air consulting and engineering, Inc.

SOURCE TEST REPORT
for
ACID EMISSIONS, VOLATILE ORGANIC COMPOUNDS
AND VISIBLE EMISSIONS

SOURCE NUMBERS:

F04S01, F04S02, F04S03, F04S05, F04E08, F51S01,
F51S02, F51S03, F51S04, F51S05, F54S01, F54S02,
F54S03, F54S04, F55S01, F57S01, F58S01, F58S02,
F59S01, F59S02, F60S01, F61S02, F62S01, F62S02,
F63S01, F63S02, F63S03, F58E01, F59ECX

JUNE, 1990

Prepared for:

HARRIS CORPORATION--SEMICONDUCTOR DIVISION
POST OFFICE BOX 883
MELBOURNE, FLORIDA 32901

Prepared by:

AIR CONSULTING AND ENGINEERING, INC.
2106 N.W. 67th PLACE, SUITE 4
GAINESVILLE, FLORIDA 32606
(904) 335-1889

187-90-05

HARRIS

August 13, 1990

Mr. Pius Sanabani
Air Permitting Engineer
Air Resource Management
Florida Department of Environmental Regulation
3319 Maguire Boulevard, Suite 232
Orlando, FL 32803-3767

SUBJECT: 1990 Source Test Report on potential Acid and VOC emissions
HARRIS SEMICONDUCTOR

Dear Mr. Sanabani:

Enclosed is a copy of the test report of the annual monitoring program of all the sources/Buildings at Harris Corporation, Semiconductor Sector on potential VOC/solvent and acid emissions as required by the specific condition section of the construction permits. Testing was conducted during the month of June.

Another copy of the report has been forwarded to Mr. Bruce Mitcell. If you have any questions or require any additional information, please contact me at (407) 729-5301.

Sincerely,

Constantine Triantafyllidis

Constantine Triantafyllidis, R.E.P.
Environmental Engineer

cc: C. Fancy
B. Mitchell
A. Zahm, P.E.

SOURCE TEST REPORT
for
ACID EMISSIONS, VOLATILE ORGANIC COMPOUNDS
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SOURCE NUMBERS:

F04S01, F04S02, F04S03, F04S05, F04E08, F51S01,
F51S02, F51S03, F51S04, F51S05, F54S01, F54S02,
F54S03, F54S04, F55S01, F57S01, F58S01, F58S02,
F59S01, F59S02, F60S01, F61S02, F62S01, F62S02,
F63S01, F63S02, F63S03, F58E01, F59EOX

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187-90-05

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Air Consulting and Engineering, Inc.

REPORT CERTIFICATION

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

Dagmar Neck

Dagmar A. Neck

8/6/90

Date

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

1.0 INTRODUCTION

During the month of June 1990, Air Consulting and Engineering, Inc. (ACE), conducted acid emission, Volatile Organic Compounds (VOC), and Visible Emission (VE) testing on 29 wet scrubber controlled outlet sources at Harris Corporation--Semiconductor Division facility in Melbourne, Florida.

Each source was tested over an entire shift period (0700-1530) during normal production.

Efficiency testing (either for VOC or Acids) was also undertaken for the following sources: F51S03, F51S05, F54S02, F59S01 and F63S02.

Testing was performed using United States Environmental Protection Agency (EPA) Method 8 for determining acid emissions, EPA Method 9 for visible emissions and EPA Method 25A for VOC emissions. EPA Methods 1-4 were employed to obtain the volumetric flow rate values for all sources.

A Ratfisch RS55 analyzer and a Byron Model 215 Flame Ionization Detector (FID) were used for the VOC testing.

Ms. Nancy Baldisserotto and Mr. Constantine Triantafyllidis coordinated the testing.

2.0 SUMMARY AND DISCUSSION OF RESULTS

Results of the acid emission tests are summarized in Table 1, while Table 2 is a presentation of total VOCs reported as propane corrected for ambient air background and drift.

The acid emission results are obtained from the laboratory data, sample volumes and the measured volumetric flow rates. In general, the emissions are very low and close to the detectable limits. Only two Building 54 sources (F54S01 and F54S03) demonstrate high hydrochloric acid values.
VOC mass emissions were reported as propane (C_3H_8). Appendix C contains VOC and strip chart copies of sources F51S02, F51S05, F04S01 and F04S08 as examples. All other strip charts are available upon request.

The tested efficiencies of selected scrubbers are:

	SOURCE	EFFICIENCY %
Acid	F51S03	50
	F54S02	88
	F59S01	85
VOC	F51S05	20.8
	F54S02	0.7
	F63S02	30.0

Visible emissions for all 29 sources averaged to 0.0 percent opacity for the highest six minute period of the 30 minute tests (see Appendix D for VE data sheets and observers' certifications).

Laboratory data, flow data, and quality assurance are presented in Appendices A, B, and E, respectively.

Table 1 Acid Emission Summary
Harris Corporation--Semiconductor Division
Melbourne, Florida
June 1990

Date	Souce	Volumetric Flow SCFMD	Meter Volume CF	Emissions (lb/Hr) HCl	HF	HNO_3	HPO_3	H_2SO_4
6/28/90	F04S01	7597	525.550	0.004	0.004	<0.001	<0.001	0.008
6/28/90	F04S02	12970	260.988	0.045	0.053	<0.001	<0.001	0.015
6/28/90	F04S03	8502	318.825	0.002	0.004	<0.001	<0.001	0.012
	F04S04	STACK DAMAGED -- NOT TESTED						
6/28/90	F04S05	3948	481.843	<0.001	<0.001	<0.001	<0.001	0.005
6/26/90	F51S01	6456	361.347	0.002	<0.001	<0.001	<0.001	0.009
6/25/90	F51S03-0	18310	525.788	0.006	0.016	<0.001	<0.001	0.015
6/25/90	F51S03-I	18277	495.514	0.004	0.037	<0.001	<0.001	0.017
6/25/90	F51S04	15555	289.603	0.013	0.037	0.065	<0.001	0.027
6/18/90	F54S01	29874	456.768	0.489	0.013	<0.001	<0.001	0.034
6/20/90	F54S02-0	21113	546.966	0.005	0.003	<0.001	<0.001	0.026
6/10/90	F54S02-I	20619	362.881	0.006	0.025	<0.001	<0.001	0.037
6/18/90	F54S03	29189	350.107	0.852	0.042	0.003	<0.001	0.188
6/19/90	F54S04	29308	431.967	0.029	0.003	<0.001	<0.001	0.036
6/22/90	F55S01	467	15.140	0.002	<0.001	<0.001	<0.001	0.013
6/22/90	F57S01	9328	430.050	0.002	<0.001	<0.001	<0.001	0.010
6/22/90	F58S01	7775	276.280	0.003	<0.001	<0.001	<0.001	0.013
6/26/90	F59S01-0	30838	505.118	0.009	0.007	<0.001	<0.001	0.029
6/26/90	F59S01-I	30677	645.58	0.054	0.020	<0.001	<0.001	0.020
6/18/90	F60S01	24109	357.692	0.008	0.002	<0.001	<0.001	0.038
6/27/90	F61S02	0	395.000	0.000	0.000	0.000	0.000	0.000
6/27/90	F62S01	23703	493.852	0.005	0.001	<0.001	<0.001	0.025
6/27/90	F63S01	17559	375.425	0.004	0.001	<0.001	<0.001	0.020

$$lb/Hr = \frac{\text{(Total mg of Compound)}}{\text{meter volume (SCF)}} \quad \frac{lb}{453600\ mg} \quad \frac{M\ compound}{M\ anion} \quad (SCFMD)\ (60)$$

Where M = molecular weight

Table 2 VOC Emission Summary
Harris Corporation--Semiconductor Division
Melbourne, Florida
June 1990

Date	Source	Volumetric Flow Rate SCFMD	VOC Emission as C_3H_8 ppm	lb/Hr
6/28/90	F04S01	7597	2.62	0.136
6/28/90	F04S02	12970	1.70	0.151
6/29/90	F04S03	8502	7.78	0.453
6/28/90	F04E08	5400	60.00	2.221
6/25/90	F51S02	8470	76.10	4.419
6/25/90	F51S03	18310	0.61	0.077
6/25/90	F51S04	15555	2.00	0.213
6/29/90	F51S05-O	14761	42.00	4.250
6/29/90	F51S05-I	14761	53.00	5.364
~~6/18/90~~ 10/22/91	F54S01	~~29874~~	~~10.63~~	~~2.177~~ 0.95
~~6/20/90~~ 10/23/91	F54S02-O	~~21113~~	~~7.27~~	~~1.052~~ 3.33
~~6/20/90~~	~~F54S02-I~~	~~20619~~	~~7.89~~	~~1.045~~
~~6/18/90~~ 10/23/91	F54S03	~~29189~~	~~22.94~~	~~4.581~~ 2.09
~~6/19/90~~	~~F54S04~~	~~29308~~	~~27.06~~	~~5.437~~
6/22/90	F57S01	9328	3.60	0.230
6/22/90	F58S01	7775	4.77	0.254
6/20/90	F58S02	2660	1.46	0.027
6/19/90	F58E01	5358	2.70	0.099
6/22/90	F59S02	10972	2.07	0.156
6/18/90	F60S01	24109	3.01	0.498
6/27/90	F62S02	11010	1.00	0.075
6/22/90	F63S02-O	6460	17.80	0.788
6/22/90	F63S02-I	6460	25.44	1.127
6/22/90	F63S03	7098	12.54	0.610
6/22/90	F59E0X	1449	11.66	0.116

3-6-92 9:54-10:12 a.m. update via phone call from Constantine Triantafyllidis RPM

All VOC emissions are corrected for ambient air background and drift.

lb/Hr C_3H_8 = (ppm) (2.595×10^{-9}) (M) (SCFMD) (60)

M C_3H_8 = 44.033

3.0 PROCESS DESCRIPTION AND OPERATION

The scrubbers tested are used to control emissions from a multitude of work areas used for the manufacture of computer circuitry.

4.0 SAMPLING POINT LOCATION

A schematic of the sources tested are provided in Appendix B, along with the emission data by source. A source location map is provided in Figure 1.

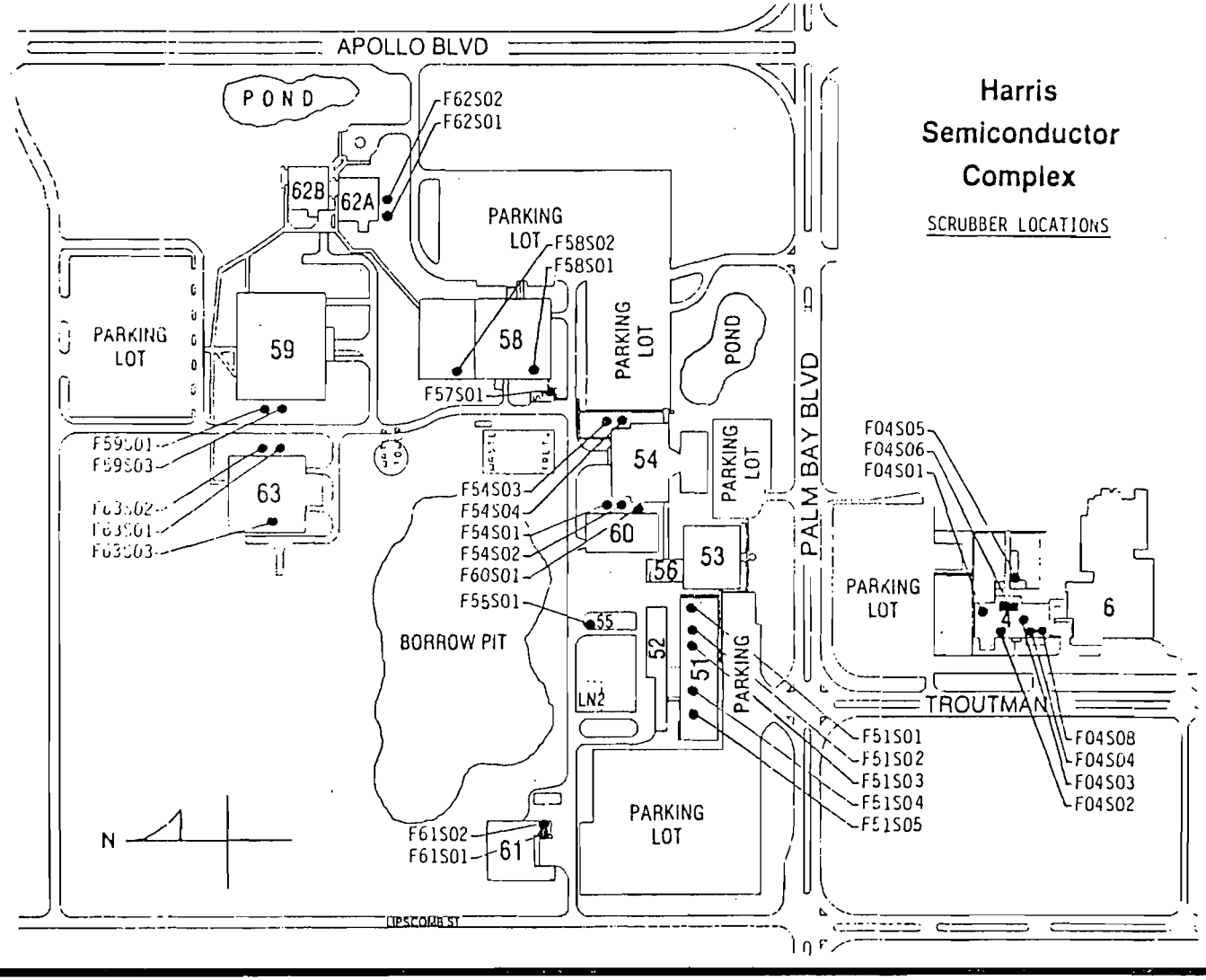

FIGURE 1
SOURCE LOCATION MAP
HARRIS SEMICONDUCTOR
MELBOURNE, FLORIDA

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and
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5.0 FIELD AND ANALYTICAL PROCEDURES

5.1 EPA METHOD 8 MODIFIED

All sampling was conducted with a modified EPA Method 8 sampling train (Figure 2). Sampling was conducted isokinetically at the point of average velocity. Sample volumes varied from 170-569 cubic feet as a function of velocity head and available test nozzle sizes.

Pure Distilled water was used as impinger solution to capture the acids.

Acid 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 - The Greenburg-Smith impingers were cleaned with a warm soapy water solution and brushes, rinsed with distilled water, and dried. The impingers 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

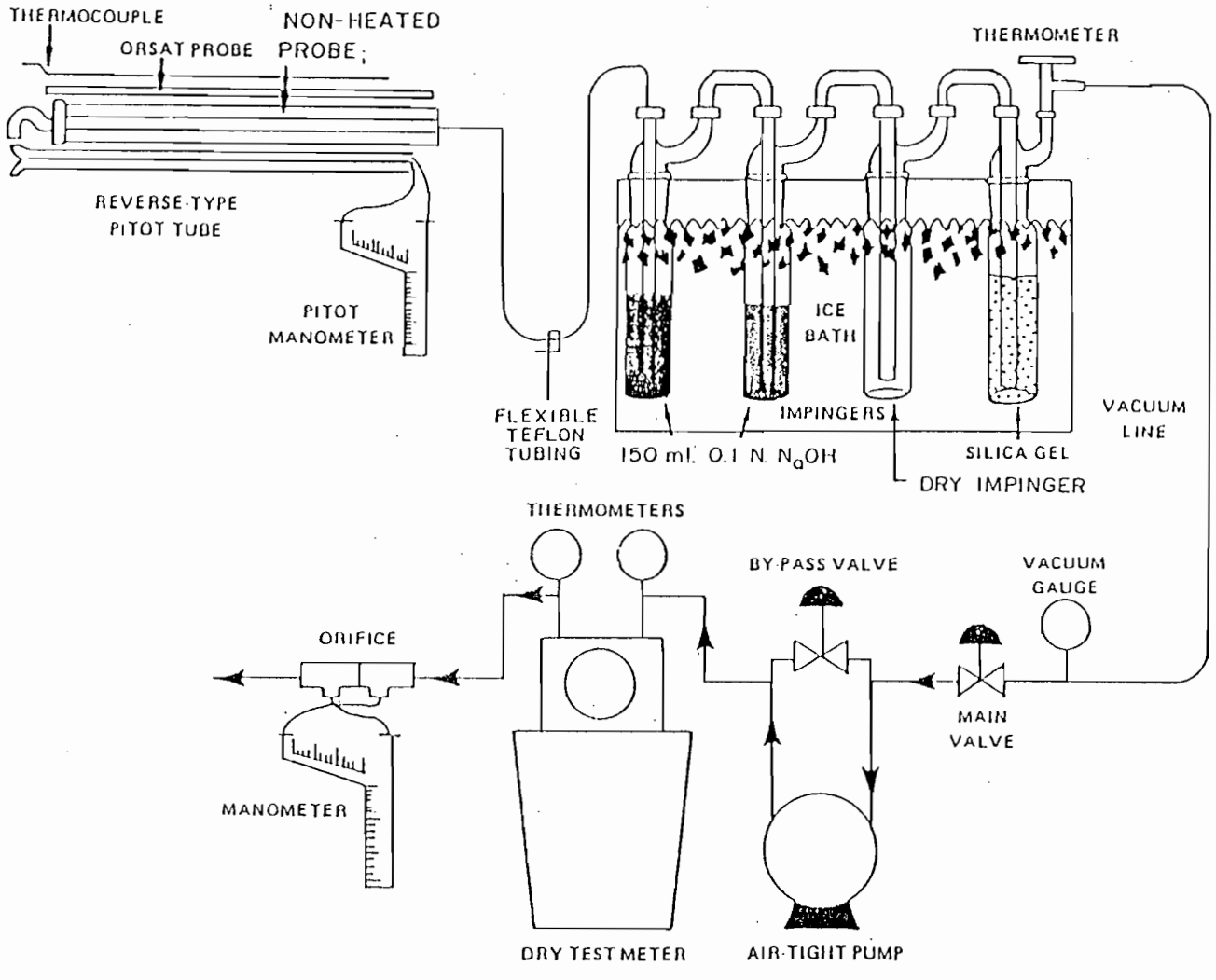

FIGURE 2
ACID SAMPLING TRAIN

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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" and standard pitot tubes and an inclined manometer. Velocity head measurements of 0.05 inches H_2O or less were measured utilizing a micromanometer.

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.

The gases sampled passed through the following components: a stainless steel nozzle and pyrex glass probe; flexible TEFLON tubing; two impingers with distilled water; one impinger dry; one impinger with 200 grams of silica gel; a flexible umbilical 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. All sample-exposed surfaces prior to the filter were washed with distilled water and placed in Container 1, sealed and the liquid level marked.

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

5.2 Visible Emissions Testing--EPA Method 9

The visible emission tests were performed in accordance with EPA Method 9. The observers maintain semi-annual FDER certification for the performance of visible emission tests.

All procedures listed in Method 9 were followed including observer's position relative to the sun, distance from the stack, and line of sight. These items are noted on the visible emission data sheet. Observations were made at 15-second intervals and recorded to the nearest five percent. The final opacity was determined by calculating the highest consecutive six minute average during the observation period.

5.3 EPA METHOD 25A

A Flame Inonization Analyzer (FIA) is used to monitor Volatile Organic Compounds (VOC) concentrations based on propane calibrations. Results are reported as ppm carbon. A Ratfisch Model RS55 analyzer and a Byron 215 dual source analyzer were used in the test series.

A schematic of the sample system is provided in Figure 3. Sample gases are continuously removed throughout a probe and TEFLON sample line.

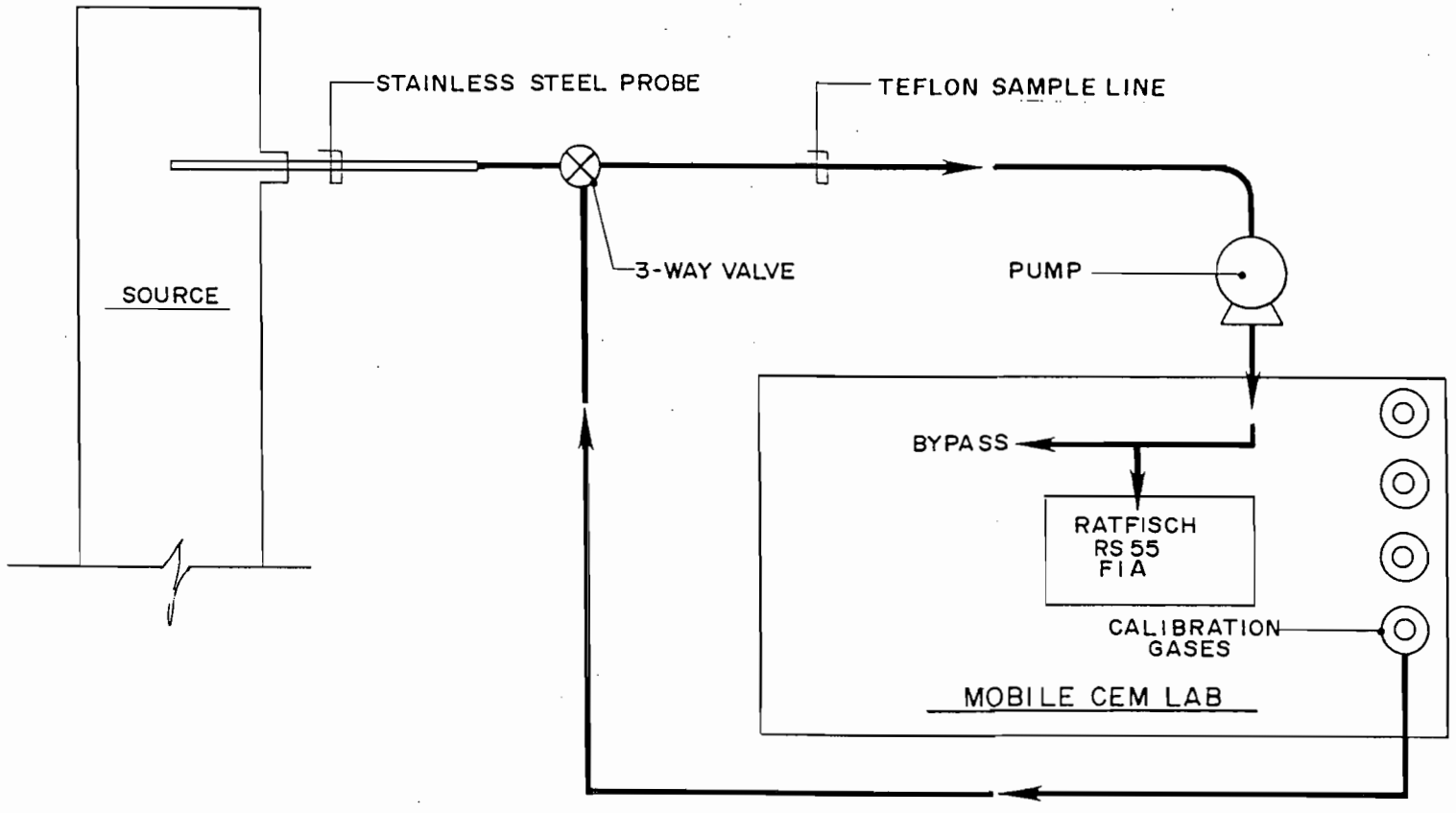

FIGURE 3.
EPA-25A
RATFISCH RS55 FIA

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and
ENGINEERING

A diaphragm sample pump is located in each analyzer that directs sample gases to the FID and bypass. Propane calibration gases are injected through a motorized three-way valve at the probe exit so that they "see" the same sample system as source gases. Three calibration gases plus a zero air gas are utilized for the sample range of interest (0 - 100 ppm, 0 - 1000 ppm, and 0 - 10000 ppm).

Before testing, a calibration error test is conducted after adjustment of zero and span gas values by injecting the remaining two gases into the sample system. These gases must demonstrate a linearity of within 5% of the calibration values.

After each test run a propane and zero gas are injected to demonstrate the drift rate. Both gases should demonstrate a drift of $\leq$ 3% of range.

5.4 EPA METHODS 1-4

Moisture and flow data for the outlet locations are necessary to report EPA Method 25A results on a mass basis. This data was compiled using EPA Methods 1-4 methodology during each test run.

APPENDIX A
ACID LABORATORY DATA

ENVIRONMENTAL LABORATORIES, INC.

July 13, 1990

Mr. Steve Neck
Air Consulting & Engineering
2106 N.W. 67th Place, Suite 4
Gainesville, FL 32606

Dear Steve:

Enclosed are the results of the analysis of your Harris samples received July 2, 1990.

All data were determined in accordance with published procedures (EPA-600/4-79-020, Methods for Chemical Analysis of Water and Wastes, Revised March 1983). PPB is certified by the Florida DHRS (Lab Nos. 82282 and E82001).

If you have any questions concerning this report, please do not hesitate to give me a call.

Sincerely,

M. Kelly Bergdoll
Project Manager

MKB:jlm

Enclosures

RE: INV90351

6821 SW ARCHER ROAD, GAINESVILLE, FLORIDA 32608 Tel. (904) 377-2349

ENVIRONMENTAL LABORATORIES, INC.

REPORT OF ANALYSES

Mr. Steve Neck
Air Consulting & Engineering
2106 N.W. 67th Place, Suite 4
Gainesville, FL 32606

Project: 86-026 ACE

Date: 7/13/90

DHRS#: 82282, E82001

Table 1. Harris Samples received July 2, 1990, All data in total mg

PPB#	ACE ID#	Chloride	Fluoride	Nitrates	Phosphorous	Sulfate
42331	F54S01	55	1.7	0.051	0.019	<4.6
42332	F54S03	90	3.6	0.333	0.014	20
42333	F54S04	3.8	0.4	0.119	0.005	<4.7
42334	F54S02	4.1	1.0	0.013	0.006	<4.6
42335	F54S02-I	<1.0	3.8	0.014	0.010	<4.8
42336	F54S02-0	<1.0	0.7	0.024	0.007	<5.0
42337	F57S01	<1.0	0.2	0.009	<0.005	<5.1
42338	F60S01	<1.0	0.3	0.034	<0.005	<5.0
42339	F55S01	<0.6	0.1	<0.003	<0.003	<3.0
42340	F57S01	<0.8	0.2	0.028	0.004	<4.1
42341	F58S02	<0.8	0.1	<0.004	0.005	<4.1
42342	F51S04	1.8	4.5	9.03	0.047	<3.7
42343	F51S03-I	1.0	8.6	0.050	0.083	<4.2
42344	F51S03-0	1.4	4.0	0.067	0.080	<3.9
42345	F59S01-I	10	3.7	0.162	0.009	<3.7
42346	F59S01-0	1.3	1.0	<0.004	0.007	<4.2
42347	F51S01	<1.0	0.3	0.302	0.008	<4.8
42348	F63S01	<0.8	0.2	0.011	0.030	<3.8
42349	F62S01	<0.9	0.2	0.013	0.013	<4.7
42350	F61S01	1.1	0.2	0.132	<0.005	<5.2
42351	F04S01	1.8	1.7	0.094	0.004	<4.4
42352	F04S02	6.7	7.6	0.039	0.004	<2.2
42353	F04S05	<0.8	0.2	<0.004	0.004	<3.8
42354	F04S03	0.7	0.9	0.015	<0.003	<3.2

Kelly Bergdall
Project Manager

6821 SW ARCHER ROAD, GAINESVILLE, FLORIDA 32608 Tel. (904) 377-2349

ENVIRONMENTAL LABORATORIES, INC.

REPORT OF ANALYSES

Mr. Steve Neck
Air Consulting & Engineering
2106 N.W. 67th Place, Suite 4
Gainesville, FL 32606

Project: 86-026 ACE

Date: 7/13/90

DHRS#: 82282, E82001

Table 2. Harris Samples received July 2, 1990

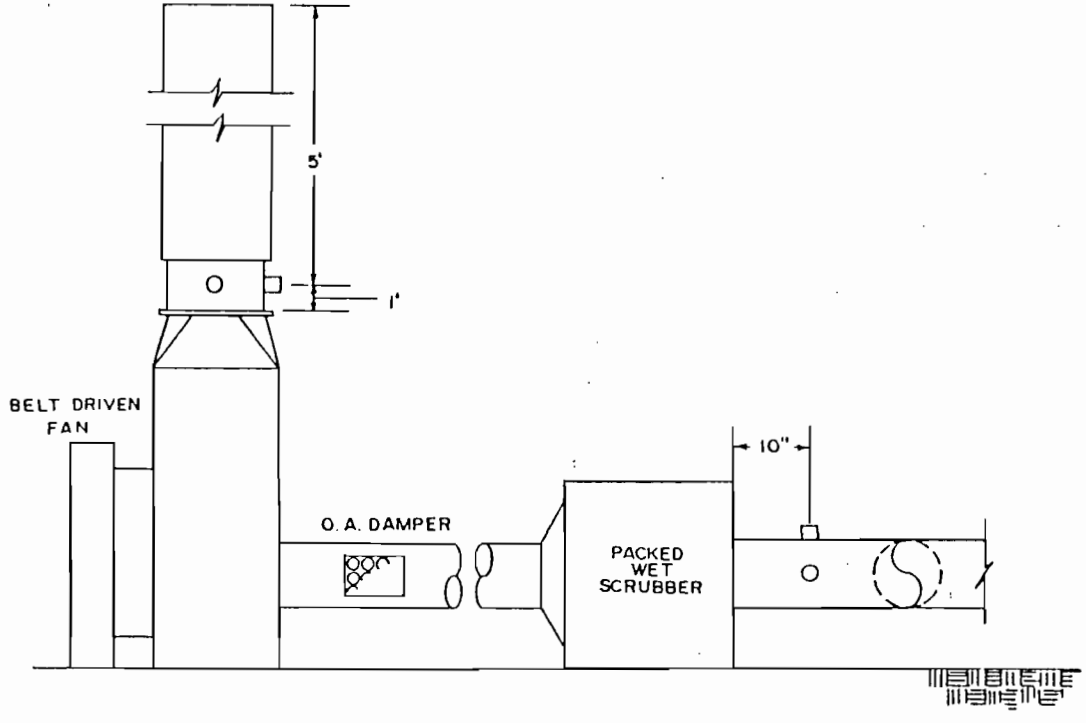
PPB#	ACE ID#	Total Volume, mL
42331	F54S01	920
42332	F54S03	880
42333	F54S04	940
42334	F54S02	910
42335	F54S02-I	968
42336	F54S02-0	1,000
42337	F57S01	1,020
42338	F60S01	1,010
42339	F55S01	605
42340	F57S01	820
42341	F58S02	825
42342	F51S04	740
42343	F51S03-I	840
42344	F51S03-0	780
42345	F59S01-I	740
42346	F59S01-0	840
42347	F51S01	970
42348	F63S01	765
42349	F62S01	940
42350	F61S01	1,040
42351	F04S01	875
42352	F04S02	450
54253	F04S05	765
54254	F04S03	640

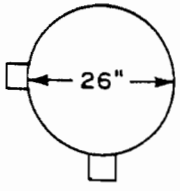
Kelly Bergdall
Project Manager

6821 SW ARCHER ROAD, GAINESVILLE, FLORIDA 32608 Tel. (904) 377-2349

APPENDIX B
SCHEMATIC
FIELD DATA SHEETS
AND
FLOW DATA BY SOURCE

F04S01
ACID, VOC





TRAVERSE POINT NUMBER	INCHES INSIDE STACK WALL
1	1.00
2	2.73
3	5.04
4	8.40
5	17.61
6	20.96
7	23.27
8	25.00

SAMPLING POINT LOCATION SCHEMATIC
HARRIS CORPORATION SOURCE - F04S01
GOVERNMENT SECTOR SYSTEMS
MELBOURNE, FLORIDA

AIR CONSULTING
and
ENGINEERING

MOISTURE AND FLOW CALCULATIONS

PLANT	HARRIS SEMICONDUCTOR	
STACK	F04S01	
DATE	6/28/90	
RUN NO.	1	
BAROMETRIC PRESS.	30.17	IN.HG
STACK PRESS.	30.17	IN.HG
STACK AREA	3.687	SQ.FT
AVG. STACK TEMP.	71	F
AVG. METER TEMP.	102.00	F
Y	0.992	
AVG. METER ORIFICE	3.110	IN. H2O
METER VOL.	525.550	CUB.FT
MOISTURE PLUS SILICA GEL	174.500	ML
STACK SQRT VEL. HEAD	0.525	IN. H2O
CP	0.990	
ORSAT: PERCENT CO2	0.0	
PERCENT O2	20.9	
PERCENT N2	79.1	
VWSTD.	8.226	SCF
VMSTD.	497.640	SCF
MOISTURE FRACTION	0.016	
FRACTION OF DRY AIR	0.984	
MWGT. OF DRY AIR	28.836	
MWGT. OF WET STACK GAS	28.660	
AVG. VEL	34.82	FPS
GAS FLOWRATE	7702.05	ACFM
STD. GAS FLOWRATE	7596.95	SCFMD

MOISTURE AND FLOW CALCULATIONS

PLANT HARRIS SEMICONDUCTOR
STACK F04S01
DATE 6/28/90
RUN NO. 1

	BAROMETRIC PRESS.	30.17	IN.HG
	STACK PRESS.	30.17	IN.HG
	STACK AREA	3.687	SQ.FT
	AVG. STACK TEMP.	71	F
	AVG. METER TEMP.	102.00	F
	Y	0.992	
	AVG. METER ORIFICE	3.110	IN. H2O
	METER VOL.	525.550	CUB.FT
	MOISTURE PLUS SILICA GEL	174.500	ML
	STACK SQRT VEL. HEAD	0.525	IN. H2O
	CP	0.840	
ORSAT:	PERCENT CO2	0.0	
	PERCENT O2	20.9	
	PERCENT N2	79.1	
	VWSTD.	8.226	SCF
	VMSTD.	497.640	SCF
	MOISTURE FRACTION	0.016	
	FRACTION OF DRY AIR	0.984	
	MWGT. OF DRY AIR	28.836	
	MWGT. OF WET STACK GAS	28.660	
	AVG. VEL	29.54	FPS
	GAS FLOWRATE	6535.07	ACFM
	STD. GAS FLOWRATE	6445.90	SCFMD

VELOCITY TRAVERSE

PLANT	HARRIS SEMICONDUCTOR
SOURCE	F04S01
DATE	6/28/90
BAROMETRIC PRESS.	30.170 IN.HG
STACK PRESS.	30.170 IN.HG
OPERATORS	GAUTHREAUX
RUN	1

TRAVERSE POINT NUMBER	VEL. HEAD IN.H2O	SQRT VEL. HEAD
1-1	0.390	0.624
1-2	0.370	0.608
1-3	0.340	0.583
1-4	0.340	0.583
1-5	0.280	0.529
1-6	0.220	0.469
1-7	0.210	0.458
1-8	0.240	0.490
2-1	0.190	0.436
2-2	0.230	0.480
2-3	0.310	0.557
2-4	0.270	0.520
2-5	0.240	0.490
2-6	0.260	0.510
2-7	0.280	0.529
2-8	0.280	0.529
		0.525

PRELIMINARY VELOCITY TRAVERSE

Air Consulting and Engineering

PLANT HARRIS SEMKONDUCTOR
DATE 6/28/90
SOURCE F04501 1,687
STACK I. D. 26" STACK AREA 3.690 Ft²
BAROMETRIC PRES., in. Hg
STATIC PRES. in. H_2O -.06 STACK PRES. in. Hg.
PORT DIAM. 2" NIPPLE LENGTH NA
PITOT TUBE NO. 48 TYPE STD.
OPERATORS HAGGE/RYANS

8/84 $\sqrt{\Delta P}$ = .591

SCHEMATIC OF TRAVERSE POINT LAYOUT

TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s) in. H_2O	STACK TEMPERATURE (T_s, °F)	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s in. H_2O	STACK TEMPERATURE (T_s, °F)
1-1	.39	~~$\sqrt{\Delta P}$~~ = .525	1.00			
2	.37	T_s = 71	2.73			
3	.34		5.04			
4	.34		8.40			
5	.28		17.61			
6	.22		20.96			
7	.21		23.27			
8 ~~.43~~	.24		25.00			
2-1	.19					
2	.23		(.525)(174)(.99)($\sqrt{.531}$) = 2083.9168 AFPM			
3	.31		(2083.9168)(3.690) = 7689.842 ACFM			
4	.27		(7689.842)($\frac{528}{531}$)(.98) = 7493.469 SCFM			
5	.24					
6	.26					
7	.28					
8 ~~.40~~	.28					
AVERAGE				AVERAGE		

STACK SAMPLING FIELD DATA SHEET

Consulting and Engineering
2106 N.W. 67th PLACE, SUITE 4
GAINESVILLE, FLORIDA 32606

TEST ID F04S01
PAGE 1 OF 2

PLANT Harris Semiconductor SOURCE F04S01
PLANT LOCATION Melbourne, Fla.
TYPE OF SAMPLING TRAIN Mod. EPA method 5
TYPE OF SAMPLES Acid
DATE 06-28-90 RUN NO.
TIME START 0700 TIME END ~~0~~ 1530
SAMPLE TIME 15 MIN. RUNS min/pt 510 Total min
BAR PRESS. 30.17 "Hg STACK PRESS. "Hg
ASSUMED MOISTURE % FDA
WEATHER TEMP. °F
METER BOX NO. 3 ΔH 1.57 Y .992
NOMOGRAPH C_f ~~8.28~~ 7.78 PITOT CORR. FACTOR .99
NOZZLE CALIBRATION = .302
STACK DIMINSIONS
STACK AREA (EFFECTIVE ft^2)
STACK HEIGHT ft.
STACK DIAMETER: UPSTREAM DOWNSTREAM
PORT SIZE in. NIPPLE LENGTH
U CORD LENGTH:
REMARKS:

cF = ~~8.28~~ 7.78

MAT'L PROCESSING RATE
GAS METER READINGS: FINAL 1272.020 $ft.^3$
INITIAL 746.470 $ft.^3$
NET 525.550 $ft.^3$
IMPINGERS VOL. GAIN 140 ml.
SILICA GEL NO. 14 WT. GAIN 34.5
FILTER NO. TOTAL CONDENSATE 174.5 ml.

ORSAT

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

NA
F_O F_O RANGE -
LEAK CHECKS: METER BOX/PUMP
ORSAT BAG GAS SAMPLE SYSTEM
ORSAT ANALYZER
PRE-TEST 0.00 CFM 15 "Hg POST-TEST 0.00 CFM 15 "Hg
BOX OPERATOR (ANONYMOUS) PROBE HOLDER
PYROMETER NO. PITOT TUBE NO. 59
PITOT TUBE LEAK CHECK: PRETEST OK
POST-TEST(+) H_2O SEC
POST-TEST(−) H_2O SEC

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL (IN.)	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O) CALC.	METER ORIFICE PRESS. DIFF. ("H_2O) ACTUAL	STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
1		0715	777.26	.40	3.31	3.31	62	NA	47	70	7.5
2		0730	777.23	.40	3.31	3.11	69		49	80	7.0
3		0745	793.400	.40	3.11	3.11	67		49	80	7.0
4		0800	807.310	.40	3.11	3.11	68		49	80	7.0
5		0815	822.906	.40	3.11	3.11	68		49	80	7.0
6		0830	838.601	.40	3.11	3.11	68		49	91	7.0

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RUN NO. F04501

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL (IN.)	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O)		STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
					CALC.	ACTUAL					
7		0845	853.469	.40	3.11	3.11	68	NA	50	92	7.0
8		0900	867.792	.40	3.11	3.11	68	↓	51	93	7.0
9		0915	884.999	.40	3.11	3.11	69	↓	45	98	7.0
10		0930	900.000	.40	3.11	3.11	69		46	101	7.0
11		0945	914.011	.40	3.11	3.11	69		45	101	7.0
12		1000	929.470	.40	3.11	3.11	69		45	101	7.0
13		1015	946.900	.40	3.11	3.11	69		45	105	7.0
14		1030	962.810	.40	3.11	3.11	69		45	107	7.0
15		1045	978.200	.40	3.11	3.11	71		48	111	7.0
16		1100	993.000	.40	3.11	3.11	69		48	109	7.0
17		1115	011.024	.40	3.11	3.11	69		45	109	7.0
18		1130	026.121	.40	3.11	3.11	70		45	104	7.0
19		1145	040.100	.40	3.11	3.11	69		44	104	7.0
20		1200	057.821	.40	3.11	3.11	69		43	104	7.0
21		1215	072.721	.40	3.11	3.11	70		42	104	7.0
22		1230	088.011	.40	3.11	3.11	71		42	102	7.0
23		1245	102.788	.40	3.11	3.11	72		42	102	7.0
24		1300	117.204	.40	3.11	3.11	72		42	100	7.0
25		1315	133.614	.40	3.11	3.11	72		42	99	7.0
26		1330	149.434	.40	3.11	3.11	72		43	98	7.0
27		1345	165.610	.40	3.11	3.11	72		44	97	7.0
28		1400	179.461	.40	3.11	3.11	72		44	97	7.0
29		1415	194.399	.40	3.11	3.11	73		45	97	7.0
30		1430	225.311	.40	3.11	3.11	72		45	97	7.0
31		1445	296.177	.40	3.11	3.11	72		45	96	7.0
32		1500	240.219	.40	3.11	3.11	72		46	97	7.0
33		1515	256.799	.40	3.11	3.11	71		46	97	7.0
34		1530	272.020	.40	3.11	3.11	71		46	97	7.0
										102	

HARRIS SEMICONDUCTOR
PALM BAY, FLORIDA
EPA-25A VOC EMISSIONS
6/28/90

AIR CONSULTING AND ENGINEERING, INC.

TIME	FO4S01 PPM C3H8 MAX	MIN	AVG	FO4S02 PPM C3H8 MAX	MIN	AVG
0700-0710	1.50	1.50	1.50	1.00	1.00	1.00
0710-0720	1.50	1.50	1.50	1.00	1.00	1.00
0720-0730	1.50	1.50	1.50	1.00	1.00	1.00
0730-0740	1.50	1.50	1.50	1.00	1.00	1.00
0740-0750	1.50	1.50	1.50	1.00	1.00	1.00
0750-0800	1.50	1.50	1.50	1.00	1.00	1.00
0800-0810	1.50	1.50	1.50	1.50	1.00	1.30
0810-0820	2.00	1.50	1.80	1.50	1.50	1.50
0820-0830	2.00	2.00	2.00	1.50	1.50	1.50
0830-0840	2.00	2.00	2.00	1.50	1.50	1.50
0840-0850	2.00	2.00	2.00	1.50	1.50	1.50
0850-0900	2.00	2.00	2.00	1.50	1.50	1.50
0900-0910	2.00	2.00	2.00	1.50	1.50	1.50
0910-0920	2.00	2.00	2.00	1.50	1.50	1.50
0920-0930	2.00	2.00	2.00	1.50	1.50	1.50
0930-0940	2.00	2.00	2.00	1.50	1.50	1.50
0940-0950	2.00	2.00	2.00	1.50	1.50	1.50
0950-1000	2.00	2.00	2.00	1.50	1.50	1.50
1000-1010	2.00	2.00	2.00	1.50	1.50	1.50
1010-1020	2.00	2.00	2.00	1.50	1.50	1.50
1020-1030	2.00	2.00	2.00	1.50	1.50	1.50
1030-1040	2.50	2.00	2.20	1.50	1.50	1.50
1040-1050	2.50	2.50	2.50	1.50	1.50	1.50
1050-1100	2.50	2.50	2.50	1.50	1.50	1.50
1100-1110	2.50	2.50	2.50	1.50	1.50	1.50
1110-1120	2.50	2.50	2.50	1.50	1.50	1.50
1120-1130	2.50	2.50	2.50	1.50	1.50	1.50
1130-1140	2.50	2.50	2.50	1.50	1.50	1.50
1140-1150	2.50	2.50	2.50	1.50	1.50	1.50
1150-1200	2.50	2.50	2.50	1.50	1.50	1.50
1200-1210	2.50	2.50	2.50	1.50	1.50	1.50
1210-1220	2.50	2.50	2.50	1.50	1.50	1.50
1220-1230	2.50	2.50	2.50	1.50	1.50	1.50
1230-1240	2.50	2.50	2.50	1.50	1.50	1.50
1240-1250	2.50	2.50	2.50	1.50	1.50	1.50
1250-1300	2.50	2.50	2.50	1.50	1.50	1.50
1300-1310	2.50	2.50	2.50	1.50	1.50	1.50
1310-1320	2.50	2.50	2.50	1.50	1.50	1.50
1320-1330	2.50	2.50	2.50	1.50	1.50	1.50
1330-1340	2.50	2.50	2.50	1.50	1.50	1.50
1340-1350	2.50	2.50	2.50	1.50	1.50	1.50
1350-1400	2.50	2.50	2.50	1.50	1.50	1.50
1400-1410	2.50	2.50	2.50	1.50	1.50	1.50
1410-1420	2.50	2.50	2.50	1.50	1.50	1.50
1420-1430	2.50	2.50	2.50	1.50	1.50	1.50
1430-1440	2.50	2.50	2.50	1.50	1.50	1.50
1440-1450	2.50	2.50	2.50	1.50	1.50	1.50
1450-1500	2.50	2.50	2.50	1.50	1.50	1.50
1500-1510	2.50	2.50	2.50	1.50	1.50	1.50
1510-1520	2.50	2.50	2.50	1.50	1.50	1.50
1520-1530	2.50	2.50	2.50	1.50	1.50	1.50
AVERAGES			2.22			1.44
AMBIENT CORR. AVG.			2.22			1.44

EMISSION SUMMARY **BEST AVAILABLE COPY**

FACILITY: Harris Semiconductor

SOURCE:

DATE: 6/28/90

S1 EQ4501 S2 EQ4502

TIME		MAXIMUM MAY	MAXIMUM MIN	MINIMUM AUG	MINIMUM MAY	AVERAGE MIN	AVERAGE AUG
0700	0710	1.5	1.5	1.5	1.0	1.0	1.0
0710	720						
0720	730						
0730	740						
0740	750						
0750	800	1.5	1.5	1.5	1.0	1.0	1.0
0800	810	1.5	1.5	1.5	1.5	1.0	1.3
0810	820	2.0	1.5	1.8	1.5	1.5	1.5
0820	830	2.0	2.0	2.0			
0830	840						
0840	850						
0850	900						
0900	910						
0910	920						
0920	930						
0930	940	2.0	2.0	2.0	1.5	1.5	1.5
0940	950						
0750	1000						
1000	1010						
1010	1020						
1020	1030						
1030	1040	2.5	2.0	2.2	1.5	1.5	1.5
1040	1050	2.5	2.5	2.5			
1050	1100	2.5	2.5	2.5			

FACILITY: Harris Semiconductor

SOURCE:

DATE: 6/28/95

S1 FOU SO1 S2 FOU SO2

TIME		MAXIMUM MAY	MAXIMUM JUN	MINIMUM AUG	MINIMUM MAY	AVERAGE JUN	AVERAGE AUG
1100	1110	2.5	2.5	2.5	1.5	1.5	1.5
1110	1120						
1120	1130						
1130	1140						
1140	1150						
1150	1200						
1200	1210	2.5	2.5	2.5	1.5	1.5	1.5
1210	1220						
1220	1230						
1230	1240						
1240	1250						
1250	1300						
1300	1310	2.5	2.5	2.5	1.5	1.5	1.5
1310	1320						
1320	1330						
1330	1340						
1340	1350						
1350	1400						
1400	1410	2.5	2.5	2.5	1.5	1.5	1.5
1410	1420						
1420	1430						
1430	1440						
1440	1450						
1445	1501						

FACILITY: Harris Semiconductor

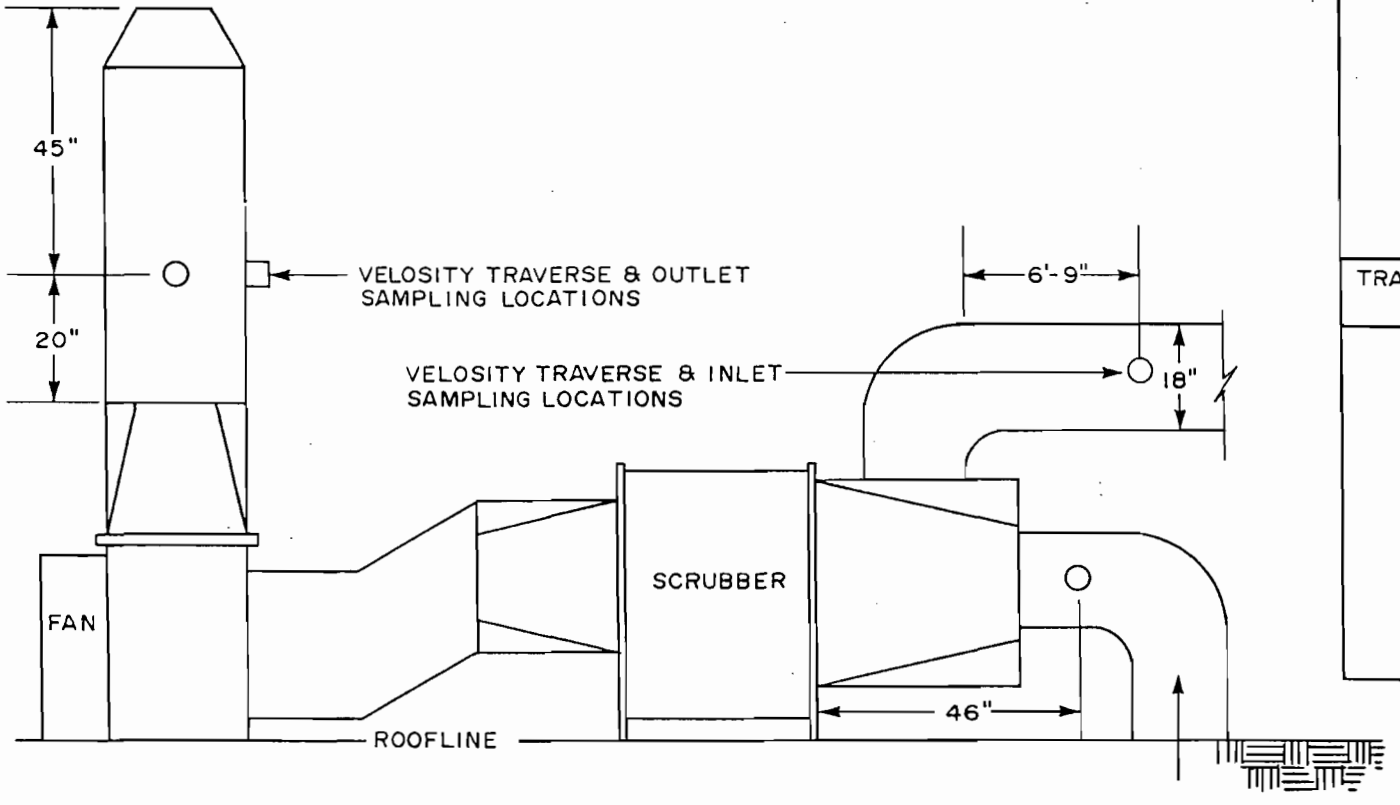
SOURCE:

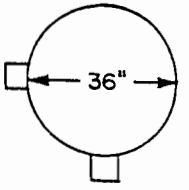
DATE: 6/28/90

5, F04501 5, F04502

TIME	MAXIMUM MAY	MAXIMUM MIN	MINIMUM AUG	MINIMUM MAY	AVERAGE MAY	AVERAGE AUG
1500 1510	2.5	2.5	2.5	1.5	1.5	1.5
1510 1520	↓	↓	↓	↓	↓	↓
1520 1530	↓	↓	↓	↓	↓	↓

F04S02
ACID, VOC





TRAVERSE POINT NUMBER	INCHES INSIDE STACK WALL
1	1.15
2	3.78
3	6.98
4	11.63
5	24.37
6	29.00
7	32.22
8	34.85

SAMPLING POINT LOCATION SCHEMATIC
HARRIS CORPORATION SOURCE - F04S02
GOVERNMENT SECTOR SYSTEMS
MELBOURNE, FLORIDA

AIR CONSULTING
and
ENGINEERING

MOISTURE AND FLOW CALCULATIONS

PLANT HARRIS SEMICONDUCTOR
STACK F04SO2
DATE 6/28/90
RUN NO. 1

	BAROMETRIC PRESS.	30.17	IN.HG
	STACK PRESS.	30.21	IN.HG
	STACK AREA	7.069	SQ.FT
	AVG. STACK TEMP.	83	F
	AVG. METER TEMP.	85.50	F
	Y	0.993	
	AVG. METER ORIFICE	0.840	IN. H2O
	METER VOL.	260.988	CUB.FT
	MOISTURE PLUS SILICA GEL	96.700	ML
	STACK SQRT VEL. HEAD	0.473	IN. H2O
	CP	0.990	
ORSAT:	PERCENT CO2	0.0	
	PERCENT O2	20.9	
	PERCENT N2	79.1	
	VWSTD.	4.558	SCF
	VMSTD.	253.460	SCF
	MOISTURE FRACTION	0.018	
	FRACTION OF DRY AIR	0.982	
	MWGT. OF DRY AIR	28.836	
	MWGT. OF WET STACK GAS	28.645	
	AVG. VEL	31.71	FPS
	GAS FLOWRATE	13448.49	ACFM
	STD. GAS FLOWRATE	12970.46	SCFMD

MOISTURE AND FLOW CALCULATIONS

PLANT HARRIS SEMICONDUCTOR
STACK F04SO2
DATE 6/28/90
RUN NO. 1

	BAROMETRIC PRESS.	30.17	IN.HG
	STACK PRESS.	30.21	IN.HG
	STACK AREA	7.069	SQ.FT
	AVG. STACK TEMP.	83	F
	AVG. METER TEMP.	85.50	F
	Y	0.993	
	AVG. METER ORIFICE	0.840	IN. H2O
	METER VOL.	260.988	CUB.FT
	MOISTURE PLUS SILICA GEL	96.700	ML
	STACK SQRT VEL. HEAD	0.473	IN. H2O
	CP	0.840	
ORSAT:	PERCENT CO2	0.0	
	PERCENT O2	20.9	
	PERCENT N2	79.1	
	VWSTD.	4.558	SCF
	VMSTD.	253.460	SCF
	MOISTURE FRACTION	0.018	
	FRACTION OF DRY AIR	0.982	
	MWGT. OF DRY AIR	28.836	
	MWGT. OF WET STACK GAS	28.645	
	AVG. VEL	26.90	FPS
	GAS FLOWRATE	11410.84	ACFM
	STD. GAS FLOWRATE	11005.24	SCFMD

VELOCITY TRAVERSE

PLANT	HARRIS SEMICONDUCTOR
SOURCE	F04SO2
DATE	6/28/90
BAROMETRIC PRESS.	30.170 IN.HG
STACK PRESS.	30.210 IN.HG
OPERATORS	PROWS
RUN	1

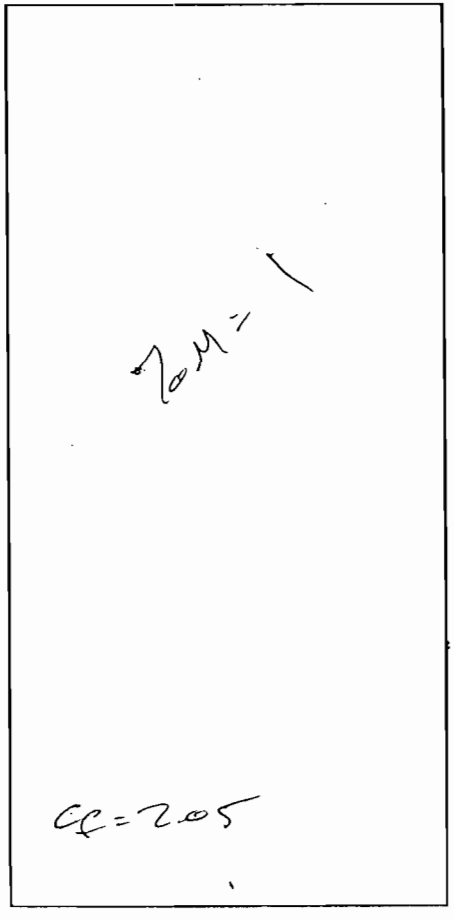
TRAVERSE POINT NUMBER	VEL. HEAD IN.H2O	SQRT VEL. HEAD
1-1	0.180	0.424
1-2	0.190	0.436
1-3	0.210	0.458
1-4	0.230	0.480
1-5	0.240	0.490
1-6	0.250	0.500
1-7	0.290	0.539
1-8	0.340	0.583
2-1	0.080	0.283
2-2	0.220	0.469
2-3	0.230	0.480
2-4	0.230	0.480
2-5	0.230	0.480
2-6	0.230	0.480
2-7	0.230	0.480
2-8	0.260	0.510
		0.473

STACK SAMPLING FIELD DATA SHEET

Consulting and Engineering
2106 N.W. 67th PLACE, SUITE 4
GAINESVILLE, FLORIDA 32606

TEST ID F04S02
PAGE 1 OF 2

PLANT HARRIS SEM SOURCE ~~F51S02~~ F04S02
PLANT LOCATION PALM BAY, FL.
TYPE OF SAMPLING TRAIN MOD. EPA-5
TYPE OF SAMPLES ACID
DATE 6/26/90 RUN NO. 1
TIME START 0700 TIME END 1530
SAMPLE TIME 15 MIN RDG min/pt 510 Total min
BAR PRESS. 30.17 "Hg STACK PRESS. ____ "Hg
ASSUMED MOISTURE 2 % FDA .98
WEATHER CLEAR TEMP. ____ °F
METER BOX NO. RAC#4 ΔH 1.897 Y 0.993
NOMOGRAPH C_f 2.05 PITOT CORR. FACTOR .84
NOZZLE CALIBRATION: 204 .205 .205 = .205
STACK DIMINSIONS ____
STACK AREA ____ (EFFECTIVE ____ ft^2)
STACK HEIGHT ____ ft.
STACK DIAMETER: UPSTREAM ____ DOWNSTREAM ____
PORT SIZE ____ in. NIPPLE LENGTH ____
U CORD LENGTH: ____
REMARKS: ____



MAT'L PROCESSING RATE ____
GAS METER READINGS: FINAL 727.142 ft.³
INITIAL 466.154 ft.³
NET 260.988 ft.³
IMPINGERS VOL. GAIN 60 ml.
SILICA GEL NO. 42 WT. GAIN 36.7
FILTER NO. — TOTAL CONDENSATE 96.7 ml.

ORSAT

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

NA
F_O ____ F_O RANGE ____
LEAK CHECKS: METER BOX/PUMP OK
ORSAT BAG ____ GAS SAMPLE SYSTEM ____
ORSAT ANALYZER ____
PRE-TEST 0.02 CFM 15 "Hg POST-TEST 0.02 CFM 17 "Hg
BOX OPERATOR TRW'S PROBE HOLDER —
PYROMETER NO. RAC PITOT TUBE NO. 53
PITOT TUBE LEAK CHECK: PRETEST OK
POST-TEST(+) 4.0 H_2O 15 SEC
POST-TEST(−) 3.0 H_2O 15 SEC

PORT AND TRAVERSE POINT NUMBER RDG.#	DISTANCE FROM INSIDE STACK WALL (IN.)	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O) CALC.	METER ORIFICE PRESS. DIFF. ("H_2O) ACTUAL	STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
1		0715	474.2	.38	.78	.78	76	NA	63	80	2
2		0730	481.3	.38	.78	.78	76		61	80	2
3		0745	488.5	.38	.78	.78	78		61	81	2
4		0800	495.4	.38	.78	.78	77		59	82	2
5		0815	502.6	.38	.78	.78	78		59	82	2
6		0830	510.0	.41	.84	.84	78		58	82	2

Consulting and Engineering

2106 N.W. 67th PLACE, SUITE 4
GAINESVILLE, FLORIDA 32606

RUN NO. F04502

F04502

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL (IN.)	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O)		STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
					CALC.	ACTUAL					
		0845	517.6	.42	.86	.86	77.6	N/A	58	82	2
		900	525.7	.42	.86	.86	78.4		56	82	2
		915	533.1	.41	.84	.84	77.6		56	83	2
		930	540.8	.41	.84	.84	77.5		56	83	2
		945	548.6	.41	.84	.84	78.5		58	83	2
		1000	556.3	.40	.82	.82	78.6		58	83	2
		1015	563.7	.40	.82	.82	78.6		59	83	2
		1030	571.6	.40	.82	.82	79.2		60	83	2
		1045	579.7	.41	.84	.84	79.7		60	83	2
		1100	587.1	.41	.84	.84	80.0		61	83	2
		1115	594.5	.41	.84	.84	80.7		61	84	2
		1130	601.8	.41	.84	.84	80.9		62	84	2
		1145	609.2	.41	.84	.84	81.5		62	84	2
		1200	616.6	.41	.84	.84	82.6		62	84	2
		1215	626.2	.41	.84	.84	83.3		63	85	2
		1230	634.1	.41	.84	.84	83.5		62	85	2
		1245	641.8	.41	.84	.84	84.2		63	85	2
		1300	649.5	.41	.84	.84	84.0		64	87	2
		1315	657.3	.41	.84	.84	83.1		63	88	2
		1330	665.0	.41	.84	.84	82.3		64	91	2
		1345	673.2	.40	.82	.82	81.8		64	93	2
		1400	680.8	.40	.82	.82	81.4		64	93	2
		1415	688.5	.40	.82	.82	81.9		64	94	2
		1430	696.3	.40	.82	.82	81.8		65	94	2
		1445	703.9	.40	.82	.82	82.0		65	95	2
		1500	711.6	.40	.82	.82	81.8		65	95	2
		1515	719.5	.40	.82	.82	81.9			95.5	
		1530									

PRELIMINARY VELOCITY TRAVERSE

Air Consulting and Engineering

PLANT: HARRIS SEMICONDUCTOR (GOV'T)
DATE: 6/28/90
SOURCE: FOH SOZ
STACK I.D.: 36" STACK AREA: 7.069 ft^2
BAROMETRIC PRES., In. Hg: 30.17
STATIC PRES. in H_2O: +.60 STACK PRES. in. Hg.: 30.21
PORT DIAM.: 2" NIPPLE LENGTH: NA
PITOT TUBE NO.: 48 TYPE: STD
OPERATORS: PROWS/HOGGE

%M = 1

8/89 $\sqrt{\Delta P}$ = 0.487

SCHEMATIC OF TRAVERSE POINT LAYOUT

TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s) in. H_2O	STACK TEMPERATURE (T_s, °F)	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s in. H_2O)	STACK TEMPERATURE (T_s, °F)
1-1	.18	[illegible]	1.15			
2	.19	[illegible] .473	3.78			
3	.21	T_s ≈ 87	6.98			
4	.23		11.63			
5	.24		24.37			
6	.25		29.00			
7	.29		32.22			
8	.34	.489	34.85			
2-1	.08					
2	.22					
3	.23					
4	.23					
5	.23					
6	.23					
7	.23					
8	.26	.457				
AVERAGE				AVERAGE		

(.473)(174)(.99)($\sqrt{.543}$) = 1898.653

(1898.653)(7.069) = 13421.575

(13421.575)($\frac{528}{543}$)(.99) = 12920.305 SCFMD

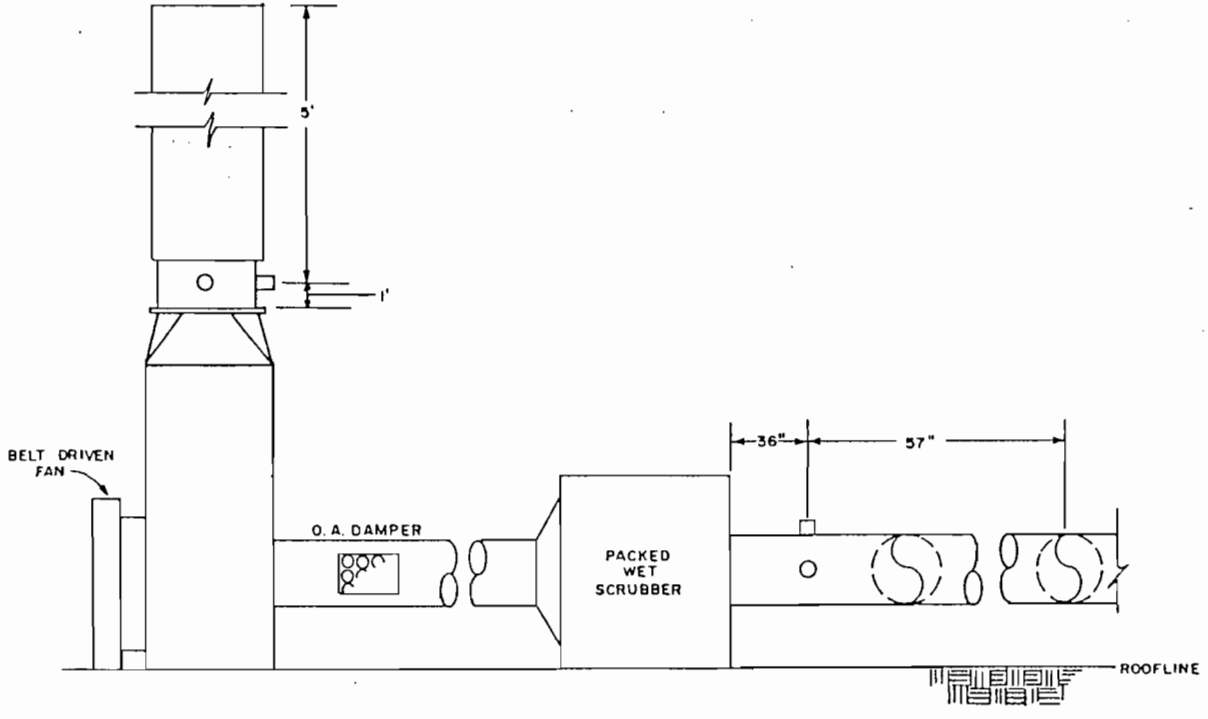
HARRIS SEMICONDUCTOR
PALM BAY, FLORIDA
EPA-25A VOC EMISSIONS
6/28/90

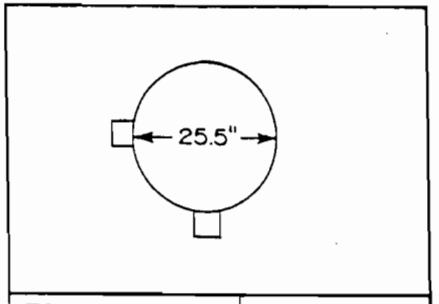
AIR CONSULTING AND ENGINEERING, INC.

BEST AVAILABLE COPY

TIME	F04S01 PPM C3H8 MAX	MIN	AVG	F04S02 PPM C3H8 MAX	MIN	AVG
0700-0710	1.50	1.50	1.50	1.00	1.00	1.00
0710-0720	1.50	1.50	1.50	1.00	1.00	1.00
0720-0730	1.50	1.50	1.50	1.00	1.00	1.00
0730-0740	1.50	1.50	1.50	1.00	1.00	1.00
0740-0750	1.50	1.50	1.50	1.00	1.00	1.00
0750-0800	1.50	1.50	1.50	1.00	1.00	1.00
0800-0810	1.50	1.50	1.50	1.50	1.00	1.30
0810-0820	2.00	1.50	1.80	1.50	1.50	1.50
0820-0830	2.00	2.00	2.00	1.50	1.50	1.50
0830-0840	2.00	2.00	2.00	1.50	1.50	1.50
0840-0850	2.00	2.00	2.00	1.50	1.50	1.50
0850-0900	2.00	2.00	2.00	1.50	1.50	1.50
0900-0910	2.00	2.00	2.00	1.50	1.50	1.50
0910-0920	2.00	2.00	2.00	1.50	1.50	1.50
0920-0930	2.00	2.00	2.00	1.50	1.50	1.50
0930-0940	2.00	2.00	2.00	1.50	1.50	1.50
0940-0950	2.00	2.00	2.00	1.50	1.50	1.50
0950-1000	2.00	2.00	2.00	1.50	1.50	1.50
1000-1010	2.00	2.00	2.00	1.50	1.50	1.50
1010-1020	2.00	2.00	2.00	1.50	1.50	1.50
1020-1030	2.00	2.00	2.00	1.50	1.50	1.50
1030-1040	2.50	2.00	2.20	1.50	1.50	1.50
1040-1050	2.50	2.50	2.50	1.50	1.50	1.50
1050-1100	2.50	2.50	2.50	1.50	1.50	1.50
1100-1110	2.50	2.50	2.50	1.50	1.50	1.50
1110-1120	2.50	2.50	2.50	1.50	1.50	1.50
1120-1130	2.50	2.50	2.50	1.50	1.50	1.50
1130-1140	2.50	2.50	2.50	1.50	1.50	1.50
1140-1150	2.50	2.50	2.50	1.50	1.50	1.50
1150-1200	2.50	2.50	2.50	1.50	1.50	1.50
1200-1210	2.50	2.50	2.50	1.50	1.50	1.50
1210-1220	2.50	2.50	2.50	1.50	1.50	1.50
1220-1230	2.50	2.50	2.50	1.50	1.50	1.50
1230-1240	2.50	2.50	2.50	1.50	1.50	1.50
1240-1250	2.50	2.50	2.50	1.50	1.50	1.50
1250-1300	2.50	2.50	2.50	1.50	1.50	1.50
1300-1310	2.50	2.50	2.50	1.50	1.50	1.50
1310-1320	2.50	2.50	2.50	1.50	1.50	1.50
1320-1330	2.50	2.50	2.50	1.50	1.50	1.50
1330-1340	2.50	2.50	2.50	1.50	1.50	1.50
1340-1350	2.50	2.50	2.50	1.50	1.50	1.50
1350-1400	2.50	2.50	2.50	1.50	1.50	1.50
1400-1410	2.50	2.50	2.50	1.50	1.50	1.50
1410-1420	2.50	2.50	2.50	1.50	1.50	1.50
1420-1430	2.50	2.50	2.50	1.50	1.50	1.50
1430-1440	2.50	2.50	2.50	1.50	1.50	1.50
1440-1450	2.50	2.50	2.50	1.50	1.50	1.50
1450-1500	2.50	2.50	2.50	1.50	1.50	1.50
1500-1510	2.50	2.50	2.50	1.50	1.50	1.50
1510-1520	2.50	2.50	2.50	1.50	1.50	1.50
1520-1530	2.50	2.50	2.50	1.50	1.50	1.50
AVERAGES			2.22			1.44
AMBIENT CORR. AVG.			2.22			1.44

F04S03
ACID, VOC





TRAVERSE POINT NUMBER	INCHES INSIDE STACK WALL
1	1.00
2	2.68
3	4.95
4	8.24
5	17.26
6	20.55
7	22.82
8	24.50

SAMPLING POINT LOCATION SCHEMATIC
HARRIS CORPORATION SOURCE - F04S03
GOVERNMENT SECTOR SYSTEMS
MELBOURNE, FLORIDA

AIR CONSULTING
and
ENGINEERING

MOISTURE AND FLOW CALCULATIONS

PLANT HARRIS SEMICONDUCTOR
STACK F04SO3
DATE 6/28/90
RUN NO. 1

BAROMETRIC PRESS.	30.17	IN.HG
STACK PRESS.	30.16	IN.HG
STACK AREA	3.547	SQ.FT
AVG. STACK TEMP.	75	F
AVG. METER TEMP.	89.00	F
Y	0.993	
AVG. METER ORIFICE	1.370	IN. H2O
METER VOL.	318.825	CUB.FT
MOISTURE PLUS SILICA GEL	119.700	ML
STACK SQRT VEL. HEAD	0.614	IN. H2O
CP	0.990	

ORSAT: PERCENT CO2	0.0	
PERCENT O2	20.9	
PERCENT N2	79.1	

VWSTD.	5.643	SCF
VMSTD.	308.051	SCF
MOISTURE FRACTION	0.018	
FRACTION OF DRY AIR	0.982	
MWGT. OF DRY AIR	28.836	
MWGT. OF WET STACK GAS	28.641	
AVG. VEL	40.89	FPS
GAS FLOWRATE	8702.56	ACFM
STD. GAS FLOWRATE	8501.86	SCFMD

MOISTURE AND FLOW CALCULATIONS

PLANT HARRIS SEMICONDUCTOR
STACK F04S03
DATE 6/28/90
RUN NO. 1

	BAROMETRIC PRESS.	30.17	IN.HG
	STACK PRESS.	30.16	IN.HG
	STACK AREA	3.547	SQ.FT
	AVG. STACK TEMP.	75	F
	AVG. METER TEMP.	89.00	F
	Y	0.993	
	AVG. METER ORIFICE	1.370	IN. H2O
	METER VOL.	318.825	CUB.FT
	MOISTURE PLUS SILICA GEL	119.700	ML
	STACK SQRT VEL. HEAD	0.614	IN. H2O
	CP	0.840	
ORSAT:	PERCENT CO2	0.0	
	PERCENT O2	20.9	
	PERCENT N2	79.1	
	VWSTD.	5.643	SCF
	VMSTD.	308.051	SCF
	MOISTURE FRACTION	0.018	
	FRACTION OF DRY AIR	0.982	
	MWGT. OF DRY AIR	28.836	
	MWGT. OF WET STACK GAS	28.641	
	AVG. VEL	34.70	FPS
	GAS FLOWRATE	7383.99	ACFM
	STD. GAS FLOWRATE	7213.70	SCFMD

VELOCITY TRAVERSE

PLANT	HARRIS SEMICONDUCTOR	
SOURCE	F04S03	
DATE	6/28/90	
BAROMETRIC PRESS.	30.170	IN.HG
STACK PRESS.	30.160	IN.HG
OPERATORS	PROWS	
RUN	1	

TRAVERSE POINT NUMBER	VEL. HEAD IN.H2O	SQRT VEL. HEAD
1-1	0.500	0.707
1-2	0.430	0.656
1-3	0.320	0.566
1-4	0.250	0.500
1-5	0.230	0.480
1-6	0.260	0.510
1-7	0.450	0.671
1-8	0.600	0.775
2-1	0.500	0.707
2-2	0.540	0.735
2-3	0.440	0.663
2-4	0.370	0.608
2-5	0.230	0.480
2-6	0.240	0.490
2-7	0.320	0.566
2-8	0.510	0.714
		0.614

STACK SAMPLING FIELD DATA SHEET

ace Consulting and Engineering
2106 N.W. 67th PLACE, SUITE 4
GAINESVILLE, FLORIDA 32606

TEST ID _____

PAGE 1 OF 2

PLANT HARRIS SOURCE FO4503

PLANT LOCATION PALM BAY, FL

TYPE OF SAMPLING TRAIN Mod. 5

TYPE OF SAMPLES ACID

DATE _____ RUN NO. _____

TIME START 0730 TIME END 1530

SAMPLE TIME 15 min min/pt _____ Total min

BAR PRESS. 30.17 "Hg STACK PRESS. _____ "Hg

ASSUMED MOISTURE _____ % FDA _____

WEATHER Clear TEMP. _____ °F

METER BOX NO. RAC ΔH 1.897 Y .993

NOMOGRAPH C_f _____ PITOT CORR. FACTOR _____

NOZZLE CALIBRATION _____ _____ _____ = _____

STACK DIMINSIONS _____

STACK AREA _____ (EFFECTIVE _____ ft^2)

STACK HEIGHT _____ ft.

STACK DIAMETER: UPSTREAM _____ DOWNSTREAM _____

PORT SIZE _____ in. NIPPLE LENGTH _____

U CORD LENGTH: _____

REMARKS: _____

MAT'L PROCESSING RATE _____

GAS METER READINGS: FINAL 1046.227 $ft.^3$

INITIAL 727.402 $ft.^3$

NET 318.825 $ft.^3$

IMPINGERS VOL. GAIN 81 ml.

SILICA GEL NO. 30 WT. GAIN 38.7

FILTER NO. _____ TOTAL CONDENSATE 119.7 ml.

ORSAT

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

F_O _____ F_O RANGE _____

LEAK CHECKS: METER BOX/PUMP _____

ORSAT BAG _____ GAS SAMPLE SYSTEM _____

ORSAT ANALYZER _____

PRE-TEST ~~000~~ CFM 14 "Hg POST-TEST ~~000~~ CFM 12 "Hg

BOX OPERATOR PROWS PROBE HOLDER _____

PYROMETER NO. ATK PITOT TUBE NO. _____

PITOT TUBE LEAK CHECK: PRETEST ✓

POST-TEST(+) 3.5 H_2O 15 SEC

POST-TEST(−) 4.5 H_2O 15 SEC

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PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL (IN.)	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O) CALC.	METER ORIFICE PRESS. DIFF. ("H_2O) ACTUAL	STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
		730	727.4	.67	1.37	1.37	64.5	N/A	61	82	2
		~~745~~	~~796.7~~	.67	1.37	1.37	63.4		59	82	2
		800	747.0	.67	1.37	1.37	65.3		59	82	2
		815	756.4	.67	1.37	1.37	65.4		57	82	2
		830	765.7	.67	1.37	1.37	65.7		56	83	2
		845	775.6	.67	1.37	1.37	66.1		57	83	

Air Consulting and Engineering

2106 N.W. 67th PLACE, SUITE 4
GAINESVILLE, FLORIDA 32606

RUN NO. _____

HARRIS F04503

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL (IN.)	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O)		STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
					CALC.	ACTUAL					
		900	785.3	.66	1.35	1.35	66.0	N/A	59	83	2
		915	794.9	.67	1.37	1.37	66.2		58	83	2
		930	804.7	.67	1.37	1.37	66.3		58	83	2
		945	814.2	.67	1.37	1.37	66.8		58	84	2
		1000	825.5	.67	1.31	1.37	66.6		59	84	2
		1015	834.1	.68	1.39	1.39	66.9		59	84	2
		1030	843.4	.66	1.35	1.35	67.0		61	85	2
		1045	853.2	.66	1.35	1.35	67.2		61	87	2
		1100	862.8	.66	1.35	1.35	67.1		60	88	2
		1115	873.0	.66	1.35	1.35	67.1		60	88	2
		1130	882.1	.66	1.35	1.35	67.2		61	90	2
		1145	892.2	.66	1.35	1.35	67.5		61	90	2
		1200	902.2	.72	1.48	1.48	67.4		62	92	2
		1215	912.8	.72	1.48	1.48	67.6		62	92	3
		1230	922.7	.74	1.52	1.52	67.7		62	92	3
		1245	932.0	.74	1.52	1.52	69		50	93	3
		1300	942.85	.74	1.52	1.52	69		50	94	3
		1315	953.00	.74	1.52	1.52	70		50	94	3
		1330	964.00	.74	1.52	1.52	69		53	96	3
		1345	975.00	.74	1.52	1.52	69		53	96	3
		1400	985.2	.72	1.48	1.48	68.4		53	96	3
		1415	995.5	.71	1.46	1.46	68.1		54	96	3
		1430	1006.3	.72	1.48	1.48	68.0		54	96	3
		1445	1016.2	.71	1.46	1.46	67.9		55	97	3
		1500	1028.0	.71	1.46	1.46	66.8		55	97	3
		1515	1037.6	.71	1.46	1.46	66.8		56	98	3
		1530	1046.2							89	

PRELIMINARY VELOCITY TRAVERSE

Air Consulting and Engineering

PLANT HARRIS SEMICONDUCTOR (GOVT)
DATE 6/28/90
SOURCE F04503
STACK I.D. ~~25.5'~~ 48" STACK AREA ~~12.57 ft²~~ 3.547 ft² 3.547
BAROMETRIC PRES., In. Hg 30.17
STATIC PRES. in H_2O -.10 STACK PRES. in. Hg. 30.16
PORT DIAM. ~2" NIPPLE LENGTH NA
PITOT TUBE NO. 48 TYPE STD
OPERATORS PRows / MOORE

SCHEMATIC OF TRAVERSE POINT LAYOUT

TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s) in. H_2O	STACK TEMPERATURE (T_s, °F)	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s in. H_2O	STACK TEMPERATURE (T_s, °F)
1-1	.50	~~535~~ = .614	1.00			
2	.43	75°	2.68			
3	.32		4.95			
4	.25		8.24			
5	.23		17.26			
6	.26		20.55			
7	.45		22.82			
8 .00	.60		24.50			
2-1	.50					
2	.54					
3	.44		(.614)(174)(.99)(~~535~~) = 2446.413			AFPM
4	.37	~~3075.44~~	(2446.413)(3.547) = ~~8677.425~~			~~ACFM~~
5	.23		~~(8677.425)~~ ($\frac{528}{535}$)(.98) = ~~8592.611~~			SCFM
6	.24					~~29742.08~~
7 .00	.32					
8 .00	.51					
			8592.611 SCFM			
AVERAGE				AVERAGE		

EMISSION SUMMARY

FACILITY: HARRIS SEMICONDUCTOR
SOURCE: F04503
DATE: 6-29-90

Source 2

TIME	MAXIMUM	MINIMUM	AVERAGE
0700 : 0710	16	10	13
0710 - 0720	9	8	8
0720 - 0730	7	6	6
0730 - 0740	7	5	6
0740 - 0750	13	5	10
0750 - 0800	12	8	9
0800 - 0810	8	7	7
0810 - 0820	7	6	6
0820 - 0830	6	5	6
0830 - 0840	6	5	6
0840 - 0850	6	5	5
0850 - 0900	5	4	5
0900 - 0910	5	5	5
0910 - 0920	8	5	6
0920 - 0930	9	5	6
0930 - 0940	28	6	11
0940 - 0950	5	5	5
0950 - 1000	12	5	6
1000 - 1010	7	5	6
1010 - 1020	6	5	5
1020 - 1030	5	5	5
1030 - 1040	28	5	11

EMISSION SUMMARY

FACILITY: HARRIS SEMICONDUCTOR
SOURCE: F04503
DATE: 6-29-90

S-2

TIME	MAXIMUM	MINIMUM	AVERAGE
1040-1050	6	5	5
1050-1100	13	6	9
1100-1110	16	7	11
1110-1120	11	9	10
1120-1130	25	8	12
1130-1140	7	5	6
1140-1150	5	5	5
1150-1200	28	5	13
1200-1210	25	5	10
1210-1220	6	5	5
1220-1230	5	4	5
1230-1240	5	4	5
1240-1250	11	6	9
1250-1300	6	5	6
1300-1310	11	5	8
1310-1320	13	7	11
1320-1330	10	9	10
1330-1340	30	10	16
1340-1350	19	9	12
1350-1400	8	6	7
1400-1410	6	5	6
1410-1420	5	5	5

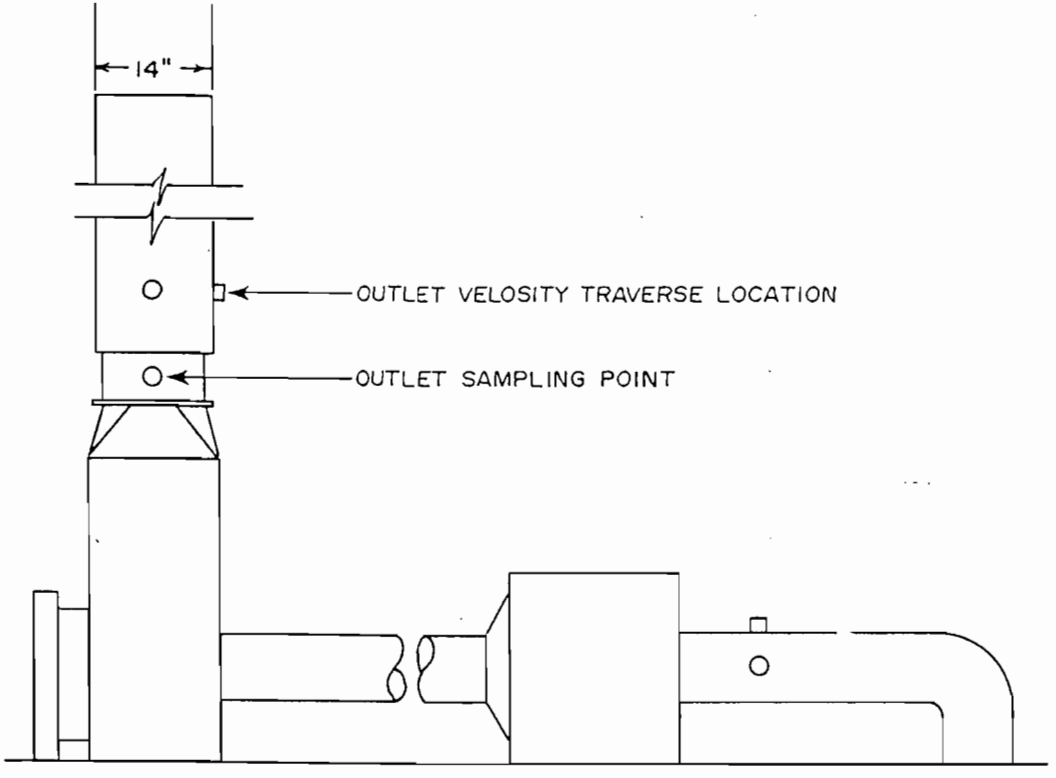
EMISSION SUMMARY

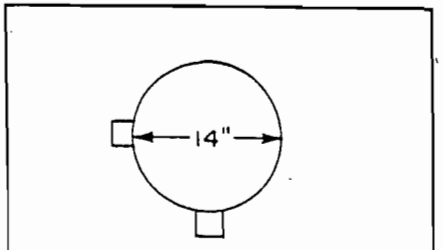
FACILITY: HARRIS SEMICONDUCTOR
SOURCE: F04503
DATE: 6/26/90

S-2

TIME	MAXIMUM	MINIMUM	AVERAGE
1420-1430	5	5	5
1430-1440	8	5	6
1440-1450	9.5	8.2	8.
1450-1500	7.5	5.5	6
1500-1510	6.5	6.0	6.
1510-1520	6	6	6
1520-1530	23	5	12
	-1-	PPM AMBIENT	
			388/51 = 7.6
			-1.0 AMB =
			6.0

F04S05
ACID





TRAVERSE POINT NUMBER	INCHES INSIDE STACK WALL
1	1.00
2	1.47
3	2.72
4	4.52
5	9.48
6	11.28
7	12.53
8	13.00

SAMPLING POINT LOCATION SCHEMATIC
HARRIS CORPORATION SOURCE - F04S05
GOVERNMENT SECTOR SYSTEMS
MELBOURNE, FLORIDA

AIR CONSULTING
and
ENGINEERING

MOISTURE AND FLOW CALCULATIONS

PLANT	HARRIS SEMICONDUCTOR	
STACK	F04S05	
DATE	6/28/90	
RUN NO.	1	
BAROMETRIC PRESS.	30.17	IN.HG
STACK PRESS.	30.19	IN.HG
STACK AREA	3.547	SQ.FT
AVG. STACK TEMP.	82	F
AVG. METER TEMP.	97.14	F
Y	0.994	
AVG. METER ORIFICE	4.880	IN. H2O
METER VOL.	481.843	CUB.FT
MOISTURE PLUS SILICA GEL	100.700	ML
STACK SQRT VEL. HEAD	0.285	IN. H2O
CP	0.990	
ORSAT: PERCENT CO2	0.0	
PERCENT O2	20.9	
PERCENT N2	79.1	
VWSTD.	4.747	SCF
VMSTD.	463.136	SCF
MOISTURE FRACTION	0.010	
FRACTION OF DRY AIR	0.990	
MWGT. OF DRY AIR	28.836	
MWGT. OF WET STACK GAS	28.726	
AVG. VEL	19.07	FPS
GAS FLOWRATE	4057.77	ACFM
STD. GAS FLOWRATE	3948.16	SCFMD

MOISTURE AND FLOW CALCULATIONS

PLANT HARRIS SEMICONDUCTOR
STACK F04S05
DATE 6/28/90
RUN NO. 1

	BAROMETRIC PRESS.	30.17	IN.HG
	STACK PRESS.	30.19	IN.HG
	STACK AREA	3.547	SQ.FT
	AVG. STACK TEMP.	82	F
	AVG. METER TEMP.	97.14	F
	Y	0.994	
	AVG. METER ORIFICE	4.880	IN. H2O
	METER VOL.	481.843	CUB.FT
	MOISTURE PLUS SILICA GEL	100.700	ML
	STACK SQRT VEL. HEAD	0.285	IN. H2O
	CP	0.840	
ORSAT:	PERCENT CO2	0.0	
	PERCENT O2	20.9	
	PERCENT N2	79.1	
	VWSTD.	4.747	SCF
	VMSTD.	463.136	SCF
	MOISTURE FRACTION	0.010	
	FRACTION OF DRY AIR	0.990	
	MWGT. OF DRY AIR	28.836	
	MWGT. OF WET STACK GAS	28.726	
	AVG. VEL	16.18	FPS
	GAS FLOWRATE	3442.95	ACFM
	STD. GAS FLOWRATE	3349.95	SCFMD

VELOCITY TRAVERSE

PLANT	HARRIS SEMICONDUCTOR
SOURCE	F04S05
DATE	6/28/90
BAROMETRIC PRESS.	30.170 IN.HG
STACK PRESS.	30.190 IN.HG
OPERATORS	HODGE
RUN	1

TRAVERSE POINT NUMBER	VEL. HEAD IN.H2O	SQRT VEL. HEAD
1-1	0.060	0.245
1-2	0.070	0.265
1-3	0.080	0.283
1-4	0.090	0.300
1-5	0.100	0.316
1-6	0.100	0.316
1-7	0.110	0.332
1-8	0.110	0.332
2-1	0.050	0.224
2-2	0.060	0.245
2-3	0.060	0.245
2-4	0.070	0.265
2-5	0.080	0.283
2-6	0.090	0.300
2-7	0.090	0.300
2-8	0.100	0.316
		0.285

STACK SAMPLING FIELD DATA SHEET

(CON'T)

Consulting and Engineering
2106 N.W. 67th PLACE, SUITE 4
GAINESVILLE, FLORIDA 32606

TEST ID Fo4S05
PAGE 1 OF 2

PLANT HARRIS SEM. SOURCE Fo4S05
PLANT LOCATION PALM BAY, FL.
TYPE OF SAMPLING TRAIN Mod. EPA-5
TYPE OF SAMPLES ACID
DATE 6/28/90 RUN NO. 1
TIME START 0822 TIME END 1530
SAMPLE TIME 15 MIN. PTS min/pt ~~540~~ 427 Total min
BAR PRESS. 30.17 "Hg STACK PRESS. 30 "Hg
ASSUMED MOISTURE 2 % FDA .98
WEATHER CLEAR TEMP. °F
METER BOX NO. 1 ΔH 2.05 Y 0.994
NOMOGRAPH C_f PITOT CORR. FACTOR .84
NOZZLE CALIBRATION .374 .375 .375 = .375
STACK DIMINSIONS 38"
STACK AREA 7.876 (EFFECTIVE 7.876 ft^2)
STACK HEIGHT ft.
STACK DIAMETER: UPSTREAM DOWNSTREAM
PORT SIZE in. NIPPLE LENGTH
U CORD LENGTH:
REMARKS: * Hood is used ~~also~~ as much as 6-7 times year

C_f = 24.45

MAT'L PROCESSING RATE
GAS METER READINGS: FINAL 991.731 ft^3
509.888 INITIAL ~~509.888~~ ft^3
NET 481.843 ft^3
IMPINGERS VOL. GAIN 70 ml.
SILICA GEL NO. 28 WT. GAIN 30.7
FILTER NO. — TOTAL CONDENSATE 100.7 ml.

ORSAT

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

NA

F_O F_O RANGE -
LEAK CHECKS: METER BOX/PUMP
ORSAT BAG GAS SAMPLE SYSTEM
ORSAT ANALYZER
PRE-TEST 0.00 CFM H "Hg POST-TEST 0.00 CFM 12 "Hg
BOX OPERATOR HAGE PROBE HOLDER —
PYROMETER NO. 1 PITOT TUBE NO. 3C
PITOT TUBE LEAK CHECK: PRETEST OK
POST-TEST(+) 4.7 H_2O 15 SEC
POST-TEST(−) 5.5 H_2O 15 SEC
29

PORT AND TRAVERSE POINT NUMBER Trg. #	DISTANCE FROM INSIDE STACK WALL (IN.)	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O) CALC.	METER ORIFICE PRESS. DIFF. ("H_2O) ACTUAL	STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
1		0830		.20	4.88		68	NA	50	82	11.0
2		0845		.20	4.88		69		50	82	11.0
3		0900		.20	4.88		70		50	82	11.0
4		0915		.20	4.88		71		50	95	11.0
5		0930		.20	4.88		73		50	95	11.0
6		0945		.20	4.88		79		50	95	

Consulting and Engineering

2106 N.W. 67th PLACE, SUITE 4
GAINESVILLE, FLORIDA 32606

PAGE 2 OF 2

RUN NO. F04505

K17.

PORT AND TRAVERSE POINT NUMBER (TRK #)	DISTANCE FROM INSIDE STACK WALL (IN)	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O) CALC.	METER ORIFICE PRESS. DIFF. ("H_2O) ACTUAL	STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
7		1000	611.30	.20	4.88		81	NA	60	98	11
8		1015	620.11	.20	4.88		81		63	99	11
9		1030	626.20	.20	4.88		81		60	99	11
10		1045	634.35	.20	4.88		81		59	99	11
11		1100	685.75	.20	4.88		82		55	101	11
12		1115	700.00	.20	4.88		82		50	101	11
13		1130	717.00	.20	4.88		82		50	101	11
14		1145	734.00	.20	4.88		82		51	101	11
15		1200	751.00	.20	4.88		82		53	100	11
16		1215	768.00	.20	4.88		82		51	100	11
17		1230	785.00	.20	4.88		82		58	99	11
18		1245	800.750	.20	4.88		82		57	99	11
19		1300	817.00	.20	4.88		82		57	99	11
20		1315	834.00	.20	4.88		83		56	99	11
21		1330	851.00	.20	4.88		83		57	99	11
22		1345	868.00	.20	4.88		83		55	99	11
23		1400	885.00	.20	4.88		83		57	99	11
24		1415	902.00	.20	4.88		83		55	99	11
25		1430	919.00	.20	4.88		83		57	99	11
26		1445	936.00	.20	4.88		83		57	99	11
27		1500	956.45	.20	4.88		83		58	99	11
28		1515	973.00	.20	4.88		83		57	99	11
29		1530	991.731	.20	4.88		83		57	99	11
~~30~~		~~1545~~							~~59~~		~~11~~
31		~~1600~~							57	99.14	
~~32~~											
~~33~~											
~~34~~											

PRELIMINARY VELOCITY TRAVERSE

air consulting and engineering

PLANT HARRIS SEMICONDUCTOR (GOV'T)
DATE ~~6/25/90~~ 10/29/90
SOURCE ~~FGD SOS~~ FGD SOS
STACK I.D. ~~30" 25.5~~ STACK AREA ~~6.681 ft²~~ ~~7.876 ft²~~ 3.547
BAROMETRIC PRES., in. Hg 30.35
STATIC PRES. in H_2O .31 STACK PRES. in. Hg.
PORT DIAM. ~2" NIPPLE LENGTH NA
PITOT TUBE NO. 59 TYPE ~~"S" PIPE STD~~
OPERATORS H/G.

1,069

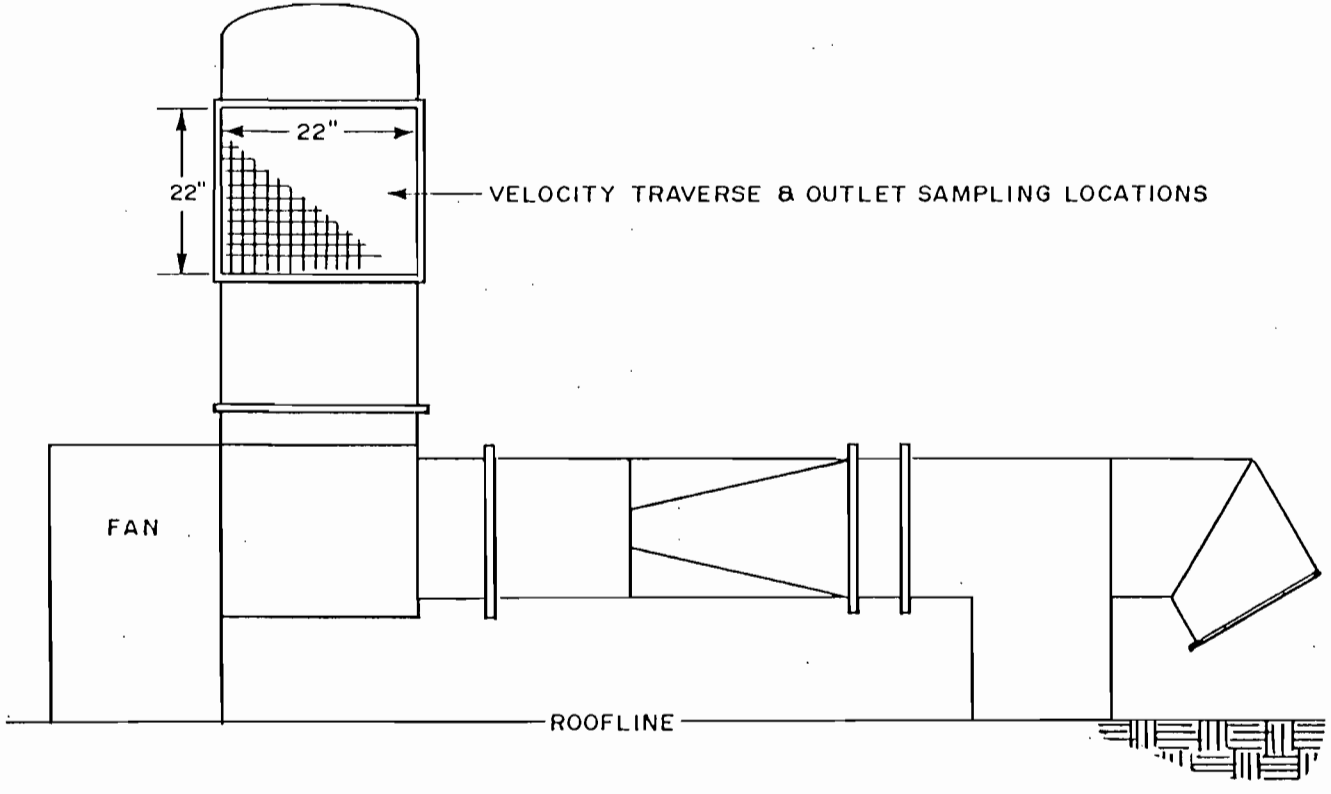
$\sqrt{\Delta P}$ = .438

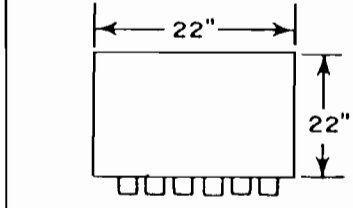
SCHEMATIC OF TRAVERSE POINT LAYOUT

TRAVERSE TOP PORT HOLES

TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s) in. H_2O	STACK TEMPERATURE (T_s, °F)	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s in. H_2O	STACK TEMPERATURE (T_s, °F)
1-1	.01 / .06		1.00	1.22		
2	.01 / .07	~~$\sqrt{\Delta P}$ = .286~~	2.55	3.99		
3	.01 / .08	T_s = 82	4.48	7.37		
4	.09		6.73	12.27		
5	.10		9.50	25.73		
6	.10		13.49	30.63		
7	.11		24.51	34.01		
8	.11		28.50	36.78		
9			31.27			
10	.299		33.52			
11			35.42			
12			37.00			
2-1	.05		(.286)(174)(.99)($\sqrt{542}$) = 1146.965			
2	.06		(1146.965)(3.547) = 4068.285			
3	.06		(4068.285)($\frac{528}{542}$)(.98) = 3883.936 SCFM			
4	.07					
5	.08					
6	.09					
7	.09					
8	.10					
9						
10						
11						
12						
AVERAGE				AVERAGE		

F04E08
VOC





TRAVERSE POINT NUMBER	INCHES INSIDE STACK WALL
1	2.75
2	8.25
3	13.75
4	19.25

SAMPLING POINT LOCATION SCHEMATIC
HARRIS CORPORATION SOURCE - F04E08
SEMICONDUCTOR DIVISION
MELBOURNE, FLORIDA

AIR CONSULTING
and
ENGINEERING

FLOWRATE CALCULATIONS

PLANT HARRIS SEMICONDUCT
STACK F04E08
DATE 6/28/90
RUN NO. 1

	BAROMETRIC PRESS.	30.09	IN.HG
	STACK PRESS.	30.11	IN.HG
	STACK AREA	3.361	SQ.FT
	AVG.STACK TEMP	70.00	F
	CP	0.99	
	AVG. SQRT VELOCITY HEAD	0.412	IN. H2O
ORSAT:	PERCENT CO2	0.0	
	PERCENT O2	20.9	
	PERCENT N2	79.1	
	FRACTION OF DRY AIR	0.976	
	MOISTURE FRACTION	0.024	
	MWGT. OF DRY STACK GAS	28.836	
	MWGT. OF WET STACK GAS	28.576	
	AVG.VELOCITY	27.36	FPS
	ACTUAL VOL. FLOW	5518.22	ACFM
	STD. VOL. FLOW	5399.53	SCFMD

VELOCITY TRAVERSE

PLANT	HARRIS SEMICONDUCTOR
DATE	6/28/90
SOURCE	F04E08
BAROMETRIC PRESS.	30.090 IN.HG
STACK PRESS.	30.105 IN.HG
OPERATORS	HODGE/PROWS
RUN	1

TRAVERSE POINT NUMBER	VEL. HEAD in. H2O	SQR VEL. HEAD
1-1	0.200	0.447
1-2	0.160	0.400
1-3	0.120	0.346
1-4	0.110	0.332
2-1	0.150	0.387
2-2	0.170	0.412
2-3	0.170	0.412
2-4	0.130	0.361
3-1	0.190	0.436
3-2	0.180	0.424
3-3	0.200	0.447
3-4	0.210	0.458
4-1	0.200	0.447
4-2	0.200	0.447
4-3	0.210	0.458
4-4	0.140	0.374
		0.412

PRELIMINARY VELOCITY TRAVERSE

Air Consulting and Engineering

PLANT: HARRIS SEMICONDUCTOR (GOVT)
DATE: 6/28/90
SOURCE: F04/S08 E08
STACK I.D.: 22x22   STACK AREA: 3.361 ft²
BAROMETRIC PRES., in. Hg: 30.09
STATIC PRES. in H_2O: +.20   STACK PRES. in. Hg.: 30.105
PORT DIAM.: 2"   NIPPLE LENGTH: NA
PITOT TUBE NO.: 48   TYPE: STD
OPERATORS: HODGE / PROWS

8/89 $\sqrt{\Delta P}$ - 0.640

SCHEMATIC OF TRAVERSE POINT LAYOUT

TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s) in. H_2O	STACK TEMPERATURE (T_s, °F)	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s in. H_2O)	STACK TEMPERATURE (T_s, °F)
1-1	.20	$\sqrt{\Delta P}$=.412	2.75			
2	.16	70	8.25			
3	.12		13.75			
4	.11		19.25			
2-1	.15					
2	.17					
3	.17					
4	.13	.387				
3-1	.19					
2	.18					
3	.20					
4	.21					
4-1	.20					
2	.20					
3	.21					
4	.14	.437				
5-1						
2						
3						
4						
6-1						
2						
3						
4						
AVERAGE				AVERAGE		

$(.412)(174)(.99)(\sqrt{530})$ = 1633.878 AFPM

$(1633.878)(3.361)$ = 5491.464 ACFMD

$(5491.464)(\frac{528}{530})(.98)$ = 5361.326 SCFMD

EMISSION SUMMARY

FACILITY: HARRIS SEMICONDUCTOR
SOURCE: F04 E08
DATE: 6-29-90

Source 1

TIME	MAXIMUM	MINIMUM	AVERAGE
0700 : 0710	9	8	9
0710 - 0720	43	9	25
0720 - 0730	56	45	49
0730 - 0740	41	31	35
0740 - 0750	29	20	23
0750 - 0800	43	21	29
0800 - 0810	68	39	49
0810 - 0820	51	44	47
0820 - 0830	82	52	63
0830 - 0840	132	87	100
0840 - 0850	91	75	84
0850 - 0900	92	68	78
0900 - 0910	75	70	74
0910 - 0920	75	58	62
0920 - 0930	98	78	84
0930 - 0940	90	70	77
0940 - 0950	138	72	100
0950 - 1000	242	125	167
1000 - 1010	115	57	86
1010 - 1020	210	55	131
1020 - 1030	125	53	81
1030 - 1040	70	46	57

EMISSION SUMMARY

FACILITY: HARRIS SEMICONDUCTOR
SOURCE: F-04E08
DATE: 6-29-90

S-1

TIME	MAXIMUM	MINIMUM	AVERAGE
1040-1050	78	70	74
1050-1100	72	58	65
1100-1110	58	52	55
1110-1120	64	59	62
1120-1130	45	39	42
1130-1140	58	34	41
1140-1150	82	66	74
1150-1200	82	74	80
1200-1210	82	68	74
1210-1220	86	75	82
1220-1230	86	65	74
1230-1240	78	64	58
1240-1250	70	42	66
1250-1300	80	56	70
1300-1310	73	63	64
1310-1320	58	46	50
1320-1330	85	42	64
1330-1340	65	50	58
1340-1350	58	40	52
1350-1400	50	38	42
1400-1410	55	50	52
1410-1420	56	35	45

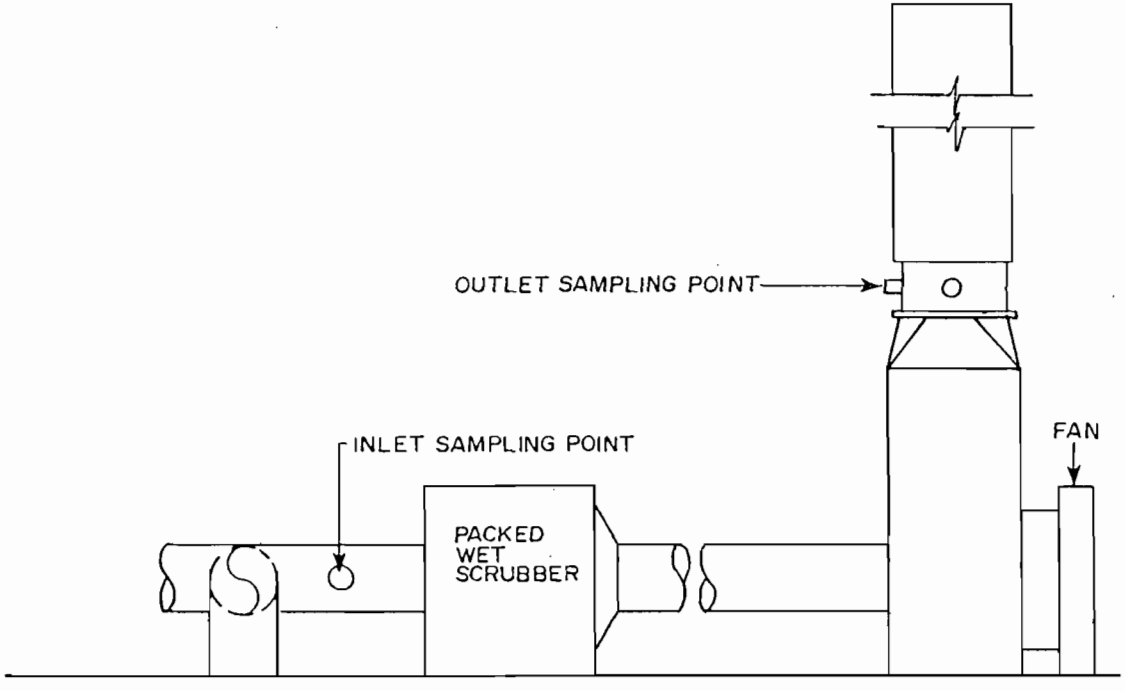
EMISSION SUMMARY

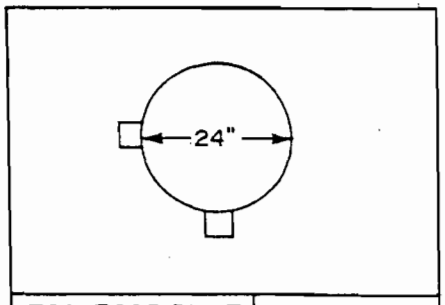
FACILITY: HARRIS SEMICONDUCTOR
SOURCE: F04E08
DATE: 6-29-90

S-1

TIME	MAXIMUM	MINIMUM	AVERAGE
1420-1430	125	34	73
1430-1440	156	30	66
1440-1450	32	21	26
1450-1500	40	30	34
1500-1510	29	19	24
1510-1520	18	15	16
1520-1530	14	12	13
	-1.0 PPM AMBIENT		
			3110/51 = 61
			-1.0 = 60

F51S01
ACID





TRAVERSE POINT NUMBER	INCHES INSIDE STACK WALL
1	1.00
2	2.52
3	4.66
4	7.75
5	16.25
6	19.34
7	21.48
8	23.00

SAMPLING POINT LOCATION SCHEMATIC
HARRIS CORPORATION- F51S01
SEMICONDUCTOR DIVISION

AIR CONSULTING
and
ENGINEERING

MOISTURE AND FLOW CALCULATIONS

PLANT HARRIS SEMICONDUCTOR
STACK F51S01
DATE 6/26/90
RUN NO. 1

	BAROMETRIC PRESS.	30.35	IN.HG
	STACK PRESS.	30.35	IN.HG
	STACK AREA	3.790	SQ.FT
	AVG. STACK TEMP.	68	F
	AVG. METER TEMP.	84.00	F
	Y	0.993	
	AVG. METER ORIFICE	1.680	IN. H2O
	METER VOL.	361.347	CUB.FT
	MOISTURE PLUS SILICA GEL	69.800	ML
	STACK SQRT VEL. HEAD	0.429	IN. H2O
	CP	0.990	
ORSAT:	PERCENT CO2	0.0	
	PERCENT O2	20.9	
	PERCENT N2	79.1	
	VWSTD.	3.290	SCF
	VMSTD.	354.706	SCF
	MOISTURE FRACTION	0.009	
	FRACTION OF DRY AIR	0.991	
	MWGT. OF DRY AIR	28.836	
	MWGT. OF WET STACK GAS	28.736	
	AVG. VEL	28.25	FPS
	GAS FLOWRATE	6423.46	ACFM
	STD. GAS FLOWRATE	6455.89	SCFMD

MOISTURE AND FLOW CALCULATIONS

PLANT	HARRIS SEMICONDUCTOR
STACK	F51S01
DATE	6/26/90
RUN NO.	1

	BAROMETRIC PRESS.	30.35	IN.HG
	STACK PRESS.	30.35	IN.HG
	STACK AREA	3.790	SQ.FT
	AVG. STACK TEMP.	68	F
	AVG. METER TEMP.	84.00	F
	Y	0.993	
	AVG. METER ORIFICE	1.680	IN. H2O
	METER VOL.	361.347	CUB.FT
	MOISTURE PLUS SILICA GEL	69.800	ML
	STACK SQRT VEL. HEAD	0.429	IN. H2O
	CP	0.840	
ORSAT:	PERCENT CO2	0.0	
	PERCENT O2	20.9	
	PERCENT N2	79.1	
	VWSTD.	3.290	SCF
	VMSTD.	354.706	SCF
	MOISTURE FRACTION	0.009	
	FRACTION OF DRY AIR	0.991	
	MWGT. OF DRY AIR	28.836	
	MWGT. OF WET STACK GAS	28.736	
	AVG. VEL	23.97	FPS
	GAS FLOWRATE	5450.21	ACFM
	STD. GAS FLOWRATE	5477.72	SCFMD

VELOCITY TRAVERSE

PLANT	HARRIS SEMICONDUCTOR
SOURCE	F51S01
DATE	6/26/90
BAROMETRIC PRESS.	30.350 IN.HG
STACK PRESS.	30.350 IN.HG
OPERATORS	WURTS
RUN	1

TRAVERSE POINT NUMBER	VEL. HEAD IN.H2O	SQRT VEL. HEAD
1-1	0.430	0.656
1-2	0.260	0.510
1-3	0.170	0.412
1-4	0.170	0.412
1-5	0.240	0.490
1-6	0.180	0.424
1-7	0.080	0.283
1-8	0.030	0.173
2-1	0.150	0.387
2-2	0.160	0.400
2-3	0.190	0.436
2-4	0.180	0.424
2-5	0.210	0.458
2-6	0.220	0.469
2-7	0.260	0.510
2-8	0.180	0.424
		0.429

STACK SAMPLING FIELD DATA SHEET

Consulting and Engineering
2106 N.W. 67th PLACE, SUITE 4
GAINESVILLE, FLORIDA 32606

TEST ID FS1501
PAGE 1 OF 2

PLANT HARRIS SEM. SOURCE FS1501
PLANT LOCATION PALM BAY, FL.
TYPE OF SAMPLING TRAIN MOD. EPA-5
TYPE OF SAMPLES ACID
DATE 6/26/90 RUN NO. 1
TIME START 0700 TIME END 1530
SAMPLE TIME 15 MIN. RDGS min/pt 510 Total min
BAR PRESS. ____ "Hg STACK PRESS. ____ "Hg
ASSUMED MOISTURE 2 % FDA .98
WEATHER CLEAR TEMP. 80-90 °F
METER BOX NO. RAC ΔH 1.997 Y 0.993
NOMOGRAPH C_f 4.43 PITOT CORR. FACTOR .84
NOZZLE CALIBRATION: .249 .250 .250 = .250
STACK DIMINSIONS ____
STACK AREA ____ (EFFECTIVE ____ ft^2)
STACK HEIGHT ____ ft.
STACK DIAMETER: UPSTREAM ____ DOWNSTREAM ____
PORT SIZE ____ in. NIPPLE LENGTH ____
U CORD LENGTH: ____
REMARKS: ____

CC=4.43

MAT'L PROCESSING RATE ____
GAS METER READINGS: FINAL 1068.952 ft.^{3}
INITIAL 707.605 ft.^{3}
NET 361.347 ft.^{3}
IMPINGERS VOL. GAIN 80 ml.
SILICA GEL NO. 21 WT. GAIN 48.8
FILTER NO. 59 TOTAL CONDENSATE 69.8 ml.

ORSAT

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

NA
F_O ____ F_O RANGE ____
LEAK CHECKS: METER BOX/PUMP ____
ORSAT BAG ____ GAS SAMPLE SYSTEM ____
ORSAT ANALYZER ____
PRE-TEST .00 CFM 12 "Hg POST-TEST .00 CFM 8 "Hg
BOX OPERATOR WURTS PROBE HOLDER —
PYROMETER NO. ATKINS PITOT TUBE NO. 59
PITOT TUBE LEAK CHECK: PRETEST OK
POST-TEST(+) 5.2 H_2O 15 SEC
POST-TEST(−) 5.0 H_2O 15 SEC

PORT AND TRAVERSE POINT NUMBER RDG #	DISTANCE FROM INSIDE STACK WALL (IN.) STATIONARY	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2))		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		0700	717.00	.38	1.68	1.68	65	NA	50	82	4
2		0715	717.00	.38	1.68	1.68	65				
3		0730	728.00	.38	1.68	1.68	65				
4		0745									
5		0800									
6		0815									

Consulting and Engineering
2106 N.W. 67th PLACE, SUITE 4
GAINESVILLE, FLORIDA 32606

RUN NO. FS1501

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL (IN.)	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O)		STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
					CALC.	ACTUAL					
7		0830									
8		0845									
9		0900	795.100	.38	1.68	1.68	65		~~54~~	~~85~~ 67	4
10		0915									
11		0930									
12		0945	825.735	.38	1.68	1.68	65		54	77	4
13		1000									
14		1015									
15		1030									
16		1045	870.645	.38	1.68	1.68	68		54	88	4
17		1100									
18		1115									
19		1:50									
20		1145									
21		1200	922.100	.38	1.68	1.68	68		54	~~98~~	4
22		1215									
23		1230									
24		1245									
25		1300	963.60	.38	1.68	1.68	68		50	92	4
26		1315									
27		1330									
28		1345									
29		1400	1006.155	.38	1.68	1.68	68		50	90	4
30		1415									
31		1430									
32		1445									
33		1500	1048.500	.38	1.68	1.68	70		50	85	
34		1515									
35		1530	1068.952	.38	1.68	1.68	70		50	86	4

84

PRELIMINARY VELOCITY TRAVERSE

Air Consulting and Engineering

PLANT HARRIS SEMICONDUCTOR

DATE ~~6/25/90~~ 6/26/90

SOURCE FS1601

STACK I.D. 24" STACK AREA 3.790 ft²

BAROMETRIC PRES., in. Hg 30.35

STATIC PRES. in H_2O ______ STACK PRES. in. Hg. ______

PORT DIAM. ~2" NIPPLE LENGTH NA

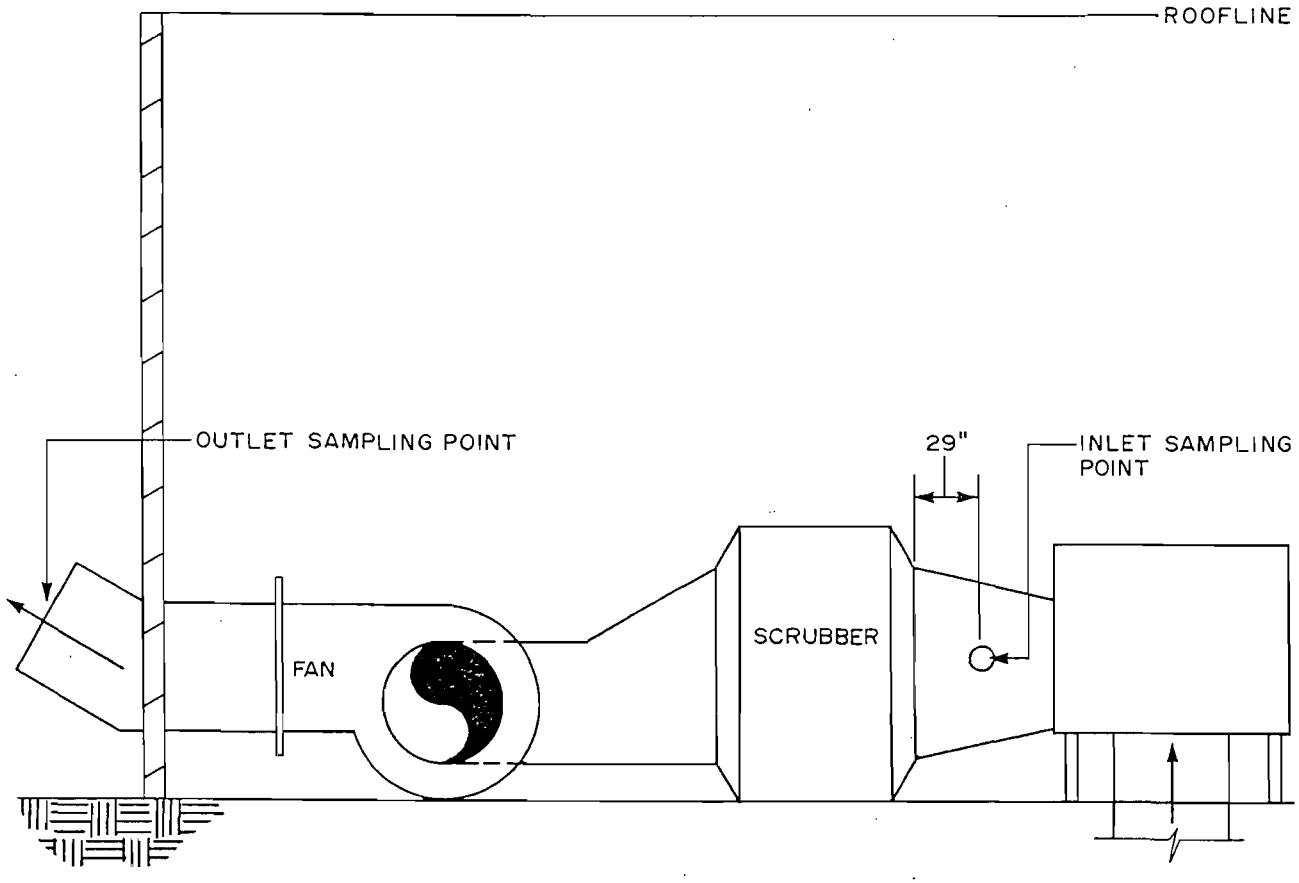
PITOT TUBE NO. 59 TYPE ~~5"~~ STD.

OPERATORS HODGE / ~~GAUTHREAUX~~ WATTS √DP 8/89 - .408

SCHEMATIC OF TRAVERSE POINT LAYOUT

TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s) in. H_2O	STACK TEMPERATURE (T_s, °F)	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s in. H_2O)	STACK TEMPERATURE (T_s, °F)
1-1	.43	Ts = 429	1.00			
2	.26		2.50			
3	~~.48~~ .17		4.66			
4	.17		7.75			
5	.24		16.25			
6	.18		19.34			
7	.08		21.48			
8	.03		23.00			
2-1	.15					
2	.16					
3	~~.16~~ .19					
4	.18					
5	~~.20~~ .24					
6	~~.20~~ .22					
7	~~.24~~ .26					
8	~~.15~~ .18					
AVERAGE				AVERAGE		

F51S02
VOC



SAMPLING POINT LOCATION SCHEMATIC
HARRIS CORPORATION SOURCE - F51S02
SEMICONDUCTOR DIVISION
MELBOURNE, FLORIDA

AIR CONSULTING
and
ENGINEERING

FLOWRATE CALCULATIONS

PLANT HARRIS SEMICONDUCT
STACK F51SO2
DATE 6/25/90
RUN NO. 1

	BAROMETRIC PRESS.	30.35	IN.HG
	STACK PRESS.	30.35	IN.HG
	STACK AREA	5.833	SQ.FT
	AVG.STACK TEMP	72.00	F
	CP	0.99	
	AVG. SQRT VELOCITY HEAD	0.371	IN. H2O
ORSAT:	PERCENT CO2	0.0	
	PERCENT O2	20.9	
	PERCENT N2	79.1	
	FRACTION OF DRY AIR	0.978	
	MOISTURE FRACTION	0.022	
	MWGT. OF DRY STACK GAS	28.836	
	MWGT. OF WET STACK GAS	28.598	
	AVG.VELOCITY	24.58	FPS
	ACTUAL VOL. FLOW	8602.57	ACFM
	STD. VOL. FLOW	8470.06	SCFMD

VELOCITY TRAVERSE

PLANT	HARRIS SEMICONDUCTOR
DATE	6/25/90
SOURCE	F51SO2
BAROMETRIC PRESS.	30.350 IN.HG
STACK PRESS.	30.350 IN.HG
OPERATORS	NECK/HODGE
RUN	1

TRAVERSE POINT NUMBER	VEL. HEAD in. H2O	SQR VEL. HEAD
1-1	0.090	0.300
1-2	0.070	0.265
1-3	0.070	0.265
1-4	0.070	0.265
2-1	0.120	0.346
2-2	0.090	0.300
2-3	0.080	0.283
2-4	0.070	0.265
3-1	0.130	0.361
3-2	0.120	0.346
3-3	0.110	0.332
3-4	0.100	0.316
4-1	0.150	0.387
4-2	0.150	0.387
4-3	0.140	0.374
4-4	0.140	0.374
5-1	0.220	0.469
5-2	0.190	0.436
5-3	0.170	0.412
5-4	0.150	0.387
6-1	0.220	0.469
6-2	0.240	0.490
6-3	0.250	0.500
6-4	0.340	0.583
		0.371

PRELIMINARY VELOCITY TRAVERSE

Air Consulting and Engineering

PLANT HARRIS SEMICONDUCTOR
DATE 6/25/90
SOURCE FS1502
STACK I.D. 30"x28" STACK AREA 5.833 ft²
BAROMETRIC PRES., in. Hg 30.35
STATIC PRES. in. H_2O ____ STACK PRES. in. Hg. 30.35
PORT DIAM. ½" - 1" NIPPLE LENGTH NA
PITOT TUBE NO. 48 TYPE STD
OPERATORS H/G.

8/89
C_p = .395

SCHEMATIC OF TRAVERSE POINT LAYOUT

TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s) in. H_2O	STACK TEMPERATURE (T_s, °F)	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s in. H_2O	STACK TEMPERATURE (T_s, °F)
1-1	.09	72	3.5			
2	.07		10.5			
3	.04		17.5			
4	.04		24.5			
2-1	.12					
2	.09					
3	.08					
4	.04	286 .36				
3-1	.13					
2	.12					
3	.11					
4	.10					
4-1	.15					
2	.15					
3	.14					
4	.14	360				
5-1	.22					
2	.19					
3	.17					
4	.15					
6-1	.22					
2	.24					
3	.25					
4	.34	460				
AVERAGE				AVERAGE		

$(.371)(174)(.99)(\sqrt{532}) = 1474.057$

$(1474.057)(5.833) = 8598.172$

$(8598.172)\left(\frac{528}{532}\right)(98) = 8562.854$ SCFMD

(3)

HARRIS SEMICONDUCTOR
PALM BAY, FLORIDA
EPA-25A VOC EMISSIONS
6/25/90

AIR CONSULTING AND ENGINEERING, INC.

TIME	F51S~~02~~ S03 PPM C3H8 MAX	MIN	AVG	F51S~~03~~ S04 PPM C3H8 MAX	MIN	AVG
0700-0710	1.50	1.50	1.50		* TESTING	
0710-0720	1.50	1.50	1.50		COMMENCED AT 0730 HRS	
0720-0730	1.50	1.50	1.50		*	
0730-0740	1.50	1.50	1.50	91.50	71.50	86.50
0740-0750	1.50	1.50	1.50	74.50	70.50	72.60
0750-0800	1.50	1.50	1.50	70.50	63.50	67.80
0800-0810	1.50	1.50	1.50	66.00	63.00	64.60
0810-0820	1.50	1.50	1.50	75.50	61.00	68.60
0820-0830	1.50	1.50	1.50	92.00	61.50	69.00
0830-0840	1.50	1.50	1.50	88.00	60.50	81.00
0840-0850	1.50	1.50	1.50	73.50	60.00	67.00
0850-0900	1.50	1.50	1.50	76.00	70.50	72.80
0900-0910	1.50	1.50	1.50	74.00	73.00	73.20
0910-0920	1.50	1.50	1.50	76.00	71.50	73.20
0920-0930	1.50	1.50	1.50	73.00	70.50	72.20
0930-0940	1.50	1.50	1.50	71.00	63.00	68.40
0940-0950	1.50	1.50	1.50	65.00	61.50	63.60
0950-1000	1.50	1.50	1.50	70.00	63.00	65.00
1000-1010	1.50	1.50	1.50	91.50	88.00	89.40
1010-1020	1.50	1.50	1.50	65.20	59.50	62.20
1020-1030	1.50	1.50	1.50	62.50	56.20	58.60
1030-1040	1.50	1.50	1.50	88.00	58.20	68.40
1040-1050	1.50	1.50	1.50	97.00	89.00	94.00
1050-1100	1.50	1.50	1.50	62.20	56.50	59.80
1100-1110	1.50	1.50	1.50	65.50	54.50	58.60
1110-1120	1.50	1.50	1.50	78.50	55.00	68.60
1120-1130	1.50	1.50	1.50	96.80	75.00	80.80
1130-1140	1.50	1.50	1.50	97.20	78.00	84.20
1140-1150	1.50	1.50	1.50	97.50	90.50	95.70
1150-1200	1.50	1.50	1.50	93.00	88.50	91.00
1200-1210	1.50	1.50	1.50	91.50	88.50	90.20
1210-1220	1.50	1.50	1.50	91.20	86.20	88.00
1220-1230	1.50	1.50	1.50	88.20	86.00	87.40
1230-1240	1.50	1.50	1.50	87.20	85.50	86.50
1240-1250	1.50	1.50	1.50	87.00	83.00	84.40
1250-1300	1.50	1.50	1.50	84.00	80.00	81.90
1300-1310	1.50	1.50	1.50	84.50	80.00	81.80
1310-1320	1.50	1.50	1.50	98.00	98.00	98.00
1320-1330	1.50	1.50	1.50	83.00	77.50	81.40
1330-1340	1.50	1.50	1.50	78.00	74.00	76.20
1340-1350	1.50	1.50	1.50	80.00	75.00	77.20
1350-1400	1.50	1.50	1.50	98.00	98.00	98.00
1400-1410	1.50	1.50	1.50	87.20	79.00	82.40
1410-1420	4.50	1.50	2.60	98.00	83.00	91.80
1420-1430	4.00	3.00	3.60	111.00	100.00	106.60
1430-1440	3.50	2.00	3.30	93.50	81.50	85.40
1440-1450	2.20	1.80	2.00	97.80	91.50	94.60
1450-1500	1.50	1.50	1.50	111.00	100.00	104.40
1500-1510	1.50	1.50	1.50	85.50	80.00	81.40
1510-1520	1.50	1.50	1.50	89.00	85.20	86.60
1520-1530	1.50	1.50	1.50	84.50	79.80	83.00
AVERAGES			1.61			79.67
AMBIENT CORR. AVG.			.61			76.07

EMISSION SUMMARY

FACILITY: HARC's
SOURCE: FS1502 & FS1503
DATE: 6/25/90

TIME		FS1502 Source 2 ~~FS1503~~ MAXIMUM MAX	MAXIMUM MIN	MINIMUM AVG	FS1503 Source 1 ~~FS1503~~ MINIMUM MAX	AVERAGE MIN	AVERAGE AVG
0700	0710				1.5	1.5	1.5
0710	0720				1.5	1.5	1.5
0720	0730				1.5	1.5	1.5
0730	0740 *	91.5	71.5	86.5	1.5	1.5	1.5
0740	0750	74.5	70.5	72.6	1.5	1.5	1.5
0750	0800	70.5	63.5	67.8	1.5	1.5	1.5
0800	0810	66.0	63.0	64.6	1.5	1.5	1.5
0810	0820	75.5	61.0	68.6	1.5	1.5	1.5
0820	0830	72.0	61.5	69.0	1.5	1.5	1.5
0850	0840	88.0	60.5	81.0	1.5	1.5	1.5
0840	0850	73.5	60.	67.0	1.5	1.5	1.5
0850	0900	76.0	70.5	72.8	1.5	1.5	1.5
0900	0910	74.0	73.0	73.2	1.5	1.5	1.5
0910	0920	76.0	71.5	73.2	1.5	1.5	1.5
0920	0930	73.0	70.5	72.2	1.5	1.5	1.5
0930	0940	71.0	63.0	68.4	1.8	1.5	1.6
0940	0950	65.0	61.5	63.6	1.8	1.5	1.6
0950	1000	70.0	63.0	65.0	1.8	1.5	1.6
1000	1010	91.5	88.0	89.4	1.5	1.5	1.5
1010	1020	65.2	59.5	62.2	1.5	1.5	1.5
1020	1030	60.5	56.2	58.6	1.5	1.5	1.5
1030	1040	86.0	58.2	68.4	1.5	1.5	1.5
1040	1050	97.0	89.0	94.0	1.5	1.5	1.5
~~1050~~	1100	62.2	56.5	59.8	1.5	1.5	1.5

EMISSION SUMMARY **BEST AVAILABLE COPY**

FACILITY: HARRIS
SOURCE: FS1502 & FS1503
DATE: 6/25/90

TIME		FS1502 ~~FS1505~~ MAXIMUM MAX	MAXIMUM MIN	MAXIMUM AVG	FS1503 ~~FS1504~~ MINIMUM MAX	MINIMUM MIN	AVERAGE AVG
1100	1110	65.5	54.5	58.6	1.5	1.5	1.5
1110	1120	78.5	55.0	68.6	1.5	1.5	1.5
1120	1130	96.8	75.0	80.8	1.5	1.5	1.5
1130	1140	97.2	78.0	84.2	1.5	1.5	1.5
1140	1150	97.5	90.5	95.7	1.5	1.5	1.5
1150	1200	93.0	88.5	91.0	1.5	1.5	1.5
1200	1210	91.5	88.5	90.2	1.5	1.5	1.5
1210	1220	91.2	86.2	88.0	1.5	1.5	1.5
1220	1230	88.2	86.0	87.4	1.5	1.5	1.5
1230	1240	87.2	85.5	86.5	1.5	1.5	1.5
1240	1250	87.0	83.0	84.4	1.5	1.5	1.5
1250	1300	84.0	80.0	81.9	1.5	1.5	1.5
1300	1310	84.5	80.0	81.8	1.5	1.5	1.5
(*) 1310	1320	98.0	98.0	98.0	1.5	1.5	1.5
1320	1330	83.0	77.5	81.4	1.5	1.5	1.5
1330	1340	78.0	74.0	76.2	1.5	1.5	1.5
1340	1350	80.0	75.0	77.2	1.5	1.5	1.5
(*) 1350	1400	98.0	98.0	98.0	1.5	1.5	1.5
1400	1410	87.2	79.0	82.4	1.5	1.5	1.5
1410	1420	98.0	83.0	91.8	4.5	1.5	2.6
1420 (*)	1430	111	100	106.6	4.0	3.0	3.6
1430	1440	93.5	81.5	85.4	3.5	2.0	3.3
1440	1450	97.8	91.5	94.6	2.2	1.8	2.0
1450 (*)	1500	111.0	100	104.4	1.5	1.5	1.5

(*) - INDICATES RDG. OFFSCALE

EMISSION SUMMARY **BEST AVAILABLE COPY**

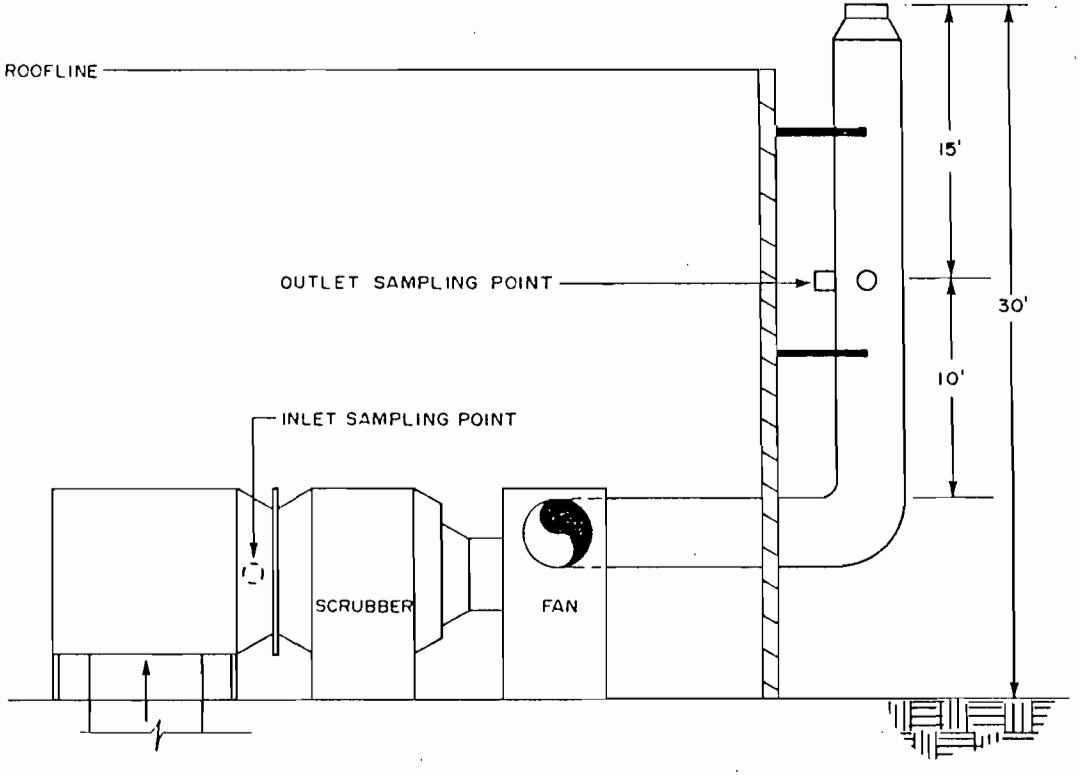
FACILITY: Harris
SOURCE: F51502 & F51503
DATE: 6/25/91

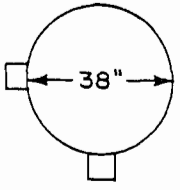
F51502 ~~F51503~~ F51503 ~~F51502~~

S_2 S_1

TIME		MAX MAXIMUM	MIN MINIMUM	AVG AVERAGE	MAX MINIMUM	MIN AVERAGE	AVG
1500	1510	85.5	80	81.4	1.5	1.5	1.5
1510	1520	89.0	85.2	86.6	1.5	1.5	1.5
1520	1530	84.5	79.8	83.0	1.5	1.5	1.5
			79.6				
Correction		S_1	3.6 ppm				
Correction		S_2	1.0 ppm				

F51S03
ACID, VOC, EFFICIENCY





TRAVERSE POINT NUMBER	INCHES INSIDE STACK WALL
1	1.22
2	3.99
3	7.37
4	12.27
5	25.73
6	30.63
7	34.01
8	36.78

SAMPLING POINT LOCATION SCHEMATIC
HARRIS CORPORATION SOURCE - F51S03
SEMICONDUCTOR DIVISION
MELBOURNE, FLORIDA

AIR CONSULTING
and
ENGINEERING

MOISTURE AND FLOW CALCULATIONS

PLANT	HARRIS SEMICONDUCTOR		
STACK	F51SO3		
DATE	6/25/90		
RUN NO.	1		
	BAROMETRIC PRESS.	30.35	IN.HG
	STACK PRESS.	30.36	IN.HG
	STACK AREA	7.876	SQ.FT
	AVG. STACK TEMP.	67	F
	AVG. METER TEMP.	87.00	F
	Y	0.994	
	AVG. METER ORIFICE	3.940	IN. H2O
	METER VOL.	525.788	CUB.FT
	MOISTURE PLUS SILICA GEL	155.100	ML
	STACK SQRT VEL. HEAD	0.692	IN. H2O
	CP	0.840	
ORSAT:	PERCENT CO2	0.0	
	PERCENT O2	20.9	
	PERCENT N2	79.1	
	VWSTD.	7.311	SCF
	VMSTD.	516.613	SCF
	MOISTURE FRACTION	0.014	
	FRACTION OF DRY AIR	0.986	
	MWGT. OF DRY AIR	28.836	
	MWGT. OF WET STACK GAS	28.685	
	AVG. VEL	38.65	FPS
	GAS FLOWRATE	18265.67	ACFM
	STD. GAS FLOWRATE	18310.31	SCFMD

MOISTURE AND FLOW CALCULATIONS

PLANT HARRIS SEMICONDUCTOR
STACK F51SO3-INLET
DATE 6/25/90
RUN NO. 1

BAROMETRIC PRESS.	30.35	IN.HG
STACK PRESS.	30.36	IN.HG
STACK AREA	7.876	SQ.FT
AVG. STACK TEMP.	73	F
AVG. METER TEMP.	88.00	F
Y	0.993	
AVG. METER ORIFICE	3.600	IN. H2O
METER VOL.	495.514	CUB.FT
MOISTURE PLUS SILICA GEL	96.700	ML
STACK SQRT VEL. HEAD	0.692	IN. H2O
CP	0.840	

ORSAT: PERCENT CO2	0.0	
PERCENT O2	20.9	
PERCENT N2	79.1	

VWSTD.	4.558	SCF
VMSTD.	485.094	SCF
MOISTURE FRACTION	0.009	
FRACTION OF DRY AIR	0.991	
MWGT. OF DRY AIR	28.836	
MWGT. OF WET STACK GAS	28.735	

AVG. VEL	38.84	FPS
GAS FLOWRATE	18353.25	ACFM
STD. GAS FLOWRATE	18276.71	SCFMD

VELOCITY TRAVERSE

PLANT	HARRIS SEMICONDUCTOR	
SOURCE	F51SO3	
DATE	6/25/90	
BAROMETRIC PRESS.	30.350	IN.HG
STACK PRESS.	30.360	IN.HG
OPERATORS	PROWS	
RUN	1	

TRAVERSE POINT NUMBER	VEL. HEAD IN.H2O	SQRT VEL. HEAD
1-1	0.800	0.894
1-2	0.800	0.894
1-3	0.680	0.825
1-4	0.630	0.794
1-5	0.260	0.510
1-6	0.260	0.510
1-7	0.150	0.387
1-8	0.120	0.346
2-1	0.680	0.825
2-2	0.680	0.825
2-3	0.680	0.825
2-4	0.620	0.787
2-5	0.450	0.671
2-6	0.470	0.686
2-7	0.350	0.592
2-8	0.500	0.707
		0.692

STACK SAMPLING FIELD DATA SHEET

Air Consulting and Engineering
2106 N.W. 67th PLACE, SUITE 4
GAINESVILLE, FLORIDA 32606

TEST ID FS1503-0
PAGE 1 OF 2

PLANT HARRIS SEM. SOURCE FS1503-0
PLANT LOCATION PALM BAY, FL.
TYPE OF SAMPLING TRAIN MOD. EPA-5
TYPE OF SAMPLES ACID EFFICIENCY
DATE 6/25/90 RUN NO. 1
TIME START 0760 TIME END
SAMPLE TIME 15 MIN. READS min/pt 510 Total min
BAR PRESS. "Hg STACK PRESS. "Hg
ASSUMED MOISTURE 2 % FDA .98
WEATHER INDOORS TEMP. °F
METER BOX NO. 1 ΔH 2.05 Y 0.994
NOMOGRAPH C_f 10.36 PITOT CORR. FACTOR .84
NOZZLE CALIBRATION .302 .303 .302 = .302
STACK DIMINSIONS
STACK AREA (EFFECTIVE ft²)
STACK HEIGHT ft.
STACK DIAMETER: UPSTREAM DOWNSTREAM
PORT SIZE in. NIPPLE LENGTH
U CORD LENGTH:
REMARKS:

Cc = 10.36

MAT'L PROCESSING RATE DAY SHIFT
GAS METER READINGS: FINAL 502.938 ft.³
INITIAL 977.150 ft.³
NET 525.788 ft.³
IMPINGERS VOL. GAIN 104 ml.
SILICA GEL NO. 19 WT. GAIN 51.1
FILTER NO. — TOTAL CONDENSATE 155.1 ml.

ORSAT

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

NA
F_O F_O RANGE -
LEAK CHECKS: METER BOX/PUMP
ORSAT BAG GAS SAMPLE SYSTEM
ORSAT ANALYZER
PRE-TEST 9.00 CFM 14 "Hg POST-TEST 9.00 CFM 20 "Hg
BOX OPERATOR H/G. PROBE HOLDER —
PYROMETER NO. 1 PITOT TUBE NO. 55
PITOT TUBE LEAK CHECK: PRETEST OK
POST-TEST(+) H_2O SEC
POST-TEST(−) H_2O SEC

PORT AND TRAVERSE POINT NUMBER TRVG. #	DISTANCE FROM INSIDE STACK WALL (IN.)	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O) CALC.	METER ORIFICE PRESS. DIFF. ("H_2O) ACTUAL	STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
1		0715	985.12	.38	3.94	3.94	65	NA	60	75	8.5
2		0730	004.00	.38	3.94	3.94	66		50	76	8.5
3		0745	019.921	.38	3.94	3.94	66		50	76	8.5
4		0800	034.125	.38	3.94	3.94	66		50	76	8.5
5		0815	051.121	.38	3.94	3.94	66		50	84	8.5
6		0830	066.812	.38	3.94	3.94	66		50	86	8.5

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RUN NO. FS1503-R0

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL (IN.)	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O)		STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
					CALC.	ACTUAL					
		0845	081.680	.38	3.94	3.94	72	NA	50	80	8.5
		0900	094.021	.38	3.94	3.94	67	↓	50	88	8.5
		0915	111.420	.38	3.94	3.94	64		50	89	8.5
		0930	128.655	.38	3.94	3.94	67		50	91	8.5
		0945	141.943	.38	3.94	3.94	70		50	92	8.5
		1000	156.750	.38	3.94	3.94	68		50	92	8.5
		1015	174.480	.38	3.94	3.94	68		50	93	8.5
		1030	189.666	.38	3.94	3.94	68		50	94	8.5
		1045	206.221	.38	3.94	3.94	67		51	95	8.5
		1100	220.463	.38	3.94	3.94	64		51	96	8.5
		1115	237.021	.38	3.94	3.94	67		50	94	8.5
		1130	248.320	.38	3.94	3.94	67		50	97	8.5
		1145	265.476	.38	3.94	3.94	67		51	97	8.5
		1200	283.001	.38	3.94	3.94	67		52	98	8.5
		1215	302.820	.38	3.94	3.94	68		52	98	8.5
		1230	318.742	.38	3.94	3.94	68		52	98	8.5
		1245	337.212	.38	3.94	3.94	68		53	99	8.5
		1300	344.641	.38	3.94	3.94	68		53	99	8.5
		1315	361.611	.38	3.94	3.94	70		53	99	8.5
		1330	377.691	.38	3.94	3.94	70		53	99	8.5
		1345	392.210	.38	3.94	3.94	72		53	99	8.5
		1400	408.621	.38	3.94	3.94	68		54	99	8.5
		1415	423.400	.38	3.94	3.94	69		54	99	8.5
		1430	439.324	.38	3.94	3.94	68		54	100	8.5
		1445	456.410	.38	3.94	3.94	68		55	100	8.5
		1500	471.650	.38	3.94	3.94	68		55	100	8.5
		1515	488.021	.38	3.94	3.94	68		56	100	8.5
		1530		.38	3.94	3.94	68		56	100	8.5

STACK SAMPLING FIELD DATA SHEET

Air Consulting and Engineering
2106 N.W. 67th PLACE, SUITE 4
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TEST ID FS1503-I
PAGE 1 OF 2

PLANT HARRIS SEM. SOURCE FS1503-I
PLANT LOCATION PALM BAY, FL.
TYPE OF SAMPLING TRAIN MOD. EPA-5
TYPE OF SAMPLES ACID - EFFICIENCY
DATE 6/25/90 RUN NO. 1
TIME START 0710 TIME END 1530
SAMPLE TIME 15 MIN RDGS min/pt ~~510~~ 500 Total min
BAR PRESS. 30.35 "Hg STACK PRESS. ____ "Hg
ASSUMED MOISTURE 2 ~~4%~~ % FDA .98
WEATHER INDOORS TEMP. — °F
METER BOX NO. 4 ΔH 1.897 Y 0.993
NOMOGRAPH C_f 72.5 PITOT CORR. FACTOR .84
NOZZLE CALIBRATION .500 ~~.498~~ .498 = .499
STACK DIMINSIONS ____
STACK AREA ____ (EFFECTIVE ____ ft^2)
STACK HEIGHT ____ ft.
STACK DIAMETER: UPSTREAM ____ DOWNSTREAM ____
PORT SIZE ____ in. NIPPLE LENGTH ____
U CORD LENGTH: ____
REMARKS: ____

C_f = 72.5

MAT'L PROCESSING RATE DAY SHIFT
GAS METER READINGS: FINAL 707.014 ft.^{3}
211.500 INITIAL ~~210.000~~ ft.^{3}
NET 495.514 ft.^{3}
IMPINGERS VOL. GAIN 72 ml.
SILICA GEL NO. 6555 WT. GAIN 24.7
FILTER NO. ____ TOTAL CONDENSATE 96.7 ml.

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

Ø — NA

F_O ____ F_O RANGE -
LEAK CHECKS: METER BOX/PUMP ____
ORSAT BAG ____ GAS SAMPLE SYSTEM ____
ORSAT ANALYZER ____
PRE-TEST 0.00 CFM 14 "Hg POST-TEST 0.00 CFM 17 "Hg
BOX OPERATOR G.G. PROBE HOLDER —
PYROMETER NO. RAC PITOT TUBE NO. 59
PITOT TUBE LEAK CHECK: PRETEST ____
POST-TEST(+) ____ H_2O ____ SEC
POST-TEST(−) ____ H_2O ____ SEC

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL (IN.)	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O) CALC.	METER ORIFICE PRESS. DIFF. ("H_2O) ACTUAL	STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
	STATIONARY	0715						NA			
1-1		~~0715~~ 0730	229.000	.05	3.60	3.60	72	↓	50	77	6
2		~~0730~~ 0745	245.012	.05	3.60	3.60	72		50	77	6
3		~~0745~~ 0800	256.924	.05	3.60	3.60	72		50	77	6
4		0815	273.200	.05	3.60	3.60	72		50	79	6
5		0830	283.111	.05	3.60	3.60	72		50	79	6
6		0845	301.522	.05	3.60	3.60	72		50	80	6

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RUN NO. FS1503-I

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL (IN.)	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O)		STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
					CALC.	ACTUAL					
		0900	302.36	.05	3.60	3.60	72	NA	50	81	6
		0915	329.85	.05	3.60	3.60	72	↓	50	83	6
		0930	345.31	.05	3.60	3.60	72	↓	50	83	6
		0945	358.21	.05	3.60	3.60	72		50	84	6
		1000	371.32	.05	3.60	3.60	72		50	85	6
		1015	388.81	.05	3.60	3.60	72		50	86	6
		1030	402.35	.05	3.60	3.60	73		50	87	6
		1045	418.62	.05	3.60	3.60	73		50	87	6
		1100	431.46	.05	3.60	3.60	73		50	88	6
		1115	447.12	.05	3.60	3.60	73		50	89	6
		1130	453.26	.05	3.60	3.60	73		50	89	6
		1145	460.02	.05	3.60	3.60	73		50	90	6
		1200	481.30	.05	3.60	3.60	73		50	90	6
		1215	507.755	.05	3.60	3.60	73		50	91	6
		1230	521.702	.05	3.60	3.60	73		50	91	6
		1245	542.210	.05	3.60	3.60	73		50	91	6
		1300	554.320	.05	3.60	3.60	73		50	92	6
		1315	568.620	.05	3.60	3.60	73		50	92	6
		1330	581.420	.05	3.60	3.60	73		50	92	6
		1345	598.410	.05	3.60	3.60	73		50	92	6
		1400	610.610	.05	3.60	3.60	73		50	92	6
		1415	629.999	.05	3.60	3.60	73		50	92	6
		1430	645.022	.05	3.60	3.60	73		50	92	6
		1445	661.420	.05	3.60	3.60	74		50	92	6
		1500	671.100	.05	3.60	3.60	73		50	93	6
		1515	689.999	.05	3.60	3.60	74		50	93	6
		1530		.05	3.60	3.60	73		50	93	6

Air Consulting and Engineering

PRELIMINARY VELOCITY TRAVERSE

PLANT HARRIS SEMICONDUCTOR
DATE 6/25/90
SOURCE FS1503 - OUTLET
STACK I.D. 38" STACK AREA ~~6.681~~ 7.876 ft²
BAROMETRIC PRES., in. Hg 30.35
STATIC PRES. in. H_2O ±.14 STACK PRES. in. Hg. 30.36
PORT DIAM. 2" NIPPLE LENGTH NA
PITOT TUBE NO. 59 TYPE "S" TYPE
OPERATORS H/G.

$\sqrt{\Delta P}$ 8/89 = .599

SCHEMATIC OF TRAVERSE POINT LAYOUT

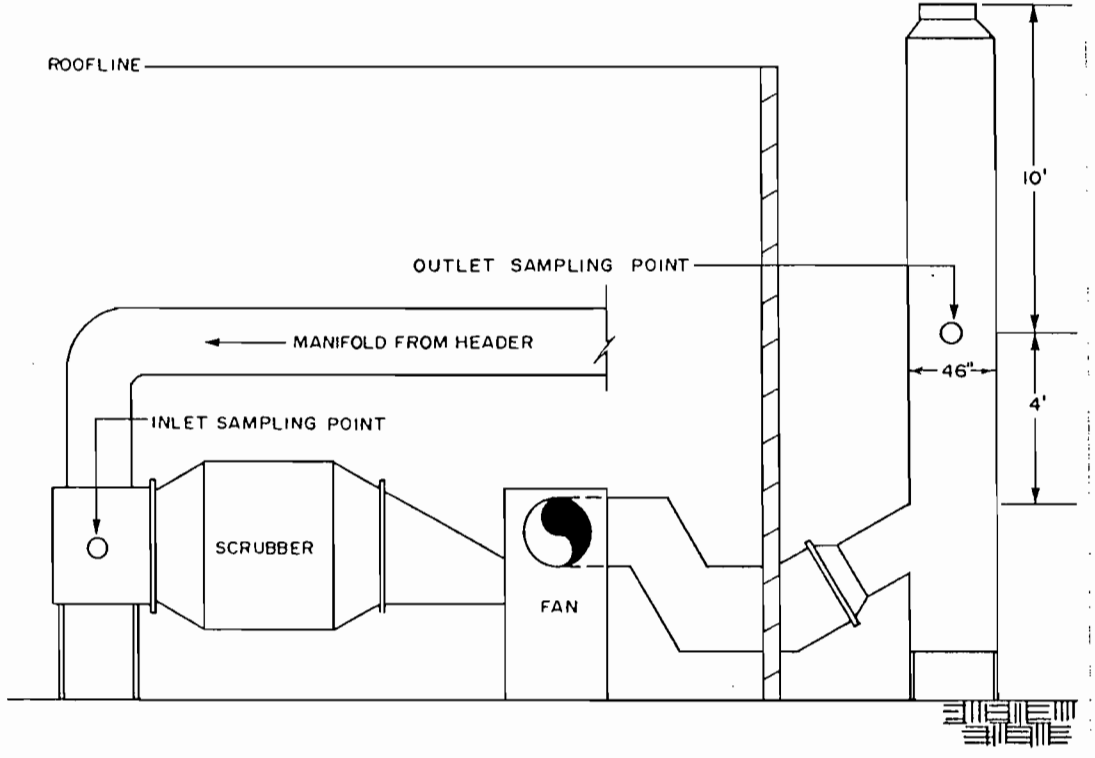
TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s) in. H_2O	STACK TEMPERATURE (T_s, °F)	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s in. H_2O	STACK TEMPERATURE (T_s, °F)
1-1	.80	64	1.22			
2	.80	64	3.99			
3	.68	64	7.37			
4	.63	64	12.27			
5	.26	64	25.73			
6	.26	64	30.63			
7	.15	64	34.01			
8 .740	.12	64	36.78			
2-1	.68	64				
2	.68	64		(.693)(174)(.84)(√527)		=2325.24
3	.68	64		(2325.24)(6.)(7.876) =		183135.56
4	.62	64		(183135.59)(528/527)(.98) = 17		981.345 SCFM
5	.45	64				
6	.47	64				
7	.35	64				
8 .740	.50	64		$\sqrt{P}$ = .692		
AVERAGE				AVERAGE		

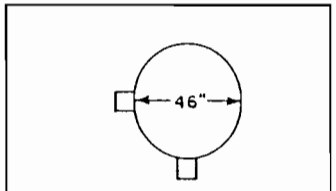
HARRIS SEMICONDUCTOR
PALM BAY, FLORIDA
EPA-25A VOC EMISSIONS
6/25/90

AIR CONSULTING AND ENGINEERING, INC.

TIME	F51SO2 PPM C3H8 MAX	F51SO2 PPM C3H8 MIN	F51SO2 PPM C3H8 AVG	F51SO3 PPM C3H8 MAX	F51SO3 PPM C3H8 MIN	F51SO3 PPM C3H8 AVG
0700-0710	1.50	1.50	1.50		*	
0710-0720	1.50	1.50	1.50		TESTING	
0720-0730	1.50	1.50	1.50		COMMENCED AT 0730 HRS	
0730-0740	1.50	1.50	1.50		*	
0740-0750	1.50	1.50	1.50	91.50	71.50	86.50
0750-0800	1.50	1.50	1.50	74.50	70.50	72.60
0800-0810	1.50	1.50	1.50	70.50	63.50	67.80
0810-0820	1.50	1.50	1.50	66.00	63.00	64.60
0820-0830	1.50	1.50	1.50	75.50	61.00	68.60
0830-0840	1.50	1.50	1.50	92.00	61.50	69.00
0840-0850	1.50	1.50	1.50	88.00	60.50	81.00
0850-0900	1.50	1.50	1.50	73.50	60.00	67.00
0900-0910	1.50	1.50	1.50	76.00	70.50	72.80
0910-0920	1.50	1.50	1.50	74.00	73.00	73.20
0920-0930	1.50	1.50	1.50	76.00	71.50	73.20
0930-0940	1.50	1.50	1.50	73.00	70.50	72.20
0940-0950	1.50	1.50	1.50	71.00	63.00	68.40
0950-1000	1.50	1.50	1.50	65.00	61.50	63.60
1000-1010	1.50	1.50	1.50	70.00	63.00	65.00
1010-1020	1.50	1.50	1.50	91.50	88.00	89.40
1020-1030	1.50	1.50	1.50	65.20	59.50	62.20
1030-1040	1.50	1.50	1.50	62.50	56.20	58.60
1040-1050	1.50	1.50	1.50	88.00	58.20	68.40
1050-1100	1.50	1.50	1.50	97.00	89.00	94.00
1100-1110	1.50	1.50	1.50	62.20	56.50	59.80
1110-1120	1.50	1.50	1.50	65.50	54.50	58.60
1120-1130	1.50	1.50	1.50	78.50	55.00	68.60
1130-1140	1.50	1.50	1.50	96.80	75.00	80.80
1140-1150	1.50	1.50	1.50	97.20	78.00	84.20
1150-1200	1.50	1.50	1.50	97.50	90.50	95.70
1200-1210	1.50	1.50	1.50	93.00	88.50	91.00
1210-1220	1.50	1.50	1.50	91.50	88.50	90.20
1220-1230	1.50	1.50	1.50	91.20	86.20	88.00
1230-1240	1.50	1.50	1.50	88.20	86.00	87.40
1240-1250	1.50	1.50	1.50	87.20	85.50	86.50
1250-1300	1.50	1.50	1.50	87.00	83.00	84.40
1300-1310	1.50	1.50	1.50	84.00	80.00	81.90
1310-1320	1.50	1.50	1.50	84.50	80.00	81.80
1320-1330	1.50	1.50	1.50	98.00	98.00	98.00
1330-1340	1.50	1.50	1.50	83.00	77.50	81.40
1340-1350	1.50	1.50	1.50	78.00	74.00	76.20
1350-1400	1.50	1.50	1.50	80.00	75.00	77.20
1400-1410	1.50	1.50	1.50	98.00	98.00	98.00
1410-1420	4.50	1.50	2.60	87.20	79.00	82.40
1420-1430	4.00	3.00	3.60	98.00	83.00	91.80
1430-1440	3.50	2.00	3.30	111.00	100.00	106.60
1440-1450	2.20	1.80	2.00	93.50	81.50	85.40
1450-1500	1.50	1.50	1.50	97.80	91.50	94.60
1500-1510	1.50	1.50	1.50	111.00	100.00	104.40
1510-1520	1.50	1.50	1.50	85.50	80.00	81.40
1520-1530	1.50	1.50	1.50	89.00	85.20	86.60
AVERAGES			1.61	84.50	79.80	83.00
AMBIENT CORR. AVG.			.61			79.67
						76.07

F51S04
ACID, VOC





TRAVERSE POINT NUMBER	INCHES INSIDE STACK WALL
1	1.00
2	3.08
3	5.43
4	8.14
5	11.50
6	16.38
7	29.62
8	34.50
9	37.86
10	40.57
11	42.92
12	45.00

FIGURE
SAMPLING POINT LOCATION SCHEMATIC
HARRIS CORPORATION — F51S04
SEMICONDUCTOR DIVISION

AIR CONSULTING
and
ENGINEERING

MOISTURE AND FLOW CALCULATIONS

PLANT HARRIS SEMICONDUCTOR
STACK F51S04
DATE 6/25/90
RUN NO. 1

	BAROMETRIC PRESS.	30.35	IN.HG
	STACK PRESS.	30.41	IN.HG
	STACK AREA	11.540	SQ.FT
	AVG. STACK TEMP.	79	F
	AVG. METER TEMP.	88.00	F
	Y	0.992	
	AVG. METER ORIFICE	0.840	IN. H2O
	METER VOL.	289.603	CUB.FT
	MOISTURE PLUS SILICA GEL	113.300	ML
	STACK SQRT VEL. HEAD	0.407	IN. H2O
	CP	0.840	
ORSAT:	PERCENT CO2	0.0	
	PERCENT O2	20.9	
	PERCENT N2	79.1	
	VWSTD.	5.341	SCF
	VMSTD.	281.350	SCF
	MOISTURE FRACTION	0.019	
	FRACTION OF DRY AIR	0.981	
	MWGT. OF DRY AIR	28.836	
	MWGT. OF WET STACK GAS	28.634	
	AVG. VEL	22.99	FPS
	GAS FLOWRATE	15919.87	ACFM
	STD. GAS FLOWRATE	15555.08	SCFMD

VELOCITY

PLANT	HARRIS SEMICONDUCT
SOURCE	F51S04
DATE	6/25/90
BAROMETRIC PRESS.	30.350 IN.HG
STACK PRESS.	30.410 IN.HG
OPERATORS	GAUTHREAUX
RUN	1

TRAVERSE POINT NUMBER	VEL. HEAD IN.H2O	SQRT VEL. HEAD
1-1	0.130	0.361
1-2	0.110	0.332
1-3	0.040	0.200
1-4	0.030	0.173
1-5	0.040	0.200
1-6	0.100	0.316
1-7	0.170	0.412
1-8	0.290	0.539
1-9	0.400	0.632
1-10	0.400	0.632
1-11	0.400	0.632
1-12	0.400	0.632
2-1	0.270	0.520
2-2	0.260	0.510
2-3	0.200	0.447
2-4	0.160	0.400
2-5	0.090	0.300
2-6	0.060	0.245
2-7	0.110	0.332
2-8	0.110	0.332
2-9	0.14	0.374
2-10	0.25	0.500
2-11	0.320	0.566
2-12	0.370	0.608
		0.407

STACK SAMPLING FIELD DATA SHEET

Consulting and Engineering
2106 N.W. 67th PLACE, SUITE 4
GAINESVILLE, FLORIDA 32606

TEST ID FS4504
PAGE 1 OF 2

PLANT HARRIS SEM. SOURCE FS4504
PLANT LOCATION PALM BAY, FL.
TYPE OF SAMPLING TRAIN MOD. EPAS
TYPE OF SAMPLES ACID
DATE 6/25/90 RUN NO. 1
TIME START 0700 TIME END 1530
SAMPLE TIME 15 MIN. RUNS min/pt 510 Total min
BAR PRESS. 30.35 "Hg STACK PRESS. _____ "Hg
ASSUMED MOISTURE 2 % FDA .98
WEATHER INDOORS TEMP. _____ °F
METER BOX NO. 3 ΔH 1.57 Y 0.992
NOMOGRAPH C_f 3.67 PITOT CORR. FACTOR .84
NOZZLE CALIBRATION _____ _____ _____ = .250
STACK DIMINSIONS _____
STACK AREA _____ (EFFECTIVE _____ ft^2)
STACK HEIGHT _____ ft.
STACK DIAMETER: UPSTREAM _____ DOWNSTREAM _____
PORT SIZE _____ in. NIPPLE LENGTH _____
U CORD LENGTH: _____
REMARKS: _____

Cf = 3.67

MAT'L PROCESSING RATE _____
GAS METER READINGS: FINAL 719.303 ft^3
INITIAL 429.700 ft^3
NET 289.603 ft^3
IMPINGERS VOL. GAIN 75 ml.
SILICA GEL NO. 26 WT. GAIN 38.3
FILTER NO. — TOTAL CONDENSATE 113.3 ml.

ORSAT

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

NA

F_O _____ F_O RANGE _____
LEAK CHECKS: METER BOX/PUMP _____
ORSAT BAG _____ GAS SAMPLE SYSTEM _____
ORSAT ANALYZER _____
PRE-TEST 0.00 CFM 20 "Hg POST-TEST 0.00 CFM 15 "Hg
BOX OPERATOR H/G PROBE HOLDER —
PYROMETER NO. 5 PITOT TUBE NO. 53
PITOT TUBE LEAK CHECK: PRETEST OK
POST-TEST(+) _____ H_2O _____ SEC
POST-TEST(−) _____ H_2O _____ SEC

PORT AND TRAVERSE POINT NUMBER (EPA #)	DISTANCE FROM INSIDE STACK WALL (IN.)	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O)		STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
					CALC.	ACTUAL					
1		0715	435.416	.23	.84	.84	71	NA	68	75	3.0
2		0730	450.263	.23	.84	.84	71		59	77	3.0
3		0745	464.540	.23	.84	.84	71		58	77	3.0
4		0800	473.155	.23	.84	.84	71		58	77	3.0
5		0815	482.101	.23	.84	.84	71		56	78	3.0
6		0830	490.720	.23	.84	.84	72		55	79	3.0

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RUN NO. FS4S04

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL (IN.)	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O)		STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
					CALC.	ACTUAL					
		0845	498.310	.23	.84	.84	72	NA	54	81	3.0
		0900	504.345	.23	.84	.84	72	↓	55	81	3.0
		0915	513.888	.23	.84	.84	73		54	81	3.0
		0930	522.860	.23	.84	.84	73		54	83	3.0
		0945	529.620	.23	.84	.84	73		54	84	3.0
		1000	537.550	.23	.84	.84	74		53	84	3.0
		1015	546.677	.23	.84	.84	74		51	86	3.0
		1030	554.110	.23	.84	.84	74		51	87	3.0
		1045	562.980	.23	.84	.84	74		51	88	3.0
		1100	570.131	.23	.84	.84	74		51	88	3.0
		1115	579.247	.23	.84	.84	74		50	89	3.0
		1130	590.291	.23	.84	.84	74		53	90	3.0
		1145	595.740	.23	.84	.84	74		51	92	3.0
		1200	600.000	.23	.84	.84	74		52	94	3.0
		1215	610.381	.23	.84	.84	74		53	96	3.0
		1230	620.556	.23	.84	.84	74		53	96	3.0
		1245	630.461	.23	.84	.84	78		53	94	3.0
		1300	637.900	.23	.84	.84	79		53	93	3.0
		1315	648.211	.23	.84	.84	79		53	93	3.0
		1330	651.810	.23	.84	.84	76		53	94	3.0
		1345	660.666	.23	.84	.84	78		53	94	3.0
		1400	667.494	.23	.84	.84	75		54	94	3.0
		1415	678.410	.23	.84	.84	76		54	94	3.0
		1430	686.042	.23	.84	.84	74		54	94	3.0
		1445	694.220	.23	.84	.84	73		55	94	3.0
		1500	702.357	.23	.84	.84	73		55	93	3.0
		1515	711.046	.23	.84	.84	73		55	93	3.0
		1530		.23	.84	.84	73		56	93	3.0

PRELIMINARY VELOCITY TRAVERSE

air consulting and engineering

PLANT HARRIS SEMICONDUCTOR
DATE 6/25/90
SOURCE FS1504
STACK I. D. 46" STACK AREA 11.540 ft²
BAROMETRIC PRES., in. Hg 30.55
STATIC PRES. in H_2O -1.81 STACK PRES. in. Hg. 30.41
PORT DIAM. ~2" NIPPLE LENGTH NA
PITOT TUBE NO. 59 TYPE "S" TYPE
OPERATORS H/G.

$\overline{\sqrt{\Delta P}}$ 8/89 — 0.378

SCHEMATIC OF TRAVERSE POINT LAYOUT

TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s) in. H_2O	STACK TEMPERATURE (T_s, °F)	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s In. H_2O	STACK TEMPERATURE (T_s, °F)
1-1	.13	80	1.00			
2	.11	79	3.08			
3	.04	79	5.43			
4	.03	79	8.14			
5	.04	78	11.50			
6	.10	76	16.38			
7	.17	76	29.62			
8	.29	75	34.50			
9	.40	75	57.66			
10	.40	76	40.57			
11 .326	—		42.92			
12	—		45.00			
2-1	.27		(.372)(174)(.84)($\sqrt{538}$) = 1261.138			
2	.26		(1261.138)(11.540) = 14553.532			
3	.20		(14553.532)($\frac{528}{538}$)(.98) = ~~14297.36~~ SCFM D			
4	.16					
5	.09		40			
6	.06					
7	.11		JP			
8	.11					
9	.14					
10	.25					
11	.32					
12	.37	428			(12)	
AVERAGE				AVERAGE		

EMISSION SUMMARY

FACILITY: HARRIS SEMICONDUCTOR
SOURCE: F51504
DATE: 6/26/90

TIME	MAXIMUM	MINIMUM	AVERAGE
0700 : 0710	2.5	2.4	2.4
0710 - 0720	2.5	2.4	2.5
0720 - 0730	2.5	2.5	2.5
0730 - 0740	2.5	2.5	2.5
0740 - 0750	2.5	2.5	2.5
0750 - 0800	2.7	2.4	2.5
0800 - 0810	2.7	2.4	2.5
0810 - 0820	3.4	2.5	4.1
0820 - 0830	2.8	2.5	2.7
0830 - 0840	3.0	2.5	2.6
0840 - 0850	3.2	2.7	3.0
0850 - 0900	3.4	3.0	3.1
0900 - 0910	3.4	3.1	3.2
0910 - 0920	3.5	3.1	3.1
0920 - 0930	3.4	3.1	3.2
0930 - 0940	3.3	3.2	3.2
0940 - 0950	5.0	3.2	3.4
0950 - 1000	5.0	3.2	3.5
1000 - 1010	3.2	3.0	3.1
1010 - 1020	3.0	3.0	
1020 - 1030	3.0	2.8	2.8
1030 - 1040	2.7	2.7	2.7

EMISSION SUMMARY

FACILITY: HARRIS SEMICONDUCTOR
SOURCE: E51 50c1
DATE: 6/26/90

TIME	MAXIMUM	MINIMUM	AVERAGE
1040-1050	2.7	2.7	2.7
1050-1100	2.7	2.7	2.7
1100-1110	2.7	2.7	2.7
1110-1120	2.7	2.6	2.6
1120-1130	5.2	2.6	4.1
1130-1140	5.2	4.6	4.7
1140-1150	4.6	4.5	4.6
1150-1200	4.6	4.5	4.5
1200-1210	4.5	3.5	4.0
1210-1220	4.5	4.5	4.5
1220-1230	4.5	4.2	4.4
1230-1240	4.3	4.2	4.2
1240-1250	4.2	4.2	4.2
1250-1300	4.2	4.2	4.2
1300-1310	4.7	4.0	4.2
1310-1320	4.0	3.5	4.0
1320-1330	3.7	3.5	3.7
1330-1340	4.0	3.7	3.8
1340-1350	4.0	3.5	3.9
1350-1400	4.0	3.8	3.9
1400-1410	4.3	4.0	4.1
1410-1420	4.3	4.0	4.2

EMISSION SUMMARY

FACILITY: HARRIS SEMICONDUCTOR

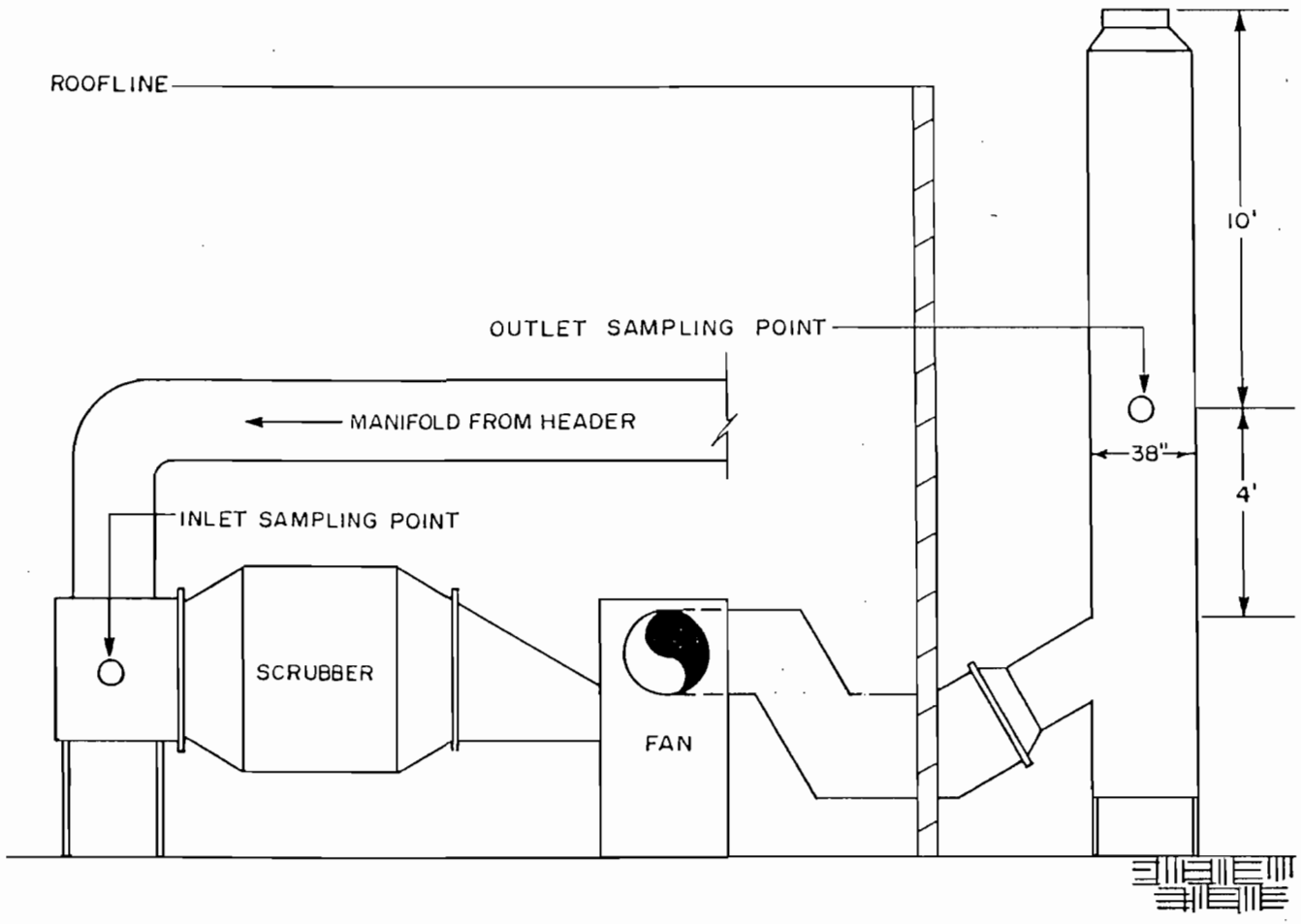
SOURCE:

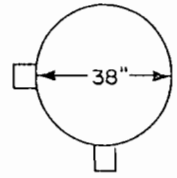
DATE:

TIME	MAXIMUM	MINIMUM	AVERAGE
1420 - 1430	4.0	3.7	3.9
1430 - 1440	4.2	3.7	3.9
1440 - 1450	5.0	3.7	4.2
1450 - 1500	4.0	4.2	4.0
1500 - 1510	4.4	4.0	4.1
1510 - 1520	4.0	3.8	3.9
1520 - 1530	3.7	3.6	3.6

Correction 1.5 ppm

F51S05
VOC, EFFICIENCY





TRAVERSE POINT NUMBER	INCHES INSIDE STACK WALL
1	1.00
2	2.55
3	4.48
4	6.73
5	9.50
6	13.49
7	24.51
8	28.50
9	31.27
10	33.52
11	35.45
12	37.00

SAMPLING POINT LOCATION SCHEMATIC
HARRIS CORPORATION SOURCE - F51S05
SEMICONDUCTOR DIVISION
MELBOURNE, FLORIDA

AIR CONSULTING
and
ENGINEERING

FLOWRATE CALCULATIONS

	PLANT	HARRIS SEMICONDUCT	
	STACK	F51SO5	
	DATE	6/28/90	
	RUN NO.	1	
	BAROMETRIC PRESS.	30.09	IN.HG
	STACK PRESS.	29.77	IN.HG
	STACK AREA	8.333	SQ.FT
	AVG.STACK TEMP	82.00	F
	CP	0.99	
	AVG. SQRT VELOCITY HEAD	0.462	IN. H2O
ORSAT:	PERCENT CO2	0.0	
	PERCENT O2	20.9	
	PERCENT N2	79.1	
	FRACTION OF DRY AIR	0.976	
	MOISTURE FRACTION	0.024	
	MWGT. OF DRY STACK GAS	28.836	
	MWGT. OF WET STACK GAS	28.576	
	AVG.VELOCITY	31.21	FPS
	ACTUAL VOL. FLOW	15602.86	ACFM
	STD. VOL. FLOW	14760.67	SCFMD

VELOCITY TRAVERSE

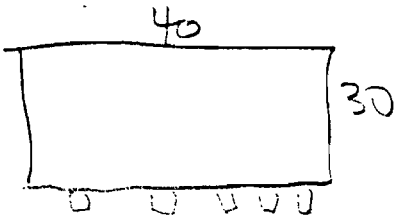
PLANT	HARRIS SEMICONDUCTOR
DATE	6/28/90
SOURCE	F51SO5
BAROMETRIC PRESS.	30.090 IN.HG
STACK PRESS.	29.770 IN.HG
OPERATORS	NECK/HODGE
RUN	1

TRAVERSE POINT NUMBER	VEL. HEAD in. H2O	SQR VEL. HEAD
1-1	0.050	0.224
1-2	0.060	0.245
1-3	0.130	0.361
1-4	0.175	0.418
1-5	0.480	0.693
2-1	0.120	0.346
2-2	0.135	0.367
2-3	0.270	0.520
2-4	0.330	0.574
2-5	0.570	0.755
3-1	0.130	0.361
3-2	0.180	0.424
3-3	0.290	0.539
3-4	0.460	0.678
3-5	0.540	0.735
4-1	0.130	0.361
4-2	0.140	0.374
4-3	0.190	0.436
4-4	0.270	0.520
4-5	0.440	0.663
5-1	0.070	0.265
5-2	0.085	0.292
5-3	0.110	0.332
5-4	0.180	0.424
5-5	0.420	0.648
		0.462

PRELIMINARY VELOCITY TRAVERSE

Air Consulting and Engineering

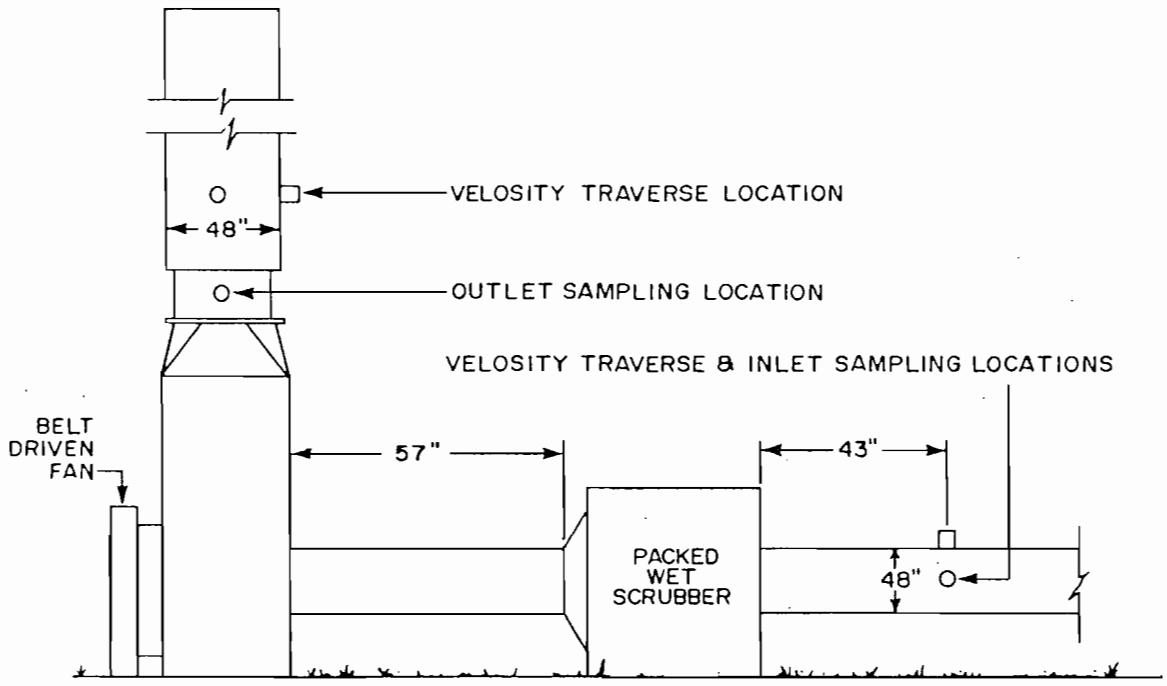
PLANT HARRIS SEMICONDUCTOR
DATE 6/28/90
SOURCE F5505
STACK I.D. 40 x 30 STACK AREA 8.333
BAROMETRIC PRES., in. Hg 30.09
STATIC PRES. in. H_2O -4.4" STACK PRES. in. Hg. 29.77
PORT DIAM. _____ NIPPLE LENGTH _____
PITOT TUBE NO. 48 TYPE STD
OPERATORS JEFF/MARK

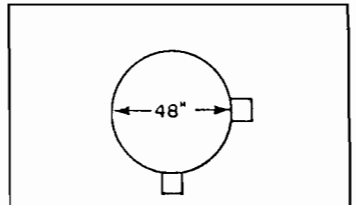


SCHEMATIC OF TRAVERSE POINT LAYOUT

TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s) in. H_2O	STACK TEMPERATURE (T_s, °F)	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s in. H_2O	STACK TEMPERATURE (T_s, °F)
1-1	~~.03~~ .05					
2	.06	87				
3	.13					
4	.175					
5	.48	588				
2-1	.12					
2	.135					
3	.27					
4	.33					
5	.57	513		(.462)(174)(.99)(542/542) = 1852.79		
3-1	.13			(1852.79)(8.333) = 15433.74		
2	.18			(15433.74)(528/542)(.98) = 14754.38		
3	.29					SCFMD
4	.46					
5	.54	547				
4-1	.13					
2	.14					
3	.19					
4	.27					
5	.44	471				
4-1	.07					
2	.085					
3	.11					
4	.18					
5	.42	342				
AVERAGE				AVERAGE		

F54S01
ACID, VOC





TRAVERSE POINT NUMBER	INCHES INSIDE STACK WALL
1	1.0
2	3.2
3	5.7
4	8.5
5	12.0
6	17.1
7	30.9
8	36.0
9	39.5
10	42.5
11	44.8
12	47.0

FIGURE
SAMPLING POINT LOCATION SCHEMATIC
HARRIS CORPORATION — 54SOI
SEMICONDUCTOR DIVISION

AIR CONSULTING
and
ENGINEERING

MOISTURE AND FLOW CALCULATIONS

PLANT HARRIS SEMICONDUCTOR
STACK F54S01
DATE 6/18/90
RUN NO. 1

	BAROMETRIC PRESS.	30.26	IN.HG
	STACK PRESS.	30.31	IN.HG
	STACK AREA	12.566	SQ.FT
	AVG. STACK TEMP.	66	F
	AVG. METER TEMP.	87.00	F
	Y	0.992	
	AVG. METER ORIFICE	2.530	IN. H2O
	METER VOL.	456.768	CUB.FT
	MOISTURE PLUS SILICA GEL	290.800	ML
	STACK SQRT VEL. HEAD	0.717	IN. H2O
	CP	0.840	
ORSAT:	PERCENT CO2	0.0	
	PERCENT O2	20.9	
	PERCENT N2	79.1	
	VWSTD.	13.708	SCF
	VMSTD.	445.063	SCF
	MOISTURE FRACTION	0.030	
	FRACTION OF DRY AIR	0.970	
	MWGT. OF DRY AIR	28.836	
	MWGT. OF WET STACK GAS	28.512	
	AVG. VEL	40.16	FPS
	GAS FLOWRATE	30282.78	ACFM
	STD. GAS FLOWRATE	29874.01	SCFMD

VELOCITY TRAVERSE

PLANT	HARRIS SEMICONDUCTOR	
SOURCE	F54S01	
DATE	6/18/90	
BAROMETRIC PRESS.	30.260	IN.HG
STACK PRESS.	30.310	IN.HG
OPERATORS	CARTER	
RUN	1	

TRAVERSE POINT NUMBER	VEL. HEAD IN.H2O	SQRT VEL. HEAD
1-1	0.750	0.866
1-2	0.930	0.964
1-3	0.980	0.990
1-4	0.880	0.938
1-5	0.720	0.849
1-6	0.460	0.678
1-7	0.260	0.510
1-8	0.230	0.480
1-9	0.180	0.424
1-10	0.210	0.458
1-11	0.320	0.566
1-12	0.400	0.632
2-1	0.420	0.648
2-2	0.580	0.762
2-3	0.650	0.806
2-4	0.650	0.806
2-5	0.690	0.831
2-6	0.610	0.781
2-7	0.450	0.671
2-8	0.450	0.671
2-9	0.51	0.714
2-10	0.56	0.748
2-11	0.570	0.755
2-12	0.580	0.762
		0.717

STACK SAMPLING FIELD DATA SHEET

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GAINESVILLE, FLORIDA 32606

TEST ID FS4S01
PAGE 1 OF 3

PLANT HARRIS SOURCE FS4S01
PLANT LOCATION PALM BAY, FL.
TYPE OF SAMPLING TRAIN H_2O TRAT
TYPE OF SAMPLES ACID
DATE 6/18/90 RUN NO. 1
TIME START 0720 TIME END 1538
SAMPLE TIME 15 MIN. RDGS. DAYSHIFT min/pt Total min
BAR PRESS. "Hg STACK PRESS. "Hg
ASSUMED MOISTURE 2 % FDA .98
WEATHER Cloudy & WARM TEMP. 87 °F
METER BOX NO. 3 ΔH 1.57 Y 0.992
NOMOGRAPH C_f 9.04 PITOT CORR. FACTOR .84
NOZZLE CALIBRATION .302 .301 .302 = .302
STACK DIMINSIONS
STACK AREA (EFFECTIVE ft^2)
STACK HEIGHT ft.
STACK DIAMETER: UPSTREAM DOWNSTREAM
PORT SIZE 3 In. NIPPLE LENGTH 0
U CORD LENGTH: 100'
REMARKS:

MAT'L PROCESSING RATE DAYSHIFT
GAS METER READINGS: FINAL 565.774 ft^3
INITIAL 109.006 ft^3
NET 456.768 ft^3
IMPINGERS VOL. GAIN 242 ml.
SILICA GEL NO. 27 WT. GAIN 48.8
FILTER NO. NA TOTAL CONDENSATE 290.8 ml.

ORSAT

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

NA
F_O F_O RANGE ✓
LEAK CHECKS: METER BOX/PUMP
ORSAT BAG GAS SAMPLE SYSTEM
ORSAT ANALYZER
PRE-TEST 0.00 CFM 14 "Hg POST-TEST 0.00 CFM 15 "Hg
BOX OPERATOR CARTER PROBE HOLDER
PYROMETER NO. 3 PITOT TUBE NO.
PITOT TUBE LEAK CHECK: PRETEST ✓
POST-TEST(+) H_2O SEC
POST-TEST(−) H_2O SEC

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL (IN.)	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O) CALC.	METER ORIFICE PRESS. DIFF. ("H_2O) ACTUAL	STACK GAS TEMP (°F)	SAMPLE BOX TEMP (°F)	LAST IMPINGER TEMP (°F)	DRY GAS METER TEMP (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
1-1	STATIONARY	0755	124.105	.28	2.53	2.53	65	NA	68	77	7.0
1		0750	139.205	.28	2.53	2.53	66		68	80	6.0
1		0805	151.315	.28	2.53	2.53	66		66	82	6.5
1		0820	164.651	.28	2.53	2.53	66		51	83	6.5
1		0835	180.111	.28	2.53	2.53	66		48	84	6.5
1		0850	195.293	.29	2.53	2.53	66		47	85	6.5

Air Consulting and Engineering
2106 N.W. 67th PLACE, SUITE 4
GAINESVILLE, FLORIDA 32606

RUN NO. E54501

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL (IN.)	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O)		STACK GAS TEMP (°F)	SAMPLE BOX TEMP (°F)	LAST IMPINGER TEMP (°F)	DRY GAS METER TEMP (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
					CALC.	ACTUAL					
		0905	207.955	.28	2.53	2.53	66		48	85	6.5
		0920	220.135	.28	2.53	2.03	66		49	86	6.5
		0935	236.440	.28	2.53	2.53	66		50	86	6.5
		0950	250.685	.28	2.53	2.53	67		49	87	6.5
		1005	264.891	.28	2.53	2.53	65		50	87	6.5
		1020	279.291	.20	1.81	~~2.53~~ 1.81	66		51	87	6.5
		1035	291.605	.19	1.72	1.72	66		50	87	5.0
		1050	303.505	.19	1.72	1.72	66		49	87	5.0
		1105	315.000	.28	2.53	2.53	66		49	87	4.5
		1120	329.355	.28	2.53	2.53	66		49	88	6.5
		1135	343.711	.28	2.53	2.53	66		49	88	6.5
		1150	357.522	.28	2.53	2.53	66		49	88	6.5
		1205	370.151	.28	2.53	2.53	66		49	89	6.5
		1220	385.850	.28	2.53	2.53	65		48	88	6.5
		1235	399.489	.29	2.53	2.53	65		49	89	6.5
		1250	414.307	.28	2.53	2.53	66		51	88	7.0
		1305	428.625	.28	2.53	2.53	66		51	88	7.0
		1320	442.736	.28	2.53	2.53	65		51	88	7.0
		1335	456.747	.28	2.53	2.53	65		51	88	7.0
		1350	470.87	.28	2.53	2.53	66		52	88	7.0
		1405	485.07	.28	2.53	2.53	66		52	89	7.0
		1420	499.638	.28	2.53	2.53	66		52	89	7.0
		1435	514.205	.28	2.53	2.53	67		52	89	7.0
		1450	527.956	.28	2.53	2.53	67		52	89	7.0
		1505	542.105	.28	2.53	2.53	67		53	89	7.0
		1520	556.285	.28	2.53	2.53	67		53	89	7.0
	Rod	1530	565.774	.28	2.53	2.53	67		53	89	7.0
		~~1550~~		~~.28~~	~~2.53~~	~~2.53~~	~~67~~		~~53~~	~~89~~	~~7.0~~
		~~1605~~	~~485.872~~	~~.28~~	2.53	2.53	67		53	89	7.0

87

PRELIMINARY VELOCITY TRAVERSE

Air Consulting Engineering

PLANT HARRIS SEMICONDUCTOR
DATE 6-18-90
SOURCE F54501
STACK I.D. 48 STACK AREA 12.566
BAROMETRIC PRES., In. Hg 30.26
STATIC PRES. In. H_2O 0.7 STACK PRES. in. Hg. 30.31
PORT DIAM. 2-3" NIPPLE LENGTH NA
PITOT TUBE NO. 59 TYPE S
OPERATORS NECK - CARTER

SCHEMATIC OF TRAVERSE POINT LAYOUT

TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s) in. H_2O	STACK TEMPERATURE (T_s, °F)	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s in. H_2O	STACK TEMPERATURE (T_s, °F)
1-~~1~~	.75	72				
2	.93	71				
3	.98	70				
4	.88	70				
5	.72	70				
6	.46	70				
7	.26	70				
8	.23	70				
9	.18	71				
10	.21	71				
11	.32	72				
12 (.696)	.40	75				
2-1	.42	72				
2	.58	71				
3	.65	71				
4	.65	70				
5	.69	70				
6	.61	70				
7	.45	70				
8	.45	70				
9	.51	70				
10	.56	70				
11	.57	71				
12 (.744)	.58	72				
AVERAGE	$\overline{\sqrt{P}}$ = .717			AVERAGE		

$A_{STM} = (.721)(174)(.84)(\sqrt{531}) = 2428.35$

$ACFM_{STM} = (2428.35)(12.566) = 30514.63$

$SCFMD = (30514.63)(\frac{528}{531})(.98) = 29755.39$

HARRIS SEMICONDUCTOR
PALM BAY, FLORIDA
EPA-25A VOC EMISSIONS
6/18/90

AIR CONSULTING AND ENGINEERING, INC

TIME	~~F54S01~~ F60S01 PPM C3H8 MAX	MIN	AVG	~~F60S01~~ F54S01 PPM C3H8 MAX	MIN	AVG
0700-0710	4.50	4.50	4.50	11.00	11.00	11.00
0710-0720	4.50	4.50	4.50	11.00	11.00	11.00
0720-0730	4.50	4.50	4.50	11.00	11.00	11.00
0730-0740	4.50	4.50	4.50	11.50	11.50	11.50
0740-0750	4.50	4.00	4.25	13.00	13.00	13.00
0750-0800	4.50	4.00	4.25	13.00	13.00	13.00
0800-0810	4.50	4.50	4.50	13.50	12.50	13.00
0810-0820	5.00	4.50	4.75	12.00	12.00	12.00
0820-0830	4.50	4.50	4.50	12.00	12.00	12.00
0830-0840	5.00	4.50	4.75	12.50	12.50	13.50
0840-0850	5.50	4.50	5.00	13.50	13.00	13.25
0850-0900	5.00	4.50	4.75	14.00	13.50	13.75
0900-0910	5.00	5.00	5.00	13.50	13.50	13.50
0910-0920	5.00	4.50	4.75	14.00	13.50	13.75
0920-0930	5.00	4.50	4.75	21.50	16.50	19.00
0930-0940	4.50	4.50	4.50	17.50	16.00	16.75
0940-0950	6.00	6.00	6.00	13.50	13.00	13.25
0950-1000	4.50	4.50	4.00	13.50	13.50	13.50
1000-1010	5.50	4.50	4.50	13.50	13.50	13.50
1010-1020	5.00	4.50	5.00	13.50	13.50	13.50
1020-1030	4.50	4.50	4.75	13.50	13.00	13.25
1030-1040	5.00	4.50	4.50	13.00	13.00	13.00
1040-1050	8.00	7.00	4.75	15.50	15.50	15.00
1050-1100	8.00	6.00	7.50	15.50	15.50	5.00
1100-1110	14.00	11.50	7.00	15.00	15.00	15.00
1110-1120	13.00	6.50	12.75	15.00	14.50	14.75
1120-1130	7.50	6.00	9.75	13.50	13.50	13.50
1130-1140	11.50	5.50	6.75	13.00	13.00	13.00
1140-1150	5.00	5.00	8.50	14.00	14.00	14.00
1150-1200	4.50	3.50	5.00	14.50	14.50	14.50
1200-1210	4.00	4.00	4.00	14.50	14.00	14.25
1210-1220	3.50	3.50	4.00	13.50	13.50	13.50
1220-1230	3.50	3.50	3.50	12.50	12.50	12.50
1230-1240	3.50	3.50	3.50	12.50	12.00	12.25
1240-1250	3.00	3.00	3.50	13.50	13.50	13.50
1250-1300	4.00	4.00	3.00	13.50	13.50	13.50
1300-1310	4.00	3.50	4.00	14.00	13.00	13.50
1310-1320	14.00	4.50	3.75	13.00	13.00	13.50
1320-1330	14.50	6.00	9.25	13.00	13.00	13.25
1330-1340	4.50	4.50	10.25	11.50	11.50	11.50
1340-1350	8.00	6.00	4.50	11.50	11.50	11.50
1350-1400	4.00	4.00	7.00	10.50	10.50	10.50
1400-1410	4.00	4.00	4.00	10.50	10.50	10.50
1410-1420	3.00	3.00	4.00	10.50	9.50	10.00
1420-1430	3.00	3.00	3.00	9.00	8.50	9.00
1430-1440	3.00	3.00	3.00	7.00	7.00	7.00
1440-1450	3.50	3.50	3.00	16.50	13.50	15.00
1450-1500	3.50	3.50	3.50	7.50	6.50	7.00
1500-1510	3.50	3.50	3.50	12.50	11.50	12.00
1510-1520	3.50	3.50	3.50	12.50	11.50	12.00
1520-1530	3.50	3.50	3.50	12.50	12.50	12.50
AVERAGES			5.01			12.63
AMBIENT CO			3.01			10.63

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EMISSION SUMMARY

FACILITY: HARRIS

SOURCE:

DATE: 6/18/90

	F54/501 Source #1			F60 501 Source #2			F54/501 Source #1			F60 501 Source #2			
0700	MAX	MIN	AUG	MAX	MIN	AUG	MAX	MIN	AUG	MAX	MIN	AUG	1100
12 1	11.0	11.0	11.0	4.5	4.5	4.5	15.0	15.0	15.00	14.0	11.5	12.75	1
13 2	11.0	11.0	11.0	4.5	4.5	4.5	15.0	14.5	14.75	13.0	6.5	9.75	2
14 3	11.0	11.0	11.0	4.5	4.5	4.5	13.5	13.5	13.50	7.5	6.0	6.75	3
15 4	11.5	11.5	11.5	4.5	4.5	4.5	13.0	13.0	13.00	11.5	5.5	8.50	4
16 5	13.0	13.0	13.0	4.5	4.0	4.25	14.0	14.0	14.00	5.0	5.0	5.00	5
70.6													
0800 17 6	13.0	13.0	13.0	4.5	4.0	4.25	14.5 (11)	14.5	14.50	4.5	3.5	4.00	6 1200
18 1	13.5	12.5	13.0	4.5	4.5	4.50	14.5 (49)	14.0	14.25	4.0	4.0	4.00	1
19 2	12.0	12.0	12.0	5.0	4.5	4.75	13.5	13.5	13.50	3.5	3.5	3.50	2
20 3	12.0	12.0	12.0	4.5	4.5	4.5	12.5	12.5	12.50	3.5	3.5	3.50	3
21 4	12.5	12.5	12.5	5.0	4.5	4.75	12.5	12.0	12.25	3.5	3.5	3.50	4
22 5	13.5	13.0	13.25	5.5	4.5	5.00	13.5	13.5	13.50	3.0	3.0	3.00	5
76.5													
900 23 6	14.0	13.5	13.75	5.0	4.5	4.75	13.5	13.5	13.50	4.0	4.0	4.00	6 1300
24 1	13.5	13.5	13.50	5.0	5.0	5.0	14.0	13.0	13.50	4.0	3.5	3.75	1
25 2	14.0	13.5	13.75	5.0	4.5	4.75	14.0	13.0	13.50	14.0	4.5	9.25	2
26 3	21.5	16.5	19.00	5.0	4.5	4.75	13.5	13.0	13.25	14.5	6.0	10.25	3
27 4	17.5	16.0	16.75	4.5	4.5	4.50	11.5	11.5	11.50	4.5	4.5	4.50	4
28 5	13.5	13.0	13.25	6.0	6.0	6.00	11.5	11.5	11.5	8.00	6.00	7.00	5
89.75													
29 6	13.5	13.5	13.50	4.5	4.5	4.50	10.5	10.5	10.5	4.00	4.00	4.00	6 1400
30 1	13.5	13.5	13.50	5.5	4.5	5.00	10.5	10.5	10.5	4.0	4.00	4.00	1
31 2	13.5	13.5	13.50	5.0	4.5	4.75	10.5	9.5	10.00	3.0	3.0	3.00	2
32 3	13.5	13.0	13.25	4.5	4.5	4.50	9.5	8.5	9.00	3.0	3.0	3.00	3
33 4	13.0	13.0	13.00	5.0	4.5	4.75	7.0	7.0	7.00	3.00	3.00	3.00	4
34													
84.25 35	15.5	15.5	15.50	8.0	7.0	7.50	16.5	13.5	15.00	3.5	3.50	3.50	5
1000 6	15.5	15.5	15.50	8.0	6.0	7.00	7.5	6.5	7.00	3.5	3.50	3.50	1500

EMISSION SUMMARY

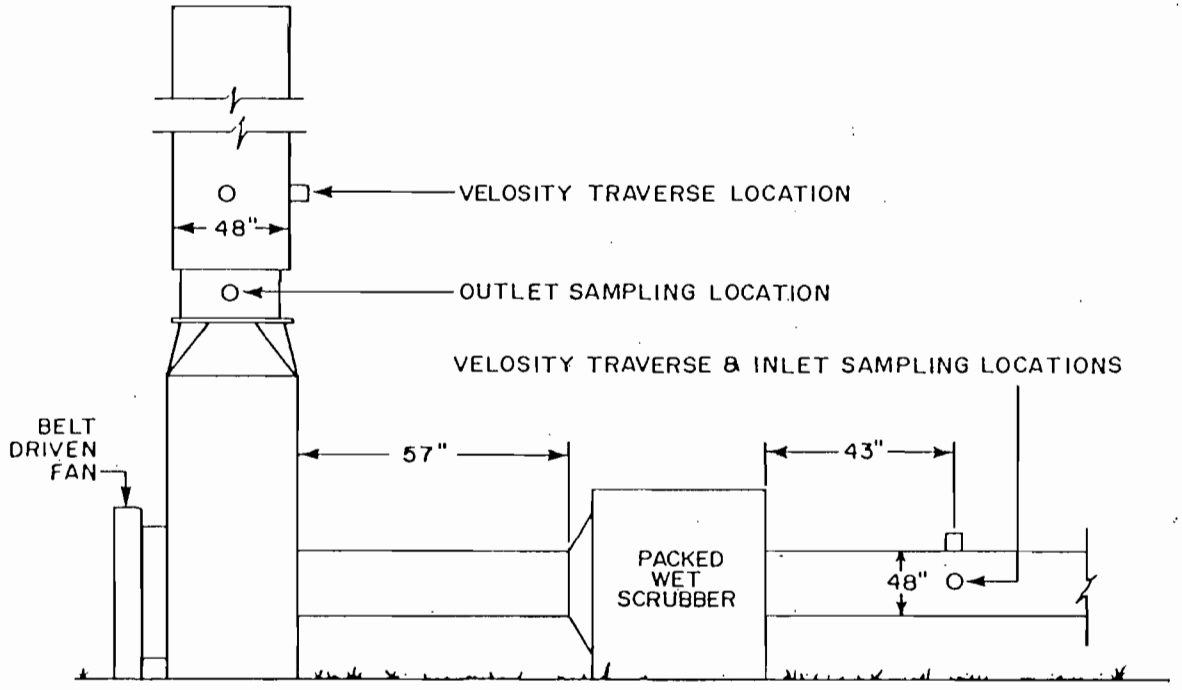
FACILITY: HARRIS

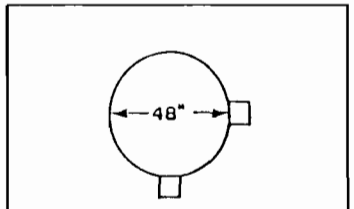
SOURCE:

DATE: 6/18/90

	Source #1			Source #2				
1500	MAX	MIN	AVG	MAX	MIN	AVG		
1	12.5	11.5	12.00	3.5	3.5	3.5		
2	12.5	11.5	12.00	3.5	3.5	3.5		
1530 3	12.5	12.5	12.50	3.5	3.5	3.5		
END Test			12.82			5.00		
	Amb +2.0		2.00		-	2.00		
			10.82			3.00		

F54S02
ACID, VOC, EFFICIENCY





TRAVERSE POINT NUMBER	INCHES INSIDE STACK WALL
1	1.0
2	3.2
3	5.7
4	8.5
5	12.0
6	17.1
7	30.9
8	36.0
9	39.5
10	42.5
11	44.8
12	47.0

SAMPLING POINT LOCATION SCHEMATIC
HARRIS CORPORATION — F54S02
SEMICONDUCTOR DIVISION

AIR CONSULTING
and
ENGINEERING

MOISTURE AND FLOW CALCULATIONS

PLANT HARRIS SEMICONDUCTOR
STACK F54SO2-OUTLET
DATE 6/20/90
RUN NO. 1

	BAROMETRIC PRESS.	30.09	IN.HG
	STACK PRESS.	30.14	IN.HG
	STACK AREA	12.566	SQ.FT
	AVG. STACK TEMP.	~~70~~	F
	AVG. METER TEMP.	86.00	F
	Y	0.992	
	AVG. METER ORIFICE	3.340	IN. H2O
	METER VOL.	546.966	CUB.FT
	MOISTURE PLUS SILICA GEL	205.800	ML
	STACK SQRT VEL. HEAD	0.505	IN. H2O
	CP	0.840	
ORSAT:	PERCENT CO2	0.0	
	PERCENT O2	20.9	
	PERCENT N2	79.1	
	VWSTD.	9.701	SCF
	VMSTD.	531.989	SCF
	MOISTURE FRACTION	0.018	
	FRACTION OF DRY AIR	0.982	
	MWGT. OF DRY AIR	28.836	
	MWGT. OF WET STACK GAS	28.642	
	AVG. VEL	28.41	FPS
	GAS FLOWRATE	21421.44	ACFM
	STD. GAS FLOWRATE	21112.51	SCFMD

VELOCITY TRAVERSE

PLANT	HARRIS SEMICONDUCTOR
SOURCE	F54SO2-OUTLET
DATE	6/20/90
BAROMETRIC PRESS.	30.090 IN.HG
STACK PRESS.	30.140 IN.HG
OPERATORS	CARTER
RUN	1

TRAVERSE POINT NUMBER	VEL. HEAD IN.H2O	SQRT VEL. HEAD
1-1	0.480	0.693
1-2	0..510	0.714
1-3	0.420	0.648
1-4	0.340	0.583
1-5	0.290	0.539
1-6	0.200	0.447
1-7	0.180	0.424
1-8	0.170	0.412
1-9	0.160	0.400
1-10	0.190	0.436
1-11	0.230	0.480
1-12	0.230	0.480
2-1	0.260	0.510
2-2	0.260	0.510
2-3	0.260	0.510
2-4	0.220	0.469
2-5	0.200	0.447
2-6	0.165	0.406
2-7	0.195	0.442
2-8	0.300	0.548
2-9	0.36	0.600
2-10	0.38	0.616
2-11	0.430	0.656
2-12	0.430	0.656
		0.505

MOISTURE AND FLOW CALCULATIONS

PLANT HARRIS SEMICONDUCTOR
STACK F54SO2-INLET
DATE 6/20/90
RUN NO. 1

	BAROMETRIC PRESS.	30.26	IN.HG
	STACK PRESS.	30.25	IN.HG
	STACK AREA	12.566	SQ.FT
	AVG. STACK TEMP.	75	F
	AVG. METER TEMP.	92.00	F
	Y	0.994	
	AVG. METER ORIFICE	1.750	IN. H2O
	METER VOL.	362.881	CUB.FT
	MOISTURE PLUS SILICA GEL	105.200	ML
	STACK SQRT VEL. HEAD	0.493	IN. H2O
	CP	0.840	
ORSAT:	PERCENT CO2	0.0	
	PERCENT O2	20.9	
	PERCENT N2	79.1	
	VWSTD.	4.959	SCF
	VMSTD.	350.424	SCF
	MOISTURE FRACTION	0.014	
	FRACTION OF DRY AIR	0.986	
	MWGT. OF DRY AIR	28.836	
	MWGT. OF WET STACK GAS	28.685	
	AVG. VEL	27.80	FPS
	GAS FLOWRATE	20956.92	ACFM
	STD. GAS FLOWRATE	20619.04	SCFMD

VELOCITY TRAVERSE

PLANT	HARRIS SEMICONDUCTOR
SOURCE	F54SO2-INLET
DATE	6/18/90
BAROMETRIC PRESS.	30.260 IN.HG
STACK PRESS.	30.250 IN.HG
OPERATORS	CARTER
RUN	1

TRAVERSE POINT NUMBER	VEL. HEAD IN.H2O	SQRT VEL. HEAD
1-1	0.430	0.656
1-2	0.430	0.656
1-3	0.400	0.632
1-4	0.340	0.583
1-5	0.290	0.539
1-6	0.230	0.480
1-7	0.170	0.412
1-8	0.140	0.374
1-9	0.140	0.374
1-10	0.150	0.387
1-11	0.190	0.436
1-12	0.260	0.510
2-1	0.260	0.510
2-2	0.270	0.520
2-3	0.240	0.490
2-4	0.230	0.480
2-5	0.220	0.469
2-6	0.180	0.424
2-7	0.190	0.436
2-8	0.250	0.500
2-9	0.29	0.539
2-10	0.33	0.574
2-11	0.380	0.616
2-12	0.410	0.640
		0.493

STACK SAMPLING FIELD DATA SHEET

ace Air Consulting and Engineering

2106 N.W. 67th PLACE, SUITE 4
GAINESVILLE, FLORIDA 32606

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TEST ID F54502 outlet

PAGE 1 OF 2

PLANT Harris Corp SOURCE F54502 outlet

PLANT LOCATION Palm Bay Fl

TYPE OF SAMPLING TRAIN Mod. EPA-5

TYPE OF SAMPLES Acid

DATE 6-20-90 RUN NO. 1

TIME START ~~0820~~ 0700 TIME END 1530

SAMPLE TIME 15/1 min/pt 510 Total min

BAR PRESS. 30.09 "Hg STACK PRESS. _____ "Hg

ASSUMED MOISTURE 2 % FDA .98

WEATHER Hot TEMP. 92 °F

METER BOX NO. 3 ΔH 1.57 Y 0.992

NOMOGRAPH C_f 9.04 PITOT CORR. FACTOR 0.84C

NOZZLE CALIBRATION .302 .302 .302 = .302

STACK DIMINSIONS _____

STACK AREA _____ (EFFECTIVE _____ ft²)

STACK HEIGHT _____ ft.

STACK DIAMETER: UPSTREAM _____ DOWNSTREAM _____

PORT SIZE 3 in. NIPPLE LENGTH 0

U CORD LENGTH: _____

REMARKS: _____

MAT'L PROCESSING RATE 8 hr. Shift

GAS METER READINGS: FINAL 566.900 ft.³

INITIAL 014.934 ft.³

NET 546.966 ft.³

IMPINGERS VOL. GAIN 154 ml.

SILICA GEL NO. 16 WT. GAIN 51.8

FILTER NO. _____ TOTAL CONDENSATE 205.2 ml.

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

F_O _____ F_O RANGE _____

LEAK CHECKS: METER BOX/PUMP _____

ORSAT BAG _____ GAS SAMPLE SYSTEM _____

ORSAT ANALYZER _____

PRE-TEST 0.00 CFM 15 "Hg POST-TEST 0.00 CFM 15 "Hg

BOX OPERATOR Carter PROBE HOLDER —

PYROMETER NO. 3 PITOT TUBE NO. 59

PITOT TUBE LEAK CHECK: PRETEST OK

POST-TEST(+) 4.8 H_2O 15 SEC

POST-TEST(−) 6.3 H_2O 15 SEC

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL (IN.)	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O)		STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
					CALC.	ACTUAL					
		0715	086.62	.37	3.34	3.34	68		44	76	8.0
		0730	052.500	.37	3.34	3.34	68		43	80	8.0
		0745	067.531	.37	3.34	3.34	68		43	81	8.0
		0800	085.100	.37	3.34	3.34	68		43	82	8.0
		0815	101.800	.37	3.34	3.34	68		43	82	8.0
		0830	117.265	.37	3.34	3.34	67		45	93	8.0

Consulting and Engineering
2106 N.W. 67th PLACE, SUITE 4
GAINESVILLE, FLORIDA 32606

RUN NO. F54502-D

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL (IN.)	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O)		STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
					CALC.	ACTUAL					
				.37							
		0845	133.750	~~.37~~	~~3.34~~	3.34	68		41	68	8.0
		0900	149.630	.37	3.34	3.34	69		46	83	8.0
		0915	165.801	.37	3.34	3.34	70		45	85	8.0
		0930	182.085	.37	3.34	3.34	69		46	85	8.0
		0945	198.190	.37	3.34	3.34	69		42	85	8.0
		1000	216.001	.37	3.34	3.34	70		43	86	8.0
		1015	224.907	.37	3.34	3.34	68		46	86	8.0
		1030	246.800	.37	3.34	3.34	68		46	86	8.0
		1045	259.777	.37	3.34	3.34	68		47	87	8.0
		1100	280.010	.37	3.34	3.34	68		48	88	8.0
		1115	295.913	.37	3.34	3.34	69		46	87	8.0
		1130	311.443	.37	3.34	3.34	69		46	87	8.0
		1145	327.840	.37	3.34	3.34	69		46	87	8.0
		1200	343.650	.37	3.34	3.34	69		46	87	8.0
		1215	359.601	.37	3.34	3.34	69		46	87	8.0
		1230	375.662	.37	3.34	3.34	69		46	87	8.0
		1245	391.505	.37	3.34	3.34	69		46	89	8.0
		1300	407.999	.37	3.34	3.34	69		47	88	8.0
		1315	423.751	.37	3.34	3.34	69		46	88	8.0
		1330	439.561	.37	3.34	3.34	69		47	89	8.0
		1345	455.555	.37	3.34	3.34	69		47	89	9.0
		1400	471.700	.37	3.34	3.34	69		41	90	8.0
		1415	486.345	.37	3.34	3.34	69		44	90	8.0
		1430	503.575	.37	3.34	3.34	68		44	87	8.0
		1445	519.569	.37	3.34	3.34	68		44	90	8.0
		1500	535.401	.37	3.34	3.34	71		44	90	8.0
		1515	551.300	.37	3.34	3.34	73		43	87	8.0
		1530	566.900	.37	3.34	3.34	73		43	87	8.0
				~~.37~~	~~3.34~~	~~3.34~~	~~73~~		~~43~~	~~87~~	~~8.0~~

8p

Air Consulting and Engineering

PRELIMINARY VELOCITY TRAVERSE

PLANT HARRIS SEMICONDUCTOR
DATE 6/20/90
SOURCE ESP #2 - OUTLET
STACK I.D. 48" STACK AREA 12.566
BAROMETRIC PRES., in. Hg 30.09
STATIC PRES. in. H_2O +.7 in STACK PRES. in. Hg. 30.14
PORT DIAM. 2-3" NIPPLE LENGTH NA
PITOT TUBE NO. S9 TYPE "S"
OPERATORS DECK/HODGE

SCHEMATIC OF TRAVERSE POINT LAYOUT

TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s) in. H_2O	STACK TEMPERATURE (T_s, °F)	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s in. H_2O	STACK TEMPERATURE (T_s, °F)
1-1	.48	76°				
2	.51					
3	.42					
4	.34					
5	.29					
6	.20					
7	.18					
8	.17					
9	.16					
10	.19					
11	.23					
12 (DO)	.23	521				
2-1	.26	76°	(1.526)(174)(.84)($\sqrt{.536}$) = 1779.904			
2	.26		(1779.904)(12.566) = 22366.279			
3	.26		(22366.279)($\frac{528}{536}$)(.98) = 21591.804			
4	.22					
5	.20					
6	.165					
7	.185					
8	.130					
9	.36					
10	.38					
11	.43					
12	.43	.431 .5				
AVERAGE		(B		AVERAGE		

STACK SAMPLING FIELD DATA SHEET

air Consulting and Engineering
2106 N.W. 67th PLACE, SUITE 4
GAINESVILLE, FLORIDA 32606

TEST ID FSI-502-I
PAGE 1 OF 2

PLANT HARRIS SEMICON SOURCE FSI-502-INLET
PLANT LOCATION PALM BAY, FL.
TYPE OF SAMPLING TRAIN MOD-EPA 5
TYPE OF SAMPLES Acid
DATE 6-20-90 RUN NO. 1
TIME START 0700 TIME END 1530
SAMPLE TIME 15/1 min/pt 510 Total min
BAR PRESS. 30.09 "Hg STACK PRESS. _____ "Hg
ASSUMED MOISTURE 2 % FDA .98
WEATHER Hot TEMP. 92 °F
METER BOX NO. 1 ΔH 2.05 Y 0.994
NOMOGRAPH C_f 5.14 PITOT CORR. FACTOR .84
NOZZLE CALIBRATION .250 .250 .250 = .250
STACK DIMINSIONS _____
STACK AREA _____ (EFFECTIVE _____ ft^2)
STACK HEIGHT _____ ft.
STACK DIAMETER: UPSTREAM _____ DOWNSTREAM _____
PORT SIZE 3 in. NIPPLE LENGTH 0
U CORD LENGTH: _____
REMARKS: _____

MAT'L PROCESSING RATE 8hr. SHIFT
GAS METER READINGS: FINAL 316.323 $ft.^3$
INITIAL 953.442 $ft.^3$
NET 362.891 $ft.^3$
IMPINGERS VOL. GAIN 65 ml.
SILICA GEL NO. 48 WT. GAIN 40.2
FILTER NO. — TOTAL CONDENSATE 105.2 ml.

ORSAT

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

F_O _____ F_O RANGE _____
LEAK CHECKS: METER BOX/PUMP _____
ORSAT BAG _____ GAS SAMPLE SYSTEM _____
ORSAT ANALYZER _____
PRE-TEST 0.00 CFM 15 "Hg POST-TEST 0.00 CFM 15 "Hg
BOX OPERATOR Carter PROBE HOLDER _____
PYROMETER NO. 1 PITOT TUBE NO. S-3
PITOT TUBE LEAK CHECK: PRETEST OK
POST-TEST(+) 4.7 H_2O 15 SEC
POST-TEST(−) 3.8 H_2O 15 SEC

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL (IN.)	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O)		STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
					CALC.	ACTUAL					
		0715	963.962	.34	1.75	1.75	73		37	76	4.0
		0730	974.480	.34	1.75	1.75	74		43	82	4.0
		0745	985.000	.34	1.75	1.75	74		43	83	4.5
		0800	995.540	.34	1.75	1.75	74		43	84	4.5
		0815	1006.100	.34	1.75	1.75	74		45	86	4.5
		0830	1006.695	.34	1.75	1.75	74		45	87	4.5

Consulting and Engineering

2106 N.W. 67th PLACE, SUITE 4
GAINESVILLE, FLORIDA 32606

RUN NO. F54502-I

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL (IN.)	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O)		STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
					CALC.	ACTUAL					
		0845	027.111	.34	1.75	1.75	74		46	88	4.0
		0900	037.600	.34	1.75	1.75	75		46	90	4.5
		0915	048.289	.35	1.80	1.80	75		47	90	4.5
		0930	058.000	.35	1.80	1.80	75		47	91	4.5
		0945	069.515	.35	1.80	1.80	75		47	91	4.5
		1000	081.666	.35	1.80	1.80	75		47	91	4.5
		1015	091.817	.35	1.80	1.80	75		48	92	4.5
		1030	101.605	.35	1.80	1.80	75		48	92	4.5
		1045	111.500	.35	1.80	1.80	75		48	92	4.5
		1100	125.010	.35	1.80	1.80	76		48	93	4.5
		1115	133.050	.35	1.80	1.80	76		48	94	4.5
		1130	143.666	.35	1.80	1.80	76		48	94	4.5
		1145	154.900	.35	1.80	1.80	76		48	94	4.5
		1200	166.125	.35	1.80	1.80	76		48	94	4.5
		1215	176.606	.35	1.80	1.80	76		48	94	4.5
		1230	187.305	.35	1.80	1.80	76		48	94	4.5
		1245	197.505	.35	1.80	1.80	76		47	94	4.5
		1300	208.951	.35	1.80	1.80	76		47	95	4.5
		1315	219.673	.35	1.80	1.80	76		47	95	4.5
		1330	230.101	.35	1.80	1.80	77		48	95	4.5
		1345	241.000	.35	1.80	1.80	78		49	95	4.5
		1400	251.771	.35	1.80	1.80	78		48	96	4.5
		1415	261.634	.35	1.80	1.80	78		48	96	4.5
		1430	273.287	.35	1.80	1.80	78		49	97	4.5
		1445	283.900	.35	1.80	1.80	78		50	97	4.5
		1500	294.989	.35	1.80	1.80	78		50	98	4.5
		1515	305.557	.35	1.80	1.80	79		50	99	4.5
		1530	316.523	.35	1.80	1.80	79		51	99	4.5
										92	

Air Consulting and Engineering

PRELIMINARY VELOCITY TRAVERSE

8/89 - $\sqrt{\Delta P}$ = .499

PLANT HARRIS SEMICONDUCTOR
DATE 6/18/90
SOURCE F54502 - Inlet
STACK I.D. 48" STACK AREA 12.566
BAROMETRIC PRES., in. Hg 30.26
STATIC PRES. in H_2O -0.2 STACK PRES. in. Hg. 30.25
PORT DIAM. 48" 2-3" NIPPLE LENGTH NA
PITOT TUBE NO. 54 TYPE "S"
OPERATORS HODGE-NECK

SCHEMATIC OF TRAVERSE POINT LAYOUT

TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s) in. H_2O	STACK TEMPERATURE (T_s, °F)	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s in. H_2O	STACK TEMPERATURE (T_s, °F)
1-1	.43	76	1.0			
2	.43	75	3.2			
3	.40	75	5.7			
4	.34	75	8.5			
5	.29	75	12.0			
6	.23	75	17.1			
7	.17	75	30.9			
8	.14	75	36.0			
9	.14	74	39.5			
10	.15	75	42.5			
11	.19	75	44.8			
12 (.503)	.26	75	47.0			
2-1	.26	78				
2	.27	77				
3	.24	76				
4	.23	76				
5	.22	76				
6	.18	75				
7	.19	75	AFPM = (.510)(174)(.84)(√535) = 1724.15			
8	.25	75	ACFM AFRA = (1724.15)(12.566) = 21665.70			
9	.29	75	SCFMD = (21665.70)(528/535)(.98) = 20954.58			
10	.33	75				
11	.38	75				
12 (.614)	.41	76				
AVERAGE		Tp = .493		AVERAGE		

HARRIS SEMICONDUCTOR
PALM BAY, FLORIDA
EPA-25A VOC EMISSIONS
6/20/90

AIR CONSULTING AND ENGINEERING, INC.

TIME	F54SO2-INLET PPM C3H8 MAX	MIN	AVG	F54SO2-OUTLET PPM C3H8 MAX	MIN	AVG
0700-0710	6.50	6.50	6.50	6.50	6.50	6.50
0710-0720	6.50	6.50	6.50	6.50	6.50	6.50
0720-0730	7.00	7.00	7.00	6.50	6.50	6.50
0730-0740	7.00	7.00	7.00	6.50	6.50	6.50
0740-0750	7.00	7.00	7.00	6.50	6.50	6.50
0750-0800	7.00	7.00	7.00	6.50	6.50	6.50
0800-0810	7.00	7.00	7.00	6.50	6.50	6.50
0810-0820	7.50	7.00	7.25	7.00	6.50	6.75
0820-0830	7.00	7.00	7.00	7.00	6.50	6.75
0830-0840	7.00	7.00	7.00	7.00	7.00	7.00
0840-0850	7.00	7.00	7.00	7.00	7.00	7.00
0850-0900	8.00	7.00	7.50	8.00	7.50	7.75
0900-0910	8.80	8.00	8.50	8.80	8.00	8.50
0910-0920	8.80	8.20	8.60	8.80	8.20	8.50
0920-0930	10.00	8.20	9.00	9.80	8.20	8.30
0930-0940	9.80	8.80	9.20	8.20	8.00	8.10
0940-0950	9.00	8.80	8.90	8.50	8.20	8.30
0950-1000	9.80	8.50	9.00	8.20	8.00	8.10
1000-1010	9.60	8.20	9.00	8.80	8.00	8.40
1010-1020	9.20	9.20	9.20	8.50	8.00	8.20
1020-1030	10.00	9.20	9.60	8.50	8.20	8.30
1030-1040	9.50	9.00	9.20	8.80	8.20	8.50
1040-1050	10.20	9.50	9.40	8.50	8.50	8.50
1050-1100	11.80	9.80	10.20	11.80	8.50	10.20
1100-1110	15.20	10.20	12.50	10.80	9.20	10.00
1110-1120	11.50	9.80	10.60	11.00	9.50	10.20
1120-1130	11.00	10.80	10.90	10.20	9.20	9.70
1130-1140	11.00	10.90	10.90	9.80	9.50	9.65
1140-1150	11.00	10.50	10.70	9.50	9.00	9.25
1150-1200	12.00	10.50	11.77	12.00	9.20	10.60
1200-1210	11.8	10.90	11.40	9.50	9.20	9.40
1210-1220	10.80	9.00	9.90	9.00	7.80	8.40
1220-1230	9.00	6.50	8.10	7.20	5.00	6.10
1230-1240	6.50	5.00	5.80	5.00	4.20	4.60
1240-1250	5.20	4.20	4.70	4.20	3.20	3.70
1250-1300	5.00	4.50	4.80	3.50	3.50	3.50
1300-1310	5.00	4.80	4.90	3.50	3.20	3.40
1310-1320	5.20	5.00	5.10	3.50	3.50	3.50
1320-1330	6.00	5.00	5.50	4.20	3.50	3.90
1330-1340	17.50	5.00	7.90	26.00	4.00	10.00
1340-1350	40.20	10.00	21.40	12.20	9.20	10.70
1350-1400	11.20	10.20	10.70	9.00	8.50	8.80
1400-1410	10.20	10.00	10.10	8.50	8.20	8.40
1410-1420	10.80	9.80	10.30	9.20	9.00	9.10
1420-1430	10.20	9.80	9.90	8.50	8.00	8.25
1430-1440	10.20	9.20	9.70	9.80	7.80	8.80
1440-1450	10.00	9.00	9.50	8.00	7.00	7.50
1450-1500	10.20	9.20	9.70	8.80	8.00	8.40
1500-1510	11.20	11.00	11.00	10.50	9.20	9.50
1510-1520	11.20	10.80	10.90	9.50	9.00	9.20
1520-1530	13.50	10.80	11.20	9.50	9.00	9.30
AVERAGES			8.89			7.77
AMBIENT CORRECTED AVG.			7.39			7.27

EMISSION SUMMARY

FACILITY: HARRIS SEMICONDUCTOR
SOURCE: ES4502
DATE: 6/20/90
EFF. TEST

s, Inlet s, Outlet

TIME	MAXIMUM MAY	MAXIMUM MIN	MAXIMUM AUG	MINIMUM MAY	MINIMUM MIN	MINIMUM AUG
0700 - 0710	6.5	6.5	6.5	6.8	6.8	6.8
0710 - 0720	6.5	6.5	6.5	6.8	6.8	6.8
0720 - 0730	7.0	7.0	7.0	6.8	6.8	6.8
0730 - 0740	7.0	7.0	7.0	6.8	6.8	6.8
0740 - 0750	7.0	7.0	7.0	6.8	6.8	6.8
0750 - 0800	7.0	7.0	7.0	6.9	6.8	6.8
0800 - 0810	7.0	7.0	7.0	6.8	6.5	6.7
0810 - 0820	7.5	7.0	7.25	6.8	6.5	6.6
0820 - 0830	7.0	7.0	7.0	7.0	6.5	6.8
0830 - 0840	7.0	7.0	7.0	7.0	7.0	6.9
0840 - 0850	7.0	7.0	7.0	7.2	7.0	7.0
0850 - 0900	8.0	7.0	7.5	7.5	7.2	7.3
0900 - 0910	8.8	8.0	8.5	8.8	8.0	8.5
0910 - 0920	8.8	8.2	8.6	8.8	8.2	8.5
0920 - 0930	10	8.2	9	9.8	8.2	8.3
0930 - 0940	9.8	8.8	9.2	8.2	8	8.1
0940 - 0950	9	8.8	8.9	8.5	8.2	8.3
0950 - 1000	9.8	8.5	9	8.2	8	8.1
1000 - 1010	9.6	8.2	9	8.8	8	8.4
1010 - 1020	9.2 (8.5)	9.2	9.2	8.5	8.0	8.2
1020 - 1030	10.0	9.2	9.6	8.5	8.2	8.3
1030 - 1040	9.5	9.0	9.2	8.8	8.2	8.5

EMISSION SUMMARY

FACILITY: HARRIS SEMICONDUCTOR
SOURCE: FSC/502
DATE:

S_2 Inlet S_1 Outlet

TIME	MAXIMUM MAX	MAXIMUM MIN	MAXIMUM AVG	MINIMUM MAX	MINIMUM MIN	MINIMUM AVG	AVERAGE MAX	AVERAGE MIN	AVERAGE AVG
1040-1050	10.2	9.5	9.4	8.5	8.5	8.5	9.35	9.0	8.95
1050-1100	11.8	9.8	10.2	11.8	8.5	10.2	11.8	9.15	10.2
1100-1110	15.2	10.2	12.5	10.8	9.2	10.0	13.0	9.7	11.25
1110-1120	11.5	9.8	10.6	11.0	9.5	10.2	11.25	9.65	10.4
1120-1130	11.0	10.8	10.9	10.2	9.2	9.7	10.6	10.0	10.3
1130-1140	11.0	10.9	10.9	9.8	9.5	9.65	10.4	10.2	10.3
1140-1150	11.0	10.5	10.7	9.5	9.0	9.25	10.25	9.75	9.98
1150-1200	12.0	10.5	11.7	12.0	9.2	10.6	12.0	9.85	11.15
1200-1210	11.8	10.9	11.4	9.5	9.2	9.4	10.65	10.05	10.4
1210-1220	10.8	9.0	9.9	9.0	7.8	8.4	9.9	8.4	9.15
1220-1230	9.0	6.5	8.1	7.2	5.0	6.1	8.1	5.75	6.95
1230-1240	6.5	5.0	5.8	5.0	4.2	4.6	5.75	4.6	5.2
1240-1250	5.2	4.2	4.7	4.2	3.2	3.7	4.7	3.7	4.2
1250-1300	5.0	4.5	4.8	3.5	3.5	3.5	4.25	4.0	4.15
1300-1310	5.0	4.8	4.9	3.5	3.2	3.4	4.25	4.0	4.15
1310-1320	5.2	5.0	5.1	3.5	3.5	3.5	4.35	4.25	4.3
1320-1330	6.0	5.0	5.5	4.2	3.5	3.9	5.1	4.25	4.7
1330-1340	17.5	5.0	7.9	26.0	4.0	10.0	21.75	4.5	8.95
1340-1350	40.2	10.0	21.4	12.2	9.2	10.7	26.2	9.6	16.05
1350-1400	11.2	10.2	10.7	9.0	8.5	8.8	10.1	9.35	9.75
1400-1410	10.2	10.0	10.1	8.5	8.2	8.4	9.35	9.1	9.25
1410-1420	10.8	9.8	10.3	9.2	9.0	9.1	10.0	9.4	9.7

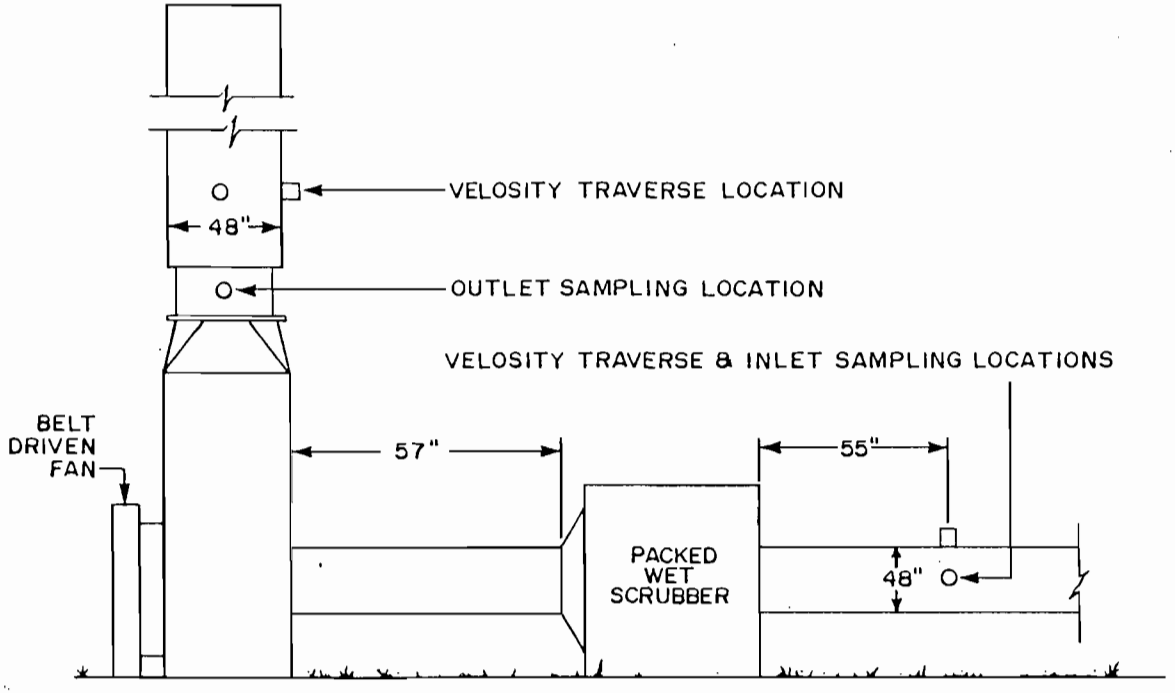
EMISSION SUMMARY

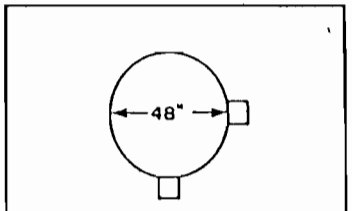
FACILITY: HARRIS SEMICONDUCTOR
SOURCE: E54/502
DATE: 6/20/90

S_2 Inlet S_1 Outlet

TIME	MAXIMUM MAX	MAXIMUM MIN	MAXIMUM AVG	MINIMUM MAX	MINIMUM MIN	AVERAGE AVG
1420-1430	10.2	9.8	9.9	8.5	8.0	8.25
1430-1440	10.2	9.2	9.7	9.8	7.8	8.8
1440-1450	10.0	9.0	9.5	8.0	7.0	7.5
1450-1500	10.2	9.2	9.7	8.8	8.0	8.4
1500-1510	11.2	11.0	11.0	10.5	9.2	9.5
1510-1520	11.2	10.8	10.9	9.5	9.0	9.2
1520-1530	13.5	10.8	11.2	9.5	9.0	9.3

F54S03
ACID, VOC





TRAVERSE POINT NUMBER	INCHES INSIDE STACK WALL
1	1.0
2	3.2
3	5.7
4	8.5
5	12.0
6	17.1
7	30.9
8	36.0
9	39.5
10	42.5
11	44.8
12	47.0

FIGURE 1.
SAMPLING POINT LOCATION SCHEMATIC
HARRIS CORPORATION — F54S03
SEMICONDUCTOR DIVISION

AIR CONSULTING
and
ENGINEERING

MOISTURE AND FLOW CALCULATIONS

PLANT HARRIS SEMICONDUCTOR
STACK F54SO3
DATE 6/18/90
RUN NO. 1

	BAROMETRIC PRESS.	30.17	IN.HG
	STACK PRESS.	30.15	IN.HG
	STACK AREA	12.566	SQ.FT
	AVG. STACK TEMP.	85	F
	AVG. METER TEMP.	96.00	F
	Y	0.994	
	AVG. METER ORIFICE	1.540	IN. H2O
	METER VOL.	350.107	CUB.FT
	MOISTURE PLUS SILICA GEL	43.300	ML
	STACK SQRT VEL. HEAD	0.701	IN. H2O
	CP	0.840	
ORSAT:	PERCENT CO2	0.0	
	PERCENT O2	20.9	
	PERCENT N2	79.1	
	VWSTD.	2.041	SCF
	VMSTD.	334.492	SCF
	MOISTURE FRACTION	0.006	
	FRACTION OF DRY AIR	0.994	
	MWGT. OF DRY AIR	28.836	
	MWGT. OF WET STACK GAS	28.770	
	AVG. VEL	39.90	FPS
	GAS FLOWRATE	30081.03	ACFM
	STD. GAS FLOWRATE	29188.63	SCFMD

VELOCITY TRAVERSE

PLANT	HARRIS SEMICONDUCTOR
SOURCE	F54SO3
DATE	6/18/90
BAROMETRIC PRESS.	30.170 IN.HG
STACK PRESS.	30.150 IN.HG
OPERATORS	HODGE
RUN	1

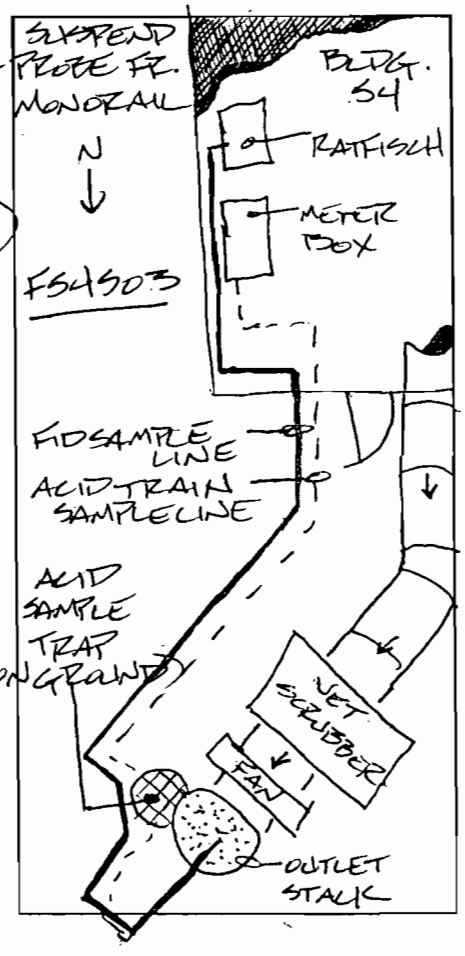
TRAVERSE POINT NUMBER	VEL. HEAD IN.H2O	SQRT VEL. HEAD
1-1	0.480	0.693
1-2	0.520	0.721
1-3	0.520	0.721
1-4	0.640	0.800
1-5	0.590	0.768
1-6	0.600	0.775
1-7	0.650	0.806
1-8	0.300	0.548
1-9	0.230	0.480
1-10	0.230	0.480
1-11	0.290	0.539
1-12	0.230	0.480
2-1	0.470	0.686
2-2	0.550	0.742
2-3	0.630	0.794
2-4	0.630	0.794
2-5	0.680	0.825
2-6	0.690	0.831
2-7	0.670	0.819
2-8	0.520	0.721
2-9	0.46	0.678
2-10	0.31	0.557
2-11	0.320	0.566
2-12	0.280	0.529
		0.701

STACK SAMPLING FIELD DATA SHEET

Consulting and Engineering
2106 N.W. 67th PLACE, SUITE 4
GAINESVILLE, FLORIDA 32606

TEST ID FS4503
PAGE 1 OF

PLANT HARRIS SEM. SOURCE FS4503
PLANT LOCATION PALM BAY, FL.
TYPE OF SAMPLING TRAIN H_2O TRAP
TYPE OF SAMPLES ACID
DATE 4/18/90 RUN NO. 1
TIME START 0700 TIME END 1530 510
SAMPLE TIME CONTINUOUS - 15MIN. RTGS. 480 min/pt Total min
BAR PRESS. 30.17 "Hg STACK PRESS. 30.16 "Hg
ASSUMED MOISTURE 2 % FDA .98
WEATHER CLEAR TEMP. 80 °F
METER BOX NO. 1 ΔH 2.05 Y 0.994
NOMOGRAPH C_f 5.12 PITOT CORR. FACTOR .84
NOZZLE CALIBRATION .225 .224 .225 = .225
STACK DIMINSIONS 48"
STACK AREA 12.566 (EFFECTIVE 12.566 ft^2)
STACK HEIGHT @ 50 ft.
STACK DIAMETER: UPSTREAM ____ DOWNSTREAM ____
PORT SIZE 2-3" in. NIPPLE LENGTH NA (ON GRADE)
U CORD LENGTH: 100'
REMARKS: A_N = .0009609



MAT'L PROCESSING RATE DAY/SHIFT
GAS METER READINGS: FINAL 520.107 ft^3
INITIAL 180.000 ft^3
NET 350.107 ft^3
IMPINGERS VOL. GAIN ____ ml.
SILICA GEL NO. 20 WT. GAIN 43.3
FILTER NO. NA TOTAL CONDENSATE 43.3 ml.

ORSAT

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

NA
F_O ____ F_O RANGE ____
LEAK CHECKS: METER BOX/PUMP ____
ORSAT BAG ____ GAS SAMPLE SYSTEM ____
ORSAT ANALYZER ____
PRE-TEST 0.00 CFM 20 "Hg POST-TEST 60.00 CFM 60 "Hg
BOX OPERATOR CARTER PROBE HOLDER ____
PYROMETER NO. 1 PITOT TUBE NO. ____
PITOT TUBE LEAK CHECK: PRETEST OK
POST-TEST(+) 4.5 H_2O 15 SEC
POST-TEST(−) 3.1 H_2O 15 SEC

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL (IN.)	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O) CALC.	METER ORIFICE PRESS. DIFF. ("H_2O) ACTUAL	STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
1-1	0715	START 15	189.9	.30	1.54	1.54	66	NA	68	78	4
2	0730	30	199.8	.30	1.54	1.54	67		65	81	4
3	0745	45	209.7	.30	1.54	1.54	67		63	84	4
4	0800	60	219.6	.30	1.54	1.54	67		60	87	4
5	0815	75	229.54	.30	1.54	1.54	67		57	90	4
6	0830	90	239.62	.30	1.54	1.54	67		57	91	4

2.05
10mm 7.55

24.5
330.35

14.5
322.60
15.5

1646

Air Consulting and Engineering

#15 I=151.66
A=151.35

BEST AVAILABLE COPY

PAGE 2 OF 2

RUN NO. PES4S03

2106 N.W. 67th PLACE, SUITE 4
GAINESVILLE, FLORIDA 32606

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL (IN.) (MIN)	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O")		STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
					CALC.	ACTUAL					
7	105	0845	249.00	.30	1.54	1.54	67	NA	54	93	4
8	120	0900	260.11	.30	1.54	1.54	~~78~~ 67	↓	54	95	4
9	135	0915	269.00	.30	1.54	1.54	67		66	95	4
10	150	0930	277.00	.30	1.54	1.54	72		65	96	4
11	165	0945	290.00	.30	1.54	1.54	68		63	97	4
12	180	1000	300.00	.30	1.54	1.54	67		60	97	4
13	195	1015	309.90	.30	1.54	1.54	67		57	97	4
14	210	1030	319.84	.30	1.54	1.54	67		57	97	4
15	225	1045	331.35	.30	1.54	1.54	67		55	97	4
16	240	1100	341.00	.30	1.54	1.54	67		58	98	4
17	255	1115	351.00	.30	1.54	1.54	68		55	98	4
18	270	1130	361.00	.30	1.54	1.54	68		55	99	4
19	285	1145	371.00	.30	1.54	1.54	68		55	100	4
20	300	1200	380.85	.30	1.54	1.54	68		58	100	4
21	315	1215	390.00	.30	1.54	1.54	68		57	100	4
22	330	1230	400.00	.30	1.54	1.54	67		58	100	4
23	345	1245	410.00	.30	1.54	1.54	68		60	100	4
24	360	1300	420.65	.30	1.54	1.54	68		60	100	4
25	375	1315	430.40	.30	1.54	1.54	68		60	100	4
26	390	1330	440.00	.30	1.54	1.54	67		60	100	4
27	405	1345	450.00	.30	1.54	1.54	68		56	100	4
28	420	1400	460.28	.30	1.54	1.54	68		56	100	4
29	435	1415	~~457.00~~	.30	1.54	1.54	68		56	100	4
30	450	1430	480.00	.30	1.54	1.54	68		56	100	4
31	465	1445	490.00	.30	1.54	1.54	68		57	100	4
32	480	1500	500.00	.30	1.54	1.54	68		56	100	4
33	495	1515	510.00	.30	1.54	1.54	68		56	100	4
34	510	1530	520.107	.30	1.54	1.54	68		56	100	4
										96	

Air Consulting and Engineering

PRELIMINARY VELOCITY TRAVERSE

PLANT HARRIS SEMICONDUCTOR
DATE 6/18/90
SOURCE FS4503 - INLET
STACK I.D. 48" STACK AREA 12.566
BAROMETRIC PRES., in. Hg 30.17
STATIC PRES. in H_2O -.21 STACK PRES. in. Hg. 30.15
PORT DIAM. 2-3" NIPPLE LENGTH NA
PITOT TUBE NO. 59 TYPE S-TYPE
OPERATORS HODGE-JECK

8/84 : $\sqrt{\Delta P}$ = .57
DB = 80°
RH = 58%

SCHEMATIC OF TRAVERSE. POINT LAYOUT

TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s) in H_2O	STACK TEMPERATURE (T_s, °F)	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s in. H_2O	STACK TEMPERATURE (T_s, °F)
1-1	.48	84	1.0			
2	.52	84	3.2			
3	.52	84	5.7			
4	.64	85	8.5			
5	.59	85	12.0			
6	.60	85	17.1			
7	.65	85	30.9			
8	.30	85	36.0			
9	.23	85	39.5			
10	.23	85	42.5			
11	.29	85	44.8			
12 (.651)	.23	85	47.0			
2-1	.47	85				
2	.55	85				
3	.63	85				
4	.63	85				
5	.68	85				
6	.69	85				
7	.67	86	AFPM = (.682)(174)(.84)($\sqrt{.545}$)			= 2327.08
8	.52	85	ACFMD = (2327.08)(12.566)			= 29242.08
9	.46	85	SCFMD = (29242.08)($\frac{528}{545}$)(.98)			= 27763.34
10	.31	85				
11	.32					
12 (.645)	.28					
(.542)		1.191				
AVERAGE				AVERAGE		

HARRIS SEMICONDUCTOR
PALM BAY, FLORIDA
EPA-25A VOC EMISSIONS

AIR CONSULTING AND ENGINEERING, INC.

TIME	F54SO3-6/18/90 PPM C3H8 MAX	MIN	AVG	F54SO4-6/19/90 PPM C3H8 MAX	MIN	AVG
0700-0710	24.50	23.00	23.00	41.00	36.00	38.00
0710-0720	24.50	22.20	22.20	37.00	35.50	36.00
0720-0730	23.80	22.00	22.00	35.00	28.00	32.00
0730-0740	25.50	23.00	23.00	28.00	27.50	27.50
0740-0750	29.00	24.00	24.00	30.50	27.50	29.00
0750-0800	33.00	24.50	24.50	30.50	28.00	28.50
0800-0810	32.00	29.00	29.00	29.50	22.00	28.50
0810-0820	29.00	28.00	28.00	31.50	26.50	28.50
0820-0830	28.50	26.00	26.00	30.00	28.70	29.50
0830-0840	27.50	25.50	25.50	32.50	28.50	30.00
0840-0850	29.00	25.00	25.00	32.50	29.50	31.00
0850-0900	27.00	25.00	25.00	33.00	27.50	29.00
0900-0910	27.00	26.50	26.50	31.50	27.50	29.00
0910-0920	26.50	25.80	25.80	28.00	25.80	27.00
0920-0930	26.50	26.00	26.00	27.00	26.30	26.80
0930-0940	26.30	25.80	25.80	26.50	25.50	26.00
0940-0950	28.00	22.00	22.00	29.00	26.50	28.00
0950-1000	30.00	22.00	22.00	32.00	26.50	28.00
1000-1010	36.30	24.80	24.80	29.00	26.50	27.00
1010-1020	29.50	26.50	26.50	31.00	25.60	28.00
1020-1030	29.80	28.50	28.50	35.50	26.50	29.00
1030-1040	32.30	28.20	28.20	30.00	27.00	29.00
1040-1050	30.00	27.50	29.00	31.50	26.50	28.00
1050-1100	29.50	26.50	28.50	33.50	26.50	30.00
1100-1110	29.00	25.50	27.00	38.80	26.50	31.00
1110-1120	26.00	24.00	25.00	34.50	26.50	30.00
1120-1130	24.50	23.00	24.00	36.20	26.50	29.00
1130-1140	23.50	21.50	22.00	40.00	27.50	34.00
1140-1150	24.00	21.50	23.00	39.00	24.00	33.00
1150-1200	21.00	19.00	20.00	183.00	21.00	30.00
1200-1210	21.00	18.70	20.00	21.0	13.00	19.00
1210-1220	19.00	18.50	18.50	15.00	13.00	14.00
1220-1230	18.50	18.00	18.50	13.00	13.00	13.00
1230-1240	19.50	18.00	18.50	13.00	13.00	13.00
1240-1250	21.00	18.50	20.00	13.50	13.00	13.00
1250-1300	21.00	18.50	20.00	13.30	12.80	13.00
1300-1310	21.50	19.00	20.00	47.30	13.50	30.00
1310-1320	21.00	19.00	20.50	26.50	24.00	25.00
1320-1330	28.00	20.50	23.00	27.00	25.50	26.00
1330-1340	42.50	23.50	27.00	28.00	26.00	27.00
1340-1350	28.50	24.50	27.00	35.00	26.00	28.00
1350-1400	35.80	26.50	30.00	29.50	26.00	28.00
1400-1410	35.30	20.00	28.00	34.90	26.00	30.00
1410-1420	39.50	24.50	28.00	32.30	25.00	27.00
1420-1430	32.00	25.00	28.00	29.50	22.50	26.00
1430-1440	30.00	20.00	25.00	28.00	22.70	27.00
1440-1450	60.00	24.00	38.00	120.00	18.00	30.00
1450-1500	48.00	25.00	28.00	28.30	22.50	25.00
1500-1510	30.00	26.00	27.00	38.70	22.50	28.00
1510-1520	32.00	26.00	28.00	29.30	23.00	25.00
1520-1530	28.00	24.00	27.00	25.00	21.00	23.00
AVERAGES			24.94			27.06
AMBIENT CORRECTED AVG.			22.94			27.06

EMISSION SUMMARY

FACILITY: HARRIS SEMICONDUCTOR
SOURCE: FS4503 - RATFISH
DATE: 6/18/90

TIME	MAXIMUM	MINIMUM	AVERAGE
0700-0710	24.5	23.0	23.5
0710-0720	24.5	23.0 22.2	23.0
0720-0730	23.8	22.0	23.0
0730-0740	25.5	23.0	24.0
0740-0750	29.0	24.0	26.0
0750-0800	33.0	24.5	27.0
0800-0810	32.0	29.0	30.0
0810-0820	29.0	28.0	29.0
0820-0830	28.5	26.0	27.0
0830-0840	27.5	25.5	26.0
0840-0850	29.0	25.0	28.0
0850-~~0860~~ 0900	27.0	25.0	26.0
0900-0910	27.0	26.5	26.5
0910-0920	26.5	25.8	26.0
0920-0930	26.5	26.0	26.3
0930-0940	26.3	25.8	26.0
0940-0950	28.0	22.0	25.0
0950-1000	30.0	22.0	27.0
1000-1010	36.3	24.8	29.0
1010-1020	29.5	26.5	28.0
1020-1030	29.8	28.5	29.0
1030-1040	32.3	28.2	30.0

EMISSION SUMMARY

FACILITY: HARRIS SEMICONDUCTOR
SOURCE: FS4503 - RATFISCH
DATE: 6/18/90

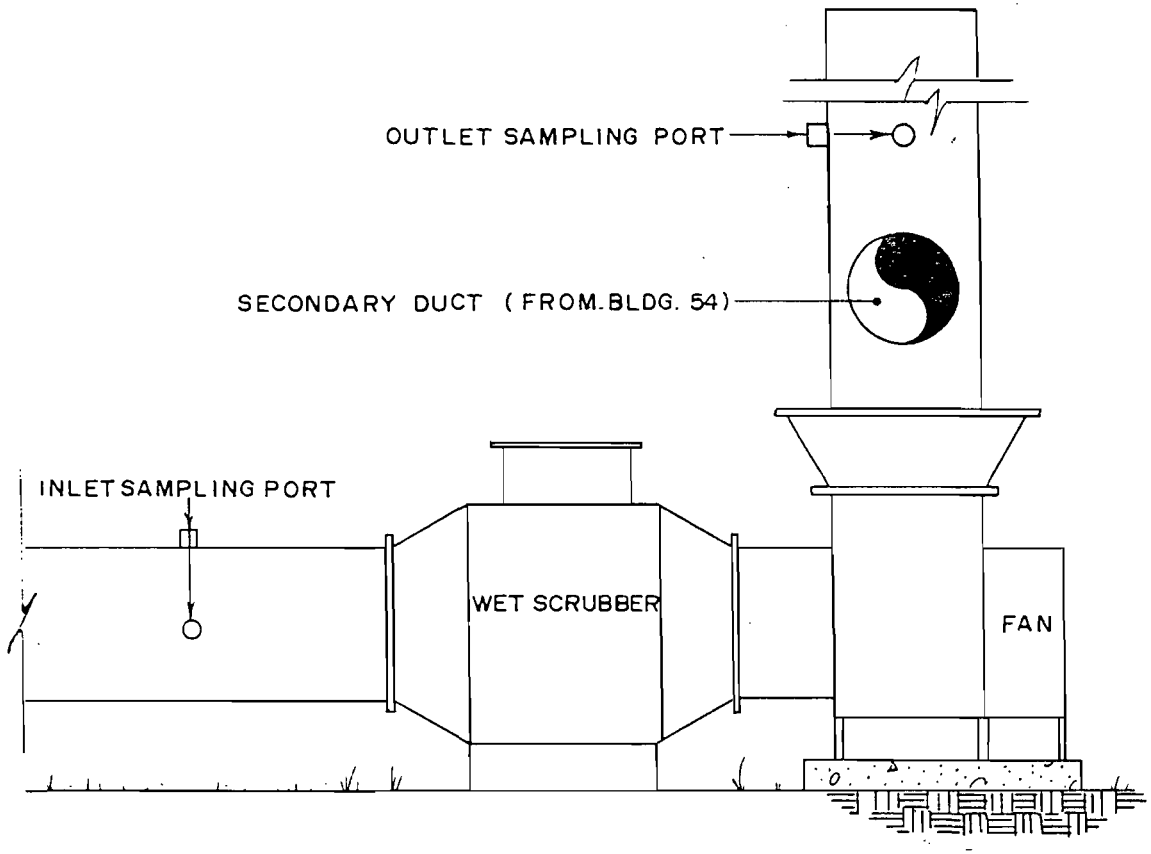
TIME	MAXIMUM	MINIMUM	AVERAGE
1040-1050	30.0	27.5	29.0
1050-1100	29.5	26.5	28.5
1100-1110	29.0	25.5	27.0
1110-1120	26.0	24.0	25.0
1120-1130	24.5	23.0	24.0
1130-1140	23.5	21.5	22.0
1140-1150	24.0	21.5	23.0
1150-1200	21.0	19.0	20.0
1200-1210	21.0	18.7	20.0
1210-1220	19.0	18.5	18.5
1220-1230	18.5	18.0	18.5
1230-1240	19.5	18.0	18.5
1240-1250	21.0	18.5	20.0
1250-1300	21.0	18.5	20.0
1300-1310	~~19.0~~ 21.5	19.0	20.0
1310-1320	21.0	19.0	20.5
1320-1330	28.0	20.5	23.0
1330-1340	42.5	23.5	27.0
1340-1350	28.5	24.5	27.0
1350-1400	~~35.0~~	26.5	30.0
1400-1410	35.3	20.0	28.0
1410-1420	39.5	~~29.5~~ 24.5	28.0

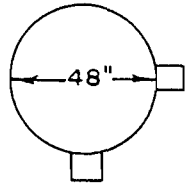
EMISSION SUMMARY

FACILITY: HARRIS SEMICONDUCTOR
SOURCE: F54503 - CATFISH
DATE: 6/18/90

TIME	MAXIMUM	MINIMUM	AVERAGE
1420 - 1430	32	25	28
1430 - 1440	30	20	25
1440 - 1450	60	24	38
1450 - 1500	48	25	28
1500 - 1510	30	26	27
1510 - 1520	32	26	28
1520 - 1530	28.0	24.0	27.0
1530			

F54S04
ACID, VOC





TRAVERSE POINT NUMBER	INCHES INSIDE STACK WALL
1	1.01
2	3.22
3	5.66
4	8.50
5	12.00
6	17.09
7	30.91
8	36.00
9	39.50
10	42.34
11	44.78
12	46.99

SAMPLING POINT LOCATION SCHEMATIC
HARRIS CORPORATION SOURCE - F54S04
SEMICONDUCTOR DIVISION
MELBOURNE, FLORIDA

AIR CONSULTING
and
ENGINEERING

MOISTURE AND FLOW CALCULATIONS

PLANT HARRIS SEMICONDUCTOR
STACK F54S04
DATE 6/19/90
RUN NO. 1

	BAROMETRIC PRESS.	30.17	IN.HG
	STACK PRESS.	30.18	IN.HG
	STACK AREA	12.566	SQ.FT
	AVG. STACK TEMP.	66	F
	AVG. METER TEMP.	100.00	F
	Y	0.994	
	AVG. METER ORIFICE	2.570	IN. H2O
	METER VOL.	431.967	CUB.FT
	MOISTURE PLUS SILICA GEL	144.700	ML
	STACK SQRT VEL. HEAD	0.697	IN. H2O
	CP	0.840	
ORSAT:	PERCENT CO2	0.0	
	PERCENT O2	20.9	
	PERCENT N2	79.1	
	VWSTD.	6.821	SCF
	VMSTD.	410.778	SCF
	MOISTURE FRACTION	0.016	
	FRACTION OF DRY AIR	0.984	
	MWGT. OF DRY AIR	28.836	
	MWGT. OF WET STACK GAS	28.659	
	AVG. VEL	39.03	FPS
	GAS FLOWRATE	29425.75	ACFM
	STD. GAS FLOWRATE	29307.65	SCFMD

VELOCITY TRAVERSE

PLANT	HARRIS SEMICONDUCTOR	
SOURCE	F54SO4	
DATE	6/19/90	
BAROMETRIC PRESS.	30.170	IN.HG
STACK PRESS.	30.180	IN.HG
OPERATORS	HODGE	
RUN	1	

TRAVERSE POINT NUMBER	VEL. HEAD IN.H2O	SQRT VEL. HEAD
1-1	1.100	1.049
1-2	1.100	1.049
1-3	0.820	0.906
1-4	0.670	0.819
1-5	0.470	0.686
1-6	0.380	0.616
1-7	0.430	0.656
1-8	0.150	0.387
1-9	0.170	0.412
1-10	0.240	0.490
1-11	0.370	0.608
1-12	0.360	0.600
2-1	0.330	0.574
2-2	0.420	0.648
2-3	0.540	0.735
2-4	0.700	0.837
2-5	0.800	0.894
2-6	0.720	0.849
2-7	0.310	0.557
2-8	0.330	0.574
2-9	0.48	0.693
2-10	0.66	0.812
2-11	0.720	0.849
2-12	0.720	0.849
		0.697

STACK SAMPLING FIELD DATA SHEET

Air Consulting and Engineering
2106 N.W. 67th PLACE, SUITE 4
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TEST ID 1
PAGE 1 OF 2

PLANT HARRIS SEM. SOURCE FSU SOU
PLANT LOCATION PALM BAY, FL.
TYPE OF SAMPLING TRAIN MOD. EPA-5
TYPE OF SAMPLES ACID
DATE 6/19/90 RUN NO. 1
TIME START 0700 TIME END 1530
SAMPLE TIME 15 MIN. EDGS. min/pt 510 Total min
BAR PRESS. SEE V.T. "Hg STACK PRESS. "Hg
ASSUMED MOISTURE 2 % FDA .98
WEATHER CLEAR TEMP. 80-100 °F
METER BOX NO. 1 ΔH 2.05 Y 0.994
NOMOGRAPH C_f 5.14 PITOT CORR. FACTOR .84
NOZZLE CALIBRATION .250 .249 .250 = .250
STACK DIMINSIONS 48"
STACK AREA 12.566 (EFFECTIVE 12.566 ft^2)
STACK HEIGHT ~40' ft.
STACK DIAMETER: UPSTREAM ____ DOWNSTREAM ____
PORT SIZE 2 in. NIPPLE LENGTH NA
U CORD LENGTH: 100'
REMARKS:

MAT'L PROCESSING RATE DAY SHIFT
GAS METER READINGS: FINAL 952.567 ft.^{3}
INITIAL 520.600 ft.^{3}
NET 431.967 ft.^{3}
IMPINGERS VOL. GAIN 109 ml.
SILICA GEL NO. 49 WT. GAIN 35.7
FILTER NO. — TOTAL CONDENSATE 144.7 ml.

ORSAT

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

NA

F_O ____ F_O RANGE ____
LEAK CHECKS: METER BOX/PUMP ____
ORSAT BAG ____ GAS SAMPLE SYSTEM ____
ORSAT ANALYZER ____
PRE-TEST 0.00 CFM 15 "Hg POST-TEST ____ CFM ____ "Hg
BOX OPERATOR HAGE PROBE HOLDER —
PYROMETER NO. 1 PITOT TUBE NO. ____
PITOT TUBE LEAK CHECK: PRETEST OK
POST-TEST(+) ____ H_2O ____ SEC
POST-TEST(−) ____ H_2O ____ SEC

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL (IN.) (MIN)	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O) CALC.	METER ORIFICE PRESS. DIFF. ("H_2O) ACTUAL	STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
1-1	15	0715	532.00	.50	2.57	2.57	65	NA	51	90	10
2	30	0730	544.00	.50	2.57	2.57	65		51	91	10
3	45	0745	556.00	.50	2.57	2.57	65		50	93	10
4	60	0800	568.00	.50	2.57	2.57	65		50	95	10
5	75	0815	580.00	.50	2.57	2.57	65		50	96	10
6	90	0830	591.75	.50	2.57	2.57	65		51	98	10

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RUN NO. F54504

17.88

PORT AND TRAVERSE POINT NUMBER RUG #	DISTANCE FROM INSIDE STACK WALL (IN) (MIN)	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O) CALC.	METER ORIFICE PRESS. DIFF. ("H_2O) ACTUAL	STACK GAS TEMP (°F)	SAMPLE BOX TEMP (°F)	LAST IMPINGER TEMP (°F)	DRY GAS METER TEMP (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
7	105	0845	617.00	.50	2.57	2.57	65	NA	52	99	12
8	120	0900	624.00	.50	2.57	2.57	65		51	99	12
9	135	0915	631.00	.50	2.57	2.57	65		51	99	12
10	150	0930	647.00	.50	2.57	2.57	65		51	100	12
11	165	0945	658.95	.50	2.57	2.57	65		50	100	12
12	180	~~0951~~ 1000	680.00	.50	2.57	2.57	65		50	100	12
13	195	1015	692.00	.50	2.57	2.57	65		50	101	12
14	210	1030	7404.00	.50	2.57	2.57	65		49	101	12
15	225	1045	7416.00	.50	2.57	2.57	65		49	101	12
16	240	1100	7628.00	.50	2.57	2.57	65		52	101	12
17	255	1115	740.00	.50	2.57	2.57	65		50	101	12
18	270	1130	752.00	.50	2.57	2.57	66		59	102	12
19	285	1145	764.00	.50	2.57	2.57	66		61	102	12
20	300	1200	776.00	.50	2.57	2.57	66		60	102	12
21	315	1215	7886.90	.50	2.57	2.57	66		61	102	12
22	330	1230	798.000	.50	2.57	2.57	66		61	102	12
23	345	1245	810.00	.50	2.57	2.57	67		51	102	12
24	360	1300	822.00	.50	2.57	2.57	67		51	102	12
25	375	1315	834.00	.50	2.57	2.57	67		51	102	12
26	390	1330	846.00	.50	2.57	2.57	67		51	102	12
27	405	1345	858.00	.50	2.57	2.57	67		51	102	12
28	420	1400	870.00	.50	2.57	2.57	67		51	102	12
29	435	1415	882.00	.50	2.57	2.57	67		51	102	12
30	450	1430	894.00	.50	2.57	2.57	67		51	102	12
31	465	1445	906.00	.50	2.57	2.57	67		51	102	12
32	480	1500	917.10	.50	2.57	2.57	67		51	102	12
33	495	1515	946.85	.50	2.57	2.57	67		51	102	12
34	510	1530		.50	2.57	2.57	67		51	102	12

PRELIMINARY VELOCITY TRAVERSE

air consulting and engineering

PLANT HARRIS SEMICONDUCTOR
DATE ~~F54508~~ ↑ F54508 ↓
SOURCE 6/18/90 ↓
STACK I.D. 48" STACK AREA 12.566
BAROMETRIC PRES., in. Hg 30.17
STATIC PRES. in H_2O -.09 STACK PRES. in. Hg. 30.18
PORT DIAM. 2-3" NIPPLE LENGTH NA
PITOT TUBE NO. 59 TYPE "S"
OPERATORS NICK/MARCO

1420

SCHEMATIC OF TRAVERSE POINT LAYOUT

TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s) in. H_2O	STACK TEMPERATURE (T_s, °F)	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s in. H_2O	STACK TEMPERATURE (T_s, °F)
1-1	1.1	72				
2	1.1	72				
3	.87	72				
4	.67	72				
5	.47	72				
6	.38	72				
7	.43	72				
8	.15	72				
9	.17	72				
10	.24	72				
11	.37	72				
12 (.690)	.36	72				
1-1	.33	73				
2	.42	73				
3	.51	72				
4	.70	72				
5	.80	72				
6	.72	72	$AFPM = (.75)(174)(.84)\sqrt{\quad} =$			2460.41
7	.31	72	$ACFM = (2460.41)(12.566) =$			30289.18
8	.33	72	$SCFM = (30289.18)\left(\frac{528}{532}\right)(.98) =$			29460.21
9	.48	72				
10	.66	72				
11	.72	72				
12 (.69)	.72	72				
		.697				
AVERAGE		T_s =		AVERAGE		

HARRIS SEMICONDUCTOR
PALM BAY, FLORIDA
EPA-25A VOC EMISSIONS

AIR CONSULTING AND ENGINEERING, INC.

TIME	F54SO3-6/18/90 PPM C3H8 MAX	MIN	AVG	F54SO4-6/19/90 PPM C3H8 MAX	MIN	AVG
0700-0710	24.50	23.00	23.00	41.00	36.00	38.00
0710-0720	24.50	22.20	22.20	37.00	35.50	36.00
0720-0730	23.80	22.00	22.00	35.00	28.00	32.00
0730-0740	25.50	23.00	23.00	28.00	27.50	27.50
0740-0750	29.00	24.00	24.00	30.50	27.50	29.00
0750-0800	33.00	24.50	24.50	30.50	28.00	28.50
0800-0810	32.00	29.00	29.00	29.50	22.00	28.50
0810-0820	29.00	28.00	28.00	31.50	26.50	28.50
0820-0830	28.50	26.00	26.00	30.00	28.70	29.50
0830-0840	27.50	25.50	25.50	32.50	28.50	30.00
0840-0850	29.00	25.00	25.00	32.50	29.50	31.00
0850-0900	27.00	25.00	25.00	33.00	27.50	29.00
0900-0910	27.00	26.50	26.50	31.50	27.50	29.00
0910-0920	26.50	25.80	25.80	28.00	25.80	27.00
0920-0930	26.50	26.00	26.00	27.00	26.30	26.80
0930-0940	26.30	25.80	25.80	26.50	25.50	26.00
0940-0950	28.00	22.00	22.00	29.00	26.50	28.00
0950-1000	30.00	22.00	22.00	32.00	26.50	28.00
1000-1010	36.30	24.80	24.80	29.00	26.50	27.00
1010-1020	29.50	26.50	26.50	31.00	25.60	28.00
1020-1030	29.80	28.50	28.50	35.50	26.50	29.00
1030-1040	32.30	28.20	28.20	30.00	27.00	29.00
1040-1050	30.00	27.50	29.00	31.50	26.50	28.00
1050-1100	29.50	26.50	28.50	33.50	26.50	30.00
1100-1110	29.00	25.50	27.00	38.80	26.50	31.00
1110-1120	26.00	24.00	25.00	34.50	26.50	30.00
1120-1130	24.50	23.00	24.00	36.20	26.50	29.00
1130-1140	23.50	21.50	22.00	40.00	27.50	34.00
1140-1150	24.00	21.50	23.00	39.00	24.00	33.00
1150-1200	21.00	19.00	20.00	183.00	21.00	30.00
1200-1210	21.00	18.70	20.00	21.0	13.00	19.00
1210-1220	19.00	18.50	18.50	15.00	13.00	14.00
1220-1230	18.50	18.00	18.50	13.00	13.00	13.00
1230-1240	19.50	18.00	18.50	13.00	13.00	13.00
1240-1250	21.00	18.50	20.00	13.50	13.00	13.00
1250-1300	21.00	18.50	20.00	13.30	12.80	13.00
1300-1310	21.50	19.00	20.00	47.30	13.50	30.00
1310-1320	21.00	19.00	20.50	26.50	24.00	25.00
1320-1330	28.00	20.50	23.00	27.00	25.50	26.00
1330-1340	42.50	23.50	27.00	28.00	26.00	27.00
1340-1350	28.50	24.50	27.00	35.00	26.00	28.00
1350-1400	35.80	26.50	30.00	29.50	26.00	28.00
1400-1410	35.30	20.00	28.00	34.90	26.00	30.00
1410-1420	39.50	24.50	28.00	32.30	25.00	27.00
1420-1430	32.00	25.00	28.00	29.50	22.50	26.00
1430-1440	30.00	20.00	25.00	28.00	22.70	27.00
1440-1450	60.00	24.00	38.00	120.00	18.00	30.00
1450-1500	48.00	25.00	28.00	28.30	22.50	25.00
1500-1510	30.00	26.00	27.00	38.70	22.50	28.00
1510-1520	32.00	26.00	28.00	29.30	23.00	25.00
1520-1530	28.00	24.00	27.00	25.00	21.00	23.00
AVERAGES			24.94			27.06
AMBIENT CORRECTED AVG.			22.94			27.06

EMISSION SUMMARY

FACILITY: HARRIS SEMICONDUCTOR
SOURCE: ES450X4
DATE: 6/19/90

TIME	MAX.	MIN.	AVG.
0700 - 0710	~~37.0~~ 41.0	~~35.5~~ 36.0	~~36.0~~ 38.0
0710 - 0720	~~35~~ 37.0	~~28~~ 35.5	36.0
0720 - 0730	35	28	32
0730 - 0740	28.0	27.5	27.5
0740 - 0750	→ 30.5/27.5/29.0 30.5	28.0	28.5
0750 - 0800	29.5	27.0	28.5
0800 - 0810	31.5	26.5	28.5
0810 - 0820	30.0	28.7	29.5
0820 - 0830	32.5	28.5	30.0
0830 - 0840	~~35.0~~ 32.5	29.5	31.0
0840 - 0850	33.0	27.5	29.0
0850 - 0900	31.5	27.5	29.0
0900 - 0910	28.0	25.8	27.0
0910 - 0920	27.0	26.3	26.8
0920 - 0930	26.5	25.5	26.0
0930 - 0940	29.0	26.5	28.0
0940 - 0950	32.0	26.5	28.0
0950 - 1000	29.0	26.5	27.0
1000 - 1010	31.0	25.6	28.0
1010 - 1020	35.5	26.5	29.0
1020 - 1030	30.0	27.0	29.0
1030 - 1040	~~30.0~~ 31.5	26.5	28.0
1040 - 1050			

EMISSION SUMMARY

FACILITY: HARRIS SEMICONDUCTOR
SOURCE: FS4S04
DATE: 4/19/90

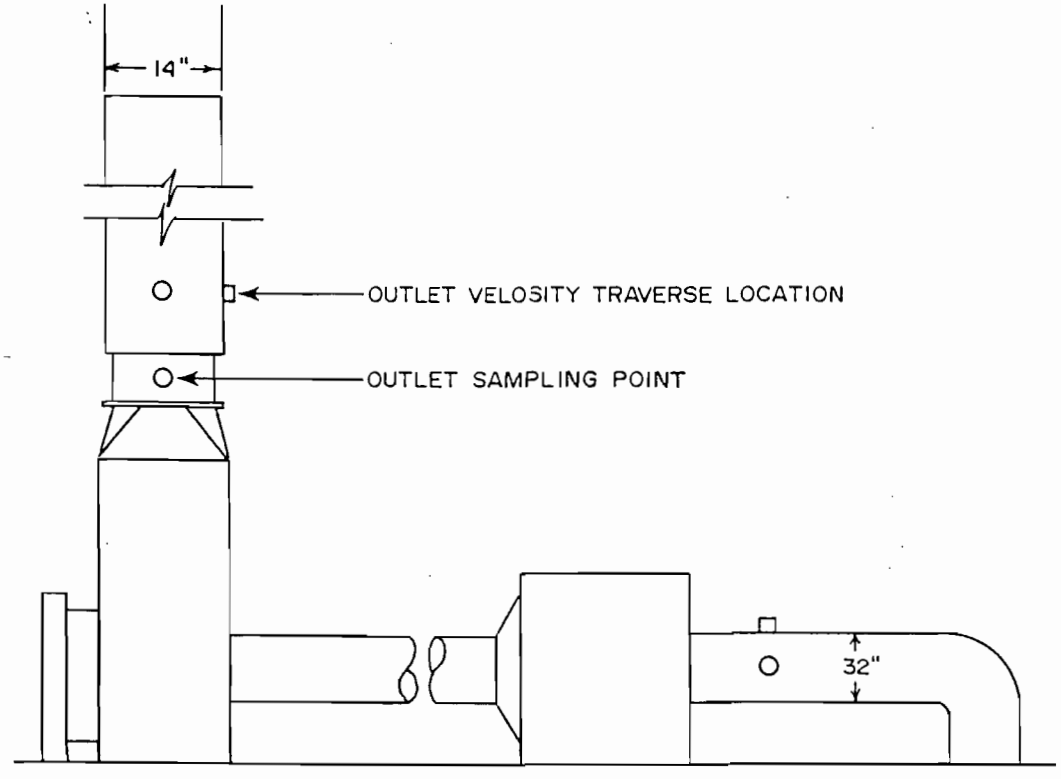
TIME	MAX.	MIN.	AVG.
~~1040 - 1050~~			
1050 - 1100	~~26.~~ 33.5	26.5	30.0
~~1100~~ 1050 - 1110	30.8	26.5	31.0
1110 - 1120	34.5	26.5	30.0
1120 - 1130	36.2	26.5	29.0
1130 - 1140	40.0	27.5	34.0
1140 - 1150	39.0	24.0	33.0
1150 - 1200	183.0	21.0	30
1200 - 1210	21.0	~~8.0~~ 15.0	19.0
1210 - 1220	13.0	13.0	14.0
1220 - 1230	~~15.0~~ 13.0	~~15.0~~ 13.0	~~15.0~~ 13.0
1230 - 1240	13.0	13.0	13.0
1240 - 1250	13.5	13.0	13.0
1250 - 1300	13.3	12.8	13.0
1300 - 1310	47.3	13.5	30.0
1310 - 1320	26.5	24.0	25.0
1320 - 1330	27.0	25.5	26.0
1330 - 1340	28.0	26.0	27.0
1340 - 1350	35.0	26.0	28.0
1350 - 1400	& 29.5	26.0	28.0
1400 - 1410	34.9	26.0	30.0
1410 - 1420	32.3	25.0	27.0
1420 - 1430	29.5	22.5	26.0

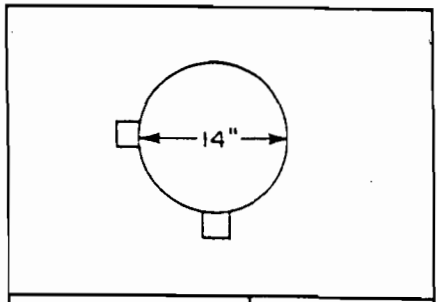
EMISSION SUMMARY

FACILITY: HARRIS SEMICONDUCTOR
SOURCE: F54504
DATE: 6/19/90

TIME	MAX.	MIN.	AVG.
1430 - 1440	28.0	22.7	27.0
1440 - 1450	120.0	18.0	30
1450 - 1500	28.3	22.5	25.0
1500 - 1510	38.7	22.5	28.0
1510 - 1520	29.3	23.0	25.0
1520 - 1530	25.0	21.0	23.0
1'			

F55S01
ACID





TRAVERSE POINT NUMBER	INCHES INSIDE STACK WALL
1	1.00
2	1.47
3	2.72
4	4.52
5	9.48
6	11.28
7	12.53
8	13.00

SAMPLING POINT LOCATION SCHEMATIC
HARRIS CORPORATION SOURCE - F55S01
SEMICONDUCTOR DIVISION
MELBOURNE, FLORIDA

AIR CONSULTING
and
ENGINEERING

MOISTURE AND FLOW CALCULATIONS

PLANT HARRIS SEMICONDUCTOR
STACK F55S01
DATE 6/22/90
RUN NO. 1

	BAROMETRIC PRESS.	30.17	IN.HG
	STACK PRESS.	30.17	IN.HG
	STACK AREA	1.069	SQ.FT
	AVG. STACK TEMP.	76	F
	AVG. METER TEMP.	78.14	F
	Y	0.994	
	AVG. METER ORIFICE	0.100	IN. H2O
	METER VOL.	15.140	CUB.FT
	MOISTURE PLUS SILICA GEL	11.400	ML
	STACK SQRT VEL. HEAD	0.134	IN. H2O
	CP	0.840	
ORSAT:	PERCENT CO2	0.0	
	PERCENT O2	20.9	
	PERCENT N2	79.1	
	VWSTD.	0.537	SCF
	VMSTD.	14.893	SCF
	MOISTURE FRACTION	0.035	
	FRACTION OF DRY AIR	0.965	
	MWGT. OF DRY AIR	28.836	
	MWGT. OF WET STACK GAS	28.459	
	AVG. VEL	7.60	FPS
	GAS FLOWRATE	487.60	ACFM
	STD. GAS FLOWRATE	467.47	SCFMD

VELOCITY TRAVERSE

PLANT	HARRIS SEMICONDUCTOR
SOURCE	F55S01
DATE	6/22/90
BAROMETRIC PRESS.	30.170 IN.HG
STACK PRESS.	30.170 IN.HG
OPERATORS	HODGE/GAUTHREAUX
RUN	1

TRAVERSE POINT NUMBER	VEL. HEAD IN.H2O	SQRT VEL. HEAD
1-1	0.01	0.100
1-2	0.01	0.100
1-3	0.02	0.141
1-4	0.02	0.141
1-5	0.02	0.141
1-6	0.02	0.141
1-7	0.02	0.141
1-8	0.02	0.141
2-1	0.01	0.100
2-2	0.02	0.141
2-3	0.02	0.141
2-4	0.02	0.141
2-5	0.02	0.141
2-6	0.02	0.141
2-7	0.02	0.141
2-8	0.02	0.141
		0.134

STACK SAMPLING FIELD DATA SHEET

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TEST ID FSS501
PAGE 1 OF 2

PLANT Harris SOURCE Building 55
PLANT LOCATION Building 55/Melborne, Flo.
TYPE OF SAMPLING TRAIN Acid
TYPE OF SAMPLES MOD-EPA 5
DATE 6-22-90 RUN NO. 1
TIME START 0700 TIME END 0830
SAMPLE TIME 15 MIN. TRGS min/pt FOR 1.5 Hr. Total min
BAR PRESS. ____ "Hg STACK PRESS. ____ "Hg
ASSUMED MOISTURE 1 % FDA .99
WEATHER CLEAR TEMP. 80's °F
METER BOX NO. 1 ΔH 2.05 Y 0.994
NOMOGRAPH C_f 5.14 PITOT CORR. FACTOR ____
NOZZLE CALIBRATION .250 .250 .250 = .250
STACK DIMINSIONS ____
STACK AREA ____ (EFFECTIVE ____ ft^2)
STACK HEIGHT ____ ft.
STACK DIAMETER: UPSTREAM ____ DOWNSTREAM ____
PORT SIZE ____ in. NIPPLE LENGTH ____
U CORD LENGTH: ____
REMARKS: ____

MAT'L PROCESSING RATE ____
GAS METER READINGS: FINAL 700.450 $ft.^3$
INITIAL 685.310 $ft.^3$
NET 15.14 $ft.^3$
IMPINGERS VOL. GAIN 10 ml.
SILICA GEL NO. 13 WT. GAIN 1.4
FILTER NO. — TOTAL CONDENSATE 11.4 ml.

ORSAT

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

F_O NA F_O RANGE ____
LEAK CHECKS: METER BOX/PUMP ____
ORSAT BAG ____ GAS SAMPLE SYSTEM ____
ORSAT ANALYZER ____
PRE-TEST 0.00 CFM 15 "Hg POST-TEST 0.00 CFM 18 "Hg
BOX OPERATOR Southreaux PROBE HOLDER ____
PYROMETER NO. 1 PITOT TUBE NO. ____
PITOT TUBE LEAK CHECK: PRETEST OK
POST-TEST(+) 4.3 H_2O 15 SEC
POST-TEST(−) 5.1 H_2O 15 SEC

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL (IN.)	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O) CALC.	METER ORIFICE PRESS. DIFF. ("H_2O) ACTUAL	STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
		0700	685.310	.020	.103	.103	74		54	74	1.0
		0715	687.351	.020	.10	.10	74		51	75	1.0
		0730	689.900	.020	.10	.10	44		50	75	1.0
		0745	691.261	.020	.10	.10	75		44	76	1.0
		0800	694.950	.020	.10	.10	44		54	79	1.0
		0815	697.641	.020	.10	.10	77		44	82	1.0

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RUN NO. _____

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL (IN.)	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O)		STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
					CALC.	ACTUAL					
		0830	700.450	.020	.10	.10	78	—	47	86	1.0
							75.57			78.14	

Air Consulting and Engineering

PRELIMINARY VELOCITY TRAVERSE

PLANT HARRIS SEMICONDUCTOR

DATE 6/22/90

SOURCE FS5501

STACK I.D. _____ STACK AREA 1.069

BAROMETRIC PRES., in. Hg 30.17

STATIC PRES. in H_2O _____ STACK PRES. in. Hg. _____

PORT DIAM. 2" NIPPLE LENGTH NA

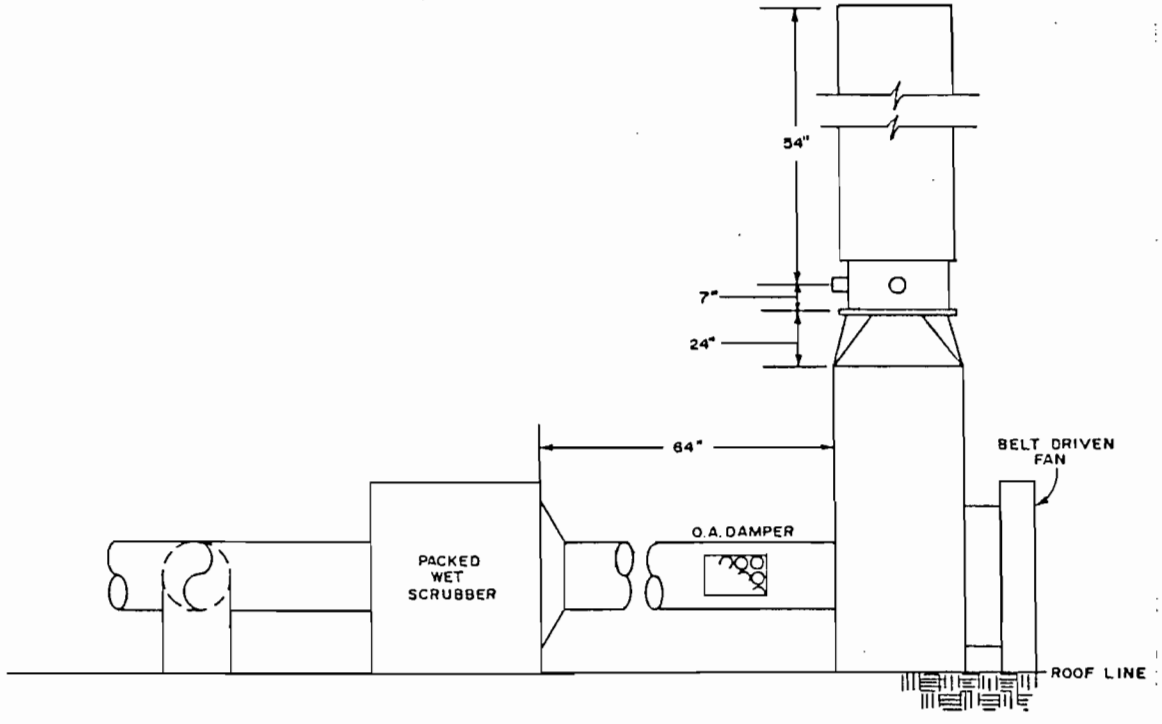
PITOT TUBE NO. _____ TYPE ~~STD~~. S TYPE"

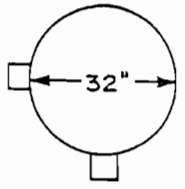
OPERATORS HODGE / GAUTHREAUX

SCHEMATIC OF TRAVERSE POINT LAYOUT

TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s) in H_2O	STACK TEMPERATURE (T_s, °F)	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s in. H_2O	STACK TEMPERATURE (T_s, °F)
1-1	.01	75°				
2	.01					
3	.02					
4	.02					
5	.02					
6	.02					
7	.02					
8	.02					
2-1	.01					
2	.02		$(0.134)(.84)(174)(\sqrt{535}) = 453.013$ AFPM			
3	.02		$(453.013)\left[\quad\right]$ =			ACFM
4	.02		$\left[\quad\right)\left(\frac{528}{535}\right)(.99)$ =			SCFM
5	.02					
6	.02					
7	.02					
8	.02					
AVERAGE				AVERAGE		

F57S01
ACID, VOC





TRAVERSE POINT NUMBER	INCHES INSIDE STACK WALL
1	1.02
2	3.36
3	6.21
4	10.34
5	21.66
6	25.79
7	28.64
8	30.98

SAMPLING POINT LOCATION SCHEMATIC
HARRIS CORPORATION SOURCE - F57S01
SEMICONDUCTOR DIVISION
MELBOURNE, FLORIDA

AIR CONSULTING
and
ENGINEERING

MOISTURE AND FLOW CALCULATIONS

PLANT HARRIS SEMICONDUCTOR
STACK F57S01
DATE 6/22/90
RUN NO. 1

	BAROMETRIC PRESS.	30.18	IN.HG
	STACK PRESS.	30.17	IN.HG
	STACK AREA	5.585	SQ.FT
	AVG. STACK TEMP.	84	F
	AVG. METER TEMP.	92.00	F
	Y	0.992	
	AVG. METER ORIFICE	2.020	IN. H2O
	METER VOL.	430.050	CUB.FT
	MOISTURE PLUS SILICA GEL	238.600	ML
	STACK SQRT VEL. HEAD	0.512	IN. H2O
	CP	0.840	
ORSAT:	PERCENT CO2	0.0	
	PERCENT O2	20.9	
	PERCENT N2	79.1	
	VWSTD.	11.248	SCF
	VMSTD.	413.632	SCF
	MOISTURE FRACTION	0.026	
	FRACTION OF DRY AIR	0.974	
	MWGT. OF DRY AIR	28.836	
	MWGT. OF WET STACK GAS	28.549	
	AVG. VEL	29.22	FPS
	GAS FLOWRATE	9790.47	ACFM
	STD. GAS FLOWRATE	9328.26	SCFMD

VELOCITY TRAVERSE

PLANT	HARRIS SEMICONDUCTOR
SOURCE	F57S01
DATE	6/22/90
BAROMETRIC PRESS.	30.180 IN.HG
STACK PRESS.	30.170 IN.HG
OPERATORS	NECK/WURTS
RUN	1

TRAVERSE POINT NUMBER	VEL. HEAD IN.H2O	SQRT VEL. HEAD
1-1	0.37	0.608
1-2	0.57	0.755
1-3	0.52	0.721
1-4	0.38	0.616
1-5	0.43	0.656
1-6	0.06	0.245
2-1	0.37	0.608
2-2	0.20	0.447
2-3	0.14	0.374
2-4	0.28	0.529
2-5	0.28	0.529
2-6	0.32	0.566
		0.512

STACK SAMPLING FIELD DATA SHEET

Consulting and Engineering
2106 N.W. 67th PLACE, SUITE 4
GAINESVILLE, FLORIDA 32606

(R-2)
TEST ID F57501
PAGE 1 OF 2

PLANT HARRIS SEMICONDUCTOR SOURCE F57501
PLANT LOCATION PALM BAY, FL.
TYPE OF SAMPLING TRAIN MOD. EPA-5
TYPE OF SAMPLES ACID
DATE 6/22/90 RUN NO. 2
TIME START 0700 TIME END 1530
SAMPLE TIME 15 MINUTES min/pt 510 Total min
BAR PRESS. ____ "Hg STACK PRESS. ____ "Hg
ASSUMED MOISTURE 2 % FDA .98
WEATHER CLEAR TEMP. 80-100 °F
METER BOX NO. 3 ΔH 1.57 Y 0.992
NOMOGRAPH C_f 8.00 PITOT CORR. FACTOR .84
NOZZLE CALIBRATION .302 .303 .302 = .302
STACK DIMINSIONS 32"
STACK AREA 5.585 (EFFECTIVE 5.585 ft^2)
STACK HEIGHT ~15' ft.
STACK DIAMETER: UPSTREAM ____ DOWNSTREAM ____
PORT SIZE 2-3" in. NIPPLE LENGTH NA
U CORD LENGTH: 100'
REMARKS:

MAT'L PROCESSING RATE DAY SHIFT
GAS METER READINGS: FINAL 1429.300 ft^3
INITIAL 999.250 ft^3
NET 430.05 ft^3
IMPINGERS VOL. GAIN 203 ml.
SILICA GEL NO. ____ WT. GAIN 238.6
FILTER NO. ____ TOTAL CONDENSATE ____ ml.

ORSAT

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

NA

F_O ____ F_O RANGE ____
LEAK CHECKS: METER BOX/PUMP ____
ORSAT BAG ____ GAS SAMPLE SYSTEM ____
ORSAT ANALYZER ____
PRE-TEST 0.00 CFM 14 "Hg POST-TEST 0.00 CFM 7 "Hg
BOX OPERATOR HOGE PROBE HOLDER ____
PYROMETER NO. 3 PITOT TUBE NO. 59
PITOT TUBE LEAK CHECK: PRETEST OK
POST-TEST(+) ____ H_2O ____ SEC
POST-TEST(−) ____ H_2O ____ SEC

PORT AND TRAVERSE POINT NUMBER RDG #	DISTANCE FROM INSIDE STACK WALL (IN.) STATIONARY	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O) CALC.	METER ORIFICE PRESS. DIFF. ("H_2O) ACTUAL	STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
1-1	15	0715	11.00	.25	2.02	2.02	75	NA	60	74	5
2	30	0730	23.00	.25	2.02	2.02	75		60	76	
3	45	0745	35.00	.25	2.02	2.02	77		60	78	
4	60	0800	47.00	.25	2.02	2.02	77		60	80	
5	75	0815	59.00	.25	2.02	2.02	78		65	82	
6	90	0830	75.00	.25	2.02	2.02	79		63	84	

Consulting and Engineering

2106 N.W. 67th PLACE, SUITE 4
GAINESVILLE, FLORIDA 32606

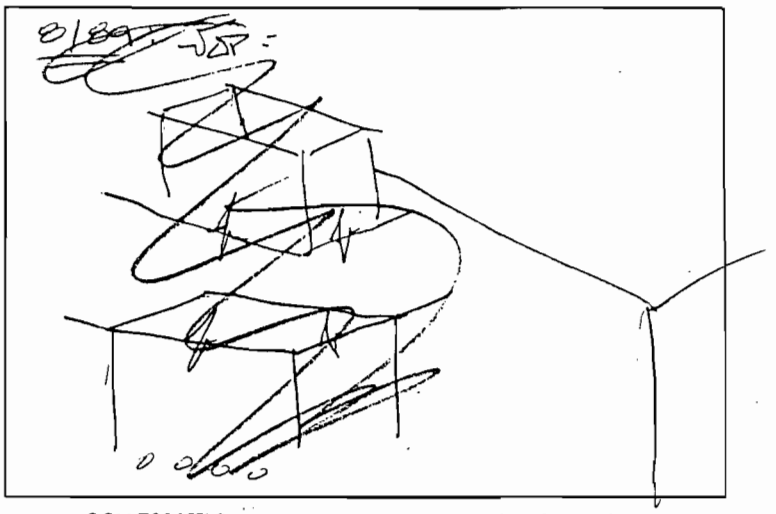
PAGE 2 OF 2
RUN NO. FS7501
(12-2)

PORT AND TRAVERSE POINT NUMBER TRAV. #	DISTANCE FROM INSIDE STACK WALL (IN.) MIN.	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O)		STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F) NA	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
					CALC.	ACTUAL					
7	105	0845	87.00	.25	2.02	2.02	80		63	86	5
8	120	0900	99.00	.25	2.02	2.02	80		62	88	5
9	135	0915	112.00	.25	2.02	2.02	82		63	90	5
10	150	0930	124.00	.25	2.02	2.02	82		63	90	5
11	165	0945	138.00	.25	2.02	2.02	82		63	92	5
12	180	1000	149.00	.25	2.02	2.02	82		50	93	5
13	195	1015	162.00	.25	2.02	2.02	83		50	95	5
14	210	1030	175.00	.25	2.02	2.02	84		50	95	5
15	225	1045	186.00	.25	2.02	2.02	84		53	103	5
16	240	1100	199.00	.25	2.02	2.02	84		53	107	5
17	255	1115	215.21	.25	2.02	2.02	86		49	109	5
18	270	1130	231.42	.25	2.02	2.02	85		52	116	5
19	285	1145	242.36	.25	2.02	2.02	84		53	116	5
20	300	1200	251.73	.25	2.02	2.02	85		53	116	5
21	315	1215	263.91	.25	2.02	2.02	87		53	112	5
22	330	1230	276.43	.25	2.02	2.02	87		53	108	5
23	345	1245	289.74	.25	2.02	2.02	85		52	100	5
24	360	1300	302.66	.25	2.02	2.02	86		50	95	5
25	375	1315	315.64	.25	2.02	2.02	86		53	94	5
26	390	1330	326.71	.25	2.02	2.02	87		53	93	5
27	405	1345	338.02	.25	2.02	2.02	85		54	93	5
28	420	1400	349.91	.25	2.02	2.02	85		54	93	5
29	435	1415	368.44	.25	2.02	2.02	85		54	91	5
30	450	1430	383.91	.25	2.02	2.02	85		53	89	5
31	465	1445	391.24	.25	2.02	2.02	85		53	89	5
32	480	1500	404.21	.25	2.02	2.02	86		53	89	5
33	495	1515	417.25	.25	2.02	2.02	85		54	88	5
34	510	1530	429.30	.25	2.02	2.02	85		54	88	5
							84			92	

PRELIMINARY VELOCITY TRAVERSE

Air Consulting and Engineering

PLANT HARRIS SEMICONDUCTOR
DATE 6/19/90
SOURCE ~~F58001~~ F57S01
STACK I.D. 32.0 STACK AREA 5.585
BAROMETRIC PRES., in. Hg 30.18
STATIC PRES. in H_2O -.1 STACK PRES. in. Hg. 30.17
PORT DIAM. _____ NIPPLE LENGTH _____
PITOT TUBE NO. 64 TYPE S ~~STD~~
OPERATORS NECK - WURTS



SCHEMATIC OF TRAVERSE POINT LAYOUT

TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s) in. H_2O	STACK TEMPERATURE (T_s, °F)	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s in. H_2O	STACK TEMPERATURE (T_s, °F)
1-1	.37	85				
2	.57	88				
3	.52	87				
4	.38	87				
5	.43	87				
6	~~.50~~ .06	87	.600			
2-1	.37	88				
2	.20	87			.84	
3	.14	87		(.555)(174)(.94)($\sqrt{.547}$) = ~~2235.996~~		
4	.28	87		(2235.996)(5.585) = ~~12488.04~~		
5	.28	86		(12488.04)($\frac{528}{547}$)(.98) = ~~11813.185~~		
6	~~.32~~ .32	86	.599			
				10023.307 SCFM		
AVERAGE				AVERAGE		

HARRIS SEMICONDUCTOR
PALM BAY, FLORIDA
EPA-25A VOC EMISSIONS
6/19/90

AIR CONSULTING AND ENGINEERING, INC.

TIME	F57S01 PPM C3H8 MAX	MIN	AVG	F58EO1 PPM C3H8 MAX	MIN	AVG
0700-0710	3.80	3.50	3.50	3.50	3.50	3.50
0710-0720	3.50	3.50	3.50	3.50	3.50	3.50
0720-0730	3.50	3.20	3.30	3.50	3.50	3.50
0730-0740	4.00	3.20	3.80	3.50	3.50	3.50
0740-0750	4.50	4.00	4.20	3.50	3.50	3.50
0750-0800	6.00	4.50	5.00	3.50	3.50	3.50
0800-0810	7.00	6.00	7.40	3.80	3.80	3.80
0810-0820	7.20	7.00	7.00	4.00	3.80	3.80
0820-0830	7.20	6.80	7.10	3.80	3.80	3.80
0830-0840	7.50	5.50	6.10	3.80	3.20	3.50
0840-0850	6.00	4.50	5.10	3.80	3.50	3.50
0850-0900	4.50	4.50	4.50	4.50	3.50	4.10
0900-0910	4.50	4.50	4.50	3.50	3.50	3.50
0910-0920	4.20	4.00	4.10	3.50	3.50	3.50
0920-0930	5.20	3.80	4.20	3.50	3.50	3.50
0930-0940	3.80	2.20	4.50	3.50	3.20	3.30
0940-0950	4.20	3.50	3.60	4.20	3.20	3.60
0950-1000	4.50	4.00	4.10	4.50	3.20	3.50
1000-1010	4.20	4.00	4.10	4.00	4.00	4.00
1010-1020	4.00	3.90	3.90	4.20	3.80	3.90
1020-1030	6.50	4.00	5.40	3.50	3.50	3.50
1030-1040	5.80	5.00	5.20	7.00	3.80	6.00
1040-1050	6.00	5.00	5.60	5.80	5.00	5.50
1050-1100	5.80	5.00	5.40	6.00	4.50	4.90
1100-1110	4.80	5.20	5.00	4.00	4.00	4.00
1110-1120	6.00	5.20	5.90	4.00	4.00	4.00
1120-1130	5.00	5.20	5.50	3.80	3.80	3.80
1130-1140	5.20	4.50	4.90	3.80	3.80	3.80
1140-1150	6.00	4.20	4.80	3.80	3.80	3.80
1150-1200	8.00	6.50	6.70	5.00	4.00	4.50
1200-1210	9.50	8.20	9.20	4.50	4.50	4.50
1210-1220	9.50	8.20	8.90	4.80	4.50	4.60
1220-1230	8.50	8.00	8.20	5.00	4.80	4.90
1230-1240	9.00	8.00	8.30	5.80	5.00	5.40
1240-1250	9.50	8.50	9.00	5.80	4.80	4.90
1250-1300	10.00	9.20	9.70	4.80	4.20	4.50
1300-1310	9.00	8.50	8.80	5.20	5.20	5.20
1310-1320	8.80	8.50	8.50	5.50	5.00	5.10
1320-1330	8.80	8.50	8.50	5.20	5.20	5.20
1330-1340	9.00	8.80	8.90	5.20	4.50	4.70
1340-1350	9.00	8.50	8.70	5.20	4.80	5.00
1350-1400	8.50	8.00	8.10	5.20	4.80	5.10
1400-1410	8.00	7.50	7.90	5.50	5.00	5.20
1410-1420	7.00	5.50	6.30	5.20	5.00	5.10
1420-1430	6.00	5.50	5.60	5.20	5.00	5.10
1430-1440	9.50	6.50	8.20	5.00	4.80	4.80
1440-1450	11.50	9.50	10.50	4.80	4.80	4.80
1450-1500	11.50	11.50	11.50	4.80	4.80	4.80
1500-1510	12.00	11.20	11.70	4.00	4.00	4.00
1510-1520	12.00	10.50	11.40	3.80	3.80	3.80
1520-1530	10.80	8.50	9.70	3.80	3.50	3.60
AVERAGES			6.58			4.24
AMBIENT CORR. AVG.			3.58			2.74

EMISSION SUMMARY

FACILITY: HARRIS
SOURCE: E57501
DATE: 6/19/80

Source #1

Correct 2ppm

TIME	MAXIMUM	MINIMUM	AVERAGE
0700 - 0710	3.8	3.5	3.5
0710 - 0720	3.5	3.5	3.5
0720 - 0730	3.5	3.2	3.3
0730 - 0740	4.0	3.2	3.8
0740 - 0750	4.5	4.0	4.2
0750 - 0800	6.0	4.5	5.0
0800 - 0810	7.0	6.0	7.4
0810 - 0820	7.2	7.0	7.0
0820 - 0830	7.2	6.8	7.1
0830 - 0840	7.5	5.5	6.1
0840 - 0850	6.0	4.5	5.1
0850 - 0900	4.5	4.5	4.5
0900 - 0910	4.5	4.5	4.5
0910 - 0920	4.2	4.0	4.1
0920 - 0930	5.2	3.8	4.2
0930 - 0940	3.8	2.2	4.5
0940 - 0950	4.2	3.5	3.6
0950 - 1000	4.5	4.0	4.1
1000 - 1010	4.2	4.0	4.1
1010 - 1020	4.0	3.9	3.9
1020 - 1030	7.5	4.0	5.4
1030 - 1040	5.8	5.0	5.2
1040 - 1050	6.0	5.0	5.6
1150 - 1200	5.8	5.0	5.4

EMISSION SUMMARY

FACILITY: HARRIS
SOURCE: F-57801
DATE: 6/19/90

Source #1 Carmel 2ppm

TIME	MAXIMUM	MINIMUM	AVERAGE
1100 - 1110	4.8	5.2	5.0
1110 - 1120	6.0	5.2	5.9
1120 - 1130	6.0	5.2	5.5
1130 - 1140	5.2	4.5	4.9
1148 - 1150	6.0	4.2	4.8
1150 - 1200	8.0	6.5	6.7
1200 - 1210	9.5	18.2	9.2
1210 - 1220	9.5	8.2	8.9
1220 - 1230	8.5	18.0	8.2
1230 - 1240	9.0	8.0	8.3
1240 - 1250	9.5	8.5	9.0
1250 - 1300	10.0	9.2	9.7
1300 - 1310	9.0	8.5	8.8
1310 - 1320	8.8	8.5	8.5
1320 - 1330	8.8	8.5	8.5
1330 - 1340	9.0	8.8	8.9
1340 - 1350	9.0	8.5	8.7
1350 - 1400	8.5	8.0	8.1
1400 - 1410	8.0	7.5	7.9
1410 - 1420	7.0	5.5	6.3
1420 - 1430	6.0	5.5	5.6
1430 - 1440	9.5	6.5	8.2
1440 - 1450	11.5	9.5	10.5
1450 - 1500	11.5	11.5	11.5

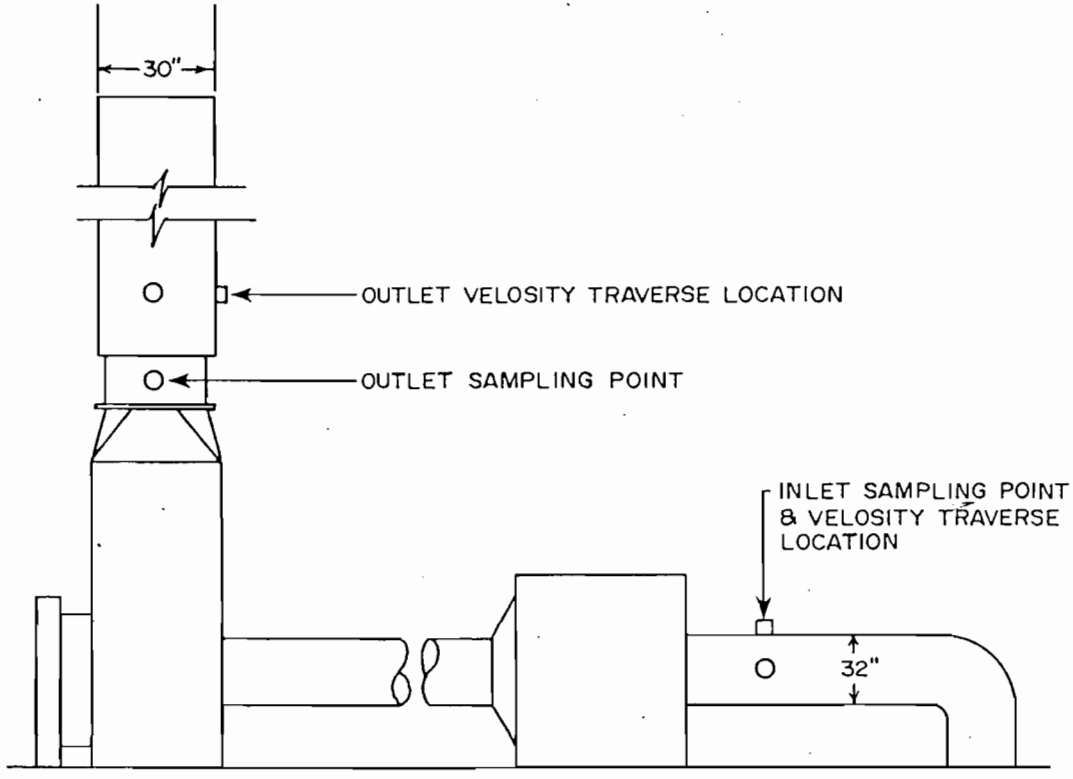
EMISSION SUMMARY

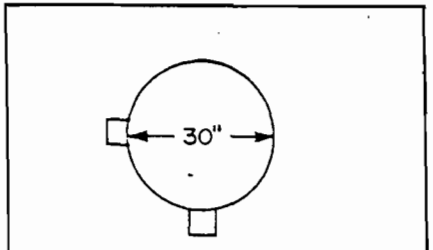
FACILITY: Harris
SOURCE: E5780 1
DATE: 6/19/90

Source #1

TIME	MAXIMUM	MINIMUM	AVERAGE
1500 - 1510	12.0	11.2	11.7
1510 - 1520	12.0	10.5	11.4
1520 - 1530	10.8	8.5	9.7
Corrected 3 ppm			

F58S01
ACID, VOC





TRAVERSE POINT NUMBER	INCHES INSIDE STACK WALL
1	1.00
2	3.15
3	5.82
4	9.69
5	20.31
6	24.18
7	26.85
8	29.00

SAMPLING POINT LOCATION SCHEMATIC
HARRIS CORPORATION- F58S01
SEMICONDUCTOR DIVISION

AIR CONSULTING
and
ENGINEERING

MOISTURE AND FLOW CALCULATIONS

PLANT HARRIS SEMICONDUCTOR
STACK F58S01
DATE 6/22/90
RUN NO. 1

BAROMETRIC PRESS.	30.09	IN.HG
STACK PRESS.	30.08	IN.HG
STACK AREA	4.909	SQ.FT
AVG. STACK TEMP.	74	F
AVG. METER TEMP.	108.00	F
Y	0.994	
AVG. METER ORIFICE	2.110	IN. H2O
METER VOL.	276.280	CUB.FT
MOISTURE PLUS SILICA GEL	109.700	ML
STACK SQRT VEL. HEAD	0.479	IN. H2O
CP	0.840	

ORSAT:

PERCENT CO2	0.0	
PERCENT O2	20.9	
PERCENT N2	79.1	

VWSTD.	5.171	SCF
VMSTD.	258.056	SCF
MOISTURE FRACTION	0.020	
FRACTION OF DRY AIR	0.980	
MWGT. OF DRY AIR	28.836	
MWGT. OF WET STACK GAS	28.623	
AVG. VEL	27.09	FPS
GAS FLOWRATE	7978.05	ACFM
STD. GAS FLOWRATE	7774.79	SCFMD

VELOCITY TRAVERSE

PLANT	HARRIS SEMICONDUCTOR
SOURCE	F58S01
DATE	6/20/90
BAROMETRIC PRESS.	30.090 IN.HG
STACK PRESS.	30.080 IN.HG
OPERATORS	NECK/HODGE
RUN	1

TRAVERSE POINT NUMBER	VEL. HEAD IN.H2O	SQRT VEL. HEAD
1-1	0.11	0.332
1-2	0.13	0.361
1-3	0.14	0.374
1-4	0.15	0.387
1-5	0.19	0.436
1-6	0.35	0.592
1-7	0.40	0.632
1-8	0.43	0.656
2-1	0.25	0.500
2-2	0.33	0.574
2-3	0.30	0.548
2-4	0.21	0.458
2-5	0.17	0.412
2-6	0.21	0.458
2-7	0.22	0.469
2-8	0.23	0.480
		0.479

STACK SAMPLING FIELD DATA SHEET

ace Consulting and Engineering
2106 N.W. 67th PLACE, SUITE 4
GAINESVILLE, FLORIDA 32606

TEST ID F58501
PAGE 1 OF 2

PLANT HARRIS SEMI. SOURCE F58501
PLANT LOCATION PALM BAY, FL.
TYPE OF SAMPLING TRAIN MOD. EPA-5
TYPE OF SAMPLES ACID
DATE 6/22/90 RUN NO. 1
TIME START 0930 TIME END 1530
SAMPLE TIME ____ min/pt ____ Total min
BAR PRESS. ____ "Hg STACK PRESS. ____ "Hg
ASSUMED MOISTURE ____ % FDA ____
WEATHER ____ TEMP. ____ °F
METER BOX NO. ____ ΔH ____ Y ____
NOMOGRAPH C_f ____ PITOT CORR. FACTOR ____
NOZZLE CALIBRATION .250 .250 .250 = .250
STACK DIMINSIONS ____
STACK AREA ____ (EFFECTIVE ____ ft^2)
STACK HEIGHT ____ ft.
STACK DIAMETER: UPSTREAM ____ DOWNSTREAM ____
PORT SIZE ____ In. NIPPLE LENGTH ____
U CORD LENGTH: ____
REMARKS: ____

MAT'L PROCESSING RATE DAY SHIFT
GAS METER READINGS: FINAL 976.905 ft.^{3}
INITIAL 700.625 ft.^{3}
NET 276.280 ft.^{3}
IMPINGERS VOL. GAIN 76 ml.
SILICA GEL NO. 39 WT. GAIN 38.7
FILTER NO. ____ TOTAL CONDENSATE 108.7 ml.

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

F_O ____ F_O RANGE ____
LEAK CHECKS: METER BOX/PUMP ____
ORSAT BAG ____ GAS SAMPLE SYSTEM ____
ORSAT ANALYZER ____
PRE-TEST 2.00 CFM 15 "Hg POST-TEST ~~2.00~~ CFM 17 "Hg
BOX OPERATOR ~~Southeaux~~ PROBE HOLDER ____
PYROMETER NO. ____ PITOT TUBE NO. ____
PITOT TUBE LEAK CHECK: PRETEST OK
POST-TEST(+) ____ H_2O ____ SEC
POST-TEST(−) ____ H_2O ____ SEC

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL (IN.)	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O)		STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
					CALC.	ACTUAL					
		0945	712.551	.41	2.11	2.11	71		49	86	5.0
		1000	723.113	.41	2.11	2.11	71		49	87	5.0
		1015	734.962	.41	2.11	2.11	71		50	90	5.0
		1030	746.021	.41	2.11	2.11	71		50	94	5.0
		1045	757.000	.41	2.11	2.11	71		50	96	5.0
		1100	769.122	.41	2.11	2.11	71		52	99	5.0

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RUN NO. F58501

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL (IN.)	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O)		STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
					CALC.	ACTUAL					
		1115	783.421	.41	2.11	2.11	72	~~0~~ NA	53	102	5.0
		1130	794.000	.41	2.11	2.11	74		58	109	5.0
		1145	805.243	.41	2.11	2.11	74		58	110	5.0
		1200	814.921	.41	2.11	2.11	84		58	116	5.0
		1215	826.411	.41	2.11	2.11	72		57	112	5.0
		1230	837.999	.41	2.11	2.11	73		57	111	5.0
		1245	849.486	.41	2.11	2.11	72		57	110	5.0
		1300	860.621	.41	2.11	2.11	74		57	109	5.0
		1315	872.947	.41	2.11	2.11	76		57	108	5.0
		1330	882.750	.41	2.11	2.11	77		58	107	5.0
		1345	894.624	.41	2.11	2.11	75		58	106	5.0
		1400	917.211	.41	2.11	2.11	75		58	108	5.0
		1415	926.444	.41	2.11	2.11	75		59	109	5.0
		1430	936.000	.41	2.11	2.11	75		60	110	5.0
		1445	941.921	.41	2.11	2.11	75		60	110	5.0
		1500	954.121	.41	2.11	2.11	75		60	110	5.0
		1515	966.212	.41	2.11	2.11	75		61	110	5.0
		1530	976.905	.41	2.11	2.11	73		63	109	5.0
							74		58	108	

PRELIMINARY VELOCITY TRAVERSE

Air Consulting and Engineering

PLANT Harris SE

DATE 6/20/90

SOURCE ~~ESP~~ ~~FS7502~~ ~~FS8502~~ FS8501

STACK I. D. 12'-30" STACK AREA ~~Jet~~ 4.909

BAROMETRIC PRES., in. Hg 30.09

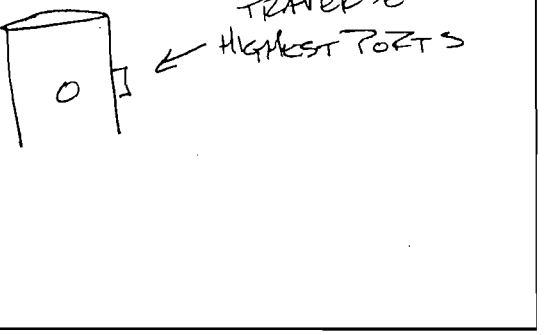
STATIC PRES. in. H_2O -.20 STACK PRES. in. Hg. 30.08

PORT DIAM. 2.3" NIPPLE LENGTH NA

PITOT TUBE NO. 64 TYPE "S" TYPE

OPERATORS NECK-HOZE

1346



SCHEMATIC OF TRAVERSE POINT LAYOUT

TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s) in. H_2O	STACK TEMPERATURE (T_s, °F)	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s in. H_2O	STACK TEMPERATURE (T_s, °F)
1-1	.11	84	1.0			
2	.13	84	1.26			
3	.14	84	2.33			
4	.15	84	3.88			
5	.19	83	8.12			
6	.35	82	9.67			
7	.40	82	10.74			
8	.43	82	11.00			
2-1	.25	83				
2	.33	83				
3	.30	83				
4	.21	83				
5	.17	83				
6	.21	83				
7	.22	84				
8	.23	84				
AVERAGE				AVERAGE		

4.909

$A_{STM} = (.479)(174)(.84)(\sqrt{.543}) = 1631.413$

$A_{CFMD} = (1631.413)\left(\frac{760}{760}\right) = 1241.505$

$S_{CFMD} = (1241.505)\left(\frac{528}{543}\right)(.98) = 11896.381$

760 T30

1631

HARRIS SEMICONDUCTOR
PALM BAY, FLORIDA
EPA-25A VOC EMISSIONS

AIR CONSULTING AND ENGINEERING, INC.

TIME	F58S01-6/20/90 PPM C3H8 MAX	MIN	AVG	F58S02-6/21/90 PPM C3H8 MAX	MIN	AVG
0700-0710	9.80	4.30	5.00	2.00	2.00	2.00
0710-0720	44.00	4.50	20.00	2.00	2.00	2.00
0720-0730	10.00	4.80	6.00	2.00	2.00	2.00
0730-0740	8.80	5.00	5.50	2.00	2.00	2.00
0740-0750	19.40	6.00	7.50	12.00	2.00	6.00
0750-0800	10.00	6.00	7.00	3.50	2.30	3.00
0800-0810	7.80	5.00	6.00	2.00	2.00	2.00
0810-0820	5.00	5.00	5.00	2.00	2.00	2.00
0820-0830	5.20	5.00	5.00	2.00	2.00	2.00
0830-0840	14.30	5.20	7.00	2.00	2.00	2.00
0840-0850	16.40	5.00	6.50	2.30	1.90	2.00
0850-0900	7.70	5.00	6.00	1.90	1.90	1.90
0900-0910	7.80	5.20	7.00	49.50	2.00	7.00
0910-0920	7.20	5.00	6.50	5.00	2.50	3.00
0920-0930	35.00	5.00	10.00	2.30	2.00	2.00
0930-0940	14.50	5.10	6.50	2.00	2.00	2.00
0940-0950	5.00	5.00	5.00	9.50	2.30	3.00
0950-1000	5.00	5.00	5.00	2.00	2.00	2.00
1000-1010	5.00	4.50	4.50	2.00	2.00	2.00
1010-1020	46.80	5.50	7.00	5.00	2.00	2.00
1020-1030	13.60	4.80	6.50	1.80	1.80	1.80
1030-1040	4.50	4.50	4.50	1.80	1.80	1.80
1040-1050	22.80	4.50	9.00	2.00	2.00	2.00
1050-1100	5.20	4.20	4.50	3.10	2.00	2.00
1100-1110	4.20	4.00	4.10	2.00	2.00	2.00
1110-1120	4.00	4.00	4.00	2.00	2.00	2.00
1120-1130	4.00	4.00	4.00	2.00	2.00	2.00
1130-1140	8.50	4.00	4.50	2.00	2.00	2.00
1140-1150	5.20	4.20	4.50	2.00	2.00	2.00
1150-1200	6.30	3.50	4.50	1.80	1.80	1.80
1200-1210	4.00	4.00	4.00	7.00	2.00	3.00
1210-1220	10.50	3.80	8.00	17.00	2.00	5.00
1220-1230	27.80	5.40	10.00	2.00	2.00	2.00
1230-1240	21.40	4.40	8.00	2.00	2.00	2.00
1240-1250	4.20	4.20	4.20	15.50	2.00	2.50
1250-1300	4.00	4.00	4.00	2.80	2.80	2.80
1300-1310	4.00	4.00	4.00	2.80	2.80	2.80
1310-1320	35.00	4.30	8.00	14.00	2.80	6.00
1320-1330	8.20	4.00	5.00	4.00	2.20	3.00
1330-1340	4.00	4.00	4.00	3.50	3.00	3.30
1340-1350	4.00	4.00	4.00	3.00	2.50	2.50
1350-1400	4.00	4.00	4.00	2.50	2.00	2.40
1400-1410	10.80	4.00	7.00	2.00	2.00	2.00
1410-1420	4.20	3.40	4.00	2.00	2.00	2.00
1420-1430	3.70	3.30	3.50	2.00	1.80	1.80
1430-1440	3.80	3.80	3.80	1.80	1.80	1.80
1440-1450	3.90	3.80	3.80	1.80	1.80	1.80
1450-1500	3.80	3.80	3.80	1.80	1.80	1.80
1500-1510	6.00	3.80	4.50	1.80	1.80	1.80
1510-1520	3.80	3.80	3.80	1.80	1.80	1.80
1520-1530	6.20	3.80	5.00	8.50	1.80	2.00
AVERAGES			5.77			2.46
AMBIENT CORR. AVG.			4.77			1.46

EMISSION SUMMARY

FACILITY: HARRIS SEMICONDUCTOR
SOURCE: F58501 (RATFISH)
DATE: 6/20/90

TIME	MAXIMUM	MINIMUM	AVERAGE
0700 : 0710	9.8	4.3	5.0
0710 - 0720	44.0	4.5	20.0
0720 - 0730	10.0	4.8	6.0
0730 - 0740	8.8	5	5.5
0740 - 0750	19.4	6	7.5
0750 - 0800	10	6	7
0800 - 0810	7.8	5	6
0810 - 0820	5	5	5
0820 - 0830	5.2	5	5
0830 - 0840	14.3	5.2	7
0840 - 0850	16.4	5	6.5
0850 - 0900	7.7	5	6
0900 - 0910	7.8	5.2	7
0910 - 0920	7.2	5	6.5
0920 - 0930	35	5	10
0930 - 0940	14.5	5.1	6.5
0940 - 0950	5	5	5
0950 - 1000	15	5	5
1000 - 1010	5	4.5	4.5
1010 - 1020	46.8	5.5	7
1020 - 1030	13.6	4.1	6.5
1030 - 1040	4.5	4.5	4.5

EMISSION SUMMARY

FACILITY: HARRIS SEMICONDUCTOR
SOURCE: F58501
DATE: 6-20-90

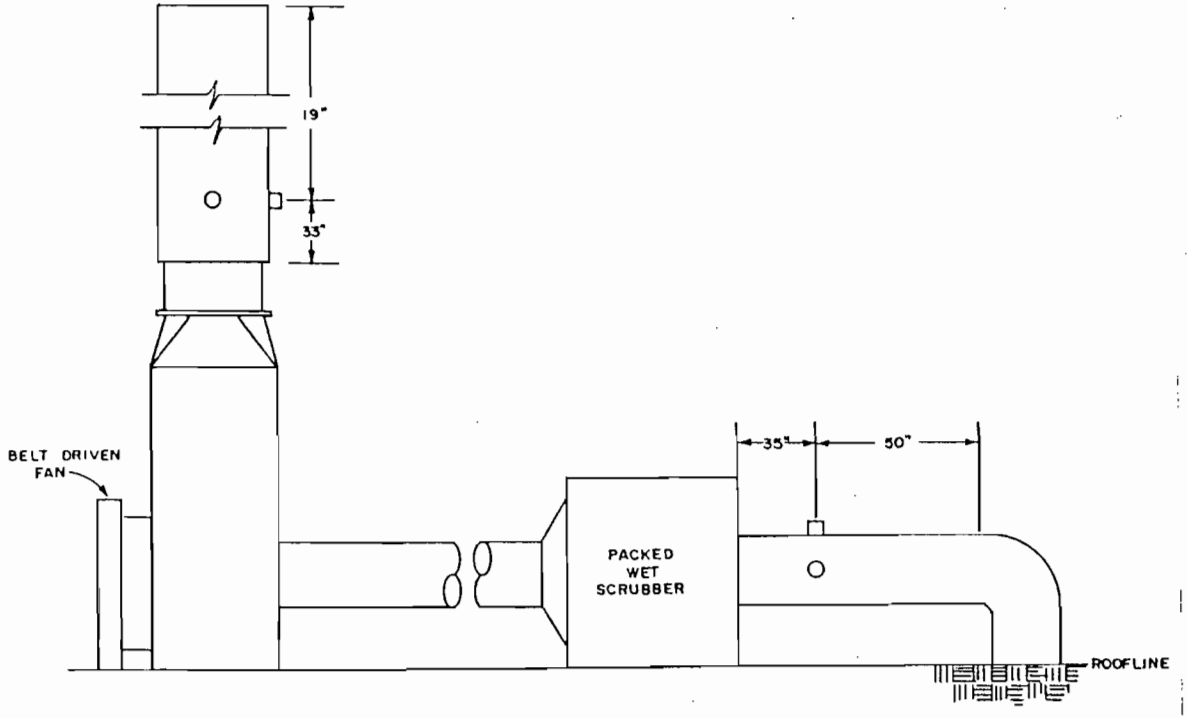
TIME	MAXIMUM	MINIMUM	AVERAGE
1040-1050	22.8	4.5	9
1050-1100	5.2	4.2	4.5
1100-1110	4.2	4	4.1
1110-1120	4	4	4
1120-1130	4	4	4
1130-1140	8.5	4	4.5
1140-1150	5.2	4.2	4.5
1150-1200	6.3	3.5	4.5
1200-1210	4	4	4
1210-1220	10.5	3.6	8
1220-1230	27.8	5.4	10
1230-1240	21.4	4.4	8
1240-1250	4.2	4.2	4.2
1250-1300	4	4	4
1300-1310	4	4	4
1310-1320	35	4.3	8
1320-1330	8.2	4	5
1330-1340	4	4	4
1340-1350	4	4	4
1350-1400	4	4	4
1400-1410	10.8	4	
1410-1420	4.2	3.4	4

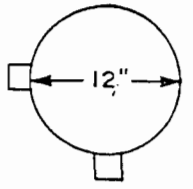
EMISSION SUMMARY

FACILITY: HARRIS SEMICONDUCTOR
SOURCE: FS8501
DATE: 6/20/90

TIME	MAXIMUM	MINIMUM	AVERAGE
1420 - 1430	3.7	3.3	3.5
1430 - 1440	3.8	3.8	3.8
1440 - 1450	3.9	3.8	3.8
1450 - 1500	3.8	3.8	3.8
1500 - 1510	6.0	3.8	4.5
1510 - 1520	3.8	3.8	3.8
1520 - 1530	6.7	3.8	5.0

F58S02
VOC





TRAVERSE POINT NUMBER	INCHES INSIDE STACK WALL
1	1.00
2	1.26
3	2.33
4	3.88
5	8.12
6	9.67
7	10.74
8	11.00

SAMPLING POINT LOCATION SCHEMATIC
HARRIS CORPORATION SOURCE - F58S02
SEMICONDUCTOR DIVISION
MELBOURNE, FLORIDA

AIR CONSULTING
and
ENGINEERING

FLOWRATE CALCULATIONS

PLANT HARRIS SEMICONDUCT
STACK F58SO2
DATE 6/20/90
RUN NO. 1

	BAROMETRIC PRESS.	30.09	IN.HG
	STACK PRESS.	30.03	IN.HG
	STACK AREA	0.761	SQ.FT
	AVG.STACK TEMP	78.00	F
	CP	0.84	
	AVG. SQRT VELOCITY HEAD	1.066	IN. H2O
ORSAT:	PERCENT CO2	0.0	
	PERCENT O2	20.9	
	PERCENT N2	79.1	
	FRACTION OF DRY AIR	0.976	
	MOISTURE FRACTION	0.024	
	MWGT. OF DRY STACK GAS	28.836	
	MWGT. OF WET STACK GAS	28.576	
	AVG.VELOCITY	60.61	FPS
	ACTUAL VOL. FLOW	2767.26	ACFM
	STD. VOL. FLOW	2660.39	SCFMD

VELOCITY TRAVERSE

PLANT	HARRIS SEMICONDUCTOR
DATE	6/20/90
SOURCE	F58SO2
BAROMETRIC PRESS.	30.090 IN.HG
STACK PRESS.	30.030 IN.HG
OPERATORS	NECK/HODGE
RUN	1

TRAVERSE POINT NUMBER	VEL. HEAD in. H2O	SQR VEL. HEAD
1-1	1.500	1.225
1-2	1.450	1.204
1-3	1.450	1.204
1-4	1.300	1.140
1-5	0.910	0.954
1-6	0.820	0.906
1-7	0.850	0.922
1-8	0.850	0.922
2-1	1.100	1.049
2-2	1.100	1.049
2-3	1.100	1.049
2-4	1.200	1.095
2-5	1.300	1.140
2-6	1.200	1.095
2-7	1.100	1.049
2-8	1.100	1.049
		1.066

PRELIMINARY VELOCITY TRAVERSE

Air Consulting and Engineering

PLANT: HARRIS SEMICONDUCTOR

DATE: 6/20/90

SOURCE: ~~FS9501~~ FS8502

STACK I.D.: ~~30~~ 11 13/16 STACK AREA: ~~[illegible]~~ 0.761

BAROMETRIC PRES., in. Hg: 30.09

STATIC PRES. in. H_2O: −.75 STACK PRES. in. Hg.: 30.03

PORT DIAM.: 2.3" NIPPLE LENGTH: NA

PITOT TUBE NO.: 59 TYPE: "S" TYPE

OPERATORS: NECK - HODGE

SCHEMATIC OF TRAVERSE POINT LAYOUT

TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s) in. H_2O	STACK TEMPERATURE (T_s, °F)	DISTANCE FROM INSIDE STACK WALL
1-1	1.5	79	1.00
2	1.45	78	3.15
3	1.45	78	5.82
4	1.3	78	9.69
5	.91	78	20.31
6	.82	78	24.18
7	.85	78	26.85
8 (1.06)	lot .85	78	29.00
2-1	1.1	78	
2	1.1	78	
3	1.1	78	
4	1.2	78	
5	1.3	78	
6	1.2	78	
7 (1.07)	1.1	78	
8 (1.04)	1.1		
AVERAGE			

~~AFPM~~ = (~~1.0~~ 1.07)(174)(.84)(√ 538) (.761) = 3627.467 ~~= 3590.156~~

ACFMD = (~~5590.156~~)(~~4.97~~) 18028.51 = ~~16849.075~~

SCFMD = (~~16849.075~~)(528/538)(.98) = ~~16205.18~~

~~17339.539~~

2655

HARRIS SEMICONDUCTOR
PALM BAY, FLORIDA
EPA-25A VOC EMISSIONS

AIR CONSULTING AND ENGINEERING, INC.

TIME	F58SO1-6/20/90 PPM C3H8 MAX	MIN	AVG	F58SO2-6/21/90 PPM C3H8 MAX	MIN	AVG
0700-0710	9.80	4.30	5.00	2.00	2.00	2.00
0710-0720	44.00	4.50	20.00	2.00	2.00	2.00
0720-0730	10.00	4.80	6.00	2.00	2.00	2.00
0730-0740	8.80	5.00	5.50	2.00	2.00	2.00
0740-0750	19.40	6.00	7.50	12.00	2.00	6.00
0750-0800	10.00	6.00	7.00	3.50	2.30	3.00
0800-0810	7.80	5.00	6.00	2.00	2.00	2.00
0810-0820	5.00	5.00	5.00	2.00	2.00	2.00
0820-0830	5.20	5.00	5.00	2.00	2.00	2.00
0830-0840	14.30	5.20	7.00	2.00	2.00	2.00
0840-0850	16.40	5.00	6.50	2.30	1.90	2.00
0850-0900	7.70	5.00	6.00	1.90	1.90	1.90
0900-0910	7.80	5.20	7.00	49.50	2.00	7.00
0910-0920	7.20	5.00	6.50	5.00	2.50	3.00
0920-0930	35.00	5.00	10.00	2.30	2.00	2.00
0930-0940	14.50	5.10	6.50	2.00	2.00	2.00
0940-0950	5.00	5.00	5.00	9.50	2.30	3.00
0950-1000	5.00	5.00	5.00	2.00	2.00	2.00
1000-1010	5.00	4.50	4.50	2.00	2.00	2.00
1010-1020	46.80	5.50	7.00	5.00	2.00	2.00
1020-1030	13.60	4.80	6.50	1.80	1.80	1.80
1030-1040	4.50	4.50	4.50	1.80	1.80	1.80
1040-1050	22.80	4.50	9.00	2.00	2.00	2.00
1050-1100	5.20	4.20	4.50	3.10	2.00	2.00
1100-1110	4.20	4.00	4.10	2.00	2.00	2.00
1110-1120	4.00	4.00	4.00	2.00	2.00	2.00
1120-1130	4.00	4.00	4.00	2.00	2.00	2.00
1130-1140	8.50	4.00	4.50	2.00	2.00	2.00
1140-1150	5.20	4.20	4.50	2.00	2.00	2.00
1150-1200	6.30	3.50	4.50	1.80	1.80	1.80
1200-1210	4.00	4.00	4.00	7.00	2.00	3.00
1210-1220	10.50	3.80	8.00	17.00	2.00	5.00
1220-1230	27.80	5.40	10.00	2.00	2.00	2.00
1230-1240	21.40	4.40	8.00	2.00	2.00	2.00
1240-1250	4.20	4.20	4.20	15.50	2.00	2.50
1250-1300	4.00	4.00	4.00	2.80	2.80	2.80
1300-1310	4.00	4.00	4.00	2.80	2.80	2.80
1310-1320	35.00	4.30	8.00	14.00	2.80	6.00
1320-1330	8.20	4.00	5.00	4.00	2.20	3.00
1330-1340	4.00	4.00	4.00	3.50	3.00	3.30
1340-1350	4.00	4.00	4.00	3.00	2.50	2.50
1350-1400	4.00	4.00	4.00	2.50	2.00	2.40
1400-1410	10.80	4.00	7.00	2.00	2.00	2.00
1410-1420	4.20	3.40	4.00	2.00	2.00	2.00
1420-1430	3.70	3.30	3.50	2.00	1.80	1.80
1430-1440	3.80	3.80	3.80	1.80	1.80	1.80
1440-1450	3.90	3.80	3.80	1.80	1.80	1.80
1450-1500	3.80	3.80	3.80	1.80	1.80	1.80
1500-1510	6.00	3.80	4.50	1.80	1.80	1.80
1510-1520	3.80	3.80	3.80	1.80	1.80	1.80
1520-1530	6.20	3.80	5.00	8.50	1.80	2.00
AVERAGES			5.77			2.46
AMBIENT CORR. AVG.			4.77			1.46

EMISSION SUMMARY

FACILITY: HARRIS SEMICONDUCTOR
SOURCE: F58502
DATE: 8-21-90

TIME	MAXIMUM	MINIMUM	AVERAGE
0700 : 0710	2	2	2
0710 - 0720	2	2	2
0720 - 0730	2	2	2
0730 - 0740	2	2	2
0740 - 0750	12	2	6
0750 - 0800	3.5	2.3	3
0800 - 0810	2	2	2
0810 - 0820	2	2	2
0820 - 0830	2	2	2
0830 - 0840	2	2	2
0840 - 0850	2.3	1.9	2
0850 - 0900	1.9	1.9	1.9
0900 - 0910	49.6	2.0	7.0
0910 - 0920	5.0	2.5	3.0
0920 - 0930	2.3	2.0	2.0
0930 - 0940	2.0	2.0	2.0
0940 - 0950	9.5	2.5	3.0
0950 - 1000	2	2	2
1000 - 1010	2	2	2
1010 - 1020	5	2	2
1020 - 1030	1.8	1.8	1.8
1030 - 1040	1.8	1.8	1.8

EMISSION SUMMARY

FACILITY: HARRIS SEMICONDUCTOR
SOURCE: E58502
DATE: 6/21/90

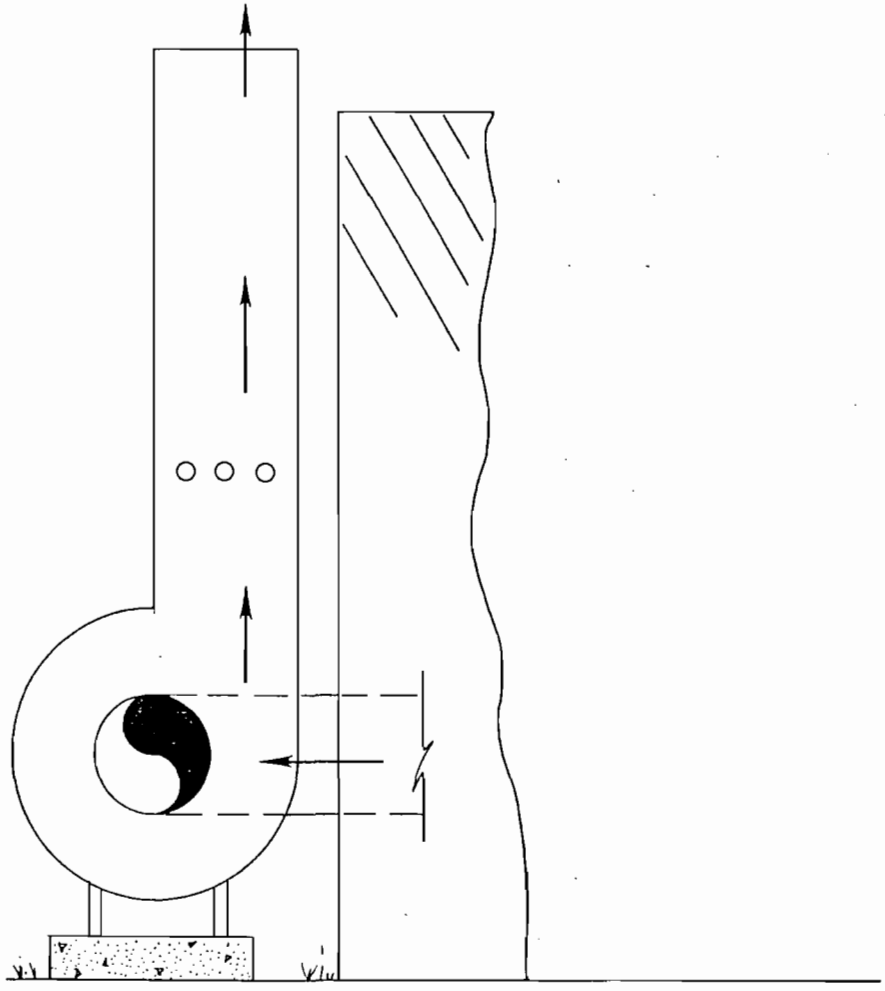
TIME	MAXIMUM	MINIMUM	AVERAGE
1040-1050	2	2	2
1050-1100	3.1	2	2
1100-1110	2	2	2
1110-1120	2	2	2
1120-1130	2	2	2
1130-1140	2	2	2
1140-1150	2	2	2
1150-1200	1.8	1.8	1.8
1200-1210	7	2	3
1210-1220	17	2	5
1220-1230	2	2	2
1230-1240	2	2	2
1240-1250	15.5	2	2.5
1250-1300	2.8	2.8	2.8
1300-1310	2.8	2.8	2.8
1310-1320	14.0	2.8	6.0
1320-1330	4.0	2.2	3.0
1330-1340	3.5	3.0	3.3
1340-1350	3.0	2.5	2.5
1350-1400	2.5	2.0	2.4
1400-1410	2	2	2
1410-1420	2	2	2

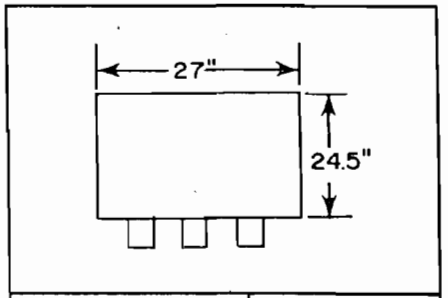
EMISSION SUMMARY

FACILITY: HARRIS SEMICONDUCTOR
SOURCE:
DATE:

TIME	MAXIMUM	MINIMUM	AVERAGE
1420-1430	2.0	1.8	1.8
1430-1440	1.8	1.8	1.8
1440-1450	1.8	1.8	1.8
1450-1500	1.8	1.8	1.8
1500-1510	1.8	1.8	1.8
1510-1520	1.8	1.8	1.8
1520-1530	8.5	1.8	2.0

F58E01
VOC





TRAVERSE POINT NUMBER	INCHES INSIDE STACK WALL
1	3.06
2	9.18
3	15.31
4	21.44

FIGURE
SAMPLING POINT LOCATION SCHEMATIC
HARRIS CORPORATION SOURCE - F58E01
SEMICONDUCTOR DIVISION
MELBOURNE, FLORIDA

AIR CONSULTING
and
ENGINEERING

FLOWRATE CALCULATIONS

PLANT HARRIS SEMICONDUCT
STACK F58E08
DATE 6/19/90
RUN NO. 1

	BAROMETRIC PRESS.	30.12	IN.HG
	STACK PRESS.	30.12	IN.HG
	STACK AREA	4.594	SQ.FT
	AVG.STACK TEMP	84.00	F
	CP	0.99	
	AVG. SQRT VELOCITY HEAD	0.303	IN. H2O
ORSAT:	PERCENT CO2	0.0	
	PERCENT O2	20.9	
	PERCENT N2	79.1	
	FRACTION OF DRY AIR	0.976	
	MOISTURE FRACTION	0.024	
	MWGT. OF DRY STACK GAS	28.836	
	MWGT. OF WET STACK GAS	28.576	
	AVG.VELOCITY	20.39	FPS
	ACTUAL VOL. FLOW	5618.96	ACFM
	STD. VOL. FLOW	5358.39	SCFMD

VELOCITY TRAVERSE

PLANT	HARRIS SEMICONDUCTOR
DATE	6/19/90
SOURCE	F58E01
BAROMETRIC PRESS.	30.120 IN.HG
STACK PRESS.	30.120 IN.HG
OPERATORS	NECK/HODGE
RUN	1

TRAVERSE POINT NUMBER	VEL. HEAD in. H2O	SQR VEL. HEAD
1-1	0.070	0.265
1-2	0.065	0.255
1-3	0.085	0.292
1-4	0.065	0.255
2-1	0.070	0.265
2-2	0.110	0.332
2-3	0.155	0.394
2-4	0.125	0.354
3-1	0.060	0.245
3-2	0.100	0.316
3-3	0.130	0.361
3-4	0.090	0.300
		0.303

ace Air Consulting and Engineering

PRELIMINARY VELOCITY TRAVERSE

PLANT HARRIS SEMICONDUCTOR

DATE 6/19/90

SOURCE ~~F58E01~~ F58E01

STACK I.D. 27 x 24.5" STACK AREA 4.594

BAROMETRIC PRES., In. Hg 30.12

STATIC PRES. in. H_2O 0 STACK PRES. in. Hg. 30.12

PORT DIAM. _____ NIPPLE LENGTH _____

PITOT TUBE NO. 36 TYPE STANDARD

OPERATORS NECK - HOOVER

SCHEMATIC OF TRAVERSE POINT LAYOUT

TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s) in. H_2O	STACK TEMPERATURE (T_s, °F)	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s in. H_2O	STACK TEMPERATURE (T_s, °F)
1-1	.07		$\sqrt{\Delta P}$ = .303			
2	.065	84°F				
3	.085					
4	.065					
2-1	.07					
2	.11					
3	.155					
4	.125					
3-1	.06					
2	.10					
3	.13					
4	.09					
AVERAGE				AVERAGE		

$ACFM = (.305)(174)(.99)(\sqrt{544}) = 12\,173.81$

$ACFMD = (1217.381)(4.594) = 5587.779$

$SCFMD = (5587.779)\left(\frac{528}{544}\right)(.98) = 5314.963$

HARRIS SEMICONDUCTOR
PALM BAY, FLORIDA
EPA-25A VOC EMISSIONS
6/19/90

AIR CONSULTING AND ENGINEERING, INC.

TIME	F57S01 PPM C3H8 MAX	MIN	AVG	F58E01 PPM C3H8 MAX	MIN	AVG
0700-0710	3.80	3.50	3.50	3.50	3.50	3.50
0710-0720	3.50	3.50	3.50	3.50	3.50	3.50
0720-0730	3.50	3.20	3.30	3.50	3.50	3.50
0730-0740	4.00	3.20	3.80	3.50	3.50	3.50
0740-0750	4.50	4.00	4.20	3.50	3.50	3.50
0750-0800	6.00	4.50	5.00	3.50	3.50	3.50
0800-0810	7.00	6.00	7.40	3.80	3.80	3.80
0810-0820	7.20	7.00	7.00	4.00	3.80	3.80
0820-0830	7.20	6.80	7.10	3.80	3.80	3.80
0830-0840	7.50	5.50	6.10	3.80	3.20	3.50
0840-0850	6.00	4.50	5.10	3.80	3.50	3.50
0850-0900	4.50	4.50	4.50	4.50	3.50	4.10
0900-0910	4.50	4.50	4.50	3.50	3.50	3.50
0910-0920	4.20	4.00	4.10	3.50	3.50	3.50
0920-0930	5.20	3.80	4.20	3.50	3.50	3.50
0930-0940	3.80	2.20	4.50	3.50	3.20	3.30
0940-0950	4.20	3.50	3.60	4.20	3.20	3.60
0950-1000	4.50	4.00	4.10	4.50	3.20	3.50
1000-1010	4.20	4.00	4.10	4.00	4.00	4.00
1010-1020	4.00	3.90	3.90	4.20	3.80	3.90
1020-1030	6.50	4.00	5.40	3.50	3.50	3.50
1030-1040	5.80	5.00	5.20	7.00	3.80	6.00
1040-1050	6.00	5.00	5.60	5.80	5.00	5.50
1050-1100	5.80	5.00	5.40	6.00	4.50	4.90
1100-1110	4.80	5.20	5.00	4.00	4.00	4.00
1110-1120	6.00	5.20	5.90	4.00	4.00	4.00
1120-1130	5.00	5.20	5.50	3.80	3.80	3.80
1130-1140	5.20	4.50	4.90	3.80	3.80	3.80
1140-1150	6.00	4.20	4.80	3.80	3.80	3.80
1150-1200	8.00	6.50	6.70	5.00	4.00	4.50
1200-1210	9.50	8.20	9.20	4.50	4.50	4.50
1210-1220	9.50	8.20	8.90	4.80	4.50	4.60
1220-1230	8.50	8.00	8.20	5.00	4.80	4.90
1230-1240	9.00	8.00	8.30	5.80	5.00	5.40
1240-1250	9.50	8.50	9.00	5.80	4.80	4.90
1250-1300	10.00	9.20	9.70	4.80	4.20	4.50
1300-1310	9.00	8.50	8.80	5.20	5.20	5.20
1310-1320	8.80	8.50	8.50	5.50	5.00	5.10
1320-1330	8.80	8.50	8.50	5.20	5.20	5.20
1330-1340	9.00	8.80	8.90	5.20	4.50	4.70
1340-1350	9.00	8.50	8.70	5.20	4.80	5.00
1350-1400	8.50	8.00	8.10	5.20	4.80	5.10
1400-1410	8.00	7.50	7.90	5.50	5.00	5.20
1410-1420	7.00	5.50	6.30	5.20	5.00	5.10
1420-1430	6.00	5.50	5.60	5.20	5.00	5.10
1430-1440	9.50	6.50	8.20	5.00	4.80	4.80
1440-1450	11.50	9.50	10.50	4.80	4.80	4.80
1450-1500	11.50	11.50	11.50	4.80	4.80	4.80
1500-1510	12.00	11.20	11.70	4.00	4.00	4.00
1510-1520	12.00	10.50	11.40	3.80	3.80	3.80
1520-1530	10.80	8.50	9.70	3.80	3.50	3.60
AVERAGES			6.58			4.24
AMBIENT CORR. AVG.			3.58			2.74

EMISSION SUMMARY

FACILITY: HARRIS
SOURCE: F58 E01
DATE: 6/19/90

Source #2 Current 1.4pm

TIME	MAXIMUM	MINIMUM	AVERAGE
0700 - 0710	3.5	3.5	3.5
0710 - 0720	3.5	3.5	3.5
0720 - 0730	3.5	3.5	3.5
0730 - 0740	3.5	3.5	3.5
0740 - 0750	3.5	3.5	3.5
0750 - 0800	3.5	3.5	3.5
0801 - 0810	3.8	3.8	3.8
0810 - 0820	4.0	3.8	3.8
0820 - 0830	3.8	3.8	3.8
0830 - 0840	3.8	3.2	3.5
0840 - 0850	3.8	3.5	3.5
0851 - 0900	4.5	3.5	4.1
0900 - 0910	3.5	3.5	3.5
0910 - 0920	3.5	3.5	3.5
0920 - 0930	3.5	3.5	3.5
0930 - 0940	3.5	3.2	3.3
0941 - 0950	4.2	3.2	3.6
0950 - 1000	4.5	3.2	3.5
1000 - 1010	4.0	4.0	4.0
1010 - 1020	4.2	3.8	3.9
1020 - 1030	3.5	3.5	3.5
1030 - 1040	7.0	3.8	6.0
1041 - 1050	5.8	5.0	5.5
1051 - 1100	6.0	4.6	4.9

EMISSION SUMMARY

FACILITY: Hamm
SOURCE: E58601
DATE: 6/19/90

Source #2

TIME	MAXIMUM	MINIMUM	AVERAGE
1100 - 1110	4.0	4.0	4.0
1110 - 1120	4.0	4.0	4.0
1120 - 1130	3.8	3.8	3.8
1130 - 1140	3.8	3.8	3.8
1140 - 1150	3.8	3.8	3.8
1150 - 1200	5.0	4.0	4.5
1200 - 1210	4.5	4.5	4.5
1210 - 1220	4.8	4.5	4.6
1220 - 1230	5.0	4.8	4.9
1230 - 1240	5.8	5.0	5.4
1240 - 1250	5.8	4.8	4.9
1250 - 1300	4.8	4.2	4.5
1300 - 1310	5.2	5.2	5.2
1310 - 1320	5.5	5.0	5.1
1320 - 1330	5.2	5.2	5.2
1330 - 1340	5.2	4.5	4.7
1340 - 1350	5.2	4.8	5.0
1350 - 1400	5.2	4.8	5.1
1400 - 1410	5.5	5.0	5.2
1410 - 1420	5.2	5.0	5.1
1420 - 1430	5.2	5.0	5.1
1430 - 1440	5.0	4.8	4.8
1440 - 1450	4.8	4.8	4.8
1450 - 1500	4.8	4.8	4.8

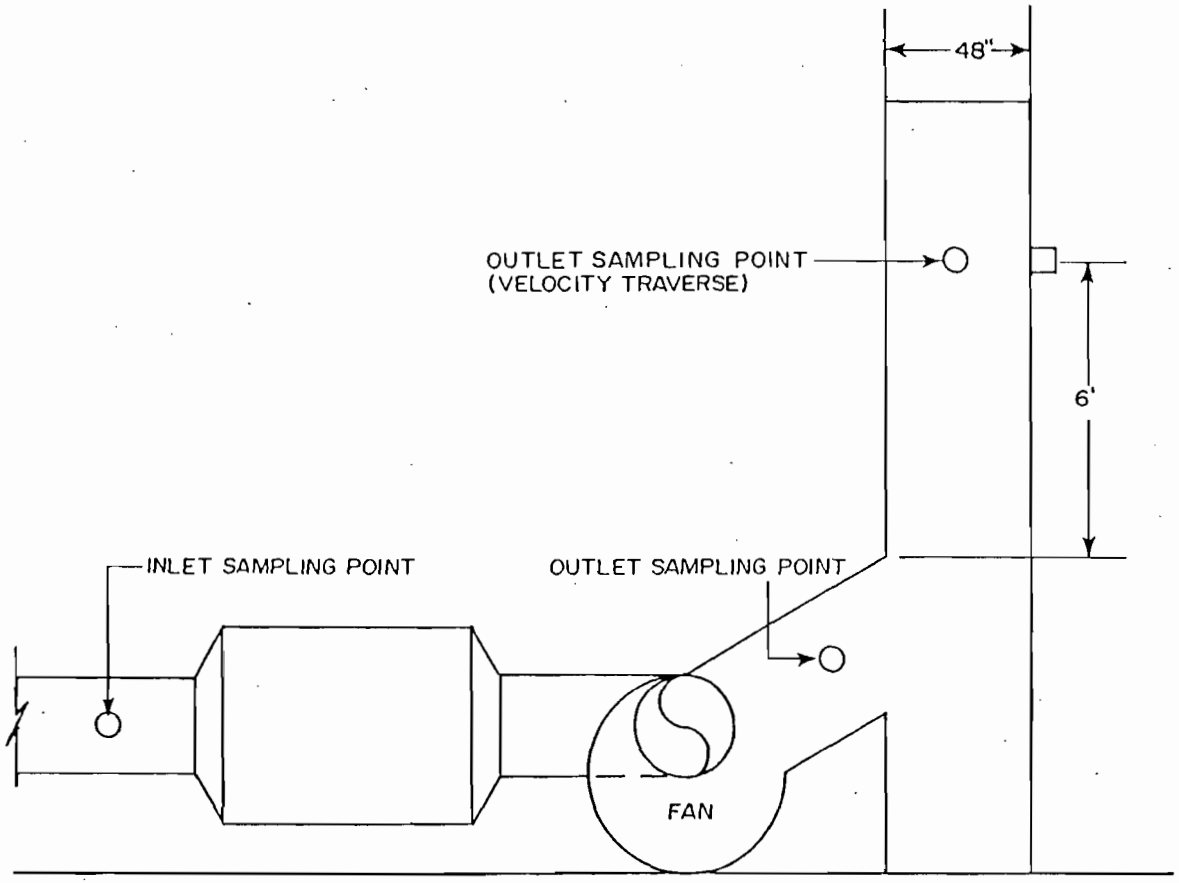
EMISSION SUMMARY

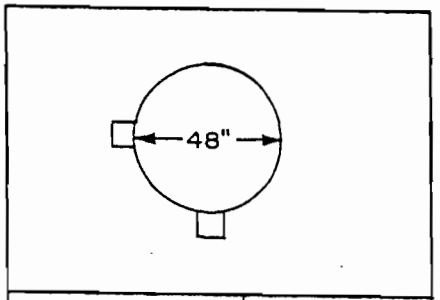
FACILITY: Harris
SOURCE: F58E01
DATE: 6/19/90

Source #2

TIME	MAXIMUM	MINIMUM	AVERAGE
1500-1510	4.0	4.0	4.0
1510-1520	3.8	3.8	3.8
1520-1530	3.8	3.5	3.6
Correct	1 ppm		

F59S01
ACID, EFFICIENCY





TRAVERSE POINT NUMBER	INCHES INSIDE STACK WALL
1	1.54
2	5.04
3	9.31
4	15.50
5	32.50
6	38.69
7	42.96
8	46.46

SAMPLING POINT LOCATION SCHEMATIC
HARRIS CORPORATION- F59S01
SEMICONDUCTOR DIVISION

AIR CONSULTING
and
ENGINEERING

MOISTURE AND FLOW CALCULATIONS

PLANT HARRIS SEMICONDUCTOR
STACK F59S01-OUTLET
DATE 6/26/90
RUN NO. 1

	BAROMETRIC PRESS.	30.17	IN.HG
	STACK PRESS.	30.15	IN.HG
	STACK AREA	12.566	SQ.FT
	AVG. STACK TEMP.	67	F
	AVG. METER TEMP.	88.00	F
	Y	0.994	
	AVG. METER ORIFICE	3.630	IN. H2O
	METER VOL.	505.118	CUB.FT
	MOISTURE PLUS SILICA GEL	165.100	ML
	STACK SQRT VEL. HEAD	0.734	IN. H2O
	CP	0.840	
ORSAT:	PERCENT CO2	0.0	
	PERCENT O2	20.9	
	PERCENT N2	79.1	
	VWSTD.	7.783	SCF
	VMSTD.	492.119	SCF
	MOISTURE FRACTION	0.016	
	FRACTION OF DRY AIR	0.984	
	MWGT. OF DRY AIR	28.836	
	MWGT. OF WET STACK GAS	28.667	
	AVG. VEL	41.15	FPS
	GAS FLOWRATE	31028.19	ACFM
	STD. GAS FLOWRATE	30838.33	SCFMD

MOISTURE AND FLOW CALCULATIONS

PLANT HARRIS SEMICONDUCTOR
STACK F59S01-INLET
DATE 6/26/90
RUN NO. 1

BAROMETRIC PRESS.	30.17	IN.HG
STACK PRESS.	30.15	IN.HG
STACK AREA	12.566	SQ.FT
AVG. STACK TEMP.	77	F
AVG. METER TEMP.	99.00	F
Y	0.992	
AVG. METER ORIFICE	4.730	IN. H2O
METER VOL.	645.580	CUB.FT
MOISTURE PLUS SILICA GEL	139.100	ML
STACK SQRT VEL. HEAD	0.734	IN. H2O
CP	0.840	

ORSAT:		
PERCENT CO2	0.0	
PERCENT O2	20.9	
PERCENT N2	79.1	

VWSTD.	6.557	SCF
VMSTD.	616.984	SCF
MOISTURE FRACTION	0.011	
FRACTION OF DRY AIR	0.989	
MWGT. OF DRY AIR	28.836	
MWGT. OF WET STACK GAS	28.722	
AVG. VEL	41.50	FPS
GAS FLOWRATE	31291.32	ACFM
STD. GAS FLOWRATE	30677.37	SCFMD

VELOCITY TRAVERSE

PLANT	HARRIS SEMICONDUCTOR
SOURCE	F59S01
DATE	6/20/90
BAROMETRIC PRESS.	30.090 IN.HG
STACK PRESS.	30.030 IN.HG
OPERATORS	NECK/HODGE
RUN	1

TRAVERSE POINT NUMBER	VEL. HEAD IN.H2O	SQRT VEL. HEAD
1-1	0.58	0.762
1-2	0.60	0.775
1-3	0.60	0.775
1-4	0.57	0.755
1-5	0.54	0.735
1-6	0.58	0.762
1-7	0.76	0.872
1-8	0.76	0.872
2-1	0.21	0.458
2-2	0.24	0.490
2-3	0.23	0.480
2-4	0.22	0.469
2-5	0.69	0.831
2-6	0.82	0.906
2-7	0.83	0.911
2-8	0.79	0.889
		0.734

STACK SAMPLING FIELD DATA SHEET

Consulting and Engineering
2106 N.W. 67th PLACE, SUITE 4
GAINESVILLE, FLORIDA 32606

TEST ID FS9501-0
PAGE 1 OF 2

PLANT HARRIS SEM SOURCE FS9501-OUTLET
PLANT LOCATION PALM BAY, FL.
TYPE OF SAMPLING TRAIN MOD. EPA-5
TYPE OF SAMPLES ACID EFFICIENCY
DATE 6/26/90 RUN NO. 1
TIME START 0702 TIME END 1530
SAMPLE TIME 15 MW. RUNS min/pt 508 Total min
BAR PRESS. ____ "Hg STACK PRESS. ____ "Hg
ASSUMED MOISTURE 2 % FDA .98
WEATHER CLEAR TEMP. 84 °F
METER BOX NO. 1 ΔH 2.05 Y 0.994
NOMOGRAPH C_f 10.36 PITOT CORR. FACTOR .84
NOZZLE CALIBRATION .302 .302 .302 = .302
STACK DIMINSIONS ____
STACK AREA ____ (EFFECTIVE ____ ft^2)
STACK HEIGHT ____ ft.
STACK DIAMETER: UPSTREAM ____ DOWNSTREAM ____
PORT SIZE ____ in. NIPPLE LENGTH ____
U CORD LENGTH: ____
REMARKS: ____

10.36

MAT'L PROCESSING RATE ____
GAS METER READINGS: FINAL 1009.650 ft.^{3}
INITIAL 504.532 ft.^{3}
NET 505.118 ft.^{3}
IMPINGERS VOL. GAIN 125 ml.
SILICA GEL NO. 10 WT. GAIN 40.1
FILTER NO. — TOTAL CONDENSATE 165.1 ml.

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

NA
F_O ____ F_O RANGE 1
LEAK CHECKS: METER BOX/PUMP ____
ORSAT BAG ____ GAS SAMPLE SYSTEM ____
ORSAT ANALYZER ____
PRE-TEST 0.00 CFM 14 "Hg POST-TEST 0.00 CFM 25 "Hg
BOX OPERATOR G.G. PROBE HOLDER —
PYROMETER NO. 1 PITOT TUBE NO. S3
PITOT TUBE LEAK CHECK: PRETEST OK
POST-TEST(+) 4.8 H_2O 15 SEC
POST-TEST(−) 5.2 H_2O 15 SEC

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL (IN.) STATIONARY	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O) CALC.	METER ORIFICE PRESS. DIFF. ("H_2O) ACTUAL	STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F) NA	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
1		0715	519.520	.35	3.63	3.63	65		56	73	7.0
2		0730	535.411	.35	3.63	3.63	65		56	75	7.0
3		0745	550.261	.35	3.63	3.63	66		56	77	7.0
4		0800	567.810	.35	3.63	3.63	66		56	79	7.0
5		0815	576.000	.35	3.63	3.63	66		56	79	7.0
6		0830	590.989	.35	3.63	3.63	66		56	79	7.0

Consulting and Engineering

2106 N.W. 67th PLACE, SUITE 4
GAINESVILLE, FLORIDA 32606

RUN NO. FS9501-0

PORT AND TRAVERSE POINT NUMBER RUG #	DISTANCE FROM INSIDE STACK WALL (IN.)	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O)		STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
					CALC.	ACTUAL					
7		0845	607.621	.35	3.63	3.63	66	NA	50	80	7.0
8		0900	623.120	.35	3.63	3.63	67	↓	48	82	7.0
9		0915	630.100	.35	3.63	3.63	64		48	83	7.0
10		0930	652.168	.35	3.63	3.63	67		48	85	7.0
11		0945	667.000	.35	3.63	3.63	67		49	86	7.0
12		1000	685.406	.35	3.63	3.63	64		49	87	7.0
13		1015	696.102	.35	3.63	3.63	67		49	88	7.0
14		1030	711.592	.35	3.63	3.63	67		49	88	7.0
15		1045	726.404	.35	3.63	3.63	67		49	90	7.0
16		1100	740.986	.35	3.63	3.63	67		48	91	7.0
17		1115	756.801	.35	3.63	3.63	67		48	93	7.0
18		1130	770.490	.35	3.63	3.63	67		48	93	7.0
19		1145	789.999	.35	3.63	3.63	67		48	93	7.0
20		1200	800.461	.35	3.63	3.63	64		48	93	7.0
21		1215	814.000	.35	3.63	3.63	67		48	93	7.0
22		1230	830.863	.35	3.63	3.63	64		48	94	7.0
23		1245	843.046	.35	3.63	3.63	67		48	94	7.0
24		1300	859.652	.35	3.63	3.63	64		48	94	7.0
25		1315	879.812	.35	3.63	3.63	67		48	94	7.0
26		1330	889.394	.35	3.63	3.63	66		48	92	7.0
27		1345	906.463	.35	3.63	3.63	66		48	87	7.0
28		1400	919.521	.35	3.63	3.63	63		45	83	7.0
29		1415	935.610	.35	3.63	3.63	65		45	83	7.0
30		1430	951.200	.35	3.63	3.63	66		45	84	7.0
31		1445	965.110	.35	3.63	3.63	67		45	85	7.0
32		1500	980.011	.35	3.63	3.63	67		46	86	7.0
33		1515	995.120	.35	3.63	3.63	64		47	86	7.0
34		1530	009.650	.35	3.63	3.63	67		49	88	7.0
							67			88	

STACK SAMPLING FIELD DATA SHEET

ace Consulting and Engineering
2106 N.W. 67th PLACE, SUITE 4
GAINESVILLE, FLORIDA 32606

TEST ID FS9501-I
PAGE 1 OF 2

PLANT HARRIS SEM. SOURCE FS9501-INLET
PLANT LOCATION PALM BAY, FL.
TYPE OF SAMPLING TRAIN MOD. EPA-5
TYPE OF SAMPLES ACID EFFICIENCY
DATE 6/26/90 RUN NO. 1
TIME START 0700 TIME END 1530
SAMPLE TIME 15 MIN RGS min/pt 510 Total min
BAR PRESS. ____ "Hg STACK PRESS. ____ "Hg
ASSUMED MOISTURE 2 % FDA .98
WEATHER CLEAR TEMP. 80-90 °F
METER BOX NO. 3 ΔH 1.57 Y 0.992
NOMOGRAPH C_f 18.9 PITOT CORR. FACTOR .84
NOZZLE CALIBRATION .375 .375 .375 = .375
STACK DIMINSIONS ____
STACK AREA ____ (EFFECTIVE ____ ft^2)
STACK HEIGHT ____ ft.
STACK DIAMETER: UPSTREAM ____ DOWNSTREAM ____
PORT SIZE ____ in. NIPPLE LENGTH ____
U CORD LENGTH: ____
REMARKS: ____

$A_N = .000767$

~~12.4~~ 18.9

MAT'L PROCESSING RATE ____
GAS METER READINGS: FINAL 1370.280 ft.^{3}
724,700 INITIAL ~~719.817~~ ft.^{3}
NET 645.58 ft.^{3}
IMPINGERS VOL. GAIN 85 ml.
SILICA GEL NO. 9 WT. GAIN 54.1
FILTER NO. ____ TOTAL CONDENSATE 139.1 ml.

ORSAT

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

NA

F_O ____ F_O RANGE ____
LEAK CHECKS: METER BOX/PUMP ____
ORSAT BAG ____ GAS SAMPLE SYSTEM ____
ORSAT ANALYZER ____
PRE-TEST 0.00 CFM 12 "Hg POST-TEST 0.00 CFM 14 "Hg
BOX OPERATOR G.G. PROBE HOLDER ____
PYROMETER NO. 3 PITOT TUBE NO. 59
PITOT TUBE LEAK CHECK: PRETEST OK
POST-TEST(+) 4.1 H_2O 15 SEC
POST-TEST(−) 3.1 H_2O 15 SEC

PORT AND TRAVERSE POINT NUMBER RTG.#	DISTANCE FROM INSIDE STACK WALL (IN.) STATIONARY	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD .25	METER ORIFICE PRESS. DIFF. ("H_2O) CALC. 4.73	ACTUAL 4.73	STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
1		0715	744.801	.25	2.84	2.84	78	NA	53	81	13.0
2		0730	764.926	.25	4.73	4.73	78		53	83	13.0
3		0745	785.420	.25	4.73	4.73	78		54	87	13.0
4		0800	806.421	.25	4.73	4.73	78		58	92	13.0
5		0815	816.999	.25	4.73	4.73	78		58	92	13.0
6		0830	835.121	.25	4.73	4.73	77		57	93	13.0

Air Consulting and Engineering
2106 N.W. 67th PLACE, SUITE 4
GAINESVILLE, FLORIDA 32606

RUN NO. FS9501-I

PORT AND TRAVERSE POINT NUMBER RDG#	DISTANCE FROM INSIDE STACK WALL (IN.)	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O)		STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
					CALC.	ACTUAL					
7		0845	856.457	.25	4.73	4.73	78	NA	54	94	13.0
8		0900	877.126	.25	4.73	4.73	77	↓	54	97	13.0
9		0915	896.981	.25	4.73	4.73	77		52	98	13.0
10		0930	913.624	.25	4.73	4.73	77		50	99	13.0
11		0945	928.340	.25	4.73	4.73	77		49	100	13.0
12		1000	958.021	.25	4.73	4.73	78		49	102	13.0
13		1015	971.461	.25	4.73	4.73	78		49	103	13.0
14		1030	989.924	.25	4.73	4.73	78		49	103	13.0
15		1045	010.301	.26	4.73	4.73	78		50	104	13.0
16		1100	027.988	.25	4.73	4.73	78		50	105	13.0
17		1115	047.401	.25	4.73	4.73	78		49	107	13.0
18		1130	070.666	.25	4.73	4.73	78		49	107	13.0
19		1145	085.464	.25	4.73	4.73	77		48	106	13.0
20		1200	099.431	.25	4.73	4.73	77		48	106	13.0
21		1215	120.699	.25	4.73	4.73	77		48	106	13.0
22		1230	141.906	.25	4.73	4.73	78		48	106	13.0
23		1245	159.684	.25	4.73	4.73	77		48	105	13.0
24		1300	179.910	.25	4.73	4.73	77		48	105	13.0
25		1315	197.982	.25	4.73	4.73	77		48	105	13.0
26		1330	220.404	.25	4.73	4.73	77		48	103	13.0
27		1345	238.201	.25	4.73	4.73	64		44	97	13.0
28		1400	254.711	.25	4.73	4.73	75		44	94	13.0
29		1415	274.667	.25	4.73	4.73	77		45	94	13.0
30		1430	294.416	.25	4.73	4.73	78		45	95	13.0
31		1445	313.941	.25	4.73	4.73	78		47	97	13.0
32		1500	331.891	.25	4.73	4.73	77		48	98	13.0
33		1515	352.000	.25	4.73	4.73	77		48	98	13.0
34		1530	370.280	.25	4.73	4.73	78 / 77		49	100 / 99	13.0

Air Consulting and Engineering

PRELIMINARY VELOCITY TRAVERSE

PLANT HARRIS SEMICONDUCTOR

DATE 6/26/90

SOURCE ~~FS8501~~ ~~FS8501~~ FS9501

STACK I.D. 48" STACK AREA 12.566

BAROMETRIC PRES., in. Hg 30.17

STATIC PRES. in. H_2O -.3 STACK PRES. in. Hg. 30.15

PORT DIAM. 2-3" NIPPLE LENGTH NA

PITOT TUBE NO. "S" TYPE

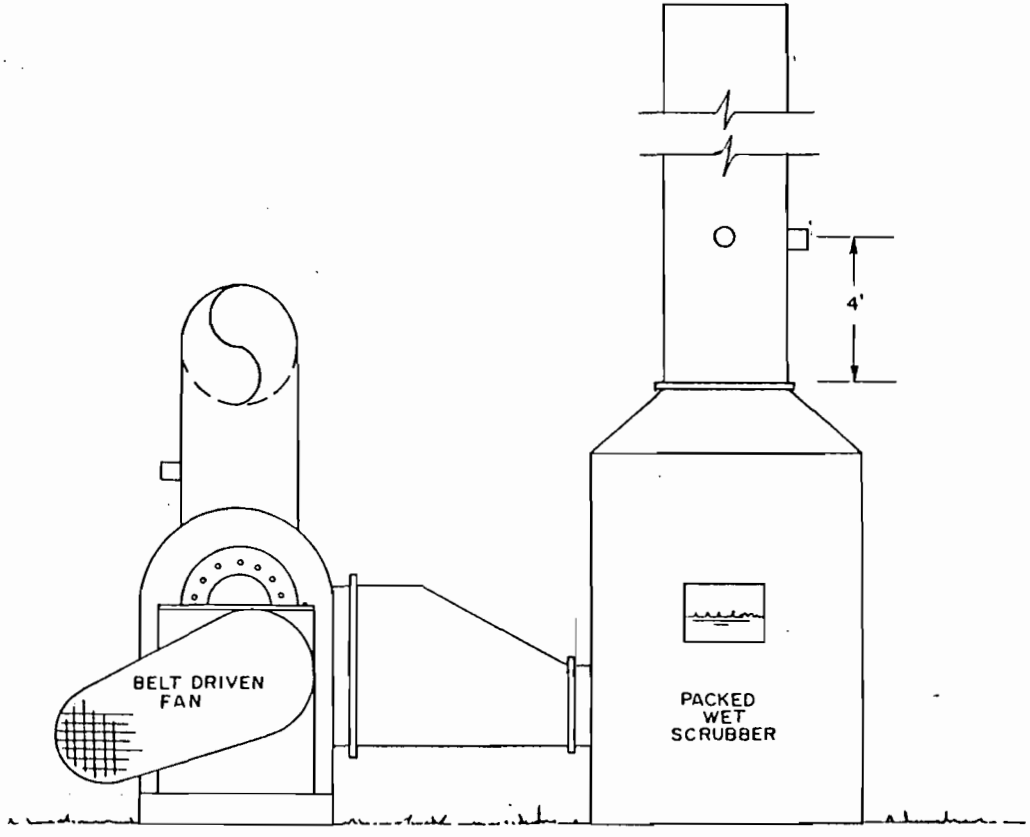
OPERATORS HODGE/GAUTHREAUX

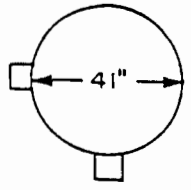
FSP 8/89 - 0.516

SCHEMATIC OF TRAVERSE POINT LAYOUT

TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s) in. H_2O	STACK TEMPERATURE (T_s, °F)	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s in. H_2O	STACK TEMPERATURE (T_s, °F)
1-1	.58		1.54			
2	.60		5.04			
3	.60		9.31			
4	.57	73	15.50			
5	.54		32.50			
6	.58		38.69			
7	.76		42.96			
8	.76	180	46.46			
2-1	.21					
2	.24					
3	.23		$(.734)(174)(.84)(\sqrt{.533}) = 2476.784$			
4	.22		$(2476.784)(12.566) = 31123.268$			
5	.19		$(31123.268)(\frac{528}{533})(.98) = 30214.67$ SCFM			
6	.82					
7	.83					
8	.79	.679				
AVERAGE				AVERAGE		

F59S02
VOC





TRAVERSE POINT NUMBER	INCHES INSIDE STACK WALL
1	1.31
2	4.31
3	7.95
4	13.24
5	27.76
6	33.05
7	36.70
8	39.69

SAMPLING POINT LOCATION SCHEMATIC
HARRIS CORPORATION SOURCE - F59S02
SEMICONDUCTOR DIVISION
MELBOURNE, FLORIDA

AIR CONSULTING
and
ENGINEERING

FLOWRATE CALCULATIONS

	PLANT	HARRIS SEMICONDUCT	
	STACK	F59SO2	
	DATE	6/22/90	
	RUN NO.	1	
	BAROMETRIC PRESS.	30.09	IN.HG
	STACK PRESS.	30.09	IN.HG
	STACK AREA	9.621	SQ.FT
	AVG.STACK TEMP	79.00	F
	CP	0.84	
	AVG. SQRT VELOCITY HEAD	0.348	IN. H2O
ORSAT:	PERCENT CO2	0.0	
	PERCENT O2	20.9	
	PERCENT N2	79.1	
	FRACTION OF DRY AIR	0.975	
	MOISTURE FRACTION	0.025	
	MWGT. OF DRY STACK GAS	28.836	
	MWGT. OF WET STACK GAS	28.565	
	AVG.VELOCITY	19.79	FPS
	ACTUAL VOL. FLOW	11422.47	ACFM
	STD. VOL. FLOW	10971.61	SCFMD

VELOCITY TRAVERSE

PLANT	HARRIS SEMICONDUCTOR
DATE	6/22/90
SOURCE	F59SO2
BAROMETRIC PRESS.	30.090 IN.HG
STACK PRESS.	30.090 IN.HG
OPERATORS	GAUTHREAUX/HODGE
RUN	1

TRAVERSE POINT NUMBER	VEL. HEAD in. H2O	SQR VEL. HEAD
1-1	0.050	0.224
1-2	0.050	0.224
1-3	0.050	0.224
1-4	0.090	0.300
1-5	0.130	0.361
1-6	0.190	0.436
1-7	0.210	0.458
1-8	0.230	0.480
2-1	0.070	0.265
2-2	0.080	0.283
2-3	0.070	0.265
2-4	0.110	0.332
2-5	0.160	0.400
2-6	0.200	0.447
2-7	0.190	0.436
2-8	0.190	0.436
		0.348

Air Consulting and Engineering

PRELIMINARY VELOCITY TRAVERSE

PLANT HARRIS SEMICONDUCTOR
DATE 6/22/90
SOURCE ~~F59502~~ ? F59502
STACK I.D. 42" STACK AREA 9.621
BAROMETRIC PRES., in. Hg 30.09
STATIC PRES. in. H_2O -.05 STACK PRES. in. Hg. 30.09
PORT DIAM. 2-3" NIPPLE LENGTH NA
PITOT TUBE NO. 591 TYPE S-TYPE
OPERATORS GALTHREALY / HODGE

1353

8/89
~~ΔP~~ = .205

SCHEMATIC OF TRAVERSE POINT LAYOUT

TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s) in. H_2O	STACK TEMPERATURE (T_s, °F)	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s in. H_2O	STACK TEMPERATURE (T_s, °F)
1-1	.05	84	1.31			
2	.05	83	4.31			
3	.05	82	7.95			
4	.09	80	13.24			
5	.13	76	27.76			
6	.19	70	33.05			
7	.21	76	36.70			
8 .3102	.23	76	39.69			
2-1	.07	~~84~~				
2	.08	81				
3	.07	80				
4	.11	79				
5	.16	78				
6	.20	77				
7	.19	76				
8 .3578	.14	76				
Av √.3340		Av = 79				
AVERAGE				AVERAGE		

$(.334)(174)(.84)(539) = 1133.364$

$(1133.364)(9.621) = 10904.240$

$(10904.240)\left(\frac{526}{539}\right)(.96) = 10468.07$ SCFM

HARRIS SEMICONDUCTOR
PALM BAY, FLORIDA
EPA-25A VOC EMISSIONS

AIR CONSULTING AND ENGINEERING, INC.

TIME	F59S02-6/22/90 PPM C3H8 MAX	MIN	AVG	F63S03-6/22/90 PPM C3H8 MAX	MIN	AVG
0700-0710	*TESTING COMMENCED AT 0720 HOURS*					
0710-0720						
0720-0730	5.80	4.80	5.10	35.00	20.00	24.50
0730-0740	4.00	3.80	3.80	24.50	20.00	21.50
0740-0750	4.00	3.50	3.80	29.50	14.50	20.60
0750-0800	3.80	3.20	3.40	15.20	12.50	13.40
0800-0810	3.80	3.20	3.30	44.00	11.00	20.90
0810-0820	3.50	3.50	3.50	17.50	8.50	13.20
0820-0830	4.00	3.20	3.90	10.50	7.00	8.50
0830-0840	3.80	3.20	3.90	15.50	6.00	9.50
0840-0850	4.50	3.50	3.30	12.20	6.20	7.80
0850-0900	4.00	4.00	4.00	15.50	6.00	9.00
0900-0910	4.20	4.00	4.00	17.20	8.00	11.30
0910-0920	4.20	3.80	3.90	9.00	7.00	8.00
0920-0930	4.00	3.50	3.80	9.50	8.00	8.50
0930-0940	4.00	3.50	3.90	34.80	7.50	13.20
0940-0950	4.20	4.00	4.10	22.00	13.20	17.60
0950-1000	5.00	4.50	4.80	21.50	9.50	14.40
1000-1010	4.80	3.80	4.10	15.00	8.20	10.60
1010-1020	3.80	3.00	3.30	15.50	8.00	13.00
1020-1030	9.00	3.00	5.10	20.00	8.20	13.50
1030-1040	3.80	3.20	3.60	22.00	10.50	15.00
1040-1050	5.20	4.80	5.00	25.50	12.00	17.30
1050-1100	5.20	5.00	5.10	22.00	12.00	17.50
1100-1110	5.00	4.50	4.70	25.00	14.00	18.70
1110-1120	5.00	4.00	4.50	17.50	12.50	14.40
1120-1130	4.80	4.00	4.20	20.50	12.50	14.50
1130-1140	5.00	6.00	5.20	20.00	10.20	14.20
1140-1150	5.20	4.80	5.00	17.00	10.20	12.30
1150-1200	5.50	5.00	5.20	14.00	10.20	12.20
1200-1210	5.50	4.50	4.80	11.50	10.00	10.50
1210-1220	4.20	3.80	4.00	10.50	9.00	9.80
1220-1230	4.00	3.80	3.80	9.50	8.50	9.20
1230-1240	3.20	3.00	3.10	18.00	8.00	12.70
1240-1250	3.20	3.20	3.20	20.00	11.20	16.60
1250-1300	3.30	3.00	3.20	17.00	12.20	15.20
1300-1310	4.00	3.00	3.60	20.00	11.50	13.90
1310-1320	3.00	3.00	3.00	20.00	11.50	13.90
1320-1330	3.00	3.00	3.00	97.00	16.00	34.30
1330-1340	8.00	5.00	5.60	26.00	13.00	17.40
1340-1350	5.00	4.50	4.80	20.00	12.50	15.00
1350-1400	4.50	4.50	4.50	14.50	10.00	11.70
1400-1410	5.00	4.50	4.80	21.00	11.00	13.50
1410-1420	4.50	4.20	4.30	25.50	10.00	14.40
1420-1430	4.20	4.20	4.20	13.50	10.00	11.10
1430-1440	4.00	3.50	3.70	21.00	11.00	16.20
1440-1450	4.00	3.50	3.70	22.00	14.00	18.00
1450-1500	4.80	4.20	4.50	36.00	17.50	24.20
1500-1510	3.00	3.00	3.00	17.00	14.00	15.20
1510-1520	4.00	4.00	4.00	14.00	12.00	13.20
1520-1530	3.50	3.00	3.10	12.00	10.50	11.60
AVERAGES			4.07			14.54
AMBIENT CORR. AVG.			2.07			12.54

EMISSION SUMMARY

FACILITY: Harris Semiconductor

SOURCE:

DATE: 6/22/

S_1 F59502 S_2 F63503

TIME	MAXIMUM MAX	MAXIMUM MIN	MAXIMUM AUG	MINIMUM MAX	AVERAGE MIN	AVERAGE AUG
0710 – 0720						
0720 – 0730	5.8	4.8	5.1	35	20	24.5
0730 – 0740	4.0	3.8	3.8	24.5	20	21.5
0740 – 0750	4.0	3.5	3.8	29.5	14.5	20.6
0750 – 0800	3.8	3.2	3.4	15.2	12.5	13.4
0800 – 0810	3.8	3.2	3.3	44.0	11	20.9
0810 – 0820	3.5	3.5	3.5	17.5	8.5	13.2
0820 – 0830	4.0	3.2	3.9	10.5	7.0	8.5
0830 – 0840	3.8	3.2	3.9	15.5	6.0	9.5
0840 – 0850	4.5	3.5	3.3	12.2	6.2	7.8
0850 – 0900	4.0	4.0	4.0	15.5	6.0	9.0
0900 – 0910	4.0	4.0	4.0	17.2	8.0	11.3
0910 – 0920	4.2	3.8	3.9	9.0	7.0	8.0
0920 – 0930	4.0	3.5	3.8	9.5	8.0	8.5
0930 – 0940	4.0	3.5	3.9	34.8	7.5	13.2
0940 – 0950	4.2	4.0	4.1	22.0	13.2	17.6
0950 – 1000	5.0	4.5	4.8	21.5	9.5	14.4
1000 – 1010	4.8	3.8	4.1	15.0	8.2	10.6
1010 – 1020	3.8	3.0	3.3	15.5	8.0	13.0
~~1020 – 1030~~	~~4.0~~	~~3.0~~	~~3.3~~	~~16.5~~	~~7.0~~	~~10.0~~
1020 – 1030	9.0	3.0	5.1	20.0	8.0	13.5
1030 – 1040	3.8	3.2	3.6	22.0	10.5	15.0

EMISSION SUMMARY

FACILITY: _____

SOURCE: Maxim Semiconductor

DATE: 6/22/96

5i F59502 5₂ F63503

TIME	MAXIMUM MAX	MAXIMUM MIN	MINIMUM AVG	MINIMUM MAX	AVERAGE MIN	AVERAGE AVG
1040 – 1050	5.2	4.5	5.0	25.5	12	17.3
1050 – 1100	5.2	5.0	5.1	22.0	12	17.5
1100 – 1110	5.0	4.5	4.7	25.0	14	18.7
1110 – 1120	5.0	4.0	4.5	17.5	12.5	14.4
1120 – 1130	4.8	4.0	4.2	20.5	12.5	14.5
1130 – 1140	5.0	6.0	5.2	20.0	10.2	14.2
1140 – 1150	5.2	4.8	5.0	17.0	10.2	12.3
1150 – 1200	5.5	5.0	5.2	14.0	10.2	12.2
1200 – 1210	5.5	4.5	4.8	11.5	10.0	10.5
1210 – 1220	4.2	3.8	4.0	10.5	9.0	9.8
1220 – 1230	4.0	3.8	3.8	9.5	8.5	9.2
1230 – 1240	3.2	3.0	3.1	18.0	8.0	12.7
1240 – 1250	3.2	3.2	3.2	20.0	11.2	16.6
1250 – 1300	3.3	3.0	3.2	17.00	12.2	15.2
1300 – 1310	4.0	3.5	3.6	20.0	11.5	13.9
1310 – 1320	3.0	3.0	3.0	20.0	11.5	13.9
1320 – 1330	3.0	3.0	3.0	97.0	16.0	34.3
1330 – 1340	8.0	5.0	5.6	26.0	13.0	17.4
1340 – 1350	5.0	4.5	4.8	20.0	12.5	15.0
1350 – 1400	4.5	4.5	4.5	14.5	10.0	11.7
1400 – 1410	5.0	4.5	4.8	21	11.0	13.5
1410 – 1420	4.5	4.2	4.3	25.5	10.0	14.4

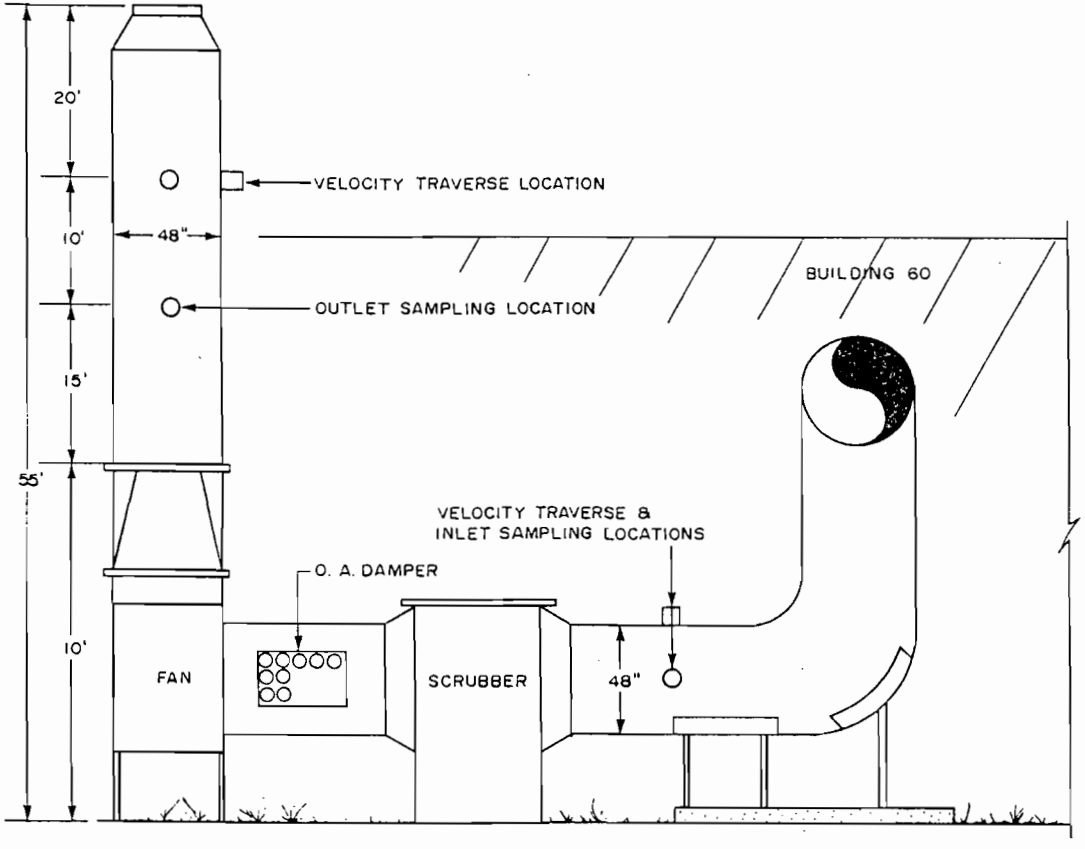
EMISSION SUMMARY **BEST AVAILABLE COPY**

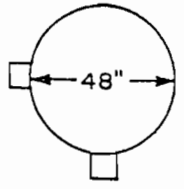
FACILITY: _____
SOURCE: Harris Semiconductor
DATE: 6/22/90

51 F59502 52 F63503

TIME	MAXIMUM MAX	MAXIMUM MIN	MINIMUM AVG	MINIMUM MAX	AVERAGE MIN	AVERAGE AVG
1420 – 1430	4.2	4.2	4.2	13.5	10.0	11.1
1430 – 1440	4.0	3.5	3.7	21.0	11.0	16.2
1440 – 1450	4.0	3.5	3.7	22.0	14.0	18.0
1450 – 1500	4.8	4.2	4.5	36.0	17.5	24.2
1500 – 1510	3.0	3.0	3.0	17.0	14.0	15.2
1510 – 1520	4.0	4.0	4.0	14.0	12.0	13.2
1520 – 1530	3.5	3.0	3.1	12.0	10.5	11.6
1530 – 1540						
1540 – 1550						
1550 – 1600						
	Current S_2		3.0 ppm			
	Current S_1		2.0 ppm			

F60S01
ACID, VOC, EFFICIENCY





TRAVERSE POINT NUMBER	INCHES INSIDE STACK WALL
1	1.54
2	5.04
3	9.31
4	15.50
5	32.50
6	38.69
7	42.96
8	46.46

SAMPLING POINT LOCATION SCHEMATIC
HARRIS CORPORATION SOURCE - F60501
SEMICONDUCTOR DIVISION
MELBOURNE, FLORIDA

AIR CONSULTING
and
ENGINEERING

MOISTURE AND FLOW CALCULATIONS

PLANT HARRIS SEMICONDUCTOR
STACK F60S01
DATE 6/21/90
RUN NO. 1

	BAROMETRIC PRESS.	30.17	IN.HG
	STACK PRESS.	30.18	IN.HG
	STACK AREA	12.566	SQ.FT
	AVG. STACK TEMP.	74	F
	AVG. METER TEMP.	94.00	F
	Y	0.994	
	AVG. METER ORIFICE	1.800	IN. H2O
	METER VOL.	357.692	CUB.FT
	MOISTURE PLUS SILICA GEL	141.300	ML
	STACK SQRT VEL. HEAD	0.579	IN. H2O
	CP	0.840	
ORSAT:	PERCENT CO2	0.0	
	PERCENT O2	20.9	
	PERCENT N2	79.1	
	VWSTD.	6.661	SCF
	VMSTD.	343.189	SCF
	MOISTURE FRACTION	0.019	
	FRACTION OF DRY AIR	0.981	
	MWGT. OF DRY AIR	28.836	
	MWGT. OF WET STACK GAS	28.630	
	AVG. VEL	32.68	FPS
	GAS FLOWRATE	24641.85	ACFM
	STD. GAS FLOWRATE	24108.78	SCFMD

VELOCITY TRAVERSE

PLANT	HARRIS SEMICONDUCTOR
SOURCE	F60S01
DATE	6/18/90
BAROMETRIC PRESS.	30.170 IN.HG
STACK PRESS.	30.180 IN.HG
OPERATORS	CARTER
RUN	1

TRAVERSE POINT NUMBER	VEL. HEAD IN.H2O	SQRT VEL. HEAD
1-1	0.340	0.583
1-2	0.340	0.583
1-3	0.310	0.557
1-4	0.300	0.548
1-5	0.300	0.548
1-6	0.290	0.539
1-7	0.390	0.624
1-8	0.390	0.624
1-9	0.400	0.632
1-10	0.380	0.616
1-11	0.370	0.608
1-12	0.330	0.574
2-1	0.270	0.520
2-2	0.300	0.548
2-3	0.300	0.548
2-4	0.310	0.557
2-5	0.330	0.574
2-6	0.360	0.600
2-7	0.370	0.608
2-8	0.350	0.592
2-9	0.35	0.592
2-10	0.34	0.583
2-11	0.350	0.592
2-12	0.320	0.566
		0.579

STACK SAMPLING FIELD DATA SHEET

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

TEST ID F60501
PAGE 01 OF 2

PLANT Harris Corp SOURCE F60501
PLANT LOCATION Palm Bay Fl
TYPE OF SAMPLING TRAIN
TYPE OF SAMPLES Acid
DATE 6-21-90 RUN NO.
TIME START 0700 TIME END 1530
SAMPLE TIME 15/1 min/pt 510 Total min
BAR PRESS. "Hg STACK PRESS. "Hg
ASSUMED MOISTURE % FDA
WEATHER TEMP. °F
METER BOX NO. 1 ΔH 2.05 Y 0.994
NOMOGRAPH C_f 5.14 PITOT CORR. FACTOR
NOZZLE CALIBRATION .250 .250 .250 = .250
STACK DIMINSIONS
STACK AREA (EFFECTIVE ft^2)
STACK HEIGHT ft.
STACK DIAMETER: UPSTREAM DOWNSTREAM
PORT SIZE 3 in. NIPPLE LENGTH 0
U CORD LENGTH: 100
REMARKS:

MAT'L PROCESSING RATE 8 hr. 54 FT
GAS METER READINGS: FINAL 685.025 ft^3
INITIAL 316.537 ft^3
NET 357.692 ft^3
IMPINGERS VOL. GAIN 95 ml.
SILICA GEL NO. 41 WT. GAIN 46.3
FILTER NO. TOTAL CONDENSATE 141.3 ml.

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

F_O F_O RANGE
LEAK CHECKS: METER BOX/PUMP
ORSAT BAG GAS SAMPLE SYSTEM
ORSAT ANALYZER
PRE-TEST 0.00 CFM 15 "Hg POST-TEST 0.000 CFM 17 "Hg
BOX OPERATOR Carter PROBE HOLDER
PYROMETER NO. PITOT TUBE NO.
PITOT TUBE LEAK CHECK: PRETEST OK
POST-TEST(+) H_2O SEC
POST-TEST(−) H_2O SEC

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL (IN.)	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O)		STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
					CALC.	ACTUAL					
	Stratum A&C	0715	327.333	.35	1.80	1.80	63		58	78	4.0
		0730	338.130	.35	1.80	1.80	64		41	80	4.0
		0745	349.121	.35	1.80	1.80	64		41	80	4.0
		0800	361.412	.35	1.80	1.80	64		43	85	4.0
		0815	371.210	.35	1.80	1.80	64		43	85	4.0
		0830	381.160	.35	1.80	1.80	65		43	86	4.0

Consulting and Engineering
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GAINESVILLE, FLORIDA 32606

RUN NO. F60501

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL (IN.)	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O)		STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
					CALC.	ACTUAL					
		0845	389.213	.35	1.80	1.80	65		44	88	4.0
		0900	403.225	.35	1.80	1.80	65		44	90	4.0
		0915	414.261	.35	1.80	1.80	66		45	92	4.0
		0930	424.823	.35	1.80	1.80	66		46	93	4.0
		0945	435.812	.35	1.80	1.80	66		46	94	4.0
		1000	446.217	.35	1.80	1.80	66		47	95	4.0
		1015	456.824	.35	1.80	1.80	66		49	96	4.0
		1030	467.450	.35	1.80	1.80	67		49	96	4.0
		1045	478.814	.35	1.80	1.80	67		49	96	4.0
		1100	489.241	.35	1.80	1.80	67		50	96	4.0
		1115	500.345	.35	1.80	1.80	67		50	97	4.0
		1130	510.903	.35	1.80	1.80	67		49	98	4.0
		1145	521.885	.35	1.80	1.80	67		49	98	4.0
		1200	532.354	.35	1.80	1.80	67		49	98	4.0
		1215	543.435	.35	1.80	1.80	67		47	98	4.0
		1230	554.891	.35	1.80	1.80	67		48	99	4.0
		1245	565.010	.35	1.80	1.80	67		48	99	4.0
		1300	574.021	.35	1.80	1.80	68		49	99	4.0
		1315	586.810	.35	1.80	1.80	68		49	99	4.0
		1330	598.321	.35	1.80	1.80	68		48	99	4.0
		1345	608.692	.35	1.80	1.80	70		49	99	4.0
		1400	619.467	.35	1.80	1.80	68		50	99	4.0
		1415	630.812	.35	1.80	1.80	68		50	99	4.0
		1430	641.255	.35	1.80	1.80	68		49	99	4.0
		1445	652.289	.35	1.80	1.80	67		49	99	4.0
		1500	663.000	.35	1.80	1.80	67		49	99	4.0
		1515	674.201	.35	1.80	1.80	68		49	99	4.0
		1530	685.025	.35	1.80	1.80	68		50	99	4.0
										94	

PRELIMINARY VELOCITY TRAVERSE

Air Consulting and Engineering

PLANT HARRIS
DATE 6-18-90
SOURCE F60501
STACK I.D. 48" STACK AREA 12.566
BAROMETRIC PRES., in. Hg 30.17
STATIC PRES. in H_2O +.15 STACK PRES. in. Hg. 30.18
PORT DIAM. _____ NIPPLE LENGTH _____
PITOT TUBE NO. 59 TYPE S
OPERATORS NECK - CARTER

SCHEMATIC OF TRAVERSE POINT LAYOUT

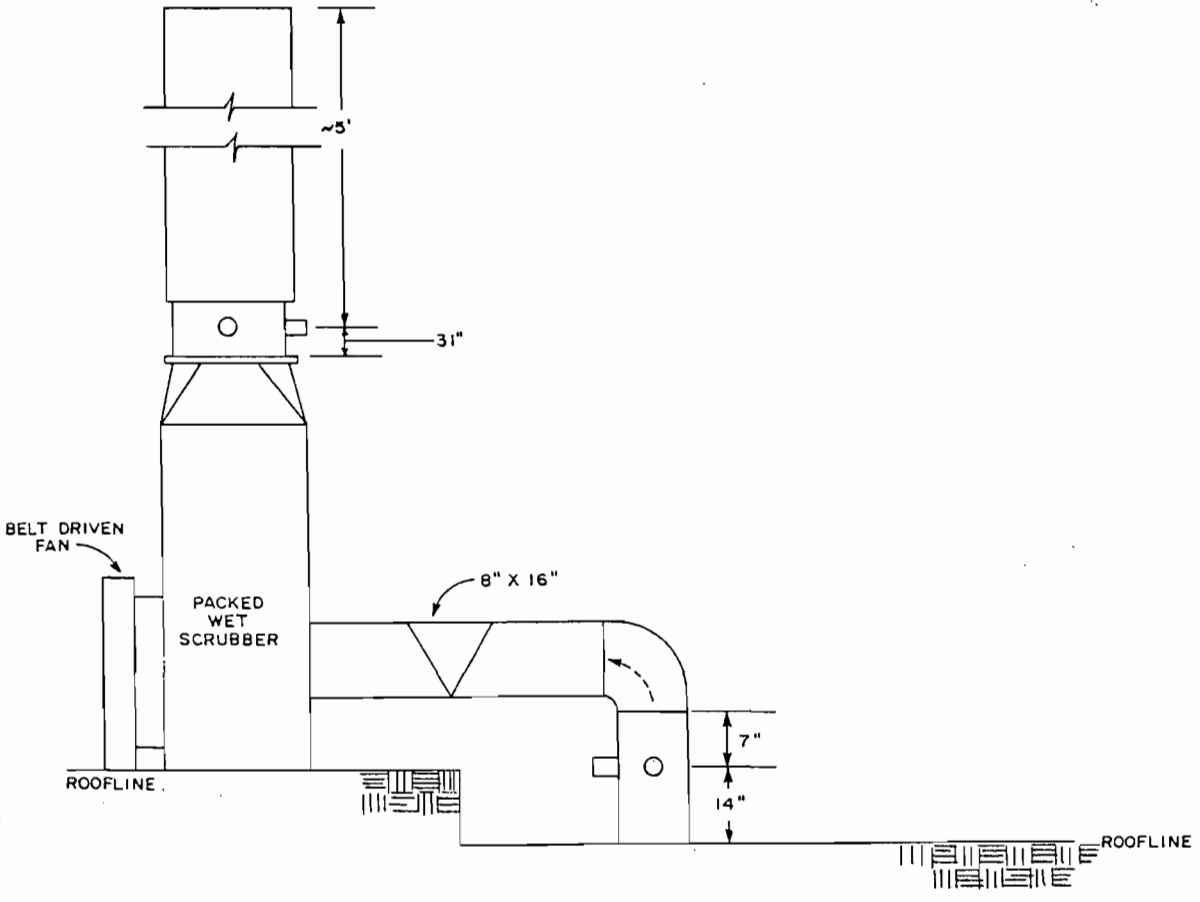
TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s) in. H_2O	STACK TEMPERATURE (T_s, °F)	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s in. H_2O	STACK TEMPERATURE (T_s, °F)
1-1	.34	74				
2	.34	74				
3	.31	74				
4	.30	74				
5	.30	74				
6	.29	74				
7	.39	74				
8	.39	74				
9	.40	74				
10	.38	74				
11	.37	74				
12	.33	74				
2-1	.27	74				
2	.30	74				
3	.30	74				
4	.31	74				
5	.33	74	$ACFM = (.5800)(174)(.84)(\sqrt{.534}) = 1958.97$			
6	.36	74	$ACFMD = (1958.97)(12.56) = 24616.38$			
7	.37	74	$SCFMD = (24616.38)(\frac{528}{534})(.98) = 23852.99$			
8	.35	74				
9	.35	74				
10	.34	74				
11	.35	74				
12	.32	74				
		74				
AVERAGE		T_s = 74		AVERAGE		

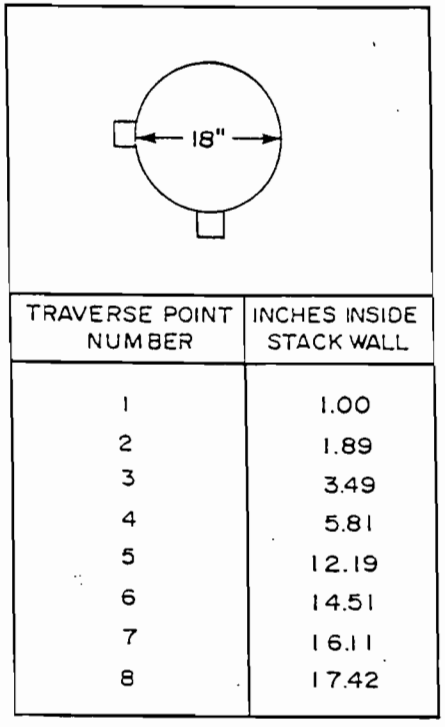
HARRIS SEMICONDUCTOR
PALM BAY, FLORIDA
EPA-25A VOC EMISSIONS
6/18/90

AIR CONSULTING AND ENGINEERING, INC

TIME	~~F54S01~~ F60S01 PPM C3H8 MAX	MIN	AVG	~~F60S01~~ F54S01 PPM C3H8 MAX	MIN	AVG
0700-0710	4.50	4.50	4.50	11.00	11.00	11.00
0710-0720	4.50	4.50	4.50	11.00	11.00	11.00
0720-0730	4.50	4.50	4.50	11.00	11.00	11.00
0730-0740	4.50	4.50	4.50	11.50	11.50	11.50
0740-0750	4.50	4.00	4.25	13.00	13.00	13.00
0750-0800	4.50	4.00	4.25	13.00	13.00	13.00
0800-0810	4.50	4.50	4.50	13.50	12.50	13.00
0810-0820	5.00	4.50	4.75	12.00	12.00	12.00
0820-0830	4.50	4.50	4.50	12.00	12.00	12.00
0830-0840	5.00	4.50	4.75	12.50	12.50	13.50
0840-0850	5.50	4.50	5.00	13.50	13.00	13.25
0850-0900	5.00	4.50	4.75	14.00	13.50	13.75
0900-0910	5.00	5.00	5.00	13.50	13.50	13.50
0910-0920	5.00	4.50	4.75	14.00	13.50	13.75
0920-0930	5.00	4.50	4.75	21.50	16.50	19.00
0930-0940	4.50	4.50	4.50	17.50	16.00	16.75
0940-0950	6.00	6.00	6.00	13.50	13.00	13.25
0950-1000	4.50	4.50	4.00	13.50	13.50	13.50
1000-1010	5.50	4.50	4.50	13.50	13.50	13.50
1010-1020	5.00	4.50	5.00	13.50	13.50	13.50
1020-1030	4.50	4.50	4.75	13.50	13.00	13.25
1030-1040	5.00	4.50	4.50	13.00	13.00	13.00
1040-1050	8.00	7.00	4.75	15.50	15.50	15.00
1050-1100	8.00	6.00	7.50	15.50	15.50	5.00
1100-1110	14.00	11.50	7.00	15.00	15.00	15.00
1110-1120	13.00	6.50	12.75	15.00	14.50	14.75
1120-1130	7.50	6.00	9.75	13.50	13.50	13.50
1130-1140	11.50	5.50	6.75	13.00	13.00	13.00
1140-1150	5.00	5.00	8.50	14.00	14.00	14.00
1150-1200	4.50	3.50	5.00	14.50	14.50	14.50
1200-1210	4.00	4.00	4.00	14.50	14.00	14.25
1210-1220	3.50	3.50	4.00	13.50	13.50	13.50
1220-1230	3.50	3.50	3.50	12.50	12.50	12.50
1230-1240	3.50	3.50	3.50	12.50	12.00	12.25
1240-1250	3.00	3.00	3.50	13.50	13.50	13.50
1250-1300	4.00	4.00	3.00	13.50	13.50	13.50
1300-1310	4.00	3.50	4.00	14.00	13.00	13.50
1310-1320	14.00	4.50	3.75	13.00	13.00	13.50
1320-1330	14.50	6.00	9.25	13.00	13.00	13.25
1330-1340	4.50	4.50	10.25	11.50	11.50	11.50
1340-1350	8.00	6.00	4.50	11.50	11.50	11.50
1350-1400	4.00	4.00	7.00	10.50	10.50	10.50
1400-1410	4.00	4.00	4.00	10.50	10.50	10.50
1410-1420	3.00	3.00	4.00	10.50	9.50	10.00
1420-1430	3.00	3.00	3.00	9.00	8.50	9.00
1430-1440	3.00	3.00	3.00	7.00	7.00	7.00
1440-1450	3.50	3.50	3.00	16.50	13.50	15.00
1450-1500	3.50	3.50	3.50	7.50	6.50	7.00
1500-1510	3.50	3.50	3.50	12.50	11.50	12.00
1510-1520	3.50	3.50	3.50	12.50	11.50	12.00
1520-1530	3.50	3.50	3.50	12.50	12.50	12.50
AVERAGES			5.01			12.63
AMBIENT CO			3.01			10.63

F61SO2
ACID





TRAVERSE POINT NUMBER	INCHES INSIDE STACK WALL
1	1.00
2	1.89
3	3.49
4	5.81
5	12.19
6	14.51
7	16.11
8	17.42

SAMPLING POINT LOCATION SCHEMATIC
HARRIS CORPORATION SOURCE - F61S02
SEMICONDUCTOR DIVISION
MELBOURNE, FLORIDA

AIR CONSULTING
and
ENGINEERING

PLANT HARRIS SEMICONDUCTOR
STACK F61SO2
DATE 6/27/90
RUN NO. 1

BAROMETRIC PRESS.	30.17	IN.HG
STACK PRESS.	30.17	IN.HG
STACK AREA	5.241	SQ.FT
AVG. STACK TEMP.	92	F
AVG. METER TEMP.	100.00	F
Y	0.993	
AVG. METER ORIFICE	2.030	IN. H2O
METER VOL.	395.000	CUB.FT
MOISTURE PLUS SILICA GEL	215.800	ML
STACK SQRT VEL. HEAD	0.000	IN. H2O
CP	0.840	

ORSAT: PERCENT CO2	0.0	
PERCENT O2	20.9	
PERCENT N2	79.1	

VWSTD.	10.173	SCF
VMSTD.	374.755	SCF
MOISTURE FRACTION	0.026	
FRACTION OF DRY AIR	0.974	
MWGT. OF DRY AIR	28.836	
MWGT. OF WET STACK GAS	28.550	

AVG. VEL	0.00	FPS
GAS FLOWRATE	0.00	ACFM
STD. GAS FLOWRATE	0.00	SCFMD

STACK SAMPLING FIELD DATA SHEET

Consulting and Engineering
2106 N.W. 67th PLACE, SUITE 4
GAINESVILLE, FLORIDA 32606

TEST ID FB150X2
PAGE 1 OF 2

PLANT Harris Semicon. SOURCE FB150X2
PLANT LOCATION Melbourne, Fla.
TYPE OF SAMPLING TRAIN mod. EPA method 5
TYPE OF SAMPLES Acid
DATE 06-27-90 RUN NO. 1
TIME START 0700 TIME END 1530
SAMPLE TIME 1/2 MIN RDGS min/pt 510 Total min
BAR PRESS. ____ "Hg STACK PRESS. ____ "Hg
ASSUMED MOISTURE 2 % FDA .98
WEATHER CLEARING TEMP. 90° °F
METER BOX NO. 4 ΔH 1.897 Y .993
NOMOGRAPH C_f 2.03 PITOT CORR. FACTOR ____
NOZZLE CALIBRATION ____ ____ ____ = .205
STACK DIMINSIONS ____
STACK AREA ____ (EFFECTIVE ____ ft^2)
STACK HEIGHT ____ ft.
STACK DIAMETER: UPSTREAM ____ DOWNSTREAM ____
PORT SIZE ____ in. NIPPLE LENGTH ____
U-CORD LENGTH: ____
REMARKS: ____

CF = 2.03

MAT'L PROCESSING RATE ____
GAS METER READINGS: FINAL 469.602 ft^3
INITIAL 69.602 ft^3
NET 395.00 ft^3
IMPINGERS VOL. GAIN 165 ml.
SILICA GEL NO. ____ WT. GAIN 50.8
FILTER NO. — TOTAL CONDENSATE 215.8 ml.

ORSAT

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

NA

F_O ____ F_O RANGE ____
LEAK CHECKS: METER BOX/PUMP ____
ORSAT BAG ____ GAS SAMPLE SYSTEM ____
ORSAT ANALYZER ____
PRE-TEST 0.00 CFM 15 "Hg POST-TEST ____ CFM ____ "Hg
BOX OPERATOR GG. PROBE HOLDER —
PYROMETER NO. ATK #2 PITOT TUBE NO. S5
PITOT TUBE LEAK CHECK: PRETEST OK
POST-TEST(+) 5.1 H_2O 15 SEC
POST-TEST(−) 4.1 H_2O 15 SEC

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL (IN.)	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O)		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		0715	080.071	1.0	2.03	2.03	86	NA	50	77	3.0
2		0730	088.800	1.0	2.03	2.03	86		50	77	3.0
3		0745	099.999	1.0	2.03	2.03	86		50	79	3.0
4		0800	111.490	1.0	2.03	2.03	86		50	80	3.0
5		0815	122.994	1.0	2.03	2.03	87		50	80	3.0
6		0830	134.498	1.0	2.03	2.03	87		50	83	3.0

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GAINESVILLE, FLORIDA 32606

RUN NO. F6150.1

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL (IN.)	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O)		STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
					CALC.	ACTUAL					
7		0845	145.998	1.0	2.03	2.03	88	NA	50	85	3.0
8		0900	157.224	1.0	2.03	2.03	88	↓	50	85	3.0
9		0915	170.401	1.0	2.03	2.03	88	↓	50	86	3.0
10		0930	181.710	1.0	2.03	2.03	89	↓	50	88	3.0
11		0945	192.450	1.0	2.03	2.03	90	↓	50	90	3.0
12		1000	↓	1.0	2.03	2.03	90	↓	50	91	3.0
13		1015	↓	↓	↓	↓	↓	↓	↓	↓	↓
14		1030	↓	↓	↓	↓	↓	↓	↓	↓	↓
15		1045	↓	↓	↓	↓	↓	↓	↓	↓	↓
16		1100	↓	↓	↓	↓	↓	↓	↓	↓	↓
17		1115	↓	↓	↓	↓	↓	↓	↓	↓	↓
18		1130	↓	↓	↓	↓	↓	↓	↓	↓	↓
19		1145	↓	↓	↓	↓	↓	↓	↓	↓	↓
20		1200	↓	1.0	2.03	2.03	94	↓	↓	104	↓
21		1215	311.35	1.0	2.05	2.05	94	↓	↓	104	↓
22		1230	↓	1.0	2.05	2.05	94	↓	↓	104	↓
23		1245	↓	1.0	2.03	2.03	94	↓	50	103	3.0
24		1300	↓	1.0	↓	↓	↓	↓	↓	↓	↓
25		1315	↓	↓	↓	↓	↓	↓	↓	↓	↓
26		1330	↓	↓	↓	↓	↓	↓	↓	↓	↓
27		1345	↓	↓	↓	↓	↓	↓	↓	↓	↓
28		1400	396.615	1.00	2.03	2.03	94	↓	50	103	3.1
29		1415	↓	↓	↓	↓	↓	↓	↓	↓	↓
30		1430	↓	↓	↓	↓	↓	↓	↓	↓	↓
31		1445	↓	↓	↓	↓	↓	↓	↓	↓	↓
32		1500	↓	↓	↓	↓	↓	↓	↓	↓	↓
33		1515	↓	↓	↓	↓	↓	↓	↓	↓	↓
34		1530	406.602	1.00	2.03	2.03	92	↓	50	100	3.0

Air Consulting and Engineering

PRELIMINARY VELOCITY TRAVERSE

PLANT HARRIS SEMICONDUCTOR
DATE 6/27/90
SOURCE F6150X2
STACK I.D. 31" 18" STACK AREA 5241
BAROMETRIC PRES., in. Hg
STATIC PRES. in. H_2O ____ STACK PRES. in. Hg. ____
PORT DIAM. 2-3" NIPPLE LENGTH NA
PITOT TUBE NO. 48 TYPE STD
OPERATORS HODGE / GANTHIE

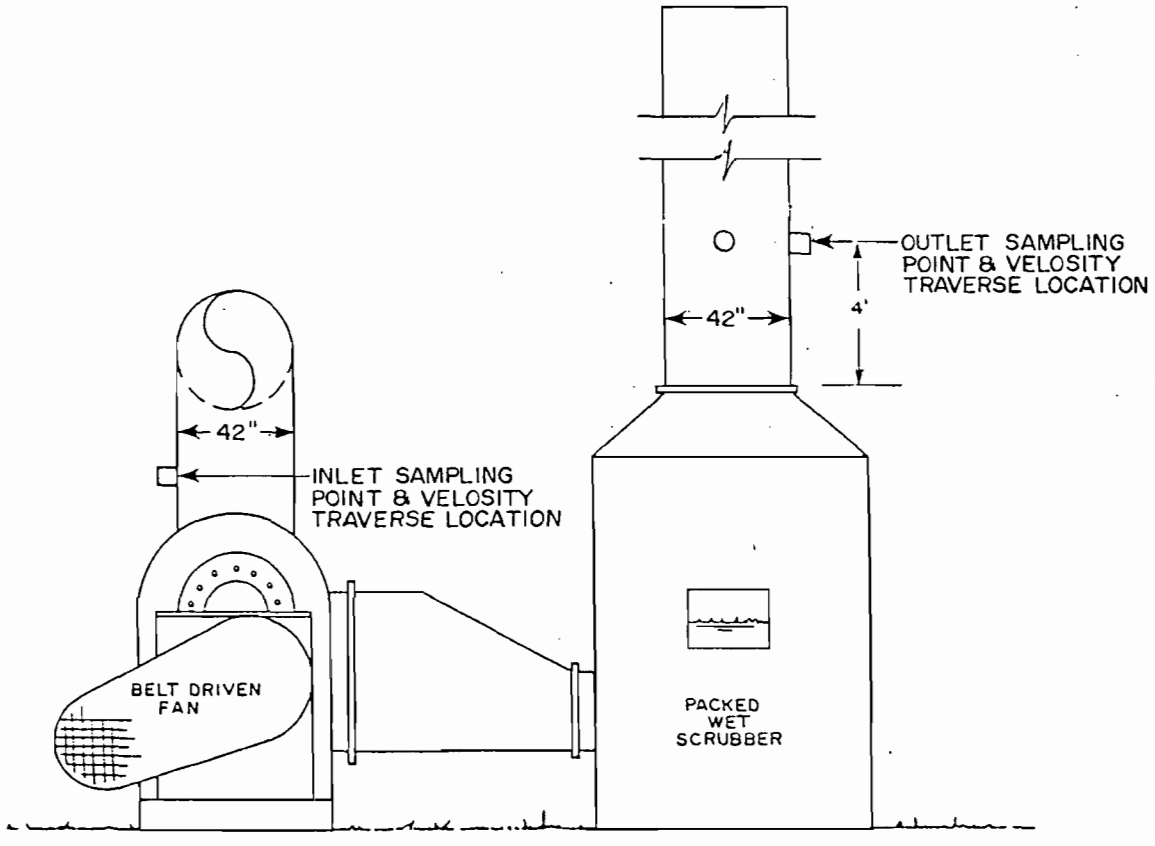
*- RECONSTRUCTED UNIT (SMALLER STACK DIA.)

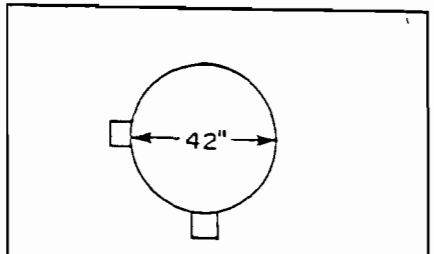
JAP 8/89 - NONE

SCHEMATIC OF TRAVERSE POINT LAYOUT
(*) SWITCHED P. LINES AT M. BOX

TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s) in H_2O	STACK TEMPERATURE (T_s, °F)	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s in. H_2O	STACK TEMPERATURE (T_s, °F)
1-1	+.9 NEG.	.18	1.00			
2	+.9 NEG.	.07	3.26			
3	— NEG.	.06	6.01			
4	— NEG.	.11	10.01			
5	— NEG.	.08	20.99			
6	— NEG.	.11	24.99			
7	— NEG.	.08	27.75			
8	NEG.	.08	30.00			
2-1	NEG.	.17				
2		.09				
3		.04				
4		.06				
5		.09				
6		.08				
7		.06				
8		.09				
AVERAGE				AVERAGE		

F62S01
ACID





TRAVERSE POINT NUMBER	INCHES INSIDE STACK WALL
1	1.34
2	4.41
3	8.15
4	13.57
5	28.43
6	33.85
7	37.59
8	40.66

SAMPLING POINT LOCATION SCHEMATIC
HARRIS CORPORATION- F62SOI
SEMICONDUCTOR DIVISION

AIR CONSULTING
and
ENGINEERING

MOISTURE AND FLOW CALCULATIONS

PLANT HARRIS SEMICONDUCTOR
STACK F62S01
DATE 6/27/90
RUN NO. 1

	BAROMETRIC PRESS.	30.17	IN.HG
	STACK PRESS.	30.17	IN.HG
	STACK AREA	9.621	SQ.FT
	AVG. STACK TEMP.	64	F
	AVG. METER TEMP.	92.00	F
	Y	0.994	
	AVG. METER ORIFICE	3.470	IN. H2O
	METER VOL.	493.852	CUB.FT
	MOISTURE PLUS SILICA GEL	168.300	ML
	STACK SQRT VEL. HEAD	0.735	IN. H2O
	CP	0.840	
ORSAT:	PERCENT CO2	0.0	
	PERCENT O2	20.9	
	PERCENT N2	79.1	
	VWSTD.	7.934	SCF
	VMSTD.	477.472	SCF
	MOISTURE FRACTION	0.016	
	FRACTION OF DRY AIR	0.984	
	MWGT. OF DRY AIR	28.836	
	MWGT. OF WET STACK GAS	28.659	
	AVG. VEL	41.08	FPS
	GAS FLOWRATE	23716.52	ACFM
	STD. GAS FLOWRATE	23703.38	SCFMD

VELOCITY TRAVERSE

PLANT	HARRIS SEMICONDUCTOR
SOURCE	F62S01
DATE	6/27/90
BAROMETRIC PRESS.	30.170 IN.HG
STACK PRESS.	30.170 IN.HG
OPERATORS	HODGE/GAUTHREAUX
RUN	1

TRAVERSE POINT NUMBER	VEL. HEAD IN.H2O	SQRT VEL. HEAD
1-1	0.63	0.794
1-2	0.64	0.800
1-3	0.62	0.787
1-4	0.59	0.768
1-5	0.57	0.755
1-6	0.37	0.608
1-7	0.17	0.412
1-8	0.10	0.316
2-1	0.52	0.721
2-2	0.63	0.794
2-3	0.63	0.794
2-4	0.58	0.762
2-5	0.58	0.762
2-6	0.67	0.819
2-7	0.80	0.894
2-8	0.94	0.970
		0.735

STACK SAMPLING FIELD DATA SHEET

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TEST ID FG2501 ~~FG3~~
PAGE 1 OF 2

PLANT HARRIS SEMI. SOURCE FG2501
PLANT LOCATION PALM BAY, FL.
TYPE OF SAMPLING TRAIN MOD. EPA-5
TYPE OF SAMPLES ACID
DATE 6/27/90 RUN NO. 1
TIME START 0700 TIME END 1530
SAMPLE TIME 15 MIN. RIGS. min/pt 510 Total min
BAR PRESS. ____ "Hg STACK PRESS. ____ "Hg
ASSUMED MOISTURE 2 % FDA .98
WEATHER CLEARING TEMP. 90's °F
METER BOX NO. 1 ΔH 2.05 Y 0.994
NOMOGRAPH C_f ____ PITOT CORR. FACTOR ____
NOZZLE CALIBRATION .243 .245 .245 = .245
STACK DIMINSIONS 42"
STACK AREA 9.621 (EFFECTIVE 9.621 ft^2)
STACK HEIGHT ____ ft.
STACK DIAMETER: UPSTREAM ____ DOWNSTREAM ____
PORT SIZE ____ in. NIPPLE LENGTH ____
U CORD LENGTH: ____
REMARKS: ____

MAT'L PROCESSING RATE ____
GAS METER READINGS: FINAL 509.258 ft.^{3}
INITIAL 015.406 ft.^{3}
NET 493.852 ft.^{3}
IMPINGERS VOL. GAIN 125 ml.
SILICA GEL NO. 1 WT. GAIN 43.3
FILTER NO. ____ TOTAL CONDENSATE 168.3 ml.

ORSAT

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

NA

F_0 ____ F_0 RANGE ____
LEAK CHECKS: METER BOX/PUMP ____
ORSAT BAG ____ GAS SAMPLE SYSTEM ____
ORSAT ANALYZER ____ 10" ✓ 0.02
PRE-TEST 0.00 CFM 15 "Hg POST-TEST ~~0.00~~ CFM ____ "Hg
BOX OPERATOR G.G./C.H. PROBE HOLDER —
PYROMETER NO. 1 PITOT TUBE NO. 36
PITOT TUBE LEAK CHECK: PRETEST OK
POST-TEST(+) 4.1 H_2O 15 SEC
POST-TEST(−) 3.8 H_2O 15 SEC

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL (IN.)	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O) CALC.	METER ORIFICE PRESS. DIFF. ("H_2O) ACTUAL	STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
1		0715	029.110	.75	3.47	3.47	62	NA	57	49	7.0
2		0730	~~042.840~~	.75	3.44	3.44	62	↓	53	80	7.0
3		0745	056.544	.75	3.44	3.44	62		52	82	7.0
4		0800	070.221	.75	3.44	3.44	62		51	84	7.0
5		0815	083.910	.75	3.44	3.44	62		50	84	7.0
6		0830	097.645	.75	3.44	3.44	63		50	85	7.0

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PAGE 1 OF 2
RUN NO. F62501

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL (IN.)	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O)		STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
					CALC.	ACTUAL					
7		0845	125.900	.75	3.47	3.47	63	NA	50	86	7.0
8		0900	137.627	.75	3.47	3.47	62	↓	50	87	7.0
9		0915	149.127	.75	3.47	3.47	63	↓	51	87	7.0
10		0930	160.838	.75	3.47	3.47	63		51	88	7.0
11		0945	172.381	.75	3.47	3.47	63		52	88	7.0
12		1000	184.534	.75	3.47	3.47	63		52	89	7.0
13		1015	198.00	.75	3.47	3.47	63		53	89	7.0
14		1030	112.00	.75	3.47	3.47	64		50	90	7.0
15		1045	126.00	.75	3.47	3.47	64		↓	90	7.0
16		1100	140.00	.75	3.47	3.47	64		↓	90	7.0
17		1115	154.00	.75	3.47	3.47	64		↓	91	7.0
18		1130	1287.00	.75	3.47	3.47	64		↓	91	7.0
19		1145	1168.00	.75	3.47	3.47	65		↓	91	7.0
20		1200	303.60	.75	3.47	3.47	65		45	91	7.5
21		1215	314.604	.75	3.47	3.47	64		50	91	7.5
22		1230	325.231	.75	3.47	3.47	64		45	91	7.5
23		1245	336.999	.75	3.47	3.47	64		45	91	7.5
24		1300	352.873	.75	3.47	3.47	64		41	92	7.5
25		1315	377.614	.75	3.47	3.47	64		40	92	7.5
26		1330	390.468	.75	3.47	3.47	64		40	92	7.5
27		1345	408.591	.75	3.47	3.47	64		40	92	7.5
28		1400	426.641	.75	3.47	3.47	64		35	92	7.5
29		1415	439.444	.75	3.47	3.47	64		36	93	7.5
30		1430	451.256	.75	3.47	3.47	64		36	93	7.5
31		1445	465.210	.75	3.47	3.47	64		36	93	7.5
32		1500	478.989	.75	3.47	3.47	64		35	93	7.5
33		1515		.75	3.47	3.47	64		35	93	7.5
34		1530		.75	3.47	3.47	64		40	93	7.5
							~~64~~ 64		~~40~~	~~93~~ 92	~~7.5~~

PRELIMINARY VELOCITY TRAVERSE

Air Consulting and Engineering

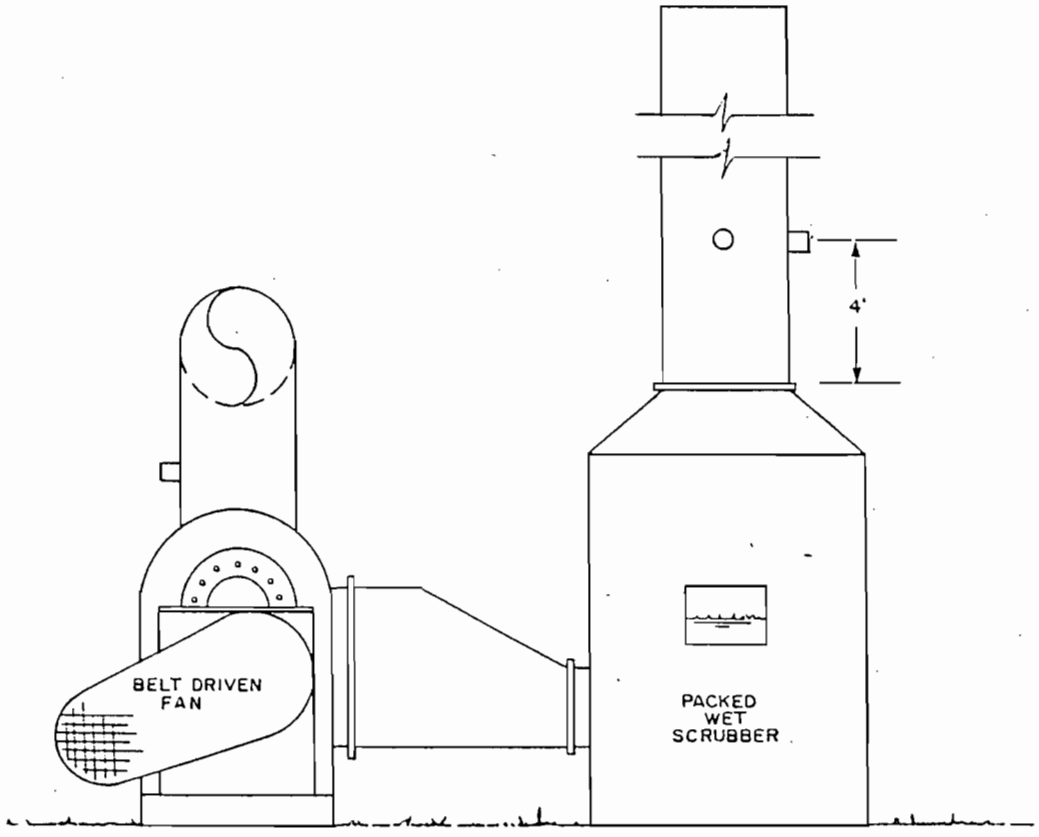
PLANT HARRIS SEMICONDUCTOR
DATE 6/27/90
SOURCE F62501
STACK I.D. 42" STACK AREA 9.621
BAROMETRIC PRES., in. Hg 30.19
STATIC PRES. in H_2O +.03 STACK PRES. in. Hg. 30.17
PORT DIAM. 2.3" NIPPLE LENGTH NA
PITOT TUBE NO. 48 TYPE STD.
OPERATORS HODGE/GALTHREALY

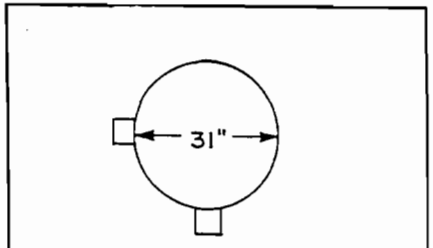
$\overline{C_p}$ = 8/89
$\sqrt{\Delta P}$ = .935

SCHEMATIC OF TRAVERSE POINT LAYOUT

TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s) in. H_2O	STACK TEMPERATURE (T_s, °F)	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s in. H_2O	STACK TEMPERATURE (T_s, °F)
1-1	.63	65°	1.31			
2	.64		4.41			
3	.62		8.15			
4	.69		13.57			
5	.57		28.43			
6	.37		33.85			
7	.17		37.59			
8	.10		40.66			
2-1	.52					
2	.63					
3	.63					
4	.58					
5	.58					
6	.67					
7	.80					
8	.94					
AVERAGE				AVERAGE		

F62SO2
VOC, EFFICIENCY





TRAVERSE POINT NUMBER	INCHES INSIDE STACK WALL
1	1.00
2	3.26
3	6.01
4	10.01
5	20.99
6	24.99
7	27.75
8	30.00

SAMPLING POINT LOCATION SCHEMATIC
HARRIS CORPORATION SOURCE - F62S02
SEMICONDUCTOR DIVISION
MELBOURNE, FLORIDA

AIR CONSULTING
and
ENGINEERING

FLOWRATE CALCULATIONS

PLANT HARRIS SEMICONDUCT
STACK F62SO2
DATE 6/27/90
RUN NO. 1

	BAROMETRIC PRESS.	30.09	IN.HG
	STACK PRESS.	30.12	IN.HG
	STACK AREA	5.241	SQ.FT
	AVG.STACK TEMP	65.00	F
	CP	0.99	
	AVG. SQRT VELOCITY HEAD	0.537	IN. H2O
ORSAT:	PERCENT CO2	0.0	
	PERCENT O2	20.9	
	PERCENT N2	79.1	
	FRACTION OF DRY AIR	0.974	
	MOISTURE FRACTION	0.026	
	MWGT. OF DRY STACK GAS	28.836	
	MWGT. OF WET STACK GAS	28.554	
	AVG.VELOCITY	35.51	FPS
	ACTUAL VOL. FLOW	11164.93	ACFM
	STD. VOL. FLOW	11009.89	SCFMD

VELOCITY TRAVERSE

PLANT	HARRIS SEMICONDUCTOR
DATE	6/27/90
SOURCE	F62SO2
BAROMETRIC PRESS.	30.090 IN.HG
STACK PRESS.	30.120 IN.HG
OPERATORS	GAUTHREAUX/HODGE
RUN	1

TRAVERSE POINT NUMBER	VEL. HEAD in. H2O	SQR VEL. HEAD
1-1	0.140	0.374
1-2	0.210	0.458
1-3	0.260	0.510
1-4	0.340	0.583
1-5	0.380	0.616
1-6	0.330	0.574
1-7	0.300	0.548
1-8	0.280	0.529
2-1	0.190	0.436
2-2	0.270	0.520
2-3	0.340	0.583
2-4	0.370	0.608
2-5	0.390	0.624
2-6	0.340	0.583
2-7	0.280	0.529
2-8	0.260	0.510
		0.537

PRELIMINARY VELOCITY TRAVERSE

air consulting and engineering

PLANT HARRIS SEMICONDUCTOR
DATE 6/27/90
SOURCE F62502
STACK I.D. 31" STACK AREA 5.241 Ft²
BAROMETRIC PRES., in. Hg 30.09
STATIC PRES. in. H_2O +.46 STACK PRES. in. Hg. 30.12
PORT DIAM. 2-3" NIPPLE LENGTH NA
PITOT TUBE NO. 48 TYPE STD
OPERATORS HODGE/GAUTHREAUX

$\sqrt{\Delta P}$ 8/89-0.551

SCHEMATIC OF TRAVERSE POINT LAYOUT

TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s) in. H_2O	STACK TEMPERATURE (T_s, °F)	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s in. H_2O	STACK TEMPERATURE (T_s, °F)
1-1	.14	65	1.00			
2	.21		3.26			
3	.26		6.01			
4	.34		10.01			
5	.38		20.99			
6	.33		24.99			
7	.30		24 27.75			
8	.28	.524	30.00			
2-1	.19					
2	.27		(.537)(174)	(.99)(√.525)	= 2119.524	
3	.34		(2119.524)	(5.241)	= 11108.426	
4	.37		(11108.426)	$(\frac{528}{525})(.98)$	= 10948.47 SCFMD	
5	.39					
6	.34					
7	.28					
8	.26	.529				
AVERAGE				AVERAGE		

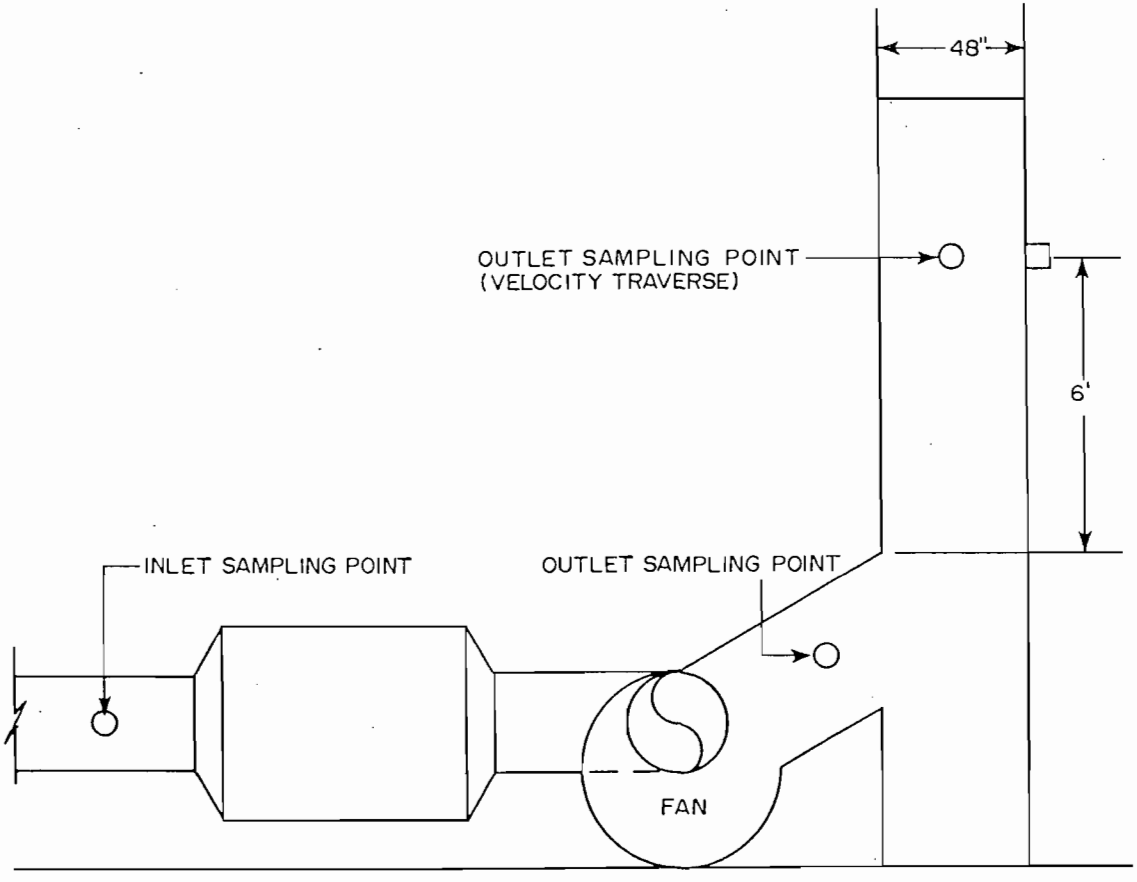
EMISSION SUMMARY

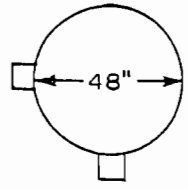
FACILITY: HARRIS SEMICONDUCTOR
SOURCE: F62502
DATE: 6-15-90

TIME	MAXIMUM	MINIMUM	AVERAGE
0805-0830	>10	1.5	4
0830-0900	>10	1.3	3
0900-0930	3.2	1.0	1.3
0930-1000	10	0.9	1.2
1000-1030	3.3	0.85	1.0
1030-1100	1.9	0.85	1.0
1100-1130	3.6	0.95	1.3
1130-1200	2.2	0.9	1.1
1200-1230	7.6	0.9	1.2
1230-1300	3.9	0.9	1.1
1300-1330	8.9	0.9	1.3
1330-1400	2.3	0.9	1.25
1400-1430	2.2	0.9	1.1
1430-1500	≈25.0	1.1	4.5
1500-1530	8.5	1.05	1.5
1530-1600	≈13	1.05	2.0
1600-1630	2	1.05	1.3
1630-1700	≈30	.95	3.5
AVERAGES			1.8
	- AMB Correction		0.8
			1.0

AMBIENT = 0.8 C_3H_8

F63S01
ACID





TRAVERSE POINT NUMBER	INCHES INSIDE STACK WALL
1	1.54
2	5.04
3	9.31
4	15.50
5	32.50
6	38.69
7	42.96
8	46.46

SAMPLING POINT LOCATION SCHEMATIC
HARRIS CORPORATION SOURCE - F63S01
SEMICONDUCTOR DIVISION
MELBOURNE, FLORIDA

AIR CONSULTING
and
ENGINEERING

MOISTURE AND FLOW CALCULATIONS

PLANT	HARRIS SEMICONDUCTOR
STACK	F63S01
DATE	6/27/90
RUN NO.	1

BAROMETRIC PRESS.	30.17	IN.HG
STACK PRESS.	30.17	IN.HG
STACK AREA	12.570	SQ.FT
AVG. STACK TEMP.	66	F
AVG. METER TEMP.	95.00	F
Y	0.992	
AVG. METER ORIFICE	1.550	IN. H2O
METER VOL.	375.425	CUB.FT
MOISTURE PLUS SILICA GEL	137.000	ML
STACK SQRT VEL. HEAD	0.418	IN. H2O
CP	0.840	

ORSAT: PERCENT CO2	0.0	
PERCENT O2	20.9	
PERCENT N2	79.1	

VWSTD.	6.458	SCF
VMSTD.	358.613	SCF
MOISTURE FRACTION	0.018	
FRACTION OF DRY AIR	0.982	
MWGT. OF DRY AIR	28.836	
MWGT. OF WET STACK GAS	28.644	

AVG. VEL	23.42	FPS
GAS FLOWRATE	17660.08	ACFM
STD. GAS FLOWRATE	17559.13	SCFMD

VELOCITY TRAVERSE

PLANT	HARRIS SEMICONDUCTOR
SOURCE	F63SO1
DATE	6/27/90
BAROMETRIC PRESS.	30.170 IN.HG
STACK PRESS.	30.170 IN.HG
OPERATORS	HODGE/GAUTHREAUX
RUN	1

TRAVERSE POINT NUMBER	VEL. HEAD IN.H2O	SQRT VEL. HEAD
1-1	0.20	0.447
1-2	0.22	0.469
1-3	0.23	0.480
1-4	0.23	0.480
1-5	0.20	0.447
1-6	0.19	0.436
1-7	0.20	0.447
1-8	0.20	0.447
2-1	0.22	0.469
2-2	0.26	0.510
2-3	0.24	0.490
2-4	0.23	0.480
2-5	0.09	0.300
2-6	0.05	0.224
2-7	0.08	0.283
2-8	0.08	0.283
		0.418

STACK SAMPLING FIELD DATA SHEET

Consulting and Engineering
2106 N.W. 67th PLACE, SUITE 4
GAINESVILLE, FLORIDA 32606

TEST ID F63501
PAGE 2 OF 2

PLANT Harris Semi Conductor SOURCE F63501
PLANT LOCATION Melbourne, Fla.
TYPE OF SAMPLING TRAIN Mod. EPA Method 5
TYPE OF SAMPLES Acid
DATE 06-27-90 RUN NO.
TIME START 0700 TIME END 1530
SAMPLE TIME min/pt Total min
BAR PRESS. "Hg STACK PRESS. "Hg
ASSUMED MOISTURE % FDA
WEATHER TEMP. °F
METER BOX NO. 3 ΔH 1.57 Y .992
NOMOGRAPH C_f 7.04 PITOT CORR. FACTOR
NOZZLE CALIBRATION = .302
STACK DIMINSIONS
STACK AREA (EFFECTIVE ft^2)
STACK HEIGHT ft.
STACK DIAMETER: UPSTREAM DOWNSTREAM
PORT SIZE in. NIPPLE LENGTH
U CORD LENGTH:
REMARKS:

Cf = 7.04

MAT'L PROCESSING RATE
GAS METER READINGS: FINAL 746.025 ft^3
INITIAL 370.600 ft^3
NET 375.425 ft^3
IMPINGERS VOL. GAIN 92 ml.
SILICA GEL NO. 43 WT. GAIN 45
FILTER NO. TOTAL CONDENSATE 137 ml.

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

F_O F_O RANGE
LEAK CHECKS: METER BOX/PUMP
ORSAT BAG GAS SAMPLE SYSTEM
ORSAT ANALYZER
PRE-TEST 000 CFM 20 "Hg POST-TEST 000 CFM 16 "Hg
BOX OPERATOR PROBE HOLDER
PYROMETER NO. PITOT TUBE NO.
PITOT TUBE LEAK CHECK: PRETEST OK
POST-TEST(+) H_2O SEC
POST-TEST(−) H_2O SEC

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL (IN.)	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O))		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		0715	381.844	.22	1.55	1.55	65	NA	58	75	4.5
2		0730	393.240	.22	1.55	1.55	65		58	75	4.5
3		0745	404.681	.22	1.55	1.55	65		57	75	4.5
4		0800	416.042	.22	1.55	1.55	65		57	76	4.5
5		0815	426.810	.22	1.55	1.55	65		56	76	4.5
6		0830	438.300	.22	1.55	1.55	65		56	76	4.5

Consulting and Engineering

2106 N.W. 67th PLACE, SUITE 4
GAINESVILLE, FLORIDA 32606

PAGE 1 OF 2

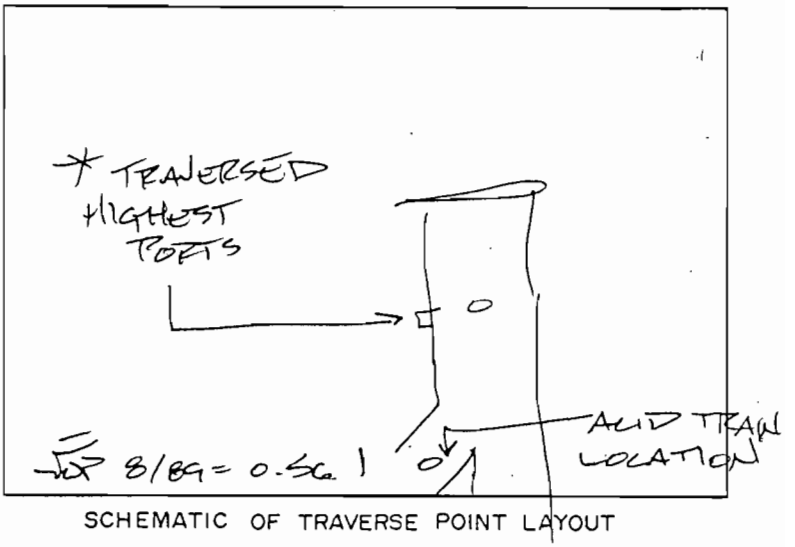
RUN NO. FC3501

PORT AND TRAVERSE POINT NUMBER	DISTANCE FROM INSIDE STACK WALL (IN.)	CLOCK TIME	GAS METER READING (FT^3)	STACK VELOCITY HEAD	METER ORIFICE PRESS. DIFF. ("H_2O)		STACK GAS TEMP. (°F)	SAMPLE BOX TEMP. (°F)	LAST IMPINGER TEMP. (°F)	DRY GAS METER TEMP. (°F)	VACUUM ON SAMPLE TRAIN ("Hg)
					CALC.	ACTUAL					
7		0845	459.541	.22	1.55	1.55	64 ~~44~~	NA	56	77	4.5
8		0900	489.999	.22	1.55	1.55	65	↓	56	80	4.5
9		0915	481.463	.22	1.55	1.55	65	↓	55	81	4.5
10		0930	486.492	.22	1.55	1.55	66		54	83	4.5
11		0945	493.106	.22	1.55	1.55	66		54	85	4.5
12		1000	504.321	.22	1.55	1.55	66		54	85	4.5
13		1015	520.463	.22	1.55	1.55	66		54	86	4.5
14		1030	535.621	.22	1.55	1.55	67		55	90	4.5
15		1045	547.322	.22	1.55	1.55	67		55	92	4.5
16		1100	561.320	.22	1.55	1.55	66		55	92	4.5
17		1115	576.492	.22	1.55	1.55	66		55	93	4.5
18		1130	590.432	.22	1.55	1.55	67		55	95	4.5
19		1145	605.111	.22	1.55	1.55	67		55	95	4.5
20		1200	620.121	.22	1.55	1.55	66		55	95	4.5
21		1215	626.494	.22	1.55	1.55	66		56	95	4.5
22		1230	629.999	.22	1.55	1.55	66		56	96	4.5
23		1245	630.012	.20	1.55	1.55	66		56	96	4.5
24		1300	634.310	.22	1.55	1.55	66		56	96	4.5
25		1315	636.444	.22	1.55	1.55	66		53	96	4.5
26		1330	650.381	.22	1.55	1.55	66		52	96	4.5
27		1345	668.712	.22	1.55	1.55	66		51	96	4.5
28		1400	679.600	.22	1.55	1.55	66		47	96	4.5
29		1415	690.421	.22	1.55	1.55	66		47	96	4.5
30		1430	699.999	.22	1.55	1.55	66		44	96	4.5
31		1445	713.720	.22	1.55	1.55	66		44	95	4.5
32		1500	723.746	.22	1.55	1.55	66		47	94	4.5
33		1515	734.999	.22	1.55	1.55	66		44	94	4.5
34		1530	746.025	.22	1.55	1.55	66		44	94	4.5
										95	

Air Consulting and Engineering

PRELIMINARY VELOCITY TRAVERSE

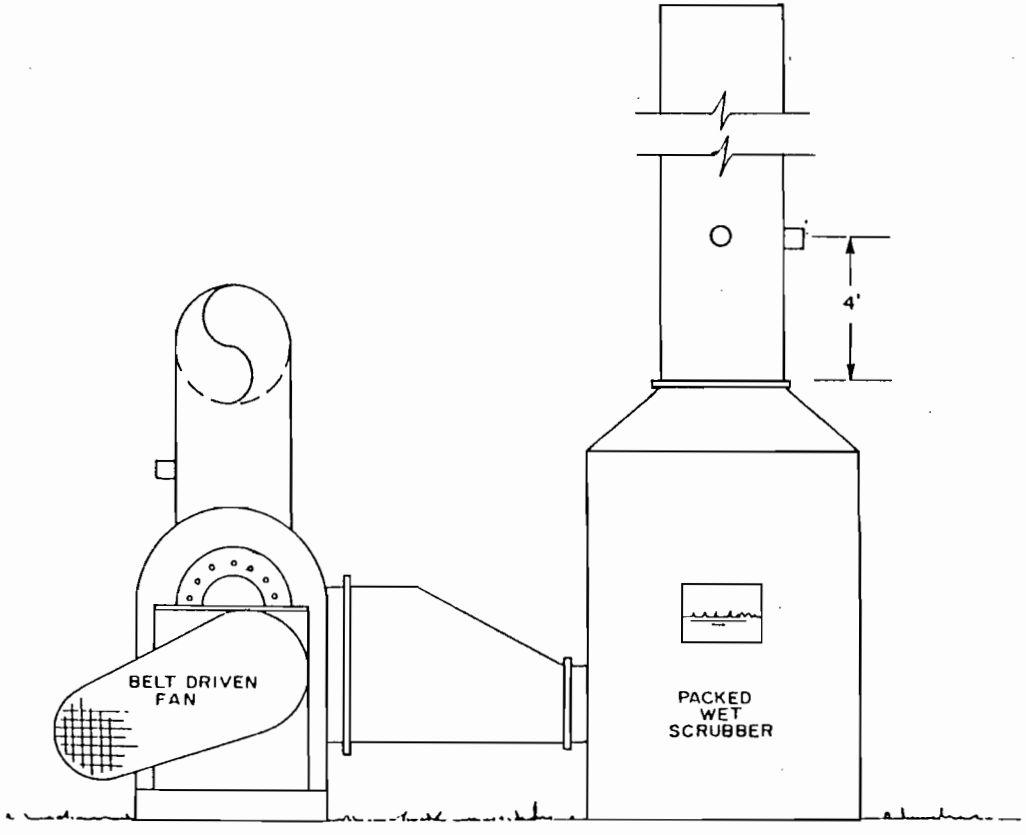
PLANT HARRIS SEMICONDUCTOR
DATE 4/27/90
SOURCE F63501
STACK I.D. 48" STACK AREA 12.57
BAROMETRIC PRES., in. Hg 30.17
STATIC PRES. in H_2O -.05 STACK PRES. in. Hg. 30.17
PORT DIAM. 2-3" NIPPLE LENGTH NA
PITOT TUBE NO. 48 TYPE STD.
OPERATORS HODGE / GANTHIER/JX

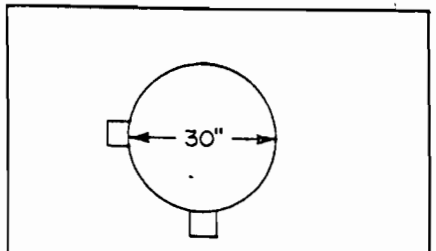


SCHEMATIC OF TRAVERSE POINT LAYOUT

TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s) in. H_2O	STACK TEMPERATURE (T_s, °F)	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s in. H_2O	STACK TEMPERATURE (T_s, °F)
1-1	.20	66°	1.54			
2	.22		5.04			
3	.23		9.31			
4	.23		15.50			
5	.20		32.50			
6	.19		38.69			
7	.20		42.96			
8	.20		46.46			
2-1	.22					
2	.26					
3	.24					
4	.23					
5	~~.05~~ .09					
6	.05					
7	.08					
8	.08					
AVERAGE				AVERAGE		

F63S02
OUTLET AND INLET
VOC, EFFICIENCY





TRAVERSE POINT NUMBER	INCHES INSIDE STACK WALL
1	1.00
2	3.15
3	5.82
4	9.69
5	20.31
6	24.18
7	26.85
8	29.00

SAMPLING POINT LOCATION SCHEMATIC
HARRIS CORPORATION SOURCE - F63S02
SEMICONDUCTOR DIVISION
MELBOURNE, FLORIDA

AIR CONSULTING
and
ENGINEERING

FLOWRATE CALCULATIONS

PLANT HARRIS SEMICONDUCT
STACK F63SO2
DATE 6/22/90
RUN NO. 1

	BAROMETRIC PRESS.	30.09	IN.HG
	STACK PRESS.	30.09	IN.HG
	STACK AREA	4.909	SQ.FT
	AVG.STACK TEMP	73.00	F
	CP	0.84	
	AVG. SQRT VELOCITY HEAD	0.399	IN. H2O
ORSAT:	PERCENT CO2	0.0	
	PERCENT O2	20.9	
	PERCENT N2	79.1	
	FRACTION OF DRY AIR	0.976	
	MOISTURE FRACTION	0.024	
	MWGT. OF DRY STACK GAS	28.836	
	MWGT. OF WET STACK GAS	28.576	
	AVG.VELOCITY	22.56	FPS
	ACTUAL VOL. FLOW	6643.75	ACFM
	STD. VOL. FLOW	6459.97	SCFMD

VELOCITY TRAVERSE

PLANT	HARRIS SEMICONDUCTOR
DATE	6/22/90
SOURCE	F63SO2
BAROMETRIC PRESS.	30.090 IN.HG
STACK PRESS.	30.090 IN.HG
OPERATORS	GAUTHREAUX/HODGE
RUN	1

TRAVERSE POINT NUMBER	VEL. HEAD in. H2O	SQR VEL. HEAD
1-1	0.110	0.332
1-2	0.100	0.316
1-3	0.130	0.361
1-4	0.180	0.424
1-5	0.230	0.480
1-6	0.210	0.458
1-7	0.188	0.434
1-8	0.150	0.387
2-1	0.150	0.387
2-2	0.180	0.424
2-3	0.210	0.458
2-4	0.220	0.469
2-5	0.180	0.424
2-6	0.140	0.374
2-7	0.110	0.332
2-8	0.100	0.316
		0.399

PRELIMINARY VELOCITY TRAVERSE

Air Consulting and Engineering

PLANT HARRIS SEMICONDUCTOR
DATE 6/22/90
SOURCE F63502
STACK I.D. 30" STACK AREA 4.909
BAROMETRIC PRES., in. Hg 30.09
STATIC PRES. in. H_2O 0.0 STACK PRES. in. Hg. 30.09
PORT DIAM. 2" NIPPLE LENGTH NA
PITOT TUBE NO. 54 TYPE ~~STD~~ S-TYPE
OPERATORS GALATHEALY / HOYLE

6/89 $\sqrt{\Delta P}$ = .421

SCHEMATIC OF TRAVERSE POINT LAYOUT

TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s) in. H_2O	STACK TEMPERATURE (T_s, °F)	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s in. H_2O	STACK TEMPERATURE (T_s, °F)
1-1	.11	~~93~~	1.00			
2	.10	~~88~~	3.15			
3	.13	~~84~~	5.82			
4	.18	~~80~~	9.69			
5	.23	75	20.31			
6	.21	74	24.18			
7	.18	73	26.85			
8 .3978	.15	73	29.00			
2-1	.15	74				
2	.18	73				
3	.21	72				
4	.22	72				
5	.18	71				
6	.14	72				
7	.11	72				
8 .3982	.10					
AV $\sqrt{.3980}$		AV = 73				
AVERAGE				AVERAGE		

$(.398)(174)(.84)(\sqrt{533}) = 1342.998$

$(\sqrt{1342.998})(4.909) = 6592.777$

$(6592.777)\left(\frac{528}{533}\right)(.98) = 6400.313$ SCFM

HARRIS SEMICONDUCTOR
PALM BAY, FLORIDA
EPA-25A VOC EMISSIONS
6/21/90

AIR CONSULTING AND ENGINEERING, INC.

	F63S02-INLET PPM C3H8			F63S02-OUTLET PPM C3H8		
TIME	MAX	MIN	AVG	MAX	MIN	AVG
0700-0710	49.50	5.50	24.50	16.00	10.00	12.40
0710-0720	63.00	6.50	29.30	19.20	10.00	13.30
0720-0730	76.00	7.00	37.50	20.50	13.00	16.30
0730-0740	55.50	12.20	25.60	18.50	14.50	16.30
0740-0750	63.50	10.00	24.60	23.20	14.00	18.80
0750-0800	16.00	9.00	11.50	15.00	11.00	12.60
0800-0810	70.00	8.00	34.30	19.20	9.80	14.70
0810-0820	67.00	22.50	36.30	27.50	19.00	22.80
0820-0830	75.50	15.80	39.40	28.20	22.00	25.40
0830-0840	NO DATA-CHANGED H2 CYLINDER					
0840-0850	96.50	10.50	45.70	31.80	20.00	26.00
0850-0900	64.50	19.50	35.20	24.20	19.50	21.20
0900-0910	63.80	6.20	29.10	27.00	14.80	21.90
0910-0920	4.80	4.00	4.30	23.00	8.20	14.20
0920-0930	54.20	4.80	27.60	13.00	6.00	6.30
0930-0940	40.80	5.50	15.90	14.50	8.50	11.70
0940-0950	29.80	6.50	15.70	15.00	10.20	12.50
0950-1000	22.80	5.20	13.80	16.20	10.20	12.80
1000-1010	49.50	4.00	14.10	13.20	7.20	9.44
1010-1020	25.50	5.50	12.00	11.20	7.50	8.00
1020-1030	29.00	5.20	11.20	16.50	10.20	12.90
1030-1040	15.80	5.50	8.50	12.00	8.20	9.70
1040-1050	6.00	6.00	4.30	7.80	5.80	6.60
1050-1100	16.20	16.20	8.10	10.60	5.80	8.20
1100-1110	35.00	35.00	15.70	13.00	9.10	11.10
1110-1120	51.20	51.20	23.70	17.20	14.20	16.10
1120-1130	56.80	56.80	24.50	21.00	12.80	17.50
1130-1140	3.80	3.80	3.60	12.00	8.00	9.76
1140-1150	4.20	4.20	4.20	7.00	5.20	6.20
1150-1200	9.80	9.80	5.20	5.20	4.00	4.80
1200-1210	81.20	81.20	55.10	20.20	8.80	15.70
1210-1220	83.80	83.80	60.46	44.00	24.50	28.70
1220-1230	53.50	53.50	35.00	42.00	26.50	30.20
1230-1240	47.50	47.50	20.30	31.50	23.00	20.00
1240-1250	60.80	60.80	27.00	47.00	19.50	27.20
1250-1300	52.00	52.00	27.90	29.50	24.00	27.40
1300-1310	89.50	89.50	53.90	42.80	26.50	33.90
1310-1320	61.20	61.20	41.90	35.20	28.90	31.90
1320-1330	75.00	75.00	47.40	33.50	26.80	30.40
1330-1340	48.50	48.50	28.50	32.00	22.80	26.90
1340-1350	66.00	66.00	26.04	26.50	17.20	21.20
1350-1400	46.00	46.00	27.60	31.80	22.00	28.30
1400-1410	5.00	5.00	4.00	12.00	11.00	14.00
1410-1420	28.00	28.00	10.12	12.50	8.00	9.50
1420-1430	93.80	93.80	53.30	23.00	12.50	18.10
1430-1440	68.00	68.00	44.10	30.50	23.20	27.20
1440-1450	68.00	68.00	46.20	36.20	28.00	30.60
1450-1500	75.50	75.50	45.60	34.00	29.20	31.30
1500-1510	72.00	72.00	51.40	38.50	31.00	33.50
1510-1520	74.50	74.50	44.10	36.50	30.20	32.70
1520-1530	25.00	7.50	11.60	26.50	20.00	21.60
AVERAGES			26.94			18.80
AMBIENT CORR. AVG.			25.44			17.80

EMISSION SUMMARY

FACILITY: HARRIS SEMICONDUCTOR
SOURCE: EL3200
DATE: 6/21/90

Source #1 outlet Source 2 - INLET

TIME	MAXIMUM MAX	MAXIMUM MIN	MAXIMUM AVG	MINIMUM MAX	MINIMUM MIN	AVERAGE AVG
0700 : 0710	16.0	10.0	12.4	49.5	5.5	24.5
0710 - 0720	19.2	10.0	13.3	63.0	6.5	29.3
0720 - 0730	21.5	13.0	16.3	76.0	7.0	37.5
0730 - 0740	18.5	14.5	16.3	55.5	12.2	25.6
0740 - 0750	23.2	14.0	18.8	63.5	10.0	24.6
0750 - 0800	15.0	11.0	12.6	16.0	9.0	11.5
0800 - 0810	19.2	9.8	14.7	70.0	8.0	34.3
0810 - 0820	27.5	19.0	22.8	67.0	22.5	36.3
0820 - 0830	28.2	22.0	25.4	75.5	15.8	39.0
0830 - 0840	NO DATA CHARGED AT THIS					
0840 - 0850	31.8	20.0	26.0	96.5	10.5	45.7
0850 - 0900	24.2	19.5	21.2	64.5	19.5	35.2
0900 - 0910	27.0	14.8	21.9	63.8	6.2	29.1
0910 - 0920	23.0	8.2	14.2	4.8	4.0	4.3
0920 - 0930	13.0	6.0	6.3	54.2	4.8	27.6
0930 - 0940	14.5	8.5	11.7	18.8	5.5	15.9
0940 - 0950	15.0	10.2	12.5	29.8	6.5	15.7
0950 - 1000	16.2	10.7	12.8	22.8	5.2	13.8
1000 - 1010	13.2	7.2	9.41	49.5	4.0	14.1
1010 - 1020	11.2	7.5	8.0	25.5	5.5	12.0
1020 - 1030	16.5	10.2	12.9	29.0	5.2	11.2
1030 - 1040	12.0	8.2	9.7	15.8	5.5	8.5

EMISSION SUMMARY

FACILITY: HARRIS SEMICONDUCTOR
SOURCE: F63502
DATE:

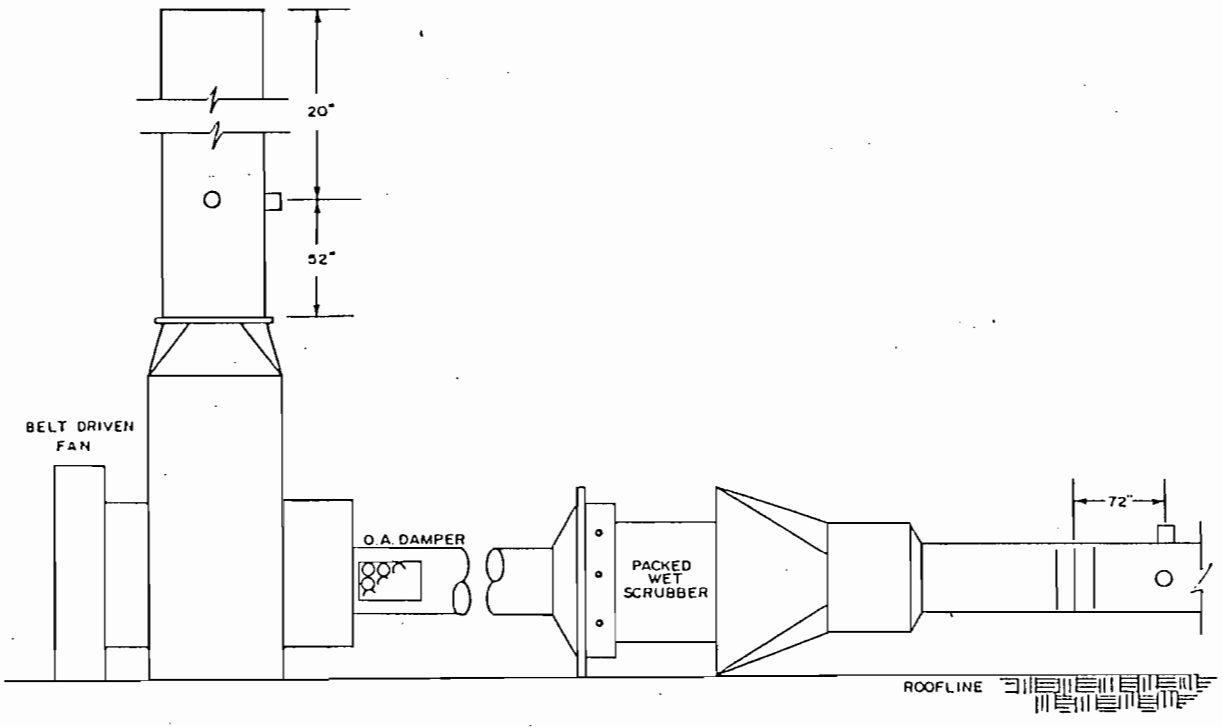
TIME	Source #1 outlet MAXIMUM MAX	MINIMUM MIN	AVERAGE AVG	Source #2 Tank MAXIMUM MAX	MINIMUM MIN	AVERAGE AVG
1040-1050	7.8	5.8	6.6	6.0	3.8	4.3
1050-1100	10.6	5.8	8.2	16.2	4.2	8.1
1100-1110	13.0	9.1	11.1	35.0	7.0	15.7
1110-1120	17.2	14.2	16.1	51.2	8.5	23.7
1120-1130	21.0	12.8	17.5	56.8	4.2	24.5
1130-1140	12.0	8.0	9.76	3.8	3.2	3.6
1140-1150	7.0	5.2	6.2	4.2	4.2	4.2
1150-1200	5.2	4.0	4.8	9.8	4.0	5.2
1200-1210	20.2	8.8	15.7	81.2	8.2	55.1
1210-1220	44.0	24.5	28.7	83.8	25.5	60.46
1220-1230	42.0	26.5	30.2	53.5	11.5	35.0
1230-1240	31.5	23.0	20.0	47.5	9.5	20.3
1240-1250	47.1	19.5	27.2	60.8	5.5	27.0
1250-1300	29.5	24.0	27.4	52	14.0	27.9
1300-1310	40.8	26.5	33.9	89.5	16.2	53.9
1310-1320	35.2	28.9	31.9	61.2	14.5	41.9
1320-1330	33.5	26.8	30.4	75.04	26.0	47.4
1330-1340	32.0	22.8	26.9	48.5	11.5	28.5
1340-1350	26.5	17.2	21.2	66.0	6.0	26.04
1350-1400	31.8	22.0	28.3	46.0	6.0	27.6
1400-1410	17.0	11.0	14.0	5.0	3.2	4.0
1410-1420	12.5	8.0	9.5	28.0	2.8	10.12

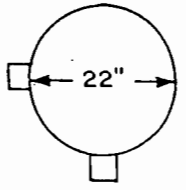
EMISSION SUMMARY

FACILITY: HARRIS-SEMICONDUCTOR
SOURCE: F63502
DATE: 6/21/90

TIME	MAXIMUM MAX	MINIMUM MIN	AVERAGE AUG	MINIMUM MIN	AVERAGE MIN	AVERAGE AUG
1420-1430	23.0	12.5	18.1	93.8	8.8	53.3
1430-1440	30.5	23.2	27.2	68.0	23.2	44.1
1440-1450	36.2	28.0	30.6	68.0	20.0	46.2
1450-1500	34.0	29.2	31.3	75.5	25.5	45.6
1500-1510	38.5	31.0	33.5	72.0	37.0	51.1
1510-1520	36.5	30.2	32.7	74.5	24.5	44.1
1520-1530	26.5	20.0	21.6	25.0	7.5	11.6
Amb Conc						

F63S03
VOC





TRAVERSE POINT NUMBER	INCHES INSIDE STACK WALL
1	1.00
2	2.31
3	4.67
4	7.11
5	14.89
6	17.73
7	19.69
8	21.00

SAMPLING POINT LOCATION SCHEMATIC
HARRIS CORPORATION SOURCE - F63S03
SEMICONDUCTOR DIVISION
MELBOURNE, FLORIDA

AIR CONSULTING
and
ENGINEERING

FLOWRATE CALCULATIONS

PLANT HARRIS SEMICONDUCT
STACK F63SO3
DATE 6/22/90
RUN NO. 1

	BAROMETRIC PRESS.	30.09	IN.HG
	STACK PRESS.	30.06	IN.HG
	STACK AREA	2.640	SQ.FT
	AVG.STACK TEMP	82.00	F
	CP	0.84	
	AVG. SQRT VELOCITY HEAD	0.828	IN. H2O
ORSAT:	PERCENT CO2	0.0	
	PERCENT O2	20.9	
	PERCENT N2	79.1	
	FRACTION OF DRY AIR	0.968	
	MOISTURE FRACTION	0.032	
	MWGT. OF DRY STACK GAS	28.836	
	MWGT. OF WET STACK GAS	28.489	
	AVG.VELOCITY	47.30	FPS
	ACTUAL VOL. FLOW	7491.93	ACFM
	STD. VOL. FLOW	7097.92	SCFMD

VELOCITY TRAVERSE

PLANT	HARRIS SEMICONDUCTOR
DATE	6/22/90
SOURCE	F63SO3
BAROMETRIC PRESS.	30.090 IN.HG
STACK PRESS.	30.060 IN.HG
OPERATORS	GAUTHREAUX/HODGE
RUN	1

TRAVERSE POINT NUMBER	VEL. HEAD in. H2O	SQR VEL. HEAD
1-1	0.690	0.831
1-2	0.750	0.866
1-3	0.740	0.860
1-4	0.740	0.860
1-5	0.710	0.843
1-6	0.770	0.877
1-7	0.760	0.872
1-8	0.710	0.843
2-1	0.830	0.911
2-2	0.760	0.872
2-3	0.740	0.860
2-4	0.700	0.837
2-5	0.600	0.775
2-6	0.590	0.768
2-7	0.490	0.700
2-8	0.450	0.671
		0.828

Air Consulting and Engineering

PRELIMINARY VELOCITY TRAVERSE

PLANT HARRIS SEMICONDUCTOR
DATE 6/22/90
SOURCE F63503
STACK I.D. 22" STACK AREA 2.640
BAROMETRIC PRES., In. Hg 30.09
STATIC PRES. in H_2O -.45 STACK PRES. in. Hg. 30.06
PORT DIAM. 3" NIPPLE LENGTH NA
PITOT TUBE NO. 59 TYPE S-TYPE
OPERATORS GALTHREAUX / HOULE

6/84 $\sqrt{\Delta P}$ = .606 (STD.)

SCHEMATIC OF TRAVERSE POINT LAYOUT

TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s) in H_2O	STACK TEMPERATURE (T_s, °F)	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s in. H_2O	STACK TEMPERATURE (T_s, °F)
1-1	.69	80	1.00			
2	.75	84	2.31			
3	.74	83	4.27			
4	.74	83	7.11			
5	.71	82	14.89			
6	.77	82	17.73			
7	.76	83	19.69			
8 .8566	.71	84	21.00			
2-1	.83	84				
2	.76	82				
3	.74	82				
4	.70	82				
5	.60	82				
6	.59	82				
7	.49	82				
8 .7992	.45	82				
avg $\sqrt{.8278}$		AV = 82				
AVERAGE				AVERAGE		

$(.8278)(174)(.84)\sqrt{542} = 2816.784$

$(2816.784)(2.64) = 7436.311$

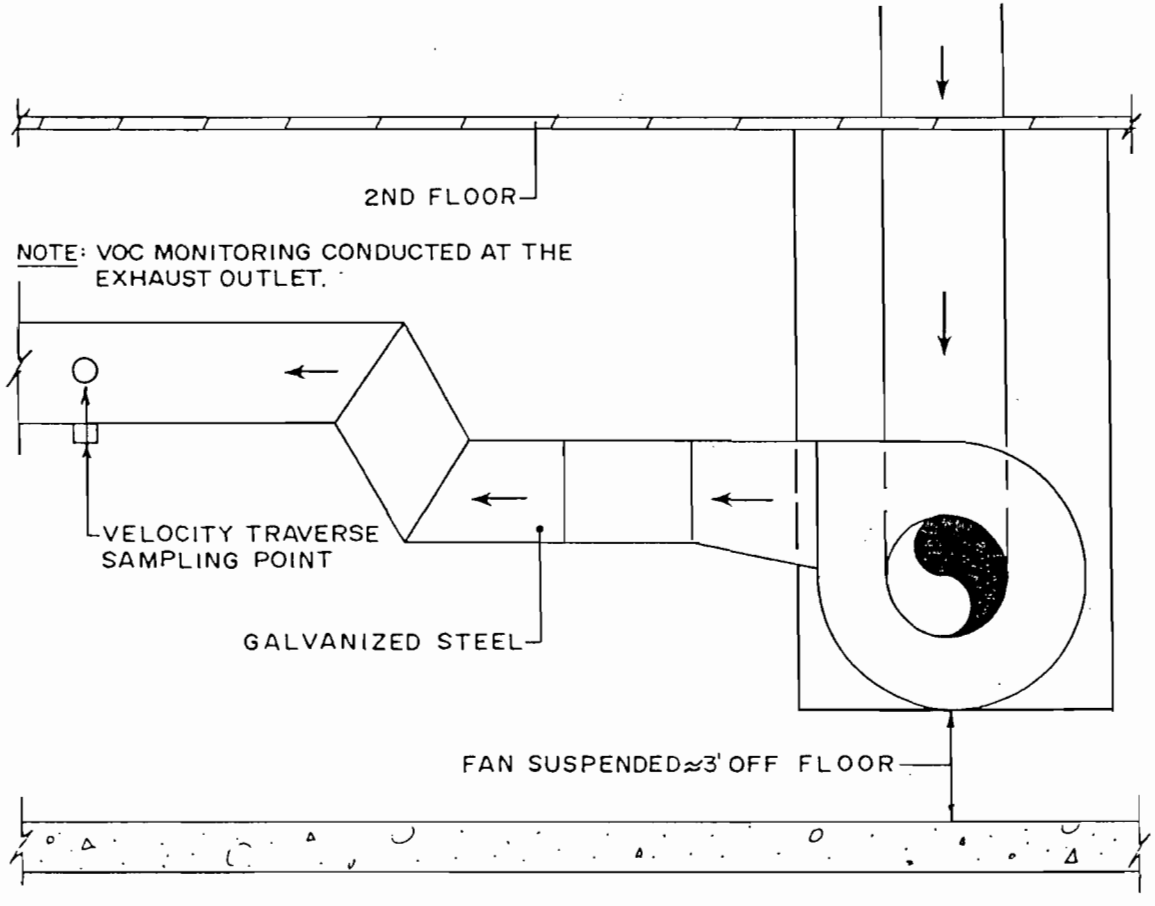
$(7436.311)\left(\frac{528}{542}\right)(.98) = 7099.344$ SCFMD

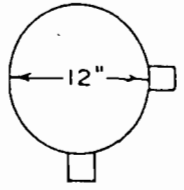
HARRIS SEMICONDUCTOR
PALM BAY, FLORIDA
EPA-25A VOC EMISSIONS

AIR CONSULTING AND ENGINEERING, INC.

TIME	F59S02-6/22/90 PPM C3H8 MAX	MIN	AVG	F63S03-6/22/90 PPM C3H8 MAX	MIN	AVG
0700-0710	*TESTING COMMENCED AT 0720 HOURS*					
0710-0720						
0720-0730	5.80	4.80	5.10	35.00	20.00	24.50
0730-0740	4.00	3.80	3.80	24.50	20.00	21.50
0740-0750	4.00	3.50	3.80	29.50	14.50	20.60
0750-0800	3.80	3.20	3.40	15.20	12.50	13.40
0800-0810	3.80	3.20	3.30	44.00	11.00	20.90
0810-0820	3.50	3.50	3.50	17.50	8.50	13.20
0820-0830	4.00	3.20	3.90	10.50	7.00	8.50
0830-0840	3.80	3.20	3.90	15.50	6.00	9.50
0840-0850	4.50	3.50	3.30	12.20	6.20	7.80
0850-0900	4.00	4.00	4.00	15.50	6.00	9.00
0900-0910	4.20	4.00	4.00	17.20	8.00	11.30
0910-0920	4.20	3.80	3.90	9.00	7.00	8.00
0920-0930	4.00	3.50	3.80	9.50	8.00	8.50
0930-0940	4.00	3.50	3.90	34.80	7.50	13.20
0940-0950	4.20	4.00	4.10	22.00	13.20	17.60
0950-1000	5.00	4.50	4.80	21.50	9.50	14.40
1000-1010	4.80	3.80	4.10	15.00	8.20	10.60
1010-1020	3.80	3.00	3.30	15.50	8.00	13.00
1020-1030	9.00	3.00	5.10	20.00	8.20	13.50
1030-1040	3.80	3.20	3.60	22.00	10.50	15.00
1040-1050	5.20	4.80	5.00	25.50	12.00	17.30
1050-1100	5.20	5.00	5.10	22.00	12.00	17.50
1100-1110	5.00	4.50	4.70	25.00	14.00	18.70
1110-1120	5.00	4.00	4.50	17.50	12.50	14.40
1120-1130	4.80	4.00	4.20	20.50	12.50	14.50
1130-1140	5.00	6.00	5.20	20.00	10.20	14.20
1140-1150	5.20	4.80	5.00	17.00	10.20	12.30
1150-1200	5.50	5.00	5.20	14.00	10.20	12.20
1200-1210	5.50	4.50	4.80	11.50	10.00	10.50
1210-1220	4.20	3.80	4.00	10.50	9.00	9.80
1220-1230	4.00	3.80	3.80	9.50	8.50	9.20
1230-1240	3.20	3.00	3.10	18.00	8.00	12.70
1240-1250	3.20	3.20	3.20	20.00	11.20	16.60
1250-1300	3.30	3.00	3.20	17.00	12.20	15.20
1300-1310	4.00	3.00	3.60	20.00	11.50	13.90
1310-1320	3.00	3.00	3.00	20.00	11.50	13.90
1320-1330	3.00	3.00	3.00	97.00	16.00	34.30
1330-1340	8.00	5.00	5.60	26.00	13.00	17.40
1340-1350	5.00	4.50	4.80	20.00	12.50	15.00
1350-1400	4.50	4.50	4.50	14.50	10.00	11.70
1400-1410	5.00	4.50	4.80	21.00	11.00	13.50
1410-1420	4.50	4.20	4.30	25.50	10.00	14.40
1420-1430	4.20	4.20	4.20	13.50	10.00	11.10
1430-1440	4.00	3.50	3.70	21.00	11.00	16.20
1440-1450	4.00	3.50	3.70	22.00	14.00	18.00
1450-1500	4.80	4.20	4.50	36.00	17.50	24.20
1500-1510	3.00	3.00	3.00	17.00	14.00	15.20
1510-1520	4.00	4.00	4.00	14.00	12.00	13.20
1520-1530	3.50	3.00	3.10	12.00	10.50	11.60
AVERAGES			4.07			14.54
AMBIENT CORR. AVG.			2.07			12.54

F59EOX
VOC





TRAVERSE POINT NUMBER	INCHES INSIDE STACK WALL
1	0.38
2	1.80
3	2.33
4	3.88
5	8.12
6	9.67
7	10.74
8	11.62

SAMPLING POINT LOCATION SCHEMATIC
HARRIS CORPORATION SOURCE - F59EOX
SEMICONDUCTOR DIVISION
MELBOURNE, FLORIDA

AIR CONSULTING
and
ENGINEERING

FLOWRATE CALCULATIONS

PLANT HARRIS SEMICONDUCT
STACK F59EOX
DATE 6/22/90
RUN NO. 1

	BAROMETRIC PRESS.	30.09	IN.HG
	STACK PRESS.	30.15	IN.HG
	STACK AREA	0.785	SQ.FT
	AVG.STACK TEMP	80.00	F
	CP	0.99	
	AVG. SQRT VELOCITY HEAD	0.478	IN. H2O
ORSAT:	PERCENT CO2	0.0	
	PERCENT O2	20.9	
	PERCENT N2	79.1	
	FRACTION OF DRY AIR	0.975	
	MOISTURE FRACTION	0.025	
	MWGT. OF DRY STACK GAS	28.836	
	MWGT. OF WET STACK GAS	28.565	
	AVG.VELOCITY	32.03	FPS
	ACTUAL VOL. FLOW	1508.63	ACFM
	STD. VOL. FLOW	1449.29	SCFMD

VELOCITY TRAVERSE

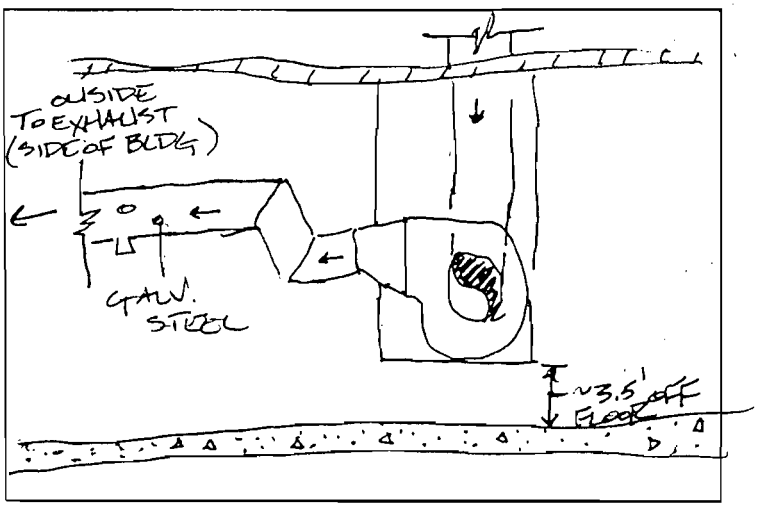
PLANT	HARRIS SEMICONDUCTOR
DATE	6/22/90
SOURCE	F59EOX
BAROMETRIC PRESS.	30.090 IN.HG
STACK PRESS.	30.150 IN.HG
OPERATORS	HODGE/WURTS
RUN	1

TRAVERSE POINT NUMBER	VEL. HEAD in. H2O	SQR VEL. HEAD
1-1	0.130	0.361
1-2	0.170	0.412
1-3	0.260	0.510
1-4	0.250	0.500
1-5	0.240	0.490
1-6	0.180	0.424
1-7	0.200	0.447
1-8	0.160	0.400
2-1	0.200	0.447
2-2	0.220	0.469
2-3	0.260	0.510
2-4	0.260	0.510
2-5	0.290	0.539
2-6	0.300	0.548
2-7	0.290	0.539
2-8	0.300	0.548
		0.478

PRELIMINARY VELOCITY TRAVERSE

Air Consulting and Engineering

PLANT HARRIS SEMICONDUCTOR
DATE 6/22/90 E59 EOX
SOURCE ESP MOT (BASEMENT BLDG. 59)
STACK I.D. 12" STACK AREA .785
BAROMETRIC PRES., In. Hg 30.09
STATIC PRES. in H_2O -.79 STACK PRES. in. Hg. 30.15
PORT DIAM. 1" NIPPLE LENGTH NA
PITOT TUBE NO. ____ TYPE STD
OPERATORS HODGE/WURTZ



SCHEMATIC OF TRAVERSE POINT LAYOUT

TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s) in H_2O	STACK TEMPERATURE (T_s, °F)	DISTANCE FROM INSIDE STACK WALL	TRAVERSE POINT NUMBER	VELOCITY HEAD (ΔP_s in. H_2O	STACK TEMPERATURE (T_s, °F)
1-1	.13	0.38 ↔	80			
2	.17	1.80				
3	.26	2.33				
4	.25	3.88				
5	.24	8.12				
6	.18	9.67				
7	.20	10.74				
8 .4430	.16	11.62				
2-1	.20		(.4783)(174)(.99)($\sqrt{.540}$) = 1914.616			
2	.22		(1914.616)(.785) = 1502.974			
3	.26		(1502.974)($\frac{528}{540}$)(.98) = 1440.183 SCFMD			
4	.26					
5	.29					
6	.30					
7	.29					
8 .5136	.30					
AV $\sqrt{.4783}$			80			
AVERAGE				AVERAGE		

HARRIS SEMICONDUCTOR
PALM BAY, FLORIDA
EPA-25A VOC EMISSIONS

AIR CONSULTING AND ENGINEERING, INC.

TIME	F54E0X ~~F54M07~~-6/22/90 PPM C3H8 MAX	MIN	AVG	F51S04-6/26/90 PPM C3H8 MAX	MIN	AVG
0700-0710	100.00	5.50	40.00	2.50	2.40	2.40
0710-0720	100.00	14.80	39.00	2.50	2.40	2.50
0720-0730	91.50	6.00	25.00	2.50	2.50	2.50
0730-0740	100.00	5.50	20.00	2.50	2.50	2.50
0740-0750	10.30	5.00	7.00	2.50	2.50	2.50
0750-0800	8.80	4.50	6.00	2.70	2.40	2.50
0800-0810	8.50	6.00	7.00	2.70	2.40	2.50
0810-0820	11.00	5.50	7.00	3.40	2.50	4.10
0820-0830	9.00	5.00	6.50	2.80	2.50	2.70
0830-0840	ZERO AIR PURGE CHECK			3.00	2.50	2.60
0840-0850	11.00	5.30	7.00	3.20	2.70	3.00
0850-0900	11.00	5.00	7.00	3.40	3.00	3.10
0900-0910	10.00	4.50	7.00	3.40	3.10	3.20
0910-0920	10.50	4.30	8.00	3.50	3.10	3.10
0920-0930	10.90	4.50	6.50	3.40	3.10	3.20
0930-0940	10.00	4.80	8.00	3.30	3.20	3.20
0940-0950	12.00	5.00	8.00	5.00	3.20	3.40
0950-1000	11.80	5.00	8.00	5.00	3.20	3.50
1000-1010	19.30	5.00	9.00	3.20	3.00	3.10
1010-1020	9.50	4.50	8.00	3.00	3.00	3.00
1020-1030	11.00	4.30	7.50	3.00	2.80	2.80
1030-1040	20.00	4.50	9.00	2.70	2.70	2.70
1040-1050	80.80	5.50	22.00	2.70	2.70	2.70
1050-1100	100.00	4.80	20.00	2.70	2.70	2.70
1100-1110	11.30	5.50	10.00	2.70	2.70	2.70
1110-1120	100.00	5.50	14.00	2.70	2.60	2.60
1120-1130	12.00	5.50	8.00	5.20	2.60	4.10
1130-1140	9.00	6.30	9.00	5.20	4.60	4.70
1140-1150	77.30	6.00	9.00	4.60	4.50	4.60
1150-1200	100.00	7.00	13.50	4.60	4.50	4.50
1200-1210	72.00	6.30	14.00	4.50	3.50	4.00
1210-1220	14.50	7.00	10.00	4.50	4.50	4.50
1220-1230	13.80	6.50	10.00	4.50	4.20	4.40
1230-1240	17.00	6.50	10.00	4.30	4.20	4.20
1240-1250	15.50	6.50	9.00	4.20	4.20	4.20
1250-1300	14.00	6.50	8.00	4.20	4.20	4.20
1300-1310	12.80	6.50	8.00	4.70	4.00	4.20
1310-1320	100.00	6.50	18.00	4.00	3.50	4.00
1320-1330	14.50	8.00	10.00	3.70	3.50	3.70
1330-1340	13.50	7.00	8.00	4.00	3.70	3.80
1340-1350	12.00	6.50	8.00	4.00	3.50	3.90
1350-1400	12.00	5.20	8.00	4.00	3.80	3.90
1400-1410	14.20	5.20	7.00	4.30	4.00	4.10
1410-1420	11.00	5.00	8.00	4.30	4.00	4.20
1420-1430	14.00	5.00	8.00	4.00	3.70	3.90
1430-1440	10.00	5.00	7.00	4.20	3.70	3.90
1440-1450	65.50	3.50	12.00	5.00	3.70	4.20
1450-1500	100.00	5.80	42.00	4.00	4.20	4.00
1500-1510	10.50	4.50	7.00	4.40	4.00	4.10
1510-1520	100.00	28.50	35.00	4.00	3.80	3.90
1520-1530	49.00	24.50	30.00	3.70	3.60	3.60
AVERAGES			12.66			3.48
AMBIENT CORR. AVG.			11.66			1.98

EMISSION SUMMARY

FACILITY: HARRIS SEMICONDUCTOR
SOURCE: ~~F59 F5MO7~~ F59 EOX
DATE: 6/22/90

TIME	MAXIMUM	MINIMUM	AVERAGE
0700 : 0710	100(+)	5.5	40.0
0710 - 0720	100(+)	14.8	39.0
0720 - 0730	91.5	6.0	25.0 ~~25.5~~
0730 - 0740	100(+)	5.5	20.0
0740 - 0750	10.3	5.0	7.0
0750 - 0800	8.8	4.5	6.0
0800 - 0810	8.5	6.0	7.0
0810 - 0820	11.0	5.5	7.0
0820 - 0830	9.0	5.0	6.5
0830 - 0840	(0) AIR PURGE FOR NOISE/BACKGROUND CHECK		
0840 - 0850	11.0	5.3	7.0
0850 - 0900	11.0	5.0	7.0
0900 - 0910	10.0	4.5	7.0
0910 - 0920	10.5	4.3	8.0
0920 - 0930	: 10.9	4.5	6.5
0930 - 0940	10.90	4.8	8.0
0940 - 0950	12.0	5.0	8.0
0950 - 1000	11.8	5.0	8.0
1000 - 1010	19.3	5.0	9.0
1010 - 1020	9.5	4.5	8.0
1020 - 1030	11.0	4.3	7.5
1030 - 1040	20.0	4.5	~~7.0~~ 9.0

EMISSION SUMMARY

FACILITY: HARRIS SEMICONDUCTOR
SOURCE: ~~F59 F59MOT~~ F59EOX
DATE: 6/22/90

TIME	MAXIMUM	MINIMUM	AVERAGE
1420-1430	14.0	5.0	8.0
1430-1440	10.0	5.0	7.0
1440-1450	65.5	3.5	12.0
1450-1500	100(+)	5.8	42.0
1500-1510	10.5	4.5	7.0
1510-1520	100(+)	28.5	35.0
1520-1530	49.0	24.5	30.0

EMISSION SUMMARY

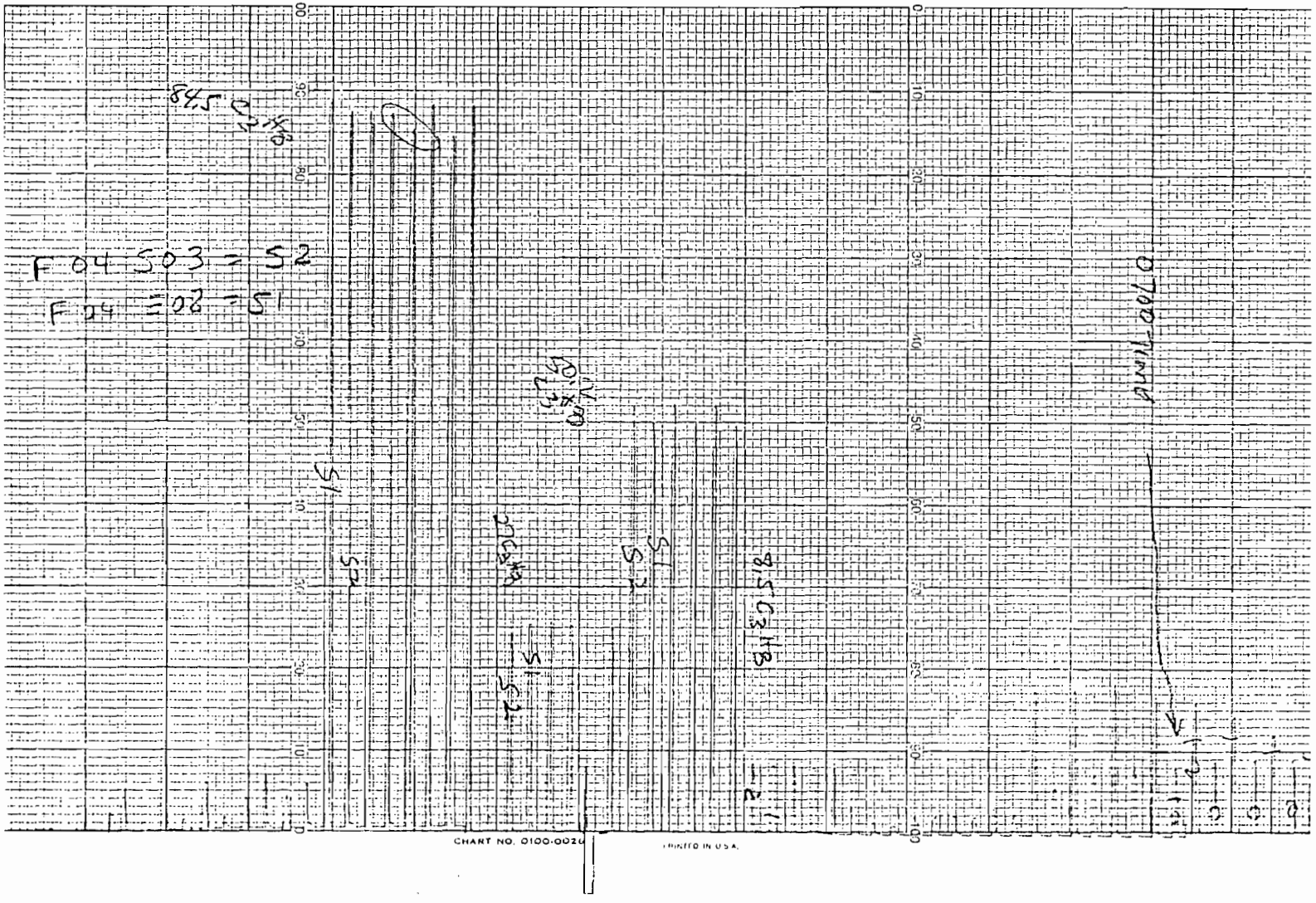
FACILITY: HARRIS SEMICONDUCTOR
SOURCE: ~~F59F54M87~~ F59EOX
DATE: 6/22/90

TIME	MAXIMUM	MINIMUM	AVERAGE
1040-1050	80.8	5.5	22.0
1050-1100	~~11.5~~ 100(+)	4.8	20.0
1100-1110	11.3	5.5	10.0
1110-1120	100(+)	5.5	14.0
1120-1130	12.0	5.5	8.0
1130-1140	9.0	6.3	9.0
1140-1150	77.3	6.0	9.0
1150-1200	~~13.5~~ 100(+)	7.0	13.5
1200-1210	72.0	6.3	14.0
1210-1220	14.5	7.0	10.0
1220-1230	13.8	6.5	10.0
1230-1240	17.0	6.5	10.0
1240-1250	15.5	6.5	9.0
1250-1300	14.0	6.5	8.0
1300-1310	12.8	6.5	8.0
1310-1320	100(+)	6.5	18.0
1320-1330	~~100(+)~~ 14.5	~~6.5~~ 8.0	~~18.0~~ 10.0
1330-1340	~~14.5~~ 13.5	~~8.0~~ 7.0	8.0
1340-1350	~~7.0~~ 12.0	6.5	8.0
1350-1400	12.0	5.5	8.0
1400-1410	14.2	5.2	7.0
1410-1420	11.0	5.0	8.0

APPENDIX C
REPRESENTATIVE STRIP CHARTS

BEST AVAILABLE COPY

START



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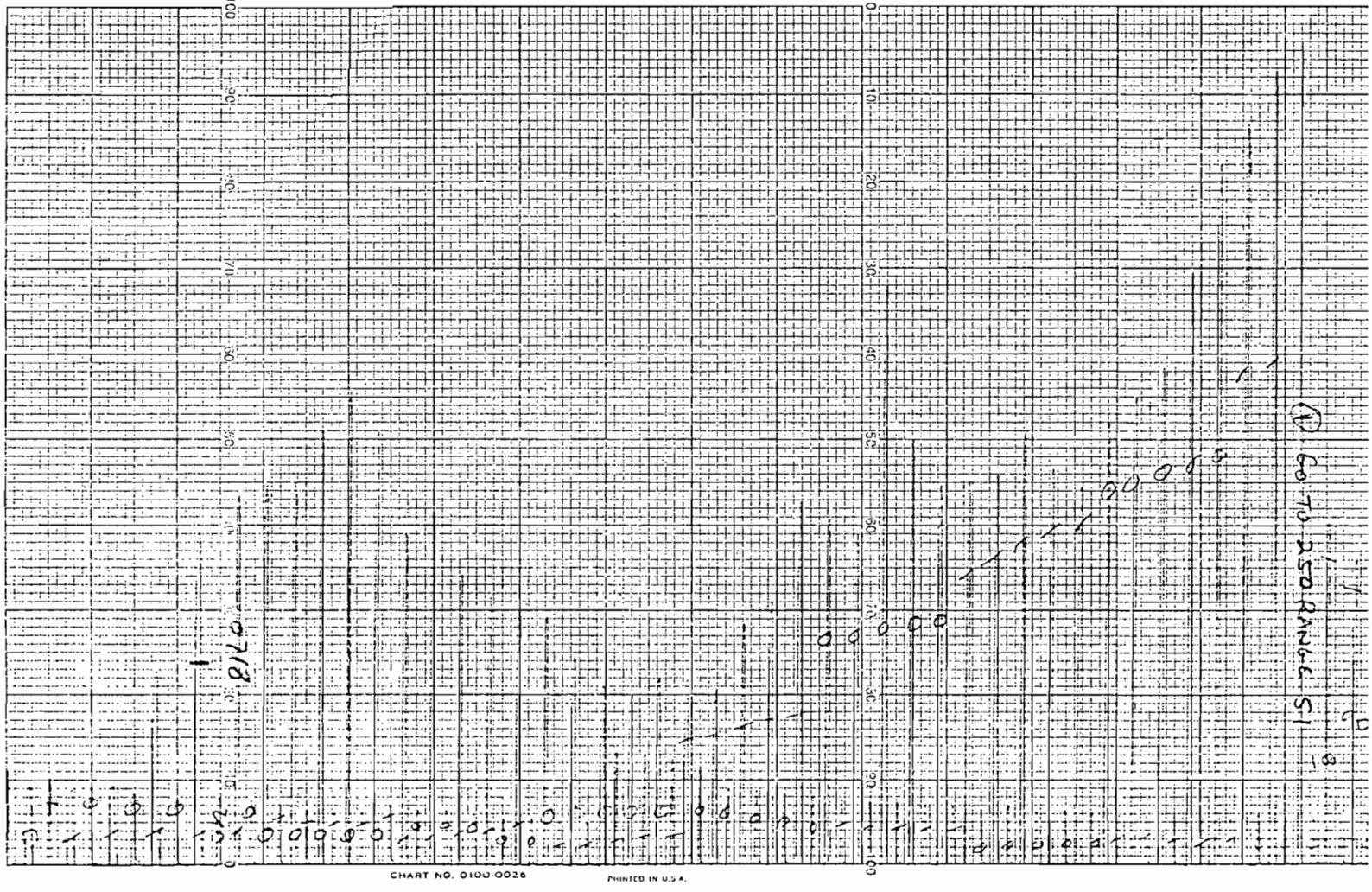
AIR CONSULTING & ENGINEERING, INC.



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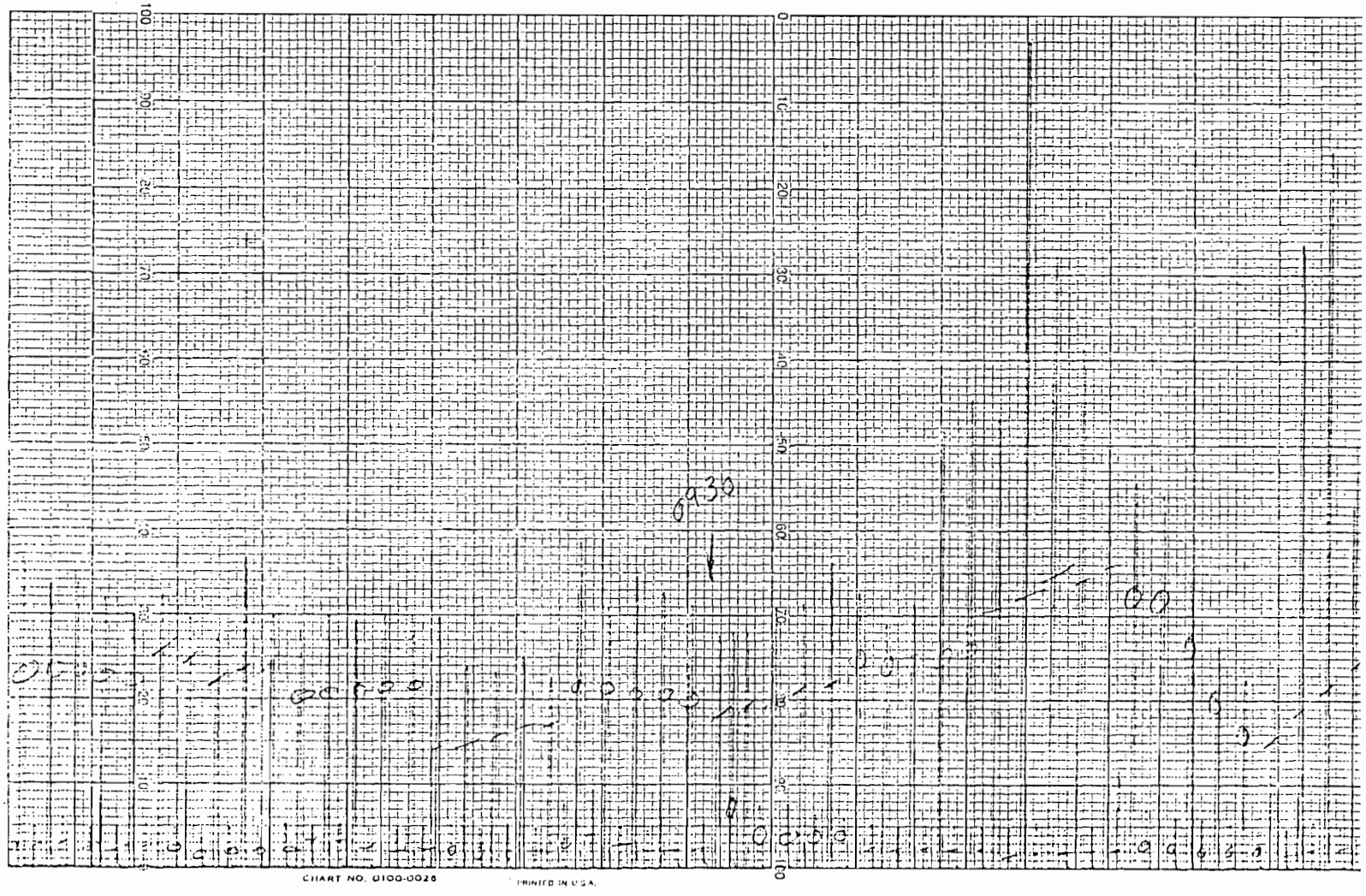

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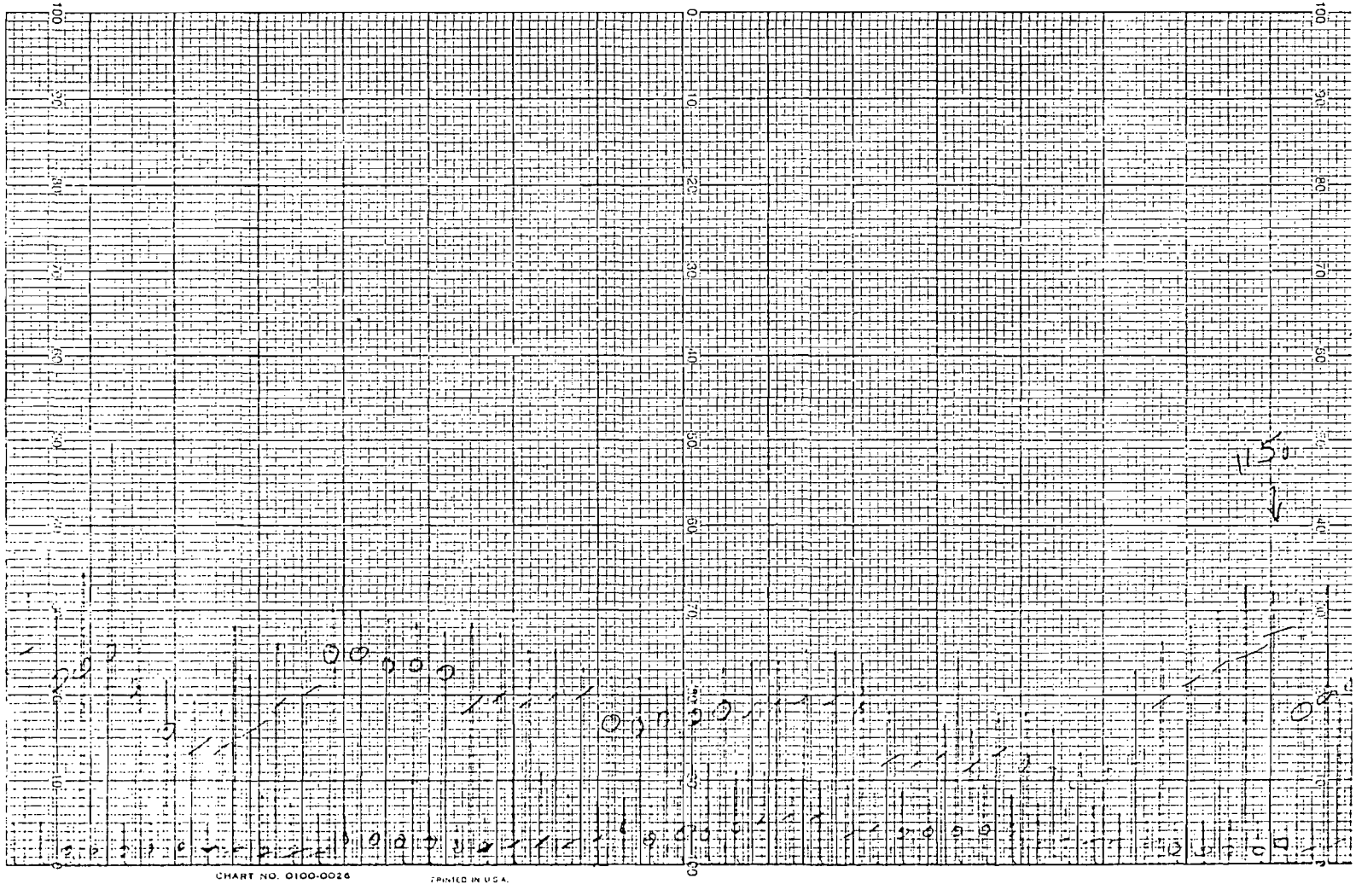

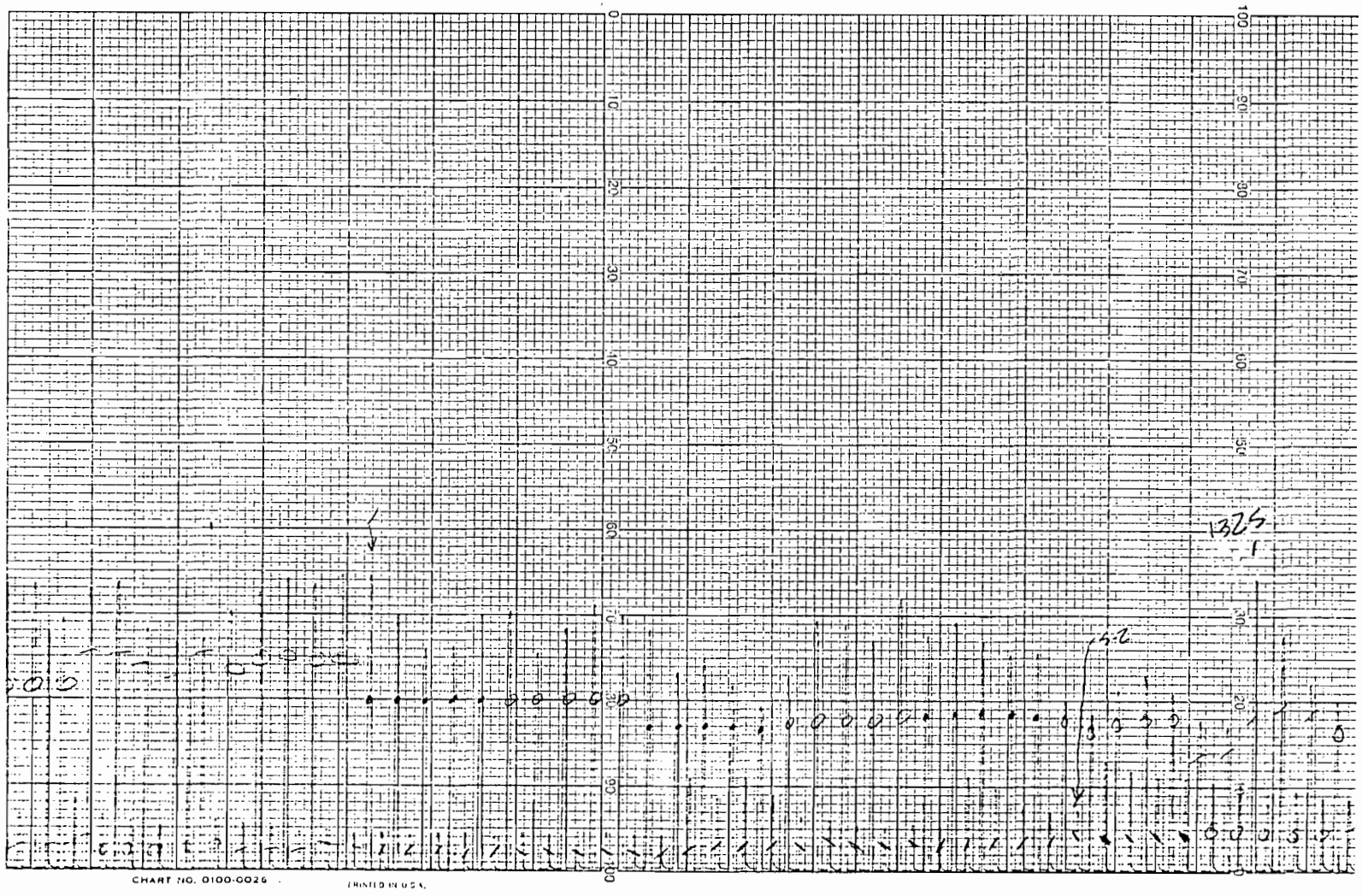

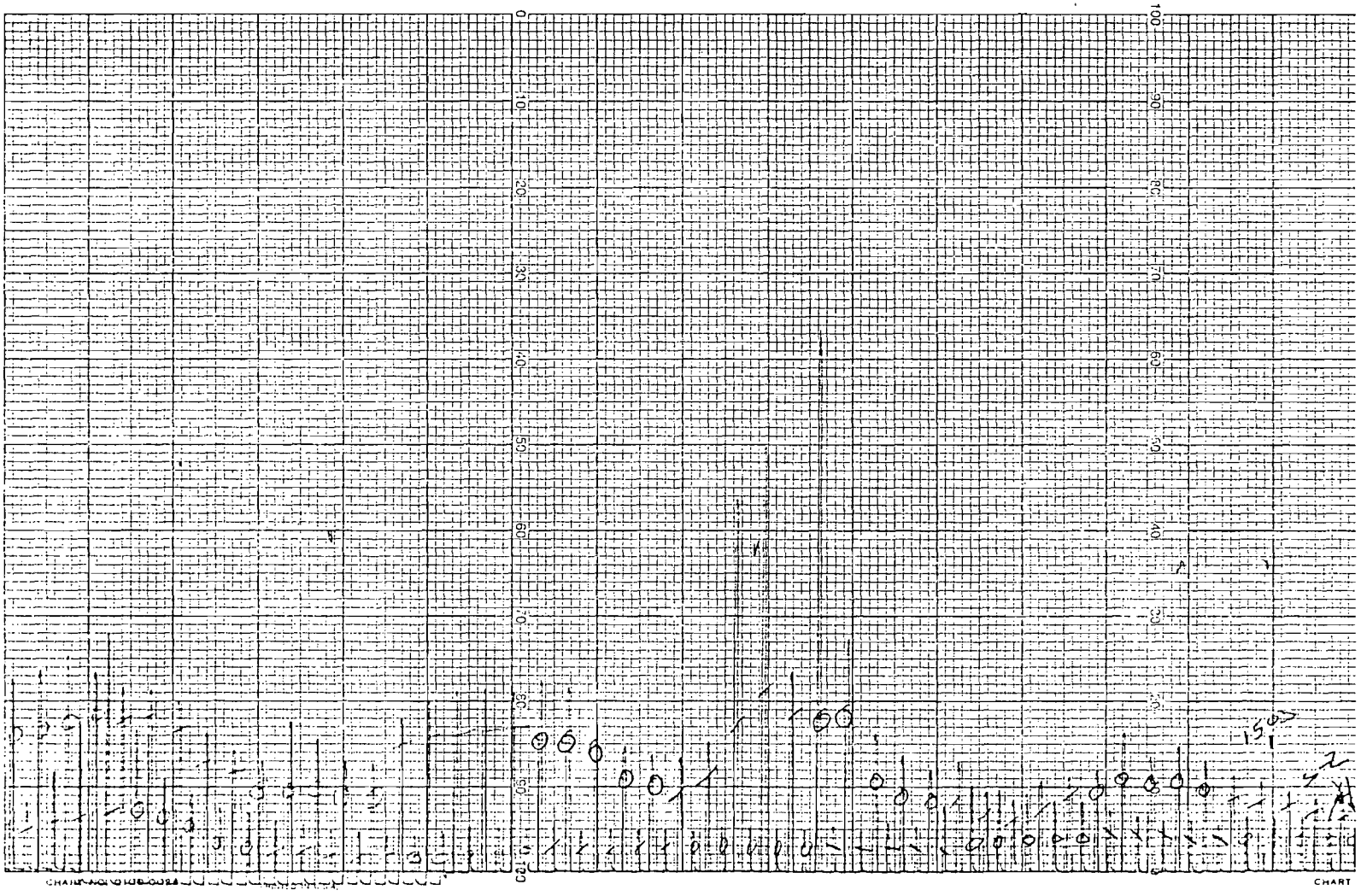

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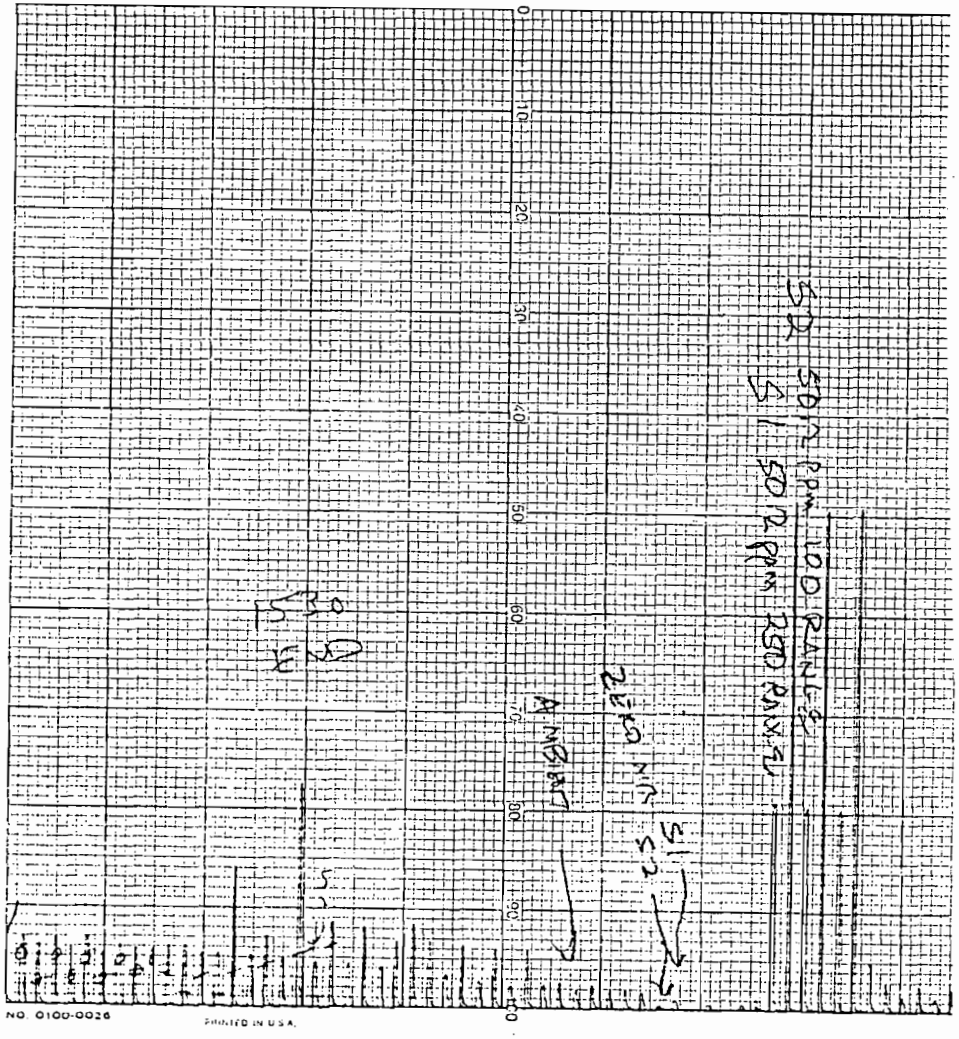
BEST AVAILABLE COPY



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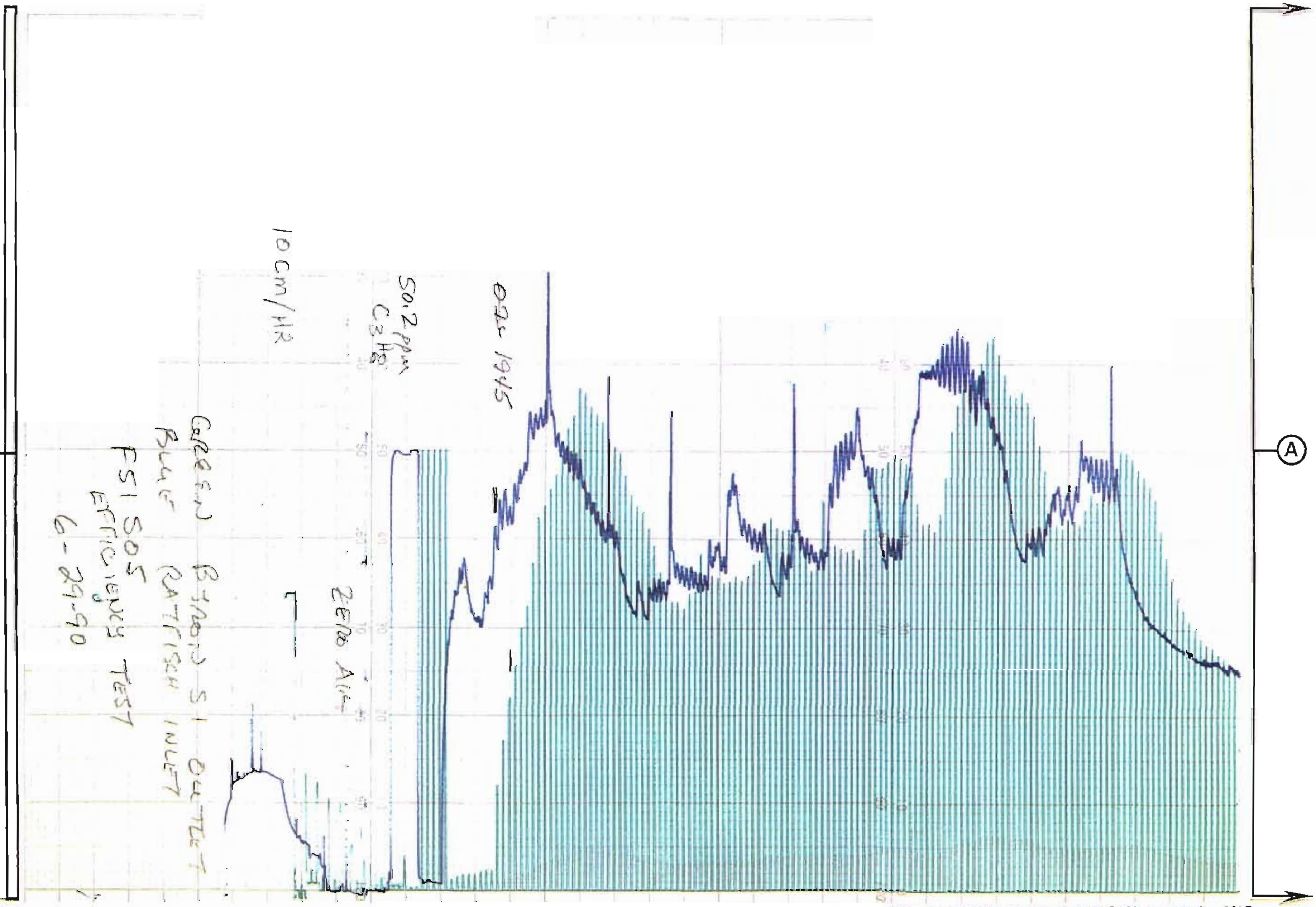

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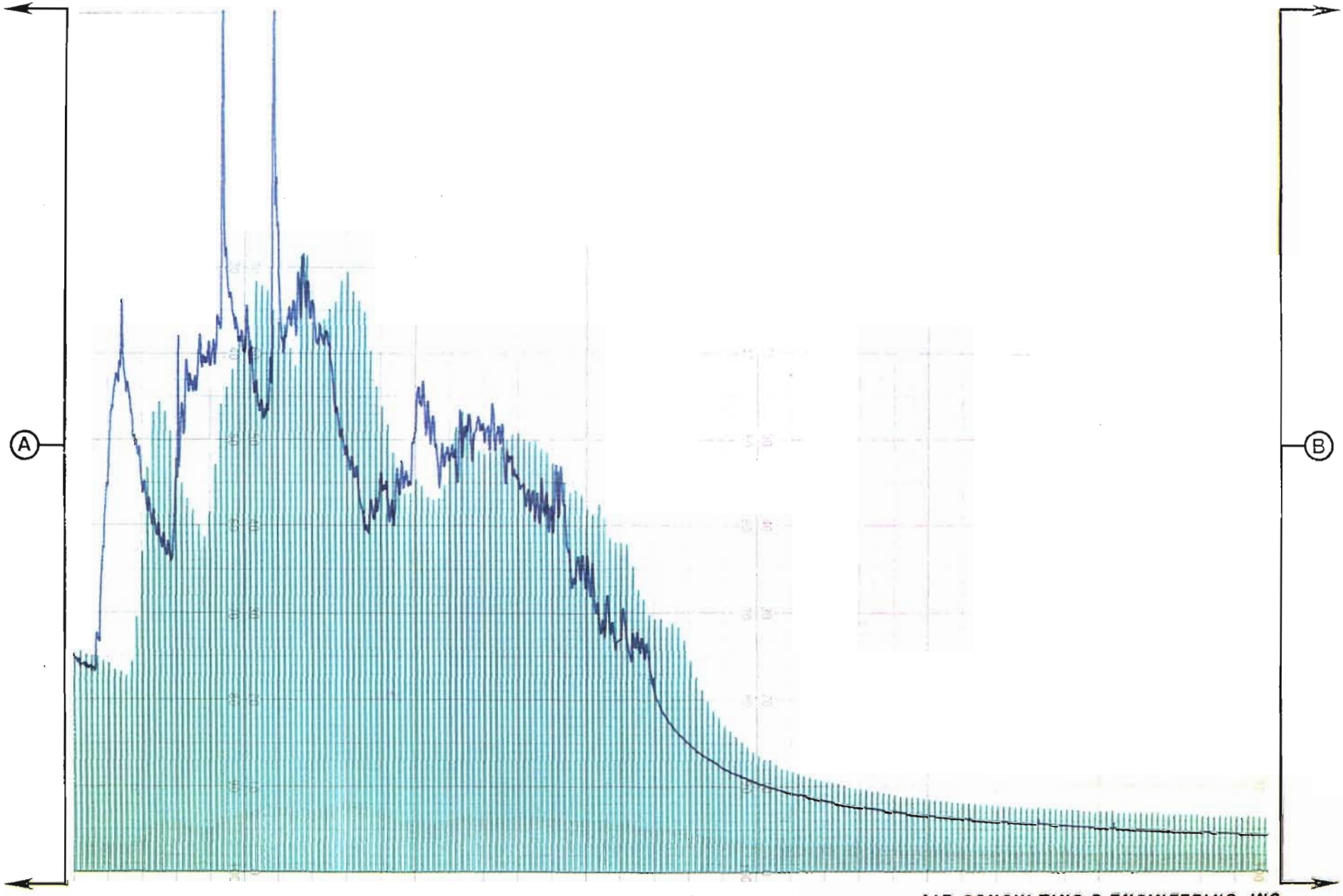
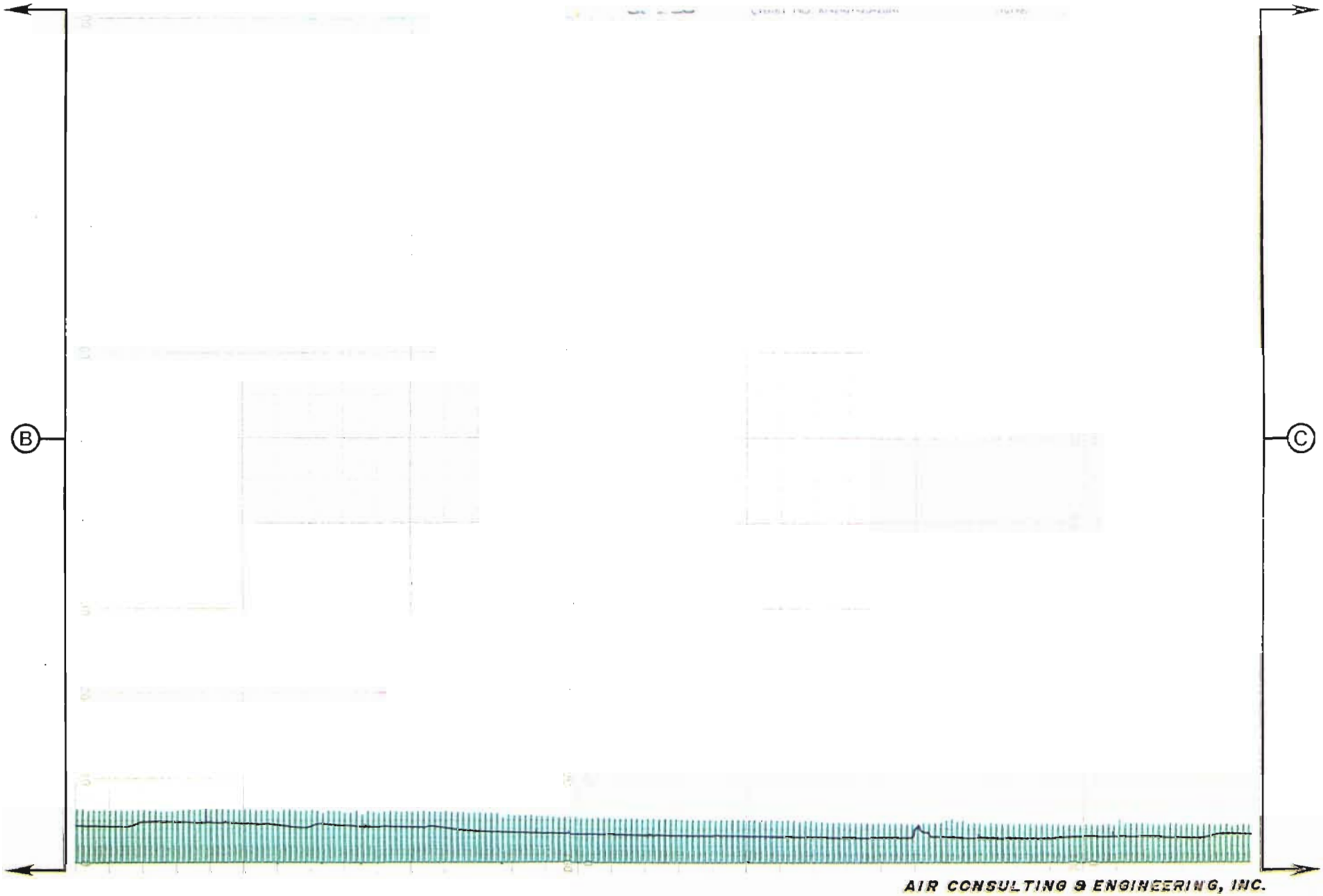
AIR CONSULTING & ENGINEERING, INC.



AIR CONSULTING & ENGINEERING, INC.



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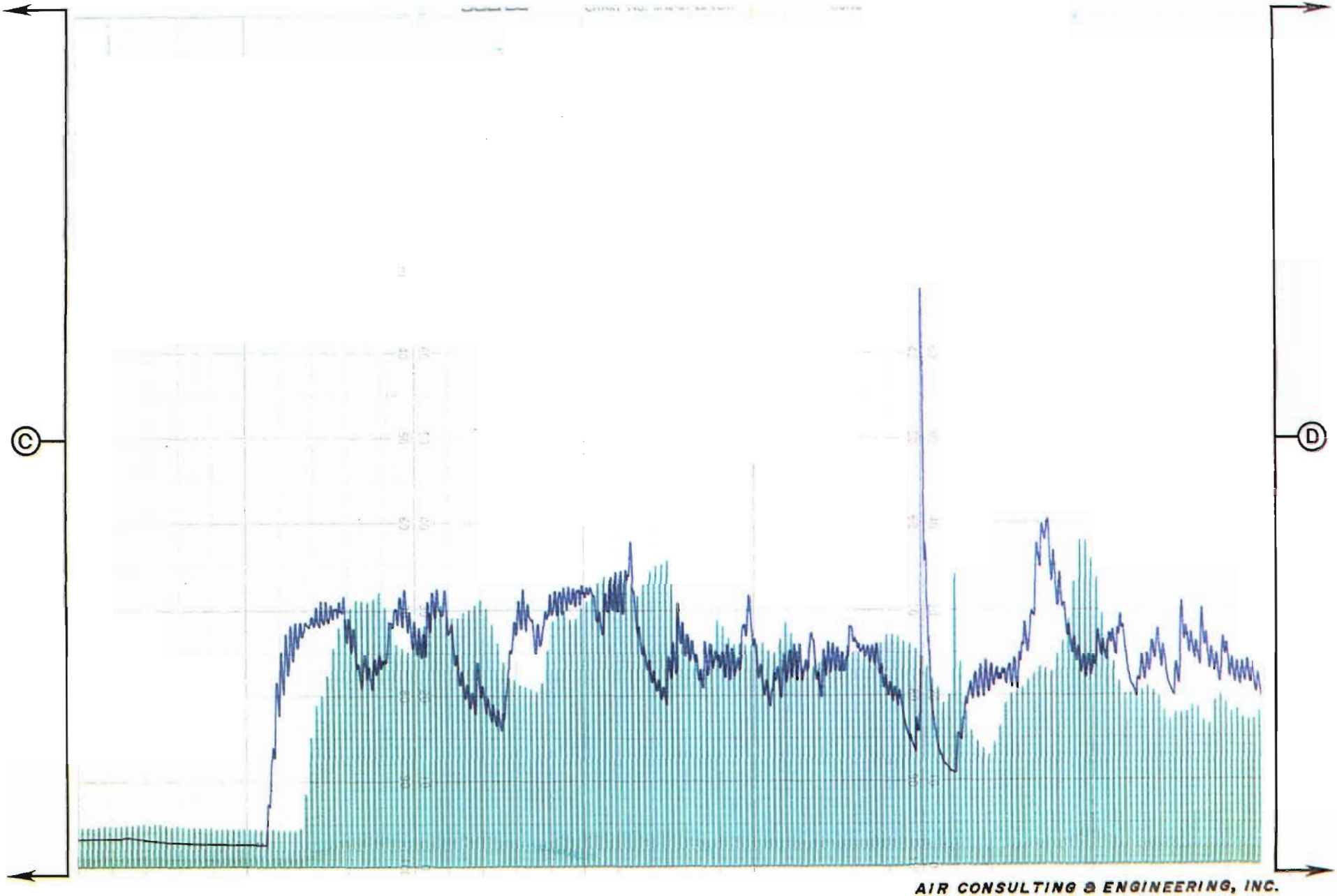

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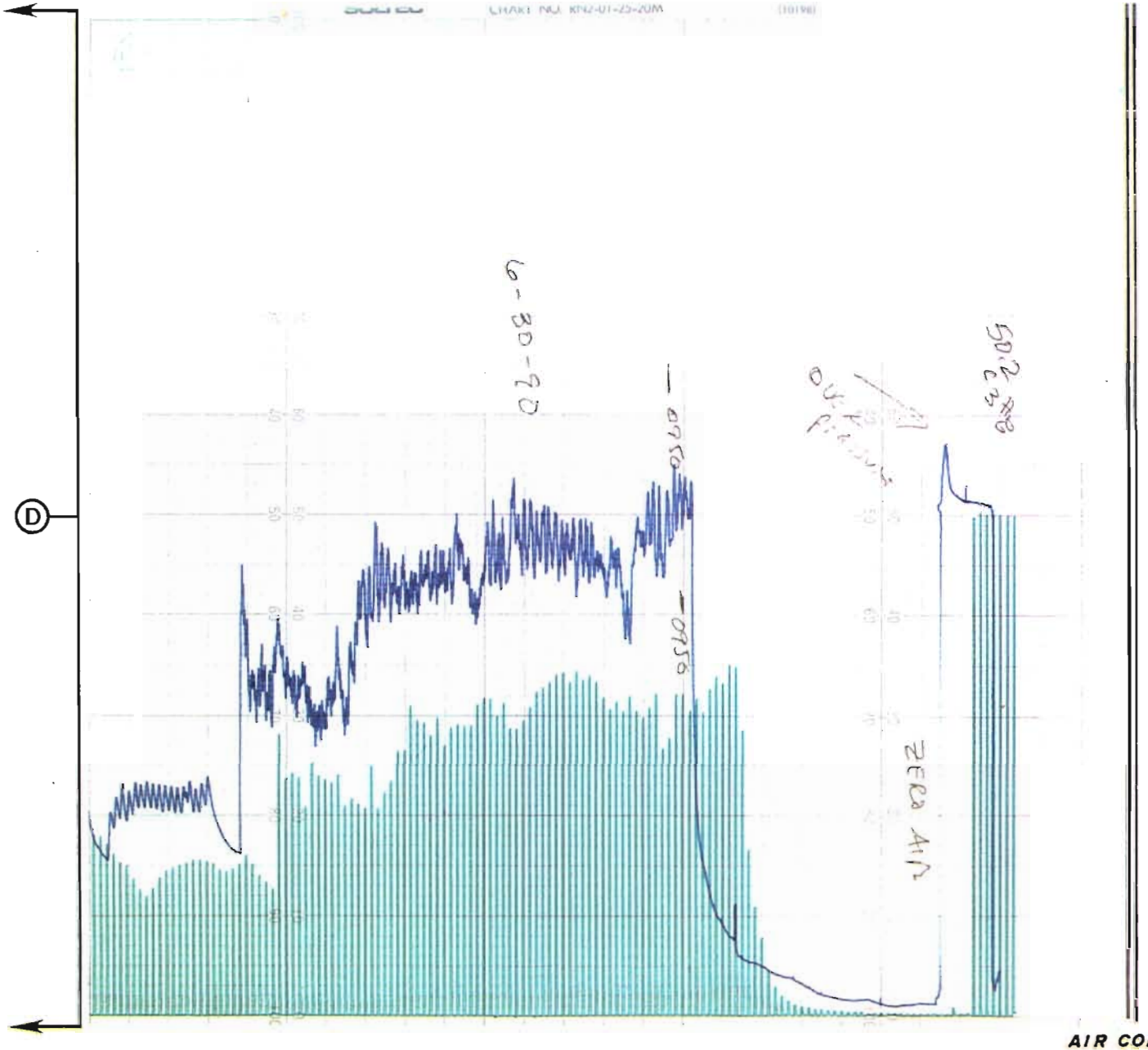


D

AIR CONSULTING & ENGINEERING, IN

APPENDIX D

VISIBLE EMISSION DATA SHEETS AND OBSERVER'S CERTIFICATION

air consulting and engineering

VISIBLE EMISSION OBSERVATION FORM

OBSERVATION DATE 6/28	START TIME 1135	STOP TIME 1205

SOURCE NAME: HARRIS SEMICONDUCTOR

ADDRESS:

CITY: PALM BAY | STATE: FL. | ZIP:

PHONE: | SOURCE I.D. NUMBER: FO4501

PROCESS EQUIPMENT: ACID/SOLVENT VENT | OPERATING MODE: NORM.

CONTROL EQUIPMENT: WET SCRUBBER | OPERATING MODE: NORM.

DESCRIBE EMISSION POINT
START STACK OUTLET STOP

HEIGHT ABOVE GROUND LEVEL: START 20' STOP
HEIGHT REL. TO OBSERVER: START 20' STOP

DISTANCE FROM OBSERVER: START 40' STOP
DIRECTION FROM OBSERVER: START N STOP

DESCRIBE EMISSIONS
START NONE STOP

EMISSION COLOR: START NA STOP
PLUME TYPE: CONT. ☑ FUGITIVE ☐ INTER. ☐

WATER DROPLETS PRESENT: NO ☑ YES ☐
IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐

POINT IN PLUME AT WHICH OPACITY WAS DETERMINED
START NA STOP

DESCRIBE BACKGROUND
START SKY STOP

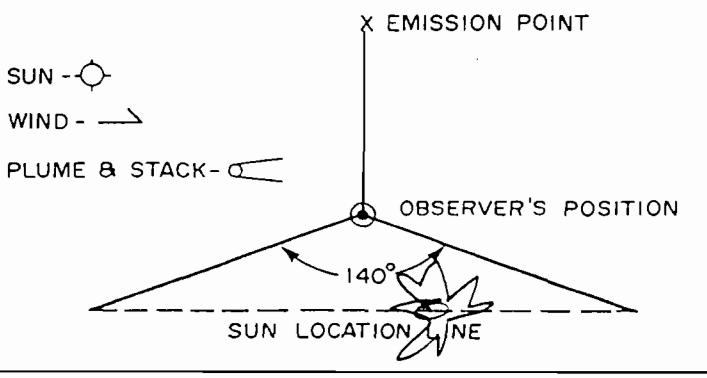
BACKGROUND COLOR: START BL STOP
SKY CONDITIONS: START CLEAR STOP

WIND SPEED: START 5-10 STOP
WIND DIRECTION: START E STOP

AMBIENT TEMP: START 90'S STOP
WET BULB TEMP.: | RH %:

SOURCE LAYOUT SKETCH

DRAW NORTH ARROW



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AVERAGE OPACITY FOR HIGHEST PERIOD 0
NUMBER OF READINGS ABOVE 0 WERE 0

RANGE OF OPACITY READINGS MINIMUM 0 MAXIMUM 0

OBSERVER'S NAME (PRINT): J. COLLEEN HODGE

COMMENTS:

OBSERVER'S SIGNATURE: J. Colleen Hodge | DATE: 6/90

ORGANIZATION: ACE, INC.

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS
SIGNATURE
TITLE DATE

CERTIFIED BY: ETA | DATE: 6/90

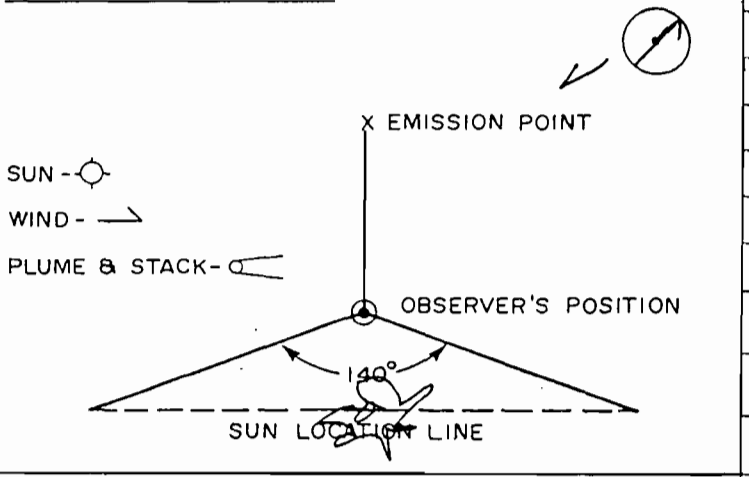
VERIFIED BY | DATE

Air Consulting and Engineering

VISIBLE EMISSION OBSERVATION FORM

SOURCE NAME	HARRIS SEMICONDUCTOR
ADDRESS	
CITY	PALM BAY
STATE	FL.
ZIP	
PHONE	
SOURCE I.D. NUMBER	FOUSOZ
PROCESS EQUIPMENT	ACID/SOLVENT VENT
OPERATING MODE	NORM
CONTROL EQUIPMENT	WET SCRUBBER
OPERATING MODE	NORM
DESCRIBE EMISSION POINT START	STACK OUT.
DESCRIBE EMISSION POINT STOP	"
HEIGHT ABOVE GROUND LEVEL START	≈50'
HEIGHT ABOVE GROUND LEVEL STOP	"
HEIGHT REL. TO OBSERVER START	≈50'
HEIGHT REL. TO OBSERVER STOP	"
DISTANCE FROM OBSERVER START	≈250'
DISTANCE FROM OBSERVER STOP	"
DIRECTION FROM OBSERVER START	N
DIRECTION FROM OBSERVER STOP	"
DESCRIBE EMISSIONS START	NONE PRES.
DESCRIBE EMISSIONS STOP	"
EMISSION COLOR START	NA
EMISSION COLOR STOP	"
PLUME TYPE: CONT. ☑ FUGITIVE ☐ INTER. ☐	
WATER DROPLETS PRESENT: NO ☑ YES ☐	
IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐	
POINT IN PLUME AT WHICH OPACITY WAS DETERMINED START	NA
POINT IN PLUME AT WHICH OPACITY WAS DETERMINED STOP	"
DESCRIBE BACKGROUND START	SKY
DESCRIBE BACKGROUND STOP	"
BACKGROUND COLOR START	BLUE
BACKGROUND COLOR STOP	"
SKY CONDITIONS START	CLEAR
SKY CONDITIONS STOP	"
WIND SPEED START	5-10
WIND SPEED STOP	"
WIND DIRECTION START	NNE
WIND DIRECTION STOP	"
AMBIENT TEMP. START	90's
AMBIENT TEMP. STOP	"
WET BULB TEMP.	
RH %	

SOURCE LAYOUT SKETCH



OBSERVATION DATE	START TIME	STOP TIME
6/24	1215	1245

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AVERAGE OPACITY FOR HIGHEST PERIOD	0
NUMBER OF READINGS ABOVE 0 WERE	0
RANGE OF OPACITY READINGS MINIMUM	0
RANGE OF OPACITY READINGS MAXIMUM	0
OBSERVER'S NAME (PRINT)	J. COLLEEN HODGE
COMMENTS:	
OBSERVER'S SIGNATURE	J. Colleen Hodge
DATE	6/90
ORGANIZATION	ACE, INC.
I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS SIGNATURE	
CERTIFIED BY	ETA
DATE	6/90
TITLE	
DATE	
VERIFIED BY	
DATE	

Air Consulting and Engineering

VISIBLE EMISSION OBSERVATION FORM

OBSERVATION DATE 6/29/90	START TIME 12/15	STOP TIME 1245 ~~1315~~

SOURCE NAME: HARRIS SEMICONDUCTOR

ADDRESS:

CITY: PALM BAY | STATE: FL. | ZIP:

PHONE: | SOURCE I.D. NUMBER: FOU503

PROCESS EQUIPMENT: ACID/SOLVENT VENT | OPERATING MODE: NORM.

CONTROL EQUIPMENT: WET SCRUBBER | OPERATING MODE: NORM.

DESCRIBE EMISSION POINT
START STACK OUT. STOP "

HEIGHT ABOVE GROUND LEVEL START ~30' STOP " | HEIGHT REL. TO OBSERVER START ~30' STOP "

DISTANCE FROM OBSERVER START ~250' STOP " | DIRECTION FROM OBSERVER START N STOP "

DESCRIBE EMISSIONS
START NONE PRES. STOP "

EMISSION COLOR START NA STOP " | PLUME TYPE: CONT. ☒ FUGITIVE ☐ INTER. ☐

WATER DROPLETS PRESENT: NO ☒ YES ☐ | IF WATER DROPLET ~~PLUME~~: ATTACHED ☐ DETACHED ☐

POINT IN PLUME AT WHICH OPACITY WAS DETERMINED
START NA STOP "

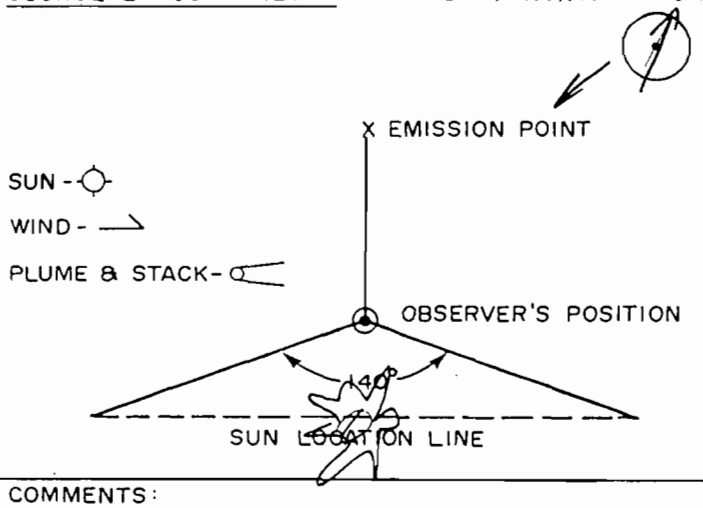
DESCRIBE BACKGROUND
START SKY STOP "

BACKGROUND COLOR START BLUE STOP | SKY CONDITIONS START CLEAR STOP "

WIND SPEED START 5-10 STOP | WIND DIRECTION START NNE STOP "

AMBIENT TEMP. START 90's STOP | WET BULB TEMP. | RH %

SOURCE LAYOUT SKETCH



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AVERAGE OPACITY FOR HIGHEST PERIOD 0 | NUMBER OF READINGS ABOVE 0 WERE 0

RANGE OF OPACITY READINGS MINIMUM 0 MAXIMUM 0

OBSERVER'S NAME (PRINT): J. COLLEEN HODGE

COMMENTS:

OBSERVER'S SIGNATURE: J. Colleen Hodge | DATE 6/90

ORGANIZATION: ACE, INC.

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SIGNATURE

TITLE | DATE

CERTIFIED BY ETA | DATE 6/90

VERIFIED BY | DATE

Air Consulting and Engineering

VISIBLE EMISSION OBSERVATION FORM

OBSERVATION DATE 6/28/90	START TIME 1135	STOP TIME 1205

SOURCE NAME: HARRIS SEMICONDUCTOR

ADDRESS:

CITY: PALM BAY | STATE: FL. | ZIP:

PHONE: | SOURCE I.D. NUMBER: FO450S

PROCESS EQUIPMENT: ACID / SOLV. VENT | OPERATING MODE: NORM.

CONTROL EQUIPMENT: WET SCRUBB. | OPERATING MODE: NORM.

DESCRIBE EMISSION POINT
START STACK OUT. STOP

HEIGHT ABOVE GROUND LEVEL: START 40' STOP " | HEIGHT REL. TO OBSERVER: START 5' STOP "

DISTANCE FROM OBSERVER: START 40' STOP " | DIRECTION FROM OBSERVER: START E STOP "

DESCRIBE EMISSIONS
START NONE STOP "

EMISSION COLOR: START NA STOP " | PLUME TYPE: CONT. ☒ FUGITIVE ☐ INTER. ☐

WATER DROPLETS PRESENT: NO ☒ YES ☐ | IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐

POINT IN PLUME AT WHICH OPACITY WAS DETERMINED
START NA STOP "

DESCRIBE BACKGROUND
START SKY STOP "

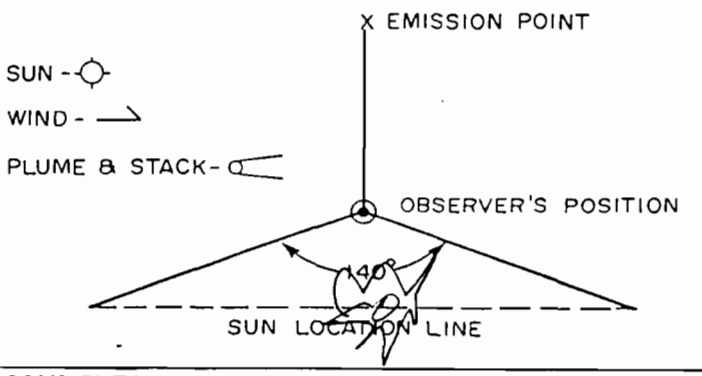
BACKGROUND COLOR: START BL STOP " | SKY CONDITIONS: START CLEAR STOP "

WIND SPEED: START 5-10 STOP | WIND DIRECTION: START NW STOP

AMBIENT TEMP: START 90's STOP " | WET BULB TEMP: | RH %:

SOURCE LAYOUT SKETCH

DRAW NORTH ARROW



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AVERAGE OPACITY FOR HIGHEST PERIOD: 0 | NUMBER OF READINGS ABOVE 0 WERE: 0

RANGE OF OPACITY READINGS: MINIMUM 0 MAXIMUM 0

OBSERVER'S NAME (PRINT): J. COLLEEN HODGE

COMMENTS:

OBSERVER'S SIGNATURE: J. Colleen Hodge | DATE: 6/90

ORGANIZATION: ACE, INC.

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SIGNATURE

TITLE | DATE

CERTIFIED BY: ETA | DATE: 6/90

VERIFIED BY | DATE

ace Air Consulting and Engineering

VISIBLE EMISSION OBSERVATION FORM

OBSERVATION DATE 6/29/90	START TIME 1215	STOP TIME 1245

SOURCE NAME: HARRIS SEMICONDUCTOR

ADDRESS:

CITY: PALM BAY | STATE: FL. | ZIP:

PHONE: | SOURCE I.D. NUMBER: FOUR08

PROCESS EQUIPMENT: ACID / SOLVENT JENT | OPERATING MODE: NORM.

CONTROL EQUIPMENT: WET SCRUBBER | OPERATING MODE: NORM.

DESCRIBE EMISSION POINT
START STACK OUT. STOP "

HEIGHT ABOVE GROUND LEVEL: START ~50' STOP "
HEIGHT REL. TO OBSERVER: START ~50' STOP "

DISTANCE FROM OBSERVER: START ~650' STOP "
DIRECTION FROM OBSERVER: START N STOP "

DESCRIBE EMISSIONS
START NONE PRES. STOP "

EMISSION COLOR: START NA STOP "
PLUME TYPE: CONT. ☑ FUGITIVE ☐ INTER. ☐

WATER DROPLETS PRESENT: NO ☑ YES ☐
IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐

POINT IN PLUME AT WHICH OPACITY WAS DETERMINED
START NA STOP "

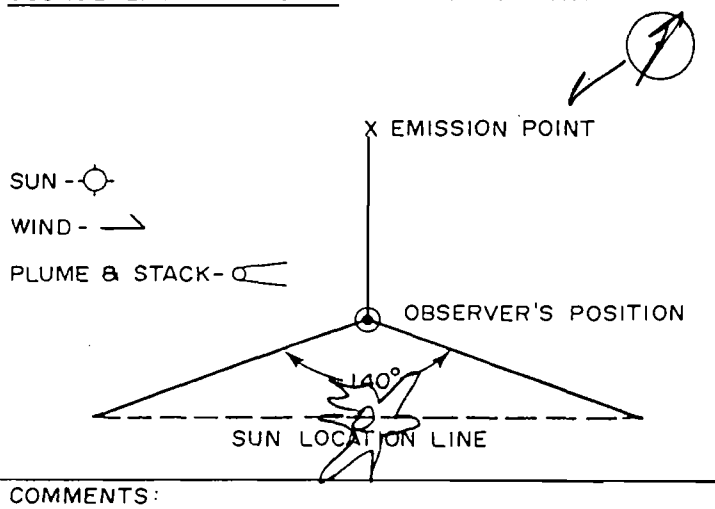
DESCRIBE BACKGROUND
START SKY STOP "

BACKGROUND COLOR: START BLUE STOP "
SKY CONDITIONS: START CLEAR STOP "

WIND SPEED: START 5-10 STOP "
WIND DIRECTION: START NNE STOP "

AMBIENT TEMP.: START 90's STOP "
WET BULB TEMP.: —
RH %: —

SOURCE LAYOUT SKETCH



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AVERAGE OPACITY FOR HIGHEST PERIOD: 0
NUMBER OF READINGS ABOVE 0 WERE 0

RANGE OF OPACITY READINGS
MINIMUM 0 MAXIMUM 0

OBSERVER'S NAME (PRINT): J. COLLEEN HODGE

OBSERVER'S SIGNATURE: J. Colleen Hodge | DATE: 6/90

ORGANIZATION: ACE, INC.

CERTIFIED BY: ETA | DATE: 6/90

VERIFIED BY: | DATE:

COMMENTS:

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS
SIGNATURE
TITLE DATE

VISIBLE EMISSION OBSERVATION FORM

Air Consulting and Engineering

OBSERVATION DATE	START TIME	STOP TIME
6/14/90	1202	1232

SOURCE NAME: HARRIS SEMICONDUCTOR

ADDRESS:

CITY: PALM BAY | STATE: FL. | ZIP:

PHONE: | SOURCE I.D. NUMBER: FS1501

PROCESS EQUIPMENT: ACID/SOLVENT VENT | OPERATING MODE: NORM.

CONTROL EQUIPMENT: WET SCRUBBER | OPERATING MODE: NORM.

DESCRIBE EMISSION POINT
START STACK OUT. STOP ''

HEIGHT ABOVE GROUND LEVEL: START 20' STOP '' | HEIGHT REL. TO OBSERVER: START 20' STOP ''

DISTANCE FROM OBSERVER: START 40' STOP '' | DIRECTION FROM OBSERVER: START NW STOP ''

DESCRIBE EMISSIONS
START NONE PICS, STOP ''

EMISSION COLOR: START NA STOP '' | PLUME TYPE: CONT. ☒ FUGITIVE ☐ INTER. ☐

WATER DROPLETS PRESENT: NO ☒ YES ☐ | IF WATER ~~DROPLET PLUME~~: ~~ATTACHED~~ ☐ DETACHED ☐

POINT IN PLUME AT WHICH OPACITY WAS DETERMINED
START NA STOP ''

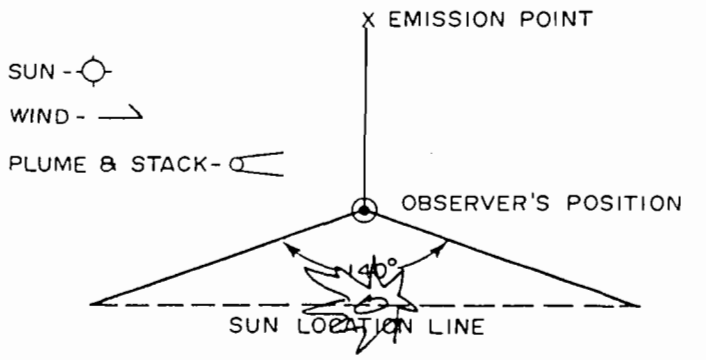
DESCRIBE BACKGROUND
START SKY STOP ''

BACKGROUND COLOR: START BLUE STOP '' | SKY CONDITIONS: START CLEAR STOP ''

WIND SPEED: START 10-15 STOP '' | WIND DIRECTION: START E STOP ''

AMBIENT TEMP: START 75° STOP '' | WET BULB TEMP: | RH %:

SOURCE LAYOUT SKETCH — DRAW NORTH ARROW



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28	0	0	0	0	58				
29	0	0	0	0	59				
30	0	0	0	0	60				

AVERAGE OPACITY FOR HIGHEST PERIOD: 0

NUMBER OF READINGS ABOVE 0 WERE 0

RANGE OF OPACITY READINGS
MINIMUM 0 MAXIMUM 0

OBSERVER'S NAME (PRINT): J. COLLEEN HODGE

OBSERVER'S SIGNATURE: J. Colleen Hodge | DATE: 6/90

ORGANIZATION: ACE, INC.

CERTIFIED BY: ETA | DATE: 6/90

VERIFIED BY: | DATE:

COMMENTS:

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS
SIGNATURE
TITLE DATE

Air Consulting and Engineering

VISIBLE EMISSION OBSERVATION FORM

OBSERVATION DATE	START TIME	STOP TIME
6/25/90	1135	1205

SOURCE NAME: HARRIS SEMICONDUCTOR

ADDRESS:

CITY: PALM BAY | STATE: FL. | ZIP:

PHONE: | SOURCE I.D. NUMBER: FS1502

PROCESS EQUIPMENT: ACID/SOLVENT VENT | OPERATING MODE: NORM.

CONTROL EQUIPMENT: WET SCRUBBER | OPERATING MODE: NORM.

DESCRIBE EMISSION POINT
START STACK OUTLET STOP "

HEIGHT ABOVE GROUND LEVEL: START ~40' STOP " | HEIGHT REL. TO OBSERVER: START 4" STOP "

DISTANCE FROM OBSERVER: START 40' STOP " | DIRECTION FROM OBSERVER: START N STOP "

DESCRIBE EMISSIONS
START NONE PRES. STOP "

EMISSION COLOR: START NA STOP " | PLUME TYPE: CONT. ~~FUGITIVE~~ ☐ INTER. ☐

WATER DROPLETS PRESENT: NO ☒ YES ☐ | IF WATER DROPLET PLUME: ~~ATTACHED~~ ☐ DETACHED ☐

POINT IN PLUME AT WHICH OPACITY WAS DETERMINED
START NA STOP "

DESCRIBE BACKGROUND
START SKY STOP "

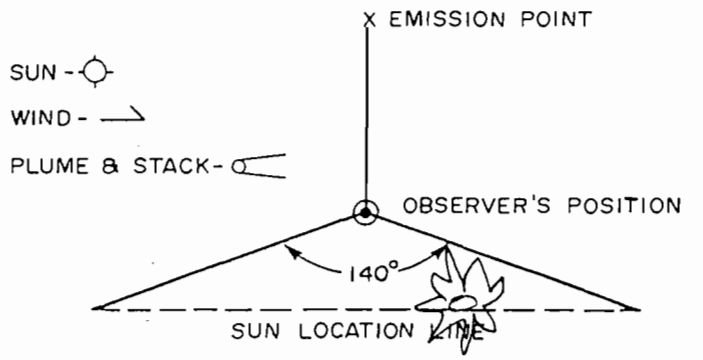
BACKGROUND COLOR: START BL STOP " | SKY CONDITIONS: START CLEAR STOP "

WIND SPEED: START 10 STOP " | WIND DIRECTION: START E STOP

AMBIENT TEMP: START 90 'S STOP " | WET BULB TEMP. | RH %

SOURCE LAYOUT SKETCH

DRAW NORTH ARROW



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30	0	0	0	0	60				

AVERAGE OPACITY FOR HIGHEST PERIOD 0 | NUMBER OF READINGS ABOVE 0 WERE 0

RANGE OF OPACITY READINGS: MINIMUM 0 MAXIMUM 0

OBSERVER'S NAME (PRINT): J. COLLEEN HODGE

COMMENTS:

OBSERVER'S SIGNATURE: J. Colleen Hodge | DATE 6/90

ORGANIZATION: ACE, INC.

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SIGNATURE

TITLE | DATE

CERTIFIED BY: ETA | DATE 6/90

VERIFIED BY | DATE

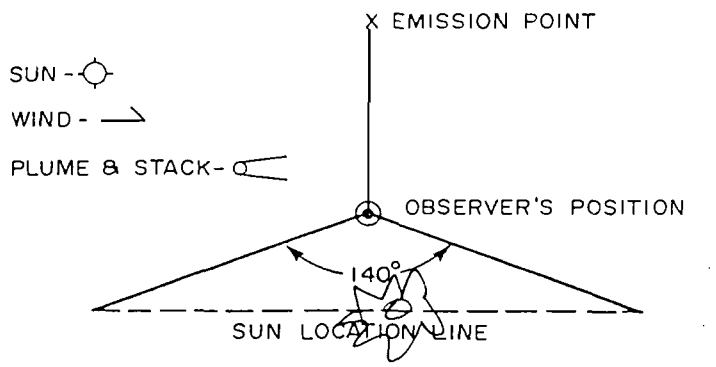
air consulting and engineering

VISIBLE EMISSION OBSERVATION FORM

SOURCE NAME	HARRIS SEMICONDUCTOR
ADDRESS	
CITY	PALM BAY
STATE	FL.
ZIP	
PHONE	
SOURCE I.D. NUMBER	F51503
PROCESS EQUIPMENT	ACID/SOLVENT VENT
OPERATING MODE	NORM.
CONTROL EQUIPMENT	WET SCRUBBER
OPERATING MODE	NORM.
DESCRIBE EMISSION POINT START	STACK OUT. STOP "
HEIGHT ABOVE GROUND LEVEL START	240' STOP "
HEIGHT REL. TO OBSERVER START	46 STOP "
DISTANCE FROM OBSERVER START	60 40' STOP "
DIRECTION FROM OBSERVER START	N STOP
DESCRIBE EMISSIONS START	NONE PRES. STOP "
EMISSION COLOR START	NA STOP "
PLUME TYPE: CONT. ☒ FUGITIVE ☐ INTER. ☐	
WATER DROPLETS PRESENT: NO ☒ YES ☐	
IF WATER ~~DROPLET PLUME~~: ~~ATTACHED~~ ☐ DETACHED ☐	
POINT IN PLUME AT WHICH OPACITY WAS DETERMINED START	NA STOP "
DESCRIBE BACKGROUND START	SKY STOP "
BACKGROUND COLOR START	BL STOP "
SKY CONDITIONS START	~~CLEAR~~ STOP "
WIND SPEED START	10 STOP "
WIND DIRECTION START	E STOP "
AMBIENT TEMP START	90's STOP "
WET BULB TEMP.	RH %

SOURCE LAYOUT SKETCH

DRAW NORTH ARROW



OBSERVATION DATE	START TIME	STOP TIME
6/25/90	1135	1205

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30	0	0	0	0	60				

AVERAGE OPACITY FOR HIGHEST PERIOD	0
NUMBER OF READINGS ABOVE 0 WERE	0
RANGE OF OPACITY READINGS MINIMUM	0
MAXIMUM	0
OBSERVER'S NAME (PRINT)	J. COLLEEN HODGE
OBSERVER'S SIGNATURE	J. Colleen Hodge
DATE	6/90
ORGANIZATION	ACE, INC.
CERTIFIED BY	ETA
DATE	6/90
VERIFIED BY	
DATE	

COMMENTS:

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TITLE DATE

air consulting and engineering

VISIBLE EMISSION OBSERVATION FORM

OBSERVATION DATE 6/25/90	START TIME 1135	STOP TIME 1205

SOURCE NAME: HARRIS SEMICONDUCTOR

ADDRESS:

CITY: PALM BAY | STATE: FL. | ZIP:

PHONE: | SOURCE I.D. NUMBER: FS1504

PROCESS EQUIPMENT: ACID/SOLVENT VENT | OPERATING MODE: NORM.

CONTROL EQUIPMENT: WET SCRUBBER | OPERATING MODE: NORM.

DESCRIBE EMISSION POINT
START STACK OUTLET STOP "

HEIGHT ABOVE GROUND LEVEL: START ~40' STOP " | HEIGHT REL. TO OBSERVER: START 5' STOP

DISTANCE FROM OBSERVER: START 80' STOP " | DIRECTION FROM OBSERVER: START NW STOP "

DESCRIBE EMISSIONS
START NONE STOP "

EMISSION COLOR: START NA STOP | PLUME TYPE: CONT. ☑ FUGITIVE ☐ INTER. ☐

WATER DROPLETS PRESENT: NO ☒ YES ☐ | IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐

POINT IN PLUME AT WHICH OPACITY WAS DETERMINED
START NA STOP NA

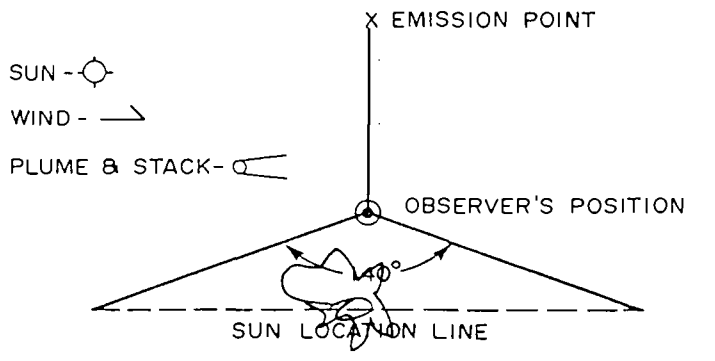
DESCRIBE BACKGROUND
START SKY STOP "

BACKGROUND COLOR: START BL STOP " | SKY CONDITIONS: START CLEAR STOP "

WIND SPEED: START 10 STOP " | WIND DIRECTION: START VE STOP "

AMBIENT TEMP. START 80 STOP 80 | WET BULB TEMP. | RH %

SOURCE LAYOUT SKETCH — DRAW NORTH ARROW



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29	0	0	0	0	59				
30	0	0	0	0	60				

AVERAGE OPACITY FOR HIGHEST PERIOD: 0

NUMBER OF READINGS ABOVE 0 WERE: 0

RANGE OF OPACITY READINGS: MINIMUM 0 MAXIMUM 0

OBSERVER'S NAME (PRINT): J. COLLEEN HODGE

OBSERVER'S SIGNATURE: J. Colleen Hodge | DATE: 6/90

ORGANIZATION: ACE, INC.

COMMENTS:

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SIGNATURE
TITLE DATE

CERTIFIED BY: ETA | DATE: 6/90

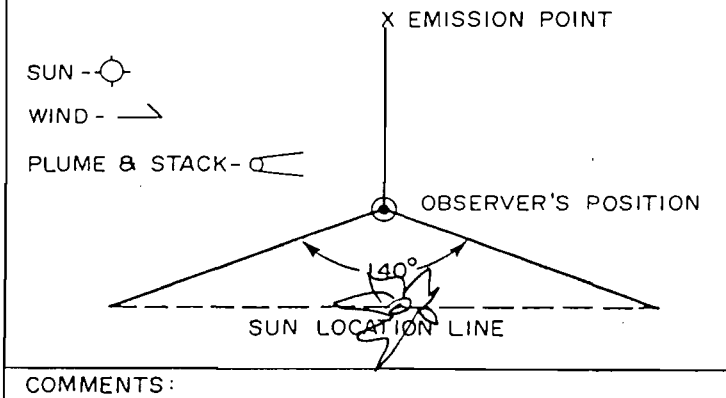
VERIFIED BY | DATE

Air Consulting and Engineering

VISIBLE EMISSION OBSERVATION FORM

SOURCE NAME	HARRIS SEMICONDUCTOR
ADDRESS	
CITY	PALM BAY
STATE	FL.
ZIP	
PHONE	
SOURCE I.D. NUMBER	FS1505
PROCESS EQUIPMENT	ACID/EFFLUENT VENT
OPERATING MODE	NORM.
CONTROL EQUIPMENT	& WET SCRUBBER
OPERATING MODE	NORM.
DESCRIBE EMISSION POINT START	STACK OUTLET STOP "
HEIGHT ABOVE GROUND LEVEL START	~40' STOP "
HEIGHT REL. TO OBSERVER START	~40' STOP "
DISTANCE FROM OBSERVER START	100' ~40' STOP "
DIRECTION FROM OBSERVER START	N STOP
DESCRIBE EMISSIONS START	NONE STOP —
EMISSION COLOR START	NA STOP —
PLUME TYPE: CONT. ☑	FUGITIVE ☐ INTER. ☐
WATER DROPLETS PRESENT: NO ☑	YES ☐
IF WATER DROPLET PLUME: ATTACHED ☐	DETACHED ☐
POINT IN PLUME AT WHICH OPACITY WAS DETERMINED START	NA STOP —
DESCRIBE BACKGROUND START	SKY STOP NA
BACKGROUND COLOR START	BL STOP "
SKY CONDITIONS START	CLEAR STOP "
WIND SPEED START	5-10 STOP "
WIND DIRECTION START	NE STOP "
AMBIENT TEMP. START	80 STOP "
WET BULB TEMP.	RH %

SOURCE LAYOUT SKETCH — DRAW NORTH ARROW



OBSERVATION DATE	START TIME	STOP TIME
6/25/90	1135	1205

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30	0	0	0	0	60				

AVERAGE OPACITY FOR HIGHEST PERIOD	0
NUMBER OF READINGS ABOVE 0 WERE	0
RANGE OF OPACITY READINGS MINIMUM	0
MAXIMUM	0
OBSERVER'S NAME (PRINT)	J. COLLEEN HODGE
OBSERVER'S SIGNATURE	J. Colleen Hodge
DATE	6/90
ORGANIZATION	ACE, INC.
CERTIFIED BY	ETA
DATE	6/90
VERIFIED BY	
DATE	

COMMENTS:

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SIGNATURE

TITLE DATE

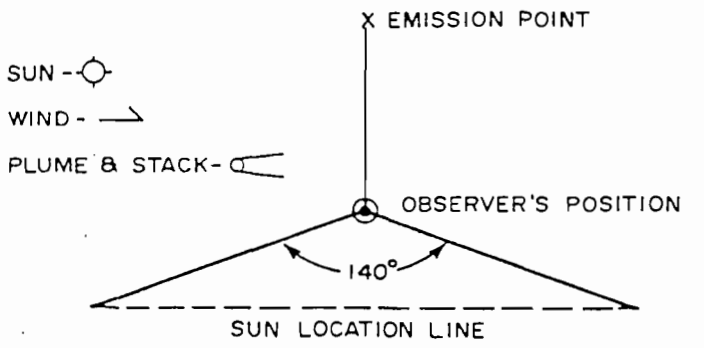
ace air consulting engineering

VISIBLE EMISSION OBSERVATION FORM

SOURCE NAME: HARRIS SEMICONDUCTOR	
ADDRESS:	
CITY: PALM BAY	STATE: FL. ZIP:
PHONE:	SOURCE I.D. NUMBER: FS1501
PROCESS EQUIPMENT: ACID/SOLVENT VENT	OPERATING MODE: NORM.
CONTROL EQUIPMENT: WET SCRUBBER	OPERATING MODE: NORM.
DESCRIBE EMISSION POINT: START STACK EXIT	STOP "
HEIGHT ABOVE GROUND LEVEL: START ~60'	STOP " HEIGHT REL. TO OBSERVER: START ~60' STOP "
DISTANCE FROM OBSERVER: START ~130'	STOP ~430' DIRECTION FROM OBSERVER: START NW STOP NW
DESCRIBE EMISSIONS: START NONE PLUME.	STOP "
EMISSION COLOR: START NA	STOP " PLUME TYPE: CONT. ☑ FUGITIVE ☐ INTER. ☐
WATER DROPLETS PRESENT: NO ☑ YES ☐	IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐
POINT IN PLUME AT WHICH OPACITY WAS DETERMINED: START NA	STOP "
DESCRIBE BACKGROUND: START SKY	STOP "
BACKGROUND COLOR: START BL.	STOP " SKY CONDITIONS: START CLEAR STOP "
WIND SPEED: START 0-5	STOP " WIND DIRECTION: START NNE STOP "
AMBIENT TEMP. START 90's	STOP " WET BULB TEMP. RH %

SOURCE LAYOUT SKETCH

DRAW NORTH ARROW



OBSERVATION DATE: 6/18/90 START TIME: 0945 STOP TIME: 1000

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AVERAGE OPACITY FOR HIGHEST PERIOD: 0

NUMBER OF READINGS ABOVE 0 WERE 0

RANGE OF OPACITY READINGS MINIMUM 0 MAXIMUM 0

OBSERVER'S NAME (PRINT): J. COLLEEN HAYES

OBSERVER'S SIGNATURE: J. Colleen Hayes DATE: 6/90

ORGANIZATION: ACE, INC.

CERTIFIED BY: ETA DATE: 6/90

VERIFIED BY: DATE:

COMMENTS:

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS

SIGNATURE

TITLE DATE

Air Consulting and Engineering

VISIBLE EMISSION OBSERVATION FORM

OBSERVATION DATE	START TIME	STOP TIME
6/18	0945	1000

SOURCE NAME: HARRIS SEMICONDUCTOR

ADDRESS:

CITY: PALM BAY | STATE: FL. | ZIP:

PHONE: | SOURCE I.D. NUMBER: FSH502

PROCESS EQUIPMENT: WET SCRUBBER | OPERATING MODE: NORM.

CONTROL EQUIPMENT: ACID/SOLV. JOINT | OPERATING MODE: NORM.

DESCRIBE EMISSION POINT
START: STACK EXIT | STOP: "

HEIGHT ABOVE GROUND LEVEL
START: ≈60' | STOP: "

HEIGHT REL. TO OBSERVER
START: ≈60' | STOP: "

DISTANCE FROM OBSERVER
START: 120' | STOP: "

DIRECTION FROM OBSERVER
START: NW | STOP: "

DESCRIBE EMISSIONS
START: NONE VISIBLE. | STOP: "

EMISSION COLOR
START: NA | STOP: "

PLUME TYPE: CONT. ☑ FUGITIVE ☐ INTER. ☐

WATER DROPLETS PRESENT: NO ☑ YES ☐

IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐

POINT IN PLUME AT WHICH OPACITY WAS DETERMINED
START: NA | STOP: "

DESCRIBE BACKGROUND
START: SKY | STOP: "

BACKGROUND COLOR
START: BL. | STOP: "

SKY CONDITIONS
START: CLEAR | STOP: "

WIND SPEED
START: 0-5 | STOP: "

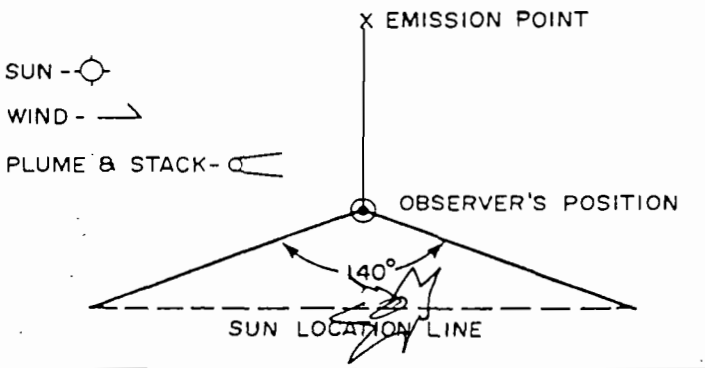
WIND DIRECTION
START: NNE | STOP:

AMBIENT TEMP.
START: 80's | STOP: "

WET BULB TEMP.: | RH %:

SOURCE LAYOUT SKETCH

DRAW NORTH ARROW



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29	0	0	0	0	59				
30	0	0	0	0	60				

AVERAGE OPACITY FOR HIGHEST PERIOD: 0

NUMBER OF READINGS ABOVE: 0 WERE 0

RANGE OF OPACITY READINGS
MINIMUM: 0 MAXIMUM: 0

OBSERVER'S NAME (PRINT): J. COLLEEN HAYES

OBSERVER'S SIGNATURE: J. Colleen Hayes | DATE: 6/90

ORGANIZATION: ACE, INC.

CERTIFIED BY: ETA | DATE: 6/90

VERIFIED BY: | DATE:

COMMENTS:

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS
SIGNATURE
TITLE DATE

air consulting engineering

VISIBLE EMISSION OBSERVATION FORM

OBSERVATION DATE 6/18/90	START TIME 0907	STOP TIME 0937

SOURCE NAME: HARRIS SEMICONDUCTOR

ADDRESS:

CITY: PALM BAY | STATE: FL. | ZIP:

PHONE: | SOURCE I.D. NUMBER: FS4503

PROCESS EQUIPMENT: ACID/SOLVENT VENT | OPERATING MODE: NORM.

CONTROL EQUIPMENT: WET SCRUBBER | OPERATING MODE: NORM.

DESCRIBE EMISSION POINT
START STACK EXIT STOP ''

HEIGHT ABOVE GROUND LEVEL START ~~XXX~~ 30' STOP '' | HEIGHT REL. TO OBSERVER START 50' STOP ''

DISTANCE FROM OBSERVER START 120' STOP '' | DIRECTION FROM OBSERVER START NW STOP ''

DESCRIBE EMISSIONS
START NONE STOP ''

EMISSION COLOR START NA STOP '' | PLUME TYPE: CONT. ☒ FUGITIVE ☐ INTER. ☐

WATER DROPLETS PRESENT: NO ☒ YES ☐ | IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐

POINT IN PLUME AT WHICH OPACITY WAS DETERMINED
START NA STOP ''

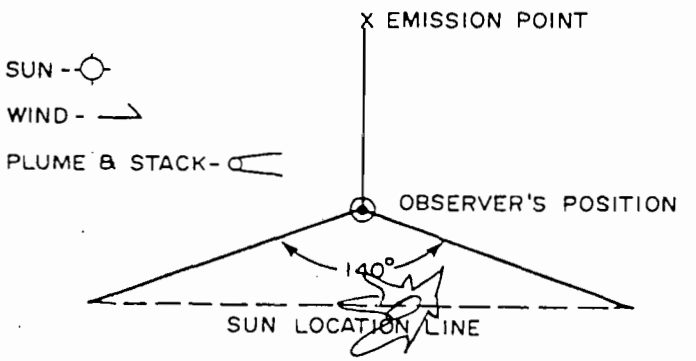
DESCRIBE BACKGROUND
START SKY STOP ''

BACKGROUND COLOR START BL. STOP '' | SKY CONDITIONS START CLEAR STOP ''

WIND SPEED START 5-10 STOP '' | WIND DIRECTION START NNE STOP

AMBIENT TEMP. START 90's STOP | WET BULB TEMP. | RH %

SOURCE LAYOUT SKETCH — DRAW NORTH ARROW



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AVERAGE OPACITY FOR HIGHEST PERIOD 0 | NUMBER OF READINGS ABOVE 0 WERE 0

RANGE OF OPACITY READINGS MINIMUM 0 MAXIMUM 0

OBSERVER'S NAME (PRINT): J. COLLEEN HAYES

COMMENTS:

OBSERVER'S SIGNATURE: J. Colleen Hayes | DATE 6/90

ORGANIZATION: ACE INC.

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS
SIGNATURE
TITLE DATE

CERTIFIED BY ETA | DATE 6/90

VERIFIED BY | DATE

air consulting and engineering

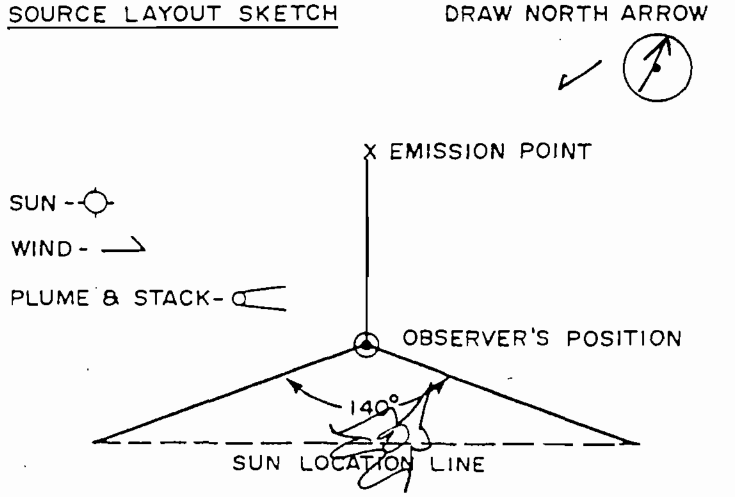
VISIBLE EMISSION OBSERVATION FORM

OBSERVATION DATE	START TIME	STOP TIME
6/18	0907	0937

SOURCE NAME	HARRIS SEMICONDUCTOR
ADDRESS	
CITY	PALM BAY
STATE	FL.
ZIP	
PHONE	ACID/SOLV. VENT
SOURCE I.D. NUMBER	FSH50734
PROCESS EQUIPMENT	WET SCRUBBER
OPERATING MODE	NORM.
CONTROL EQUIPMENT	
OPERATING MODE	NORM.
DESCRIBE EMISSION POINT	START STACK OUT. STOP "
HEIGHT ABOVE GROUND LEVEL	START ≈60' STOP "
HEIGHT REL. TO OBSERVER	START ≈60' STOP "
DISTANCE FROM OBSERVER	START 120' STOP "
DIRECTION FROM OBSERVER	START NW STOP "
DESCRIBE EMISSIONS	START NONE PRES. STOP "
EMISSION COLOR	START NA STOP "
PLUME TYPE	CONT. ☑ FUGITIVE ☐ INTER. ☐
WATER DROPLETS PRESENT	NO ☑ YES ☐
IF WATER ~~DROPLET PLUME~~	~~ATTACHED~~ ☐ DETACHED ☐
POINT IN PLUME AT WHICH OPACITY WAS DETERMINED	START NA STOP "
DESCRIBE BACKGROUND	START SKY STOP "
BACKGROUND COLOR	START BL. STOP "
SKY CONDITIONS	START CLEAR STOP "
WIND SPEED	START 5-10 STOP "
WIND DIRECTION	START NNE STOP "
AMBIENT TEMP.	START 70° STOP "
WET BULB TEMP.	
RH %	

SOURCE LAYOUT SKETCH

DRAW NORTH ARROW



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AVERAGE OPACITY FOR HIGHEST PERIOD 0

NUMBER OF READINGS ABOVE 0 WERE 0

RANGE OF OPACITY READINGS MINIMUM 0 MAXIMUM 0

OBSERVER'S NAME (PRINT) J. COLLEEN HOGE

OBSERVER'S SIGNATURE J. Colleen Hoge DATE 6/90

ORGANIZATION ACE, INC.

CERTIFIED BY ETA DATE 6/90

VERIFIED BY DATE

COMMENTS:

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TITLE DATE

ACE Consulting Engineering

VISIBLE EMISSION OBSERVATION FORM

OBSERVATION DATE	START TIME	STOP TIME
6/22/90	1145	1215

SOURCE NAME: HARRIS SEMICONDUCTOR

ADDRESS:

CITY: PALM BAY | STATE: FL. | ZIP:

PHONE: | SOURCE I.D. NUMBER: FS550

PROCESS EQUIPMENT: ACID/SOLVENT VENT | OPERATING MODE: NORM.

CONTROL EQUIPMENT: WET SCRUBBER | OPERATING MODE: NORM.

DESCRIBE EMISSION POINT
START STACK OUT. STOP "

HEIGHT ABOVE GROUND LEVEL
START 15' STOP "

HEIGHT REL. TO OBSERVER
START 15' STOP "

DISTANCE FROM OBSERVER
START 20' STOP "

DIRECTION FROM OBSERVER
START N STOP "

DESCRIBE EMISSIONS
START NONE PICKS. STOP "

EMISSION COLOR
START NA STOP "

PLUME TYPE: CONT. ☑ FUGITIVE ☐ INTER. ☐

WATER DROPLETS PRESENT:
NO ☑ YES ☐

IF WATER DROPLET PLUME:
ATTACHED ☐ DETACHED ☐

POINT IN PLUME AT WHICH OPACITY WAS DETERMINED
START NA STOP "

DESCRIBE BACKGROUND
START SKY STOP "

BACKGROUND COLOR
START BLUE STOP "

SKY CONDITIONS
START CLEAR STOP "

WIND SPEED
START 10-15 STOP "

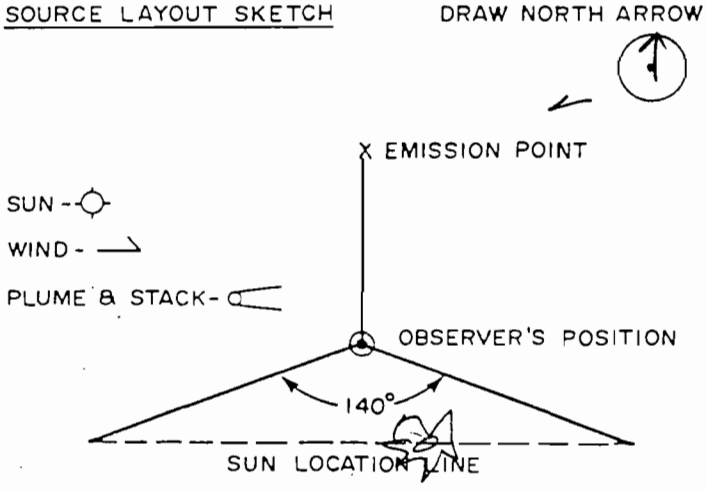
WIND DIRECTION
START E STOP "

AMBIENT TEMP.
START 90'S STOP "

WET BULB TEMP.

RH %

SOURCE LAYOUT SKETCH



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AVERAGE OPACITY FOR HIGHEST PERIOD: 0

NUMBER OF READINGS ABOVE 0 WERE 0

RANGE OF OPACITY READINGS
MINIMUM 0 MAXIMUM 0

OBSERVER'S NAME (PRINT): J. COLLEEN HAYES

COMMENTS:

OBSERVER'S SIGNATURE: J. Colleen Hayes | DATE: 6/90

ORGANIZATION: ACE, INC.

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TITLE | DATE

CERTIFIED BY: ETA | DATE: 6/90

VERIFIED BY | DATE

Air Consulting Engineering

VISIBLE EMISSION OBSERVATION FORM

OBSERVATION DATE 6/21/90	START TIME 1233	STOP TIME 1303

SOURCE NAME: HARRIS SEMICONDUCTOR

ADDRESS:

CITY: PALM BAY | STATE: FL. | ZIP:

PHONE: | SOURCE I.D. NUMBER: FS750

PROCESS EQUIPMENT: WET SCRUBBER | OPERATING MODE: NORM.

CONTROL EQUIPMENT: SOLVENT/ACID VENT | OPERATING MODE: NORM.

DESCRIBE EMISSION POINT
START OUTLET STACK STOP "

HEIGHT ABOVE GROUND LEVEL: START ~25' STOP " | HEIGHT REL. TO OBSERVER: START ~25' STOP "

DISTANCE FROM OBSERVER: START ~100' STOP " | DIRECTION FROM OBSERVER: START NW STOP "

DESCRIBE EMISSIONS
START NONE STOP "

EMISSION COLOR: START NA STOP | PLUME TYPE: CONT. ☒ FUGITIVE ☐ INTER. ☐

WATER DROPLETS PRESENT: NO ☒ YES ☐ | IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐

POINT IN PLUME AT WHICH OPACITY WAS DETERMINED
START NA STOP "

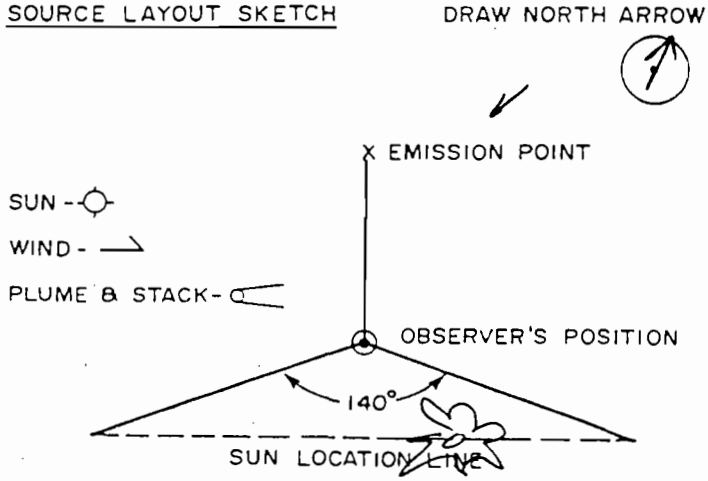
DESCRIBE BACKGROUND
START SKY STOP "

BACKGROUND COLOR: START BLUE STOP " | SKY CONDITIONS: START CLEAR STOP "

WIND SPEED: START 0-3 STOP " | WIND DIRECTION: START NE STOP "

AMBIENT TEMP. START 80's STOP " | WET BULB TEMP. | RH %

SOURCE LAYOUT SKETCH



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AVERAGE OPACITY FOR HIGHEST PERIOD 0 | NUMBER OF READINGS ABOVE 0 WERE 0

RANGE OF OPACITY READINGS: MINIMUM 0 MAXIMUM 0

OBSERVER'S NAME (PRINT): J. COLLEEN HAYES

OBSERVER'S SIGNATURE: J. Colleen Hayes | DATE 6/90

ORGANIZATION: ACE, INC.

CERTIFIED BY: ETA | DATE 6/90

VERIFIED BY: | DATE

COMMENTS:

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SIGNATURE
TITLE DATE

air consulting and engineering

VISIBLE EMISSION OBSERVATION FORM

OBSERVATION DATE	START TIME	STOP TIME
6/26/90	11:05	11:35

SOURCE NAME: HARRIS SEMICONDUCTOR

ADDRESS:

CITY: PALM BAY | STATE: FL. | ZIP:

PHONE: | SOURCE I.D. NUMBER: FS8501

PROCESS EQUIPMENT: ACID/SOLVENT VENT | OPERATING MODE: NORM.

CONTROL EQUIPMENT: WET SCRUBBER | OPERATING MODE: NORM.

DESCRIBE EMISSION POINT
START OUTLET STACK STOP

HEIGHT ABOVE GROUND LEVEL: START ≈35' STOP " | HEIGHT REL. TO OBSERVER: START SAME STOP

DISTANCE FROM OBSERVER: START ≈175' STOP " | DIRECTION FROM OBSERVER: START NW STOP "

DESCRIBE EMISSIONS
START NONE STOP "

EMISSION COLOR: START NA STOP " | PLUME TYPE: CONT. ☒ FUGITIVE ☐ INTER. ☐

WATER DROPLETS PRESENT: NO ☒ YES ☐ | IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐

POINT IN PLUME AT WHICH OPACITY WAS DETERMINED
START NA STOP "

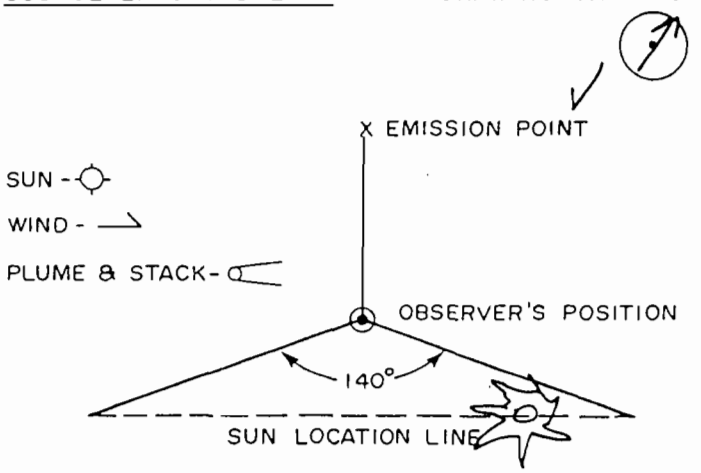
DESCRIBE BACKGROUND
START SKY STOP "

BACKGROUND COLOR: START BLUE STOP " | SKY CONDITIONS: START CLEAR STOP "

WIND SPEED: START 5-10 STOP " | WIND DIRECTION: START N STOP "

AMBIENT TEMP: START 80's STOP " | WET BULB TEMP. | RH %

SOURCE LAYOUT SKETCH — DRAW NORTH ARROW



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AVERAGE OPACITY FOR HIGHEST PERIOD 0 | NUMBER OF READINGS ABOVE 0 WERE 0

RANGE OF OPACITY READINGS: MINIMUM 0 MAXIMUM 0

OBSERVER'S NAME (PRINT): J. COLLEEN HODGE

COMMENTS:

OBSERVER'S SIGNATURE: J. Colleen Hodge | DATE 6/90

ORGANIZATION: ACE, INC.

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS
SIGNATURE
TITLE DATE

CERTIFIED BY: ETA | DATE 6/90

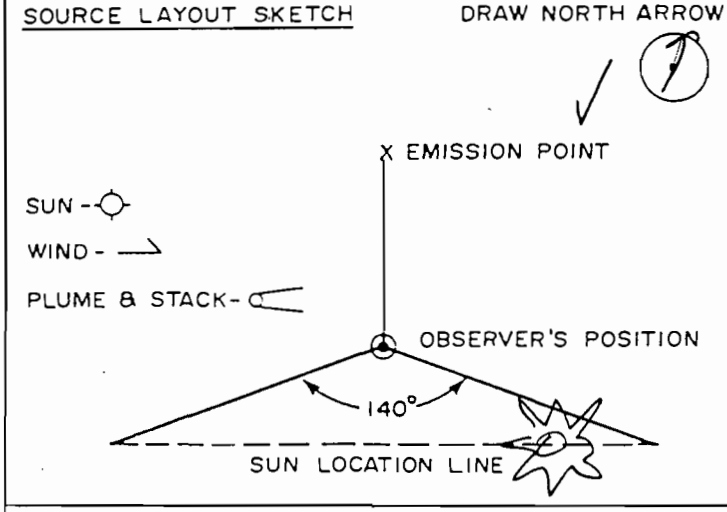
VERIFIED BY | DATE

Air Consulting Engineering

VISIBLE EMISSION OBSERVATION FORM

SOURCE NAME: HARRIS SEMICONDUCTOR	OBSERVATION DATE: 6/21/90
ADDRESS:	START TIME: 0937
CITY: PALM BAY / STATE: FL. / ZIP:	STOP TIME: 1007
PHONE: / SOURCE I.D. NUMBER: FS8502	
PROCESS EQUIPMENT: ACID/SOLVENT VENT / OPERATING MODE:	
CONTROL EQUIPMENT: WET SCRUBBER / OPERATING MODE:	
DESCRIBE EMISSION POINT: START OUTLET STACK STOP "	
HEIGHT ABOVE GROUND LEVEL: START ≈35' STOP " / HEIGHT REL. TO OBSERVER: START ≈35' STOP "	
DISTANCE FROM OBSERVER: START NW STOP 200' / DIRECTION FROM OBSERVER: START NW STOP	
DESCRIBE EMISSIONS: START NONE PRESENT STOP	
EMISSION COLOR: START NA STOP " / PLUME TYPE: CONT. ☒ FUGITIVE ☐ INTER. ☐	
WATER DROPLETS PRESENT: NO ☒ YES ☐ / IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐	
POINT IN PLUME AT WHICH OPACITY WAS DETERMINED: START NA STOP "	
DESCRIBE BACKGROUND: START SKY STOP "	
BACKGROUND COLOR: START BLUE STOP " / SKY CONDITIONS: START CLEAR STOP "	
WIND SPEED: START 5-10 STOP " / WIND DIRECTION: START N STOP "	
AMBIENT TEMP: START 80's STOP " / WET BULB TEMP: — / RH %: —	

SOURCE LAYOUT SKETCH — DRAW NORTH ARROW



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AVERAGE OPACITY FOR HIGHEST PERIOD: 0	NUMBER OF READINGS ABOVE: 0 WERE 0
RANGE OF OPACITY READINGS: MINIMUM 0	MAXIMUM 0
OBSERVER'S NAME (PRINT): J. COLLEEN HAYES	
COMMENTS:	OBSERVER'S SIGNATURE: J. Colleen Hayes / DATE: 6/90
	ORGANIZATION: ACE, INC.
I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS / SIGNATURE	CERTIFIED BY: ETA / DATE: 6/90
TITLE / DATE	VERIFIED BY / DATE

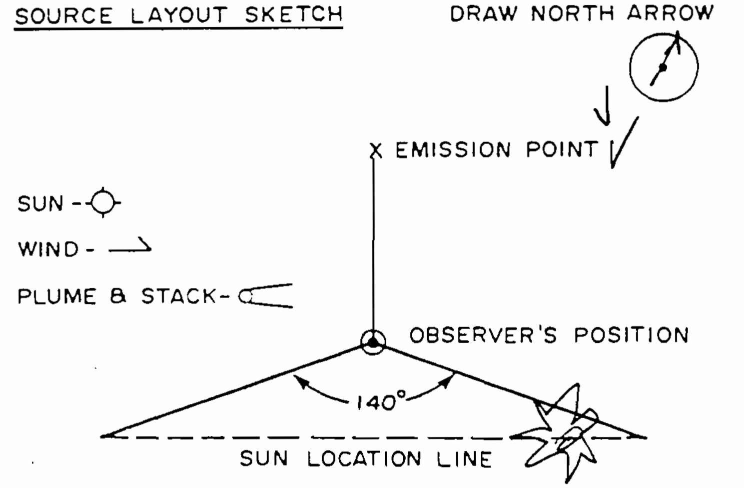
Air Consulting and Engineering

VISIBLE EMISSION OBSERVATION FORM

Field	Value
OBSERVATION DATE	6/29/90
START TIME	
STOP TIME	
SOURCE NAME	HARRIS SEMICONDUCTOR
ADDRESS	
CITY	PALM BAY
STATE	FL.
ZIP	
PHONE	
SOURCE I.D. NUMBER	F59501
PROCESS EQUIPMENT	ACID/SOLVENT VENT
OPERATING MODE	NORM.
CONTROL EQUIPMENT	WET SCRUBBER
OPERATING MODE	NORM.
DESCRIBE EMISSION POINT	START STACK OUTLET STOP "
HEIGHT ABOVE GROUND LEVEL	START ≈50 STOP "
HEIGHT REL. TO OBSERVER	START ≈50 STOP
DISTANCE FROM OBSERVER	START ≈350 STOP "
DIRECTION FROM OBSERVER	START NNW STOP "
DESCRIBE EMISSIONS	START NONE STOP "
EMISSION COLOR	START NA STOP
PLUME TYPE	CONT. ☒ FUGITIVE ☐ INTER. ☐
WATER DROPLETS PRESENT	NO ☒ YES ☐
IF WATER DROPLET PLUME	ATTACHED ☐ DETACHED ☐ (struck through)
POINT IN PLUME AT WHICH OPACITY WAS DETERMINED	START NA STOP "
DESCRIBE BACKGROUND	START SKY STOP "
BACKGROUND COLOR	START BLUE STOP "
SKY CONDITIONS	START ~~CLEAR~~ P.C. STOP "
WIND SPEED	START 5-10 STOP
WIND DIRECTION	START N STOP "
AMBIENT TEMP.	START STOP
WET BULB TEMP.	
RH %	

SOURCE LAYOUT SKETCH

DRAW NORTH ARROW



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28	0	0	0	0	58				
29	0	0	0	0	59				
30	0	0	0	0	60				

AVERAGE OPACITY FOR HIGHEST PERIOD: 0

NUMBER OF READINGS ABOVE 0 WERE 0

RANGE OF OPACITY READINGS: MINIMUM 0 MAXIMUM 0

OBSERVER'S NAME (PRINT): J. COLLEEN HODGE

OBSERVER'S SIGNATURE: J. Colleen Hodge — DATE 6/90

ORGANIZATION: ACE, INC.

CERTIFIED BY: ETA — DATE 6/90

VERIFIED BY: — DATE

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS

SIGNATURE

TITLE — DATE

Air Consulting and Engineering

VISIBLE EMISSION OBSERVATION FORM

OBSERVATION DATE	START TIME	STOP TIME
6/22/90	0956	1026

SOURCE NAME: HARRIS SEMICONDUCTOR

ADDRESS:

CITY: PALM BAY | STATE: FL. | ZIP:

PHONE: | SOURCE I.D. NUMBER: F59502

PROCESS EQUIPMENT: ACID/SOLVENT VENT | OPERATING MODE: NORM.

CONTROL EQUIPMENT: WET SCRUBBER | OPERATING MODE: NORM.

DESCRIBE EMISSION POINT
START STACK OUTLET STOP "

HEIGHT ABOVE GROUND LEVEL: START ≈50' STOP " | HEIGHT REL. TO OBSERVER: START ≈50' STOP "

DISTANCE FROM OBSERVER: START ≈250' STOP " | DIRECTION FROM OBSERVER: START NNW STOP "

DESCRIBE EMISSIONS
START NONE PRESENT STOP "

EMISSION COLOR: START NA STOP " | PLUME TYPE: CONT. ☒ FUGITIVE ☐ INTER. ☐

WATER DROPLETS PRESENT: NO ☒ YES ☐ | IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐

POINT IN PLUME AT WHICH OPACITY WAS DETERMINED
START ~~0'~~ NA STOP "

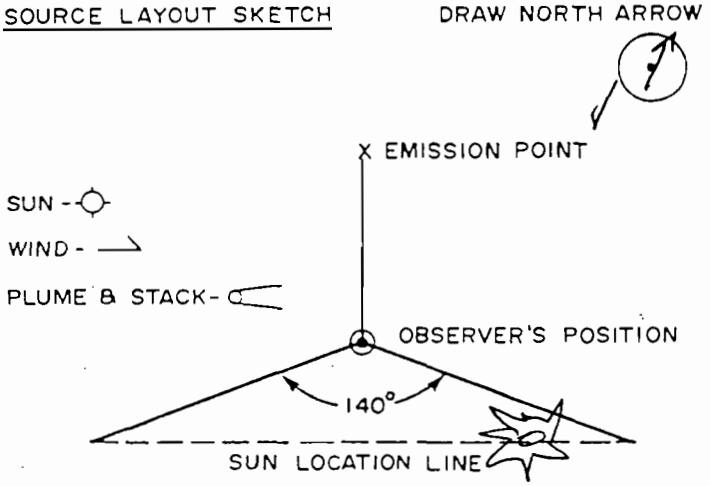
DESCRIBE BACKGROUND
START SKY STOP "

BACKGROUND COLOR: START BLUE STOP " | SKY CONDITIONS: START ~~CLOUDLESS~~ STOP

WIND SPEED: START 10-15 STOP " | WIND DIRECTION: START N STOP

AMBIENT TEMP.: START 90's STOP | WET BULB TEMP. | RH %

SOURCE LAYOUT SKETCH



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28	0	0	0	0	58				
29	0	0	0	0	59				
30	0	0	0	0	60				

AVERAGE OPACITY FOR HIGHEST PERIOD: 0 | NUMBER OF READINGS ABOVE 0 WERE 0

RANGE OF OPACITY READINGS: MINIMUM 0 MAXIMUM 0

OBSERVER'S NAME (PRINT): J. COLLEEN HODGE

COMMENTS:

OBSERVER'S SIGNATURE: J. Colleen Hodge | DATE: 6/90

ORGANIZATION: ACE INC.

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SIGNATURE

TITLE | DATE

CERTIFIED BY: ETA | DATE: 6/90

VERIFIED BY | DATE

ace air consulting and engineering

VISIBLE EMISSION OBSERVATION FORM

OBSERVATION DATE 6/18/90	START TIME 0945	STOP TIME 1000

SOURCE NAME: HARRIS SEMICONDUCTOR

ADDRESS:

CITY: PALM BAY | STATE: FL. | ZIP:

PHONE: | SOURCE I.D. NUMBER: ~~EST~~ FL0050 1

PROCESS EQUIPMENT: ACID/SOLVENT VENT | OPERATING MODE: NORM.

CONTROL EQUIPMENT: WET SCRUBBER | OPERATING MODE: NORM.

DESCRIBE EMISSION POINT
START STACK OUTLET STOP "

HEIGHT ABOVE GROUND LEVEL
START ~60' STOP "

HEIGHT REL. TO OBSERVER
START STOP

DISTANCE FROM OBSERVER
START 100' STOP 100'

DIRECTION FROM OBSERVER
START NW STOP "

DESCRIBE EMISSIONS
START NONE PRES STOP "

EMISSION COLOR
START NA STOP "

PLUME TYPE: CONT. ☒ FUGITIVE ☐ INTER. ☐

WATER DROPLETS PRESENT: NO ☒ YES ☐

IF WATER ~~DROPLET PLUME~~: ATTACHED ☐ DETACHED ☐

POINT IN PLUME AT WHICH OPACITY WAS DETERMINED
START NA STOP "

DESCRIBE BACKGROUND
START SKY STOP "

BACKGROUND COLOR
START BL. STOP "

SKY CONDITIONS
START CLEAR STOP "

WIND SPEED
START 0-5 STOP "

WIND DIRECTION
START ~~W~~ NNW STOP

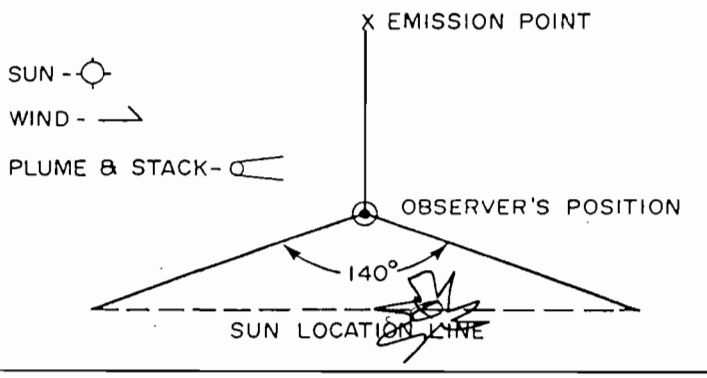
AMBIENT TEMP.
START 80°S STOP "

WET BULB TEMP.

RH %

SOURCE LAYOUT SKETCH

DRAW NORTH ARROW



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27	0	0	0	0	57				
28	0	0	0	0	58				
29	0	0	0	0	59				
30	0	0	0	0	60				

AVERAGE OPACITY FOR HIGHEST PERIOD 0

NUMBER OF READINGS ABOVE 0 WERE 0

RANGE OF OPACITY READINGS
MINIMUM 0 MAXIMUM 0

OBSERVER'S NAME (PRINT): J. COLLEEN HODGE

COMMENTS:

OBSERVER'S SIGNATURE: J. Colleen Hodge | DATE 6/90

ORGANIZATION: ACE, INC.

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SIGNATURE

TITLE | DATE

CERTIFIED BY: ETA | DATE 6/90

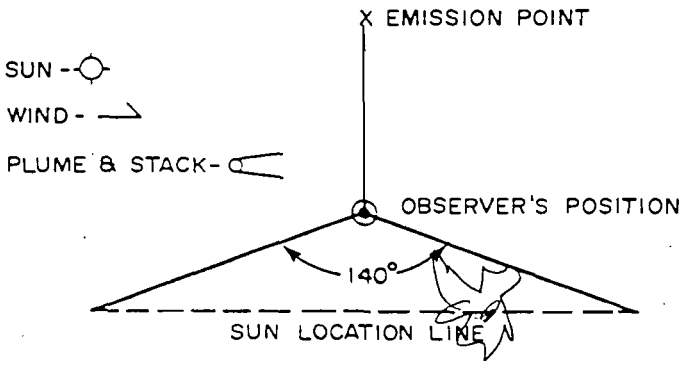
VERIFIED BY | DATE

air consulting engineering

VISIBLE EMISSION OBSERVATION FORM

SOURCE NAME: HARRIS SEMICONDUCTOR	OBSERVATION DATE: 6/21/90
ADDRESS:	START TIME: 0937
CITY: PALM BAY / STATE: FL. / ZIP:	STOP TIME: 1007
PHONE:	SOURCE I.D. NUMBER: FS860 1
PROCESS EQUIPMENT: ACID SOLVENT SCRUBBER	OPERATING MODE:
CONTROL EQUIPMENT: WET SCRUBBER	OPERATING MODE:
DESCRIBE EMISSION POINT: START OUTLET STACK STOP "	
HEIGHT ABOVE GROUND LEVEL: START ≈15' STOP ≈15'	HEIGHT REL. TO OBSERVER: START ≈15 STOP "
DISTANCE FROM OBSERVER: START 200 STOP	DIRECTION FROM OBSERVER: START NW STOP
DESCRIBE EMISSIONS: START NONE PRES. STOP "	
EMISSION COLOR: START NA STOP "	PLUME TYPE: CONT. ☒ FUGITIVE ☐ INTER. ☐
WATER DROPLETS PRESENT: NO ☒ YES ☐	IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐
POINT IN PLUME AT WHICH OPACITY WAS DETERMINED: START NA STOP "	
DESCRIBE BACKGROUND: START SKY STOP "	
BACKGROUND COLOR: START BLUE STOP "	SKY CONDITIONS: START CLEAR STOP
WIND SPEED: START 5-10 STOP	WIND DIRECTION: START N STOP "
AMBIENT TEMP. START 90°S STOP	WET BULB TEMP. / RH %

SOURCE LAYOUT SKETCH — DRAW NORTH ARROW



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AVERAGE OPACITY FOR HIGHEST PERIOD: 0	NUMBER OF READINGS ABOVE 0 WERE 0
RANGE OF OPACITY READINGS: MINIMUM 0	MAXIMUM 0
OBSERVER'S NAME (PRINT): J. COLLEEN HARGETT	
COMMENTS:	OBSERVER'S SIGNATURE: J. Colleen Hargett — DATE:
	ORGANIZATION:
I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS — SIGNATURE	CERTIFIED BY — DATE
TITLE — DATE	VERIFIED BY — DATE

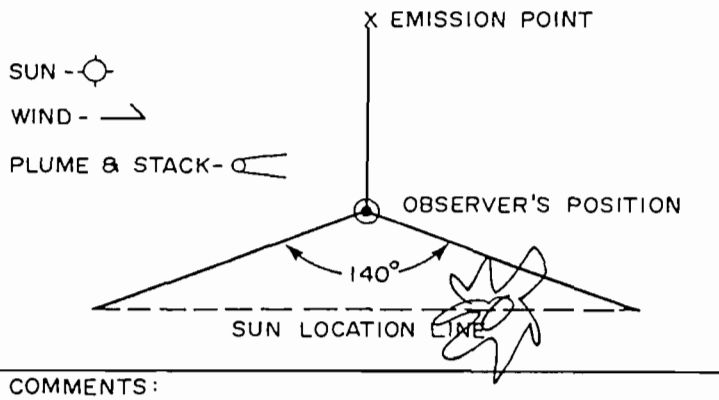
VISIBLE EMISSION OBSERVATION FORM

ace air consulting and engineering

SOURCE NAME: HARRIS SEMICONDUCTOR		
ADDRESS:		
CITY: PALM BAY	STATE: FL.	ZIP:
PHONE: (NO LONGER EXISTS)	SOURCE I.D. NUMBER: ~~FO1502~~ FO1501	
PROCESS EQUIPMENT: ACID/SOLVENT VENT	OPERATING MODE: NORM.	
CONTROL EQUIPMENT: WET SCRUBBER	OPERATING MODE: NORM.	
DESCRIBE EMISSION POINT: START STACK OUTLET STOP "		
HEIGHT ABOVE GROUND LEVEL: START ≈50' STOP "	HEIGHT REL. TO OBSERVER: START ≈50' STOP "	
DISTANCE FROM OBSERVER: START ≈200' STOP "	DIRECTION FROM OBSERVER: START WNW STOP "	
DESCRIBE EMISSIONS: START NONE STOP "		
EMISSION COLOR: START NA STOP	PLUME TYPE: CONT. ☑ FUGITIVE ☐ INTER. ☐	
WATER DROPLETS PRESENT: NO ☑ YES ☐	IF WATER ~~DROPLET PLUME~~: ~~ATTACHED~~ ☐ DETACHED ☐	
POINT IN PLUME AT WHICH OPACITY WAS DETERMINED: START NA STOP "		
DESCRIBE BACKGROUND: START SKY STOP "		
BACKGROUND COLOR: START BLUE/CLOUD STOP	SKY CONDITIONS: START PCLOUD STOP "	
WIND SPEED: START 5-10 STOP "	WIND DIRECTION: START NW STOP	
AMBIENT TEMP: START 90 STOP "	WET BULB TEMP.	RH %

SOURCE LAYOUT SKETCH

DRAW NORTH ARROW



OBSERVATION DATE	START TIME	STOP TIME
6/27/90	1130	~~1200~~

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29	0	0	0	0	59				
30	0	0	0	0	60				

AVERAGE OPACITY FOR HIGHEST PERIOD: 0	NUMBER OF READINGS ABOVE 0 WERE 0
RANGE OF OPACITY READINGS: MINIMUM 0	MAXIMUM 0
OBSERVER'S NAME (PRINT): J. COLLEEN HODGE	
COMMENTS:	OBSERVER'S SIGNATURE: J. Colleen Hodge — DATE: 6/90
	ORGANIZATION: ACE, INC.
I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS — SIGNATURE	CERTIFIED BY: ETA — DATE: 6/90
TITLE — DATE	VERIFIED BY — DATE

ace Air Consulting and Engineering

VISIBLE EMISSION OBSERVATION FORM

OBSERVATION DATE 6/27/90	START TIME 1045	STOP TIME 1115

SOURCE NAME: HARRIS SEMICONDUCTOR

ADDRESS:

CITY: PALM BAY | STATE: FL. | ZIP:

PHONE: | SOURCE I.D. NUMBER: FG250

PROCESS EQUIPMENT: ACID/SOLVENT VENT | OPERATING MODE: NORM.

CONTROL EQUIPMENT: WET SCRUBBER | OPERATING MODE: NORM.

DESCRIBE EMISSION POINT
START STACK OUTLET STOP "

HEIGHT ABOVE GROUND LEVEL
START ≈35' STOP "

HEIGHT REL. TO OBSERVER
START ≈35' STOP "

DISTANCE FROM OBSERVER
START 50' STOP "

DIRECTION FROM OBSERVER
START 50' STOP "

DESCRIBE EMISSIONS
START NONE PRES. STOP "

EMISSION COLOR
START NA STOP "

PLUME TYPE: CONT. ☑
FUGITIVE ☐ INTER. ☐

WATER DROPLETS PRESENT:
NO ☑ YES ☐

IF WATER DROPLET PLUME:
ATTACHED ☐ DETACHED ☐

POINT IN PLUME AT WHICH OPACITY WAS DETERMINED
START NA STOP "

DESCRIBE BACKGROUND
START SKY STOP "

BACKGROUND COLOR
START BLUE STOP

SKY CONDITIONS
START CLEAR STOP "

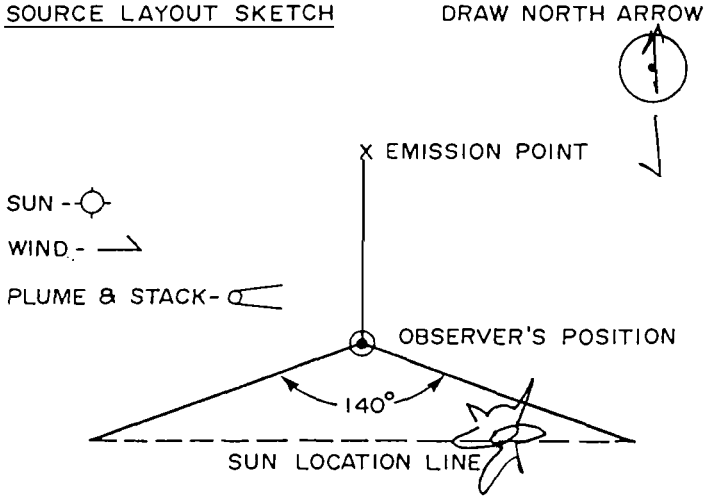
WIND SPEED
START 5-10 STOP "

WIND DIRECTION
START N STOP

AMBIENT TEMP.
START 80's STOP "

WET BULB TEMP. | RH %

SOURCE LAYOUT SKETCH



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AVERAGE OPACITY FOR HIGHEST PERIOD 0

NUMBER OF READINGS ABOVE 0 WERE 0

RANGE OF OPACITY READINGS
MINIMUM 0 MAXIMUM 0

OBSERVER'S NAME (PRINT): J. COLLEEN HODGE

OBSERVER'S SIGNATURE: J. Colleen Hodge | DATE 6/90

ORGANIZATION: ACE, INC.

COMMENTS:

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS
SIGNATURE
TITLE DATE

CERTIFIED BY: ETA | DATE 6/90

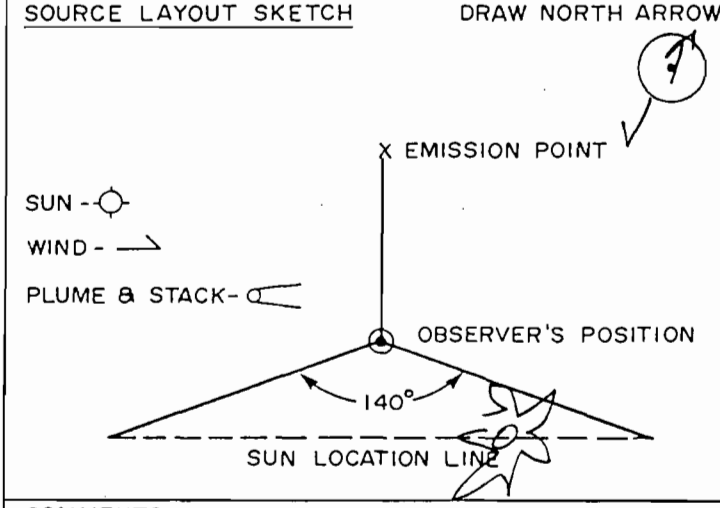
VERIFIED BY | DATE

Air Consulting and Engineering

VISIBLE EMISSION OBSERVATION FORM

SOURCE NAME: HARRIS SEMICONDUCTOR	
ADDRESS:	
CITY: PALM BAY	STATE: FL. ZIP:
PHONE:	SOURCE I.D. NUMBER: FUG502
PROCESS EQUIPMENT: ACID/SOLVENT VENT	OPERATING MODE: NORM.
CONTROL EQUIPMENT: WET SCRUBBER	OPERATING MODE: NORM.
DESCRIBE EMISSION POINT: START STACK OUTLET STOP "	
HEIGHT ABOVE GROUND LEVEL: START ~35' STOP "	HEIGHT REL. TO OBSERVER: START ~35' STOP "
DISTANCE FROM OBSERVER: START 50' STOP "	DIRECTION FROM OBSERVER: START 50' STOP "
DESCRIBE EMISSIONS: START NONE PRES. STOP "	
EMISSION COLOR: START NA STOP "	PLUME TYPE: CONT. ☑ FUGITIVE ☐ INTER. ☐
WATER DROPLETS PRESENT: NO ☑ YES ☐	IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐
POINT IN PLUME AT WHICH OPACITY WAS DETERMINED: START NA STOP "	
DESCRIBE BACKGROUND: START SKY STOP "	
BACKGROUND COLOR: START BLUE STOP	SKY CONDITIONS: START CLEAR STOP "
WIND SPEED: START 5-10 STOP "	WIND DIRECTION: START N STOP
AMBIENT TEMP: START 80° STOP	WET BULB TEMP. / RH %

SOURCE LAYOUT SKETCH — DRAW NORTH ARROW



OBSERVATION DATE: 6/27/90 | START TIME: 1045 | STOP TIME: 1115

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30	0	0	0	0	60				

AVERAGE OPACITY FOR HIGHEST PERIOD: 0 | NUMBER OF READINGS ABOVE WERE: 0

RANGE OF OPACITY READINGS: MINIMUM 0 MAXIMUM 0

OBSERVER'S NAME (PRINT): J. COLLEEN HODGE

COMMENTS:

OBSERVER'S SIGNATURE: J. Colleen Hodge | DATE: 6/90

ORGANIZATION: ACE, INC.

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS
SIGNATURE
TITLE DATE

CERTIFIED BY: ETA | DATE: 6/90

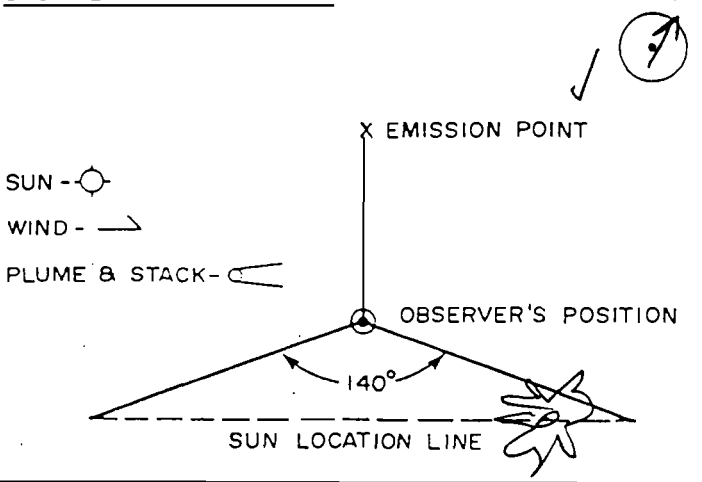
VERIFIED BY | DATE

air consulting engineering

VISIBLE EMISSION OBSERVATION FORM

SOURCE NAME: HARRIS SEMICONDUCTOR	
ADDRESS:	
CITY: PALM BAY	STATE: FL. ZIP:
PHONE:	SOURCE I.D. NUMBER: FG3501
PROCESS EQUIPMENT: ACID/SOLVENT VENT	OPERATING MODE: NORM.
CONTROL EQUIPMENT: WET SCRUBBER	OPERATING MODE: NORM.
DESCRIBE EMISSION POINT: START STACK OUTLET STOP "	
HEIGHT ABOVE GROUND LEVEL: START ≈50' STOP "	HEIGHT REL. TO OBSERVER: START ≈50' STOP "
DISTANCE FROM OBSERVER: START ≈200' STOP "	DIRECTION FROM OBSERVER: START NNW STOP "
DESCRIBE EMISSIONS: START NONE PRESENT STOP "	
EMISSION COLOR: START NA STOP "	PLUME TYPE: CONT. ☒ FUGITIVE ☐ INTER. ☐
WATER DROPLETS PRESENT: NO ☒ YES ☐	IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐
POINT IN PLUME AT WHICH OPACITY WAS DETERMINED: START NA STOP "	
DESCRIBE BACKGROUND: START SKY STOP "	
BACKGROUND COLOR: START BLUE STOP "	SKY CONDITIONS: START CLEAR STOP "
WIND SPEED: START 5-10 STOP "	WIND DIRECTION: START N STOP "
AMBIENT TEMP: START 80's STOP "	WET BULB TEMP. / RH %

SOURCE LAYOUT SKETCH — DRAW NORTH ARROW



OBSERVATION DATE: 6/27/90 START TIME: 0951 STOP TIME: 1001

SEC / MIN	0	15	30	45	SEC / MIN	0	15	30	45
1	0	0	0	0	31				
2	0	0	0	0	32				
3	0	0	0	0	33				
4	0	0	0	0	34				
5	0	0	0	0	35				
6	0	0	0	0	36				
7	0	0	0	0	37				
8	0	0	0	0	38				
9	0	0	0	0	39				
10	0	0	0	0	40				
11	0	0	0	0	41				
12	0	0	0	0	42				
13	0	0	0	0	43				
14	0	0	0	0	44				
15	0	0	0	0	45				
16	0	0	0	0	46				
17	0	0	0	0	47				
18	0	0	0	0	48				
19	0	0	0	0	49				
20	0	0	0	0	50				
21	0	0	0	0	51				
22	0	0	0	0	52				
23	0	0	0	0	53				
24	0	0	0	0	54				
25	0	0	0	0	55				
26	0	0	0	0	56				
27	0	0	0	0	57				
28	0	0	0	0	58				
29	0	0	0	0	59				
30	0	0	0	0	60				

AVERAGE OPACITY FOR HIGHEST PERIOD: 0

NUMBER OF READINGS ABOVE 0 WERE: 0

RANGE OF OPACITY READINGS: MINIMUM 0 MAXIMUM 0

OBSERVER'S NAME (PRINT): J. COLLEEN HAGGE

OBSERVER'S SIGNATURE: J. Colleen Hagge DATE: 6/90

ORGANIZATION: ACE, INC.

CERTIFIED BY: ETA DATE: 6/90

VERIFIED BY: DATE:

COMMENTS:

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS

SIGNATURE

TITLE DATE

ace air consulting and engineering

VISIBLE EMISSION OBSERVATION FORM

OBSERVATION DATE 6/21/90	START TIME 1531	STOP TIME 1601

SOURCE NAME: HARRIS SEMICONDUCTOR

ADDRESS:

CITY: PALM BAY | STATE: FL. | ZIP:

PHONE: | SOURCE I.D. NUMBER: FOESOZ

PROCESS EQUIPMENT: ACID/SOLVENT VENT | OPERATING MODE: NORM.

CONTROL EQUIPMENT: WET SCRUBBER | OPERATING MODE: NORM.

DESCRIBE EMISSION POINT
START STACK OUTLET STOP "

HEIGHT ABOVE GROUND LEVEL
START ≈50' STOP "

HEIGHT REL. TO OBSERVER
START ≈50' STOP "

DISTANCE FROM OBSERVER
START ≈250' STOP "

DIRECTION FROM OBSERVER
START NNW STOP "

DESCRIBE EMISSIONS
START NONE STOP "

EMISSION COLOR
START NA STOP "

PLUME TYPE: CONT. ☒ FUGITIVE ☐ INTER. ☐

WATER DROPLETS PRESENT: NO ☒ YES ☐

IF WATER ~~DROPLET PLUME~~: ATTACHED ☐ DETACHED ☐

POINT IN PLUME AT WHICH OPACITY WAS DETERMINED:
START NA STOP

DESCRIBE BACKGROUND
START SKY STOP "

BACKGROUND COLOR
START GREY STOP "

SKY CONDITIONS
START ~~CLEAR~~ STOP "

WIND SPEED
START 0-5 STOP "

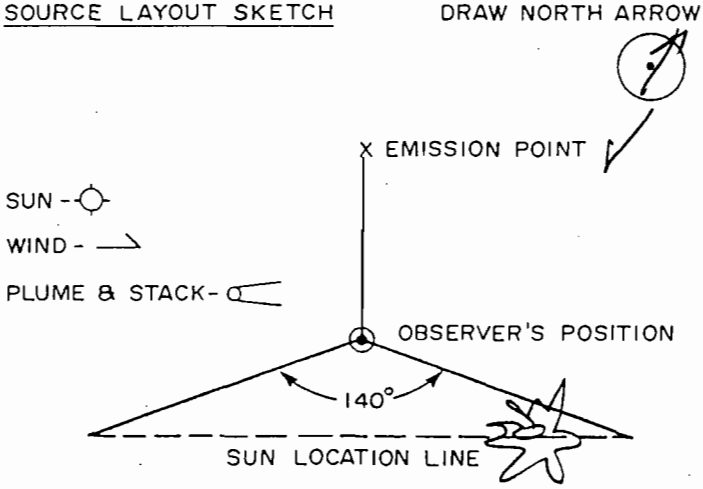
WIND DIRECTION
START N STOP

AMBIENT TEMP.
START 80'S STOP "

WET BULB TEMP. —

RH % —

SOURCE LAYOUT SKETCH



SEC / MIN	0	15	30	45	SEC / MIN	0	15	30	45
1	0	0	0	0	31				
2	0	0	0	0	32				
3	0	0	0	0	33				
4	0	0	0	0	34				
5	0	0	0	0	35				
6	0	0	0	0	36				
7	0	0	0	0	37				
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10	0	0	0	0	40				
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25	0	0	0	0	55				
26	0	0	0	0	56				
27	0	0	0	0	57				
28	0	0	0	0	58				
29	0	0	0	0	59				
30	0	0	0	0	60				

AVERAGE OPACITY FOR HIGHEST PERIOD 0

NUMBER OF READINGS ABOVE 0 WERE 0

RANGE OF OPACITY READINGS
MINIMUM 0 MAXIMUM 0

OBSERVER'S NAME (PRINT)
J. COLLEEN HODGE

COMMENTS:

OBSERVER'S SIGNATURE J. Colleen Hodge | DATE 6/90

ORGANIZATION ACE, INC.

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS
SIGNATURE

TITLE | DATE

CERTIFIED BY ETA | DATE 6/90

VERIFIED BY | DATE

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

THIS IS TO CERTIFY THAT

JOAN C. HODGE , has completed the STATE OF FLORIDA visible emissions evaluation training and is a qualified observer of visible emissions as specified by EPA reference method 9.

THIS CERTIFICATE EXPIRES DEC 5, 1990

Michael R. Clark
CERTIFICATE OFFICER

BEARER'S SIGNATURE

VISIBLE EMISSIONS EVALUATOR

This is to certify that

Joan C. Hodge

met the specifications of Federal Reference Method 9 and qualified as a visible emissions evaluator. Maximum deviation on white and black smoke did not exceed 7.5% opacity and no single error exceeding 15% opacity was incurred during the certification test conducted by Eastern Technical Associates of Raleigh, North Carolina. This certificate is valid for six months from date of issue.

Thomas H. Rose
President

226483
Certificate Number

Willis S. Lee
Vice President

Jacksonville
Location

David Savage
Program Manager

June 6, 1990
Date of Issue

APPENDIX E

QUALITY ASSURANCE

STANDARD METER CALIBRATION

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

$$Y_a \times Y_w = Y$$

Y_a = actual ratio of field meter to standard meter

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

Y = corrected ratio of field meter

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

AIR CONSULTING & ENGINEERING — STANDARD METER CALIBRATION

DATE 4-26-90 LEAK CHECK 0.0 CFM at 0.0 In. Hg.

METER BOX NUMBER STD #691751 BAROMETRIC PRESSURE 30.30 In. Hg.

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

WET ΔH	STD ΔH	GAS VOLUME, WET TEST METER			GAS VOLUME, STD GAS METER			TEMP. WET TEST METER (°F)	TEMP. OF STD. METER (°F)	TIME (Minutes)
		INITIAL	FINAL	ACTUAL ft^3	INITIAL	FINAL	ACTUAL ft^3			
-0.2	-1.1	4.020	9.842	5.822	243.643	249.457	5.814	70	70	13
-0.2	-1.1	9.842	15.577	5.735	249.457	255.194	5.737	70.5	71	13
-0.2	-1.1	5.577	11.240	5.663	255.194	260.872	5.678	70.5	71	13
-0.4	-1.8	2.026	7.602	5.576	261.665	267.296	5.631	70.5	72	9
-0.4	-1.8	7.602	13.171	5.569	267.296	272.923	5.627	70.5	72	9
-0.4	-1.8	3.171	8.734	5.563	272.923	278.539	5.616	70.5	72	9
-0.5	-2.2	9.112	14.275	5.163	278.917	284.153	5.239	70.5	72	7
-0.5	-2.2	4.275	9.434	5.159	284.153	289.386	5.233	70.5	72	7
-0.5	-2.2	9.434	14.600	5.166	289.386	294.632	5.246	70.5	72	7
-0.6	-3.1	5.182	10.663	5.481	295.233	300.834	5.601	70.5	72	6
-0.6	-3.1	0.663	6.124	5.461	300.834	306.424	5.590	70.5	72	6
-0.6	-3.1	6.124	11.579	5.455	306.424	311.997	5.573	70.5	72	6
-0.7	-3.7	2.185	7.422	5.237	312.617	317.993	5.376	70.5	71	5
-0.7	-3.7	7.422	12.658	5.236	317.993	323.366	5.373	70.5	71	5
-0.7	-3.7	2.658	7.888	5.230	323.366	328.737	5.371	70.5	71	5

CALIBRATED BY: George F. Gabl

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

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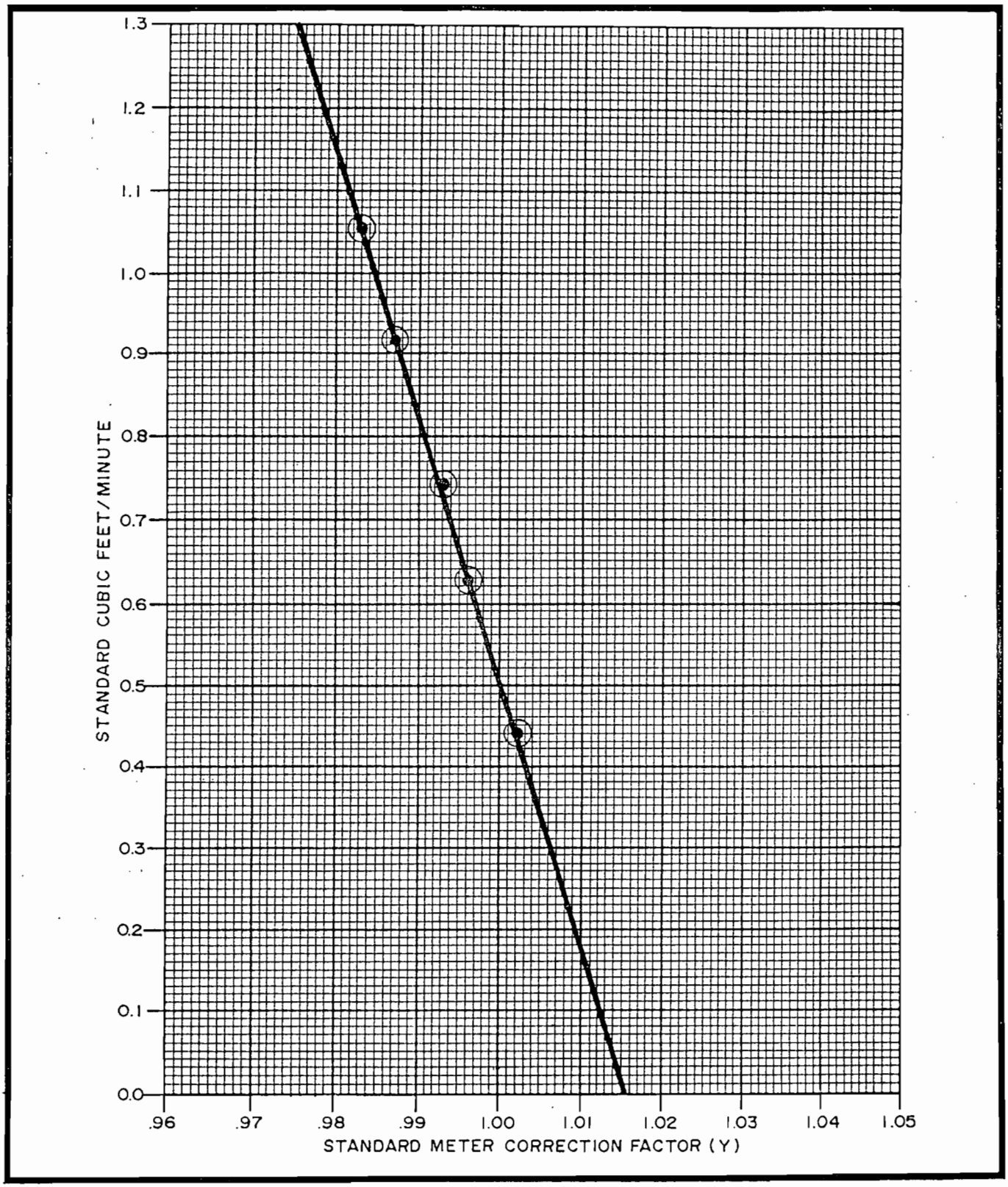

STANDARD METER CALIBRATION CURVE

APRIL 26, 1990

AIR CONSULTING and ENGINEERING

AIR CONSULTING & ENGINEERING, inc. — POST TEST CALIBRATION

DATE 7-9-90 METER BOX NUMBER 1 LEAK CHECK 0.000 CFM at 16 in. Hg.

CLIENT HARRIS CORP. SOURCE SEE DATA SHTS THERMOCOUPLE NUMBER ____ PYROMETER NUMBER 1

FLIGHT SERVICE Pb 30.20 in. Hg. ACE BAROMETER Pb 30.20 in. Hg.

ASTM GLASS THERMOMETER ____ °F / THERMOCOUPLE ____ °F ASTM GLASS THERMOMETER 88 °F / METER TEMP 88 °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				
.13	1.0	644.319	649.582	5.263	306.187	311.423	5.236	88	88	10	5
.13	1.0	649.582	654.914	5.332	311.423	316.704	5.281	88	89	10	5
.13	1.0	654.914	660.256	5.342	316.704	321.997	5.293	89	91	10	5

CALIBRATED BY: [signature]

DELTA H	Ya	SCFM	Ys	Y
2.077	1.003	0.512	1.000	1.003
2.020	1.009	0.519	0.999	1.008
2.012	1.010	0.519	0.999	1.009
MEAN:	2.036	1.007	0.999	1.007

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AIR CONSULTING & ENGINEERING, inc. — POST TEST CALIBRATION

DATE 7/9/90 METER BOX NUMBER 3 LEAK CHECK 0.00 CFM at 15 in. Hg.

CLIENT Harris Semiconductor SOURCE _____ THERMOCOUPLE NUMBER _____ PYROMETER NUMBER _____

FLIGHT SERVICE Pb 30.20 in. Hg. ACE BAROMETER Pb 30.21 in. Hg.

ASTM GLASS THERMOMETER _____ °F / THERMOCOUPLE _____ °F ASTM GLASS THERMOMETER 93 °F / METER TEMP 93 °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				
.16	1.0	716.429	721.829	5.400	277.200	282.556	5.356	95 ~~94~~	93 ~~94~~	9	3
.16	1.0	721.829	727.252	5.423	282.556	287.930	5.374	95	94	9	3
.16	1.0	727.252	732.689	5.437 ~~5.431~~	287.930	293.319	5.389	95	94	9	3

CALIBRATED BY: Larry J. Winters

DELTA H	Ya	SCFM	Ys	Y
1.624	1.002	0.576	0.998	1.000
1.607	1.005	0.579	0.998	1.003
1.590	1.010	0.580	0.998	1.008
MEAN:	1.607	1.006	0.998	1.004

ace air consulting and engineering

AIR CONSULTING & ENGINEERING, inc. — POST TEST CALIBRATION

DATE 7/9/90 METER BOX NUMBER 4 LEAK CHECK 0.00 CFM at 15 in. Hg.

CLIENT HARRIS Semiconductor SOURCE _____ THERMOCOUPLE NUMBER _____ PYROMETER NUMBER _____

FLIGHT SERVICE Pb 30.20 in. Hg. ACE BAROMETER Pb 30.21 in. Hg.

ASTM GLASS THERMOMETER _____ °F / THERMOCOUPLE _____ °F ASTM GLASS THERMOMETER 93 °F / METER TEMP 92 °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				
.14	1.0	694.408	700.075	5.667	53.899	59.468	5.569	92	92	10	2.0
.14	1.0	700.075	705.728	5.653 ~~5.65~~	59.468	65.022	5.554	93	94	10	2.0
.14	1.0	705.728	711.376	5.648	65.022	70.585	5.563	93	94	10	2.0

CALIBRATED BY: _____

DELTA H	Ya	SCFM	Ys	Y
1.804	1.015	0.547	0.999	1.014
1.813	1.017	0.545	0.999	1.016
1.816	1.015	0.544	0.999	1.014
MEAN:	1.811	1.016	0.999	1.015

air consulting and engineering

AIR CONSULTING & ENGINEERING — ANNUAL METER CALIBRATION

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

METER BOX NUMBER 1 BAROMETRIC PRESSURE 30.02 In. Hg.

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

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

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

CALIBRATED BY: H. F. Gabel

AIR CONSULTING & ENGINEERING — ANNUAL METER CALIBRATION

DATE 5-8-90 LEAK CHECK 0.000 CFM at 18 In. Hg.

METER BOX NUMBER #3 BAROMETRIC PRESSURE 30.20 In. Hg.

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

ΔHS	AVERAGE ΔHD	GAS VOLUME, STANDARD METER			GAS VOLUME, DRY GAS METER			TEMP STD METER	TEMP OF DRY METER	TIME (Minutes)	TIMER
		INITIAL	FINAL	ACTUAL ft^3	INITIAL	FINAL	ACTUAL ft^3				
.08	.5	449,412	454.431	5.019	682,776	687,819	5.043	69	71	12	12
.16	1.0	455.147	460,468	5,321	688.551	693,894	5.343	70	72	9	9
.26	1.5	444,062	449,117	5.055	677.428	682,481	5.053	69	70	7	7
.31	2.0	461,044	466,066	5.022	694.459	699,479	5.017	71	73	6	6
.46	3.0	466,317	471,526	5.209	699.728	704.894	5.166	72	75	5	5
.64	4.0	471,780	477.752	5,972	705,145	711,053	5,908	73	76	5	5

DELTA H	Ya	SCFM	Ys	Y
1.581	0.998	0.421	1.002	1.000
1.586	0.997	0.595	0.997	0.994
1.594	0.999	0.728	0.993	0.992
1.585	1.000	0.840	0.990	0.990
1.535	1.007	1.044	0.983	0.990
1.560	1.007	1.194	0.978	0.985
MEAN: 1.573	1.001		0.991	0.992

CALIBRATED BY: Gregory R Lewis

AIR CONSULTING & ENGINEERING — ANNUAL METER CALIBRATION

DATE 6-12-89 LEAK CHECK 0.000 CFM at 12 In. Hg.

METER BOX NUMBER 4 BAROMETRIC PRESSURE 30.07 In. Hg.

DRY GAS METER TEMPERATURE 94 °F/ASTM GLASS THERMOMETER TEMPERATURE 93 °F

ΔHS	AVERAGE ΔHD	GAS VOLUME, STANDARD METER			GAS VOLUME, DRY GAS METER			TEMP STD METER	TEMP OF DRY METER	TIME (Minutes)	TIMER
		INITIAL	FINAL	ACTUAL ft^3	INITIAL	FINAL	ACTUAL ft^3				
-.05	0.5	918.137	923.308	5.171	420.704	425.966	5.262	92	94	13	13
-.12	1.0	923.506	929.107	5.601	426.174	431.906	5.732	92	95	10	
-.21	1.5	929.319	934.689	5.370	432.138	437.640	5.502	92	99	8	
-.31	2.0	935.152	942.140	6.988	438.106	445.206	7.100	93	101	9	
-.44	3.0	942.545	948.222	5.677	445.609	451.367	5.758	93	102	6	
-.60	4.0	948.610	954.018	5.408	451.763	457.240	5.477	93	102	5	

	DELTA H	Ya	SCFM	Ys	Y
	1.832	0.9851	0.3824	1.0146	0.9994
	1.845	0.9801	0.5384	1.0098	0.9897
	1.913	0.9848	0.6453	1.0063	0.9910
	1.906	0.9936	0.7451	1.0032	0.9968
	1.922	0.9947	0.9079	0.9984	0.9931
	1.961	0.9938	1.0379	0.9943	0.9881
MEAN:	1.897	0.9887		1.0044	0.9930

CALIBRATED BY: G. F. Gabel

AIR CONSULTING & ENGINEERING, INC. PYROMETER CALIBRATION

DATE 7-10-90

PYROMETER NUMBER METER BOX # 1

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

FDER - MAXIMUM 5° DIFFERENCE

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

CALIBRATED BY: Larry J. Watts

ace air consulting and engineering

PYROMETER CALIBRATION

Date 9/2/89 Pyrometer No. 3

Source (Specify)	Glass Thermometer With NBS Mercury (°F)	Pyrometer (°F)	Degree Difference	% Difference
ICE BATH	34	35	1	0.2
AMBIENT	79	79	0	0
OVEN	310	312	2	0.3

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 R. Bruce Smith

air consulting and engineering

PYROMETER CALIBRATION

Date 9/15/87 Pyrometer No. ACE 4 (Tool Box)

Source (Specify)	Glass Thermometer With NBS Mercury (°F)	Pyrometer (°F)	Degree Difference	% Difference
ICE BATH	41	42	1	0.2
AMBIENT	90	90	0	0.0
BOILING WATER	210	211	1	0.2
HOT OVEN	356	359	3	0.4

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: Greg R. Lowe

air consulting and engineering

PITOT TUBE CALIBRATION MEASUREMENTS

DATE CALIBRATED 3-28-90 PITOT TUBE 36

Pitot tube assembly level? ✓ Yes _____ No

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

α_1 = 2 ° (<10°), α_2 = 3 ° (<10°), β_1 = 0 ° (<5°),

β_2 = 1 ° (<5°)

γ = 0 °, θ = 3 °, A = 1.025 in. = (Pa + Pb)

z = A sin γ = .018 in.; <0.32 / <1/8 in.

w = A sin θ = .054 in.; <0.08 / <1/32 in.

P_a .5125 in. P_b .5125 in. D_t = .375

Calibration required? _____ Yes ✓ No

THERMOCOUPLE CALIBRATION

Date 3-28-90 Thermocouple No. 36

Source (Specify)	ASTM Glass Thermometer With Mercury (°F)	Pyrometer (°F)	Degree Difference	% Difference
OVEN	311	314	3	0.41
Ambient	75	77	2	0.38
Ice Bath	34	34	0	0.00

FDER - Maximum 5° difference

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

Calibrated by Lil Carter

ace air consulting and engineering

PITOT TUBE CALIBRATION MEASUREMENTS

DATE CALIBRATED 3-28-90 PITOT TUBE S-S

Pitot tube assembly level? ✓ Yes _____ No

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

α_1 = 1 ° (<10°), α_2 = 2 ° (<10°), β_1 = 1 ° (<5°),

β_2 = 1 ° (<5°)

γ = 0 °, θ = 3 °, A = 1.135 in. = (Pa + Pb)

z = A sin γ = .0198 in.; <0.32 / <1/8 in.

w = A sin θ = .060 in.; <0.08 / <1/32 in.

P_a .5675 in. P_b .5675 in. D_t = .375

Calibration required? _____ Yes ✓ No

THERMOCOUPLE CALIBRATION

Date 3-28-90 Thermocouple No. S-S

Source (Specify)	ASTM Glass Thermometer With Mercury (°F)	Pyrometer (°F)	Degree Difference	% Difference
Ambient	76	79	3	0.41
Oven	313	310	3	0.41
Ice Bath	34	36	2	0.38

FDER - Maximum 5° difference

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

Calibrated by S. L Carter

air consulting and engineering

PITOT TUBE CALIBRATION MEASUREMENTS

DATE CALIBRATED 12-19-89 PITOT TUBE 53

Pitot tube assembly level? ✓ Yes _____ No

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

α_1 = 0 ° (<10°), α_2 = 1 ° (<10°), β_1 = 1.5 ° (<5°),

β_2 = 2.5 ° (<5°)

γ = 2.5 °, θ = 1 °, A = 1.04 in. = (Pa + Pb)

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

w = A sin θ = 0.018 in.; <0.08 / <1/32 in.

P_a 0.54 in. P_b 0.50 in. D_t = .375

Calibration required? _____ Yes ✓ No

THERMOCOUPLE CALIBRATION

Date 12-19-89 Thermocouple No. 53

Source (Specify)	ASTM Glass Thermometer With Mercury (°F)	Pyrometer (°F)	Degree Difference	% Difference
Hot Box	311	311	0	0
Ambient	58	58	0	0
Ice Bath	34	34	0	0

FDER - Maximum 5° difference

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

Calibrated by S. L Carter

air consulting and engineering

PITOT TUBE CALIBRATION MEASUREMENTS

DATE CALIBRATED 9-29-89 PITOT TUBE 59

Pitot tube assembly level? ✓ Yes _____ No

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

α_1 = 0 ° (<10°), α_2 = 1 ° (<10°), β_1 = 2 ° (<5°),

β_2 = 1 ° (<5°)

γ = 1 °, θ = 1 °, A = 1.165 in. = (Pa + Pb)

z = A sin γ = 0.017 in.; <0.32 / <1/8 in.

w = A sin θ = 0.017 in.; <0.08 / <1/32 in.

P_a 0.583 in. P_b 0.582 in. D_t = .375

Calibration required? _____ Yes ✓ No

THERMOCOUPLE CALIBRATION

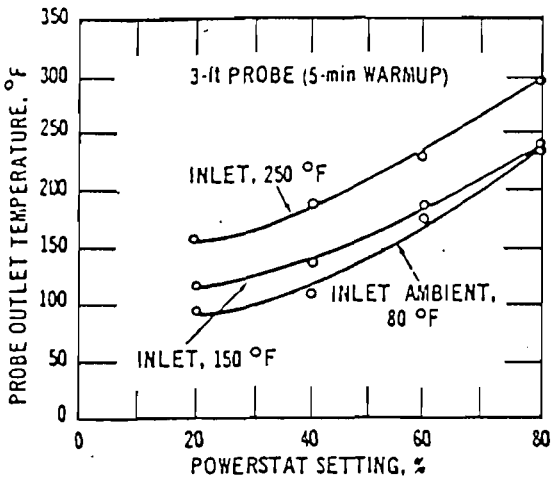
Date 9-29-89 Thermocouple No. 59

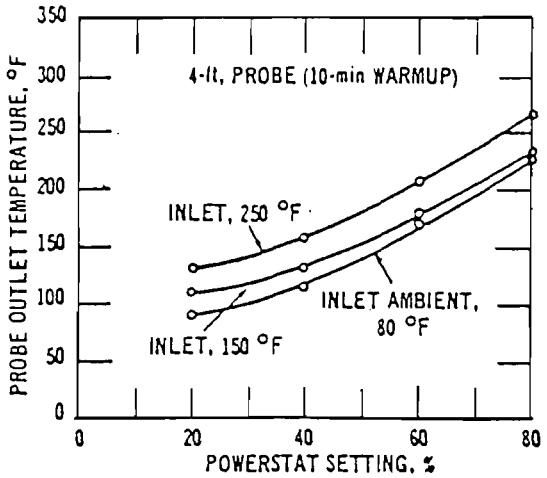
Source (Specify)	ASTM Glass Thermometer With Mercury (°F)	Pyrometer (°F)	Degree Difference	% Difference
Ambient	88	87	1	0.2
Oil Bath	291	290	1	0.2
Ice Bath	34	34	0	0.0

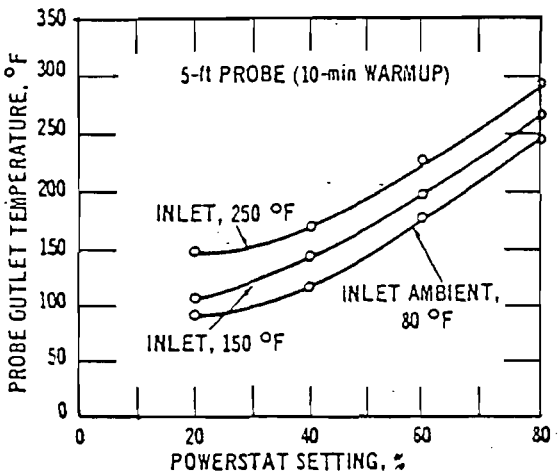
FDER - Maximum 5° difference

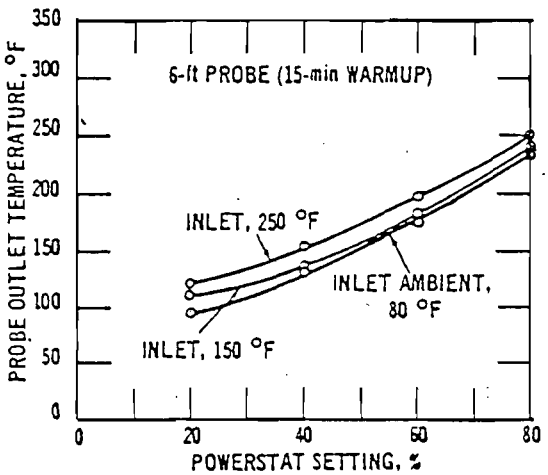
EPA $\left[\frac{\text{(Ref. temp. °F + 460) - (Pyrometer temp. °F + 460)}}{\text{Ref. temp. °F + 460}}\right]$ 100≤1.5%

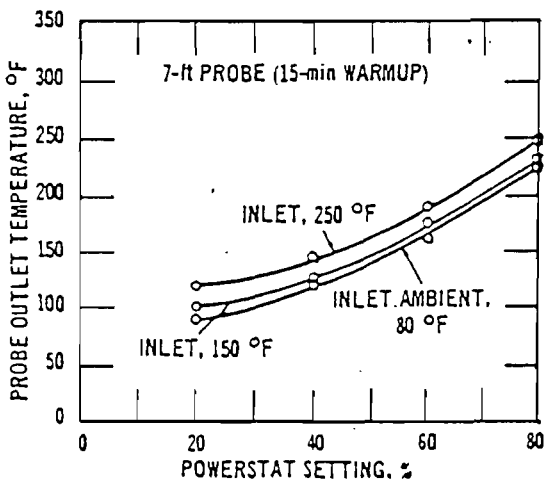
Calibrated by S. D. Cotton











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

Probe temperatures.

APPENDIX F
PROJECT PARTICIPANTS

PROJECT PARTICIPANTS

ACE

Stephen L. Neck, P.E.	Project Manager Field Testing
J. Colleen Hodge	Field Testing VE Observer
Sidney J. Carter	Field Testing
Gregory R. Prows	Field Testing Post Test Calibrations
Gerard Gauthreaux	Field Testing
Larry J. Wurts	Post Test Calibrations
Dagmar Neck. E.I.T.	Computer Analysis Report Preparation
Candace V. Taylor	Document Production

HARRIS CORPORATION

Nancy Baldisserotto	Project Coordinator
Constantine Triantafyllidis	Project Coordinator

PPB

Kelly Bergdoll	Acid Analysis