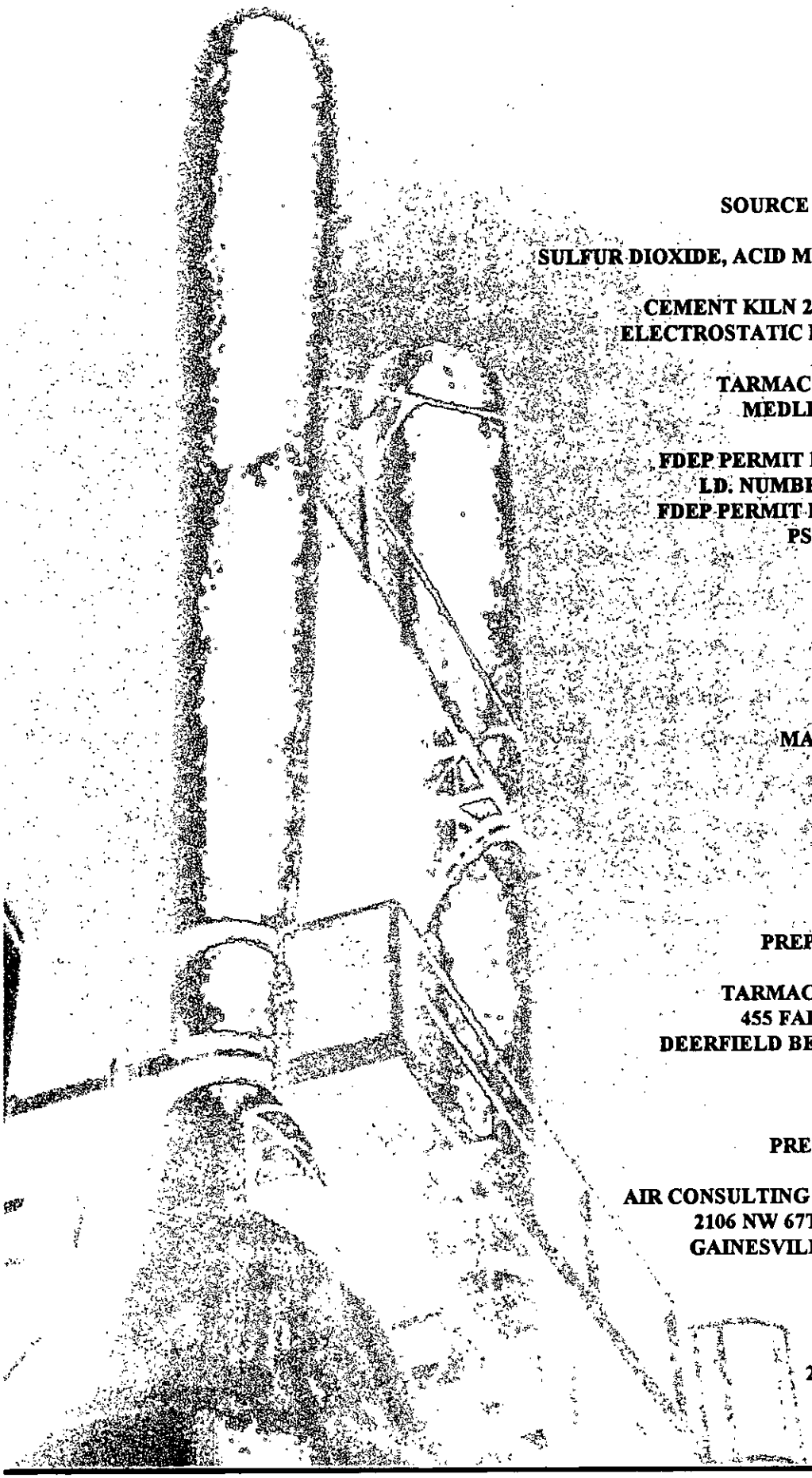


SOURCE TEST REPORT
FOR
SULFUR DIOXIDE, ACID MIST, AND OXIDES OF NITROGEN

CEMENT KILN 2 - COAL CONVERSION
ELECTROSTATIC PRECIPITATOR OUTLET

TARMAC FLORIDA, INC.
MEDLEY, FLORIDA

FDEP PERMIT NUMBER A013-238048
I.D. NUMBER 50/DAD/13/0020
FDEP PERMIT NUMBER AC13-169901
PSD-FL-142

MAY 31, 1995

PREPARED FOR:

TARMAC FLORIDA, INC.
455 FAIRWAY DRIVE
DEERFIELD BEACH, FLORIDA 33441

PREPARED BY:

AIR CONSULTING AND ENGINEERING, INC.
2106 NW 67TH PLACE, SUITE 4
GAINESVILLE, FLORIDA 32606

247-95-02

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACE
AIR CONSULTING
& ENGINEERING, INC.

2106 N.W. 67th Place • Suite 4 • Gainesville, Florida • 32606
(904) 335-1889 FAX (904) 335-1891

REPORT CERTIFICATION

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

Stephen L. Neck, P.E.

July 12, 1995
Date

1.0 INTRODUCTION

On May 31, 1995, Air Consulting and Engineering , Inc. (ACE) conducted Sulfur Dioxide (SO_2), acid mist, and Oxides of Nitrogen (NO_x) emissions testing on the outlet stack of Cement Kiln 2 at Tarmac Florida, Inc. in Medley, Florida.

Kiln 2 was tested in accordance with Florida Department of Environmental Protection (FDEP) Permit Number AC13-169901 while firing coal.

Testing was performed using United States Environmental Protection Agency (EPA) Method 8 SO_2, acid mist and SO_3, and EPA Method 7E NO_x.

Mr. Scott Quaas of Tarmac coordinated testing and provided production data. He also performed the opacity test.

Messrs Frank Delgado and Marc Le'Veille' of Dade County Department of Environmental Resource Management (DERM) witnessed testing.

2.0 SUMMARY AND DISCUSSION OF RESULTS

Table 1 summarizes the emission results and flue gas parameters. During the testing effort, the kiln was fired with coal.

Oxides of nitrogen emissions averaged 328.4 pounds per hour (lbs/Hr).

The SO_2 and acid mist averaged 4.43 and 2.27 lbs/Hr, respectively. The value reported as acid mist was probably all SO_3 as no acid mist was detected prior to first filter (see Section 5.0) in the EPA Method 8 train.

Complete emission summaries, field data, laboratory data, and strip chart copies are presented in Appendices A, B, C, and D, respectively.

Table 1 Emission Summary
Tarmac Florida, Inc.
Kiln 2 ESP Outlet
Medley, Florida
May 31, 1995

Run Number	Time	Flow Rate SCFMD	NOx Emissions ppm	NOx Emissions lbs/Hr	SO2 Emissions lbs/Hr	Acid Mist Emissions lbs/Hr
1	1055-1206	52185	923	345.1	4.23	5.93
2	1259-1408	51010	883	322.7	7.26	0.63
3	1459-1610	53962	821	317.4	1.81	0.25
AVERAGE		52387	876	328.4	4.43	2.27

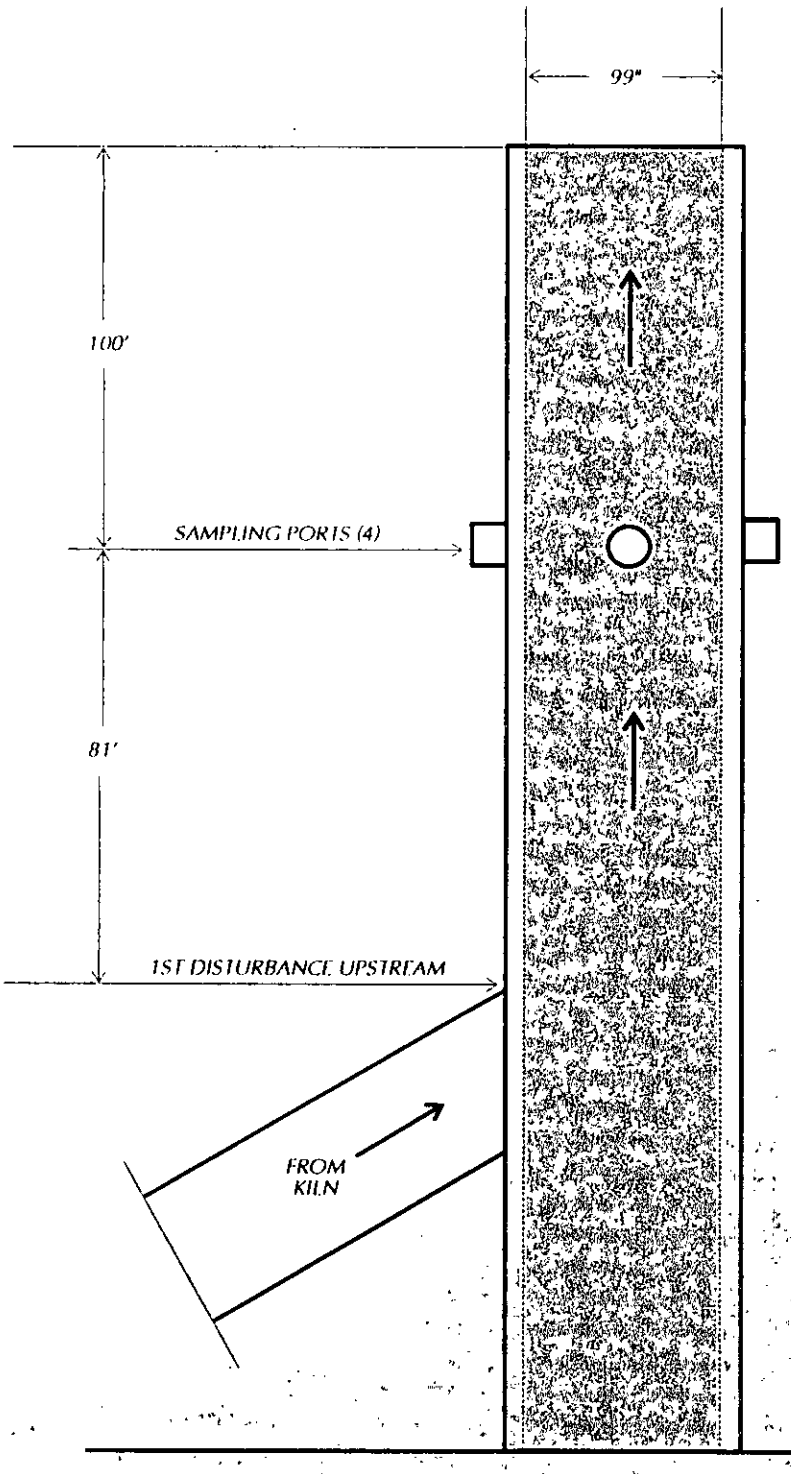
3.0 PROCESS DESCRIPTION AND OPERATION

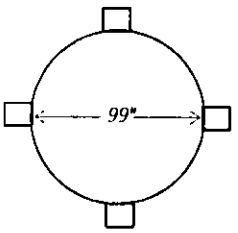
Kiln Systems 1 and 2 contain a common dust insufflation system which can return captured particulate to the kiln firing hoods. The dust handling equipment for the insufflation system includes a surge bin (for each kiln precipitator) and a common dust bin controlled by a baghouse. Kiln 2 has a 40.5 dry tons per hour input capacity and is controlled by a double chambered electrostatic precipitator.

Plant production data sheets are presented in Appendix G.

4.0 SAMPLING POINT LOCATION

The sampling point locations and outlet duct schematic are provided in Figure 1. The outlet stack has 99 inch diameter and four sample ports 90 degrees apart. Six test points per port were sampled for each run. The stack configuration is such that evaluation for the presence of cyclonic flow is not necessary.





(4) PORTS

TRAVERSE POINT NUMBER	INCHES INSIDE STACK WALL
1	2.1
2	6.6
3	11.7
4	17.5
5	24.8
6	35.3

Note: Not to scale.

FIGURE 1.
SAMPLING POINT LOCATION
KILN NO. 2, ESP OUTLET
TARMAC, FLORIDA, INC.
MIAMI, FLORIDA

ACE AIR CONSULTING & ENGINEERING, INC.

5.0 FIELD AND ANALYTICAL PROCEDURES

5.1 Determination of Sulfuric Acid Mist and Sulfur Dioxide Emissions From Stationary Sources--EPA Method 8

SO_2 and acid mist samples were collected by the measurement method specified by the United States Environmental Protection Agency. A schematic diagram of the sampling train used is shown in Figure 2.

PREPARATION OF EQUIPMENT

1. NOZZLE, SAMPLING PROBE, AND FLEXIBLE TEFLON TUBING - The nozzle, sampling probe, and flexible tubing were washed vigorously with soapy water and brushes, rinsed with acetone and distilled water, and dried prior to the test program. All openings on the sampling equipment were sealed while in transit to the test site.

2. IMPINGERS AND FILTER HOLDER - The Greenburg-Smith impingers and filter holder were cleaned with a warm soapy water solution and brushes, rinsed with distilled water and acetone, and dried. The impingers and filter holder were sealed tightly during transit.

TEST PROCEDURE

Prior to performing the actual Method 8 sample runs, certain stack and stack gas parameters were measured. These preliminary measurements included the average gas temperature, the stack gas velocity head, the stack gas moisture content, and the stack dimensions at the point where the tests were being performed. The stack gas temperature was determined by using a bi-metallic thermocouple and calibrated pyrometer. Velocity head measurements were made with calibrated type "S" pitot tube and an inclined manometer. Velocity head measurements of 0.05 inches H2O or less were measured utilizing a micromanometer.

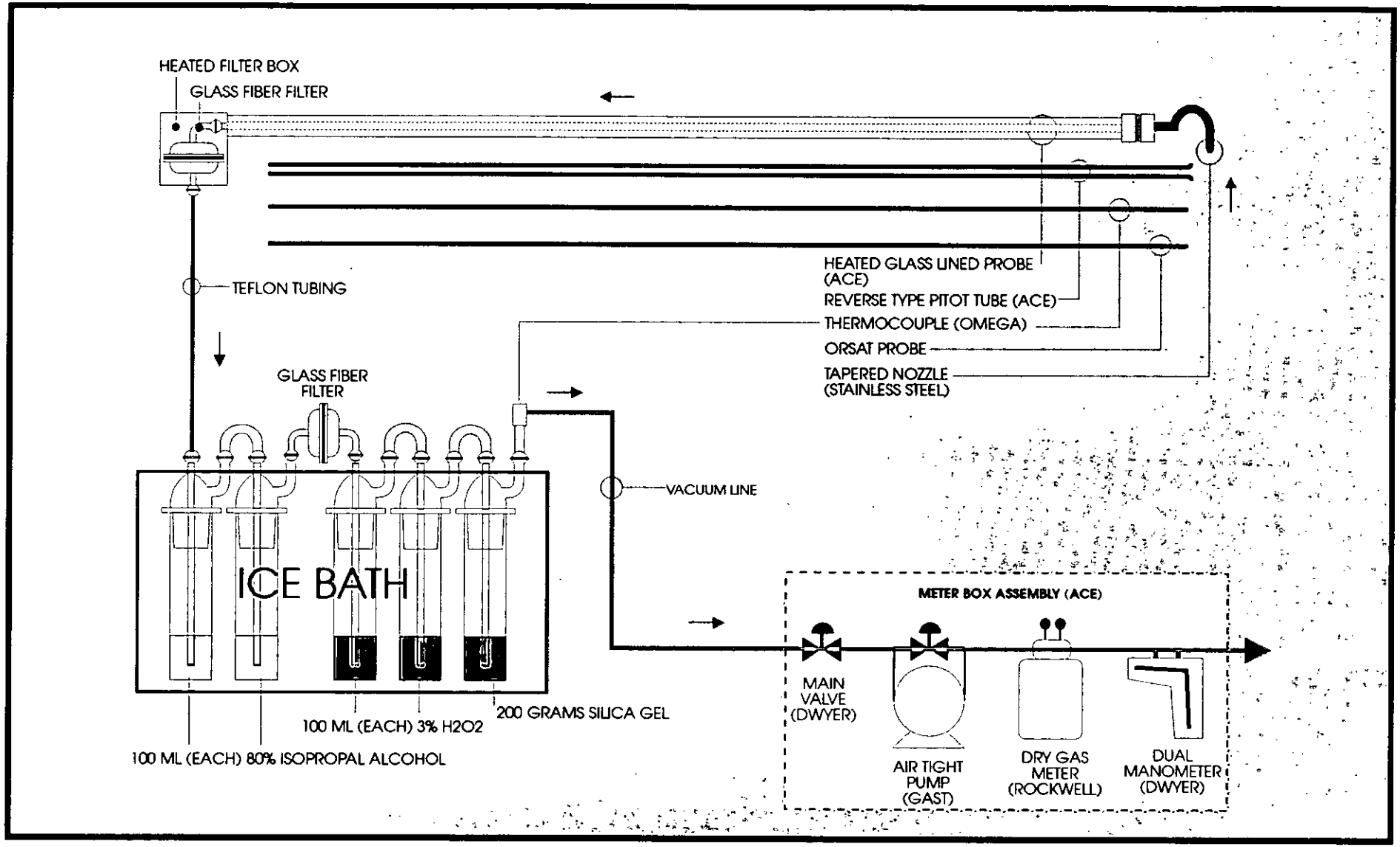


FIGURE 2.

EPA METHOD 8 SAMPLING SCHEMATIC
(SULFURIC ACID MIST AND SULFUR DIOXIDE EMISSIONS)

ACE AIR CONSULTING & ENGINEERING, INC.

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

Each Method 8 test run consisted of sampling for a specific time at each traverse point. The type "S" pitot tube was connected to the sampling probe so that an instantaneous velocity head measurement could be made at each traverse point while making the test run. The stack gas temperature was also measured at each traverse point. Nomographs were used to calculate the isokinetic sampling rate at each traverse point during each test run.

The gases sampled passed through the following components: a stainless steel nozzle and PYREX glass probe a heated glass fiber filter, flexible TEFLON tubing; two impingers with 100 ml of 80% isopropyl alcohol (ISO); a filter holder with 0.2 micron glass fiber filter; two impingers with 100 ml each of 3% hydrogen peroxide; one impinger with 200 grams of silica gel; a flexible sample line; an air-tight pump; a dry test meter; and a calibrated orifice. The first and third impingers had standard tips, while the second and fourth impingers had modified tips with a 0.5 inch I.D. opening. Following each test run, a leak check was conducted at the maximum vacuum experienced and this value was recorded on the field data sheet. The sample train was then disconnected at the inlet of the first impinger and removed to another area for a fifteen minute purge using ambient air at approximately 0.5 SCFM. A portion of each reagent was retained as a blank solution.

Sample recovery was accomplished by the following procedures:

1. The first filter and acetone probe was were saved for acid mist analysis (Container 1). The second was removed from its holder and placed in Container 2 along with the contents of the first two impingers.

2. All sample-exposed surfaces prior to the filter were washed with 80% ISO and placed in Container 1, sealed and the liquid level marked.

3. The contents and distilled water washings of the third and fourth impingers placed in container 2 and the liquid level was marked.

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

SAMPLE ANALYSES

Liquid levels were checked to assure no sample loss. Samples were thoroughly mixed and analyses begun. The analysis consists of a barium perchlorate titration procedure using thorin indicator for endpoint determination. The barium perchlorate was standardized using a 0.01 normal sulfuric acid solution. A minimum of two titrations were made that agreed within 1%. The titration was made into a 250 ml Erlenmeyer flask that contained the sample aliquot diluted to a 20/80 proportion with isopropyl alcohol. Four drops of thorin indicator were added to the solution. Blanks were titrated in the same manner as the samples.

5.2 Determination of Nitrogen Oxides Emissions from Stationary Sources (Instrumental Analyzer Procedure)--EPA Method 7E

The sampling system is shown in Figure 3. A sample was drawn from the stack at a rate of approximately 2 SCFH. A stainless steel probe and filter assembly was followed by a three-way stainless steel valve. The sample was pumped through a non-heated 1/4" O.D. TEFLON sampling line and condensate trap housed in an ice bath. Calibration gases were introduced at the sampling interface (the three way valve) through another 1/4" O.D. TEFLON line that was not heated. The sample pump delivered gases to a manifold system where one stream was sent to a Thermo Electron Model 10AR Chemiluminescent Analyzer, converted to nitric oxide, reacted with ozone, and a chemiluminescent response measured by a photomultiplier. A second stream was delivered to a Teledyne 320P O2 analyzer. A third stream was dumped to the ambient air. All instrument responses were recorded on strip chart recorders. The sampling system yields NOx and O2 concentrations on a dry basis.

All calibration gases were certified NBS traceable.

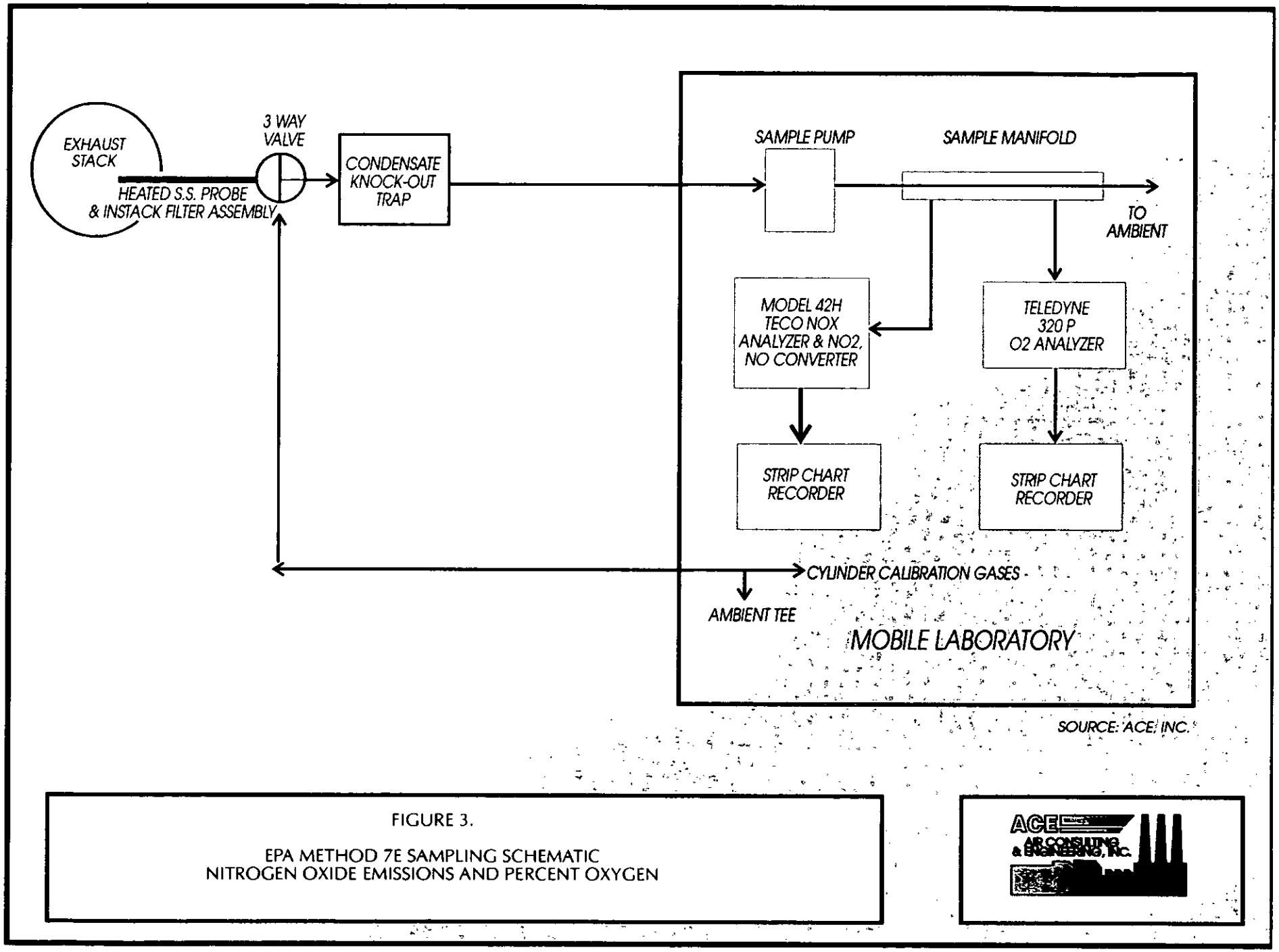


FIGURE 3.

EPA METHOD 7E SAMPLING SCHEMATIC
NITROGEN OXIDE EMISSIONS AND PERCENT OXYGEN

ACE AIR CONSULTING & ENGINEERING, INC.

APPENDIX A

COMPLETE EMISSION SUMMARY

NOx EMISSION SUMMARY
TARMAC FLORIDA, INC.
K-2 KILN OUTLET
MEDLEY, FLORIDA
MAY 31, 1995

RUN NUMBER:	1	2	3
TIME:	1056-1207	1259-1401	1459-1605
DATA LOGGER NOx PPM:	937	908.1	836.2
DATA LOGGER O2%:	10.71	11.34	11.2
NOx INITIAL BIAS:	481	473	468.8
NOx FINAL BIAS:	473	496.9	490.8
NOx AVERAGE BIAS:	477	484.95	479.8
O2 INITIAL BIAS:	20.93	20.93	20.88
O2 FINAL BIAS:	20.93	21.36	20.76
O2 AVERAGE BIAS:	20.93	21.145	20.82
NOx INITIAL ZERO:	4.2	-0.5	0.4
NOx FINAL ZERO:	-0.5	12.2	8.4
NOx AVERAGE ZERO:	1.85	5.85	4.4
O2 INITIAL ZERO:	0.05	0.08	0.11
O2 FINAL ZERO:	0.08	0.11	0.08
O2 AVERAGE ZERO:	0.065	0.095	0.095
NOx CAL. GAS VALUE:	469	469	469
O2 CAL. GAS VALUE:	20.9	20.9	20.9
NOx CORRECTED AVERAGE:	923.0	883.2	820.6
O2 CORRECTED AVERAGE:	10.67	11.29	11.16
FUEL FACTOR:	9780	9780	9780
NOx LB/MMBTU:	2.20	2.24	2.06
SCFMD:	52438	52479	54688
NOx LB/HR:	346.76	332.06	321.50
AVERAGE:		333.44	

Air Consulting and Engineering
Emission Measurments

Plant:	Tarmac				
Source:	Kiln 2 - SO2 Acid Mist				
Date:	05/31/95				
Run:		1	2	3	Average
Time:	From:	1055	1259	1459	
	To:	1206	1408	1610	
Water Vapor Sampled (SCF).....		11.852	14.229	12.577	12.886
Stand. Dry Gas Sampled (SCF)....		41.309	43.525	45.639	43.491
Percent Moisture.....		22.30	24.64	21.60	22.85
Percent Dry Air.....		77.70	75.36	78.40	77.15
Molecular Weight Dry.....		30.51	30.52	30.53	30.52
Molecular Weight Actual.....		27.72	27.44	27.82	27.66
Percent Excess Air.....		113.31	124.19	127.11	121.54
Velocity Of Flue Gas (FPS).....		32.91	33.02	33.47	33.14
Actual Vol. Flow Rate (ACFM).....		105550.3	105917.7	107366.2	106278.1
Dry Vol. Flow Rate (ACFMD).....		82017.9	79821.9	84170.7	82003.5
Stand. Vol Flow Rate (SCFMD)....		52185.2	51012.5	53962.5	52386.7
Percent Isokinetics.....		93.0	100.2	99.3	97.5
ACID MIST					
Emission Conc. (gr/DSCF).....		0.01326	0.00143	0.00055	0.00508
Emission Conc. (gr/ACF).....		0.00656	0.00069	0.00049	0.00258
Emission Conc. (lbs/DSCF).....		1.89E-06	2.04E-07	7.79E-08	7.25E-07
Emission Rate (lbs/Hr).....		5.93	0.63	0.25	2.27
SULFUR DIOXIDE					
Emission Conc. (gr/DSCF).....		0.00945	0.01661	0.00392	0.00999
Emission Conc. (gr/ACF).....		0.00467	0.00800	0.00354	0.00540
Emission Conc. (lbs/DSCF).....		1.35E-06	2.37E-06	5.60E-07	1.43E-06
Emission Rate (lbs/Hr).....		4.23	7.26	1.81	4.43

Air Consulting and Engineering
Emission Measurments

Plant: Tarmac
Source: Kiln 2 - SO2 Acid Mist
Date: 05/31/95
Run: 1
Time From: 1055 To: 1206

Sample Time.(Min).....	60	Final Volume (ftE3)...	659.835
Pitot Cofficient.....	0.84	Initial Volume (ftE3)...	616.400
Bar. Pres.(in Hg).....	30.04	Net Volume (ftE3).....	43.435
Static Pres.(in H2O)....	0.00	Condensate (ml).....	251.8
Meter Correction (Y).	0.997	% Carbon Dioxide.....	13.0
Nozzle Diameter (in.)	0.373	% Oxygen.....	10.7
Stack Area (ftE2).....	53.456	F Factor.....	NA

Port-Point	Delta-P	Delta-H	Stack T	Meter T
1-1	0.26	2.10	372	92
-2	0.24	1.90	373	92
-3	0.22	1.80	373	92
-4	0.21	1.70	373	93
-5	0.20	1.60	372	94
-6	0.18	1.50	371	95
2-1	0.27	2.20	368	96
-2	0.24	1.90	373	96
-3	0.24	1.90	373	96
-4	0.21	1.70	372	97
-5	0.20	1.60	372	97
-6	0.20	1.60	372	97
3-1	0.18	1.50	373	99
-2	0.23	1.90	370	99
-3	0.22	1.80	374	100
-4	0.20	1.60	373	100
-5	0.19	1.50	373	100
-6	0.18	1.50	372	101
4-1	0.23	1.90	373	101
-2	0.24	1.90	379	101
-3	0.20	1.60	379	102
-4	0.17	1.40	377	102
-5	0.18	1.50	375	103
-6	0.17	1.40	374	103
Averages:	0.21	1.71	373.17	97.83

	Acid Mist	SO2
Titrant Volume (ml)	2.40	2.40
Blank Volume (ml)	0.00	0.00
Titrant Normality	0.010989	0.010989
Solution Volume (ml)	550.00	300.00
Aliquot Volume (ml)	20.00	10.00
Pollutant Mass (mg)	35.57	25.34

Air Consulting and Engineering
Emission Measurments

Plant: Tarmac
Source: Kiln 2 - SO2 Acid Mist
Date: 05/31/95
Run: 2
Time From: 1259 To: 1408

Sample Time.(Min).....	60	Final Volume (ftE3)...	706.084
Pitot Cofficient.....	0.84	Initial Volume (ftE3)...	660.000
Bar. Pres.(in Hg).....	30.04	Net Volume (ftE3).....	46.084
Static Pres.(in H2O)....	0.00	Condensate (ml).....	302.3
Meter Correction (Y).	0.997	% Carbon Dioxide.....	13.0
Nozzle Diameter (in.)	0.373	% Oxygen.....	11.1
Stack Area (ftE2).....	53.456	F Factor.....	NA

Port-Point	Delta-P	Delta-H	Stack T	Meter T
1-1	0.24	1.90	372	99
-2	0.23	1.90	372	99
-3	0.22	1.80	373	99
-4	0.21	1.70	372	100
-5	0.20	1.60	371	100
-6	0.20	1.60	371	100
2-1	0.23	2.10	372	100
-2	0.19	1.70	371	100
-3	0.19	1.70	372	101
-4	0.20	1.80	372	101
-5	0.20	1.80	372	101
-6	0.19	1.70	372	101
3-1	0.28	2.50	371	102
-2	0.27	2.40	371	102
-3	0.24	2.20	372	102
-4	0.23	2.10	372	103
-5	0.19	1.70	369	104
-6	0.16	1.40	357	104
4-1	0.21	1.90	364	104
-2	0.23	2.10	367	104
-3	0.22	2.00	367	104
-4	0.22	2.00	366	105
-5	0.16	1.40	365	105
-6	0.16	1.40	365	106
Averages:	0.21	1.85	369.50	101.92

	Acid Mist	SO2
Titrant Volume (ml)	0.25	4.85
Blank Volume (ml)	0.00	0.00
Titrant Normality	0.010989	0.010989
Solution Volume (ml)	300.00	550.00
Aliquot Volume (ml)	10.00	20.00
Pollutant Mass (mg)	4.04	46.95

Air Consulting and Engineering
Emission Measurments

Plant: Tarmac
Source: Kiln 2 - SO2 Acid Mist
Date: 05/31/95
Run: 3
Time From: 1459 To: 1610

Sample Time.(Min).....	60	Final Volume (ftE3)...	754.158
Pitot Cofficient.....	0.84	Initial Volume (ftE3)...	706.200
Bar. Pres.(in Hg).....	30.04	Net Volume (ftE3).....	47.958
Static Pres.(in H2O)....	0.00	Condensate (ml).....	267.2
Meter Correction (Y).	0.997	% Carbon Dioxide.....	13.0
Nozzle Diameter (in.)	0.373	% Oxygen.....	11.2
Stack Area (ftE2).....	53.456	F Factor.....	NA

Port-Point	Delta-P	Delta-H	Stack T	Meter T
1-1	0.26	2.40	366	96
-2	0.25	2.30	366	96
-3	0.23	2.10	367	96
-4	0.22	2.00	366	96
-5	0.20	1.80	366	96
-6	0.17	1.50	366	96
2-1	0.29	2.60	365	98
-2	0.28	2.50	367	97
-3	0.26	2.40	367	96
-4	0.23	2.10	366	97
-5	0.23	2.10	367	98
-6	0.22	2.00	367	98
3-1	0.18	1.60	367	98
-2	0.23	2.10	367	98
-3	0.23	2.10	369	99
-4	0.19	1.70	368	99
-5	0.21	1.90	369	99
-6	0.20	1.80	370	99
4-1	0.24	2.20	365	99
-2	0.23	2.10	367	99
-3	0.21	1.90	367	99
-4	0.19	1.70	366	100
-5	0.18	1.60	367	100
-6	0.17	1.50	367	100
Averages:	0.22	2.00	366.88	97.88

	Acid Mist	SO2
Titrant Volume (ml)	0.10	1.20
Blank Volume (ml)	0.00	0.00
Titrant Normality	0.010989	0.010989
Solution Volume (ml)	300.00	550.00
Aliquot Volume (ml)	10.00	20.00
Pollutant Mass (mg)	1.62	11.62

APPENDIX B

FIELD DATA SHEETS

PLANT TARMAC FLORIDA, INC.
SOURCE CEMENT KILN 2
PLANT LOCATION MEDLEY, FLORIDA
TYPE OF SAMPLING TRAIN EPA-8
TYPE OF SAMPLES PM/SO2/ACID MIST
DATE 5/31/95 RUN NUMBER 1
TIME START 1055 TIME END 1206
SAMPLE TIME 24 / 2.5 (MIN/PT)= 60 TOTAL MIN
ASSUMED MOISTURE(%) 26 FDA .74
NOMOGRAPH Cf 1 = 0.1 PITOT Cf .84
Pb ("Hg) 30.04 Ps ("Hg) 30.04
WEATHER CLEAR TEMP (F) 90's
METER BOX NO. 6 H 1.809 Y .997
NOZZLE IDENTIFIICATION NO. S.F. #1
NOZZLE CAL .373 / .373 / .372 = .373
STACK DIMENSIONS 99"
STACK AREA (FT2) 53.456 EFFECTIVE (FT2) 53.456
STACK DIAMETERS:(UPSTREAM) 81' (DOWNSTREAM) 100'
PORT SIZE _____ NIPPLE LENGTH NA
STACK HEIGHT (FT) _____ UMBILICAL LENGTH 200'
AGENCY OBSERVER(S) MARC A. LENELLE/FRANK DELGADO (METRO DADE)
TEST COORDINATOR(S) SCOTT GRAAS (TARMAC)
V. E. OBSERVER _____

ACE AIR CONSULTING & ENGINEERING, INC.
2106 NW 67TH PLACE SUITE 4
GAINESVILLE, FLORIDA 32653
(904) 335-1889 - OFFICE / (904) 335-1891 - FAX

STACK CONFIGURATION

9 OK!

247 95 02B

TEST ID _____
PAGE 1 OF 2
MATERIAL PROCESSING RATE _____
GAS METER READINGS: FINAL 659.235 (FT3)
INITIAL 616.400 (FT3)
NET 43.435 (FT3)
FILTER NO. 6293 IMP. VOL.GAIN 242 (ml)
SILICA GEL NO. 10 WT. GAIN 9.8 (ml)
TOTAL CONDENSATE _____ (ml)

ORSAT

	1	2	3	4	AVG.
%CO2					13.0
%O2					10.7
%CO					
%N2					

Fo=_____ Fo RANGE=_____ ORSAT ANALYZER SN
LEAK CHECKS
PRE 0.00 CFM 10.0 ("Hg) POST 0.00 CFM 9 ("Hg)
METER BOX/PUMP ✓ GAS SYSTEM ✓ ORSAT BAG ✓
PITOT TUBE NO. 7 PRE-TEST LEAK CHECK OK
POST TEST (+) 3.9 / 0.00 "H20 (15 SECONDS)
POST TEST (-) 4.3 / 0.00 "H20 (15 SECONDS)
PYROMETER NUMBER ATK-3
BOX OPERATOR CH PROBE HOLDER JG

PORT & TRAVERSE PT. NUMBER	COMMENTS	CLOCK TIME	GAS METER READING (FT3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF.("H2O) CALC.	METER ORIFICE PRESS. DIFF.("H2O) ACTUAL	STACK GAS TEMP (F)	SAMPLE BOX TEMP (F)	LAST IMPINGER TEMP (F)	DRY GAS METER TEMP (F)	VACUUM ON SAMPLE TRAIN ("Hg)
1-1			618.21	.26	2.1	2.1	372	226	57	92	5
2		1100	620.14	.24	1.9	1.9	373	230	58	92	5
3			621.95	.22	1.8	1.8	373	228	41	92	5
4		1105	623.77	.21	1.7	1.7	373	229	43	93	5
5			625.55	.20	1.6	1.6	372	226	44	94	5
6		1110	627.20	.18	1.5	1.5	371	230	44	95	4

ACE AIR CONSULTING & ENGINEERING, INC.

TEST ID 1

PAGE 2 OF 2

PORT & TRAVERSE PT. NUMBER	COMMENTS	CLOCK TIME	GAS METER READING (FT3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF.('H2O)		STACK GAS TEMP (F)	SAMPLE BOX TEMP (F)	LAST IMPINGER TEMP (F)	DRY GAS METER TEMP (F)	VACUUM ON SAMPLE TRAIN ('Hg)
					CALC.	ACTUAL					
		(10.8 / 11.2)		(.466)							
2-1			629.15	.27	2.2	2.2	368	245	45	96	5
2		1118	630.90	.24	1.9	1.9	373	242	44	96	5
3			634.45	.24	1.9	1.9	373	237	46	96	5
4		1123	635.79	.21	1.7	1.7	372	237	47	97	5
5			636.65	.20	1.6	1.6	372	237	47	97	4
6		1128	638.40	.20	1.6	1.6	372	239	48	97	4
		(22.6 / 22.0)		(.475)						(97)	
3-1			640.40	.18	1.5	1.5	373	251	45	99	4
2		1137	642.41	.23	1.9	1.9	370	247	45	99	4
3			645.82	.22	1.8	1.8	374	241	45	100	4
4		1142	645.71	.20	1.6	1.6	373	240	45	100	4
5			647.51	.19	1.5	1.5	373	235	46	100	4
6		1147	649.22	.18	1.5	1.5	372	235	47	101	4
		(33.3 / 32.8)		(.447)						(100)	
4-1			651.13	.23	1.9	1.9	373	240	49	101	5
2		1156	652.90	.24	1.9	1.9	379	254	49	101	5
3			654.90	.20	1.6	1.6	379	250	50	102	5
4		1201	656.75	.17	1.4	1.4	377	260	50	102	5
5			658.41	.18	1.5	1.5	375	270	50	103	5
6		1206	659.835	.17	1.4	1.4	374	8270	51	103	5
		(42.99 /)		(.404)							

PLANT [redacted] FLORIDA, INC

SOURCE CEMENT KILN 2

PLANT LOCATION MEDLEY, FL.

TYPE OF SAMPLING TRAIN EPA-8

TYPE OF SAMPLES ACID MIST / SO2 /

DATE 5/31/95 RUN NUMBER 2

TIME START 1259 TIME END 1408

SAMPLE TIME 24 / 2.5 (MIN/PT)= 60 TOTAL MIN

ASSUMED MOISTURE(%) 26 FDA .74

NOMOGRAPH Cf 1 = 8.19.0 PITOT Cf .84

Pb ('Hg) 30.04 Ps ('Hg) 30.04

WEATHER CLEAR TEMP (F) 90's

METER BOX NO. 6 H 1.809 Y .997

NOZZLE IDENTIFIICATION NO. S.F. #1

NOZZLE CAL ____ / ____ / ____ = .373

STACK DIMENSIONS 99"

STACK AREA (FT2) 53.456 EFFECTIVE (FT2) 53.456

STACK DIAMETERS:(UPSTREAM) 8' (DOWNSTREAM) 10'

PORT SIZE ____ NIPPLE LENGTH N4

STACK HEIGHT (FT) ____ UMBILICAL LENGTH 200'

AGENCY OBSERVER(S) ____

TEST COORDINATOR(S) ____

V. E. OBSERVER ____

ACE AIR CONSULTING & ENGINEERING, INC.
2106 NW 67TH PLACE SUITE 4
GAINESVILLE, FLORIDA 32653
(904) 335-1889 - OFFICE / (904) 335-1891 - FAX

STACK CONFIGURATION

TARKZ-2

REMARKS: ____

TEST ID ____

PAGE 1 OF 2

MATERIAL PROCESSING RATE ____

GAS METER READINGS: FINAL 706.084 (FT3)

INITIAL 660.000 (FT3)

NET 46.084 (FT3)

FILTER NO. 6295 (6295) IMP. VOL.GAIN 256 (ml)

SILICA GEL NO. TO192 WT. GAIN 44.3 (ml)

TOTAL CONDENSATE ____ (ml)

ORSAT

	1	2	3	4	AVG.
%CO2					13.0
%O2					11.1
%CO					
%N2					

Fo= ____ Fo RANGE= ____ ORSAT ANALYZER SN

LEAK CHECKS

PRE 0.000 CFM 6.0 ('Hg) POST 0.00 CFM 9.5 ('Hg)

METER BOX/PUMP ✓ GAS SYSTEM ✓ ORSAT BAG —

PITOT TUBE NO. 73 PRE-TEST LEAK CHECK OK

POST TEST (+) 5.1 / 0.00 "H20 (15 SECONDS)

POST TEST (-) 6.7 / 0.00 "H20 (15 SECONDS)

PYROMETER NUMBER ATK-3

BOX OPERATOR CH PROBE HOLDER LG.

PORT & TRAVERSE PT. NUMBER	COMMENTS	CLOCK TIME	GAS METER READING (FT3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF.('H2O)		STACK GAS TEMP (F)	SAMPLE BOX TEMP (F)	LAST IMPINGER TEMP (F)	DRY GAS METER TEMP (F)	VACUUM ON SAMPLE TRAIN ('Hg)
					CALC.	ACTUAL					
1-1		1304	662.12	.24	1.9	1.9	372	233	51	99	4
2		1309	664.25	.23	1.9	1.9	372	233	47	99	4
3		1314	665.64	.22	1.8	1.8	373	230	51	99	4
4		1319	667.51	.21	1.7	1.7	372	231	51	100	4
5		1324	669.03	.20	1.6	1.6	371	233	56	100	4
6		1329	671.23	.20	1.6	1.6	371	233	56	100	4

ACE AIR CONSULTING & ENGINEERING, INC.

TEST ID 2

PAGE 2 OF 2

PORT & TRAVERSE PT. NUMBER	COMMENTS	CLOCK TIME	GAS METER READING (FT3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF.("H2O)		STACK GAS TEMP (F)	SAMPLE BOX TEMP (F)	LAST IMPINGER TEMP (F)	DRY GAS METER TEMP (F)	VACUUM ON SAMPLE TRAIN ("Hg)
					CALC.	ACTUAL					
		(11.72	/ 11.2)	(.465)							
2.1			673.03	.23	2.1	2.1	372	241	46	100	5
2		1322	674.19	.19	1.7	1.7	371	249	47	100	4
3			675.33	.19	1.7	1.7	372	251	49	101	4
4		1327	678.01	.20	1.8	1.8	372	251	50	101	5
5			680.71	.20	1.8	1.8	372	246	50	101	4
6		1332	682.56	.19	1.7	1.7	372	249	51	101	4
		(23.0	/ 22.6)	(.447)							
3.1			684.95	.28	2.5	2.5	371	250	51	102	5
2		1341	686.90	.27	2.4	2.4	371	251	52	102	6
3			689.22	.24	2.2	2.2	372	260	53	102	4
4		1346	691.55	.23	2.1	2.1	372	261	53	103	5
5			693.—	.19	1.7	1.7	369	255	53	104	4
6		1351	695.08	.16	1.4	1.4	357	256	53	104	4
		(34.9	/ 35.1)	(.476)							
4.1			696.76	.21	1.9	1.9	364	254	47	104	4
2		1358	699.00	.23	2.1	2.1	367	250	48	104	5
3			701.00	.22	2.0	2.0	367	248	49	104	5
4		1403	702.65	.22	2.0	2.0	366	245	50	105	5
5			704.71	.16	1.4	1.4	365	245	50	105	4
6		1408	706.084	.16	1.4	1.4	365	246	50	106	4
		(34.0	/)	(.446)							

PLANT [redacted] FLORIDA, INC.

SOURCE CEMENT KILN 2

PLANT LOCATION METTLER, FL.

TYPE OF SAMPLING TRAIN EPA-6

TYPE OF SAMPLES ACID MIST / SO_2

DATE 5/31/95 RUN NUMBER 3

TIME START 1459 TIME END 1610

SAMPLE TIME 24 / 2.5 (MIN/PT)= 60 TOTAL MIN

ASSUMED MOISTURE(%) 26 FDA .74

NOMOGRAPH Cf 1=9.0 PITOT Cf .84

Pb ("Hg) 30.04 Ps ("Hg) 30.04

WEATHER CLEAR TEMP (F) 90's

METER BOX NO. 6 H 1.809 Y .997

NOZZLE IDENTIFIICATION NO. S.F. -#1

NOZZLE CAL ____ / ____ / ____ = .373

STACK DIMENSIONS 99'

STACK AREA (FT2) 53.456 EFFECTIVE (FT2) 53.456

STACK DIAMETERS:(UPSTREAM) 81' (DOWNSTREAM) 100'

PORT SIZE ____ NIPPLE LENGTH N/A

STACK HEIGHT (FT) ____ UMBILICAL LENGTH 200'

AGENCY OBSERVER(S) ____

TEST COORDINATOR(S) ____

V. E. OBSERVER ____

ACE AIR CONSULTING & ENGINEERING, INC.
2106 NW 67TH PLACE SUITE 4
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STACK CONFIGURATION

REMARKS: ____

TEST NO. [redacted]3

PAGE 1 OF 2

MATERIAL PROCESSING RATE ____

GAS METER READINGS: FINAL 754.158 (FT3)

INITIAL 706.200 (FT3) 47.958

NET 44.958 (FT3)

6291

FILTER NO. 6291 CH IMP. VOL.GAIN 2582.45 (ml)

SILICA GEL NO. 34579 -CH WT. GAIN 2443.2 (ml)

-CH

TOTAL CONDENSATE ____ (ml)

ORSAT

	1	2	3	4	AVG.
%CO2					13.0
%O2					11.2
%CO					
%N2					

Fo=____ Fo RANGE=____ ORSAT ANALYZER SN

LEAK CHECKS

PRE 0.00 CFM 8.5 ("Hg) POST 0.00 CFM 10.0 ("Hg)

METER BOX/PUMP ✓ GAS SYSTEM ✓ ORSAT BAG ✓

PITOT TUBE NO. 73 PRE-TEST LEAK CHECK ✓

POST TEST (+) 4.2 / 0.0 "H20 (15 SECONDS)

POST TEST (-) 5.2 / 0.0 "H20 (15 SECONDS)

PYROMETER NUMBER AHL-3

BOX OPERATOR CH PROBE HOLDER JG

PORT & TRAVERSE PT. NUMBER	COMMENTS	CLOCK TIME	GAS METER READING (FT3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF.("H2O) CALC.	METER ORIFICE PRESS. DIFF.("H2O) ACTUAL	STACK GAS TEMP (F)	SAMPLE BOX TEMP (F)	LAST IMPINGER TEMP (F)	DRY GAS METER TEMP (F)	VACUUM ON SAMPLE TRAIN ("Hg)
1-1			708.61	.26	2.4	2.4	366	230	59	96	4
2		1504	710.08	.25	2.3	2.3	366	240	58	96	4
3			712.40	.23	2.1	2.1	367	230	58	96	4
4		1509	714.40	.22	2.0	2.0	366	230	58	96	4
5			716.41	.20	1.8	1.8	366	228	59	96	4
6		1514	718.27	.17	1.5	1.5	366	231	59	96	4

ACE AIR CONSULTING & ENGINEERING, INC.

TEST ID _____

PAGE 2 OF 2

PORT & TRAVERSE PT. NUMBER	COMMENTS	CLOCK TIME	GAS METER READING (FT3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF.("H2O)		STACK GAS TEMP (F)	SAMPLE BOX TEMP (F)	LAST IMPINGER TEMP (F)	DRY GAS METER TEMP (F)	VACUUM ON SAMPLE TRAIN ("Hg)
					CALC.	ACTUAL					
		(11.8 /	)	(.470)							
2-1			720.25	.29	2.6	2.6	365	229	51	98	5
2		1520	723.09	.28	2.5	2.5	367	250	51	97	5
3			725.00	.26	2.4	2.4	367	261	56	96	5
4		1525	727.05	.23	2.1	2.1	366	258	57	97	5
5			729.18	.23	2.1	2.1	367	257	57	98	4
6		1530	731.00	.22	2.0	2.0	367	254	57	98	4
		(24.4 /	24.8)	(.50)							
3-1			733.05	.18	1.6	1.6	367	257	56	98	4
2		1536	735.00	.23	2.1	2.1	367	259	57	98	4
3			~~736.81~~	.23	2.1	2.1	369	262	58	99	4
4		1541	736.81	.19	1.7	1.7	368	264	59	99	4
5			740.84	.21	1.9	1.9	369	265	59	99	4
6		1546	742.63	.20	1.8	1.8	370	264	59	99	4
		(35.8 /	36.4)	(.454)							
4-1			743.88	.24	2.2	2.2	365	260	57	99	4
2		1600	746.61	.23	2.1	2.1	367	261	59	99	4
3			748.70	.21	1.9	1.9	367	261	57	99	4
4		1605	750.51	.19	1.7	1.7	366	260	58	100	4
5			752.25	.18	1.6	1.6	367	262	59	100	4
6		1610	~~753~~ 158	.17	1.5	1.5	367	261	59	100	4
		(47.1 /	)	(~~.454~~)							
				.45							

APPENDIX C

LABORATORY ANALYSIS

DUPE PURGE

AIR CONSULTING AND ENGINEERING, INC.
SO_2 LAB DATA

Plant Name TARMAC Unit KILN 2 - ACID MIST

Analyzed By MS Date Analyzed 6.9.95

Samp.No.	V.T.	V.T.B.	N.	V.Soln.	V.A.
1	2.4	0.0	0.010989	550	20
1	2.4				
2	4.8, 2				
2	4.9, 3				
3	1.9, 1				
3	1.9, 1				
Blank	0.0				
↓	0.0	↓	↓	↓	↓

121 - 81 mL

120 - 80 mL

120 - 80 mL

V.T. = Titrant Volume (ml)
V.T.B. = Titrant Volume For Blank (ml)
N. = Titrant Normality
V.Soln. = Sample Volume (ml)
V.A. = Aliquot Volume (ml)

$$C_{SO2} = K \frac{(Vt - Vtb)(N)\left(\frac{Vsol}{Va}\right)}{Vstd}$$

Where: C_{SO2} = Concentration SO2 in lbs/SCF

$K = 7.061 \times 10^{-5}$ lbs/MEQ

AIR CONSULTING AND ENGINEERING, INC.
SO_2 LAB DATA

Plant Name TARMAC Unit KILN 2 - Probe Wash / Silt

Analyzed By MS Date Analyzed 6.9.95

Samp.No.	V.T.	V.T.B.	N.	V.Soln.	V.A.	
1	0.0		0.010989	200mL	20	
1	0.0					
2	0.0					-40mL
2	0.0					
3	0.0					-40mL
3	0.0		↓	↓	↓	

V.T. = Titrant Volume (ml)
V.T.B. = Titrant Volume For Blank (ml)
N. = Titrant Normality
V.Soln. = Sample Volume (ml)
V.A. = Aliquot Volume (ml)

$$C_{SO2} = K \frac{(Vt - Vtb)(N)\left(\frac{Vsol}{Va}\right)}{Vstd}$$

Where C_{SO2} = Concentration SO2 in lbs/SCF

$K = 7.061 \times 10^{-5}$ lbs/MEQ

AIR CONSULTING AND ENGINEERING, INC.

AIR CONSULTING AND ENGINEERING, INC.
SO_2 LAB DATA

Plant Name TARMAC Unit KILN 2 - SO_2

Analyzed By MS Date Analyzed 6-9-95

Samp.No.	V.T.	V.T.B.	N.	V.Soln.	V.A.
1	2.4	~~3~~ 0.0	0.01089	~~3~~ 00	10
1	2.4	↓	↓	↓	↓
2	~~.2~~ 4.8				
2	.3 4.9				
3	~~.1~~ 1.2				
3	~~.1~~ 1.2		↓	↓	
Blank	~~2~~ 0.0				
↓	~~3~~ 00	↓	↓	↓	↓

$1 - 1 ml -

80 - 40 ml -

20 - 10 mL -

V.T. = Titrant Volume (ml)
V.T.B. = Titrant Volume For Blank (ml)
N. = Titrant Normality
V.Soln. = Sample Volume (ml)
V.A. = Aliquot Volume (ml)

$$C_{SO2} = K \frac{(Vt - Vtb)(N)\left(\frac{Vsol}{Va}\right)}{Vstd}$$

Where: C_{SO2} = Concentration SO2 in lbs/SCF

$K = 7.061 \times 10^{-5}$ lbs/MEQ

APPENDIX D

STRIP CHART COPIES

```
******** ON     ********
******** RUN    ********
   07:11:41  05/31/95

******** STOP   ********
   07:12:12  05/31/95
Run statistics   N=00006
    Min     Avg     Max
1 -014.43-010.64-009.18
2  006.29 006.41 006.70

   07:12:13  05/31/95
RUN  starts logging
STOP stops logging
PROG starts programming

******** OFF    ********

******** ON     ********
******** RUN    ********
   07:16:22  05/31/95

******** STOP   ********
   07:16:35  05/31/95
Run statistics   N=00002
    Min     Avg     Max
1 -007.63-007.51-007.40
2  099.93 099.94 099.94

   07:16:37  05/31/95
RUN  starts logging
STOP stops logging
PROG starts programming

******** RUN    ********
   07:17:25  05/31/95

******** STOP   ********
   07:17:37  05/31/95
Run statistics   N=00002
    Min     Avg     Max
1 -005.30-003.69-002.08
2  099.93 099.94 099.94

   07:17:38  05/31/95
RUN  starts logging
STOP stops logging
PROG starts programming
******** PROG   ********
 Program volts  mX+b
 m polarity = +
 m = +1.00000
 b polarity = +
b Val? (000000-999999)
 b = +000000
Units?(00-64,99 to list)
 Units = V
Decimal Position? (0-5)
 Decimal position = 1
 2 V V   1.00000 000000
******** EXIT   ********
******** RUN    ********
   07:18:06  05/31/95

**** NEW BATTE

**** NEW  BATTERY  ****
*****  clock init  *****
*****  cache init  *****
******** ON     ********
   00:00:02  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming

**** NEW  BATTERY  ****
*****  clock init  *****
*****  cache init  *****
******** ON     ********
   00:00:02  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming

******** OFF    ********

******** ON     ********
******** RUN    ********
   00:01:46  01/01/80

******** STOP   ********
   00:01:54  01/01/80
Run statistics   N=00001
    Min     Avg     Max
1 -009.60-009.60-009.60
2  0004.2 0004.2 0004.2

   00:01:56  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming

******** RUN    ********
   00:02:27  01/01/80

******** STOP   ********
   00:02:45  01/01/80
Run statistics   N=00003
    Min     Avg     Max
1 -007.18-005.67-004.45
2  0999.3 0999.3 0999.3

   00:02:47  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming

******** OFF    ********

******** ON     ********
******** RUN    ********
   00:03:43  01/01/80

******** STOP   ********
   00:03:59  01/01/80
Run statistics   N=00003
    Min     Avg     Max
1 -007.90-005.93-004.85
2  0004.2 0335.8 0999.1

   00:04:01  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming

******** RUN    ********
   00:04:14  01/01/80

******** STOP   ********
   00:04:23  01/01/80
Run statistics   N=00002
    Min     Avg     Max
1 -008.23-007.15-006.08
2  0004.1 0004.1 0004.2

   00:04:24  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming

******** RUN    ********
   00:05:13  01/01/80

******** STOP   ********
   00:05:25  01/01/80
Run statistics   N=00002
    Min     Avg     Max
1  018.50 018.50 018.50
2  0005.0 0005.0 0005.0

   00:05:27  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming

******** OFF    ********

******** ON     ********
   00:09:43  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming
******** PROG   ********
```

CONTINUOUS MONITORING DATA LOGGER PRINTOUTS

```
 Program volts  mX+b
******** EXIT  ********
******** RUN   ********
   00:09:46  01/01/80

********  STOP  ********
   00:10:07  01/01/80
Run statistics   N=00003
    Min     Avg     Max
1  018.48 018.48 018.50
2  0005.9 0006.0 0006.0
3 -2.0627-2.0626-2.0626

   00:10:09  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming

********  PROG  ********
 Program volts  mX+b
 m polarity = +
 m = +1.00000
 b polarity = +
 b = +000000
Units?(00-64,99 to list)
 Units = V
Decimal Position? (0-5)
 Decimal position = 4
 3 V V   1.00000 000000
   00:10:37  01/01/80
 Interval=00:00:05  60Hz
 Full in 0000:03:14:25
 TadJust=+00.0F
 1 V V  -2.50000 000000
 2 V V   1.00000 000000
 3 V V   1.00000 000000
EXIT leaves program mode
OK   skips to next field

Select channel? (1-6)
********  EXIT  ********
   00:10:39  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming
********  RUN   ********
   00:10:44  01/01/80

********  STOP  ********
   00:11:04  01/01/80
Run statistics   N=00002
    Min     Avg     Max
1  018.48 018.48 018.48
2  0006.0 0006.0 0006.0
3 -0.0021-0.0019-0.0017

   00:11:05  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming
********  PROG  ********
 Program volts  mX+b
m Positive? (Yes/No)
 m polarity = -
m Val? (0.00000-9.99999)
 m = -5.00000
b Positive? (Yes/No)
 b polarity = +
b Val? (000000-999999)
 b = +000000
Units?(00-64,99 to list)
 Units = V
Decimal Position? (0-5)
 Decimal position = 2
 3 V V  -5.00000 000000
********  EXIT  ********
********  RUN   ********
   00:11:48  01/01/80

********  STOP  ********
   00:12:14  01/01/80
Run statistics   N=00005
    Min     Avg     Max
1  004.55 020.02 041.23
2  0005.9 0005.9 0005.9
3  ****** ****** ******

   00:12:15  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming

********  PROG  ********
 Program volts  mX+b
 m polarity = -
 m = -5.00000
 b polarity = +
 b = +000000
 Units = V
Decimal Position? (0-5)
 Decimal position = 0
 3 V V  -5.00000 000000
********  EXIT  ********
********  RUN   ********
   00:12:42  01/01/80

********  STOP  ********
   00:12:55  01/01/80
Run statistics   N=00002
    Min     Avg     Max
1  018.13 018.31 018.50
2  0005.9 0005.9 0005.9
3  ****** ****** ******

   00:12:56  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming

********  OFF   ********

********  ON    ********
********  RUN   ********
   00:13:59  01/01/80

********  STOP  ********
   00:14:15  01/01/80
Run statistics   N=00003
    Min     Avg     Max
1  018.48 018.48 018.50
2  0005.8 0005.9 0005.9
3  ****** ****** ******

   00:14:16  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming

********  PROG  ********
CH3 Type(J,K,T,E,V,SKIP)
 Program volts  mX+b
m Positive? (Yes/No)
 m polarity = -
m Val? (0.00000-9.99999)
 m = -0.50000
********  EXIT  ********
********  RUN   ********
   00:15:15  01/01/80

********  STOP  ********
   00:15:27  01/01/80
Run statistics   N=00002
    Min     Avg     Max
1  018.48 018.49 018.50
2  0005.9 0005.9 0005.9
3  10314. 10314. 10314.

   00:15:28  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming

********  PROG  ********
 Program volts  mX+b
 m polarity = -
 m = -0.50000
 b polarity = +
b Val? (000000-999999)
 b = +000000
Units?(00-64,99 to list)
 Units = V
Decimal Position? (0-5)
 Decimal position = 1
 3 V V  -0.50000 000000
********  EXIT  ********
```

CONTINUOUS MONITORING DATA LOGGER PRINTOUTS

```
******** RUN    ********
   00:16:00  01/01/80

******** STOP   ********
   00:16:16  01/01/80
Run statistics   N=00003
    Min     Avg     Max
1  018.50 018.50 018.50
2  0004.9 0005.6 0005.9
3  1031.4 1031.4 1031.4

   00:16:17  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming

******** OFF    ********

******** ON     ********
******** PROG   ********
CH4 Type(J,K,T,E,V,SKIP)
 Program volts  mX+b
m Positive? (Yes/No)
******** EXIT   ********
******** RUN    ********
   00:21:39  01/01/80

******** STOP   ********
   00:22:11  01/01/80
Run statistics   N=00006
    Min     Avg     Max
1 -010.78-006.09-003.88
2  0004.8 0004.9 0004.9
3 -0000.2-0000.1 0000.0
4  ****** ******-0.2165

   00:22:12  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming

******** RUN    ********
   00:22:55  01/01/80

******** STOP   ********
   00:23:05  01/01/80
Run statistics   N=00002
    Min     Avg     Max
1  018.53 018.53 018.53
2  0004.9 0004.9 0004.9
3 -0000.1-0000.1 0000.0
4 -0.2271-0.2260-0.2249

   00:23:07  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming
******** PROG   ********
 Program volts  mX+b
m Positive? (Yes/No)
 m polarity = -
m Val? (0.00000-9.99999)
 m = -5.00000
b Positive? (Yes/No)
 b polarity = +
 b = +000000
Units?(00-64,99 to list)
 Units = V
Decimal Position? (0-5)
 Decimal position = 2
 4 V V  -5.00000 000000
******** EXIT   ********
******** RUN    ********
   00:23:46  01/01/80

******** STOP   ********
   00:24:08  01/01/80
Run statistics   N=00004
    Min     Avg     Max
1  018.53 018.53 018.55
2  0004.0 0004.0 0004.0
3 -0000.3 0000.0 0000.2
4  106.40 106.64 107.00

   00:24:10  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming

******** OFF    ********

******** ON     ********
******** RUN    ********
   01:22:19  01/01/80

******** STOP   ********
   01:22:37  01/01/80
Run statistics   N=00003
    Min     Avg     Max
1  001.78 001.78 001.80
2 -0000.3 0000.4 0000.8
3 -0000.2 0000.0 0000.3
4  060.65 060.98 061.30

   01:22:38  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming
******** STOP   ********
   01:22:48  01/01/80
Run statistics   N=00003
    Min     Avg     Max
1  001.78 001.78 001.80
2 -0000.3 0000.4 0000.8
3 -0000.2 0000.0 0000.3
4  060.65 060.98 061.30

   01:22:49  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming

******** OFF    ********

******** ON     ********
******** RUN    ********
   01:26:22  01/01/80
******** STOP   ********
   01:26:26  01/01/80
Run statistics   N=00003
    Min     Avg     Max
1  001.78 001.78 001.80
2 -0000.3 0000.4 0000.8
3 -0000.2 0000.0 0000.3
4  060.65 060.98 061.30

   01:26:28  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming

******** OFF    ********

******** ON     ********
******** RUN    ********
   01:43:26  01/01/80

******** STOP   ********
   01:43:41  01/01/80
Run statistics   N=00003
    Min     Avg     Max
1 -004.60-001.90-000.03
2  0002.7 0003.1 0003.8
3  0002.7 0002.7 0002.7
4  089.65 089.85 090.15

   01:43:42  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming

******** PROG   ********
 Program volts  mX+b
 m polarity = -
 m = -5.00000
 b polarity = +
b Val? (000000-999999)
 b = +000000
 Units = V
Decimal Position? (0-5)
 Decimal position = 3
 4 V V  -5.00000 000000
******** EXIT   ********
******** RUN    ********
   01:44:20  01/01/80

******** STOP   ********
   01:44:33  01/01/80
```

CONTINUOUS MONITORING DATA LOGGER PRINTOUTS

ACEL AIR CONSULTING & ENGINEERING, Inc.

```
Run statistics   N=00002
    Min     Avg     Max
1 -003.65 007.79 019.23
2  0002.8 0003.4 0003.9
3  0002.6 0002.6 0002.6
4  08.945 08.952 08.960

   01:44:35  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming

********  OFF   ********

********  ON    ********
********  RUN   ********
   01:55:26  01/01/80

********  STOP  ********
   01:55:45  01/01/80
Run statistics   N=00003
    Min     Avg     Max
1  000.13 000.16 000.20
2 -0000.2-0000.2-0000.2
3  0359.5 0360.3 0360.8
4  00.730 00.755 00.780

   01:55:47  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming

********  RUN   ********
   01:56:26  01/01/80

********  STOP  ********
   01:56:38  01/01/80
Run statistics   N=00002
    Min     Avg     Max
1  000.05 000.05 000.05
2 -0001.2-0001.2-0001.2
3  0513.2 0513.3 0513.4
4  00.660 00.662 00.665

   01:56:39  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming

********  OFF   ********

********  ON    ********
********  RUN   ********
   01:57:36  01/01/80

********  STOP  ********
   01:58:11  01/01/80
Run statistics   N=00007
    Min     Avg     Max
1  000.05 000.05 000.08
2 -0001.3-0000.5-0000.2
3  0472.8 0473.7 0474.6
4 -00.445-00.372-00.320

   01:58:13  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming

********  RUN   ********
   01:58:49  01/01/80

********  STOP  ********
   01:59:05  01/01/80
Run statistics   N=00003
    Min     Avg     Max
1  000.05 000.05 000.05
2 -0000.2-0000.2-0000.1
3  0473.6 0474.0 0474.2
4 -00.005 00.012 00.030

   01:59:06  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming

********  OFF   ********

********  ON    ********
********  RUN   ********
   02:01:17  01/01/80

********  STOP  ********
   02:01:49  01/01/80
Run statistics   N=00006
    Min     Avg     Max
1  000.05 000.05 000.05
2  0062.4 0062.5 0062.5
3  0004.4 0004.4 0004.5
4 -00.775-00.737-00.710

   02:01:51  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming

********  OFF   ********

********  ON    ********
********  RUN   ********
   02:05:13  01/01/80

********  STOP  ********
   02:05:36  01/01/80
Run statistics   N=00004
    Min     Avg     Max
1  019.78 019.81 019.85
2 -0000.2-0000.1-0000.1
3  0004.2 0004.2 0004.3
4  82.470 82.502 82.580

   02:05:38  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming

********  OFF   ********

********  ON    ********
********  RUN   ********
   02:08:30  01/01/80

********  STOP  ********
   02:08:48  01/01/80
Run statistics   N=00003
    Min     Avg     Max
1  000.10 000.10 000.10
2 -0000.2-0000.2-0000.2
3  0731.7 0732.9 0733.5
4 -00.390-00.355-00.315

   02:08:49  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming

********  OFF   ********

********  ON    ********
********  RUN   ********
   02:10:52  01/01/80

********  STOP  ********
   02:11:18  01/01/80
Run statistics   N=00005
    Min     Avg     Max
1  020.90 020.94 020.98
2 -0000.2-0000.1-0000.1
3  0004.7 0004.8 0004.9
4  18.905 18.918 18.955

   02:11:19  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming

********  OFF   ********

********  ON    ********
********  RUN   ********
   02:13:23  01/01/80

********  STOP  ********
   02:13:51  01/01/80
Run statistics   N=00005
    Min     Avg     Max
```

CONTINUOUS MONITORING DATA LOGGER PRINTOUTS

```
1  020.65 020.73 020.83
2 -0000.2-0000.1-0000.1
3  0004.4 0004.4 0004.5
4  01.015 01.021 01.025

   02:13:52  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming

********  OFF   ********

********  ON    ********
********  RUN   ********
   02:16:45  01/01/80

********  STOP  ********
   02:17:06  01/01/80
Run statistics   N=00004
    Min    Avg    Max
1  020.83 020.83 020.85
2 -0000.2-0000.1-0000.1
3  0004.4 0004.4 0004.4
4  01.170 01.176 01.185

   02:17:07  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming

********  STOP  ********
   02:17:53  01/01/80
Run statistics   N=00004
    Min    Avg    Max
1  020.83 020.83 020.85
2 -0000.2-0000.1-0000.1
3  0004.4 0004.4 0004.4
4  01.170 01.176 01.185

   02:17:55  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming
********  RUN   ********
   02:18:09  01/01/80

********  STOP  ********
   02:18:24  01/01/80
Run statistics   N=00003
    Min    Avg    Max
1  021.03 021.03 021.03
2 -0000.2-0000.2-0000.1
3  0004.3 0004.3 0004.4
4  01.170 01.180 01.190

   02:18:26  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming

********  OFF   ********

********  ON    ********
********  RUN   ********
   02:21:37  01/01/80

********  STOP  ********
   02:22:05  01/01/80
Run statistics   N=00005
    Min    Avg    Max
1  000.08 000.08 000.10
2  0032.8 0032.9 0032.9
3  0004.3 0004.3 0004.3
4 -00.650-00.599-00.550

   02:22:07  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming

********  OFF   ********

********  ON    ********
********  RUN   ********
   02:23:29  01/01/80

********  STOP  ********
   02:23:56  01/01/80
Run statistics   N=00005
    Min    Avg    Max
1  005.58 005.57 005.58
2  0001.9 0004.8 0010.7
3  0004.2 0004.2 0004.3
4 -01.190-01.163-01.125

   02:23:57  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming

********  OFF   ********

********  ON    ********
********  RUN   ********
   02:26:11  01/01/80

********  STOP  ********
   02:26:27  01/01/80
Run statistics   N=00003
    Min    Avg    Max
1  000.05 000.06 000.08
2 -0001.2-0001.2-0001.2
3  0742.3 0742.6 0742.9
4 -01.340-01.327-01.310

   02:26:28  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming

********  RUN   ********
   02:27:08  01/01/80

********  STOP  ********
   02:27:34  01/01/80
Run statistics   N=00005
    Min    Avg    Max
1  000.05 000.05 000.05
2 -0001.2-0000.5-0000.1
3  0736.0 0736.6 0738.0
4 -01.400-01.387-01.380

   02:27:36  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming

********  OFF   ********

********  ON    ********
********  RUN   ********
   02:29:39  01/01/80

********  STOP  ********
   02:29:57  01/01/80
Run statistics   N=00003
    Min    Avg    Max
1  021.05 021.06 021.08
2 -0000.2-0000.1-0000.1
3  0005.4 0005.4 0005.7
4  00.300 00.313 00.330

   02:29:59  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming

********  OFF   ********

********  ON    ********
********  RUN   ********
   02:30:55  01/01/80

********  STOP  ********
   02:31:16  01/01/80
Run statistics   N=00004
    Min    Avg    Max
1  010.53 010.55 010.58
2  0059.7 0065.7 0071.6
3  ****** ****** 1085.6
4  15.800 15.851 15.955

   02:31:18  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming
```

CONTINUOUS MONITORING DATA LOGGER PRINTOUTS

ACE AIR CONSULTING & ENGINEERING, Inc.

```
******** RUN   ********
   02:31:39  01/01/80

******** STOP  ********
   02:31:48  01/01/80
Run statistics   N=00002
    Min     Avg     Max
1  010.45 010.49 010.53
2  0080.8 0080.8 0080.8
3  0430.8 0431.0 0431.2
4  15.245 15.278 15.310

   02:31:50  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming

******** OFF   ********

******** ON    ********
******** RUN   ********
   02:33:23  01/01/80

******** STOP  ********
   02:33:44  01/01/80
Run statistics   N=00004
    Min     Avg     Max
1  000.13 000.18 000.28
2  0004.7 0008.7 0012.7
3  0301.2 0301.8 0302.3
4  01.345 01.544 01.770

   02:33:45  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming

******** PROG  ********
CH3 Type(J,K,T,E,U,SKIP)
 Program volts  mX+b
m Positive? (Yes/No)
 m polarity = -
m Val? (0.00000-9.99999)
 m = -1.25000
******** EXIT  ********
******** RUN   ********
   02:35:01  01/01/80

******** STOP  ********
   02:35:20  01/01/80
Run statistics   N=00004
    Min     Avg     Max
1  000.05 000.05 000.05
2 -0000.1-0000.1-0000.1
3  0755.0 0755.8 0756.5
4  00.320 00.365 00.410

   02:35:21  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming

******** RUN   ********
   02:35:50  01/01/80

******** STOP  ********
   02:36:14  01/01/80
Run statistics   N=00005
    Min     Avg     Max
1  000.05 000.05 000.05
2 -0000.1-0000.1-0000.1
3  0730.3 0730.8 0731.5
4  00.020 00.068 00.125

   02:36:15  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming

******** OFF   ********

******** ON    ********
******** RUN   ********
   02:38:32  01/01/80

******** STOP  ********
   02:38:49  01/01/80
Run statistics   N=00003
    Min     Avg     Max
1  000.10 000.15 000.23
2 -0000.2-0000.1-0000.1
3  0476.3 0476.6 0477.4
4 -00.035-00.028-00.015

   02:38:50  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming

******** OFF   ********

******** ON    ********
******** RUN   ********
   02:40:32  01/01/80

******** STOP  ********
   02:40:50  01/01/80
Run statistics   N=00003
    Min     Avg     Max
1  005.43 005.43 005.45
2 -0000.2-0000.1-0000.1
3  0005.8 0005.9 0006.0
4 -00.430-00.428-00.425

   02:40:52  01/01/80
RUN  starts logging
STOP stops logging
PROG starts programming

******** PROG  ********
 Log Interval=00:00:05
 Full in 0000:02:25:50
Stop on full cache?(Y/N)
 Overwrite full cache
Date? [MMDDYY]
 Date=05/31/95
Time? [HHMMSS]
 Time=10:12:45
Celsius units? (Yes,No)
******** EXIT  ********
   10:12:49  05/31/95
RUN  starts logging
STOP stops logging
PROG starts programming
******** RUN   ********
   10:12:51  05/31/95

******** STOP  ********
   10:13:09  05/31/95
Run statistics   N=00003
    Min     Avg     Max
1  021.08 021.09 021.10
2 -0000.1-0000.1-0000.1
3  0005.1 0005.2 0005.3
4  00.880 00.895 00.915

   10:13:11  05/31/95
RUN  starts logging
STOP stops logging
PROG starts programming

******** RUN   ********
   10:13:28  05/31/95

******** STOP  ********
   10:13:39  05/31/95
Run statistics   N=00002
    Min     Avg     Max
1  020.98 020.99 021.00
2 -0000.1-0000.1-0000.1
3  0005.1 0005.1 0005.1
4  00.905 00.912 00.920

   10:13:41  05/31/95
RUN  starts logging
STOP stops logging
PROG starts programming
******** RUN   ********
   10:13:52  05/31/95

******** STOP  ********
   10:14:00  05/31/95
Run statistics   N=00001
    Min     Avg     Max
```

CONTINUOUS MONITORING DATA LOGGER PRINTOUTS

```
1  020.93 020.93 020.93
2 -0000.1-0000.1-0000.1
3  0005.1 0005.1 0005.1
4  00.900 00.900 00.900

   10:14:01  05/31/95
RUN  starts logging
STOP stops logging
PROG starts programming

********  STOP  ********
   10:14:19  05/31/95
Run statistics   N=00001
    Min    Avg    Max
1  020.93 020.93 020.93
2 -0000.1-0000.1-0000.1
3  0005.1 0005.1 0005.1
4  00.900 00.900 00.900

   10:14:20  05/31/95
RUN  starts logging
STOP stops logging
PROG starts programming

********  OFF   ********

********  ON    ********
********  RUN   ********
   10:15:23  05/31/95

********  STOP  ********
   10:47:45  05/31/95
Run statistics   N=00388
    Min    Avg    Max
1  010.25 010.66 011.10
2  0076.5 0080.6 0083.7
3  0874.9 1012.1 1164.8
4  13.835 14.822 16.150

   10:47:46  05/31/95
RUN  starts logging
STOP stops logging
PROG starts programming

********  OFF   ********

********  ON    ********
   10:50:29  05/31/95
RUN  starts logging
STOP stops logging
PROG starts programming
********  RUN   ********
   10:50:30  05/31/95

********  STOP  ********
   10:51:18  05/31/95
Run statistics   N=00009
    Min    Avg    Max
1  005.60 009.50 018.75
2 -0000.3-0000.2-0000.2
3  0009.1 0009.7 0012.6
4  00.925 01.298 02.025

   10:51:19  05/31/95
RUN  starts logging
STOP stops logging
PROG starts programming

********  OFF   ********

********  ON    ********
   10:54:01  05/31/95
RUN  starts logging
STOP stops logging
PROG starts programming
********  RUN   ********
   10:54:03  05/31/95

********  STOP  ********
   10:54:16  05/31/95
Run statistics   N=00002
    Min    Avg    Max
1  000.05 000.06 000.08
2 -0000.3-0000.3-0000.2
3  0480.6 0481.0 0481.4
4  00.595 00.607 00.620

   10:54:17  05/31/95
RUN  starts logging
STOP stops logging
PROG starts programming

********  OFF   ********

********  ON    ********
********  RUN   ********
   10:56:05  05/31/95

********  STOP  ********
   12:06:54  05/31/95
Run statistics   N=00849
    Min    Avg    Max
1  010.10 010.71 011.13
2  0074.6 0080.2 0083.7
3  0813.3 0937.0 1077.4
4  12.965 14.050 16.040

   12:06:55  05/31/95
RUN  starts logging
STOP stops logging
PROG starts programming

********  OFF   ********

********  ON    ********
********  RUN   ********
   12:14:50  05/31/95

********  STOP  ********
   12:15:00  05/31/95
Run statistics   N=00002
    Min    Avg    Max
1  021.03 021.04 021.05
2 -0001.4-0001.3-0001.3
3  0008.8 0008.8 0008.9
4  01.350 01.358 01.365

   12:15:01  05/31/95
RUN  starts logging
STOP stops logging
PROG starts programming

********  OFF   ********

********  ON    ********
********  RUN   ********
   12:18:13  05/31/95

********  STOP  ********
   12:18:34  05/31/95
Run statistics   N=00004
    Min    Avg    Max
1  000.08 000.08 000.10
2  0060.4 0060.5 0060.5
3  0008.8 0008.8 0008.9
4  00.025 00.095 00.145

   12:18:35  05/31/95
RUN  starts logging
STOP stops logging
PROG starts programming

********  OFF   ********

********  ON    ********
********  RUN   ********
   12:20:23  05/31/95

********  STOP  ********
   12:20:44  05/31/95
Run statistics   N=00004
    Min    Avg    Max
1  000.05 000.06 000.08
2 -0001.3-0000.5-0000.2
3  0472.6 0473.0 0473.4
4 -00.500-00.469-00.440

   12:20:45  05/31/95
RUN  starts logging
STOP stops logging
PROG starts programming

********  OFF   ********
```

CONTINUOUS MONITORING DATA LOGGER PRINTOUTS

```
******** ON    ********
******** RUN   ********
   12:22:35  05/31/95

******** STOP  ********
   12:22:51  05/31/95
Run statistics   N=00003
    Min    Avg    Max
1  021.43 021.44 021.45
2 -0001.3-0001.3-0001.3
3  0008.9 0009.0 0009.1
4  17.555 17.563 17.575

   12:22:52  05/31/95
RUN  starts logging
STOP stops logging
PROG starts programming

******** RUN   ********
   12:23:25  05/31/95

******** STOP  ********
   12:23:55  05/31/95
Run statistics   N=00006
    Min    Avg    Max
1  021.28 021.32 021.35
2 -0001.3-0001.3-0001.3
3  0008.4 0008.4 0008.5
4  19.340 19.390 19.430

   12:23:56  05/31/95
RUN  starts logging
STOP stops logging
PROG starts programming

******** RUN   ********
   12:24:20  05/31/95

******** STOP  ********
   12:24:31  05/31/95
Run statistics   N=00002
    Min    Avg    Max
1  021.25 021.25 021.25
2 -0001.3-0001.3-0001.3
3  0008.3 0008.3 0008.4
4  20.020 20.033 20.045

   12:24:33  05/31/95
RUN  starts logging
STOP stops logging
PROG starts programming

******** RUN   ********
   12:24:54  05/31/95

******** STOP  ********
   12:25:05  05/31/95
Run statistics   N=00002
    Min    Avg    Max
1  021.20 021.20 021.20
2 -0001.3-0001.3-0001.3
3  0008.1 0008.1 0008.1
4  20.645 20.645 20.645

   12:25:07  05/31/95
RUN  starts logging
STOP stops logging
PROG starts programming

******** OFF   ********

******** ON    ********
******** RUN   ********
   12:26:17  05/31/95

******** STOP  ********
   12:26:43  05/31/95
Run statistics   N=00005
    Min    Avg    Max
1  021.05 021.06 021.08
2 -0001.3-0001.3-0001.3
3  0008.0 0008.0 0008.1
4  01.055 01.226 01.380

   12:26:44  05/31/95
RUN  starts logging
STOP stops logging
PROG starts programming

******** OFF   ********

******** ON    ********
******** RUN   ********
   12:59:09  05/31/95

******** STOP  ********
   14:08:45  05/31/95
Run statistics   N=00835
    Min    Avg    Max
1  010.95 011.34 011.80
2  0074.6 0078.2 0081.8
3  0798.9 0908.1 1028.1
4  13.435 15.224 16.900

   14:08:46  05/31/95
RUN  starts logging
STOP stops logging
PROG starts programming

******** OFF   ********

******** ON    ********
******** RUN   ********
   14:10:04  05/31/95

******** STOP  ********
   14:10:19  05/31/95
Run statistics   N=00003
    Min    Avg    Max
1  021.35 021.36 021.38
2  0005.8 0009.0 0015.5
3  0021.8 0022.3 0022.8
4  03.985 04.170 04.345

   14:10:20  05/31/95
RUN  starts logging
STOP stops logging
PROG starts programming
******** STOP  ********
   14:10:29  05/31/95
Run statistics   N=00003
    Min    Avg    Max
1  021.35 021.36 021.38
2  0005.8 0009.0 0015.5
3  0021.8 0022.3 0022.8
4  03.985 04.170 04.345

   14:10:31  05/31/95
RUN  starts logging
STOP stops logging
PROG starts programming

******** STOP  ********
   14:11:18  05/31/95
Run statistics   N=00003
    Min    Avg    Max
1  021.35 021.36 021.38
2  0005.8 0009.0 0015.5
3  0021.8 0022.3 0022.8
4  03.985 04.170 04.345

   14:11:20  05/31/95
RUN  starts logging
STOP stops logging
PROG starts programming

******** OFF   ********

******** ON    ********
******** RUN   ********
   14:13:19  05/31/95

******** STOP  ********
   14:13:46  05/31/95
Run statistics   N=00005
    Min    Avg    Max
1  000.10 000.11 000.13
2 -0001.4-0001.3-0001.3
3  0496.5 0496.9 0497.3
4  00.065 00.113 00.160

   14:13:48  05/31/95
RUN  starts logging
STOP stops logging
```

CONTINUOUS MONITORING DATA LOGGER PRINTOUTS

```
PROG starts programming

********  OFF   ********

********  ON    ********
********  RUN   ********
   14:15:29  05/31/95

********  STOP  ********
   14:15:50  05/31/95
Run statistics   N=00004
    Min    Avg    Max
1  021.60 021.64 021.68
2 -0001.4-0001.3-0001.3
3  0012.0 0012.2 0012.4
4  01.075 01.110 01.135

   14:15:51  05/31/95
RUN  starts logging
STOP stops logging
PROG starts programming

********  OFF   ********

********  ON    ********
********  RUN   ********
   14:49:54  05/31/95

********  STOP  ********
   14:50:11  05/31/95
Run statistics   N=00003
    Min    Avg    Max
1  020.95 020.97 020.98
2  0000.7 0000.8 0000.8
3  0013.8 0013.9 0014.1
4  01.405 01.423 01.435

   14:50:12  05/31/95
RUN  starts logging
STOP stops logging
PROG starts programming

********  RUN   ********
   14:50:27  05/31/95

********  STOP  ********
   14:50:43  05/31/95
Run statistics   N=00003
    Min    Avg    Max
1  020.88 020.88 020.88
2  0000.8 0000.8 0000.8
3  0013.5 0013.5 0013.6
4  01.330 01.368 01.415

   14:50:44  05/31/95
RUN  starts logging
STOP stops logging
PROG starts programming

********  RUN   ********
   14:51:20  05/31/95

********  STOP  ********
   14:51:35  05/31/95
Run statistics   N=00003
    Min    Avg    Max
1  020.83 020.83 020.83
2 -0000.2-0000.2-0000.2
3  0016.8 0016.8 0016.9
4  01.210 01.228 01.250

   14:51:36  05/31/95
RUN  starts logging
STOP stops logging
PROG starts programming

********  RUN   ********
   14:52:03  05/31/95

********  STOP  ********
   14:52:13  05/31/95
Run statistics   N=00002
    Min    Avg    Max
1  020.95 020.95 020.95
2  0000.8 0000.8 0000.8
3  0000.4 0000.4 0000.4
4  01.075 01.088 01.100

   14:52:14  05/31/95
RUN  starts logging
STOP stops logging
PROG starts programming

********  RUN   ********
   14:52:32  05/31/95


********  STOP  ********
   14:52:52  05/31/95
Run statistics   N=00004
    Min    Avg    Max
1  020.90 020.91 020.93
2 -0000.3-0000.2-0000.2
3 -0002.5-0002.5-0002.4
4  00.950 00.957 00.975

   14:52:53  05/31/95
RUN  starts logging
STOP stops logging
PROG starts programming

********  OFF   ********

********  ON    ********
********  RUN   ********
   14:54:41  05/31/95

********  STOP  ********
   14:55:00  05/31/95
Run statistics   N=00003
    Min    Avg    Max
1  000.10 000.13 000.15
2 -0002.3-0001.9-0001.3
3  0468.8 0468.8 0468.9
4 -01.600-01.578-01.555

   14:55:01  05/31/95
RUN  starts logging
STOP stops logging
PROG starts programming

********  OFF   ********

********  ON    ********
********  RUN   ********
   14:56:22  05/31/95

********  STOP  ********
   14:56:34  05/31/95
Run statistics   N=00002
    Min    Avg    Max
1  020.95 020.96 020.98
2 -0002.3-0002.3-0002.2
3 -0005.1-0005.0-0004.9
4 -00.035-00.033-00.030

   14:56:35  05/31/95
RUN  starts logging
STOP stops logging
PROG starts programming

********  RUN   ********
   14:57:05  05/31/95

********  STOP  ********
   14:57:16  05/31/95
Run statistics   N=00002
    Min    Avg    Max
1  020.80 020.81 020.83
2 -0002.2-0002.2-0002.2
3 -0000.1-0000.1-0000.1
4 -00.085-00.070-00.055

   14:57:17  05/31/95
RUN  starts logging
STOP stops logging
PROG starts programming

********  OFF   ********

********  ON    ********
********  RUN   ********
   14:59:03  05/31/95
```

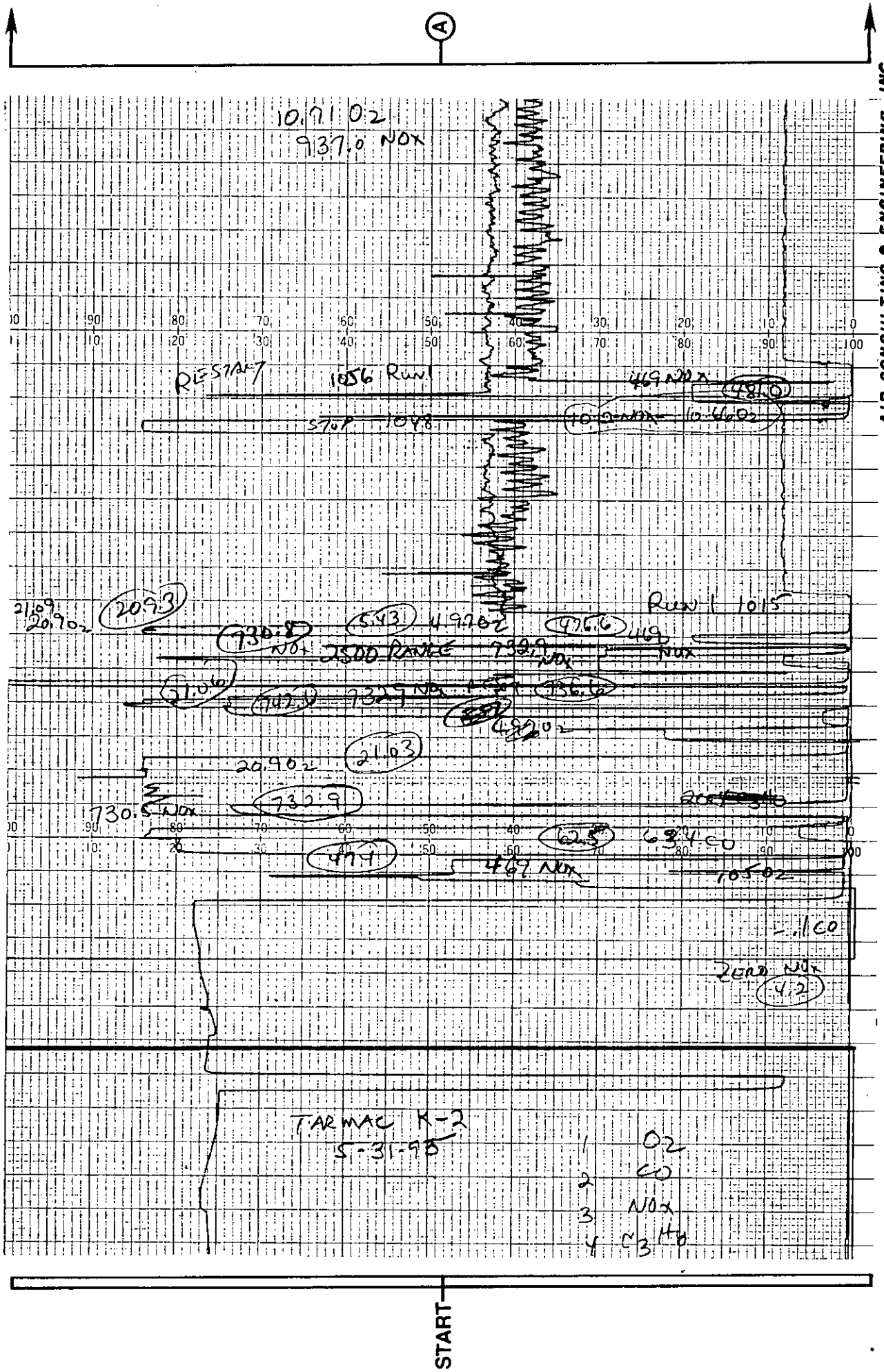
CONTINUOUS MONITORING DATA LOGGER PRINTOUTS

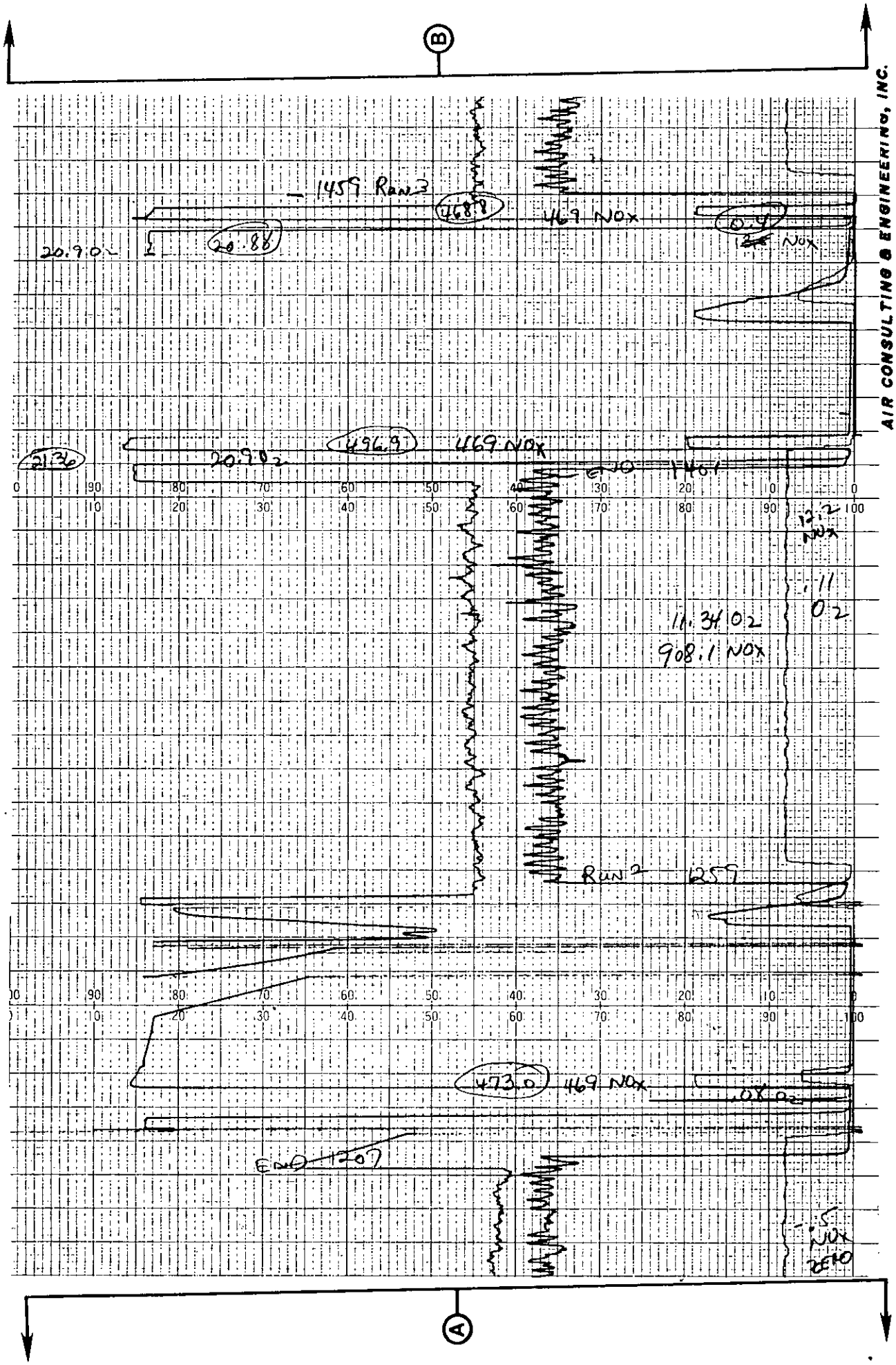
```
******** STOP ********
   16:05:11  05/31/95
Run statistics   N=00793
    Min    Avg    Max
1  010.90 011.20 011.45
2  0075.7 0078.7 0083.7
3  0763.0 0836.2 0954.0
4  12.050 14.246 15.395

   16:05:12  05/31/95
RUN  starts logging
STOP stops logging
PROG starts programming

********  OFF   ********

********  ON    ********
********  RUN   ********
   16:06:32  05/31/95

********  STOP  ********
   16:06:53  05/31/95
Run statistics   N=00004
    Min    Avg    Max
1  020.75 020.76 020.78
2  0001.9 0005.3 0008.8
3  0007.8 0008.4 0009.3
4  04.150 04.455 04.780

   16:06:54  05/31/95
RUN  starts logging
STOP stops logging
PROG starts programming

********  OFF   ********

********  ON    ********
********  RUN   ********
   16:08:20  05/31/95

********  STOP  ********
********  PROG  ********
   16:08:46  05/31/95
 Interval=00:00:05  60Hz
 Full in 0000:02:25:50
 Tadjust=+00.0F
 1 V V  -2.50000 000000
 2 V V   1.00000 000000
 3 V V  -1.25000 000000
 4 V V  -5.00000 000000
EXIT leaves program mode
OK   skips to next field
```

```
Select channel? (1-6)
********  EXIT  ********
********  RUN   ********
   16:09:04  05/31/95

********  STOP  ********
   16:09:17  05/31/95
Run statistics   N=00003
    Min    Avg    Max
1  000.08 000.08 000.08
2 -0002.2-0002.2-0002.2
3  0490.4 0490.8 0491.1
4  01.105 01.120 01.130

   16:09:19  05/31/95
RUN  starts logging
STOP stops logging
PROG starts programming

********  OFF   ********

********  ON    ********
********  RUN   ********
   16:11:49  05/31/95

********  STOP  ********
   16:12:06  05/31/95
Run statistics   N=00003
    Min    Avg    Max
1  000.05 000.05 000.05
2  0059.6 0059.6 0059.7
3  0002.5 0002.5 0002.5
4  00.350 00.387 00.420

   16:12:08  05/31/95
RUN  starts logging
STOP stops logging
PROG starts programming

********  OFF   ********

********  ON    ********
********  RUN   ********
   16:13:29  05/31/95

********  STOP  ********
   16:13:50  05/31/95
Run statistics   N=00004
    Min    Avg    Max
1  021.30 021.34 021.38
2  0001.9 0005.8 0009.8
3  0001.0 0001.0 0001.1
4  20.870 20.895 20.920

   16:13:51  05/31/95
RUN  starts logging
STOP stops logging
```

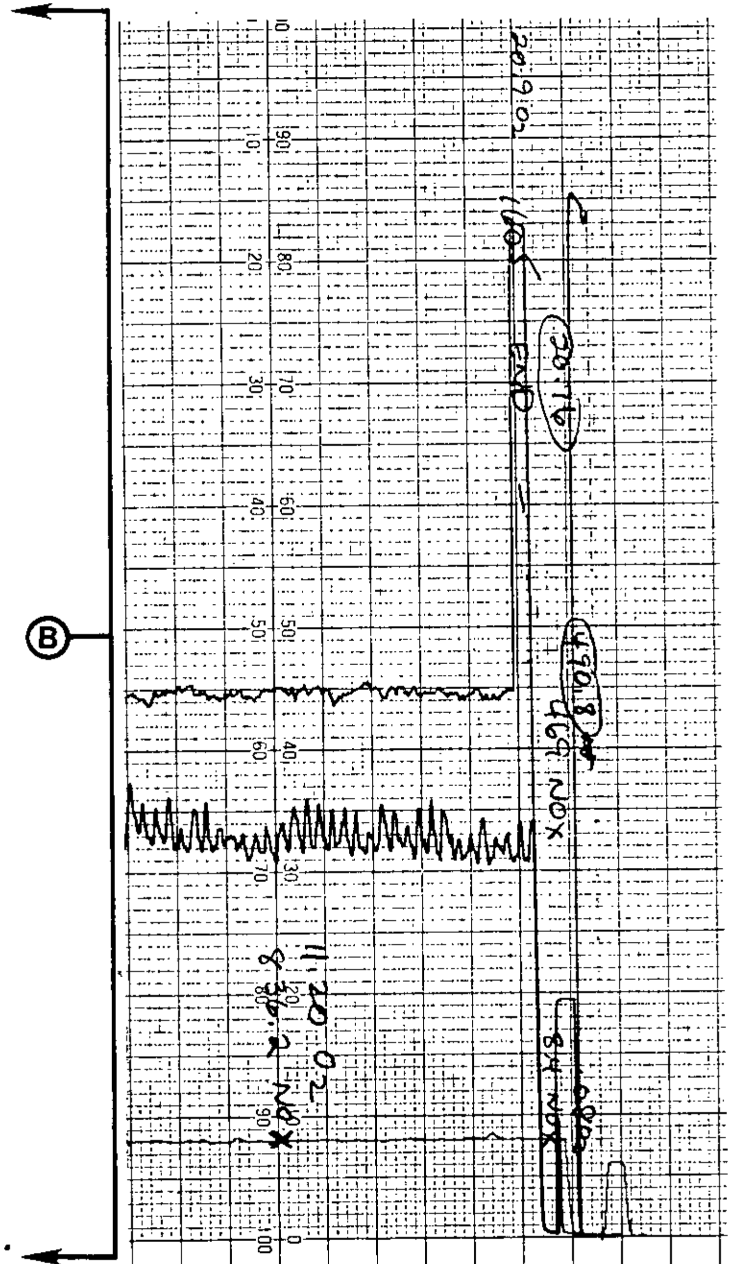
CONTINUOUS MONITORING DATA LOGGER PRINTOUTS

ACE Air Consulting & Engineering, Inc.


A
10.91 O2
9137.0 NOx
RESTART
1056 Run!
STOP 1098
469 NOx
481.0
10.46 O2
Run 1 1015
20.93
20.90 O2
730.8 NOx
5.43
499 O2
476.6
469 NOx
2500 RANGE
732.9 NOx
21.09
20.90 O2
21.03
730.9
730.5 NOx
474
469 NOx
62.5
63.4 CO
10.5 O2
-.1 CO
ZERO NOx
4.2
TARMAC K-2
5-31-95
1 O2
2 CO
3 NOx
4 C3 H8
START
AIR CONSULTING & ENGINEERING, INC.



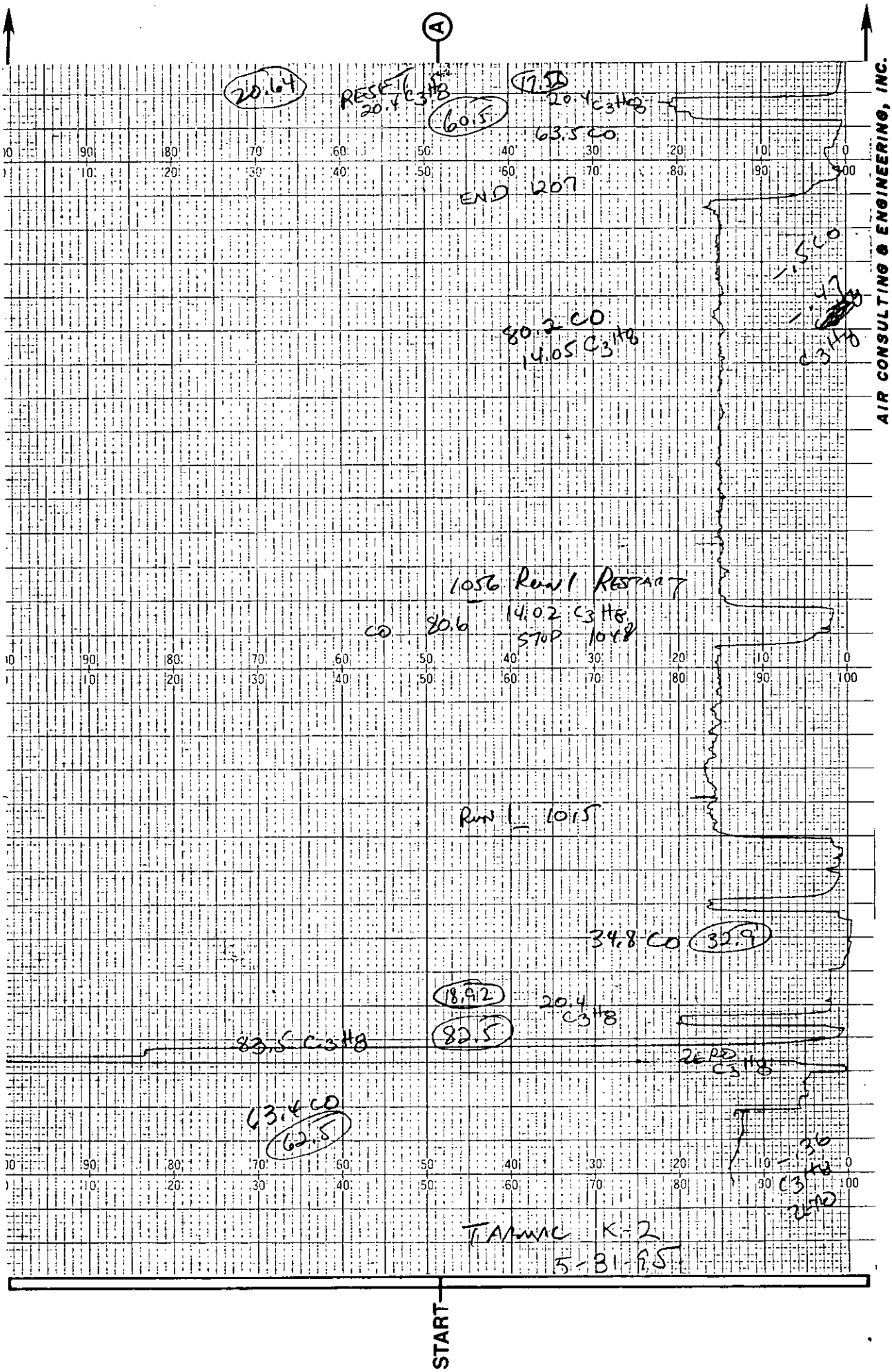
AIR CONSULTING & ENGINEERING, INC.



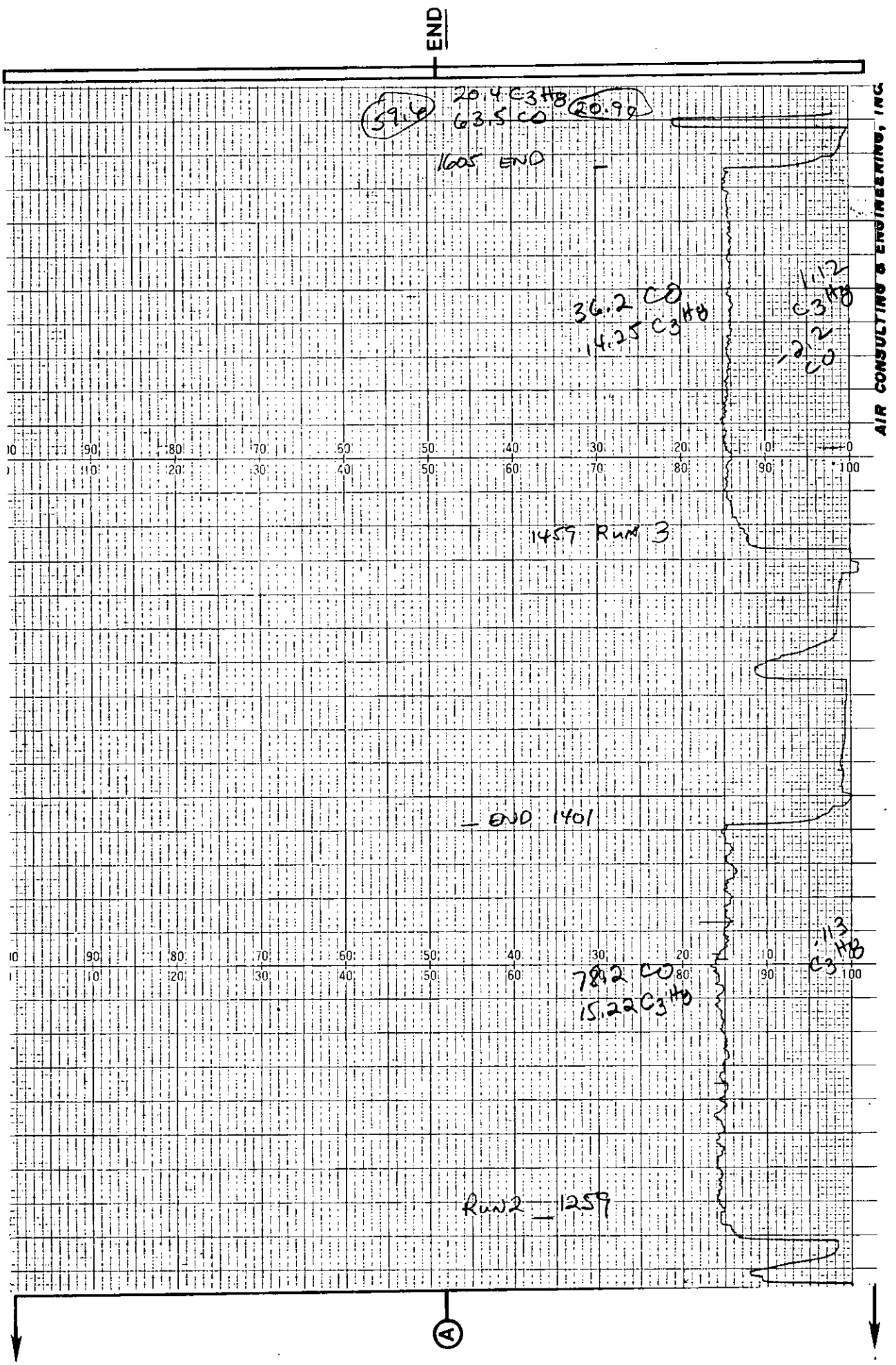
B

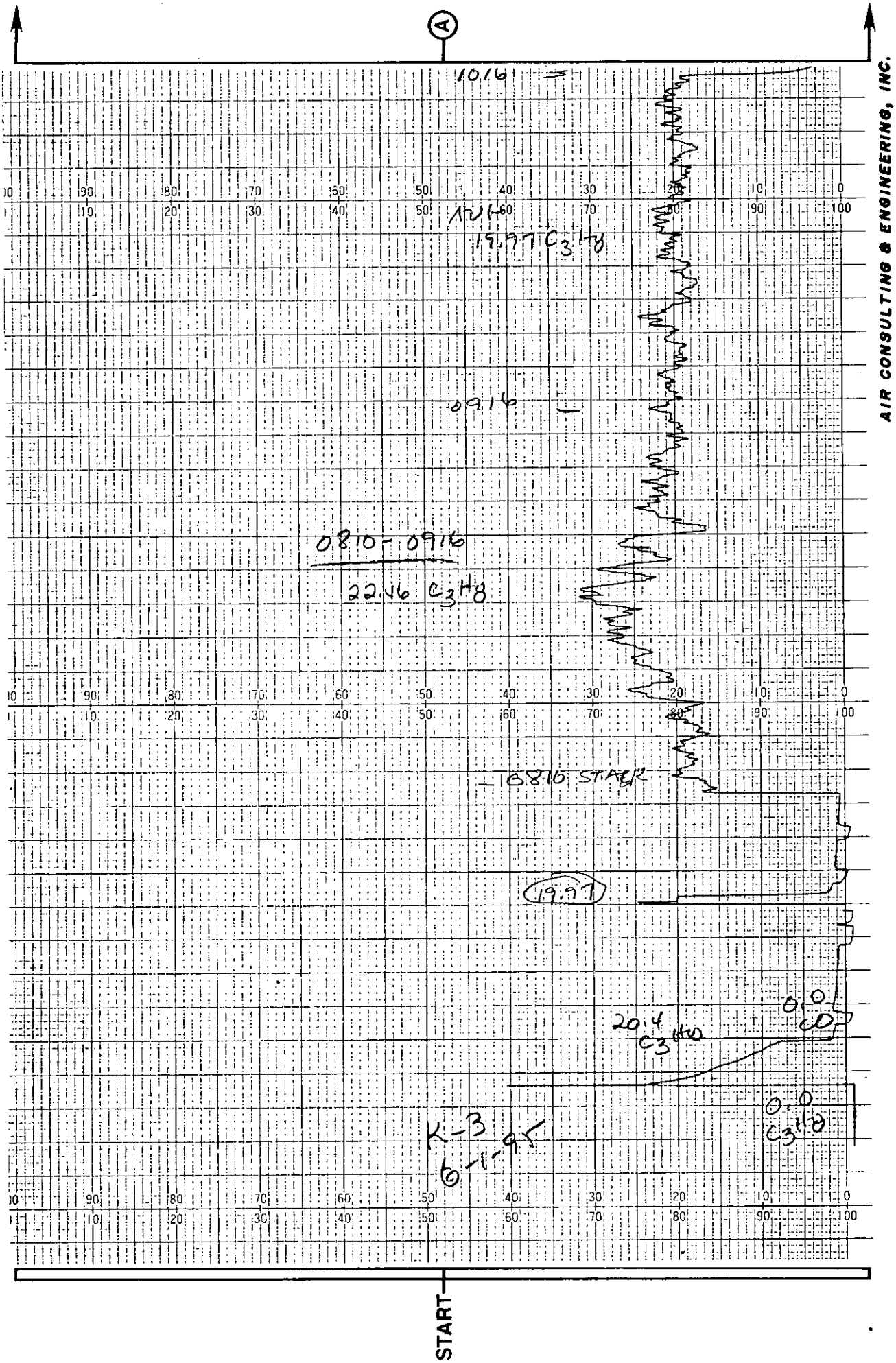
END

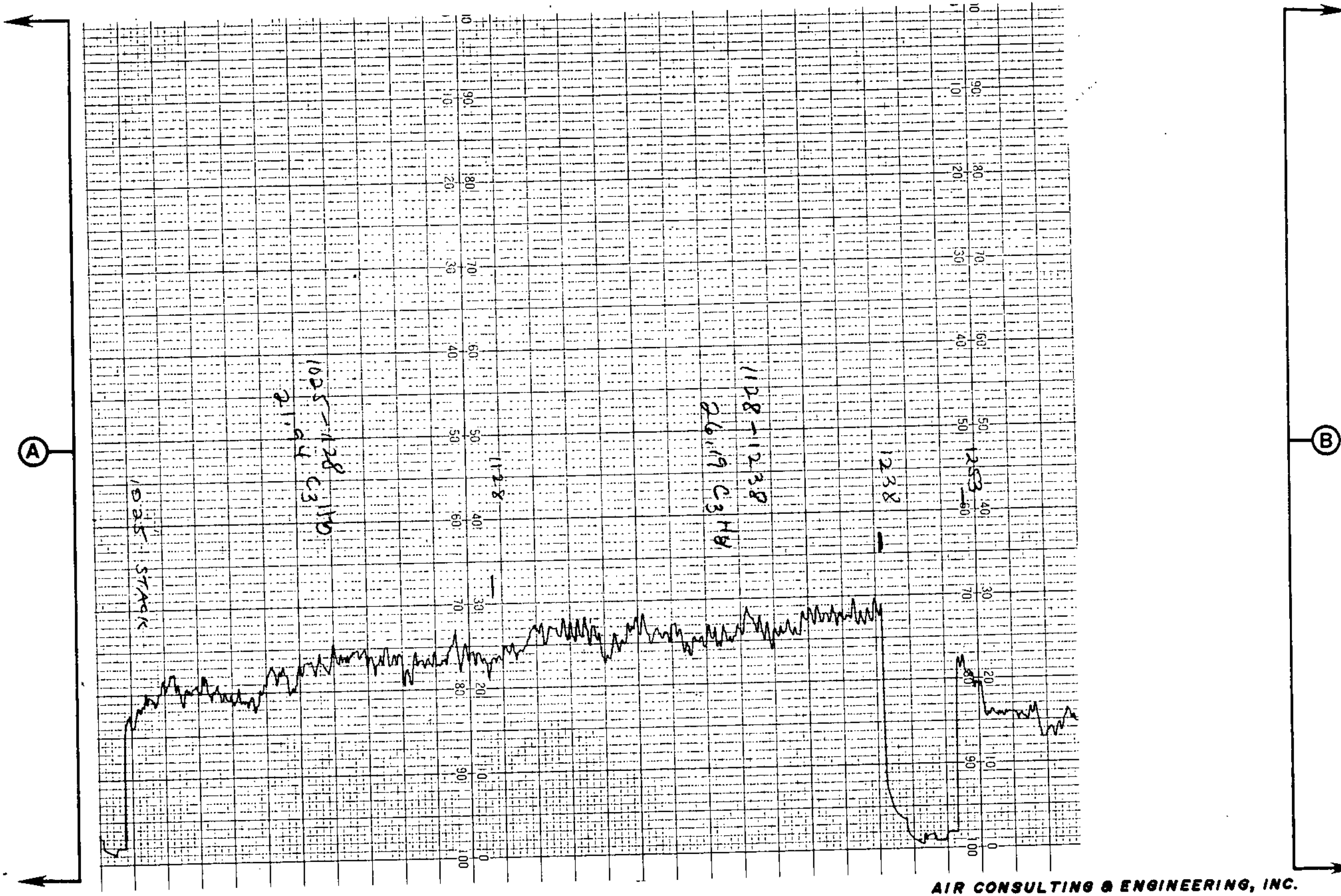
AIR CONSULTING & ENGINEERING, INC.



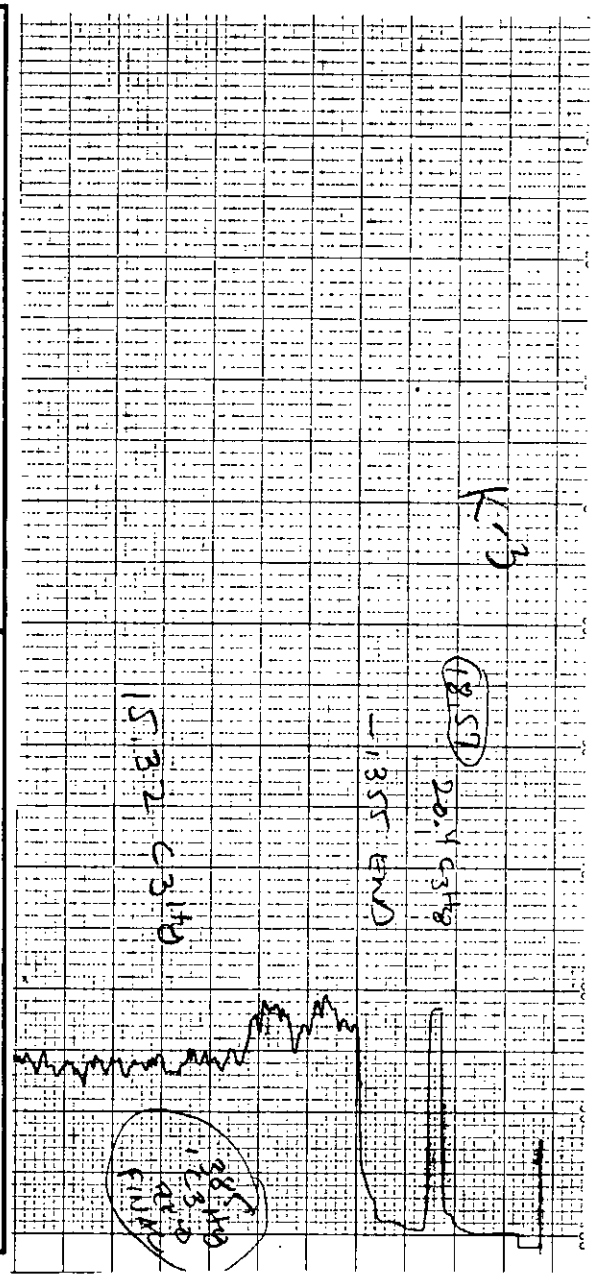
AIR CONSULTING & ENGINEERING, INC.


END
20.4 C3H8
63.5 CO
59.6
20.90
1605 END
36.2 CO
14.25 C3H8
1.12 C3H8
2.2 CO
1459 Run 3
END 1401
78.2 CO
15.22 C3H8
1.13 C3H8
Run2 1259
A
AIR CONSULTING & ENGINEERING, INC.





AIR CONSULTING & ENGINEERING, INC.


B
END

APPENDIX E

QUALITY ASSURANCE AND CHAIN OF CUSTODY

STANDARD METER CALIBRATION
Meter Number 1040616 - S

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

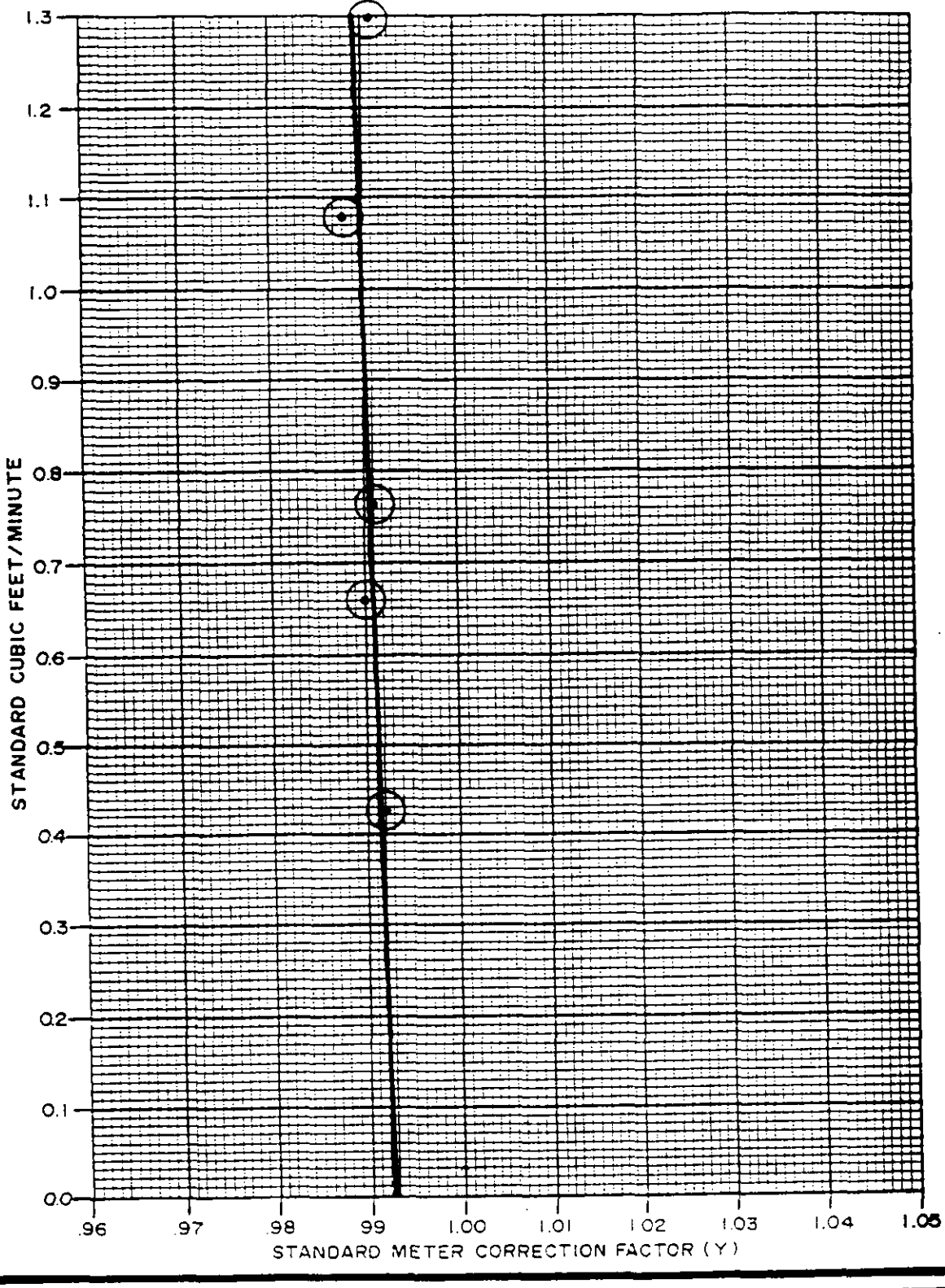
$$Y_a \times Y_s = Y$$

Y_a = actual ratio of field meter to standard meter

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

Y = corrected ratio of field meter

The dry standard meter was calibrated on July 12, 1993, and has been rechecked and verified annually. The latest verification was August 22, 1994.



STANDARD METER CALIBRATION CURVE

JULY 12, 1993 - SERIAL NO. 1040616 (SOUTH)

NOTE: CALIBRATED AGAINST 1 FT / REV. WET TEST METER AT ESE, INC.

AIR CONSULTING and ENGINEERING

AIR CONSULTING & ENGINEERING — STANDARD METER CALIBRATION

DATE 7-12-93

LEAK CHECK 0.000 CFM at 12 In. Hg.

METER SERIAL NUMBER 1040616 (SOUTH)

BAROMETRIC PRESSURE 30.16 In. Hg.

STD GAS METER TEMPERATURE 76 °F/ ASTM GLASS THERMOMETER TEMPERATURE 76 °F

WET ΔH	STD ΔH	GAS VOLUME, WET TEST METER			GAS VOLUME, STD GAS METER			TEMP WET TEST METER (°F)	TEMP OF STD METER (°F)	TIME (Minutes)
		INITIAL	FINAL	ACTUAL ft³	INITIAL	FINAL	ACTUAL ft³			
-.3	-.63	0.000	5.100	5.100	761.399	766.552	5.153	75	78	12
-.3	-.63	0.000	5.110	5.110	766.552	771.718	5.166	75	76	12
-.3	-.63	0.000	5.093	5.093	771.718	776.873	5.155	75	76	12
-.4	-1.2	0.000	5.298	5.298	777.783	783.158	5.375	75	76	8
-.4	-1.2	0.000	5.299	5.299	783.158	788.538	5.380	75	76	8
-.4	-1.2	0.000	5.297	5.297	788.538	793.914	5.376	75	76	8
-.5	-1.5	0.000	5.002	5.002	719.913	725.008	5.095	74	76	6.50
-.5	-1.5	0.000	7.001	7.001	725.009	735.113	7.104	74	76	9.05
-.5	-1.5	0.000	5.012	5.012	732.113	737.203	5.090	75	76	6.62
-.7	-2.4	0.000	6.517	6.517	796.774	803.417	6.643	75	76	6
-.7	-2.4	0.000	5.424	5.424	803.417	808.959	5.543	75	76	5
-.7	-2.4	0.000	5.422	5.422	808.959	814.492	5.533	75	76	5
-.95	-2.7	0.000	5.710	5.710	740.453	746.259	5.796	75	76	5
-.95	-2.7	0.000	5.694	5.694	746.259	752.053	5.794	75	76	5
-.95	-2.7	0.000	5.690	5.690	753.647	759.444	5.797	75	75	6

CALIBRATED BY: Greg R. Cross

	Y	SCFMD	Y	SCFMD	Y	SCFMD	Y	SCFMD	Y	SCFMD
1	0.993	0.423	0.990	0.659	0.989	0.767	0.989	1.081	0.994	1.136
2	0.993	0.424	0.990	0.659	0.993	0.771	0.986	1.079	0.991	1.133
3	0.991	0.422	0.990	0.659	0.990	0.753	0.988	1.079	0.988	1.132
AVG	0.992	0.424	0.990	0.659	0.991	0.764	0.988	1.080	0.991	1.134

Air Consulting and Engineering

NOTE: CALIBRATED AGAINST 1 FT³/REV. WET TEST METER AT ESE

AIR CONSULTING & ENGINEERING — STANDARD METER CALIBRATION

DATE 8-23-94 LEAK CHECK 0.000 CFM at 9 In. Hg.

METER SERIAL NUMBER 1040616 BAROMETRIC PRESSURE 30.14 In. Hg.

STD GAS METER TEMPERATURE 73 °F/ASTM GLASS THERMOMETER TEMPERATURE 73 °F

WET ΔH	STD ΔH	GAS VOLUME, WET TEST METER			GAS VOLUME, STD GAS METER			TEMP WET TEST METER (°F)	TEMP OF STD METER (°F)	TIME (Minutes)
		INITIAL	FINAL	ACTUAL ft^3	INITIAL	FINAL	ACTUAL ft^3			
-.02	-1.4	0.000	5.877	5.877	581.660	587.649	5.989	73	76	17
-.75	-8.8	0.000	6.021	6.021	575.283	581.583	6.300	73	75	6

CALIBRATED BY: [signature]

SCFM	Y Old Value	Y New Value	% Change
0.345	0.992	0.990	0.20
1.001	0.990	0.980	1.01

air consulting and engineering

AIR CONSULTING & ENGINEERING — ANNUAL METER CALIBRATION

DATE 12-28-94

LEAK CHECK 0.000 CFM at 15 in. Hg

METER BOX NUMBER 6

BAROMETRIC PRESSURE 30.15 in. Hg

DRY GAS METER TEMPERATURE 68 °F/ASTM GLASS THERMOMETER TEMPERATURE 68 °F

ΔHS	AVERAGE ΔHD	GAS VOLUME, STANDARD METER			GAS VOLUME, DRY GAS METER			TEMP STD METER	TEMP OF DRY METER	TIME (Minutes)	TIMER
		INITIAL	FINAL	ACTUAL ft³	INITIAL	FINAL	ACTUAL ft³				
-.4	0.5	963.700	968.700	5.000	138.236	143.161	4.924	68	68	12:24	12.40
-.57	1.0	969.400	974.400	5.000	143.854	148.777	4.923	69.5	69.5	9:00	9.0
-.75	1.5	975.900	986.475	10.575	150.257	160.700	10.443	71.2	72.2	15:27	15.45
-.90	2.0	987.100	998.604	11.504	161.318	172.711	11.393	71.7	74.5	14:39	14.65
-1.10	3.0	000.100	010.100	10.000	174.200	184.185	9.985	73	75	10:30	10.5
-1.65	5.0	013.900	023.900	10.000	187.280	197.330	10.050	68	75	8:21	8.35

DELTA H	Ya	SCFM
1.663	1.014	0.412
1.804	1.013	0.558
1.743	1.011	0.694
1.740	1.010	0.800
1.777	0.998	0.969
1.846	0.996	1.227
MEAN: 1.762	1.007	

Ya	Y
0.992	1.006
0.991	1.004
0.991	1.001
0.991	1.001
0.990	0.988
0.989	0.985
0.990	0.997

CALIBRATED BY: Gerard P Gauthreau

AIR CONSULTING & ENGINEERING, inc.

POST TEST CALIBRATION

DATE 7/12/95 METER BOX NUMBER C LEAK CHECK 0.000 CFM at 15.0 in. Hg.

CLIENT Tarmac SOURCE K-2 THERMOCOUPLE NUMBER ____ PYROMETER NUMBER ____

FLIGHT SERVICE Pb ____ in. Hg. ACE BAROMETER Pb 30.01 in. Hg.

ASTM GLASS THERMOMETER ____ °F / THERMOCOUPLE ____ °F ASTM GLASS THERMOMETER ____ °F / METER TEMP ____ °F

ΔHS	AVERAGE ΔHD	GAS VOLUME, STANDARD METER			GAS VOLUME, DRY GAS METER			TEMP STANDARD METER	TEMP OF DRY METER	TIME (Minutes)	MAX. VACUUM In. Hg
		INITIAL	FINAL	ACTUAL ft^3	INITIAL	FINAL	ACTUAL ft^3				
-.39	.461	145.275	155.049	9.774	514.833	524.833	10.000	80	93	24.9	5.0
-.39	.461	155.049	164.778	9.729	524.833	534.833	10.000	80	94	25.6	5.0
-.39	.461	164.778	174.470	9.692	534.833	544.833	10.000	81	96	25.8	5.0

CALIBRATED BY: [signature]

DELTA H	Ya	SCFM	Ys	Y
1.667	1.000	0.385	0.994	0.994
1.775	0.997	0.373	0.994	0.991
1.816	0.995	0.368	0.994	0.989
MEAN: 1.753	0.997		0.994	0.992

ace air consulting and engineering

AIR CONSULTING & ENGINEERING, INC. — PITOT TUBE CALIBRATION

DATE CALIBRATED 4-7-95

PITOT TUBE 73

IS PITOT TUBE ASSEMBLY LEVEL yes

ARE PITOT TUBE OPENINGS DAMAGED no

α_1 = 0 °(<10°), α_2 = 1 °(<10°), β_1 = 4 °(<5°), β_2 = 0 °(<5°)

γ = 1 ° θ = 2 ° A = .9999 in. = (Pa + Pb)

z = A sin γ = .017 in.; <0.32/<1/8 in.

w = A sin θ = .035 in.; <0.08/<1/32 in.

P_a .4990 in. P_b .5009 in. D_t .375

WAS CALIBRATION REQUIRED no

THERMOCOUPLE CALIBRATION

SOURCE (SPECIFY)	ASTM GLASS THERMOMETER WITH MERCURY (°F)	PYROMETER (°F)	DEGREE DIFFERENCE	PERCENT DIFFERENCE
ICE BATH	36	38	2	.40
AMBIENT	87	88	1	.18
HOT OVEN	436	439	3	.34

FDER - MAXIMUM 5° DIFFERENCE

CALIBRATED BY: Lil Carter

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

AIR CONSULTING & ENGINEERING, INC. — PYROMETER CALIBRATION

DATE 6/22/94

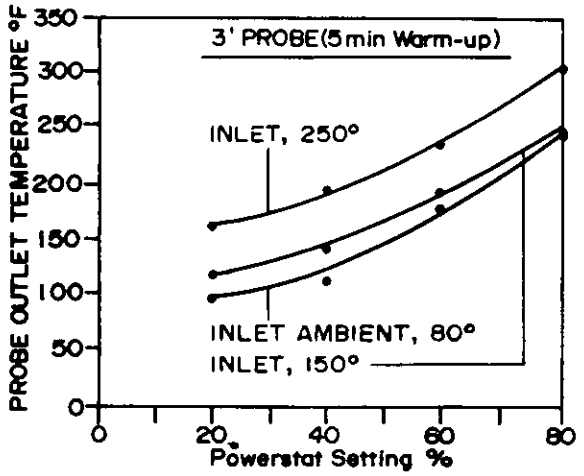
PYROMETER NUMBER Atkins #3

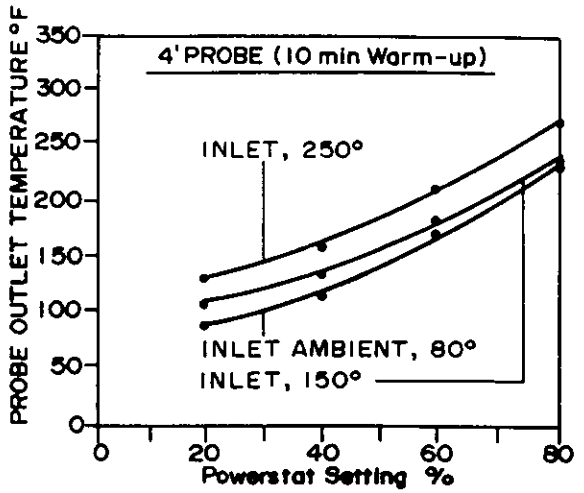
SOURCE (SPECIFY)	GLASS THERMOMETER WITH NBS MERCURY (°F)	PYROMETER (°F)	DEGREE DIFFERENCE	PERCENT DIFFERENCE
ICE BATH	32	32	0	0
AMBIENT	82	83	1	0.2
HOT OVEN	400	404	4	0.8

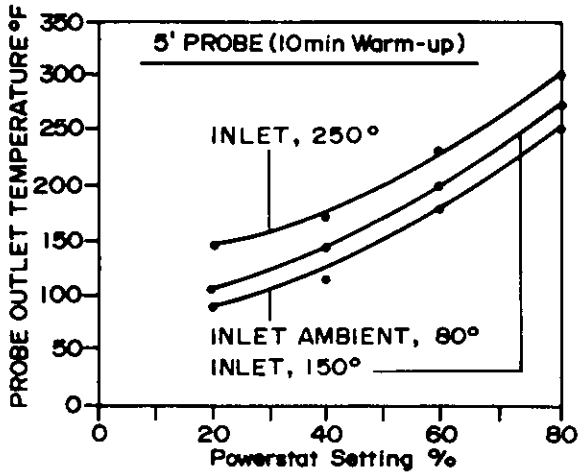
FDER - MAXIMUM 5° DIFFERENCE

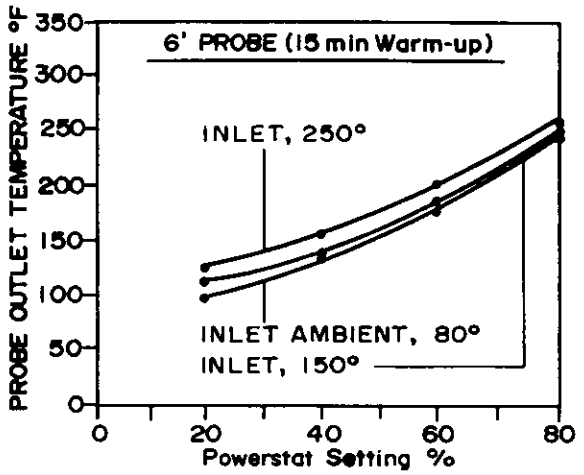
EPA $\left[\frac{(\text{REF. TEMP. °F} + 460°) - (\text{PYROMETER TEMP. °F} + 460°)}{\text{REF. TEMP. °F} + 460°}\right] 100 \leq 1.5\%$

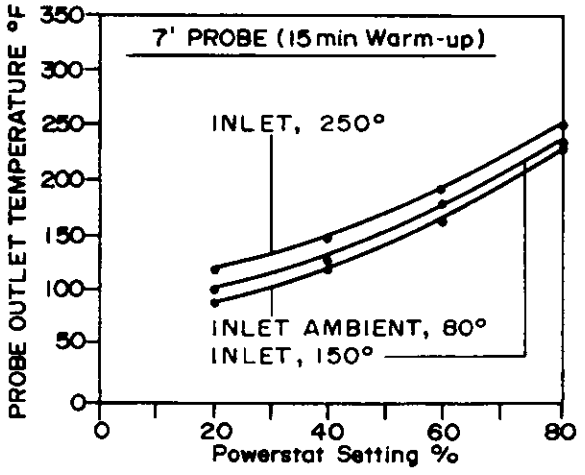
CALIBRATED BY: Gerard Gauthreaux











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

PROBE GRAPH

AIR CONSULTING and ENGINEERING

AIR CONSULTING AND ENGINEERING, Inc.

SAMPLE RECOVERY AND CHAIN OF CUSTODY

PLANT NAME TARMAC — TEST DATE 5.31.95
SOURCE NAME CEMENT KILN 2 — SAMPLE RECOVERED BY CH
TYPE OF SAMPLE PARTICULATE — PARTICULATE ANALYSES BY MS

SAMPLE RECOVERY

RUN NO.	CONTAINER NO.	LIQUID LEVEL MARKED	COLOR	COMMENTS
1	6293	NA	Beige	0.4046
2	6295	↓	↓	0.4142
3	6291	↓	↓	0.4028
1	28	✓	↓	255.7
2	46	✓	↓	272.3
3	75	✓	↓	297.7
ACETONE / WATER BLANK (CIRCLE)				
FILTER BLANK				

SILICA GEL

RUN NO.	CONTAINER NO.	FINAL WT. (g)	INIT. WT. (g)	NET WT. (g)	COLOR
1	10	209.8	200.0	9.8	Blue/Pink
2	192	244.3	200.0	44.3	↓
3	79	222.2	200.0	22.2	↓
			200.0		
			200.0		
			200.0		
			200.0		
			200.0		

CONTINUOUS MONITOR ACCURACY CERTIFICATION

ACE AIR CONSULTING & ENGINEERING, INC.
2106 N.W. 67th PLACE · Suites 9&10
GAINESVILLE, FLORIDA · 32606
(904) 335-1889

PLANT: TARMAC FLORIDA

SOURCE: @ K-2

DATE: 5-31-95

PAGE 1 OF 1

2000 RANGE

NO_x CALIBRATION GAS	MONITOR VALUE ppm	DIFFERENCE ppm	% SPAN
730.5	732.9	2.4	0.12
469	474	5	0.25
ZERO	4.2	4.2	0.21

O_2 CALIBRATION GAS	MONITOR VALUE ppm	DIFFERENCE ppm	% SPAN

CO CALIBRATION GAS	MONITOR VALUE ppm	DIFFERENCE ppm	% SPAN

NATIONAL SPECIALTY GASES
630 UNITED DRIVE
DURHAM, NC 27713
(919)544-3772

CERTIFICATE OF ANALYSIS-EPA PROTOCOL MIXTURES

REFERENCE #: 88-31469 CYLINDER #:CC71434 CYL. PRESSURE:2000PSIG
EXPIRATION DATE: 5/25/96 LAST ANALYSIS DATE:5/25/94
CUSTOMER: CRYOTECH P.O.# 275659

METHOD: ANALYZED ACCORDING TO EPA TRACEABILITY PROTOCOL FOR ASSAY AND CERTIFICATION OF GASEOUS CALIBRATION STANDARDS-SEPTEMBER 1993:G-1

STANDARD:
SRM #:2735
CYL #:ALM365
CONC.:795PPM

INSTRUMENT:BECKMAN CHEMILUMINESCENT
MODEL #:951A
SERIAL #:0101572
LAST CAL.:5/2/94

728 - 2.46 = 730.5

COMPONENT:NO
MEAN CONC:728PPM
REPLICATE CONC.
DATE:5/18/94 DATE:5/25/94
726PPM 730PPM
727PPM 729PPM
728PPM 731PPM

COMPONENT: NO2
MEAN CONC: 2.46PPM
REPLICATE CONC.
DATE: DATE:

COMPONENT:
MEAN CONC:
REPLICATE CONC.
DATE: DATE:

BALANCE GAS:N2

REPLICATE DATA

DATE: 5/18/94

Z	0	R	523	C	477.6
R	522	Z	0	C	477.4
Z	0	C	478	R	522

COMPONENT:NO

DATE:5/25/94

Z	0	R	511	C	469.2
R	511	Z	0	C	468.6
Z	0	C	468.9	R	510

REPLICATE DATA

DATE:

Z	R	C
R	Z	C
Z	C	R

COMPONENT:

DATE:

Z	R	C
R	Z	C
Z	C	R

REPLICATE DATA

DATE:

Z	R	C
R	Z	C
Z	C	R

COMPONENT:

DATE:

Z	R	C
R	Z	C
Z	C	R

Z=ZERO C=CANDIDATE R=REFERENCE

ANALYST: APPROVED BY:

NATIONAL SPECIALTY GASES
630 UNITED DRIVE
DURHAM, NC 27713
(919)544-3772

CERTIFICATE OF ANALYSIS-EPA PROTOCOL MIXTURES

REFERENCE #: 88-34599 CYLINDER #:CC35983 CYL. PRESSURE:2000PSIG
EXPIRATION DATE:10/21/96 LAST ANALYSIS DATE:10/21/94
CUSTOMER: CRYOTECH P.O.# 2360

METHOD: ANALYZED ACCORDING TO EPA TRACEABILITY PROTOCOL FOR ASSAY AND CERTIFICATION OF GASEOUS CALIBRATION STANDARDS-SEPTEMBER 1993:G-1

STANDARD:
SRM #: 1686B
CYL #: CLM4860
CONC.: 492PPM

INSTRUMENT:BECKMAN CHEMILUMINESCENT
MODEL #:951A
SERIAL #:0100532
LAST CAL.:10/3/94

COMPONENT:NO	NO2	COMPONENT:		COMPONENT:	
MEAN CONC:469PPM	<0.1PPM	MEAN CONC:		MEAN CONC:	
REPLICATE CONC.		REPLICATE CONC.		REPLICATE CONC.	
DATE:10/14/94	DATE:10/21/94	DATE:	DATE:	DATE:	DATE:
471PPM	468PPM				
471PPM	467PPM				
472PPM	467PPM				

BALANCE GAS:N2

REPLICATE DATA

DATE: 10/14/94

Z	0	R	447.0	C	427.9
R	447.0	Z	0	C	427.9
Z	0	C	429.3	R	447.5

COMPONENT:NO

DATE:10/21/94

Z	0	R	446.5	C	424.7
R	446.0	Z	0	C	423.3
Z	0	C	423.3	R	446.0

REPLICATE DATA

DATE:

Z	R	C
R	Z	C
Z	C	R

COMPONENT:

DATE:

Z	R	C
R	Z	C
Z	C	R

REPLICATE DATA

DATE:

Z	R	C
R	Z	C
Z	C	R

COMPONENT:

DATE:

Z	R	C
R	Z	C
Z	C	R

Z=ZERO C=CANDIDATE R=REFERENCE

ANALYST: APPROVED BY:

APPENDIX F

PRODUCTION DATA

APPENDIX G

FDEP PERMIT NUMBER AC13-169901

Florida Department of Environmental Regulation
Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400
Lawton Chiles, Governor
Carol M. Browner, Secretary

PERMITTEE:
Tarmac Florida, Inc.
P. O. Box 2998
Hialeah, Florida 33012

Permit Number: AC 13-169901
PSD-FL-142
Expiration Date: June 30, 1992
County: Dade
Latitude/Longitude: 25°52'30"N
80°22'30"W
Project: Kiln No. 2 Coal Conversion

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Chapters 17-2 and 17-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

For the conversion of kiln No. 2 to coal firing. The project will be located at the permittee's existing facility in Medley, Dade County, Florida. The UTM coordinates are Zone 17, 562.8 km East and 2861.7 km North.

The source shall be constructed in accordance with the permit application, plans, documents, amendments and drawings, except as otherwise noted in the General and Specific Conditions.

Attachments are listed below:

1. Application to construct received September 5, 1989.
2. DER's letter of incompleteness dated October 4, 1989.
3. EPA's letter dated October 18, 1989.
4. KBN's response (to incompleteness letter) dated November 13, 1989.
5. Dade County DERM's letter dated November 17, 1989.
6. EPA's letter dated December 13, 1989.
7. KBN's letter dated December 21, 1989.
8. KBN's letter dated January 15, 1990.
9. KBN's letter dated January 30, 1990.
10. EPA's letter dated March 20, 1990.
11. EPA's letter dated April 13, 1990.
12. Dade County DERM's letter dated April 30, 1990.
13. NPS's letter dated May 30, 1990.

GENERAL CONDITIONS:

b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.

c. Records of monitoring information shall include:

- the date, exact place, and time of sampling or measurements;
- the person responsible for performing the sampling or measurements;
- the dates analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and
- the results of such analyses.

15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

SPECIFIC CONDITIONS:

1. The construction and operation of the subject modification of kiln No. 2 shall be in accordance with the capacities and specifications stated in the application.

2. The maximum clinker production rate of kiln No. 2 shall not exceed 25 tons per hour and 197,100 tons per year. Kiln No. 2 shall operate only on coal firing for up to 7,884 hours per year at a maximum firing rate of 162.5 MMBtu per hour. The coal used for firing kiln No. 2 shall have a maximum sulfur content of 2.0 percent by weight, with the rolling 30-day average sulfur content not exceeding 1.75 percent by weight.

3. Sulfur dioxide emissions from kiln No. 2 shall not exceed 7.8 lbs/ton of clinker produced, 195.0 lbs/hr, 768.7 tons/yr.

SPECIFIC CONDITIONS:

4. Sulfuric acid mist emissions from kiln No. 2 shall not exceed 0.23 lb/ton of clinker produced, 5.86 lbs/hr, 23.06 tons/yr.

5. Nitrogen oxides emissions from kiln No. 2 shall not exceed 4.55 lbs/ton of clinker produced, 113.8 lbs/hr, 448.4 tons/yr.

6. Carbon monoxide emissions from kiln No. 2 shall not exceed 346 lbs/hr, 1363.9 tons/yr.

7. VOC emissions from kiln No. 2 shall not exceed 28.8 lbs/hr, 113.5 tons/yr.

8. Particulate matter emissions from kiln No. 2 shall not exceed 14.40 lbs/hr, 56.76 tons/yr.

9. PM_{10} emissions from kiln No. 2 shall not exceed 12.24 lbs/hr, 48.25 tons/yr. Compliance for PM_{10} shall be determined by applying a factor of 0.85 to the measured particulate matter emissions.

10. All reasonable precautions that apply under F.A.C. Rule 17-2.610(3) shall be implemented to limit unconfined emissions of particulate matter from any activity associated with this project. Adequate watering of the coal pile area shall be conducted whenever visible emissions occur in that area. The frequency of watering shall be no more than every half hour.

11. Initial and annual compliance tests shall be conducted using the following test methods:

EPA Method 5 for particulate matter
EPA Method 7 for nitrogen oxides
EPA Method 8 for sulfur dioxide and acid mist
EPA Method 25 for VOC
EPA Method 10 for carbon monoxide

12. Tarmac shall conduct a series of compliance tests for SO_2, H_2SO_4 mist, and NO_x emissions every two months for up to one year to allow representative sampling during different times of the year. The tests shall be performed in accordance with the compliance test methods specified in this permit. In the event that this series of tests results in SO_2 emissions in the range of 195 to 275 lbs/hr (up to 11 lbs/ton clinker, 1,084.1 TPY), NO_x emissions in the range of 113.8 to 169.3 lbs/hr (up to 6.77 lbs/ton clinker, 667.2 TPY), or H_2SO_4 mist emissions in the range

SPECIFIC CONDITIONS:

of 5.86 to 8.25 lbs/hr (up to 0.33 lbs/ton clinker, 32.52 TPY), the Department, if requested by the permittee, shall re-evaluate BACT and consider upward adjustments of the emission limitations for the indicated constituents based on available data. During this testing and evaluation period, the permittee shall make reasonable efforts to limit air emissions, and the Department shall not initiate enforcement proceedings. Any upward adjustment of emission limitations pursuant to this paragraph shall be the subject of public notice in a local newspaper pursuant to Department rules. The Department's determination based on the data produced under this paragraph shall be a point of entry for purposes of Section 120.57, Florida Statutes.

13. The compliance tests shall be conducted within 30 days after operation on coal begins. The Department's Southeast District office and the Dade County Department of Environmental Resources Management (DCDERM) shall be notified in writing at least 15 days prior to source testing and at least 5 days prior to initial startup. Written reports of the tests shall be submitted to those offices within 45 days of test completion.

14. The permittee, for good cause, may request that this construction permit be extended. Such a request shall be submitted to the Bureau of Air Regulation prior to 60 days before the expiration of the permit (F.A.C. Rule 17-4.090).

15. An application for an operation permit must be submitted to the Department's Southeast District office and the DCDERM at least 90 days prior to the expiration date of this construction permit or within 45 days after completion of compliance testing, whichever occurs first. To properly apply for an operation permit, the applicant shall submit the appropriate application form, fee, certification that construction was completed noting any deviations from the conditions in the construction permit, and compliance test reports as required by this permit (F.A.C. Rule 17-4.220).

Issued this 25 day
of February, 1991

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

Carol M. Browner, Secretary

APPENDIX H

PROJECT PARTICIPANTS

PROJECT PARTICIPANTS

Air Consulting and Engineering, Inc.

Stephen L. Neck, P.E.
Field Testing
Report Preparation

Joshua Gelston
Field Testing

J. Colleen Hodge
Field Testing
Post Test Calibrations

Margaret E. Sneeringer
SO2 Analysis

Candace V. Taylor
Document Production

Tarmac Florida, Inc.

Scott Quaas
Test Coordinator