57	1030	3.50	
		1045	3.43	
		1100	3.55	3.49
7	01/31/07 11:55 - 12:16	1200	3.49	
		1215	3.50	3.50
8	01/31/07 12:58 - 13:19	1300	3.45	
		1315	3.46	3.46
9	01/31/07 13:45 - 14:06	1345	3.46	
		1400	3.44	3.45

"D" Sulfuric Acid Plant Process Operation Data

Test Dates: 1/29, 30, & 31/2007

Run No.	1	2	3	4	5	6	7	8	9
Date	1/29/07	1/30/07	1/30/07	1/30/07	1/30/07	1/31/07	1/31/07	1/31/07	1/31/07
Start Time	1332	1042	1135	1317	1454	1036	1155	1258	1345
Stop Time	1353	1103	1301	1446	1621	1057	1216	1319	1406
Production tons/day	2632	2613	2613	2613	2613	2628	2610	2595	2588
Period Average Values from Aspen									
Avg lbs SO2/ton for period	3.28	3.21	3.17	3.19	3.22	3.25	3.17	3.20	3.20
Avg % O2 for period	3.45	3.50	3.48	3.47	3.52	3.49	3.50	3.46	3.45
Avg SO2 ppm for period	373	363	358	360	362	367	358	362	362

SO2 MONITORING LOG

Plant D

Date 1/29/07

SO2 Chart Readings

Time	:00	:15	:30	:45	AVG.
6:00 AM	370	370	375	370	371.25
7:00 AM	375	375	375	370	373.75
8:00 AM	375	370	370	370	371.25
9:00 AM	370	365	370	365	367.5
10:00 AM	360	370	SPAN	TEST	365
11:00 AM	365	375	370	370	370
12:00 PM	370	370	365	370	368.75
1:00 PM	365	365	375	370	368.75
2:00 PM	380	370	370	370	372.5
3:00 PM	370	370	375	370	371.25
4:00 PM	365	370	370	375	370
5:00 PM	365	375	375	375	372.50
6:00 PM	375	375	375	370	373.75
7:00 PM	370	370	370	370	370
8:00 PM	370	365	375	375	371.25
9:00 PM	375	375	370	375	373.75
10:00 PM	375	370	380	380	376.25
11:00 PM	375	370	370	370	371.25
12:00 AM	370	370	375	375	372.50
1:00 AM	375	375	380	380	377.50
2:00 AM	370	370	375	375	372.50
3:00 AM	365	365	370	375	368.75
4:00 AM	370	370	365	370	368.75
5:00 AM	375	374	376	374	375

O2 Chart Readings

Time	:00	:15	:30	:45	AVG.
6:00 AM	3.45	3.45	3.48	3.46	3.46
7:00 AM	3.44	3.46	3.54	3.44	3.47
8:00 AM	3.49	3.49	3.45	3.42	3.46
9:00 AM	3.44	3.56	3.46	3.56	3.51
10:00 AM	3.53	3.40	SPAN	TEST	3.47
11:00 AM	3.49	3.51	3.46	3.41	3.47
12:00 PM	3.39	3.44	3.50	3.38	3.43
1:00 PM	3.52	3.51	3.42	3.50	3.49
2:00 PM	3.37	3.40	3.44	3.49	3.43
3:00 PM	3.36	3.36	3.52	3.40	3.41
4:00 PM	3.49	3.49	3.45	3.36	3.45
5:00 PM	3.45	3.45	3.40	3.40	3.42
6:00 PM	3.47	3.47	3.42	3.43	3.45
7:00 PM	3.39	3.39	3.46	3.45	3.42
8:00 PM	3.51	3.51	3.49	3.40	3.48
9:00 PM	3.43	3.43	3.51	3.44	3.45
10:00 PM	3.50	3.50	3.42	3.41	3.46
11:00 PM	3.49	3.49	3.44	3.50	3.48
12:00 AM	3.39	3.39	3.47	3.42	3.42
1:00 AM	3.43	3.43	3.36	3.44	3.42
2:00 AM	3.46	3.46	3.45	3.42	3.45
3:00 AM	3.47	3.47	3.52	3.45	3.48
4:00 AM	3.47	3.47	3.43	3.45	3.45
5:00 AM	3.44	3.44	3.44	3.47	3.45

Time	Lbs SO2/ton H2SO4 AVG.
6:00 AM	
7:00 AM	
8:00 AM	3.27
9:00 AM	
10:00 AM	
11:00 AM	
12:00 PM	
1:00 PM	
2:00 PM	3.28
3:00 PM	
4:00 PM	
5:00 PM	
6:00 PM	
7:00 PM	
8:00 PM	3.29
9:00 PM	
10:00 PM	
11:00 PM	
12:00 AM	
1:00 AM	
2:00 AM	3.29
3:00 AM	
4:00 AM	
5:00 AM	

Lbs SO2/ton H2SO4 = ppm SO2 * .001959
.265 -(.125 * %SO2)

EXIT REIGH TEST		
SHIFT	TIME	%SO2
7:00 AM		
7:00 AM		
7:00 PM		
7:00 PM		

Remarks: SPAN TEST 10:25-10:15 7AM 1-24-07

Day Shift Operator Ben Lamy

Night Shift Operator Jimmy Parker

To calculate Lbs/ Ton:

1) Multiply the hourly average ppm SO2 (form the log sheet) by .001959 _____ (a)
2) Multiply the hourly average % O2 (from the log sheet) by .0126 _____ (b)
3) Subtract the number calculated in step two (b) from .0265 _____ (c)
4) Divide the number calculated in step 1 (a) by the number calculated in step 3 (c) _____. This will give Lbs/ ton _____

SO2 MONITORING LOG

Plant _D_ Date 11/30/07

SO2 Chart Readings

Time	:00	:15	:30	:45	AVG.
6:00 AM	3.75	375	376	361	372
7:00 AM	3.72	370	367	370	370
8:00 AM	366	366	363	362	365
9:00 AM	359	358	361	359	359
10:00 AM	355	SPAN	TEST	361	356.61
11:00 AM	364	359	358	362	360.50
12:00 PM	355	355	358	360	357.07
1:00 PM	360	353	362	360	358.67
2:00 PM	367	357	363	361	362.18
3:00 PM	360	358	365	360	360.89
4:00 PM	362	362	368	360	363.02
5:00 PM	353	350	361	365	357
6:00 PM	366	364	362	364	364
7:00 PM	361	356	360	359	359
8:00 PM	361	360	351	359	358
9:00 PM	359	357	358	354	357
10:00 PM	357	353	363	360	358
11:00 PM	359	363	364	362	362
12:00 AM	359	360	361	366	361
1:00 AM	364	364	365	364	364
2:00 AM	364	366	367	364	366
3:00 AM	363	361	362	361	362
4:00 AM	365	362	365	365	364
5:00 AM	364	364	366	365	365

O2 Chart Readings

Time	:00	:15	:30	:45	AVG.
6:00 AM	3.45	3.45	3.43	3.55	3.47
7:00 AM	3.45	3.45	3.54	3.44	3.47
8:00 AM	3.47	3.52	3.48	3.47	3.48
9:00 AM	3.51	3.49	3.56	3.55	3.53
10:00 AM	3.58	SPAN	TEST	3.47	3.55
11:00 AM	3.52	3.47	3.43	3.55	3.49
12:00 PM	3.5	3.45	3.44	3.49	3.47
1:00 PM	3.53	3.48	3.44	3.55	3.5
2:00 PM	3.39	3.48	3.45	3.52	3.46
3:00 PM	3.56	3.55	3.52	3.47	3.53
4:00 PM	3.45	3.55	3.51	3.55	3.52
5:00 PM	3.58	3.43	3.55	3.45	3.50
6:00 PM	3.50	3.44	3.43	3.55	3.48
7:00 PM	3.44	3.49	3.45	3.52	3.47
8:00 PM	3.51	3.47	3.51	3.49	3.49
9:00 PM	3.49	3.52	3.49	3.44	3.49
10:00 PM	3.58	3.46	3.58	3.47	3.52
11:00 PM	3.51	3.50	3.45	3.46	3.48
12:00 AM	3.53	3.43	3.46	3.45	3.47
1:00 AM	3.49	3.46	3.45	3.48	3.47
2:00 AM	3.48	3.50	3.40	3.45	3.46
3:00 AM	3.47	3.48	3.52	3.44	3.48
4:00 AM	3.49	3.52	3.45	3.48	3.49
5:00 AM	3.40	3.48	3.45	3.49	3.45

Time	Lbs SO2/ton H2SO4 AVG.
6:00 AM	
7:00 AM	
8:00 AM	3.23
9:00 AM	
10:00 AM	
11:00 AM	
12:00 PM	
1:00 PM	
2:00 PM	3.20
3:00 PM	
4:00 PM	
5:00 PM	
6:00 PM	
7:00 PM	
8:00 PM	3.17
9:00 PM	
10:00 PM	
11:00 PM	
12:00 AM	
1:00 AM	
2:00 AM	3.23
3:00 AM	
4:00 AM	
5:00 AM	

$$\text{Lbs SO2/ton H2SO4} = \frac{\text{ppm SO2} * .001959}{.265 - (.125 * \%SO2)}$$

EXIT REIGH TEST		
SHIFT	TIME	%SO2
7:00 AM		
7:00 AM		
7:00 PM		
7:00 PM		

Remarks: Span test 10:06-10:36 [illegible]

Day Shift Operator [signature]

Night Shift Operator [signature]

To calculate Lbs/ Ton:

1) Multiply the hourly average ppm SO2 (form the log sheet) by .001959 _____ (
2) Multiply the hourly average % O2 (from the log sheet) by .0126 ______ (b)
3) Subtract the number calculated in step two (b) from .0265 ______ (c)
4) Divide the number calculated in step 1 (a) by the number calculated in step 3 (c) ______ . This will give Lbs/ ton __________

Plant "D"

SO2 MONITORING LOG

Date 1/31/07

SO2 Chart Readings

Time	:00	:15	:30	:45	AVG.
6:00 AM	366	367	366	370	367
7:00 AM	368	375	Span	TEST	371
8:00 AM	377	365	365	363	367
9:00 AM	364	366	369	369	367
10:00 AM	371	366	373	364	369
11:00 AM	363	361	363	362	363
12:00 PM	358	358	358	366	360
1:00 PM	363	363	356	360	360
2:00 PM	363	364	365	366	365
3:00 PM	359	364	361	360	361
4:00 PM	368	370	368	373	370
5:00 PM	373	362	372	373	370
6:00 PM	373	370	369	370	370
7:00 PM	372	370	372	376	372
8:00 PM	376	369	369	371	371
9:00 PM	374	369	370	371	371
10:00 PM	372	374	372	371	372
11:00 PM	371	375	367	364	369
12:00 AM	368	363	364	370	366
1:00 AM	367	367	365	369	367
2:00 AM	361	361	358	366	360
3:00 AM	370	371	367	364	368
4:00 AM	362	359	372	372	366
5:00 AM	371	368	370	371	370

O2 Chart Readings

Time	:00	:15	:30	:45	AVG.
6:00 AM	3.47	3.51	3.45	3.46	3.47
7:00 AM	3.45	3.45	Span	TEST	3.45
8:00 AM	3.36	3.47	3.51	3.47	3.45
9:00 AM	3.51	3.42	3.40	3.43	3.44
10:00 AM	3.39	3.55	3.50	3.43	3.47
11:00 AM	3.55	3.46	3.45	3.49	3.49
12:00 PM	3.49	3.50	3.45	3.42	3.47
1:00 PM	3.45	3.46	3.52	3.46	3.47
2:00 PM	3.44	3.42	3.44	3.41	3.43
3:00 PM	3.55	3.55	3.44	3.47	3.50
4:00 PM	3.43	3.43	3.43	3.39	3.42
5:00 PM	3.51	3.51	3.52	3.41	3.49
6:00 PM	3.44	3.44	3.42	3.46	3.44
7:00 PM	3.43	3.43	3.46	3.43	3.44
8:00 PM	3.51	3.51	3.41	3.42	3.47
9:00 PM	3.49	3.49	3.44	3.41	3.45
10:00 PM	3.45	3.45	3.40	3.48	3.45
11:00 PM	3.41	3.41	3.51	3.49	3.45
12:00 AM	3.49	3.49	3.49	3.45	3.48
1:00 AM	3.45	3.45	3.47	3.56	3.49
2:00 AM	3.45	3.45	3.55	3.49	3.49
3:00 AM	3.40	3.40	3.45	3.49	3.44
4:00 AM	3.50	3.50	3.51	3.41	3.48
5:00 AM	3.52	3.52	3.43	3.49	3.49

Time	Lbs SO2/ton H2SO4 AVG.
6:00 AM	
7:00 AM	
8:00 AM	3.25
9:00 AM	
10:00 AM	
11:00 AM	
12:00 PM	
1:00 PM	
2:00 PM	3.21
3:00 PM	
4:00 PM	
5:00 PM	
6:00 PM	
7:00 PM	
8:00 PM	3.28
9:00 PM	
10:00 PM	
11:00 PM	
12:00 AM	
1:00 AM	
2:00 AM	3.19
3:00 AM	
4:00 AM	
5:00 AM	

EXIT REIGH TEST		
SHIFT	TIME	%SO2
7:00 AM		
7:00 AM		
7:00 PM		
7:00 PM		

Remarks: Span test 07:20-07:50 WSL

Day Shift Operator Mark Lytle

Night Shift Operator D Bell

Lbs SO2/ton H2SO4 = ppm SO2 * .001959 / .265 -(.125 * %SO2)

To calculate Lbs/ Ton:

1) Multiply the hourly average ppm SO2 (form the log sheet) by .001959 _____ (a)
2) Multiply the hourly average % O2 (from the log sheet) by .0126 _____ (b)
3) Subtract the number calculated in step two (b) from .0265 _____ (c)
4) Divide the number calculated in step 1 (a) by the number calculated in step 3 (c) _____. This will give Lbs/ ton _____

CF INDUSTRIES, INC.
PLANT CITY PHOSPHATE COMPLEX

DATE	29-Jan-07		
TIME	1:32 PM	TO	3:43:00 A
STACK	D SAP		
RUN	#1		

SAMPLE SOLUTION ANALYSIS

	Acid Mist, SO_3	SO_2	
Volume of Sample, ml.	500	500	100
Aliquot, ml.	50	20	20
Normality of Barium Perchlorate	0.012840	0.012840	
Mls. of Barium Perchlorate Titrated		7.83	
Blank, ml.	0.10	0.10	
Conversion to Milligrams		397.38	

Analyst Lloyd D. Camp

dso4titr.xls

CF INDUSTRIES, INC.
PLANT CITY PHOSPHATE COMPLEX

DATE	30-Jan-07		
TIME	10:42 AM	TO	11:03 AM
STACK	D SAP		
RUN	#2		

SAMPLE SOLUTION ANALYSIS

	Acid Mist, SO_3	SO_2
Volume of Sample, ml.	500	500 100
Aliquot, ml.	50	20 20
Normality of Barium Perchlorate	0.012840	0.012840
Mls. of Barium Perchlorate Titrated		6.93
Blank, ml.	0.10	0.15
Conversion to Milligrams		348.55

Analyst Frank J Rigor

dso4titr.xls

CF INDUSTRIES, INC.
PLANT CITY PHOSPHATE COMPLEX

DATE	30-Jan-07		
TIME	11:25 AM	TO	1:01 PM
STACK	D SAP		
RUN	#3		

SAMPLE SOLUTION ANALYSIS

	Acid Mist, SO_3	SO_2
Volume of Sample, ml.	500	500 100
Aliquot, ml.	50	20 20
Normality of Barium Perchlorate	0.012840	0.012840
Mls. of Barium Perchlorate Titrated	4.30	24.83
Blank, ml.	0.15	0.15
Conversion to Milligrams	26.13	1268.75

Analyst Lloyd Bu Camp

dso4titr.xls

CF INDUSTRIES, INC.
PLANT CITY PHOSPHATE COMPLEX

DATE	30-Jan-07		
TIME	1:17 PM	TO	2:46 PM
STACK	D SAP		
RUN	#4		

SAMPLE SOLUTION ANALYSIS

	Acid Mist, SO_3	SO_2	
Volume of Sample, ml.	500	500	100
Aliquot, ml.	50	20	20
Normality of Barium Perchlorate	0.012840	0.012840	
Mls. of Barium Perchlorate Titrated	2.63	24.73	
Blank, ml.	0.15	0.15	
Conversion to Milligrams	15.62	1263.61	

Analyst Floyd B. Camp

dso4titr.xls

CF INDUSTRIES, INC.
PLANT CITY PHOSPHATE COMPLEX

DATE	30-Jan-07		
TIME	2:54 PM	TO	4:21 PM
STACK	D SAP		
RUN	#5		

SAMPLE SOLUTION ANALYSIS

	Acid Mist, SO_3	SO_2	
Volume of Sample, ml.	500	500	100
Aliquot, ml.	50	20	20
Normality of Barium Perchlorate	0.012840	0.012840	
Mls. of Barium Perchlorate Titrated	2.75	24.85	
Blank, ml.	0.15	0.15	
Conversion to Milligrams	16.37	1269.78	

Analyst Lloyd Lee Camp

dso4titr.xls

CF INDUSTRIES, INC.
PLANT CITY PHOSPHATE COMPLEX

DATE	31-Jan-07		
TIME	10:36 AM	TO	10:57 AM
STACK	D SAP		
RUN	#6		

SAMPLE SOLUTION ANALYSIS

	Acid Mist, SO_3	SO_2	
Volume of Sample, ml.	500	500	100
Aliquot, ml.	50	20	20
Normality of Barium Perchlorate	0.012840	0.012840	
Mls. of Barium Perchlorate Titrated		7.68	
Blank, ml.	0.15	0.15	
Conversion to Milligrams		387.10	

Analyst Floyd L. Camp

dso4titr.xls

CF INDUSTRIES, INC.
PLANT CITY PHOSPHATE COMPLEX

DATE	31-Jan-07		
TIME	11:55 AM	TO	12:16 PM
STACK	D SAP		
RUN	#7		

SAMPLE SOLUTION ANALYSIS

	Acid Mist, SO_3	SO_2
Volume of Sample, ml.	500	500 100
Aliquot, ml.	50	20 20
Normality of Barium Perchlorate	0.012840	0.012840
Mls. of Barium Perchlorate Titrated		7.45
Blank, ml.	0.15	0.15
Conversion to Milligrams		375.28

Analyst Floyd D. Camp

dso4titr.xls

CF INDUSTRIES, INC.
PLANT CITY PHOSPHATE COMPLEX

DATE	31-Jan-07		
TIME	12:58 PM	TO	1:19 PM
STACK	D SAP		
RUN	#8		

SAMPLE SOLUTION ANALYSIS

	Acid Mist, SO_3	SO_2	
Volume of Sample, ml.	500	500	100
Aliquot, ml.	50	20	20
Normality of Barium Perchlorate	0.012840	0.012840	
Mls. of Barium Perchlorate Titrated		7.50	
Blank, ml.	0.15	0.15	
Conversion to Milligrams		377.85	

Analyst Lloyd D. Camp

dso4titr.xls

CF INDUSTRIES, INC.
PLANT CITY PHOSPHATE COMPLEX

DATE	25-Jan-06		
TIME	1:30 PM	TO	1:51 PM
STACK	D SAP		
RUN	#9		

SAMPLE SOLUTION ANALYSIS

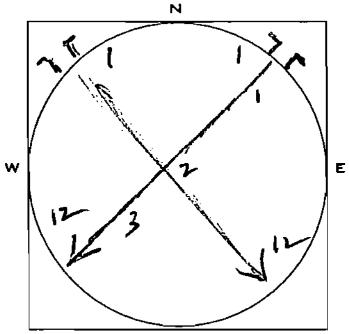
	Acid Mist, SO_3	SO_2
Volume of Sample, ml.	500	500 100
Aliquot, ml.	50	20 20
Normality of Barium Perchlorate	0.012840	0.012840
Mls. of Barium Perchlorate Titrated		7.18
Blank, ml.	0.15	0.15
Conversion to Milligrams		361.40

Analyst Lloyd B. Camp

dso4titr.xls

CF INDUSTRIES COMPLIANCE TEST FIELD SHEET

PLANT	D SULFURIC ACID
CEM RUN NUMBER	1
LOCATION	CF INDUSTRIES, PLANT CITY
DATE	1/29/07
OPERATOR	ERNEST KRETSCHMAR
SAMPLE UNIT S/N	S-311A
CONTROL UNIT S/N	C-254



SCHEMATIC OF STACK CROSS SECTION

AMBIENT AIR TEMPERATURE	55°	DEGREES F
BAROMETRIC PRESSURE	30.22	INCHES HG
ASSUMED MOISTURE	0	%
HEATER BOX SETTING	N/A	DEGREES F
PROBE TIP DIAMETER	0.276	INCHES
PROBE LENGTH	10.5	FEET
PROBE HEATER SETTING	N/A	

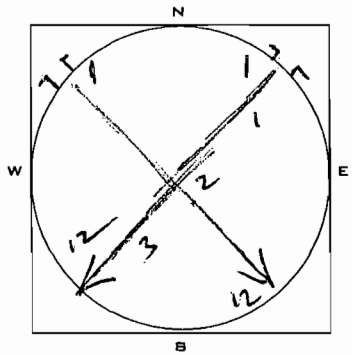
No Leak at 15" (Run Start) EK   K = 4.88   No Leak at 12" (End of Run) EK

PITOT TRAVERSE POINT	PITOT DELTA P (INCHES) (OF WATER)	CEM PITOT TRAVERSE POINT	CLOCK (TIME)	DRY GAS METER (CUBIC FEET)	CEM PITOT DELTA P (INCHES) (OF WATER)	ORIFICE DELTA H (INCHES) (OF WATER)	DRY GAS TEMPERATURE (DEGREES F) INLET	DRY GAS TEMPERATURE (DEGREES F) OUTLET	PUMP VACUUM (INCHES HG)	IMPINGER TEMPERATURE (DEGREES F)	STACK TEMPERATURE (DEGREES F)
1	0.18	1	1:32PM	305.609	0.33	1.61	64°	65°	6.0	48°	159°
2	0.23	2	1:39	311.1	0.25	1.22	82°	66°	5.0	48°	158°
3	0.33	3	1:46	315.7	0.25	1.22	88°	76°	5.0	51°	158°
4	0.30	STOP	1:53PM	320.495							
5	0.25					1.35		72.67			158.33
6	0.23			14.886							
7	0.23										
8	0.25										
9	0.28										
10	0.28										
11	0.28										
12	0.25										
STOP											
1	0.25										
2	0.25										
3	0.31										
4	0.33										
5	0.33										
6	0.30										
7	0.25										
8	0.22										
9	0.22										
10	0.25										
11	0.28										
12	0.28										
STOP											
	.5134										

CF INDUSTRIES COMPLIANCE TEST FIELD SHEET

24.

PLANT	D SULFURIC ACID
CEM RUN NUMBER	2
LOCATION	CF INDUSTRIES, PLANT CITY
DATE	1/30/07
OPERATOR	ERNEST KRETSCHMAR
SAMPLE UNIT S/N	S-311A
CONTROL UNIT S/N	C-254



SCHEMATIC OF STACK CROSS SECTION

AMBIENT AIR TEMPERATURE	54	DEGREES F
BAROMETRIC PRESSURE	30.30	INCHES HG
ASSUMED MOISTURE	0	%
HEATER BOX SETTING	N/A	DEGREES F
PROBE TIP DIAMETER	0.276	INCHES
PROBE LENGTH	10.5	FEET
PROBE HEATER SETTING	N/A	

K=4.88

No Leak at 15" (run start) EA

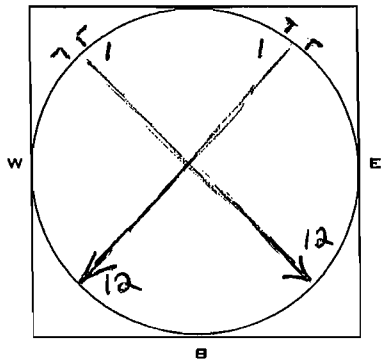
No Leak at 12" (end of run) EA

PITOT TRAVERSE POINT	PITOT DELTA P (INCHES) (OF WATER)	CEM PITOT TRAVERSE POINT	CLOCK (TIME)	DRY GAS METER (CUBIC FEET)	CEM PITOT DELTA P (INCHES) (OF WATER)	ORIFICE DELTA H (INCHES) (OF WATER)	DRY GAS TEMPERATURE (DEGREES F) INLET	DRY GAS TEMPERATURE (DEGREES F) OUTLET	PUMP VACUUM (INCHES HG)	IMPINGER TEMPERATURE (DEGREES F)	STACK TEMPERATURE (DEGREES F)
1	0.25	1	10:42AM	323.005	0.33	1.61	61°	60°	6.0	58°	159°
2	0.27	2	10:49	328.2	0.26	1.27	74°	59°	5.0	48°	158°
3	0.30	3	10:56	333.1	0.23	1.12	80°	62°	4.8	50°	158°
4	0.33	STOP	11:03AM	337.694							
5	0.23							66.00			
6	0.24					1.33					158.33
	~~0.30~~ 0.25										
8	0.23										
9	0.22										
10	0.25										
11	0.28										
12	0.28										
STOP											
1	0.23										
2	0.26										
3	0.30										
4	0.32										
5	0.35										
6	0.33										
7	0.23										
8	0.22										
9	0.20										
10	0.22										
11	0.25										
12	0.28										
STOP											
	0.5196			14.689							

CF INDUSTRIES COMPLIANCE TEST FIELD SHEET

25.

PLANT	D SULFURIC ACID
RUN NUMBER	1
LOCATION	CF INDUSTRIES, PLANT CITY
DATE	1/30/07
OPERATOR	ERNEST KRETSCHMAR
SAMPLE UNIT S/N	S-311A
CONTROL UNIT S/N	C-254



SCHEMATIC OF STACK CROSS SECTION

AMBIENT AIR TEMPERATURE	55	DEGREES F
BAROMETRIC PRESSURE	30.26	INCHES HG
ASSUMED MOISTURE	0	%
HEATER BOX SETTING	N/A	DEGREES F
PROBE TIP DIAMETER	0.276	INCHES
PROBE LENGTH	10.5	FEET
PROBE HEATER SETTING	N/A	

No Leak at 15" (Run start) EK

K=4.88

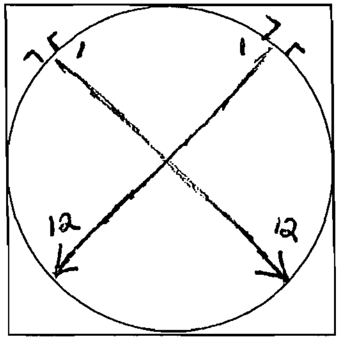
No Leak at 13" (End of Run) EK

TRAVERSE POINT	CLOCK (TIME)	DRY GAS METER (CUBIC FEET)	PITOT DELTA P (INCHES) (OF WATER)	ORIFICE DELTA H (INCHES) (OF WATER)	DRY GAS TEMPERATURE (DEGREES F) INLET	DRY GAS TEMPERATURE (DEGREES F) OUTLET	PUMP VACUUM (INCHES HG) GUAGE	BOX TEMPERATURE (DEGREES F)	IMPINGER TEMPERATURE (DEGREES F)	STACK TEMPERATURE (DEGREES F)
1	11:35AM	339.209	0.23	1.12	74°	71°	3.8	N/A	55°	138°
2	11:38	341.2	0.28	1.37	82°	69°	4.2		48°	148°
3	11:41	343.3	0.33	1.61	84°	69°	5.0		48°	157°
4	11:44	345.6	0.33	1.61	85°	69°	5.0		47°	158°
5	11:47	348.0	0.31	1.51	87°	70°	4.8		49°	157°
6	11:50	350.1	0.31	1.51	87°	71°	4.8		50°	158°
7	11:53	352.3	0.20	0.98	88°	72°	3.5		52°	157°
8	11:56	354.2	0.20	0.98	88°	72°	3.5		52°	158°
9	11:59	356.0	0.20	0.98	89°	73°	3.5		53°	158°
10	12:02	358.0	0.23	1.12	90°	74°	3.8		53°	158°
11	12:05	360.0	0.27	1.32	92°	75°	4.2		53°	158°
12	12:08	361.9	0.30	1.46	92°	75°	4.5		54°	158°
STOP	12:11PM	364.093								
1	12:25PM	364.093	0.33	1.61	78°	75°	5.0	N/A	54°	146°
2	12:28	366.4	0.27	1.32	89°	77°	4.0		55°	158°
3	12:31	368.6	0.23	1.12	90°	76°	3.8		55°	158°
4	12:34	370.6	0.30	1.46	90°	75°	4.5		55°	158°
5	12:37	372.8	0.33	1.61	91°	76°	5.0		55°	157°
6	12:40	374.9	0.33	1.61	92°	76°	5.0		55°	157°
7	12:43	377.4	0.20	0.98	91°	77°	3.5		55°	158°
8	12:46	379.3	0.20	0.98	91°	77°	3.5		55°	157°
9	12:49	381.1	0.23	1.12	92°	77°	4.0		54°	158°
10	12:52	383.1	0.23	1.12	93°	78°	4.0		54°	158°
11	12:55	385.1	0.27	1.32	93°	77°	4.2		54°	159°
12	12:58	387.2	0.27	1.32	93	78°	4.2		54°	158°
STOP	1:01PM	389.371								
		50.162	.5135	1.2975		81.25				156.04

CF INDUSTRIES COMPLIANCE TEST FIELD SHEET

26.

PLANT	D SULFURIC ACID
RUN NUMBER	2
LOCATION	CF INDUSTRIES, PLANT CITY
DATE	1/30/07
OPERATOR	ERNEST KRETSCHMAR
SAMPLE UNIT S/N	S-311A
CONTROL UNIT S/N	C-254



SCHEMATIC OF STACK CROSS SECTION

AMBIENT AIR TEMPERATURE	59	DEGREES F
BAROMETRIC PRESSURE	30.19	INCHES HG
ASSUMED MOISTURE	0	%
HEATER BOX SETTING	N/A	DEGREES F
PROBE TIP DIAMETER	0.276	INCHES
PROBE LENGTH	10.5	FEET
PROBE HEATER SETTING	N/A	

No leak at 15" (run start) EK

K=4.88

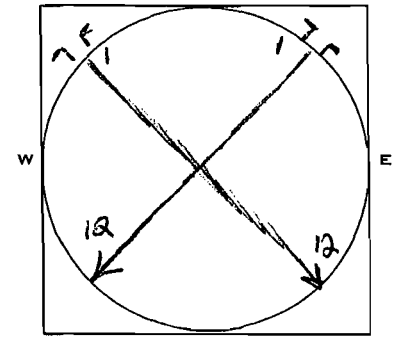
No leak at 10" (end of run) EK

TRAVERSE POINT	CLOCK (TIME)	DRY GAS METER (CUBIC FEET)	PITOT DELTA P (INCHES) (OF WATER)	ORIFICE DELTA H (INCHES) (OF WATER)	DRY GAS TEMPERATURE (DEGREES F) INLET	DRY GAS TEMPERATURE (DEGREES F) OUTLET	PUMP VACUUM (INCHES HG) GUAGE	BOX TEMPERATURE (DEGREES F)	IMPINGER TEMPERATURE (DEGREES F)	STACK TEMPERATURE (DEGREES F)
1	1:17PM	391.804	0.23	1.12	80°	77°	4.0	N/A	55°	140°
2	1:20	393.8	0.28	1.37	89°	77°	4.5	↓	52°	149°
3	1:23	395.9	0.32	1.56	89°	77°	5.0		51°	157°
4	1:26	398.2	0.34	1.66	90°	77°	5.2		51°	158°
5	1:29	400.5	0.34	1.66	91°	77°	5.2		52°	158°
6	1:32	402.9	0.30	1.46	92°	77°	5.0		53°	158°
7	1:35	~~404~~ 405.1	0.20	0.98	92°	77°	4.0		54°	158°
8	1:38	407.1	0.18	0.88	92°	77°	3.5		54°	159°
9	1:41	408.8	0.18	0.88	92°	78°	3.5		53°	159°
10	1:44	410.5	0.23	1.12	93°	78°	4.0		53°	159°
11	1:47	412.5	0.25	1.22	94°	78°	4.2		53°	159°
12	1:50	414.5	0.28	1.37	95°	79°	4.5		53°	158°
STOP	1:53PM	416.724								
1	2:10PM	416.724	0.23	1.12	84°	80°	4.0	N/A	53°	139°
2	2:13	418.7	0.28	1.37	95°	81°	4.5	↓	53°	146°
3	2:16	420.8	0.31	1.51	96°	82°	5.0		54°	156°
4	2:19	423.1	0.31	1.51	97°	82°	5.0		54°	157°
5	2:22	425.4	0.33	1.61	97°	82°	5.2		56°	158°
6	2:25	427.5	0.31	1.51	97°	82°	5.0		57°	158°
7	2:28	430.1	0.23	1.12	96°	83°	4.0		58°	158°
8	2:31	432.2	0.20	0.98	95°	83°	3.5		60°	158°
9	2:34	433.9	0.18	0.88	95°	83°	3.5		58°	158°
10	2:37	435.7	0.23	1.12	96°	82°	4.0		59°	159°
11	2:40	437.7	0.28	1.37	97°	83°	4.5		58°	158°
12	2:43	440.0	0.28	1.37	97°	83°	4.5		59°	158°
STOP	2:46PM	442.039								
		50.235	.5098	1.2813		86.38				155.63

CF INDUSTRIES COMPLIANCE TEST FIELD SHEET

27.

PLANT	D SULFURIC ACID
RUN NUMBER	3
LOCATION	CF INDUSTRIES, PLANT CITY
DATE	1/30/07
OPERATOR	ERNEST KRETSCHMAR
SAMPLE UNIT S/N	S-311A
CONTROL UNIT S/N	C-254



SCHEMATIC OF STACK CROSS SECTION

AMBIENT AIR TEMPERATURE	61	DEGREES F
BAROMETRIC PRESSURE	30.16	INCHES HG
ASSUMED MOISTURE	0	%
HEATER BOX SETTING	N/A	DEGREES F
PROBE TIP DIAMETER	0.276	INCHES
PROBE LENGTH	10.5	FEET
PROBE HEATER SETTING	N/A	

No LEAK at 15" (RUN START) EP

K=4.88

No LEAK at 10" (RUN START) EP

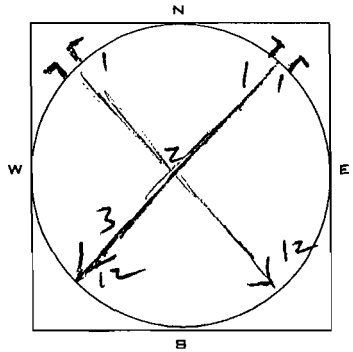
TRAVERSE POINT	CLOCK (TIME)	DRY GAS METER (CUBIC FEET)	PITOT DELTA P (INCHES) (OF WATER)	ORIFICE DELTA H (INCHES) (OF WATER)	DRY GAS TEMPERATURE (DEGREES F) INLET	DRY GAS TEMPERATURE (DEGREES F) OUTLET	PUMP VACUUM (INCHES HG) GUAGE	BOX TEMPERATURE (DEGREES F)	IMPINGER TEMPERATURE (DEGREES F)	STACK TEMPERATURE (DEGREES F)
1	2:54PM	447.501	0.23	1.12	82°	80°	3.0		63°	140°
2	2:57	449.7	0.23	1.37	93°	81°	3.2	N/A	58°	~~149°~~ 151°
3	3:00	451.2	0.33	1.61	94°	80°	3.5		58°	158°
4	3:03	454.0	0.33	1.61	95°	80°	3.5		58°	159°
5	3:06	456.4	0.33	1.61	96°	80°	3.5		57°	159°
6	3:09	458.7	0.30	1.46	95°	80°	3.3		57°	159°
7	3:12	460.9	0.23	1.12	95°	81°	3.0		58°	160°
8	3:15	463.0	0.18	0.88	95°	81°	3.0		59°	160°
9	3:18	464.6	0.20	0.98	95°	81°	3.0		59°	160°
10	3:21	466.6	0.25	1.22	97°	82°	3.2		59°	161°
11	3:24	468.7	0.28	1.37	98°	82°	3.2		59°	161°
12	3:27	470.8	0.28	1.37	98°	82°	3.2		59°	161°
STOP	3:30PM	473.021								
1	3:45PM	473.021	0.23	1.12	87°	82°	3.0		61°	138°
2	3:48	474.9	0.25	1.22	98°	83°	3.0	N/A	59°	150°
3	3:51	476.9	0.28	1.37	98°	83°	3.2		59°	160°
4	3:54	479.5	0.33	1.61	99°	83°	3.5		59°	161°
5	3:57	481.8	0.33	1.61	100°	84°	3.5		60°	161°
6	4:00	484.0	0.33	1.61	100°	84°	3.5		61°	161°
7	4:03	486.4	0.25	1.22	100°	84°	3.2		61°	162°
8	4:06	488.5	0.20	0.98	99°	84°	3.0		61°	162°
9	4:09	490.4	0.20	0.98	98°	84°	3.0		60°	162°
10	4:12	492.2	0.23	1.12	99°	85°	3.0		61°	163°
11	4:15	494.3	0.28	1.37	100°	85°	3.0		61°	162°
12	4:18	496.5	0.25	1.22	99°	85°	3.0		62°	163°
STOP	4:21PM	498.548								
			0.5135	1.298		89.29				158.08

51.047

CF INDUSTRIES COMPLIANCE TEST FIELD SHEET

28,

PLANT	D SULFURIC ACID
CEM RUN NUMBER	3
LOCATION	CF INDUSTRIES, PLANT CITY
DATE	1/31/07
OPERATOR	ERNEST KRETSCHMAR
SAMPLE UNIT S/N	S-311A
CONTROL UNIT S/N	C-254



SCHEMATIC OF STACK CROSS SECTION

AMBIENT AIR TEMPERATURE	59	DEGREES F
BAROMETRIC PRESSURE	30.22	INCHES HG
ASSUMED MOISTURE	0	%
HEATER BOX SETTING	N/A	DEGREES F
PROBE TIP DIAMETER	0.276	INCHES
PROBE LENGTH	10.5	FEET
PROBE HEATER SETTING	N/A	

K=4.74

No Leak at 18" (Run Start) E&O

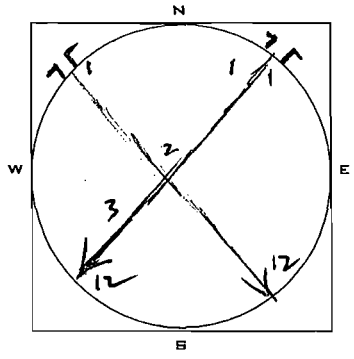
No Leak at 11" (Mid-Run) E&O

PITOT TRAVERSE POINT	PITOT DELTA P (INCHES) (OF WATER)	CEM PITOT TRAVERSE POINT	CLOCK (TIME)	DRY GAS METER (CUBIC FEET)	CEM PITOT DELTA P (INCHES) (OF WATER)	ORIFICE DELTA H (INCHES) (OF WATER)	DRY GAS TEMPERATURE (DEGREES F) INLET	DRY GAS TEMPERATURE (DEGREES F) OUTLET	PUMP VACUUM (INCHES HG)	IMPINGER TEMPERATURE (DEGREES F)	STACK TEMPERATURE (DEGREES F)
1	0.23	1	10:36 AM	504.201	0.33	1.56	72°	73°	4.8	52°	~~154°~~ 157°
2	0.28	2	10:43	509.5	0.28	1.33	88°	73°	4.0	54°	157°
3	0.34	3	10:50	514.5	0.23	1.09	91°	76°	3.7	55°	158°
4	0.35	STOP	10:57 AM	519.023							
5	0.35										
6	0.33										
7	0.22										
8	0.19										
9	0.22										
10	0.24										
11	0.27										
12	0.27										
STOP											
1	0.24										
2	0.30										
3	0.33										
4	0.35										
5	0.35										
6	0.31										
7	0.22										
8	0.18										
9	0.20										
10	0.23										
11	0.26										
12	0.29										
STOP											
	.5197			14.822		1.3267		78.83			157.33

CF INDUSTRIES COMPLIANCE TEST FIELD SHEET

19.

PLANT	D SULFURIC ACID
CEM RUN NUMBER	4
LOCATION	CF INDUSTRIES, PLANT CITY
DATE	1/31/07
OPERATOR	ERNEST KRETSCHMAR
SAMPLE UNIT S/N	S-311A
CONTROL UNIT S/N	C-254



SCHEMATIC OF STACK CROSS SECTION

AMBIENT AIR TEMPERATURE	64	DEGREES F
BAROMETRIC PRESSURE	30.20	INCHES HG
ASSUMED MOISTURE	0	%
HEATER BOX SETTING	N/A	DEGREES F
PROBE TIP DIAMETER	0.276	INCHES
PROBE LENGTH	10.5	FEET
PROBE HEATER SETTING	N/A	

K = 4.74

No Leak at 15" (Run Start) EA

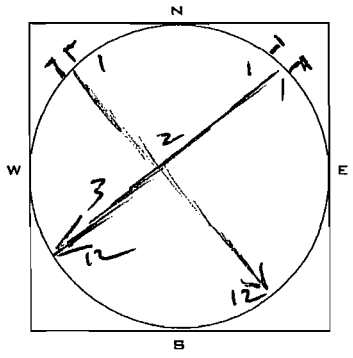
No Leak at 12" (End of Run) EA

PITOT TRAVERSE POINT	PITOT DELTA P (INCHES) (OF WATER)	CEM PITOT TRAVERSE POINT	CLOCK (TIME)	DRY GAS METER (CUBIC FEET)	CEM PITOT DELTA P (INCHES) (OF WATER)	ORIFICE DELTA H (INCHES) (OF WATER)	DRY GAS TEMPERATURE (DEGREES F) INLET	DRY GAS TEMPERATURE (DEGREES F) OUTLET	PUMP VACUUM (INCHES HG)	IMPINGER TEMPERATURE (DEGREES F)	STACK TEMPERATURE (DEGREES F)
1	0.23	1	11:55AM	520.358	0.35	1.66	81°	82°	6.0	64°	159°
2	0.27	2	12:02 PM	525.8	0.26	1.23	93°	80°	5.0	57°	160°
3	0.33	3	12:09 PM	530.7	0.22	1.04	94°	81°	4.0	57°	160°
4	0.33	STOP	12:16 PM	535.135							
5	0.35										
6	0.33										
7	0.23										
8	0.20										
9	0.20										
10	0.25										
11	0.27										
12	0.28										
STOP											
1	0.25										
2	0.27										
3	0.32										
4	0.35										
5	0.34										
6	0.33										
7	0.21										
8	0.18										
9	0.21										
10	0.23										
11	0.27										
12	0.24										
STOP											
	.5187			14.777		1.3100		85.17			159.67

CF INDUSTRIES COMPLIANCE TEST FIELD SHEET

30.

PLANT	D SULFURIC ACID
CEM RUN NUMBER	5
LOCATION	CF INDUSTRIES, PLANT CITY
DATE	1/31/07
OPERATOR	ERNEST KRETSCHMAR
SAMPLE UNIT S/N	S-311A
CONTROL UNIT S/N	C-254



SCHEMATIC OF STACK CROSS SECTION

AMBIENT AIR TEMPERATURE	66	DEGREES F
BAROMETRIC PRESSURE	30.17	INCHES HG
ASSUMED MOISTURE	0	%
HEATER BOX SETTING	N/A	DEGREES F
PROBE TIP DIAMETER	0.276	INCHES
PROBE LENGTH	10.5	FEET
PROBE HEATER SETTING	N/A	

K=4.74

No Leak at 15" (Raw START) EK

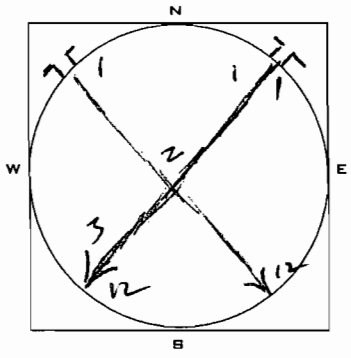
No Leak at 12" (End of Run) EK

PITOT TRAVERSE POINT	PITOT DELTA P (INCHES) (OF WATER)	CEM PITOT TRAVERSE POINT	CLOCK (TIME)	DRY GAS METER (CUBIC FEET)	CEM PITOT DELTA P (INCHES) (OF WATER)	ORIFICE DELTA H (INCHES) (OF WATER)	DRY GAS TEMPERATURE (DEGREES F) INLET	DRY GAS TEMPERATURE (DEGREES F) OUTLET	PUMP VACUUM (INCHES HG)	IMPINGER TEMPERATURE (DEGREES F)	STACK TEMPERATURE (DEGREES F)
1	0.25	1	12:58PM	536.506	0.35	1.66	80°	80°	5.2	65°	159° ~~173°~~ EK
2	0.29	2	1:05	542.0	0.26	1.23	90°	80°	4.3	56°	161°
3	0.34	3	1:12	546.9	0.22	1.04	94°	81°	4.0	56°	162°
4	0.34	STOP	1:19PM	551.306							
5	0.34										
6	0.32										
7	0.21										
8	0.19										
9	0.20										
10	0.24										
11	0.27										
12	0.29										
STOP											
1	0.24										
2	0.28										
3	0.24										
4	0.35										
5	0.34										
6	0.31										
7	0.22										
8	0.18										
9	0.20										
10	0.23										
11	0.28										
12	0.28										
STOP											
	.5190			14.800		1.3100		84.17			160.67

CF INDUSTRIES COMPLIANCE TEST FIELD SHEET

31.

PLANT	D SULFURIC ACID
CEM RUN NUMBER	6
LOCATION	CF INDUSTRIES, PLANT CITY
DATE	1/31/07
OPERATOR	ERNEST KRETSCHMAR
SAMPLE UNIT S/N	S-311A
CONTROL UNIT S/N	C-254



SCHEMATIC OF STACK CROSS SECTION

AMBIENT AIR TEMPERATURE	68°	DEGREES F
BAROMETRIC PRESSURE	30.11	INCHES HG
ASSUMED MOISTURE	0	%
HEATER BOX SETTING	N/A	DEGREES F
PROBE TIP DIAMETER	0.276	INCHES
PROBE LENGTH	10.5	FEET
PROBE HEATER SETTING	N/A	

K= 4.74

No Leak at 15" (Run Start) EK

No Leak at 10" (Post Run) EK

PITOT TRAVERSE POINT	PITOT DELTA P (INCHES) (OF WATER)	CEM PITOT TRAVERSE POINT	CLOCK (TIME)	DRY GAS METER (CUBIC FEET)	CEM PITOT DELTA P (INCHES) (OF WATER)	ORIFICE DELTA H (INCHES) (OF WATER)	DRY GAS TEMPERATURE (DEGREES F) INLET	DRY GAS TEMPERATURE (DEGREES F) OUTLET	PUMP VACUUM (INCHES HG)	IMPINGER TEMPERATURE (DEGREES F)	STACK TEMPERATURE (DEGREES F)
1	0.23	1	1:45 PM	551.502	0.28	1.33	83°	85°	3.0	64°	154°
2	0.31	2	1:52	556.5	0.27	1.28	96°	83°	3.0	62°	161° ~~155°~~ EK
3	0.32	3	1:59	561.5	0.27	1.28	98°	84°	3.0	62°	162°
4	0.33	STOP	2:06PM	566.333							
5	0.34					1.297		88.16			159.00
6	0.32			4.831							
7	0.22										
8	0.18										
9	0.21										
10	0.22										
11	0.28										
12	0.27										
STOP											
1	0.23										
2	0.30										
3	0.34										
4	0.34										
5	0.34										
6	0.20										
7	0.18										
8	0.20										
9	0.23										
10	0.23										
11	0.27										
12	0.27										
STOP											
	0.3120										

O2 Testing by Orsat

Date		Plant	Tedlar Bags Leak Checked Yes	Tedlar Bags Leak Checked No	Orsat Leak Checked Yes	Orsat Leak Checked No	Time Collected	Time Analyzed	CO2	O2*	Analyst	AVG
1/29/07	1	D	✓		✓		1332-1353	3PM	0	3.15	[illegible]	
|	2	D							0	3.20	[illegible]	3.18
|	3	D						4PM	0	3.20	[illegible]	
1/30/07	1	D	✓		✓		1042-1103	1230	0.0	3.6	[illegible]	
	2							|	0.0	3.7	[illegible]	3.70
	3								0.0	3.8	[illegible]	
1/30/07	1	D					1135-1301	1345	0.0	3.6	[illegible]	
	2							|	0.0	3.8	[illegible]	3.70
	3								0.0	3.7	[illegible]	
1/30/07	1	D					1317-1446	1500	0.0	4.0	[illegible]	
	2							|	0.0	3.9	[illegible]	3.97
	3							|	0.0	4.0	[illegible]	
1/30/07	1	D					1454-1621	1635	0.0	4.1	[illegible]	
	2							|	0.0	4.1	[illegible]	4.10
	3	D						|	0.0	4.1	[illegible]	
1/31/07	1	D	✓		✓		1036-1057	1140	0.00	3.9	[illegible]	
	2							|	0.00	4.1	[illegible]	4.03
	3							|	0.00	4.1	[illegible]	
1/31/07	1	D						1250	0.00	4.1	[illegible]	
	2							|	0.00	4.0	[illegible]	4.10
	3							|	0.00	4.2	[illegible]	
1/31/07	1	D						1340	0.00	4.0	[illegible]	
	2							|	0.00	4.0	[illegible]	4.00
	3							|	0.00	4.0	[illegible]	
1/31/07	1	D						1500	0.00	3.9	[illegible]	
	2							|	0.00	4.0	[illegible]	4.00
	3							|	0.00	4.1	[illegible]	
	1											
	2											
	3											
	1											
	2											
	3											
	1											
	2											
	3											

*O2 is actual O2 reading minus actual CO2 reading

Southern Environmental Sciences, Inc.

1204 North Wheeler Street □ Plant City, Florida 33563 □ (813) 752-5014, Fax: (813) 752-2475

February 16, 2006

Mr. Frank Dlugos
CF INDUSTRIES, INC.
P.O. Drawer L
Plant City, Florida 33564

Re: Meter Box Calibration &
Dry Gas Meter Calibration

Dear Frank:

The attached calibrations were performed on the Lear Seigler meter box (serial # C254) and the Rockwell dry gas meter (serial # JA631105). All calibrations were performed using a wet test meter that is checked annually using a liquid displacement method as described in "Quality Assurance Handbook for Air Pollution Measurement Systems: Volume III, Stationary Source Specific Methods". A copy of the calibration check is enclosed.

Please let me know if we can be of any further assistance.

Very truly yours,

SOUTHERN ENVIRONMENTAL
SCIENCES, INC.

Mark S. Gierke
Source Testing Manager

MSG/mg

Enclosures

DRY GAS METER CALIBRATION

Meter Box Number: Lear Seigler Barometric Pressure: 30.23
Serial No: C254 Wet Test Meter No.: P-576
Date: 02/15/06 Calibrated By: MH

Orifice Manometer Setting (Delta H) in. H2O	Gas Volume		Temperature		Time (THETA) Min.	Yi	Delta H@i in. H2O
	Wet Test Meter (Vw) ft.^3	Dry Gas Meter (Vd) ft.^3	Wet Test Meter (Tw) Deg F	Dry Gas Meter (Td) Deg F			
0.50	5.000	5.374	70.5	101.25	12.1	0.983	1.540
1.00	5.000	5.316	70.0	101.3	8.57	0.994	1.542
1.50	10.000	10.543	68.0	99.5	14.02	1.001	1.541
2.00	10.000	10.425	67.0	93.5	12.33	1.003	1.600
3.00	10.000	10.134	67.0	85.5	10.02	1.014	1.608
4.00	10.000	9.950	66.0	73.3	8.61	1.009	1.613
						1.001	1.574

Delta H@ Acceptable Range 1.774 to 1.374
Yi Acceptable Range 1.021 to 0.981

$$Yi = \frac{Vw\ Pb\ (Td + 460)}{Vd\ (Pb + DeltaH/13.6)\ (Tw + 460)}$$

$$Delta\ H@ = \frac{.0317\ (DeltaH)}{Pb\ (Td + 460)} [(Tw + 460)\ (Theta)/Vw]^2$$

Where:
Vw = Gas Volume passing through the wet test meter, ft.^3.
Vd = Gas Volume passing through the dry gas meter, ft.^3.
Tw = Temperature of the gas in the wet test meter, deg F.
Td = Average temperature of the gas in the dry gas meter, deg F.
Delta H = Pressure differential across orifice. in. H20.
Yi = Ratio of accuracy of wet test meter to dry gas meter for each run.
Y = Average ratio of accuracy of wet test meter to dry gas meter
Pb = Barometric pressure, in. Hg
Theta = Time of calibration run, min.

SOUTHERN ENVIRONMENTAL SCIENCES, INC.
1204 North Wheeler Street
Plant City, Florida 33563
Phone (813) 752-5014 Fax (813) 752-2475

STANDARD DRY GAS METER CALIBRATION

GAS METER MANUF.	ROCKWELL	PERFORMED FOR	C. F. Industries - Plant City
MODEL #	175-S	DATE	02/16/06
SERIAL #	JA 631105	BAROMETRIC PRESSURE	30.28
WET TEST METER #	P-576	LEAK CHECK	0.00 CFM @ 15" Hg

	Gas Volume		Temperature						
Approximate Flowrate (CFM)	Wet Test Meter (Vw) ft.^3	Dry Gas Meter (Vd) ft.^3	Wet Test Meter (Tw) Deg.F	Dry Gas Meter (Td) Deg.F	Dry Gas Meter Delta P ("H2O)	Time (THETA) Min.	Flowrate (CFM)	Dry Gas Meter Coeff. (Yds)	Avg. Gas Meter Coeff. (Yds)
0.40	7.000	6.902	60.0	74.0	0.08	14.92	0.482	1.041	
0.40	7.000	6.925	61.0	74.0	0.08	14.97	0.480	1.036	1.038
0.40	5.000	4.945	65.0	78.0	0.08	10.78	0.472	1.036	
0.60	5.000	4.936	62.0	75.0	0.32	8.43	0.607	1.037	
0.60	5.000	4.927	63.0	76.5	0.32	8.27	0.618	1.040	1.039
0.60	5.000	4.942	63.0	77.0	0.32	8.32	0.614	1.038	
0.80	6.000	5.957	63.5	77.5	0.68	6.98	0.877	1.032	
0.80	5.000	4.966	64.0	77.5	0.68	5.90	0.864	1.031	1.032
0.80	5.000	4.962	64.0	78.0	0.68	5.85	0.872	1.033	
1.00	5.000	5.000	65.0	80.0	1.23	4.63	1.099	1.026	
1.00	5.000	5.000	65.0	80.0	1.23	4.62	1.102	1.026	1.026
1.00	5.000	5.000	65.0	80.0	1.23	4.63	1.099	1.026	
1.20	5.000	5.046	66.0	79.0	1.10	3.85	1.319	1.013	
1.20	5.000	5.043	66.0	78.0	1.10	3.83	1.326	1.011	1.012
1.20	5.000	5.040	66.0	78.0	1.10	3.81	1.333	1.012	

$$Q = \frac{Pb \times Vw \times 528}{(Tw + 460) \times Theta \times 29.92}$$

$$Yds = \frac{Vw}{Vd} \times \frac{(Td + 460)}{(Tw + 460)} \times \frac{Pb}{[Pb + (Delta\ P/13.6)]}$$

Where:

Vw = Gas Volume passing through the wet test meter, ft.^3.

Vd = Gas Volume passing through the dry gas meter, ft.^3.

Tw = Temperature of the gas in the wet test meter, deg F.

Td = Average temperature of the gas in the dry gas meter, deg F.

Delta P = Dry gas meter pressure differential, in. H20.

Yds = Dry gas meter Coefficient

Pb = Barometric pressure, in. Hg

Theta = Time of calibration run, min.

SOUTHERN ENVIRONMENTAL SCIENCES, INC.

1204 North Wheeler Street

Plant City, Florida 33563

Phone (813) 752-5014 Fax (813) 752-2475

SOUTHERN ENVIRONMENTAL SCIENCES, INC.
WET TEST METER CALIBRATION CHECK

Wet Test Meter #: P-576
Manufacturer: American Meter
Date: 01/05/06

Barometric Pressure: 30.18
Calibration Factor: 1.00
Checked by: MG

Gas Volume		Temperature		
Liquid Displaced (Vd) ft.^3	Wet Test Meter (Vw) ft.^3	Ambient (Ta) Deg F	Wet Test Meter (Tw) Deg F	Yi
1.198	1.202	67.0	69.0	1.000
1.198	1.204	67.0	70.0	1.001
1.198	1.202	67.0	69.0	1.000
1.197	1.204	67.0	70.0	1.000
1.199	1.202	67.0	69.0	1.001
1.199	1.204	67.0	69.0	1.000
				1.000

$$Yi = \frac{Vw\ Pb\ (Tw + 460)}{Vd\ (Pb + DeltaH/13.6)\ (Ta + 460)}$$

Where:
- Vw = Gas Volume passing through the wet test meter, ft.^3.
- Vd = Gas Volume passing through the dry gas meter, ft.^3.
- Tw = Temperature of the gas in the wet test meter, deg F.
- Ta = Ambient temperature, deg F.
- Yi = Accuracy of wet test meter to displaced liquid.
- Y = Average accuracy of wet test meter.
- Pb = Barometric pressure, in. Hg

STANDARD METER CALIBRATION CURVE

GAS METER MANUF.	ROCKWELL	PERFORMED FOR	C. F. Industries - Plant City
MODEL #	175-S	DATE	02/16/06
SERIAL #	JA 631105		

FLOWRATE (CFM)	DRY GAS METER COEFF (Yds)
0.478	1.038
0.613	1.039
0.871	1.032
1.100	1.026
1.326	1.012

Regression Output:

Constant	1.0344084
Std Err of Y Est	0.0022086
R Squared	0.9494629
No. of Observations	5
Degrees of Freedom	3

X Coefficient(s)	-0.025997
Std Err of Coef.	0.0034628

FLOW (CFM)	CORRECTION FACTOR
0.40	1.024
0.45	1.023
0.50	1.021
0.55	1.020
0.60	1.019
0.65	1.018
0.70	1.016
0.75	1.015
0.80	1.014
0.85	1.012
0.90	1.011
0.95	1.010
1.00	1.008
1.05	1.007
1.10	1.006
1.15	1.005
1.20	1.003

SOUTHERN ENVIRONMENTAL SCIENCES, INC.

1204 North Wheeler Street

Plant City, Florida 33563

Phone (813) 752-5014 Fax (813) 752-2475

TYPE S PITOT TUBE INSPECTION DATA

Date: August 6, 2004 Pitot Number: 8-6-04-5

Pitot tube assembly level? yes x no ____

Pitot tube opening damage? yes ____ no x
If yes explain below.

$\alpha 1$ 1 (<10 °) $\alpha 2$ 2 (<10°)

$\beta 1$ = 1 (< 5°) $\beta 2$ 0 (< 5°)

γ = 1 ° θ = 1 ° A = 1.010 cm (in)

Z = A SINE γ = 0.018 cm (in) Where Z is <0.32 cm (<1/8 in)

W = A SINE θ = 0.018 cm (in) Where W is <0.08 cm (<1/32 in)

Pa = 0.505 cm, in Pb = 0.505 cm, in

P = Pa + Pb / = 0.505 cm, in

Dt = 0.375 cm , in P/Dt = 1.347 Where P / Db $\geq$ 1.05 and $\leq$ 1.50

Comments: Client: CF Industries

Type of Probe and Effective 31-674X-B1

Cp = 0.84

ANNUAL LSI STACKBOX (C254) THERMOCOUPLE CALIBRATIONS

Date: 9/12/06

FOR TEMPERATURES 0 TO 110 DEGREES C
NIST Traceable Thermometer # J95-258

FOR TEMPERATURES 110 TO 200 DEGREES C
NIST Traceable Thermometer # 90B-2024

Time: 1020-1500

Initial

Display	Item	Ice Water Point			Ambient Water Point			Hot Water Point			Hot Oil Point		
		Thermocouple or RTD Reading (Degrees F)	NIST Reading Actual	NIST Reading Conversion to Degrees C	Thermocouple or RTD Reading (Degrees F)	NIST Reading Actual	NIST Reading Conversion to Degrees C	Thermocouple or RTD Reading (Degrees F)	NIST Reading Actual	NIST Reading Conversion to Degrees C	Thermocouple or RTD Reading (Degrees F)	NIST Reading Actual	NIST Reading Conversion to Degrees C
				F			F			F			F
[1] Stack	Probe 4.0ft. #2405	32	0.6	33.1	70	22.6	72.7	149	66.1	151.0	N/A	N/A	N/A
	Probe 6.0ft. #1009	33	0.6	33.1	70	22.6	72.7	150	66.1	151.0	N/A	N/A	N/A
	Probe 10.5ft. #2329	33	0.6	33.1	72	22.6	72.7	150	66.2	151.2	N/A	N/A	N/A
[2] Probe (Probe Liner Heater)	Probe 4.0ft. #2405	34	0.4	32.7	69	22.4	72.3	148	66.1	151.0	233	111.4	232.5
	Probe 6.0ft. #1009	33	0.4	32.7	69	22.4	72.3	150	66.1	151.0	233	111.2	232.2
	Probe 10.5ft. #2329	33	0.4	32.7	70	22.4	72.3	151	66.2	151.2	233	111.6	232.9
[3] Hot Box	Thermocouple	34	0.6	33.1	72	22.8	73.0	151	66.1	151.0	233	111.0	231.8
	External Sensor	OUT OF RANGE			75	22.8	73.0	150	66.0	150.8	231	111.4	232.5
[4] Umbilical (Coldbox Exit)		34	0.6	33.1	72	22.8	73.0	152	66.1	151.0	N/A	N/A	N/A
[5] DGM Inlet		34	0.6	33.1	74	22.8	73.0	152	66.1	151.0	N/A	N/A	N/A
[6] DGM Exit		33	0.6	33.1	74	22.8	73.0	151	66.1	151.0	N/A	N/A	N/A

POSTTEST DRY GAS METER CALIBRATION DATA FORM (English units)

Test numbers _____ Date 2/1/07 Meter box number C254 Plant D SULFURIC

Barometric pressure, P_b = 29.99 in. Hg Dry gas meter number 463613 Pretest Y 1.001

Orifice manometer setting, (ΔH), in. H_2O	Gas volume: Dry test meter (V_w), ft^3	Gas volume: Dry gas meter (V_d), ft^3	Temperature: Dry test meter (t_w), °F	Temperature: Dry gas meter Inlet (t_{d_i}), °F	Temperature: Dry gas meter Outlet (t_{d_o}), °F	Temperature: Dry gas meter Average[a] (t_d), °F	Time (θ), min	Vacuum setting, in. Hg	Y_i	$Y_i = \frac{V_w P_b (t_d + 460)}{V_d \left(P_b + \frac{\Delta H}{13.6}\right)(t_w + 460)}$
1.30	654.928 644.937	607.633 597.200	70.0° 70.0°	106° 94°	91° 88°	94.75°	15.0	6.0	0.9992	$\frac{(9,991)(29.99)(554.75)}{(10,433)(30.086)(530.00)}$
1.30	665.535 654.928	618.751 607.633	70.0 70.0°	106° 94°	92° 90°	95.50°	16.0	6.0	1.0004	$\frac{(10,607)(29.99)(555.50)}{(11,077)(30.086)(530.00)}$
1.30	676.822 665.535	630.588 618.751	70.0° 70.0°	106° 92°	93° 92°	95.75°	17.0	6.0	0.9967	$\frac{(11,287)(29.99)(555.75)}{(11,837)(30.086)(530.00)}$
									Y = 0.9987	

[a] If there is only one thermometer on the dry gas meter, record the temperature under t_d.

Within ±0.05Y
2/1/07 10:48AM

V_w = Gas volume passing through the wet test meter, ft^3.

V_d = Gas volume passing through the dry gas meter, ft^3.

t_w = Temperature of the gas in the wet test meter, °F.

t_{d_i} = Temperature of the inlet gas of the dry gas meter, °F.

t_{d_o} = Temperature of the outlet gas of the dry gas meter, °F.

t_d = Average temperature of the gas in the dry gas meter, obtained by the average of t_{d_i} and t_{d_o}, °F.

ΔH = Pressure differential across orifice, in H_2O.

Y_i = Ratio of accuracy of wet test meter to dry gas meter for each run.

Y = Average ratio of accuracy of wet test meter to dry gas meter for all three runs; tolerance = pretest Y ±0.05Y

P_b = Barometric pressure, in. Hg.

θ = Time of calibration run, min.

Dry test meter number Rockwell-JA631105

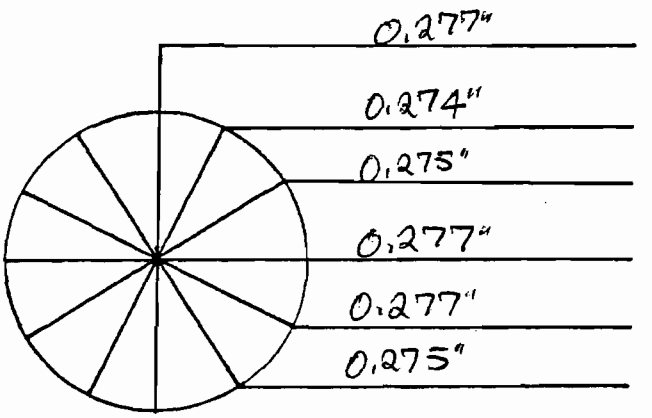
P.O. Drawer L.
Plant City, Florida 33564-9007
Telephone: 813/782-1591

CF Industries, Inc.
Plant City Phosphate Complex

PROBE NOZZLE CALIBRATION DATA

Nozzle Identification Number: 4453

Calibrated by: Ernest Koertschman **Date:** 1/22/07



Instructions:

Measure to nearest 0.001"

Tolerance:

0.001" for mean of at least three readings.
Maximum deviation between readings ≤ 0.004".

Nozzle diameter, D_n: 0.276 In.

Nozzle area A_n: 0.000 415 ft^2

$$A_n = \frac{\pi}{144} \left(\frac{D_n}{2}\right)^2$$

CF INDUSTRIES, INC.
PLANT CITY PHOSPHATE COMPLEX

SOURCE SAMPLING NOMENCLATURE SHEET

pb	=	Barometric pressure, in Hg
Ps	=	Stack pressure, in Hg
As	=	Stack area, square feet
As'	=	Effective area of positive stack gas flow, square feet
Ts	=	Stack temperature, °R
Tm	=	Meter temperature, °R
$\sqrt{\Delta}$ Pave	=	Average square root of velocity head, in. H_2O
Cp	=	S-type pitot tube correction factor
Kp	=	85.48 ft/sec (lb mole - °R) 1/2
Ms	=	Molecular weight of gas at stack conditions
Md	=	Molecular weight of gas at dry conditions
Bwo	=	Proportion by volume of water vapor in gas stream
Vwstd	=	Volume of water vapor in gas sample
V	=	Total volume of liquid collected in impinger and silica gel
P H_2O	=	Density of water, 1 gm/ml
M H_2O	=	Molecular weight of water, 18 lb/lb mole
R	=	Ideal gas constant, 28.83 inches Hg-cu ft/lb-mole °R
T std	=	Absolute temperature at standard conditions, 528 °R
P std	=	Absolute pressure at standard conditions, 29.92 in. Hg
Vm std	=	Volume of gas sample through dry gas meter (standard conditions) ft^3
Vm	=	Volume of gas sample through the dry gas meter (meter condition)
Δ H	=	Orifice pressure of sampling meter
S.T.P.	=	Standard condition, dry, 528 °R, 29.92 inches Hg
An	=	Sampling nozzle area, square feet
Vs	=	Velocity of stack gas, feet per sec.
Qs	=	Volumetric flow rate, dry basis, standard condition, CFM
C mist	=	Concentration of mist in stack gas, grs/SCF
C SO_2	=	Concentration of SO_2 in stack gas, grs/SCF
C NH_3	=	Concentration of NH_3 in stack gas, grs/SCF
I	=	Percent isokinetic volume sampled
Ø	=	Sampling time (minutes)

$$Vwstd = 0.04707 \text{ cuft/ml } (V_1)$$

$$Vmstd = Vm \left(\frac{Tstd}{Tm} \right) \left(\frac{Pbar + \frac{\Delta H}{13.6}}{Pstd} \right)$$

$$Bwo = \frac{Vwstd}{Vwstd + Vmstd}$$

$$Ms = Md\ (1 - Bwo) + 18\ (Bwo)$$

$$Vs(avg) = Kp\ Cp \sqrt{P(avg)} \sqrt{\frac{460 + Ts}{Ms\ Ps}}$$

$$Qs = 60\ (1 - Bwo)\ Vs\ As \left(\frac{Tstd}{Ts} \right) \left(\frac{Ps}{Pstd} \right)$$

PERCENT ISOKINETIC

$$I = \frac{Ts\ \ (1.667) \left[(0.00267)\ V_1 + \left(\frac{Tstd}{Tm} \right) Pbar + \frac{\Delta H}{13.6} \right]}{\theta\ Vs\ Ps\ An}$$

$$Cs = 0.0154 \text{ grs/mg } \frac{Mf \text{ or } Mn}{Vmstd}$$

$$lbs/hr = (Cs \times Qs \times 60) / 7000$$

$$lbs/day = lbs/hr \times 24 \text{ hrs/day}$$

J. H. Falls
3/15/93

CALIBRATION DRIFT EVALUATION

Sulfuric Acid Plant D

Continuous Emissions Monitoring System

January 28, 2007 through February 3, 2007

FDEP Facility ID No. 0570005
E.U. ID NO. 008

CALIBRATION DRIFT EVALUATION

The CF Industries, Inc., Instrument Shop tests the calibration of the SO2 and O2 Continuous Emissions Monitoring Systems (CEMS) against certified reference gases daily. Tables 1 and 2 show calibration drift test results for Sulfuric Acid Plant D for the period, January 28 through February 3, 2007. Both the SO2 and O2 calibration drift results are within the rule specification ranges.

Attachment 1 provides the CEMS Calibration Test Log for the month of January 2006. Attachment 2 provided zero point drift data for the SO2 and O2 CEMS.

T.A. Edwards
2/14/2007

Table 1
Calibration Drift Determination - "D" Sulfuric Acid Plant
January 22 - January 28, 2006 - SO2 CEMS

Date	Reference Value ppm (a)	CEMS Response ppm	Calibration Drift ppm	Calibration Drift, % of span value (b)
28-Jan-07	894	885.0	9	0.90
29-Jan-07	894	898.0	4	0.40
30-Jan-07	894	898.0	4	0.40
31-Jan-07	894	892.0	2	0.20
1-Feb-07	894	887.0	7	0.70
2-Feb-07	894	880.0	14	1.40
3-Feb-07	894	895.0	1	0.10

(a) The zero point is checked daily against the certified SO2 reference gas (0 ppm SO2).

(b) The maximum calibration drift performance specification for the SO2 CEMS is 2.5% of the span value (40 CFR 60, Appendix B, P.S.2,13.1). The span value is 1000 ppm as specified at 40 CFR 60.84(a).

Table 1
Calibration Drift Determination - "D" Sulfuric Acid Plant
January 28 - February 3, 2007 - O2 CEMS

Date	Reference Value % O2 (a)	CEMS Response % O2	Calibration Drift % O2 (b)
28-Jan-07	15.0	14.90	0.10
29-Jan-07	15.0	14.70	0.30
30-Jan-07	15.0	15.00	0.00
31-Jan-07	15.0	15.00	0.00
1-Feb-07	15.0	15.00	0.00
2-Feb-07	15.0	14.70	0.30
3-Feb-07	15.0	15.00	0.00

(a) The zero point is checked daily against the certified O2 reference gas (0% O2). The CEMS reading is also checked daily against clean instrument air at 20.9% O2.

(b) The maximum calibration drift performance specification for the O2 CEMS is 0.5% O2 (40CFR60, Appendix B, P.S.3,13.1).

ATTACHMENT 1 – CEMS CALIBRATION TEST

LOG – January, February 2007

D-SAP Daily SO2 Emissions Test Log for Month of Jan. 07

Send copy of this document to Lab each month.

Day	Tech	Bottle Change (√)[1]	Zero Ref Count	Prev Day Zero Ref Count	Ref Count Δ[2]	O_2 Sample	O_2 Reference	O_2 % Error[3]	SO_2 Sample	SO_2 Reference	SO_2 Error[4]	Span Test Period[5]
1	SC		-8579	-8573	6	15.0	15.0	0	909	913	4	07:11-07:41
2	SC		-8590	-8579	11	15.0	15.0	0	910	913	3	07:15-07:45
3	TC		-8591	-8590	1	15.1	15.0	+.66	913	913	0	07:06-07:37
4	DR		-8593	-8591	2	15.1	15.0	+.66	910	913	3	07:20-07:46
5	TC		-8603	-8593	10	15.0	15.0	0	907	913	6	07:27-07:57
6	SC		-8625	-8603	22	15.0	15.0	0	906	913	7	07:44-08:14
7	SC		-8601	-8625	24	15.0	15.0	0	911	913	2	07:11-07:42
8	SC		-8631	-8601	30	15.0	15.0	0	907	913	6	07:15-07:46
9	TC		-8609	-8631	22	15.1	15.0	+.66	913	913	0	07:24-07:53
10	TC		-8608	-8609	1	15.1	15.0	+.66	917	913	4	08:17-08:47
11	TC		-8615	-8608	7	15.0	15.0	0	919	913	6	07:30-08:02
12	SC		-8622	-8615	7	15.0	15.0	0	921	913	8	07:22-07:52
13	SC		-8634	-8622	12	15.0	15.0	0	918	913	5	07:15-07:46
14	SC		-8660	-8634	26	15.0	15.0	0	911	913	2	07:13-07:43
15	TC		-8665	-8660	5	15.0	15.0	0	912	913	1	07:21-07:50
16	TC		-8662	-8665	3	14.9	15.0	-.66	912	913	1	07:15-07:45
17	TC		-8667	-8662	5	15.1	15.0	+.66	912	913	1	0709-0740
18	DR		-8678	-8667	11	15.0	15.0	0	912	913	1	07:21-07:47
19	SC		-8664	-8678	14	15.1	15.0	+.67	914	913	1	07:15-07:45
20	JC		-8675	-8664	11	15.0	15.0	0	910	913	3	07:19-07:46
21	TC		-8678	-8675	3	14.9	15.0	-.66	910	913	3	07:05-07:35
22	TC	SO2	-8709	-8678	31	15.0	15.0	0	886	894	8	07:14-07:44
23	TC		-8707	-8709	3	15.0	15.0	0	889	894	5	07:15-07:45
24	SC		-8705	-8707	2	14.9	15.0	-.67	889	894	5	07:10-07:40
25	SC		-8715	-8705	10	15.0	15.0	0	890	894	4	07:14-07:44
26	SC		-8690	-8715	25	15.0	15.0	0	897	894	3	09:31-10:01
27	TC		-8725	-8690	35	14.9	15.0	-.66	894	894	0	09:05-09:35
28	TC		-8740	-8725	15	14.9	15.0	-.66	885	894	9	09:20-09:50
29	TC		-8708	-8740	32	14.7	15.0	2	898	894	4	10:25-10:57
30	SC		-8724	-8708	16	15.0	15.0	0	898	894	4	10:06-10:36
31	SC		-8742	-8724	18	15.0	15.0	0	892	894	2	07:20-07:50

Notes:

1) Type of gas (SO_2/O_2)

Type of gas (SO_2/O_2)		Date Changed	Cylinder No.	ppm
SO2		9/21/06	CC209496	913
	O2	11/3/06	CC200616	15.0
SO2		1-31-07	CC150077	894

2) |Ref Count Δ| <= 200

3) |O2 % Error| <= 3%

4) |SO2 Error| <= 25 ppm

5) Note maintenance performed on separate sheet.

39560-Q

D-SAP Daily SO2 Emissions Test Log for Month of Feb. 07

Send copy of this document to Lab each month.

Day	Tech	Bottle Change (Y)[1]	Zero Ref Count	Prev Day Zero Ref Count	Ref Count Δ[2]	O_2 Sample	O_2 Reference	O_2 % Error[3]	SO_2 Sample	SO_2 Reference	SO_2 Error[4]	Span Test Period[5]
1	SC		-8740	-8742	2	15.0	15.0	0	887	894	7	07:19-07:49
2	TC		-8768	-8740	28	14.7	15.0	-2	880	894	14	07:18-07:46
3	TC		-8765	-8768	3	15.0	15.0	0	895	894	+1	07:05-07:35
4	TC		-8759	-8765	6	15.0	15.0	0	898	894	-4	07:25-07:55
5	CR		-8755	-8759	4	15.0	15.0	0	900	894	+6	07:21 - 07:48
6	CR		-8743	-8755	12	15.0	15.0	0	900	894	+6	07:15 - 07:41
7	CR		-8756	-8743	13	15.0	15.0	0	897	894	+3	07:14 - 07:40
8	YQ		-8766	-8756	10	15.1	15.0	+.66	895	894	+1	07:12 - 07:39
9	YQ		-8770	-8766	4	15.1	15.0	+.66	893	894	-1	07:22 - 07:48
10	WB		-8795	-8770	15	15.1	15.0	+.66	891	894	-3	07:16-07:44
11	CR		-8809	-8795	14	15.1	15.0	+.66	892	894	-2	06:58 - 07:24
12	JC		-8808	-8809	1	15.0	15.0	0	890	894	-4	07:35 - 08:02
13	CR		-8822	-8808	14	15.0	15.0	0	883	894	-11	07:24 - 07:51
14	CEB		-8894	-8822	22	15.0	15.0	0	877	894	-17	07:18 - 07:44
15	YQ		-8817	-8894	27	15.2	15.0	+1.3	886	894	-8	07:16 - 07:42
16				-8817								
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												
31												

Notes:

1) Type of gas (SO_2/O_2)

Type of gas (SO_2/O_2)		Date Changed	Cylinder No.	ppm
SO2		1/21/07	CC150077	894
	O2	11/3/06	CC200616	15.0

2) |Ref Count Δ| <= 200

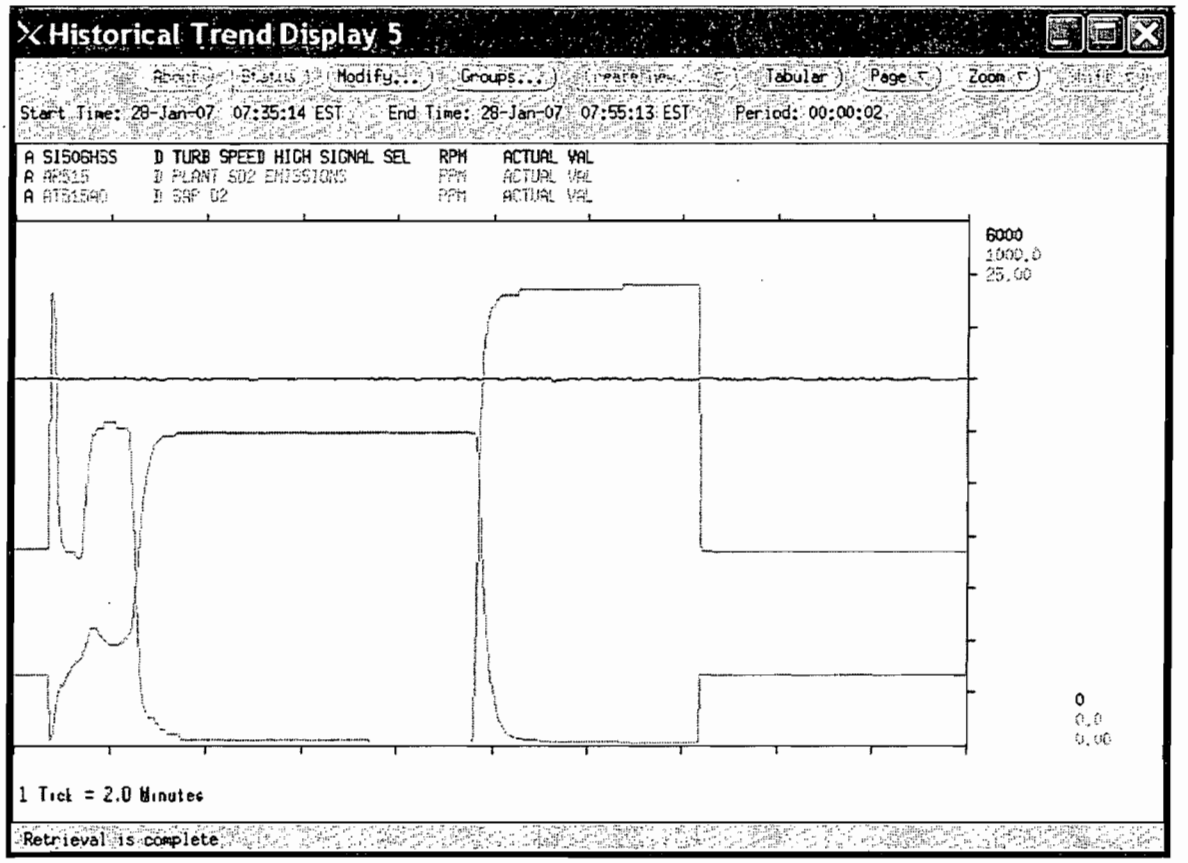
3) |O2 % Error| <= 3%

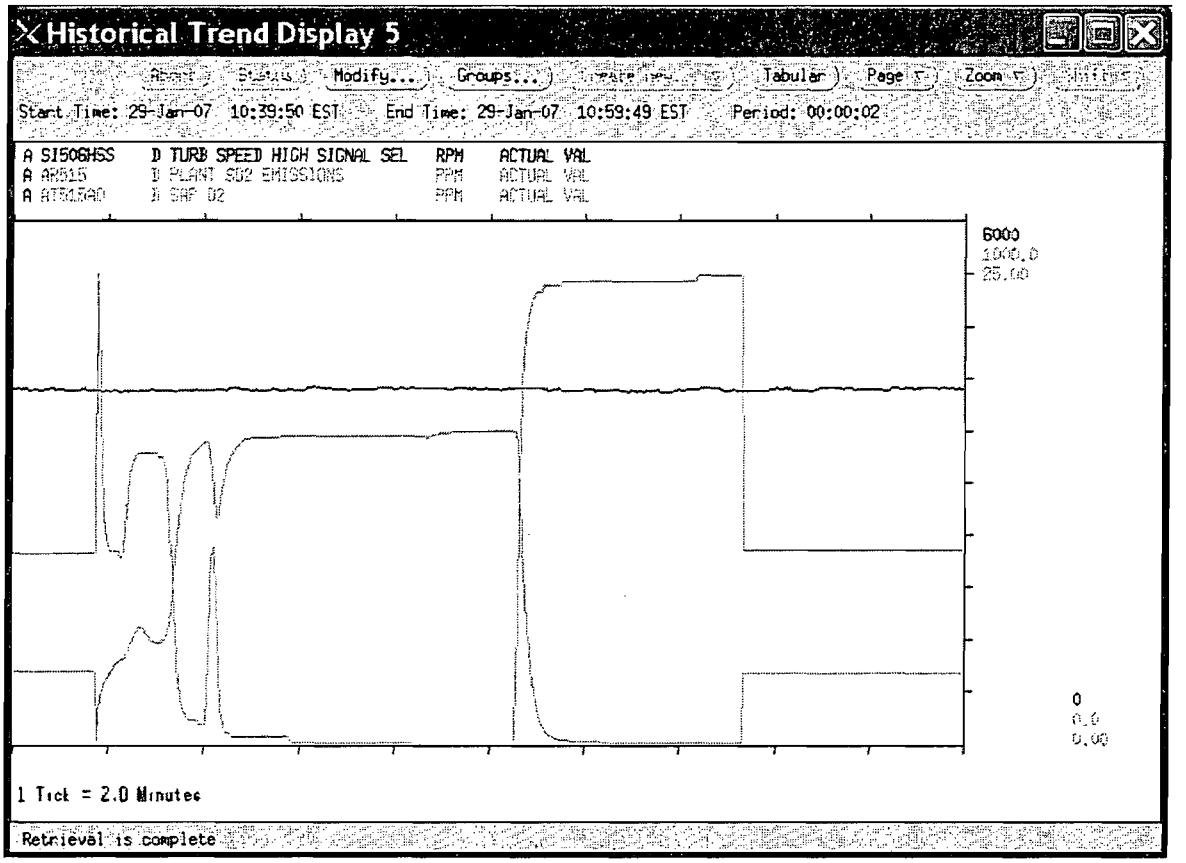
4) |SO2 Error| <= 25 ppm 50.

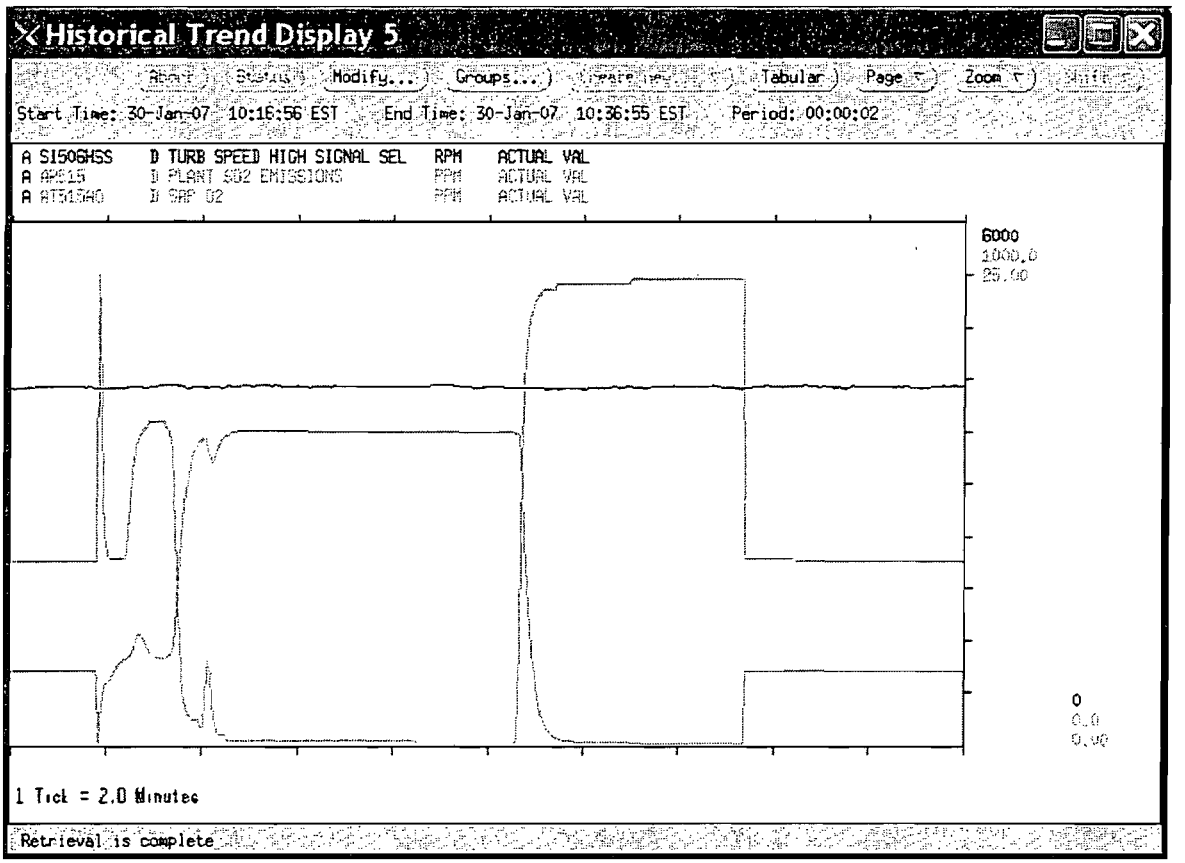
5) Note maintenance performed on separate sheet.

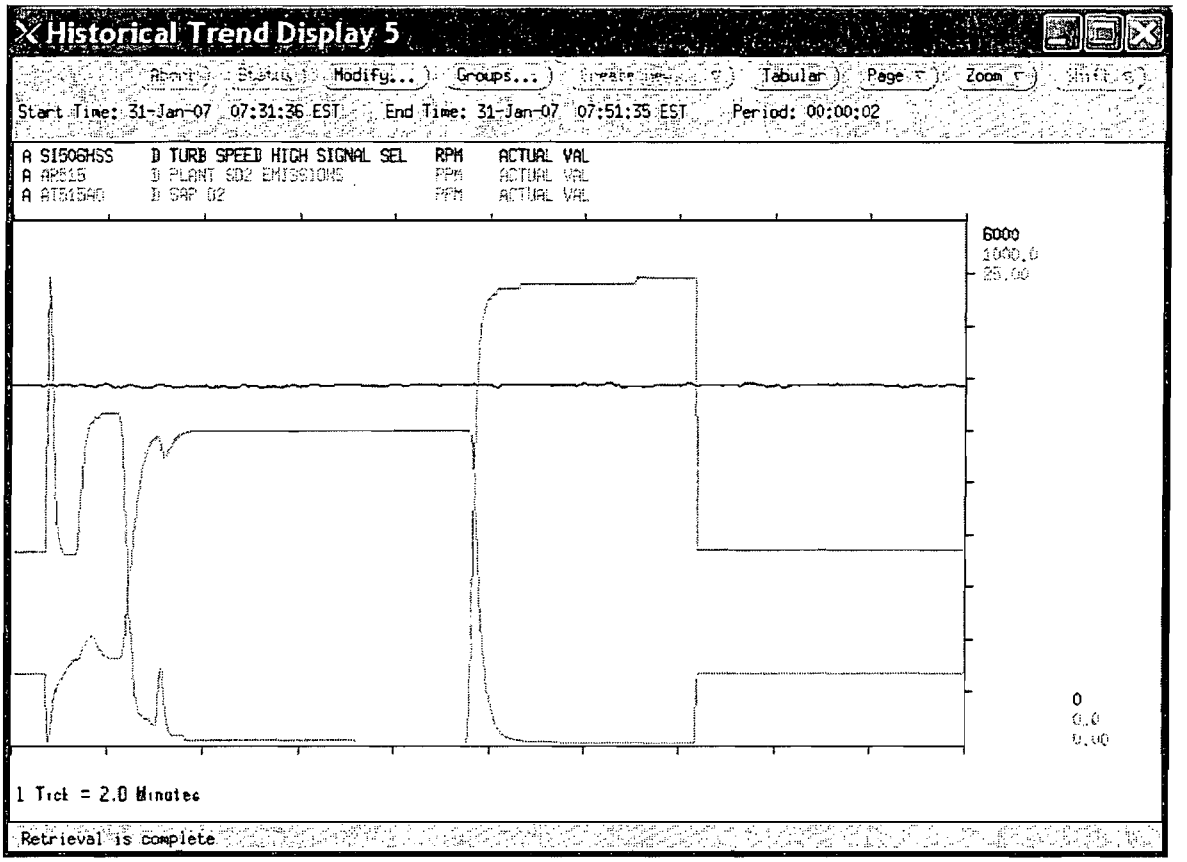
ATTACHMENT 2 – CEMS SO2 and O2

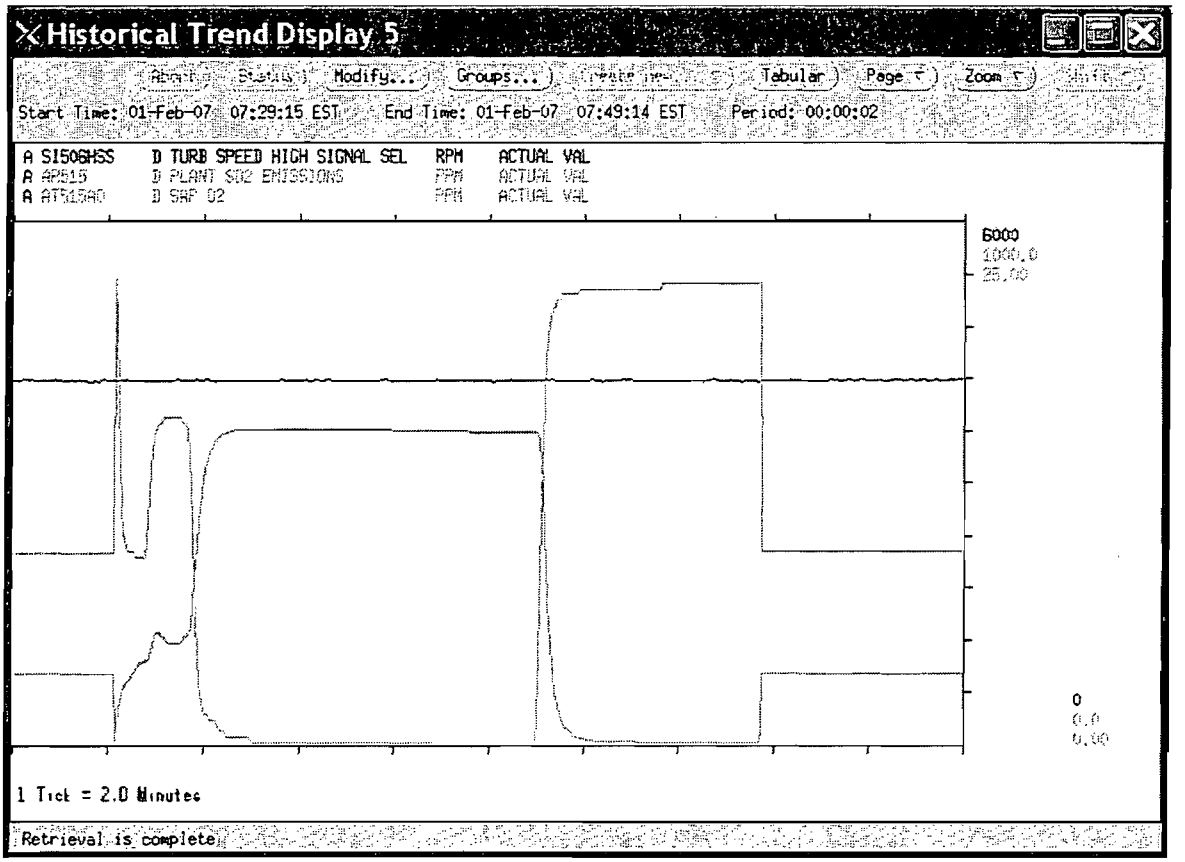
Zero Point Graphs from DCS-WPF – January 28-February 3, 2007

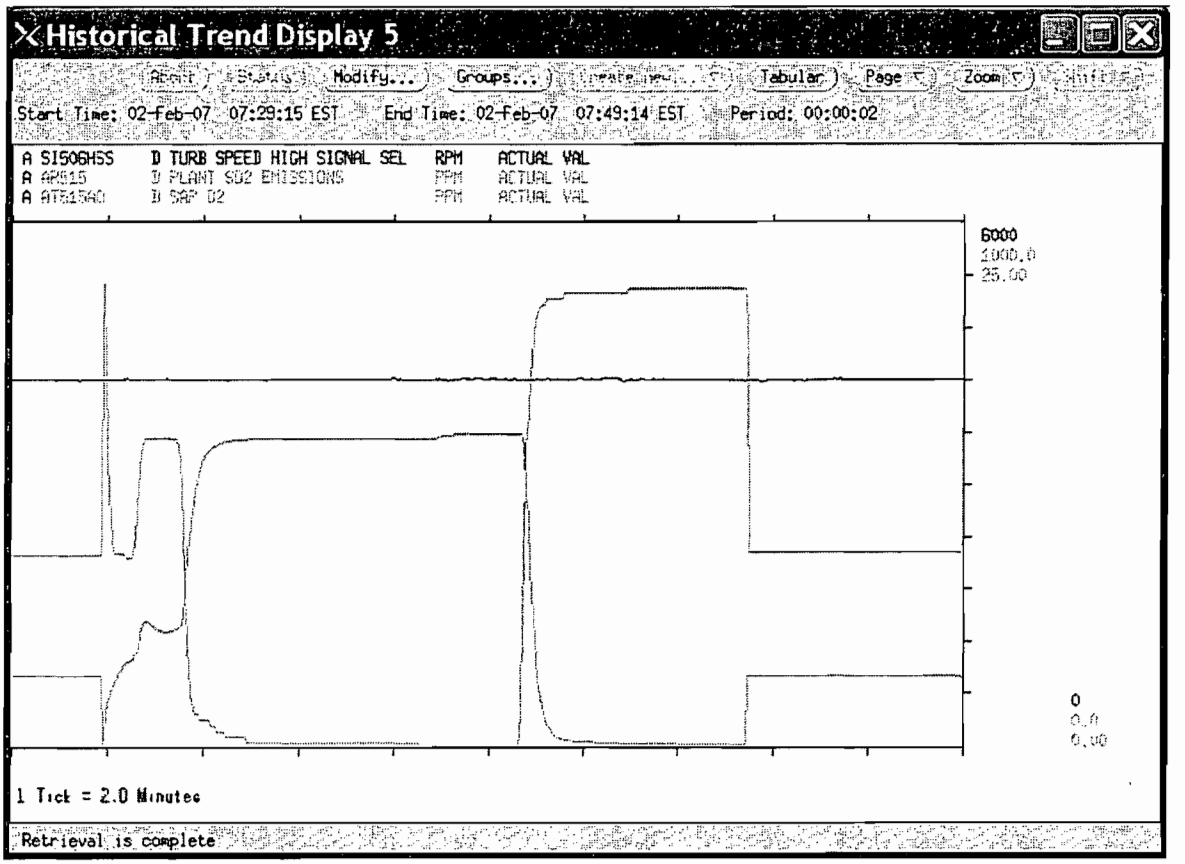

Historical Trend Display 5
Modify...
Groups...
Tabular
Page
Zoom
Start Time: 28-Jan-07 07:35:14 EST
End Time: 28-Jan-07 07:55:13 EST
Period: 00:00:02
A SI506H5S D TURB SPEED HIGH SIGNAL SEL RPM ACTUAL VAL
A AR515 D PLANT SO2 EMISSIONS PPM ACTUAL VAL
A AT515A0 D SAF 02 PPM ACTUAL VAL
6000
1000.0
25.00
0
0.0
0.00
1 Tick = 2.0 Minutes
Retrieval is complete.

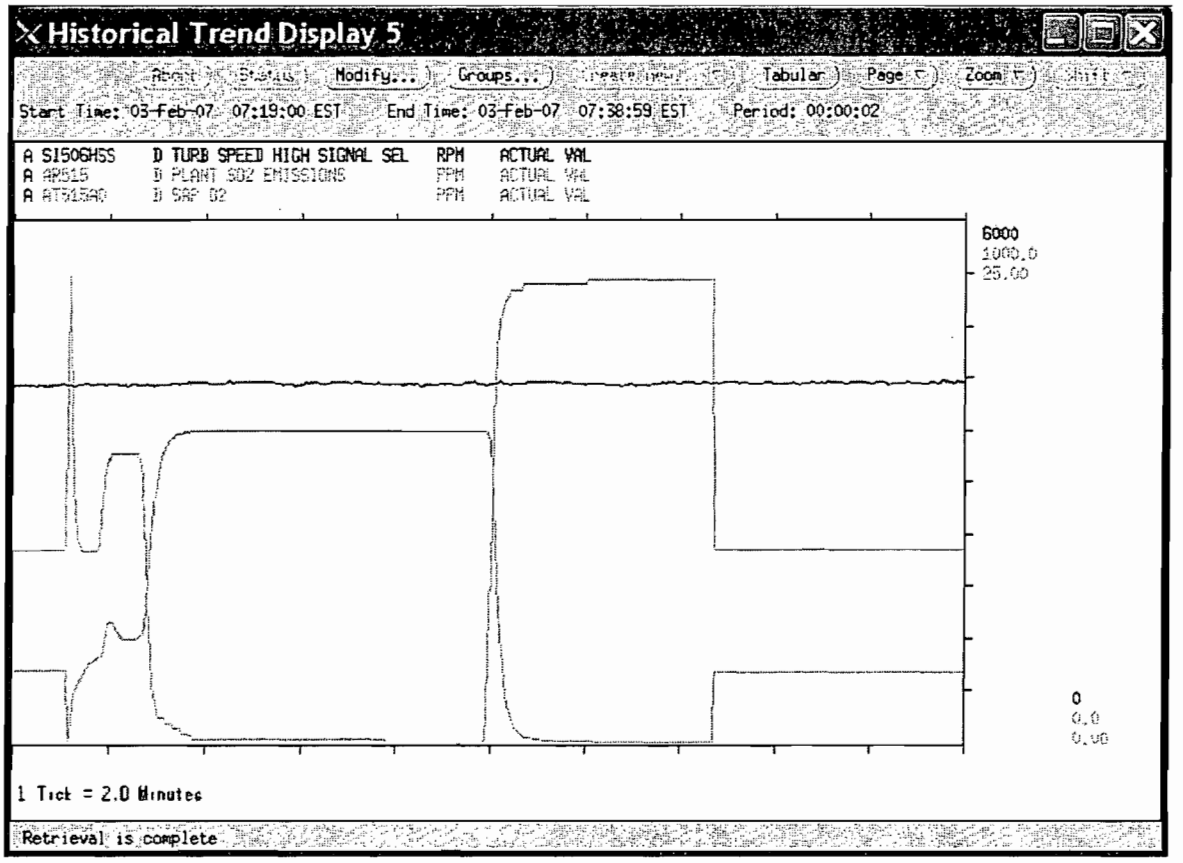

Historical Trend Display 5
Modify...
Groups...
Tabular
Page
Zoom
Start Time: 29-Jan-07 10:39:50 EST
End Time: 29-Jan-07 10:59:49 EST
Period: 00:00:02
A SI506HSS D TURB SPEED HIGH SIGNAL SEL RPM ACTUAL VAL
A AR515 D PLANT SO2 EMISSIONS PPM ACTUAL VAL
A AT515A0 D STAF 02 PPM ACTUAL VAL
6000
1000.0
25.00
0
0.0
0.00
1 Tick = 2.0 Minutes
Retrieval is complete


Historical Trend Display 5
Abort
Status
Modify...
Groups...
Tabular
Page
Zoom
Start Time: 30-Jan-07 10:16:56 EST
End Time: 30-Jan-07 10:36:55 EST
Period: 00:00:02
A SI506HSS D TURB SPEED HIGH SIGNAL SEL RPM ACTUAL VAL
A AM515 D PLANT SO2 EMISSIONS PPM ACTUAL VAL
A AT515A0 D SAF 02 PPM ACTUAL VAL
6000
1000.0
25.00
0
0.0
0.00
1 Tick = 2.0 Minutes
Retrieval is complete


Historical Trend Display 5
Modify...
Groups...
Tabular
Page
Zoom
Start Time: 31-Jan-07 07:31:36 EST
End Time: 31-Jan-07 07:51:35 EST
Period: 00:00:02
A SI50GHSS D TURB SPEED HIGH SIGNAL SEL RPM ACTUAL VAL
A AR515 D PLANT SO2 EMISSIONS PPM ACTUAL VAL
A AT515A0 D SAP 02 PPM ACTUAL VAL
6000
1000.0
25.00
0
0.0
0.00
1 Tick = 2.0 Minutes
Retrieval is complete


Historical Trend Display 5
Modify...
Groups...
Tabular
Page
Zoom
Start Time: 01-Feb-07 07:29:15 EST
End Time: 01-Feb-07 07:49:14 EST
Period: 00:00:02
A S1S06HSS D TURB SPEED HIGH SIGNAL SEL RPM ACTUAL VAL
A AP515 D PLANT SO2 EMISSIONS PPM ACTUAL VAL
A AT515A0 D SAP 02 PPM ACTUAL VAL
6000
1000.0
25.00
0
0.0
0.00
1 Tick = 2.0 Minutes
Retrieval is complete


Historical Trend Display 5
Modify...
Groups...
Tabular
Page
Zoom
Start Time: 02-Feb-07 07:29:15 EST
End Time: 02-Feb-07 07:49:14 EST
Period: 00:00:02
A SI506HSS D TURB SPEED HIGH SIGNAL SEL RPM ACTUAL VAL
A AR515 D PLANT SO2 EMISSIONS PPM ACTUAL VAL
A AT515A0 D SAP O2 PPM ACTUAL VAL
6000
1000.0
25.00
0
0.0
0.00
1 Tick = 2.0 Minutes
Retrieval is complete


Historical Trend Display 5
Abort
Status
Modify...
Groups...
Tabular
Page
Zoom
Shift
Start Time: 03-Feb-07 07:19:00 EST
End Time: 03-Feb-07 07:38:59 EST
Period: 00:00:02
A S1S06H5S D TURB SPEED HIGH SIGNAL SEL RPM ACTUAL VAL
A AR515 D PLANT SO2 EMISSIONS PPM ACTUAL VAL
A AT515A0 D SAF O2 PPM ACTUAL VAL
6000
1000.0
25.00
0
0.0
0.00
1 Tick = 2.0 Minutes
Retrieval is complete