P 274 010 097

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL
(See Reverse)

Sent to James R. Kolanek, Mgr. Harris Semiconductor	
Street and No. P.O. Box 883	
P.O., State and ZIP Code Melbourne, FL 32901	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date Mailed: 02/03/88 Permit: AC 05-138795	

PS Form 3800, June 1985 ☆ U.S.G.P.O. 1985-480-794

SENDER: Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.

Put your address in the "RETURN TO" space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.

1. ☒ Show to whom delivered, date, and addressee's address. 2. ☐ Restricted Delivery.

3. Article Addressed to: James R. Kolanek, Mgr.
Environmental Services
Harris Semiconductor
P.O. Box 883
Melbourne, FL 32901

4. Article Number
P 274 010 097

Type of Service:
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature — Addressee
X

6. Signature — Agent
X Harris Semiconductor

7. Date of Delivery
FEB 8 1988

8. Addressee's Address (ONLY if requested and fee paid)

MELBOURNE FL USPS

PS Form 3811, Feb. 1986 DOMESTIC RETURN RECEIPT

File

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
NOTICE OF PERMIT

Mr. James R. Kolanek, Manager
Environmental Services
Harris Semiconductor
Post Office Box 883
Melbourne, Florida 32901

February 3, 1988

Enclosed is permit No. AC 05-138795, for Harris Semiconductor to install/construct an Industrial Grade Water System to provide water for the Deionized Water Plants in Buildings 52 and 59. A vacuum degasifier will be used to remove hydrogen sulfide and carbon dioxide from the raw well water and a flare will be used to oxidize the gasses. The project will occur at Harris Semiconductor's existing facility in Melbourne, Brevard County, Florida. This permit is issued pursuant to Section 403, Florida Statutes.

Any Party to this permit has the right to seek judicial review of the permit pursuant to Section 120.68, Florida Statutes, by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date this permit is filed with the Clerk of the Department.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality Management

Copy furnished to:

T. Sawicki, CF Dist.
C. Bach, P.E.

Final Determination

Harris Semiconductor
Brevard County
Melbourne, Florida

Permit No. AC 05-138795

Florida Department of Environmental Regulation
Bureau of Air Quality Management
Central Air Permitting

January 27, 1988

Final Determination

The construction permit application has been reviewed by the Department. Public Notice of the Department's Intent to Issue was published in the Florida Today Newspaper, Cocoa, Florida, on January 6, 1988. The Technical Evaluation and Preliminary Determination were available for public inspection at the DER's Central Florida District office in Orlando and the DER's Bureau of Air Quality Management office in Tallahassee.

No comments were received during the Public Notice period. Therefore, the final action of the Department will be to issue the construction permit as drafted.

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

PERMITTEE:
Harris Semiconductor
P. O. Box 883
Melbourne, Florida 32901

Permit Number: AC 05-138795
Expiration Date: January 31, 1989
County: Brevard
Latitude/Longitude: 28° 01' 20"N/
80° 36' 10" W
Project: Industrial Grade Water System with Vacuum Degasifier and Flare System

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

For the construction/installation of a 600 gallon per minute Industrial Grade water system with a vacuum degasifier and flare system. The vacuum degasifier will remove hydrogen sulfide and carbon dioxide from raw well water and the removed gases will be transported to and oxidized/combusted by the flare system. The nonassisted type flare will be designed and built by the John Zink Company, which includes a self-supported flare stack, a Model EEF-U-2 flare tip (John Zink Co.), and a manual weatherproof pilot ignition panel. The construction/installation will occur at the permittee's existing facility located on Palm Bay Road, City of Palm Bay, Florida. The UTM coordinates are Zone 17, 538.7 km East and 3100.9 km North.

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

Attachments to be Incorporated:

1. Application to Construct Air Pollution Source, DER Form 17-1.202(1), and Mr. James R. Kolanek's cover letter dated August 28, 1987, and received August 31, 1987.
2. Mr. C. H. Fancy's letter dated September 25, 1987.
3. Mr. J. R. Kolanek's letter with enclosures dated October 16, 1987, and received October 23, 1987.
4. Copy of 40 CFR 60.18, as revised July 1, 1986.
5. Technical Evaluation and Preliminary Determination dated December 4, 1987.

PERMITTEE:
Harris Semiconductor

Permit Number: AC 05-138795
Expiration Date: January 31, 1989

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions" and as such are binding upon the permittee and enforceable pursuant to the authority of Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is hereby placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants or representatives.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit does not constitute a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute state recognition or acknowledgement of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the state. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, plant or aquatic life or property and penalties therefore caused by the construction or operation of this permitted source, nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

GENERAL CONDITIONS:

6. The permittee shall at all times properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law, access to the premises, at reasonable times, where the permitted activity is located or conducted for the purpose of:

a. Having access to and copying any records that must be kept under the conditions of the permit;

b. Inspecting the facility, equipment, practices, or operations regulated or required under this permit; and

c. Sampling or monitoring any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately notify and provide the Department with the following information:

a. a description of and cause of non-compliance; and

b. the period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance.

GENERAL CONDITIONS:

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source, which are submitted to the Department, may be used by the department as evidence in any enforcement case arising under the Florida Statutes or Department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes.

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

11. This permit is transferable only upon department approval in accordance with Florida Administrative Code Rules 17-4.12 and 17-30.30, as applicable. The permittee shall be liable for any noncompliance of the permitted activity until the transfer is approved by the Department.

12. This permit is required to be kept at the work site of the permitted activity during the entire period of construction or operation.

13. This permit also constitutes:

( ) Determination of Best Available Control Technology (BACT)
( ) Determination of Prevention of Significant Deterioration (PSD)
( ) Compliance with New Source Performance Standards

14. The permittee shall comply with the following monitoring and record keeping requirements:

a. Upon request, the permittee shall furnish all records and plans required under Department rules. The retention period for all records will be extended automatically, unless otherwise stipulated by the Department, during the course of any unresolved enforcement action.

GENERAL CONDITIONS:

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

c. Records of monitoring information shall include:

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

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

SPECIFIC CONDITIONS:

1. Annual hours of operation are 8760.

2. The maximum potential sulfur dioxide (SO_2) emissions are 7.0 pounds per hour and 30.7 tons per year.

3. The maximum potential hydrogen sulfide (H_2S) emissions are 493 pounds per year, which is based on a flare efficiency of 98.5%.

PERMITTEE:
Harris Semiconductor

Permit Number: AC 05-138795
Expiration Date: January 31, 1989

SPECIFIC CONDITIONS:

4. The permittee shall comply with the conditions of 40 CFR 60.18(c) thru (f).

5. No visible emissions (5% opacity) shall be allowed, except for a total period of 5 minutes during any consecutive 2 hours, pursuant to 40 CFR 60.18(c). Compliance shall be demonstrated annually using EPA Method 22 pursuant to 40 CFR 60.18(f)(1).

6. EPA Method 15 shall be performed annually to determine the maximum concentration of the H_2S prior to being flared and the result should be in terms of dry standard conditions (14.7 psia and 68^0 F). A retest shall be required if the concentration of H_2S is to be increased.

7. The exit velocity of the flare shall be determined using the procedure in 40 CFR 60.18(f)(4) and either EPA Method 2, 2A, 2C or 2D, as appropriate.

8. EPA Methods shall be as described in 40 CFR 60, Appendix A.

9. The Central Florida District shall be notified in writing 15 days in advance of any compliance testing and the test reports shall be submitted within 45 days after the last test run.

10. Objectionable odors shall not be allowed off plant property pursuant to FAC Rule 17-2.620(2).

11. The construction shall reasonably conform to the plans and schedule submitted in the application. If the permittee is unable to complete construction on schedule, he must notify the Department in writing 60 days prior to the expiration date of the construction permit and submit a new schedule and request for an extension of the construction permit. (FAC Rule 17-4.09)

To obtain a permit to operate, the permittee must demonstrate compliance with the conditions of the construction permit and submit a complete application for an operating permit, including the application fee, along with compliance test results and Certificate of Completion, to the Department's District office 90 days prior to the expiration date of the construction permit. The permittee may continue to operate in compliance with all terms of the construction permit until its expiration date. Operation beyond the construction permit expiration date requires a valid permit to operate. (FAC Rules 17-4.22 and 17-4.23)

PERMITTEE:
Harris Semiconductor

Permit Number: AC 05-138795
Expiration Date: January 31, 1989

SPECIFIC CONDITIONS:

If the construction permit expires prior to the permittee requesting an extension or obtaining a permit to operate, then all activities at the project must cease and the permittee must apply for a new permit to construct which can take up to 90 days to process a complete application. (FAC Rule 17-4.10)

Issued this 1 day of February
1988

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

Dale Twachtmann

Dale Twachtmann, Secretary

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

Interoffice Memorandum

For Routing To Other Than The Addressee	
To:	Location:
To:	Location:
To:	Location:
From:	Date:

TO: Dale Twachtmann

FROM: Howard L. Rhodes

SUBJECT: Approval of Harris Semiconductor State Air Construction Permit No. AC 05-138795

DER
FEB 2
BAQM

DATE: January 28, 1988

Attached for your approval and signature is a permit prepared by the Central Air Permitting staff for the above mentioned company to install/construct an Industrial Grade Water System to provide water for the Deionized Water Plants in Buildings 52 and 59. A vacuum degasifier will be used to remove hydrogen sulfide and carbon dioxide from the raw well water and a flare will be used to oxidize the gases. The project will occur at Harris Semiconductor's existing facility in Melbourne, Brevard County, Florida. No comments were received during the public notice period.

Day 90 after which the permit will be issued by default is March 5, 1988.

I recommend your approval and signature.

HLR/aqm/bm

attachment

RECEIVED
JAN 29 1988
Office of the Secretary

Check Sheet

Company Name: HARRIS SEMICONDUCTOR
Permit Number: AC 05-138795
PSD Number:
Permit Engineer:

Application:

- [x] Initial Application
  - [x] Incompleteness Letters
  - [x] Responses
  - [ ] Waiver of Department Action
  - [ ] Department Response
  - [ ] Other

Cross References:

- [ ]
- [ ]
- [ ]

Intent:

- [x] Intent to Issue
- [x] Notice of Intent to Issue
- [x] Technical Evaluation
- [ ] BACT Determination
- [x] Unsigned Permit
- Correspondence with:
  - [ ] EPA
  - [ ] Park Services
  - [x] Other
- [x] Proof of Publication
  - [ ] Petitions - (Related to extensions, hearings, etc.)
  - [ ] Waiver of Department Action
  - [ ] Other

Final Determination:

- [ ] Final Determination
- [ ] Signed Permit
- [ ] BACT Determination
  - [ ] Other

Post Permit Correspondence:

- [ ] Extensions/Amendments/Modifications
- [ ] Other

HARRIS SEMICONDUCTOR

May 29, 1992 R-9250 0090-92

Mr. John Turner
Engineer
State of Florida
Department of Environmental Regulation
3319 Maguire Blvd., Suite 232
Orlando, FL. 32803

Dear Mr. Turner:

Enclosed is the 1991 calendar year annual operating report for the vacuum degasified system, Florida operating permit number A005-688383. This operating report was inadvertently omitted from the March 26, 1992 submittal.

If you have any questions regarding this matter please contact me at (407)729-4076.

Sincerely,

John W. Widell

John W. Widell
Safety Environmental Engineer
Environmental Services
Harris Semiconductor

cc: D. Bock
R. Sands
B. Mitchell, DER Tal.
C. Collins, DER Orl.
C. Fancy, DER Tal.

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301

BOB GRAHAM
GOVERNO

VICTORIA J. TSCHINKE
SECRETAR

ANNUAL OPERATION REPORT FORM FOR AIR EMISSIONS SOURCES

For each permitted emission point, please submit a separate report for calendar year 19 91 prior to March 1st of the following year.

I GENERAL INFORMATION

1. Source Name: HARRIS SEMICONDUCTOR
2. Permit Number: A005-188383
3. Source Address: Palm Bay Road
   Palm Bay, Florida 32902-0883
4. Description of Source: Industrial Grade Water System with Vacuum Degasifier and Flare System

II ACTUAL OPERATING HOURS: 24 hrs/day 7 days/wk 52 wks/yr

III RAW MATERIAL INPUT PROCESS WEIGHT: (List seperately all materials put into process and specify applicable units if other than tons/yr)

Raw Material	Input Process Weight
	N/A tons/yr
	tons/yr
	tons/yr
	tons/yr
	tons/yr

IV PRODUCT OUTPUT (Specify applicable units) N/A

V TOTAL FUEL USAGE including standby fuels. If fuel is oil, specify type and sulfur content (e.g., No. 6 oil with 1% S). N/A

_____ 10^6 cubic feet Natural Gas _____ 10^3 Kerosene

_____ 10^3 gallons _____ Oil, _____ %S _____ tons Coal

_____ 10^3 gallons Propane _____ tons Carbonaceous

_____ 10^6 Black Liquor Solids _____ tons Refuse

Other (Specify type and units) _____

VI EMISSION RATE(S) (tons/yr)

_____ Particulates 17.60 Sulfur Dioxide _____ Total Reduced Sulfur

_____ Nitrogen Oxide _____ Carbon Monoxide _____ Fluoride

_____ Hydrocarbon Other (Specify type and units) _____

VII METHOD OF CALCULATING EMISSION RATES (e.g., use of fuel and materials balance, emission factors drawn from AP 42, etc.)

EPA Method 15

VIII CERTIFICATION:

I hereby certify that the information given in this report is correct to the best of my knowledge.

John L. Steiner

SIGNATURE OF OWNER OR AUTHORIZED REPRESENTATIVE

John R. Steiner, Director

TYPED NAME AND TITLE

Environmental, Safety, Facilities

DATE

HARRIS

July 9, 1991

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

SUBJECT: Source Test Report, Permit Number A005-188383
Vacuum Degasifier with Flare System - HARRIS SEMICONDUCTOR

Dear Mr. Sanabani:

Enclosed are two copies of the test report for the vacuum degasifier system as required by specific conditions 7-10 of the referenced operating permit. The testing indicates that the system operates within the permissible range and operating standards.

If you should have any questions, please call me at (407) 729-5301.

Sincerely,

Constantine Triantafyllidis

Constantine Triantafyllidis
Environmental Engineer

cc: C. Fancy, Tall. DER
B. Mitchell, Tall. DER
A. Zahm, P.E., Orlando DER
G. Kuberski, Orlando DER
K. Smith

PM
8-29-89
Melbourne, FL

HARRIS

August 29, 1989

Alan Zahm, P.E.
Air Permitting Engineer
Air Resource Management
Florida Department of Environmental Regulation
3319 Maguire Boulevard, Suite 232
Orlando, FL 32803-3767

SUBJECT: Completeness Review of AO 05-~~167380~~ ? 138795
Vacuum Degasifier with Flare System - HARRIS SEMICONDUCTOR

Dear Mr. Zahm:

This letter is written on the behalf of Harris Semiconductor ("Semiconductor"), in reply to your letter of July 25, 1989. Your letter requested additional information on three (3) items.

Item 1. A statement from the visible emission test observer Sidney J. Carter is attached to this response (see attachment I.) The letter verifies that no objectionable odors were detected during the flare monitoring on June 16, 1989.

Item 2. The completion of construction date for the Industrial Grade Water system that the vacuum degasifier services is April 1, 1989.

Item 3. Attachment II. contains a letter from Air Consulting & Engineering, Inc. explaining the 0.013 factor mentioned in the test report of June 16, 1989. The original report contained a decimal point error which resulted in an incorrect calculation of the BTU value of the gas being combusted. The revised report is included with this package. Because this mathematical error resulted in a change to section H. of the operating permit application form, a corrected application sheet is also enclosed (see attachment III.) Please note that the source meets all 40 CFR 60.18 emission criteria.

If you should have any questions, please call me at (407) 729-4061.

RECEIVED
AUG 31 1989
DER - BAQM

Sincerely,

Nancy Baldisserotto

Nancy Baldisserotto
Environmental Engineer
Harris Semiconductor, Melbourne

ATTACHMENT I.

air consulting and engineering, Inc.

August 4, 1989
187 88 04

Mr. Allen Zahm, P.E.
Florida Department of
Environmental Regulation
3319 Maguire Blvd., Suite 232
Orlando, Florida 32803

Dear Mr. Zahm:

On June 16, 1989, I performed visible emission tests on the Vacuum Degasifier Flare System (FDER Permit Number AC05138795) at the Harris Corporation facility in Palm Bay, Florida. During that time I detected no objectionable oders.

Please contact me with any questions or if further information is needed.

Sincerely,

AIR CONSULTING AND ENGINEERING, INC.

Sidney J. Carter

SJC:ggp

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

ATTACHMENT II.

Air Consulting and Engineering, Inc.

August 22, 1989
187 88 04

Mr. Alan Zahn, P.E.
Air Permitting Engineer
Florida Department of
Environmental Regulation
3319 Maguire Blvd., Suite 232
Orlando, Florida 32803

RE: HARRIS SEMICONDUCTOR FLARE (PERMIT NUMBER A005-167380)

Dear Mr. Zahn:

Enclosed are two copies of a revised test report for the referenced vacuum degasifier system. A decimal point error concerning propane boost fuel usage was made in the previous submittal.

Please note that this source meets all CFR 60.18 emission criteria and that there were no objectionable odors observed during the test period. As test team leader, I attest to these facts.

The 0.013 factor mentioned in your July 25, 1989, "Completeness" inquiry is the dry gas fraction of H_2O present in the degasifier off-gases prior to propane enrichment. The only combustible components of the flow to the flare are propane fuel and H_2S. 60.18(F) was modified to allow a dry gas measurement as it was necessary to remove the high volume of moisture from the gas stream before measurement of H_2S. This was done using a citrate buffer ice bath cooled impinger system in accordance with EPA Method 15.

If you have further questions, please contact me.

Respectfully,

AIR CONSULTING & ENGINEERING, INC.

Stephen L. Neck

Stephen L. Neck, P.E.

SLN:ggp

Enclosures

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

ATTACHMENT III.

DEPARTMENT OF ENVIRONMENTAL REGULATION

WIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Stationary [X] New[1] [ ] Existing[1]

APPLICATION TYPE: [ ] Construction [X] Operation [ ] Modification

COMPANY NAME: Harris Semiconductor COUNTY: Brevard

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peaking Unit No. 2, Gas Fired) Vacuum Degasifier with Flare System

SOURCE LOCATION: Street Palm Bay Road City Palm Bay

UTM: East 17-538700 North 17-3100900

Latitude 28 ° 1 ' 20 "N Longitude 80 ° 36 ' 10 "W

APPLICANT NAME AND TITLE: N. A. Baldisserotto, Environmental Engineer, Environmental Services

APPLICANT ADDRESS: P.O. Box 883, Melbourne, FL 32901

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Harris Semiconductor

I certify that the statements made in this application for a operating permit are true, correct and complete to the best of my knowledge and belief. Further, I agree to maintain and operate the pollution control source and pollution control facilities in such a manner as to comply with the provision of Chapter 403, Florida Statutes, and all the rules and regulations of the department and revisions thereof. I also understand that a permit, if granted by the department, will be non-transferable and I will promptly notify the department upon sale or legal transfer of the permitted establishment.

*Attach letter of authorization

Signed: Lawrence R Hutker

Lawrence R. Hutker, Director, Facilities Dept
Name and Title (Please Type)

Date: _____ Telephone No. (407) 729-4655

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

This is to certify that the engineering features of this pollution control project have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that

[1] See Florida Administrative Code Rule 17-2.100(57) and (104)

the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signed Lawrence R. Hutker

Lawrence R. Hutker
Name (Please Type)

Harris Semiconductor
Company Name (Please Type)

P.O. Box 883, Melbourne, FL 32901
Mailing Address (Please Type)

Florida Registration No. 35972 Date: _____ Telephone No. 407-729-4655

SECTION II: GENERAL PROJECT INFORMATION

. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

Semiconductor is using an Industrial Grade Water System to provide water for the deionized water plants in bldgs. 52 and 59. The system includes a vacuum degasifier to remove H_2S and CO_2 from raw well water. The removed gases are flared to oxidize the products and control H_2S emissions. (see attachment A.)

. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction _____ Completion of Construction _____

. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

(see attachment B.)

. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

Construction permit no. AC 05-138795 issued 2/1/88; expires 10/1/89.

E. Requested permitted equipment operating time: hrs/day 24 ; days/wk 7 ; wks/yr 52

if power plant, hrs/yr_____; if seasonal, describe: _____

F. If this is a new source or major modification, answer the following questions. (Yes or No)

1. Is this source in a non-attainment area for a particular pollutant? No

   a. If yes, has "offset" been applied? _____

   b. If yes, has "Lowest Achievable Emission Rate" been applied? _____

   c. If yes, list non-attainment pollutants. _____

2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. No

3. Does the State "Prevention of Significant Deterioration" (PSD) requirement apply to this source? If yes, see Sections VI and VII. No

4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? No

5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? No

H. Do "Reasonably Available Control Technology" (RACT) requirements apply to this source? No

   a. If yes, for what pollutants? _____

   b. If yes, in addition to the information required in this form, any information requested in Rule 17-2.650 must be submitted.

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

A. Raw Materials and Chemicals Used in your Process, if applicable:

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): 5.29 lb/hr of H_2S; 66.67 lb/hr of CO_2

2. Product Weight (lbs/hr): _____

C. Airborne Contaminants Emitted: (Information in this table must be submitted for each emission point, use additional sheets as necessary)

Name of Contaminant	Emission[1]		Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission lbs/hr	Potential[4] Emission		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/yr	T/yr	
SO_2	9.96	5.39			87249.6	43.6	
H_2S	0.0794	0.04			46355	23.2	
CO_2	126.6	333.8			126.6	554	

[1]See Section V, Item 2.

[2]Reference applicable emission standards and units (e.g. Rule 17-2.600(5)(b)2. Table II, E. (1) - 0.1 pounds per million BTU heat input)

[3]Calculated from operating rate and applicable standard.

[4]Emission, if source operated without control (See Section V, Item 3).

D. Control Devices: (See Section V, Item 4)

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles Size Collected (in microns) (If applicable)	Basis for Efficiency (Section V Item 5)
Self-supported flare stack (John Zink Co. w/model EEF-U-2 flare tip and manual weatherproof pilot ignition panel.	H_2S	98.5%	N/A	See attachmt

E. Fuels

Type (Be Specific)	Consumption* avg/hr	Consumption* max./hr	Maximum Heat Input (MMBTU/hr)
propane (pilot)	22.0 SCFH		54193.4 BTU/hr
propane (enrichment)	152.6 SCFH		375683.4 BTU/hr

*Units: Natural Gas--MMCF/hr; Fuel Oils--gallons/hr; Coal, wood, refuse, other--lbs/hr.

Fuel Analysis:

Percent Sulfur: 0 Percent Ash: 0

Density: 1.8324 g/L at STP lbs/gal Typical Percent Nitrogen: 0

Heat Capacity: 21591 BTU/lb _____ BTU/ga

Other Fuel Contaminants (which may cause air pollution): _____

F. If applicable, indicate the percent of fuel used for space heating. N/A

Annual Average _____ Maximum _____

G. Indicate liquid or solid wastes generated and method of disposal.

N/A

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):

Stack Height: 20 ft. Stack Diameter: 0.5 ft

Gas Flow Rate: 9.63 ACFM 13.18 DSCFM Gas Exit Temperature: 168 °F

Water Vapor Content: 40 % Velocity: 9.2 FP

SECTION IV: INCINERATOR INFORMATION

Type of Waste	Type 0 (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq.& Gas By-prod.)	Type VI (Solid By-prod.)
Actual lb/hr Incinerated							
Uncontrolled (lbs/hr)							

Description of Waste _____

Total Weight Incinerated (lbs/hr) _____ Design Capacity (lbs/hr) _____

Approximate Number of Hours of Operation per day _____ day/wk _____ wks/yr. _____

Manufacturer _____

Date Constructed _____ Model No. _____

	Volume $(ft)^3$	Heat Release (BTU/hr)	Fuel		Temperature (°F)
			Type	BTU/hr	
Primary Chamber					
Secondary Chamber					

Stack Height: _____ ft. Stack Diamter: _____ Stack Temp. _____

Gas Flow Rate: _____ ACFM _____ DSCFM* Velocity: _____ FP

*If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air.

Type of pollution control device: [ ] Cyclone [ ] Wet Scrubber [ ] Afterburner

[ ] Other (specify) _____

Brief description of operating characteristics of control devices: _____

Ultimate disposal of any effluent other than that emitted from the stack (scrubber water, ash, etc.):

NOTE: Items 2, 3, 4, 6, 7, 8, and 10 in Section V must be included where applicable.

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

1. Total process input rate and product weight -- show derivation [Rule 17-2.100(127)]

2. To a construction application, attach basis of emission estimate (e.g., design calcul tions, design drawings, pertinent manufacturer's test data, etc.) and attach propos methods (e.g., FR Part 60 Methods 1, 2, 3, 4, 5) to show proof of compliance with a plicable standards. To an operation application, attach test results or methods us to show proof of compliance. Information provided when applying for an operation pe mit from a construction permit shall be indicative of the time at which the test w ade.

3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test).

4. With construction permit application, include design details for all air pollution co trol systems (e.g., for baghouse include cloth to air ratio; for scrubber inclu cross-section sketch, design pressure drop, etc.)

5. With construction permit application, attach derivation of control device(s) efficie cy. Include test or design data. Items 2, 3 and 5 should be consistent: actual emi sions = potential (1-efficiency).

6. An 8 1/2" x 11" flow diagram which will, without revealing trade secrets, identify t individual operations and/or processes. Indicate where raw materials enter, where so id and liquid waste exit, where gaseous emissions and/or airborne particles are evolv and where finished products are obtained.

7. An 8 1/2" x 11" plot plan showing the location of the establishment, and points of ai borne emissions, in relation to the surrounding area, residences and other permane structures and roadways (Example: Copy of relevant portion of USGS topographic map).

8. An 8 1/2" x 11" plot plan of facility showing the location of manufacturing process and outlets for airborne emissions. Relate all flows to the flow diagram.

9. The appropriate application fee in accordance with Rule 17-4.05. The check should b made payable to the Department of Environmental Regulation.

10. With an application for operation permit, attach a Certificate of Completion of Con struction indicating that the source was constructed as shown in the constructio permit.

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 6 applicable to the source?

[ ] Yes [ ] No

Contaminant	Rate or Concentration

B. Has EPA declared the best available control technology for this class of sources (I yes, attach copy)

[ ] Yes [ ] No

Contaminant	Rate or Concentration

C. What emission levels do you propose as best available control technology?

Contaminant	Rate or Concentration

D. Describe the existing control and treatment technology (if any).

1. Control Device/System:
2. Operating Principles:
3. Efficiency:*
4. Capital Costs:

*Explain method of determining

5. Useful Life:

6. Operating Costs:

7. Energy:

8. Maintenance Cost:

9. Emissions:

Contaminant	Rate or Concentration

10. Stack Parameters

a. Height: ft.

b. Diameter: ft

c. Flow Rate: ACFM

d. Temperature: °F

e. Velocity: FPS

E. Describe the control and treatment technology available (As many types as applicabl use additional pages if necessary).

1.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy [2]

h. Maintenance Cost:

i. Availaoility of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and opera within proposed levels:

2.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

[1]Explain method of determining efficiency.
[2]Energy to be reported in units of electrical power - KWH design rate.

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

3.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

4.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Costs:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

F. Describe the control technology selected:

1. Control Device:

2. Efficiency:[1]

3. Capital Cost:

4. Useful Life:

5. Operating Cost:

6. Energy:[2]

7. Maintenance Cost:

8. Manufacturer:

9. Other locations where employed on similar processes:

a. (1) Company:

(2) Mailing Address:

(3) City:

(4) State:

[1] Explain method of determining efficiency.
[2] Energy to be reported in units of electrical power - KWH design rate.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

b. (1) Company:

(2) Mailing Address:

(3) City: (4) State:

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

10. Reason for selection and description of systems:

[1]Applicant must provide this information when available. Should this information not b available, applicant must state the reason(s) why.

SECTION VII - PREVENTION OF SIGNIFICANT DETERIORATION

A. Company Monitored Data

1. _____no. sites _____ TSP _____( ) SO^2* _____ Wind spd/dir

Period of Monitoring _____/_____/_____ to _____/_____/_____
month day year month day year

Other data recorded _____

Attach all data or statistical summaries to this application.

*Specify bubbler (B) or continuous (C).

2. Instrumentation, Field and Laboratory

a. Was instrumentation EPA referenced or its equivalent? [ ] Yes [ ] No

b. Was instrumentation calibrated in accordance with Department procedures?

[ ] Yes [ ] No [ ] Unknown

B. Meteorological Data Used for Air Quality Modeling

1. _____ Year(s) of data from ____/____/____ to ____/____/____
month day year month day year

2. Surface data obtained from (location)_____

3. Upper air (mixing height) data obtained from (location)_____

4. Stability wind rose (STAR) data obtained from (location)_____

C. Computer Models Used

1. _____ Modified? If yes, attach description.

2. _____ Modified? If yes, attach description.

3. _____ Modified? If yes, attach description.

4. _____ Modified? If yes, attach description.

Attach copies of all final model runs showing input data, receptor locations, and principle output tables.

D. Applicants Maximum Allowable Emission Data

Pollutant	Emission Rate	
TSP	_____	grams/sec
SO^2	_____	grams/sec

E. Emission Data Used in Modeling

Attach list of emission sources. Emission data required is source name, description of point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time.

F. Attach all other information supportive to the PSD review.

G. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources.

H. Attach scientific, engineering, and technical material, reports, publications, journals, and other competent relevant information describing the theory and application of the requested best available control technology.

SOURCE TEST REPORT

BUILDING 52 AND 59 WATER TREATMENT PLANT
VACUUM DEGASIFIER FLARE SYSTEM
EPA 15 H_2S TEST
EPA 22 VISIBLE EMISSIONS

FDER PERMIT NUMBER:
AC05-138795

JUNE 16, 1989

Prepared for:

HARRIS CORPORATION
SEMICONDUCTOR DIVISION
PALM BAY ROAD--BUILDING 61
PALM BAY, FLORIDA 32905

Prepared by:

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

187-88-04

TABLE OF CONTENTS

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LIST OF FIGURES

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.

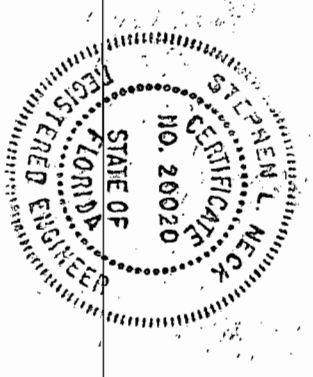
Stephen L. Neck

Stephen L. Neck, P.E.

State of Florida
Registration No. 20020

August 21, 1989

Date



SEAL

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

1.0 INTRODUCTION

Air Consulting and Engineering, Inc. (ACE), performed testing as required in the "Specific Conditions" of Florida Department of Environmental Regulation (FDER) permit AC05-138795 on the Vacuum Degasifier Flare System at the Harris Corporation--Semiconductor Division facility in Palm Bay, Florida. Testing was performed on June 16, 1989.

Mr. Harvey Gray of Technical Services, Inc., performed H_2S United States Environmental Protection Agency (EPA) Method 15 testing.

The flare system by John Zink Company included a calibrated thin plate orifice for purposes of monitoring degasifier outlet flows.

2.0 SUMMARY AND DISCUSSION OF RESULTS

Results of the testing in terms of Code of Federal Regulations Title 40 Part 60.18 (see Appendix B) and permit specific conditions (see Appendix A) are provided in Table 1.

As shown in Figure 1, flow volume determinations and H_2S testing were conducted in the two inch outlet line coming from the degasifier system. Propane gas at a rate of 154 cubic feet per hour is added to the gas stream downstream of this point and prior to flaring. Calculated flare velocities include both flow streams and assume that none of the observed water content condenses prior to flaring.

Three test runs were conducted during water production periods of 600 gallons per minute (maximum rate). The average observed orifice pressure drop (P) for each run was reported to the John Zink Company who then reported the calibrated flow rates for those P values (see Appendix C).

SO_2 emission rates assume total H_2S oxidation.

EPA Method 15 data is provided in Appendix C. An ice trap citrate buffer system was used to remove the considerable moisture content and provide a dry gas analysis.

Pertinent calculations are provided in Appendix D.

Table 1 Emission Summary
Vacuum Degreaser Flare System
Harris Corporation-Semiconduction Division
June 16. 1989

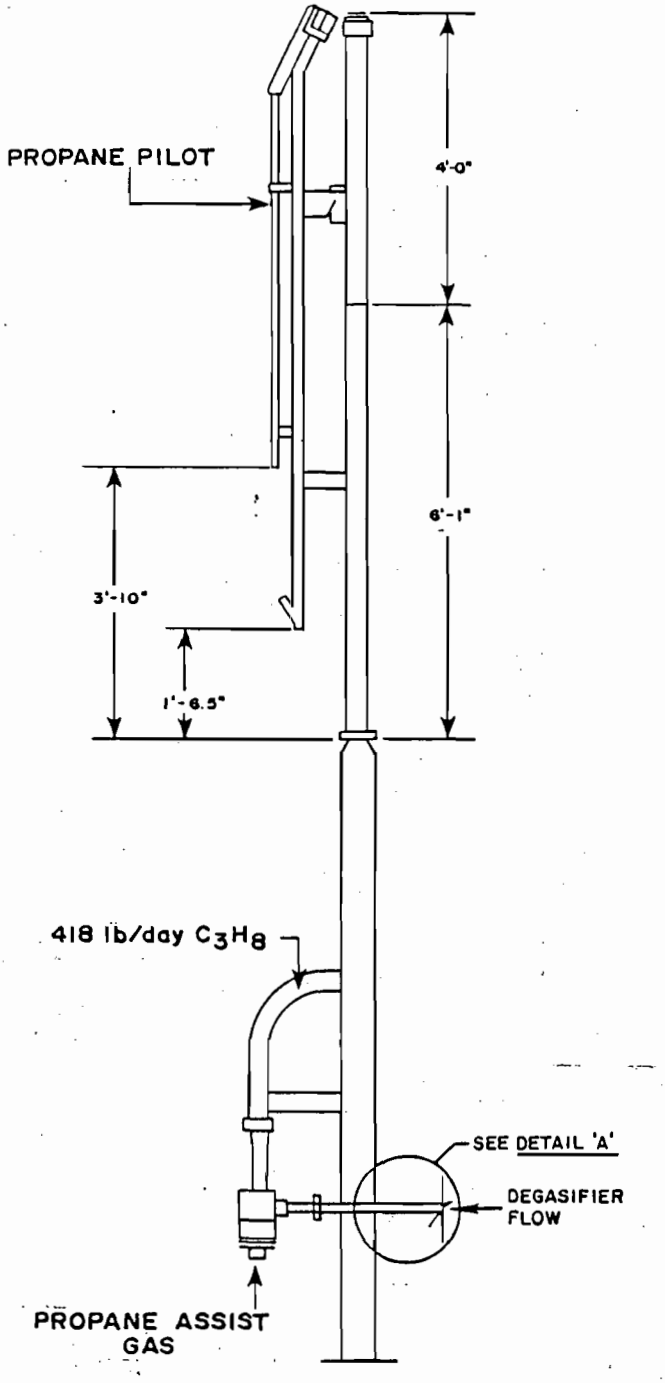
Inlet Average Composition (Wet Basis)	
H_2S %	1.3
H_2O %	40.0
CO_2 %	24.6
O_2 %	3.0
N_2 % (by difference)	31.1
Total Degasifier Flow	578 CFH
H_2S Flow	7.5 CFH
Propane Assist Flow	154 CFH
Propane Pilot Flow	22 CFH
Total Heat Value	520.2 BTU/cubic foot = 19.39 MJ/SCM(1)
Flare Velocity	9.2 FPS = 2.8 M/SEC(2)
SO_2 Emission	1.23 lb/Hr
Visible Emission	0% opacity

(1) See Appendix D

(2) Maximum Permitted Velocity = $10^{(Ht + 28.8)/31.7} = V_{max}$ = 38.6 M/SEC
where Ht = MJ/SCM

3.0 PROCESS OPERATION AND SAMPLING POINT LOCATION

The new water plant used the degasifier system to remove CO_2 and H_2S gases prior to cleansing by reverse osmosis. The vacuum systems delivers these gases and considerable water vapor to a flame system which adds additional propane fuel prior to flaring. A propane pilot is always on.



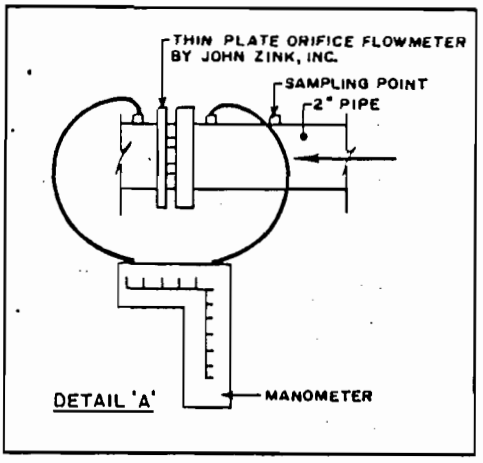


FIGURE I.
FLARE SYSTEM SCHEMATIC
HARRIS CORPORATION-SEMICONDUCTOR DIVISION
PALM BAY, FLORIDA

AIR CONSULTING and ENGINEERING

APPENDIX A

FDER PERMIT NUMBER AC05-138795

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
NOTICE OF PERMIT

Mr. James R. Kolanek, Manager
Environmental Services
Harris Semiconductor
Post Office Box 883
Melbourne, Florida 32901

February 3, 1988

Enclosed is permit No. AC 05-138795, for Harris Semiconductor to install/construct an Industrial Grade Water System to provide water for the Deionized Water Plants in Buildings 52 and 59. A vacuum degasifier will be used to remove hydrogen sulfide and carbon dioxide from the raw well water and a flare will be used to oxidize the gasses. The project will occur at Harris Semiconductor's existing facility in Melbourne, Brevard County, Florida. This permit is issued pursuant to Section 403, Florida Statutes.

Any Party to this permit has the right to seek judicial review of the permit pursuant to Section 120.68, Florida Statutes, by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date this permit is filed with the Clerk of the Department.

Executed in Tallahassee, Florida.

RECEIVED
FEB 10 1988
J. R. KOLANEK

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality Management

Copy furnished to:

T. Sawicki, CF Dist.
C. Bach, P.E.

Final Determination

Harris Semiconductor
Brevard County
Melbourne, Florida

Permit No. AC 05-138795

Florida Department of Environmental Regulation
Bureau of Air Quality Management
Central Air Permitting

January 27, 1988

Final Determination

The construction permit application has been reviewed by the Department. Public Notice of the Department's Intent to Issue was published in the Florida Today Newspaper, Cocoa, Florida, on January 6, 1988. The Technical Evaluation and Preliminary Determination were available for public inspection at the DER's Central Florida District office in Orlando and the DER's Bureau of Air Quality Management office in Tallahassee.

No comments were received during the Public Notice period. Therefore, the final action of the Department will be to issue the construction permit as drafted.

Bruce

...APE PUBLICATIONS, ... C. 6 Jan 1988
Melbourne, FL

The Times
Published Weekly on Wednesday

THE TRIBUNE
Published Weekly on Wednesday

STAR-ADVOCATE
Published Weekly on Wednesday

DER

JAN 08 1988

BAQM

FLORIDA TODAY
Published Daily

STATE OF FLORIDA
COUNTY OF BREVARD

Before the undersigned authority personally appeared **Linda L. Spicer** who on oath says that he/she is **Legal Advertising Clerk** of the **FLORIDA TODAY**, a newspaper published in Brevard County, Florida; that the attached copy of advertising being a Legal Notice in the matter of Permit to Harris Semiconductor in the ____ Court was published in the **FLORIDA TODAY NEWSPAPER** in the issues of January 6, 1988

Affiant further says that the said **FLORIDA TODAY NEWSPAPER** is a newspaper published in said Brevard County, Florida and that the said newspaper has heretofore been continuously published in said Brevard County, Florida regularly as stated above, and has been entered as second class mail matter at the post office in **COCOA**, said Brevard County, Florida for a period of one year next preceeding the first publication of the attached copy of advertisement; and affiant further says that he has neither paid nor promised any person, firm or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in said newspaper.

Copied: Bruce Mitchell
Tom Sawicki - CF Dist } 1.12.88 mr

Linda L. Spicer

Sworn and subscribed to before me this

6th day of January A.D., 19 88

Notary Public, State of Florida at Large
My Commission Expires July 20, 1990

State of Florida
Department of Environmental Regulation
Notice of Intent

The Department of Environmental Regulation hereby gives notice of its intent to issue a permit to Harris Semiconductor to install/construct an industrial Grade Water System to provide water for the Deionized Water Plants in Buildings 52 and 59. The system will include a vacuum degasifier to remove hydrogen sulfide and carbon dioxide from the raw well water. The removed gases will be oxidized in a flare, which will be designed and built by the John Zink Company, Model EEF-U-2 Flare Tip with a manual/weatherproof pilot ignition panel. The pilot and enrichment fuel will be propane. The construction/installation will take place at the permittee's existing facility located in Palm Bay, Brevard County, Florida.

Persons whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative determination (hearing) in accordance with Section 120.57, Florida Statutes. The petition must conform to the requirements of Chapters 17-103 and 28-5, Florida Administrative Code, and must be filed (received) in the Department's Office of General Counsel, 2600 Blair Stone Road, Twin Towers Office Building, Tallahassee, Florida 32399-2400, within fourteen (14) days of publication of this notice. Failure to file a petition within this time period constitutes a waiver of any right such person has to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the proposed agency action. Therefore, persons who may not wish to file a petition may wish to intervene in the proceeding. A petition for intervention must be filed pursuant to Rule 28-5.207, Florida Administrative Code, at least five (5) days before the final hearing and be filed with the hearing officer if one has been assigned at the Division of Administrative Hearings, Department of Administration, 2009 Apalachee Parkway, Tallahassee, Florida 32301. If no hearing officer has been assigned, the petition is to be filed with the Department's Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Failure to petition to intervene within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, Florida Statutes.

The application is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Dept. of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dept. of Environmental Regulation
Central Florida District
3319 Maguire Blvd., Suite 232
Orlando, Florida 32803-3767

Any person may send written comments on the proposed action to Mr. Bill Thomas at the Department's Tallahassee address. All comments mailed within 14 days of the publication of this notice will be considered in the Department's final determination.

TD84395—1T—1/6, 1988.
Wednesday

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

PERMITTEE:
Harris Semiconductor
P. O. Box 883
Melbourne, Florida 32901

Permit Number: AC 05-138795
Expiration Date: January 31, 1989
County: Brevard
Latitude/Longitude: 28° 01' 20"N/
80° 36' 10" W
Project: Industrial Grade Water System with Vacuum Degasifier and Flare System

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

For the construction/installation of a 600 gallon per minute Industrial Grade water system with a vacuum degasifier and flare system. The vacuum degasifier will remove hydrogen sulfide and carbon dioxide from raw well water and the removed gases will be transported to and oxidized/combusted by the flare system. The nonassisted type flare will be designed and built by the John Zink Company, which includes a self-supported flare stack, a Model EEF-U-2 flare tip (John Zink Co.), and a manual weatherproof pilot ignition panel. The construction/installation will occur at the permittee's existing facility located on Palm Bay Road, City of Palm Bay, Florida. The UTM coordinates are Zone 17, 538.7 km East and 3100.9 km North.

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

Attachments to be Incorporated:

1. Application to Construct Air Pollution Source, DER Form 17-1.202(1), and Mr. James R. Kolanek's cover letter dated August 28, 1987, and received August 31, 1987.
2. Mr. C. H. Fancy's letter dated September 25, 1987.
3. Mr. J. R. Kolanek's letter with enclosures dated October 16, 1987, and received October 23, 1987.
4. Copy of 40 CFR 60.18, as revised July 1, 1986.
5. Technical Evaluation and Preliminary Determination dated December 4, 1987.

PERMITTEE:
Harris Semiconductor

Permit Number: AC 05-138795
Expiration Date: January 31, 1989

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions" and as such are binding upon the permittee and enforceable pursuant to the authority of Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is hereby placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants or representatives.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit does not constitute a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute state recognition or acknowledgement of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the state. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, plant or aquatic life or property and penalties therefore caused by the construction or operation of this permitted source, nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

GENERAL CONDITIONS:

6. The permittee shall at all times properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law, access to the premises, at reasonable times, where the permitted activity is located or conducted for the purpose of:

a. Having access to and copying any records that must be kept under the conditions of the permit;

b. Inspecting the facility, equipment, practices, or operations regulated or required under this permit; and

c. Sampling or monitoring any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately notify and provide the Department with the following information:

a. a description of and cause of non-compliance; and

b. the period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance.

GENERAL CONDITIONS:

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source, which are submitted to the Department, may be used by the department as evidence in any enforcement case arising under the Florida Statutes or Department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes.

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

11. This permit is transferable only upon department approval in accordance with Florida Administrative Code Rules 17-4.12 and 17-30.30, as applicable. The permittee shall be liable for any noncompliance of the permitted activity until the transfer is approved by the Department.

12. This permit is required to be kept at the work site of the permitted activity during the entire period of construction or operation.

13. This permit also constitutes:

( ) Determination of Best Available Control Technology (BACT)
( ) Determination of Prevention of Significant Deterioration (PSD)
( ) Compliance with New Source Performance Standards

14. The permittee shall comply with the following monitoring and record keeping requirements:

a. Upon request, the permittee shall furnish all records and plans required under Department rules. The retention period for all records will be extended automatically, unless otherwise stipulated by the Department, during the course of any unresolved enforcement action.

GENERAL CONDITIONS:

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

c. Records of monitoring information shall include:

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

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

SPECIFIC CONDITIONS:

1. Annual hours of operation are 8760.

2. The maximum potential sulfur dioxide (SO_2) emissions are 7.0 pounds per hour and 30.7 tons per year.

3. The maximum potential hydrogen sulfide (H_2S) emissions are 493 pounds per year, which is based on a flare efficiency of 98.5%.

SPECIFIC CONDITIONS:

4. The permittee shall comply with the conditions of 40 CFR 60.18(c) thru (f).

5. No visible emissions (5% opacity) shall be allowed, except for a total period of 5 minutes during any consecutive 2 hours, pursuant to 40 CFR 60.18(c). Compliance shall be demonstrated annually using EPA Method 22 pursuant to 40 CFR 60.18(f)(1).

6. EPA Method 15 shall be performed annually to determine the maximum concentration of the H_2S prior to being flared and the result should be in terms of dry standard conditions (14.7 psia and 68^0 F). A retest shall be required if the concentration of H_2S is to be increased.

7. The exit velocity of the flare shall be determined using the procedure in 40 CFR 60.18(f)(4) and either EPA Method 2, 2A, 2C or 2D, as appropriate.

8. EPA Methods shall be as described in 40 CFR 60, Appendix A.

9. The Central Florida District shall be notified in writing 15 days in advance of any compliance testing and the test reports shall be submitted within 45 days after the last test run.

10. Objectionable odors shall not be allowed off plant property pursuant to FAC Rule 17-2.620(2).

11. The construction shall reasonably conform to the plans and schedule submitted in the application. If the permittee is unable to complete construction on schedule, he must notify the Department in writing 60 days prior to the expiration date of the construction permit and submit a new schedule and request for an extension of the construction permit. (FAC Rule 17-4.09)

To obtain a permit to operate, the permittee must demonstrate compliance with the conditions of the construction permit and submit a complete application for an operating permit, including the application fee, along with compliance test results and Certificate of Completion, to the Department's District office 90 days prior to the expiration date of the construction permit. The permittee may continue to operate in compliance with all terms of the construction permit until its expiration date. Operation beyond the construction permit expiration date requires a valid permit to operate. (FAC Rules 17-4.22 and 17-4.23)

PERMITTEE:
Harris Semiconductor

Permit Number: AC 05-138795
Expiration Date: January 31, 1989

SPECIFIC CONDITIONS:

If the construction permit expires prior to the permittee requesting an extension or obtaining a permit to operate, then all activities at the project must cease and the permittee must apply for a new permit to construct which can take up to 90 days to process a complete application. (FAC Rule 17-4.10)

Issued this 1 day of February
1988

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

Dale Twachtmann

Dale Twachtmann, Secretary

APPENDIX B

CODE OF FEDERAL REGULATIONS 60.18

§ 60.18 General control device requirements.

(a) *Introduction.* This section contains requirements for control devices used to comply with applicable subparts of Part 60 and Part 61. The requirements are placed here for administrative convenience and only apply to facilities covered by subparts referring to this section.

(b) *Flares.* Paragraphs (c) through (f) apply to flares.

(c)(1) Flares shall be designed for and operated with no visible emissions as determined by the methods specified in paragraph (f), except for periods not to exceed a total of 5 minutes during any 2 consecutive hours.

(2) Flares shall be operated with a flame present at all times, as determined by the methods specified in paragraph (f).

(3) Flares shall be used only with the net heating value of the gas being combusted being 11.2 MJ/scm (300 Btu/scf) or greater if the flare is steam-assisted or air-assisted; or with the net heating value of the gas being combusted being 7.45 MJ/scm (200 Btu/scf) or greater if the flare is nonassisted. The net heating value of the gas being combusted shall be determined by the methods specified in paragraph (f).

(4)(i) Steam-assisted and nonassisted flares shall be designed for and operated with an exit velocity, as determined by the methods specified in paragraph (f)(4), less than 18.3 m/sec (60 ft/sec), except as provided in paragraphs (b)(4) (ii) and (iii).

(ii) Steam-assisted and nonassisted flares designed for and operated with an exit velocity, as determined by the methods specified in paragraph (f)(4), equal to or greater than 18.3 m/sec (60 ft/sec) but less than 122 m/sec (400 ft/sec) are allowed if the net heating value of the gas being combusted is greater than 37.3 MJ/scm (1,000 Btu/scf).

(iii) Steam-assisted and nonassisted flares designed for and operated with an exit velocity, as determined by the methods specified in paragraph (f)(4), less than the velocity, V_{max}, as determined by the method specified in paragraph (f)(5), and less than 122 m/sec (400 ft/sec) are allowed.

(5) Air-assisted flares shall be designed and operated with an exist velocity less than the velocity, V_{max}, as determined by the method specified in paragraph (f)(6).

(6) Flares used to comply with this section shall be steam-assisted, air-assisted, or nonassisted.

(d) Owners or operators of flares used to comply with the provisions of this subpart shall monitor these control devices to ensure that they are operated and maintained in conformance with their designs. Applicable subparts will provide provisions stating how owners or operators of flares shall monitor these control devices.

(e) Flares used to comply with provisions of this subpart shall be operated at all times when emissions may be vented to them.

(f)(1) Reference Method 22 shall be used to determine the compliance of flares with the visible emission provisions of this subpart. The observation period is 2 hours and shall be used according to Method 22.

(2) The presence of a flare pilot flame shall be monitored using a thermocouple or any other equivalent device to detect the presence of a flame.

(3) The net heating value of the gas being combusted in a flare shall be calculated using the following equation:

$$H_T = K \sum_{i=1}^{n} C_i H_i$$

where:

H_T = Net heating value of the sample, MJ/scm; where the net enthalpy per mole of offgas is based on combustion at 25 °C and 760 mm Hg, but the standard temperature for determining the volume corresponding to one mole is 20 °C;

$$K = \text{Constant}, \quad 1.740 \times 10^{-7} \quad \left(\frac{1}{ppm}\right) \left(\frac{g\ mole}{scm}\right) \left(\frac{MJ}{kcal}\right)$$

where the standard temperature for $\left(\frac{g\ mole}{scm}\right)$ is 20°C;

C_i = Concentration of sample component i in ppm on a wet basis, as measured for organics by Reference Method 18 and measured for hydrogen and carbon monoxide by ASTM D1946-77 (Incorporated by reference as specified in § 60.17); and

H_i = Net heat of combustion of sample component i, kcal/g mole at 25 °C and 760 mm Hg. The heats of combustion may be determined using ASTM D2382-76 (incorporated by reference as specified in § 60.17) if published values are not available or cannot be calculated.

(4) The actual exist velocity of a flare shall be determined by dividing the volumetric flowrate (in units of standard temperature and pressure), as determined by Reference Methods 2, 2A, 2C, or 2D as appropriate; by the unobstructed (free) cross sectional area of the flare tip.

(5) The maximum permitted velocity, V_{max}, for flares complying with paragraph (c)(4)(iii) shall be determined by the following equation.

$$\text{Log}_{10}(V_{max}) = (H_T + 28.8)/31.7$$

V_{max} = Maximum permitted velocity, M/sec

28.8 = Constant

31.7 = Constant

H_T = The net heating value as determined in paragraph (f)(3).

(6) The maximum permitted velocity, V_{max}, for air-assisted flares shall be determined by the following equation.

$$V_{max} = 8.706 + 0.7084\,(H_T)$$

V_{max} = Maximum permitted velocity, m/sec

8.706 = Constant

0.7084 = Constant

H_T = The net heating value as determined in paragraph (f)(3).

[51 FR 2701, Jan.21, 1986]

APPENDIX C

EPA METHOD 15 H_2S

CALIBRATION DATA

CLIENT AGE - Harris Corp. TSI PROJECT NO. 060389

PLANT Harris Corp Semiconductor Div

LOCATION Melbourne, Florida

SOURCE H_2S Flare - Inlet Gas DATE 6-17-89

COMPOUND	H_2S	MeSH	DMS	DMDS	AMB TEMP
PERMEATION RATE (ng/min)	1050				Trailer 75°F
TUBE NUMBER	30394				BAR PRES 30.0

TIME	FLOW ml/min	CMPD	CONC ppm	AREA COUNTS 1	2	3	AVG.
1012	329	H_2S	2.79	254243	256202	261996	257480
1036	621	H_2S	1.21	64957	64523	64645	64707
1100	1272	H_2S	0.59	16906	16623	16669	16733

CALIBRATION DATA SUMMARY

CLIENT: ACE - Harris Corp. TSI PROJECT NO. 06037

PLANT: Harris Corp., Semiconductor Div.

LOCATION: Melbourne, Florida

SOURCE: H_2S Flare - Inlet Gases DATE: 6-17-89

CMPD: H_2S Curve: 2

TIME	CONC ppm	RESPONSE	CALC CONC ppm	% DIFF
1017	2.29	257480	2.33	1.7
1036	1.21	64707	1.17	3.3
1100	0.59	116733	0.60	1.7

SLOPE: 2.0129 Y int: 46974

CONC @

CMPD Curve

TIME	CONC ppm	RESPONSE	CALC CONC ppm	% DIFF

SLOPE Y int

CONC @

CMPD Curve

TIME	CONC ppm	RESPONSE	CALC CONC ppm	% DIFF

SLOPE Y int

CONC @

CMPD Curve

TIME	CONC ppm	RESPONSE	CALC CONC ppm	% DIFF

SLOPE Y int

CONC @

STATIONARY SOURCES

6.1.2 Using Equation 14-1, calculate the expected average velocity (v_d) in the sampling duct, corresponding to each value of v_m obtained under Section 6.1.1.

6.1.3 Calculate the actual average velocity (v_s) in the sampling duct for each run or sub-run, according to Equation 2-9 of Method 2, and using data obtained from Method 13.

6.1.4 Express each value v_s from Section 6.1.3 as a percentage of the corresponding v_d value from Section 6.1.2.

6.1.4.1 If v_s is less than or equal to 120 percent of v_d, the results are acceptable (note that in cases where the above calculations have been performed for each sub-run, the results are acceptable if the average percentage for all sub-runs is less than or equal to 120 percent).

6.1.4.2 If v_s is more than 120 percent of v_d, multiply the reported emission rate by the following factor.

$$1+\frac{(100\ v_s/v_d)-120}{200}$$

6.2 Average velocity of roof monitor gases. Calculate the average roof monitor velocity using all the velocity or volumetric flow readings from Section 5.1.2.

6.3 Roof monitor temperature. Calculate the mean value of the temperatures recorded in Section 5.2.

6.4 Concentration of fluorides in roof monitor air.

[6.4 corrected by 52 FR 34639, September 14, 1987]

6.4.1 If a single sampling train was used throughout the run, calculate the average fluoride concentration for the roof monitor using Equation 13A-2 of Method 13A.

6.4.2 If two or more sampling trains were used (i.e., one per sub-run), calculate the average fluoride concentration for the run, as follows:

$$C=\frac{\sum_{i=1}^{n}(F_t)_i}{\sum_{i=1}^{n}(V_{m(std)})_i} \qquad \text{Eq. 14-2}$$

Where:

C_s = Average fluoride concentration in roof monitor air, mg F/dscm (mgF/dscf).

F_t = Total fluoride mass collected during a particular sub-run, mg F (from Equation 13A-1 of Method 13A or Equation 13B-1 of Method 13B).

$V_{m(std)}$ = Total volume of sample gas passing through the dry gas meter during a particular sub-run, dscm (dscf) (see Equation 5-1 of Method 5).

n = Total number of sub-runs.

[6.4.2 corrected by 52 FR 34639, September 14, 1987]

6.5 Average volumetric flow from the roof monitor of the potroom(s) (or potroom segment(s)) containing the anemometers is given in Equation 14-3.

$$Q_{sd}=\frac{V_{mt}M_dP_m(293\ ^\circ K)A}{(t_m+273^\circ)(760\ mm\ Hg)} \qquad \text{Eq. 14-3}$$

Where:

Q_{sd} = Average volumetric flow from roof monitor at standard conditions on a dry basis, m^3/min.

A = Roof monitor open area, m^2.

v_{mt} = Average velocity of air in the roof monitor, m/min, from Section 6.2.

P_m = Pressure in the roof monitor; equal to barometric pressure for this application, mm Hg.

t_m = Roof monitor temperature, °C, from Section 6.3.

M_d = Mole fraction of dry gas, which is given by:

$$M_d=(1-B_{ws})$$

NOTE: B_{ws} is the proportion by volume of water vapor in the gas stream, from Equation 5-3, Method 5.

[6.5 equation corrected by 52 FR 34639, September 14, 1987]

6.6 Conversion Factors.

1 ft^3 = 0.02832 m^3

1 hr = 60 min

[6.6 added by 52 FR 34639, September 14, 1987]

7. *Bibliography.*

1. Shigehara, R. T., A guideline for Evaluating Compliance Test Results (Isokinetic Sampling Rate Criterion). U.S. Environmental Protection Agency, Emission Measurement Branch. Research Triangle Park, North Carolina, August 1977.

METHOD 15—DETERMINATION OF HYDROGEN SULFIDE, CARBONYL SULFIDE, AND CARBON DISULFIDE EMISSIONS FROM STATIONARY SOURCES

[Method 15 amended and corrected by 52 FR 34639, September 14, 1987]

Introduction. The method described below uses the principle of gas chromatographic separation and flame photometric detection (FPD). Since there are many systems or sets of operating conditions that represent usable methods of determining sulfur emissions, all systems which employ this principle, but differ only in details of equipment and operation, may be used as alternative methods, provided that the criteria set below are met.

1. *Principle and Applicability*

1.1 Principle. A gas sample is extracted from the emission source and diluted with clean dry air. An aliquot of the diluted sample is then analyzed for hydrogen sulfide (H_2S), carbonyl sulfide (COS), and carbon disulfide (CS_2) by gas chromatographic (GC) separation and flame photometric detection (FPD).

1.2 Applicability. This method is applicable for determination of the above sulfur compounds from tail gas control units of sulfur recovery plants.

2. *Range and sensitivity*

2.1 Range. Coupled with a gas chromtographic system utilizing a 1-milliliter sample size, the maximum limit of the FPD for each sulfur compound is approximately 10 ppm. It may be necessary to dilute gas samples from sulfur recovery plants hundredfold (99:1) resulting in an upper limit of about 1000 ppm for each compound.

2.2 The minimum detectable concentration of the FPD is also dependent on sample size and would be about 0.5 ppm for a 1 ml sample.

3. *Interferences*

3.1 Moisture Condensation. Moisture condensation in the sample delivery system, the analytical column, or the FPD burner block can cause losses or interferences. This potential is eliminated by heating the sample line, and by conditioning the sample with dry dilution air to lower its dew point below the operating temperature of the GC/FPD analytical system prior to analysis.

3.2 Carbon Monoxide and Carbon Dioxide. CO and CO_2 have substantial desensitizing effects on the flame photometric detector even after 9:1 dilution. (Acceptable systems must demonstrate that they have eliminated this interference by some procedure such as eluding CO and CO_2 before any of the sulfur compounds to be measured.) Compliance with this requirement can be demonstrated by submitting chromatograms of calibration gases with and without CO_2 in the diluent gas. The CO_2 level should be approximately 10 percent for the case with CO_2 present. The two chromatograms should show agreement within the precision limits of section 4.1.

[3.2 corrected by 52 FR 34639 September 14, 1987]

3.3 Elemental Sulfur. The condensation of sulfur vapor in the sampling line can lead to eventual coating and even blockage of the sample line. This problem can be eliminated along with the moisture problem by heating the sample line.

4. *Precision*

4.1 Calibration Precision. A series of three consecutive injections of the same calibration gas, at any dilution, shall produce re-

sults which do not vary by more than ±13 percent from the mean of the three injections.

4.2 Calibration Drift. The calibration drift determined from the mean of three injections made at the beginning and end of any 8-hour period shall not exceed ±5 percent.

5. *Apparatus*

5.1 Sampling.

[5.1 added by 52 FR 34639, September 14, 1987]

5.1.1 Probe. The probe must be made of inert material such as stainless steel or glass. It should be designed to incorporate a filter and to allow calibration gas to enter the probe at or near the sample entry point. Any portion of the probe not exposed to the stack gas must be heated to prevent moisture condensation.

5.1.2 Sample Line. The sample line must be made of Teflon, no greater than 1.3 cm (½ in) inside diameter. All parts from the probe to the dilution system must be thermostatically heated to 120° C.

[5.1.2 amended by 52 FR 34639, September 14, 1987]

5.1.3 Sample Pump. The sample pump shall be a leakless Teflon coated diaphragm type or equivalent. If the pump is upstream of the dilution system, the pump head must be heated to 120° C.

5.2 Dilution System. The dilution system must be constructed such that all sample contacts are made of inert material (e.g. stainless steel or Teflon). It must be heated to 120° C and be capable of approximately a 9:1 dilution of the sample.

5.3 Gas Chromatograph. The gas chromatograph must have at least the following components:

5.3.1 Oven. Capable of maintaining the separation column at the proper operating temperature ±1° C.

5.3.2 Temperature Gauge. To monitor column oven, detector, and exhaust temperature ±1° C.

5.3.3 Flow System. Gas metering system to measure sample, fuel, combustion gas, and carrier gas flows.

5.3.4 Flame Photometric Detector.

5.3.4.1 Electrometer. Capable of full scale amplification of linear ranges of 10^{-9} to 10^{-4} amperes full scale.

5.3.4.2 Power Supply. Capable of delivering up to 750 volts.

5.3.4.3 Recorder. Compatible with the output voltage range of the electrometer.

5.4 Gas Chromatograph Columns. The column system must be demonstrated to be capable of resolving three major reduced sulfur compounds: H_2S, COS, and CS_2.

To demonstrate that adequate resolution has been achieved the tester must submit a chromatogram of a calibration gas containing all three reduced sulfur compounds in the concentration range of the applicable standard. Adequate resolution will be defined as base line separation of adjacent peaks when the amplifier attenuation is set so that the smaller peak is at least 50 percent of full scale. Base line separation is defined as a return to zero ±5 percent in the interval between peaks. Systems not meeting this criteria may be considered alternate methods subject to the approval of the Administrator.

[5.4 corrected 52 FR 34639, September 14, 1987]

5.5.1 Calibration System. The calibration system must contain the following components.

5.5.2 Flow System. To measure air flow over permeation tubes at ±2 percent. Each flowmeter shall be calibrated after a complete test series with a wet test meter. If the flow measuring device differs from the wet test meter by 5 percent, the completed test shall be discarded. Alternatively, the tester may elect to use the flow data that would yield the lowest flow measurement. Calibration with a wet test meter before a test is optional.

5.5.3 Constant Temperature Bath. Device capable of maintaining the permeation tubes at the calibration temperature within ±0.1° C.

[5.5.3 corrected by 52 FR 34639 September 14, 1987]

5.5.4 Temperature Gauge. Thermometer or equivalent to monitor bath temperature within ±1° C.

6. *Reagents*

6.1 Fuel. Hydrogen (H_2) prepurified grade or better.

6.2 Combustion Gas. Oxygen (O_2) or air, research purity or better.

6.3 Carrier Gas. Prepurified grade or better.

6.4 Diluent. Air containing less than 0.5 ppm total sulfur compounds and less than 10 ppm each of moisture and total hydrocarbons.

6.5 Calibration Gases. Permeation tubes, one each of H_2S, COS, and CS_2, gravimetrically calibrated and certified at some convenient operating temperature. These tubes consist of hermetically sealed FEP Teflon tubing in which a liquified gaseous substance is enclosed. The enclosed gas permeates through the tubing wall at a constant rate. When the temperature is constant, calibration gases covering a wide range of known concentrations can be generated by varying and accurately measuring the flow rate of diluent gas passing over the tubes. These calibration gases are used to calibrate the GC/FPD system and the dilution system.

7. *Pretest Procedures*

The following procedures are optional but would be helpful in preventing any problem which might occur later and invalidate the entire test.

7.1 After the complete measurement system has been set up at the site and deemed to be operational, the following procedures should be completed before sampling is initiated.

7.1.1 Leak Test. Appropriate leak test procedures should be employed to verify the integrity of all components, sample lines, and connections. The following leak test procedure is suggested: For components upstream of the sample pump, attach the probe end of the sample line to a manometer or vacuum gauge, start the pump and pull greater than 50 mm (2 in.) Hg vacuum, close off the pump outlet, and then stop the pump and ascertain that there is no leak for 1 minute. For components after the pump, apply a slight positive pressure and check for leaks by applying a liquid (detergent in water, for example) at each joint. Bubbling indicates the presence of a leak.

7.1.2 System Performance. Since the complete system is calibrated following each test, the precise calibration of each component is not critical. However, these components should be verified to be operating properly. This verification can be performed by observing the response of flowmeters or of the GC output to changes in flow rates or calibration gas concentrations and ascertaining the response to be within predicted limits. If any component or the complete system fails to respond in a normal and predictable manner, the source of the discrepancy should be identifed and corrected before proceeding.

8. *Calibration*

Prior to any sampling run, calibrate the system using the following procedures. (If more than one run is performed during any 24-hour period, a calibration need not be performed prior to the second and any subsequent runs. The calibration must, however, be verified as prescribed in section 10, after the last run made within the 24-hour period.)

8.1 General Considerations. This section outlines steps to be followed for use of the GC/FPD and the dilution system. The procedure does not include detailed instructions because the operation of these systems is complex, and it requires an understanding of the individual system being used. Each system should include a written operating manual describing in detail the operating procedures associated with each component in the measurement system. In addition, the operator should be familiar with the operating principles of the components; particularly the GC/FPD. The citations in the Bibliography at the end of this method are recommended for review for this purpose.

8.2 Calibration Procedure. Insert the permeation tubes into the tube chamber. Check the bath temperature to assure agreement with the calibration temperature of the tubes within ±0.1°C. Allow 24 hours for the tubes to equilibrate. Alternatively equilibration may be verified by injecting samples of

[1]Mention of trade names or specific products does not constitute an endorsement by the Environmental Protection Agency.

calibration gas at 1-hour intervals. The permeation tubes can be assumed to have reached equilibrium when consecutive hourly samples agree within the precision limits of section 4.1.

Vary the amount of air flowing over the tubes to produce the desired concentrations for calibrating the analytical and dilution systems. The air flow across the tubes must at all times exceed the flow requirement of the analytical systems. The concentration in parts per million generated by a bube containing a specific permeant can be calculated as follows:

$$C = K \times P_r / ML$$

Equation 15-1

where:

C = Concentration of permeant produced in ppm.

P_r = Permeation rate of the tube in μg/min.

M = Molecular weight of the permeant: g/g-mole.

L = Flow rate, l/min, of air over permeant @ 20°C, 760 mm Hg.

K = Gas constant at 20°C and 760 mm Hg = 24.04 l/g mole.

8.3 Calibration of analysis system. Generate a series of three or more known concentrations spanning the linear range of the FPD (approximately 0.05 to 1.0 ppm) for each of the four major sulfur compounds. Bypassing the dilution system, inject these standards in to the GC/FPD analyzers and monitor the responses. Three injects for each concentration must yield the precision described in section 4.1. Failure to attain this precision is an indication of a problem in the calibration or analytical system. Any such problem must be identified and corrected before proceeding.

8.4 Calibration Curves. Plot the GC/FPD response in current (amperes) versus their causative concentrations in ppm on log-log coordinate graph paper for each sulfur compound. Alternatively, a least squares equation may be generated from the calibration data.

8.5 Calibration of Dilution System. Generate a know concentration of hydrogen sulfied using the permeation tube system. Adjust the flow rate of diluent air for the first dilution stage so that the desired level of dilution is approximated. Inject the diluted calibration gas into the GC/FPD system and monitor its response. Three injections for each dilution must yield the precision described in section 4.1. Failure to attain this precision in this step is an indication of a problem in the dilution system. Any such problem must be identified and corrected before proceeding. Using the calibration data for H_2S (developed under 8.3) determine the diluted calibration gas concentration in ppm. Then calculate the dilution factor as the ratio of the calibration gas concentration before dilution to the diluted calibration gas concentration determined under this paragraph. Repeat this procedure for each stage of dilution required. Alternatively, the GC/FPD system may be calibrated by generating a series of three or more concentrations of each sulfur compound and diluting these samples before injecting them into the GC/FPD system. This data will then serve as the calibration data for the unknown samples and a separate determination of the dilution factor will not be necessary. However, the precision requirements of section 4.1 are still applicable.

9. *Sampling and Analysis Procedure*

9.1 Sampling. Insert the sampling probe into the test port making certain that no dilution air enters the stack through the port. Begin sampling and dilute the sample approximately 9:1 using the dilution system. Note that the precise dilution factor is that which is determined in paragraph 8.5. Condition the entire system with sample for a minimum of 15 minutes prior to commencing analysis.

9.2 Analysis. Aliquots of diluted sample are injected into the GC/FPD analyzer for analysis.

9.2.1 Sample Run. A sample run is composed of 16 individual analyses (injects) performed over a period of not less than 3 hours or more than 6 hours.

9.2.2 Observation for Clogging of Probe. If reductions in sample concentrations are observed during a sample run that cannot be explained by process conditions, the sampling must be interrupted to determine if the sample probe is clogged with particulate matter. If the probe is found to be clogged, the test must be stopped and the results up to that point discarded. Testing may resume after cleaning the probe or replacing it with a clean one. After each run, the sample probe must be inspected and, if necessary, dismantled and cleaned.

10. *Post-Test Procedures*

10.1 Sample Line Loss. A known concentration of hydrogen sulfide at the level of the applicable standard, ±20 percent, must be introduced into the sampling system at the opening of the probe in sufficient quantities to ensure that there is an excess of sample which must be vented to the atmosphere. The sample must be transported through the entire sampling system to the measurement system in the normal manner. The resulting measured concentration should be compared to the known value to determine the sampling system loss. A sampling system loss of more than 20 percent is unacceptable. Sampling losses of 0-20 percent must be corrected by dividing the resulting sample concentration by the fraction of recovery. The known gas sample may be generated using permeation tubes. Alternatively, cylinders of hydrogen sulfide mixed in air may be used provided they are traceable to permeation tubes. The optional pretest procedures provide a good guideline for determining if there are leaks in the sampling system.

10.2 Recalibration. After each run, or after a series of runs made within a 24-hour period, perform a partial recalibration using the procedures in section 8. Only H_2S (or other permeant) need be used to recalibrate the GC/FPD analysis system (8.3) and the dilution system (8.5).

10.3 Determination of Calibration Drift. Compare the calibration curves obtained prior to the runs, to the calibration curves obtained under Section 10.2. The calibration drift should not exceed the limits set forth in Section 4.2. If the drift exceeds this limit, the intervening run or runs should be considered not valid. The tester, however, may instead have the option of choosing the calibration data set which would give the highest sample values. [10.3 amended by 52 FR 34639, September 14, 1987]

11. *Calculations*

11.1 Determine the concentrations of each reduced sulfur compound detected directly from the calibration curves. Alternatively, the concentrations may be calculated using the equation for the least squares line.

11.2 Calculation of SO_2 Equivalent. SO_2 equivalent will be determined for each analysis made by summing the concentrations of each reduced sulfur compound resolved during the given analysis.

$$SO_2 \text{ equivalent} = \Sigma(H_2S, COS, 2\,CS_2)d$$

Equation 15-2

where:

SO_2 equivalent = The sum of the concentration of each of the measured compounds (COS, H_2S, CS_2) expressed as sulfur dioxide in ppm.

H_2S = Hydrogen sulfide, ppm.

COS = Carbonyl sulfide, ppm.

CS_2 = Carbon disulfide, ppm.

d = Dilution factor, dimensionless.

11.3 Average SO_2 equivalent will be determined as follows:

$$\text{Average } SO_2 \text{ equivalent} = \frac{\sum_{i=1}^{N} SO_2 \text{ equiv.}_i}{N\,(1 - Bwo)}$$

Equation 15-3

where:

Average SO_2 equivalent$_i$ = Average SO_2 equivalent in ppm, dry basis.

SO_2 equivalent$_i$ = SO_2 in ppm as determined by Equation 15-2.

N = Number of analyses performed.

Bwo = Fraction of volume of water vapor in the gas stream as determined by Method 4—Determination of Moisture in Stack Gases (36 FR 24887).

[11.3 corrected by 52 FR 34639, September 14, 1987]

12.1.4.1 Tube Chamber. Glass chamber of sufficient dimensions to house permeation tubes.

12.1.4.2 Mass Flowmeters. Two mass flowmeters in the range 0-3 l/min. and 0-10 l/min. to measure air flow over permeation tubes at ±2 percent. These flowmeters shall be cross-calibrated at the beginning of each test. Using a convenient flow rate in the measuring range of both flowmeters, set and monitor the flow rate of gas over the permeation tubes. Injection of calibration gas generated at this flow rate as measured by one flowmeter followed by injection of calibration gas at the same flow rate as measured by the other flowmeter should agree within the specified precision limits. If they do not, then there is a problem with the mass flow measurement. Each mass flowmeter shall be calibrated prior to the first test with a wet test meter and thereafter at least once each year.

12.1.4.3 Constant Temperature Bath. Capable of maintaining permeation tubes at certification temperature of 30° C within ±0.1° C.

12.2 Reagents.

12.2.1 Fuel. Hydrogen (H_2) prepurified grade or better.

12.2.2 Combustion Gas. Oxygen (O_2) research purity or better.

12.2.3 Carrier Gas. Nitrogen (N_2) prepurified grade or better.

12.2.4 Diluent. Air containing less than 0.5 ppm total sulfur compounds and less than 10 ppm each of moisture and total hydrocarbons, and filtered using MSA filters 46727 and 79030, or equivalent. Removal of sulfur compounds can be verified by injecting dilution air only, described in section 8.3.

12.2.5 Compressed Air. 60 psig for GC valve actuation.

12.2.6 Calibration Gases. Permeation tubes gravimetrically calibrated and certified at 30.0° C.

12.3 Operating Parameters. The operating parameters for the GC/FPD system are as follows: nitrogen carrier gas flow rate of 100 cc/min, exhaust temperature of 110° C, detector temperature 105° C, oven temperature of 40° C, hydrogen flow rate of 80 cc/minute, oxygen flow rate of 20 cc/minute, and sample flow rate of 80 cc/minute.

12.4 Analysis. The sample valve is actuated for 1 minute in which time an aliquot of diluted sample is injected onto the separation column. The valve is then deactivated for the remainder of analysis cycle in which time the sample loop is refilled and the separation column continues to be foreflushed. The elution time for each compound will be determined during calibration.

13. *Bibliography.*

13.1 O'Keeffe, A. E. and G. C. Ortman. "Primary Standards for Trace Gas Analysis." Anal. Chem. 38,760 (1966).

13.2 Stevens, R. K., A. E. O'Keeffe, and G. C. Ortman. "Absolute Calibration of a Flame Photometric Detector to Volatile Sulfur Compounds at Sub-Part-Per-Million Levels." Environmental Science and Technology 3:7 (July 1969).

13.3 Mulick, J. D., R. K. Stevens, and R. Baumgardner. "An Analytical System Designed to Measure Multiple Malodorous Compounds Related to Kraft Mill Activities." Presented at the 12th Conference on Methods in Air Pollution and Industrial Hygiene Studies, University of Southern California, Los Angeles, Calif. April 6-8, 1971.

13.4 Devonald, R. H., R. S. Serenius, and A. D. McIntyre. "Evaluation of the Flame Photometric Detector for Analysis of Sulfur Compounds." Pulp and Paper Magazine of Canada, 73,3 (March, 1972).

13.5 Grimley, K. W., W. S. Smith, and R. M. Martin. "The Use of a Dynamic Dilution System in the Conditioning of Stack Gases for Automated Analysis by a Mobile Sampling Van." Presented at the 63rd Annual APCA Meeting in St. Louis, Mo. June 14-19, 1970.

13.6 General Reference. Standard Methods of Chemical Analysis Volume III A and B Instrumental Methods. Sixth Edition. Van Nostrand Reinhold Co.

Method 15A — Determination of Total Reduced Sulfur Emissions From Sulfur Recovery Plants in Petroleum Refineries

[Method 15A added by 52 FR 20392, June 1, 1987]

1. Applicability, Principle, Interferences, Precision, and Bias

1.1 *Applicability.* This method is applicable to the determination of total reduced sulfur (TRS) emissions from sulfur recovery plants where the emissions are in a reducing atmosphere, such as in Stretford units. The lower detectable limit is 0.1 ppm of sulfur dioxide (SO_2) when sampling at 2 liters/min for 3 hours or 0.3 ppm when sampling at 2 liters/min for 1 hour. The upper concentration limit of the method exceeds TRS levels generally encountered in sulfur recovery plants.

1.2 *Principle.* An integrated gas sample is extracted from the stack, and combustion air is added to the oxygen (O_2)-deficient gas at a known rate. The TRS compounds (hydrogen sulfide, carbonyl sulfide, and carbon disulfide) are thermally oxidized to sulfur dioxide, collected in hydrogen peroxide as sulfate ion, and then analyzed according to the Method 6 barium-thorin titration procedure.

1.3 *Interferences.* Reduced sulfur compounds, other than TRS, that are present in the emissions will also be oxidized to SO_2. For example, thiophene has been identified in emissions from a Stretford unit and produced a positive bias of 30 percent in the Method 15A result. However, these biases may not affect the outcome of the test at units where emissions are low relative to the standard.

Calcium and aluminum have been shown to interfere in the Method 6 titration procedure. Since these metals have been identified in particulate matter emissions from Stretford units, a Teflon filter is required to remove this interference.

Note. — Mention of trade name or commercial products in this publication does not constitute the endorsement or recommendation for use by the Environmental Protection Agency.

When used to sample emissions containing 7 percent moisture or less, the midget impingers have sufficient volume to contain the condensate collected during sampling. Dilution of the H_2O_2 does not affect the collection of SO_2. At higher moisture contents, the potassium citrate-citric acid buffer system used with Method 16A should be used to collect the condensate.

1.4 *Precision and bias.* Relative standard deviations of 2.8 and 6.9 percent at 41 ppm TRS have been obtained when sampling for 1 and 3 hours, respectively. Results obtained with this method are likely to contain a positive bias due to the presence of nonregulated sulfur compounds (that are present in petroleum) in the emissions.

2. Apparatus

2.1 *Sampling.* The sampling train is shown in Figure 15A-1, and component parts are discussed below. Modifications to this sampling train are acceptable provided that the system performance check is met.

12. *Example System*

Described below is a system utilized by EPA in gathering NSPS data. This system does not now reflect all the latest developments in equipment and column technology, but it does represent one system that has been demonstrated to work.

12.1 Apparatus.

12.1.1 Sample System.

12.1.1.1 Probe. Stainless steel tubing, 6.35 mm (¼ in.) outside diameter, packed with glass wool.

12.1.1.2 Sample Line. ⅜ inch inside diameter Teflon tubing heated to 120° C. This temperature is controlled by a thermostatic heater.

12.1.1.3 Sample Pump. Leakless Teflon coated diaphragm type or equivalent. The pump head is heated to 120° C by enclosing it in the sample dilution box (12.2.4 below).

12.1.2 Dilution System. A schematic diagram of the dynamic dilution system is given in Figure 15-2. The dilution system is constructed such that all sample contacts are made of inert materials. The dilution system which is heated to 120° C must be capable of a minimum of 9:1 dilution of sample. Equipment used in the dilution system is listed below:

12.1.2.1 Dilution Pump. Model A-150 Kohmyhr Teflon positive displacement type, nonadjustable 150 cc/min. ±2.0 percent, or equivalent, per dilution stage. A 9:1 dilution of sample is accomplished by combining 150 cc of sample with 1350 cc of clean dry air as shown in Figure 15-2.

12.1.2.2 Valves. Three-way Teflon solenoid or manual type.

12.1.2.3 Tubing. Teflon tubing and fittings are used throughout from the sample probe to the GC/FPD to present an inert surface for sample gas.

12.1.2.4 Box. Insulated box, heated and maintained at 120° C, of sufficient dimensions to house dilution apparatus.

12.1.2.5 Flowmeters. Rotameters or equivalent to measure flow from 0 to 1500 ml/min. ±1 percent per dilution stage.

12.1.3.0 Gas Chromatograph.

12.1.3.1 Column—1.83 m (6 ft.) length of Teflon tubing, 2.16 mm (0.085 in.) inside diameter, packed with deactivated silica gel, or equivalent.

12.1.3.2 Sample Valve. Teflon six port gas sampling valve, equipped with a 1 ml sample loop, actuated by compressed air (Figure 15-1).

12.1.3.3 Oven. For containing sample valve, stripper column and separation column. The oven should be capable of maintaining an elevated temperature ranging from ambient to 100° C, constant within ±1° C.

12.1.3.4 Temperature Monitor. Thermocouple pyrometer to measure column oven, detector, and exhaust temperature ±1° C.

12.1.3.5 Flow System. Gas metering system to measure sample flow, hydrogen flow, oxygen flow and nitrogen carrier gas flow.

12.1.3.6 Detector. Flame photometric detector.

12.1.3.7 Electrometer. Capable of full scale amplification of linear ranges of 10^{-9} to 10^{-4} amperes full scale.

12.1.3.8 Power Supply. Capable of delivering up to 750 volts.

12.1.3.9 Recorder. Compatible with the output voltage range of the electrometer.

12.1.4 Calibration. Permeation tube system (Figure 15-3).

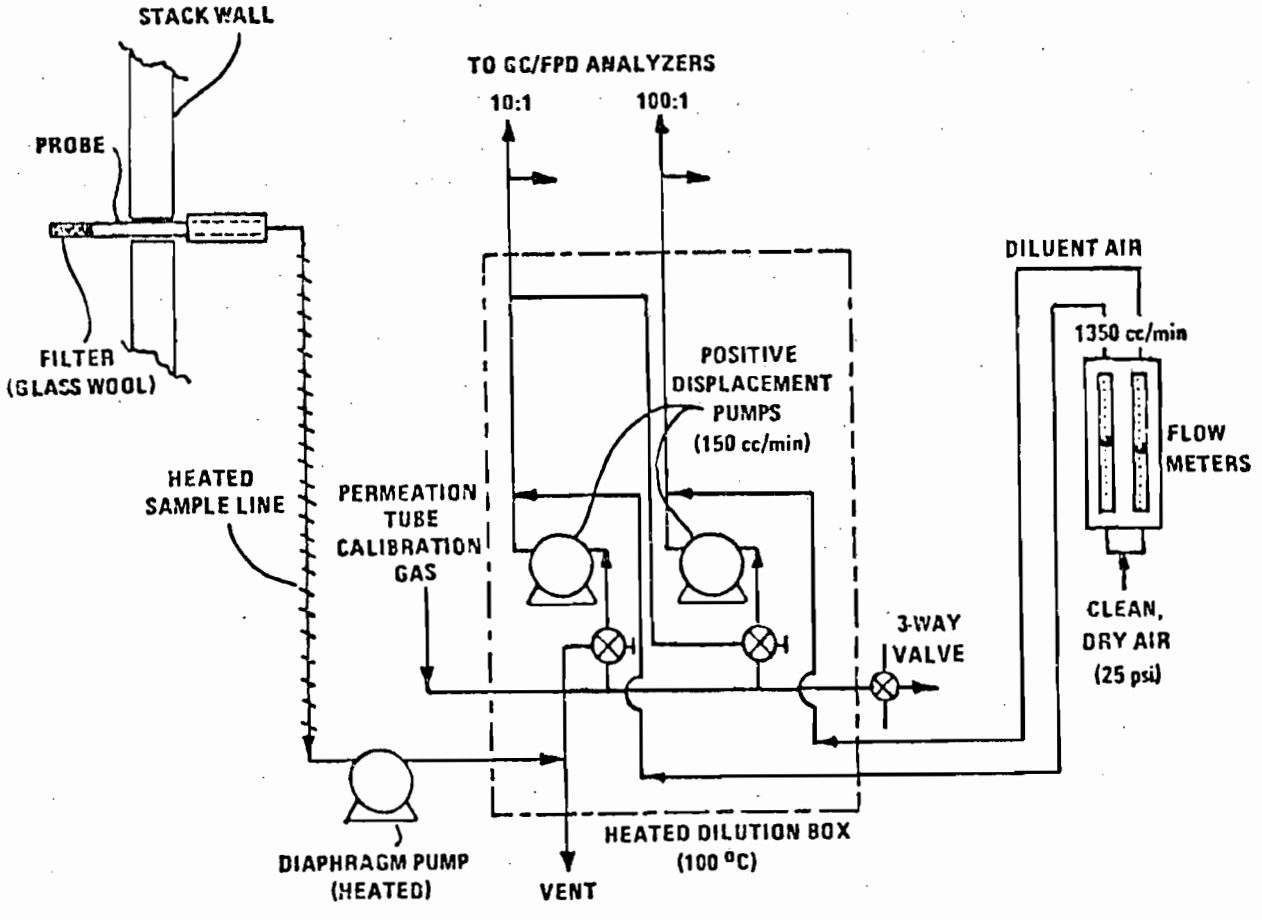


Figure 15-1. Sampling and dilution apparatus.

[Figure 15-1 added by 52 FR 34639, September 14, 1987]

[Appendix A, Method 15]

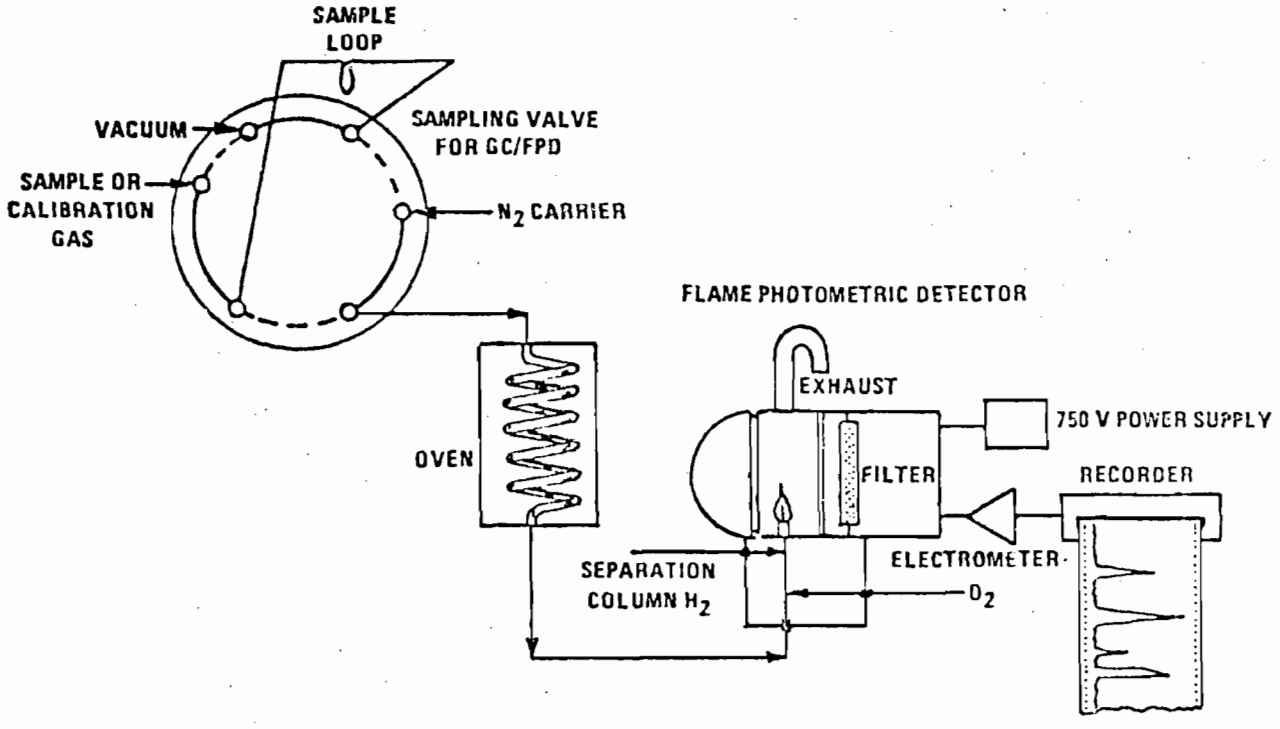


Figure 15-2. Gas chromatographic flame photometric analyzer.

[Figure 15-2 added by 52 FR 34639, September 14, 1987]

[Appendix A, Method 15]

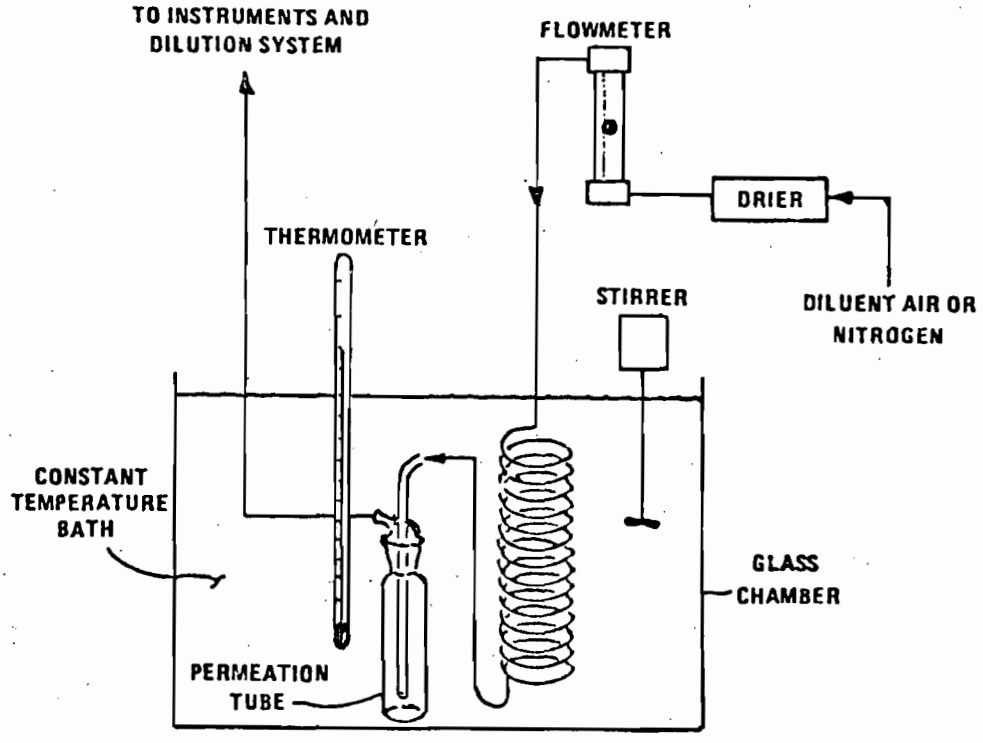


Figure 15-3. Apparatus for field calibration.

[Figure 15-3 added by 52 FR 34639, September 14, 1987]

CHANNEL A INJECT 06/16/89 10:20:01

06/16/89 10:20:01 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 22 INDEX 22

PEAK#	AREA%	RT	AREA BC
1	1.24	0.3	616 02
2	1.028	0.35	511 02
3	32.642	0.49	16221 03
4	65.09	1.25	32346 01
TOTAL	100.		49694

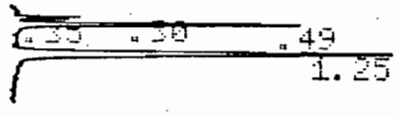
CHANNEL A INJECT 06/16/89 10:24:01

06/16/89 10:24:01 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 23 INDEX 23

PEAK#	AREA%	RT	AREA BC
1	2.821	0.3	596 02
2	2.5	0.35	528 02
3	30.16	0.49	6371 03
4	64.519	1.25	13629 01
TOTAL	100.		21124

CHANNEL A INJECT 06/16/89 10:28:01



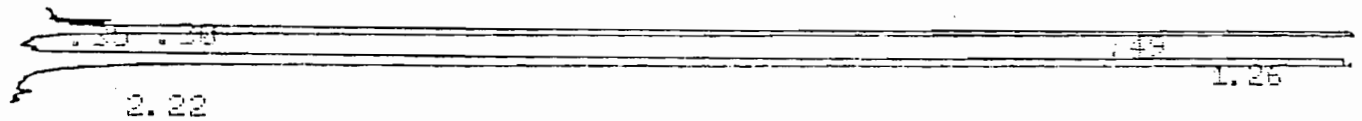
06/16/89 10:28:01 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 24 INDEX 24

PEAK#	AREA%	RT	AREA BC
1	2.967	0.3	610 02
2	2.335	0.35	480 02
3	30.18	0.49	6204 03
4	64.518	1.25	13263 01
TOTAL	100.		20557

CHANNEL A INJECT 06/16/89 10:32:01

CHANNEL A INJECT 06/16/89 09:48:00

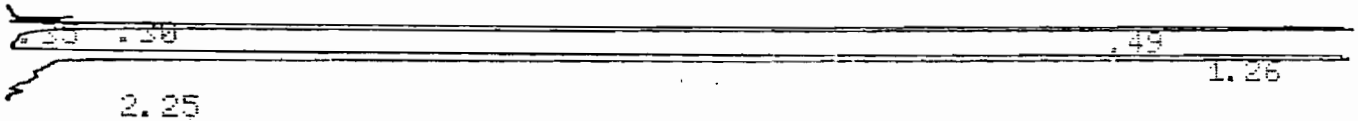


06/16/89 09:48:00 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 14 INDEX 14

PEAK#	AREA%	RT	AREA	BC
1	0.071	0.3	533	02
2	0.068	0.35	511	02
3	32.856	0.49	245623	03
4	66.966	1.26	500626	01
5	0.038	2.22	286	01
TOTAL	100.		747579	

CHANNEL A INJECT 06/16/89 09:52:00



06/16/89 09:52:00 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 15 INDEX 15

PEAK#	AREA%	RT	AREA	BC
1	0.272	0.3	562	02
2	0.224	0.35	463	02
3	33.74	0.49	69764	03
4	65.662	1.26	135767	01
5	0.103	2.25	212	01
TOTAL	100.		206768	

CHANNEL A INJECT 06/16/89 09:56:00

06/16/89 09:56:00 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 16 INDEX 16

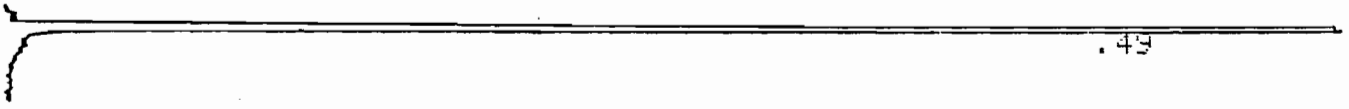
PEAK#	AREA%	RT	AREA	BC
1	0.284	0.3	584	02
2	0.23	0.35	472	02
3	33.617	0.49	69112	03
4	65.87	1.25	135420	01
TOTAL	100.		205588	

CHANNEL A INJECT 06/16/89 10:00:00

FILE 1. METHOD 0. RUN 40 INDEX 40

PEAK#	AREA%	RT	AREA BC
1	100.	0.49	317436 01
TOTAL	100.		317436

CHANNEL A INJECT 06/16/89 11:40:02



06/16/89 11:40:02 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 41 INDEX 41

PEAK#	AREA%	RT	AREA BC
1	100.	0.49	241497 01
TOTAL	100.		241497

CHANNEL A INJECT 06/16/89 11:44:02

06/16/89 11:44:02 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 42 INDEX 42

PEAK#	AREA%	RT	AREA BC
1	0.104	0.33	323 02
2	99.896	0.49	311005 08
3	0.001	0.8	2 05
TOTAL	100.		311330

CHANNEL A INJECT 06/16/89 11:48:02

06/16/89 11:48:02 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 43 INDEX 43

PEAK#	AREA%	RT	AREA BC
1	100.	0.49	437669 01
TOTAL	100.		437669

CHANNEL A INJECT 06/16/89 11:52:02

1.02

06/16/89 13:25:04 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 57 INDEX 57

PEAK#	AREA%	RT	AREA BC
1	1.631	0.23	43974 02
2	28.914	0.44	779673 02
3	28.654	0.49	772665 02
4	38.408	0.56	1035690 02
5	2.394	1.02	64551 03
TOTAL	100.		2696553

CHANNEL A INJECT 06/16/89 13:28:04

1.14

06/16/89 13:28:04 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 58 INDEX 58

PEAK#	AREA%	RT	AREA BC
1	4.782	1.08	91 02
2	42.144	1.14	802 02
3	53.074	1.2	1010 03
TOTAL	100.		1903

CHANNEL A INJECT 06/16/89 13:31:04

1.02

2.44

06/16/89 13:31:04 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 59 INDEX 59

PEAK#	AREA%	RT	AREA BC
1	14.286	1.02	58 01
2	85.714	2.44	348 01
TOTAL	100.		406

CHANNEL A INJECT 06/16/89 13:34:04

.19

1.03

06/16/89 13:34:04 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 60 INDEX 60

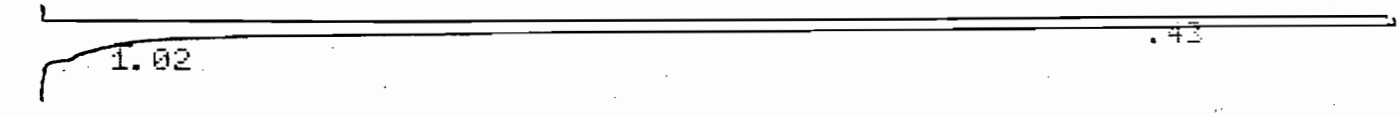
CHANNEL A INJECT 06/16/89 18:36:06

06/16/89 18:36:06 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 131 INDEX 131

PEAK#	AREA%	RT	AREA	BC
1	99.977	0.43	998743	08
2	0.023	1.02	230	05
TOTAL	100.		998973	

CHANNEL A INJECT 06/16/89 18:39:06

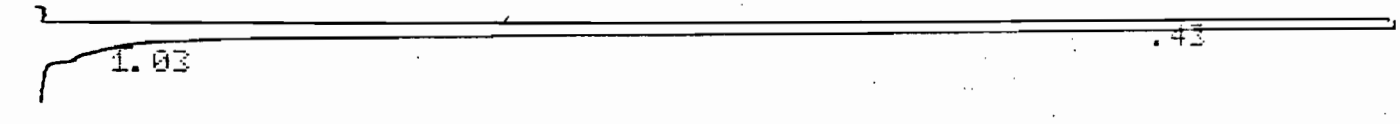


06/16/89 18:39:06 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 132 INDEX 132

PEAK#	AREA%	RT	AREA	BC
1	99.978	0.43	1102023	08
2	0.022	1.02	239	05
TOTAL	100.		1102262	

CHANNEL A INJECT 06/16/89 18:42:06

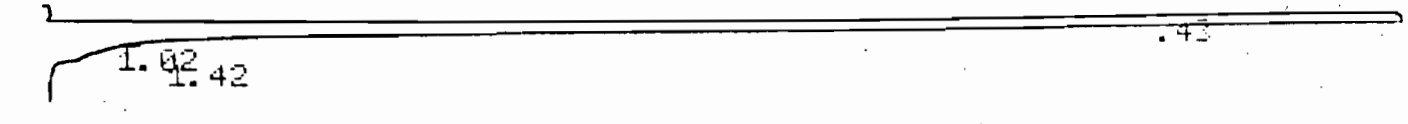


06/16/89 18:42:06 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 133 INDEX 133

PEAK#	AREA%	RT	AREA	BC
1	99.981	0.43	1037564	08
2	0.019	1.03	198	05
TOTAL	100.		1037762	

CHANNEL A INJECT 06/16/89 18:45:06



06/16/89 18:45:06 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 134 INDEX 134

PEAK#	AREA%	RT	AREA	BC

TABLE I

TOTAL REDUCED SULFUR EMISSIONS
H_2S FLARE - INLET GASES

HARRIS CORPORATION, SEMICONDUCTOR DIVISION
MELBOURNE, FLORIDA

DATE	RUN NO.	TIME PERIOD	LEVEL	CONCENTRATION, ppm[1] H_2S[2]	COS[3]	CS_2[4]*	SO_2EQ.[5]
06/16/89	1	1337-1421	MAX	23700	ND[6]	ND	23700
			MIN	19400			19400
			AVG	21500			21500
06/16/89	2	1724-1809	MAX	23200	ND	ND	23200
			MIN	17800			17800
			AVG	21000			21000
06/16/89	3	1815-2200	MAX	24500	ND	ND	24500
			MIN	20300			20300
			AVG	22600			22600
**MEAN FOR THREE RUNS				21700			21700

*Concentration Corrected for Recovery
**Mean determined as arithmetic average of the average results for each of the three runs.

[1]ppm----------Parts per million by volume, corrected for recovery.

[2]H_2S----------Hydrogen Sulfide

[3]COS----------Carbonyl Sulfide

[4]CS_2----------Carbon Disulfide

[5]SO_2EQ.----------Sulfur Dioxide Equivalent

[6]ND----------Not detected, i.e., below detection limit of the system.

GLC DATA SHEET

Company: Harris Corp., Semiconductor Div.

Date: 6-16-89 Melbourne, Fla.

Source: H_2S Flare - Inlet Gases Run 1

SHEET 1 OF ____

(Vol. %)

TIME	COLUMN	LOOP	ATTN.	CMPD.	PEAK HT.	PEAK AREA	CONC. (PPM)	DIL. FACTOR	TRS CONC. (PPM)
1337	Combo	.5		H_2S		987796	4.34	5000	2.17
1340	↓	↓		H_2S		986022	4.34	↓	2.17
1343				H_2S		928158	4.21		2.11
1346				H_2S		877835	4.10		2.05
1349				H_2S		934272	4.23		2.11
1352				H_2S		854426	4.05		2.02
1355				H_2S		835144	4.00		2.00
1358				H_2S		741377	3.78		1.89
1401				H_2S		1120992	4.62		2.31
1404	↓	↓		H_2S		892046	4.13	↓	2.07

GLC DATA SHEET

Company: Harris Corp, Semiconductor Div,
Date: 6-16-89 Melbourne, Fla.
Source: H_2S Flare - Inlet Gases

SHEET 2 OF ____

Run 1

(Vol. %)

TIME	COLUMN	LOOP	ATTN.	CMPD.	PEAK HT.	PEAK AREA	CONC. (PPM)	DIL. FACTOR	TRS CONC. (PPM)
1407	Ponbo	.5		H_2S		960607	4.29	5000	2.14
1410				H_2S		929915	4.22		2.11
1413				H_2S		970705	4.31		2.15
1416				H_2S		963907	4.29		2.15
1419				H_2S		948381	4.26		2.13
1421	↓	↓		H_2S		851673	4.04	↓	2.02

GLC DATA SHEET

Company: Harris Corp. Semiconductor Div.

Date: 6-16-89 Melbourne, Fla.

Source: H_2S Flare - Inlet Gases

SHEET 3 OF ____

Run 2

(Vol. %)

TIME	COLUMN	LOOP	ATTN.	CMPD.	PEAK HT.	PEAK AREA	CONC. (PPM)	DIL. FACTOR	TRS CONC. (PPM)
1724	Combo	.5		H_2S		874092	4.09	5000	2.05
1727				H_2S		1034095	4.44		2.22
1730				H_2S		1069632	4.52		2.26
1733				H_2S		953259	4.27		2.13
1736				H_2S		827039	3.98		1.99
1739				H_2S		781636	3.88		1.94
1742				H_2S		623673	3.47		1.74
1745				H_2S		910910	4.18		2.09
1748				H_2S		899542	4.15		2.08
1751	↓	↓		H_2S		1026635	4.43	↓	2.21

GLC DATA SHEET

Company: Harris Corp., Semiconductor Div.

Date: 6-16-89 Melbourne, Fla.

Source: H_2S Flare - Inlet Gases

SHEET 4 OF ____

(Vol. %)

TIME	COLUMN	LOOP	ATTN.	CMPD.	PEAK HT.	PEAK AREA	CONC. (PPM)	DIL. FACTOR	TRS CONC. (PPM)
1754	Combo	.5		H_2S		820152	3.97	5000	1.98
1757	↓	↓		H_2S		911237	4.18	↓	2.09
1800				H_2S		890618	4.13		2.07
1803				H_2S		728637	3.75		1.87
1806				H_2S		780971	3.87		1.94
1809				H_2S		932483	4.22		2.11

GLC DATA SHEET

Company: Harris Corp., Semiconductor Div

Date: 6-16-89 Melbourne, Fla.

Source: H_2S Flare - Inlet Gases Run 3

SHEET 5 OF ____

(61 %)

TIME	COLUMN	LOOP	ATTN.	CMPD.	PEAK HT.	PEAK AREA	CONC. (PPM)	DIL. FACTOR	TRS CONC. (PPM)
1815	Combo	.5		H_2S		926746	4.21	5000	2.11
1818				H_2S		966877	4.30		2.15
1821				H_2S		1114543	4.61		2.30
1824				H_2S		969336	4.30		2.15
1827				H_2S		1067884	4.51		2.26
1830				H_2S		1068868	4.51		2.26
1833				H_2S		1030164	4.43		2.22
1836				H_2S		998743	4.37		2.18
1839				H_2S		1102023	4.58		2.29
1842	↓	↓		H_2S		1037564	4.45	↓	2.22

GLC DATA SHEET

Company: Harris Corp., Semiconductor Div.
Date: 6-16-89 Melbourne, Fla
Source: H_2S Flare - Inlet Gases

SHEET 6 OF ____

(Vol. %)

TIME	COLUMN	LOOP	ATTN.	CMPD.	PEAK HT.	PEAK AREA	CONC. (PPM)	DIL. FACTOR	TRS CONC. (PPM)
1845	Combo	.5		H_2S		1073042	4.52	5000	2.26
2142				H_2S		815950	3.96		1.98
2145				H_2S		917713	4.19		2.10
2148				H_2S		921277	4.20		2.10
2151				H_2S		854248	4.05		2.02
2154				H_2S		1130307	4.64		2.32
2157				H_2S		1120459	4.62		2.31
2200	↓	↓		H_2S		1208851	4.79	↓	2.40

GLC DATA SHEET

Company: Harris Corp., Semiconductor Div.

Date: 6-16-89 Melbourne, Fla.

Source: H_2S Flare - Inlet Gases

SHEET ___ OF ___

Run 2

(vol. %)

TIME	COLUMN	LOOP	ATTN.	CMPD.	PEAK HT.	PEAK AREA	CONC. (PPM)	DIL. FACTOR	TRS CONC. (PPM)
1428	Combo	.5		H_2S		1049534	4.47	5000	2.24
1431				H_2S		1226755	4.83		2.41
* 1434				H_2S		388350	2.76		1.38
1437				H_2S		391874	2.77		1.39
1440				H_2S		369451	2.69		1.35
1443				H_2S		212831	2.06		1.03
1446				H_2S		132423	1.63		0.82
1449				H_2S		60605	1.12		0.56
1452				H_2S		73401	1.23		0.61
1455	↓	↓		H_2S		41180	0.93	↓	0.46

* Note. RO Unit shut down @ 1430

RECOVERY DATA

CLIENT ACE - Harris Corp. TSI PROJECT NO. 060389

PLANT Harris Corp., Semiconductor Div.

LOCATION Melbourne, Florida

SOURCE H_2S Flare - Inlet Gases DATE 6-16-89

	Std	Dilwent	Total	Time
FLOW (ml/min)	From	Permeation	System	
CONC (ppm)				

TIME	PEAK AREA	AVG.	CONC.	REMARKS
2245	2613398			
	2603820	2651134	7.02	Direct
	2736183			
2315	2594838			
	2521639	2518908	6.85	
	2440247			

$$\% \text{ Recovery} = \frac{6.85}{7.02} \times 100 = 97.6\%$$

CALIBRATION DATA

CLIENT ACE - Harris Corp. TSI PROJECT NO. 060389

PLANT Harris Corp, Semiconductor Div. Melbourne, Fla.

LOCATION Melbourne, Florida

SOURCE H_2S Flare - Inlet Gases DATE 6-16-89

COMPOUND	H_2S	MeSH	DMS	DMDS	AMB TEMP
PERMEATION RATE (ng/min)	1050	2620			75°F
TUBE NUMBER	30394				BAR PRES 30.0

TIME	FLOW ml/min	CMPD	CONC ppm	AREA COUNTS 1	2	3	AVG.
1104	329	H_2S	2.29	270571	270077	279597	273415
		MeSH	4.05	521198	532400	528289	527296
0956	621	H_2S	1.21	69112	67739	66548	67,800
		MeSH	2.14	135420	137938	135103	136154
1012	1276	H_2S	0.59	16805	16264	16221	16430
		MeSH	1.04	33845	32984	32346	33058
1032		H_2S	0.35	5819	5582	5516	5639
		MeSH	0.62	12606	12347	11952	12302

CALIBRATION DATA SUMMARY

CLIENT ACE - Harris Corp. TSI PROJECT NO. 060389

PLANT Harris Corp. Semiconductor Div

LOCATION Melbourne, Florida

SOURCE H_2S Flare - Inlet Gases DATE 6-16-89

CMPD H_2S Curve 1

TIME	CONC ppm	RESPONSE	CALC CONC ppm	% DIFF
1104	2.79	273415	2.32	1.3
0956	1.21	67800	1.18	2.5
1012	0.59	16430	0.59	0.0
1032	0.35	5639	0.35	0.0

SLOPE 2.0557 Y int 48231

.9998

CONC @ _____

CMPD MeSH Curve 1

TIME	CONC ppm	RESPONSE	CALC CONC ppm	% DIFF
1104	4.05	527296	4.12	1.7
0956	2.14	136154	2.09	2.3
1012	1.04	33058	1.03	1.0
1032	0.62	12302	0.63	1.6

SLOPE 1.9990 Y int 31108

.9997

CONC @ _____

CMPD _____ Curve _____

TIME	CONC ppm	RESPONSE	CALC CONC ppm	% DIFF

SLOPE _____ Y int _____

CONC @ _____

CMPD _____ Curve _____

TIME	CONC ppm	RESPONSE	CALC CONC ppm	% DIFF

SLOPE _____ Y int _____

CONC @ _____

INSTRUMENT DATA

CLIENT ACE - Harris Corp. TSI PROJECT NO. 060389

LOCATION Harris Corp. Semiconductor Div., Melbourne, Fla.

SOURCE H_2S Flare - Inlet Gases DATE 6-16-89

INSTRUMENT TRAPOR 250 HC

Gas Pressures		Temperatures		Columns	
H_2:	32psi	TRAILER:	75°F	PPE-1:	0.5m
O_2:	26psi	COLUMN:	55°C	BHT-100:	1.5m
N_2:	60psi	VALVE:	55°C	PPE-2:	2.0m
Air:	—	DETECTOR:	125°C		

TIMER PROGRAM			
EVENT	1	2	3
PROGRAM	1	2	3
CIRCUIT	1	3	4
ON (min)	0.0	0.0	7.0
ON (sec)	0.0	0.0	30.0
VARY (min)	5.0	5.0	5.0
OFF (min)	1.0	0.0	3.0
OFF (sec)	0.0	1.0	31.0
VARY (min)	5.0	5.0	5.0

INTEGRATOR PROGRAM

Auto ✓

Manual

Peak Height

Peak Area ✓

REMARKS

Event 1: Valve switch to inject sample

Event 2: Integrator on simultaneously w/ Event 1.

Event 3: Integrator off Generate report.

CERTIFICATE

The permeation rate of the DYNACAL® PERMEATION DEVICE listed below is certified traceable to N.B.S. standards.

CHEMICAL FILL	:	HYDROGEN SULFIDE
DEVICE TYPE	:	EXTENDED LIFE TUBE-STD
LENGTH/GEOMETRY	:	1.2 CM.
PART NUMBER	:	177-012-0110-10
METHOD OF CERTIFICATION	:	GRAVIMETRIC
CERTIFICATION NUMBER	:	10-30394

RATE: 1050 NG/MIN +/- 2% AT 35 DEG C
NOTE:
DATE: 13 APRIL 1989 BY: Blanca Ruiz

VICI

VICI Metronics
2991 Corvin Drive
Santa Clara, California 95051 U.S.A.
(408) 737-0550 Telex: 35-2129

INDIVIDUAL DEVICE CERTIFICATION

The gravimetric method measures the weight loss per unit of time at the certification temperature. Traceability is thus established by the use of temperature and weight standards traceable to N.B.S. standards.

Individual certification is accomplished by: (1) maintaining the device in a constant temperature chamber with a purge flow of dry nitrogen, and (2) weighing periodically on a semi-microanalytical balance, accurate to the nearest 0.01 mg, until a steady weight loss per unit time has been achieved. Temperature control and accuracy are better than ± 0.05°C, referenced against temperature standards traceable to the National Bureau of Standards. The semi-microanalytical balances are routinely serviced and calibrated by an independent service organization using N.B.S. traceable weight standards. Gravimetric permeation rate determinations are continued until the standard error of the permeation rate meets the required accuracy at the 95% confidence level.

Validation of the certification procedures and standards at VICI Metronics is accomplished by routine certification of Standard Reference Material (SRM) permeation devices obtained from the National Bureau of Standards.

METRONICS
DYNACALIBRATOR ROTOMETER CALIBRATION DATA
- READ AT CENTER OF FLOAT -

MODEL NO: 340-31	SERIAL NO: M-846	DATE CALIBRATED: 11/17/86	BY: TKP

ROTOMETER FLOAT SETTING	DYNACALIBRATOR SERIES 230 & 340		DYNACALIBRATOR SERIES 450			
	SPAN CHANNEL		SPAN 1 CHANNEL		SPAN 2 CHANNEL	
	TUBE TYPE: B-250-4 SERIAL NO. 643943		TUBE TYPE: SERIAL NO.		TUBE TYPE: SERIAL NO.	
	TOP FLOAT MATERIAL: GLASS	BOTTOM FLOAT MATERIAL:	TOP FLOAT MATERIAL:	BOTTOM FLOAT MATERIAL:	TOP FLOAT MATERIAL:	BOTTOM FLOAT MATERIAL:
	FLOW RATE -LPM	FLOW RATE -LPM-	FLOW RATE -LPM-	FLOW RATE -LPM-	FLOW RATE -LPM-	FLOW RATE -LPM-
1.0	.292					
2.0	.947					
3.0	1.81					
4.0	2.60					
5.0	3.44					
6.0	4.26					
7.0	5.16					
8.0	6.03					
9.0	6.92					
10.0	7.79					
11.0	8.70					
12.0	9.63					
13.0	10.63					
14.0	11.59					
15.0	12.50					

FACTORY SET CARRIER FLOW RATE (F_c): 329 cc/minute TOTAL FLOW = DILUTION FLOW + .329 LPM

All flow rate measurements are corrected to 25°C and 760 mm Hg.

VICI METRONICS

DYNACALIBRATOR MODEL 1340 -31 DATE CALIBRATED 11-18-86
SERIAL NUMBER : M-846 BY :KAR

STANDARD TEMPERATURE RANGE

TEMPERATURE -DEG C-	DIGITAL SETTING
25	332
26	361
27	389
28	415
29	441
30	465
31	489
32	511
33	533
34	553
35	573
36	592
37	610
38	627
39	644
40	660
41	676
42	690
43	705
44	718
45	731
46	744
47	756
48	768
49	778
50	790

APPENDIX D

TEST CALCULATIONS

TEST CALCULATIONS

ACE Supplied Values	John Zink Mass Flow lbs/Hr
Run 1 = 0.12 "H_2O Average Orifice P	32.66
Run 2 = 0.16 "H_2O Average Orifice P	37.88
Run 3 = 0.147 "H_2O Average Orifice P	36.57

Average Molecular Weight = 28.13

$$\text{Overall Density} = \frac{28.13 \text{ gm}}{22.4 \text{ liters}} \times \frac{492°R}{628°R} \times \frac{\text{lb}}{453.6 \text{ gm}} \times \frac{28.32 \text{ liters}}{ft^3}$$

$$= 0.062 \text{ lb/SCF}$$

Specific Volume = 1/density = 16.18 ft^3/lb

TOTAL FLOW

Degasifier Flow
(35.70 lb/Hr) (16.18 ft^3/lb) = 578.0 CFH

Propane Assist Flow 154.0 CFH

Total Flow 732.0 CFH

Flare Velocity = 732.0 CFH/0.0222 ft^2 flare (2.016 inches ID)
= 32973.0 FPH
= 550 FPM
= 9.2 FPS

$$\text{BTU Content} = \frac{154 \text{ (2440 BTU/CF Propane)} + 578 \text{ (0.013) (700 BTU/CF) H2S}}{732 \text{ Total CFH}} = 520.5 \text{ BTU/CF}$$

H_2S Concentration = (H_2S Dry) (FDA) = (0.0217) (0.60) x 100 = 1.3%

$$SO_2 \text{ Emission} = (7.5 \text{ CFH } H_2S) (0.087 \text{ lb/CF}) \frac{64.064}{34.064} = 1.23 \text{ lb/Hr}$$

APPENDIX E

VOLUMETRIC FLOW AND VISIBLE EMISSION DATA

Air Consulting and Engineering

FUGITIVE OR SMOKE EMISSION INSPECTION
OUTDOOR LOCATION

COMPANY HARRIS Semiconductor
LOCATION Palm Bay Rd - Palm Bay FLA
COMPANY REPRESENTATIVE _____

OBSERVER Sid Carter
AFFILIATION Air Consulting + Engineering Inc.
DATE 6-16-89

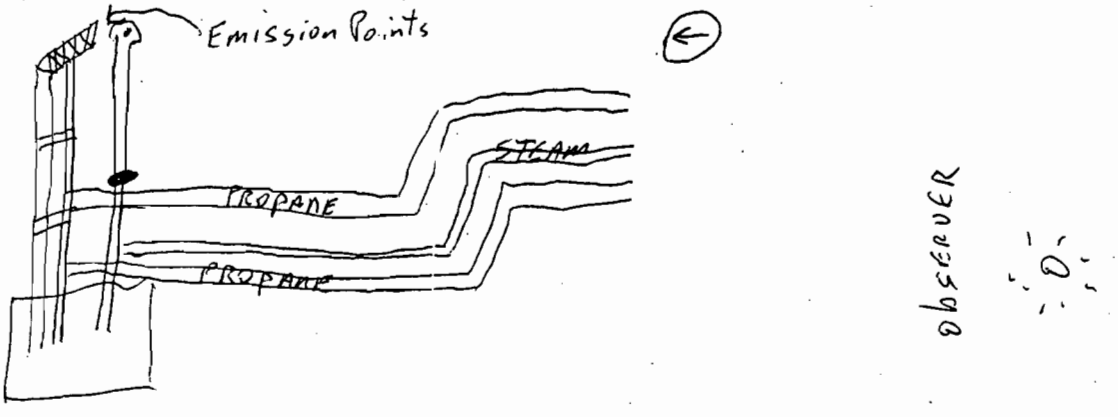
SKY CONDITIONS CLEAR
PRECIPITATION _____

WIND DIRECTION NE
WIND SPEED 7

INDUSTRY Semiconductors

PROCESS UNIT _____

Sketch process unit; indicate observer position relative to source and sun; indicate potential emission points and/or actual emission points.



OBSERVATIONS:

unit went down at 1445
RESTARTED AT 1722

BEGIN OBSERVATION 1340

END OBSERVATION 1822

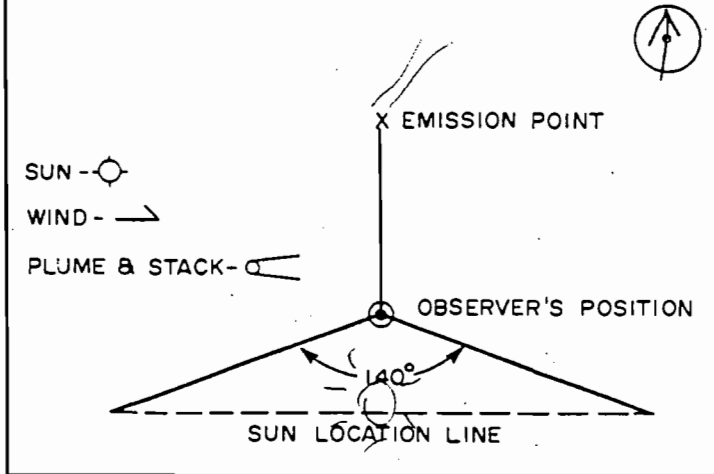
CLOCK TIME	OBSERVATION PERIOD DURATION (min:sec)	ACCUMULATED EMISSION TIME (min:sec)
SHOWN ON OTHER SHEETS	120	0

air consulting and engineering

VISIBLE EMISSION OBSERVATION FORM

SOURCE NAME: HARRIS CORP	OBSERVATION DATE: 6-16-89
ADDRESS: Palm Bay Rd	START TIME: 1540
CITY: Palm Bay, FL / STATE: FL / ZIP: 32906	STOP TIME: 1822
PHONE / SOURCE I.D. NUMBER	
PROCESS EQUIPMENT: FLARE / OPERATING MODE	
CONTROL EQUIPMENT / OPERATING MODE	
DESCRIBE EMISSION POINT: START Metal Pipe 2' Dia STOP	
HEIGHT ABOVE GROUND LEVEL: START 20' STOP 20'	HEIGHT REL. TO OBSERVER: START 20' STOP 20'
DISTANCE FROM OBSERVER: START 70' STOP 70'	DIRECTION FROM OBSERVER: START North STOP North
DESCRIBE EMISSIONS: START CLEAR STOP Clear	
EMISSION COLOR: START CLEAR STOP Clear	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 1' Above Pipe Open STOP Same	
DESCRIBE BACKGROUND: START Blue Sky STOP Blue Sky	
BACKGROUND COLOR: START Blue STOP Blue	SKY CONDITIONS: START CLEAR STOP
WIND SPEED: START 10 STOP 8	WIND DIRECTION: START West STOP NE
AMBIENT TEMP: START 85 STOP 80	WET BULB TEMP. / RH %

SOURCE LAYOUT SKETCH — DRAW NORTH ARROW



SEC / MIN	0	15	30	45	SEC / MIN	0	15	30	45
1	0	0	0	0	31	0	0	0	0
2	0	0	0	0	32	0	0	0	0
3	0	0	0	0	33	0	0	0	0
4	0	0	0	0	34	0	0	0	0
5	0	0	0	0	35	0	0	0	0
6	0	0	0	0	36	0	0	0	0
7	0	0	0	0	37	0	0	0	0
8	0	0	0	0	38	0	0	0	0
9	0	0	0	0	39	0	0	0	0
10	0	0	0	0	40	0	0	0	0
11	0	0	0	0	UP! DOWN	0	0	0	0
12	0	0	0	0	42	0	0	0	0
13	0	0	0	0	43	0	0	0	0
14	0	0	0	0	44	0	0	0	0
15	0	0	0	0	45	0	0	0	0
16	0	0	0	0	46	0	0	0	0
17	0	0	0	0	47	0	0	0	0
18	0	0	0	0	48	0	0	0	0
19	0	0	0	0	49	0	0	0	0
20	0	0	0	0	UP! DOWN	0	0	0	0
21	0	0	0	0	RESTART 1724	0	0	0	0
22	0	0	0	0	52	0	0	0	0
23	0	0	0	0	53	0	0	0	0
24	0	0	0	0	54	0	0	0	0
25	0	0	0	0	55	0	0	0	0
26	0	0	0	0	56	0	0	0	0
27	0	0	0	0	57	0	0	0	0
28	0	0	0	0	58	0	0	0	0
29	0	0	0	0	59	0	0	0	0
30	0	0	0	0	60	0	0	0	0

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): S. L. Carter

COMMENTS: EPA Method #22 + 9

OBSERVER'S SIGNATURE: S. L. Carter — DATE: 6-16-89

ORGANIZATION: A.C.E.

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS — SIGNATURE

TITLE — DATE

CERTIFIED BY: E.T.A. — DATE

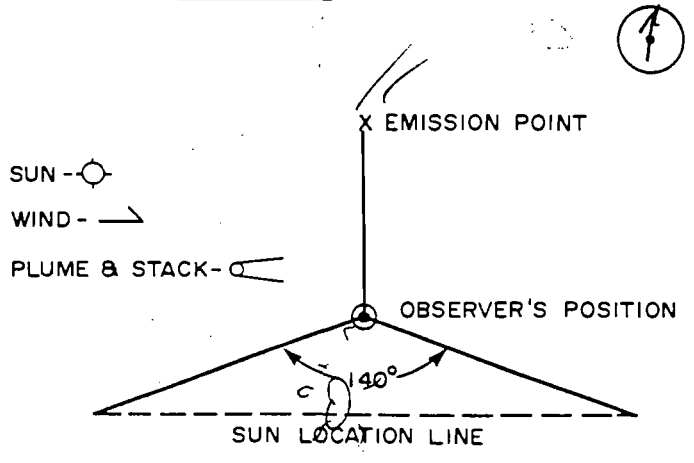
VERIFIED BY — DATE

Air Consulting and Engineering

VISIBLE EMISSION OBSERVATION FORM

SOURCE NAME: HARRIS CORP		
ADDRESS:		
CITY	STATE	ZIP
PHONE	SOURCE I.D. NUMBER	
PROCESS EQUIPMENT	OPERATING MODE	
CONTROL EQUIPMENT	OPERATING MODE	
DESCRIBE EMISSION POINT: START	STOP	
HEIGHT ABOVE GROUND LEVEL: START STOP	HEIGHT REL. TO OBSERVER: START STOP	
DISTANCE FROM OBSERVER: START STOP	DIRECTION FROM OBSERVER: START STOP	
DESCRIBE EMISSIONS: START	STOP	
EMISSION COLOR: START 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	STOP	
DESCRIBE BACKGROUND: START	STOP	
BACKGROUND COLOR: START STOP	SKY CONDITIONS: START STOP	
WIND SPEED: START STOP	WIND DIRECTION: START STOP	
AMBIENT TEMP: START STOP	WET BULB TEMP.	RH %

SOURCE LAYOUT SKETCH — DRAW NORTH ARROW



OBSERVATION DATE: 6-16-89 | START TIME: 1340 | STOP TIME: 1822

SEC / MIN	0	15	30	45	SEC / MIN	0	15	30	45
1	0	0	0	0	31	0	0	0	0
2	0	0	0	0	32	0	0	0	0
3	0	0	0	0	33	0	0	0	0
4	0	0	0	0	34	0	0	0	0
5	0	0	0	0	35	0	0	0	0
6	0	0	0	0	36	0	0	0	0
7	0	0	0	0	37	0	0	0	0
8	0	0	0	0	38	0	0	0	0
9	0	0	0	0	39	0	0	0	0
10	0	0	0	0	40	0	0	0	0
11	0	0	0	0	41	0	0	0	0
12	0	0	0	0	42	0	0	0	0
13	0	0	0	0	43	0	0	0	0
14	0	0	0	0	44	0	0	0	0
15	0	0	0	0	45	0	0	0	0
16	0	0	0	0	46	0	0	0	0
17	0	0	0	0	47	0	0	0	0
18	0	0	0	0	48	0	0	0	0
19	0	0	0	0	49	0	0	0	0
20	0	0	0	0	50	0	0	0	0
21	0	0	0	0	51	0	0	0	0
22	0	0	0	0	52	0	0	0	0
23	0	0	0	0	53	0	0	0	0
24	0	0	0	0	54	V	0	V	0
25	0	0	0	0	55	0	0	0	0
26	0	0	0	0	56	0	0	0	0
27	0	0	0	0	57	0	0	0	0
28	0	0	0	0	58	0	0	0	0
29	0	0	0	0	59	0	0	0	0
30	0	0	0	0	60	0	0	0	0

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

RANGE OF OPACITY READINGS: MINIMUM 0 MAXIMUM 0

OBSERVER'S NAME (PRINT): S. D. Carter

COMMENTS: unit went down at 1445
Restarted at 1722

OBSERVER'S SIGNATURE: S. D. Carter | DATE: 6-16-89

ORGANIZATION: A.C.E.

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

CERTIFIED BY: E.P.A. | DATE

VERIFIED BY | DATE

Air Consulting and Engineering

VISIBLE EMISSION OBSERVATION FORM

OBSERVATION DATE	START TIME 1340	STOP TIME 1822

SOURCE NAME: Harris Corp

ADDRESS:

CITY | STATE | ZIP:

PHONE | SOURCE I.D. NUMBER:

PROCESS EQUIPMENT | OPERATING MODE:

CONTROL EQUIPMENT | OPERATING MODE:

DESCRIBE EMISSION POINT

START | STOP

HEIGHT ABOVE GROUND LEVEL: START | STOP

HEIGHT REL. TO OBSERVER: START | STOP

DISTANCE FROM OBSERVER: START | STOP

DIRECTION FROM OBSERVER: START | STOP

DESCRIBE EMISSIONS

START | STOP

EMISSION COLOR: START | 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 | STOP

DESCRIBE BACKGROUND

START | STOP

BACKGROUND COLOR: START | STOP

SKY CONDITIONS: START | STOP

WIND SPEED: START | STOP

WIND DIRECTION: START | STOP

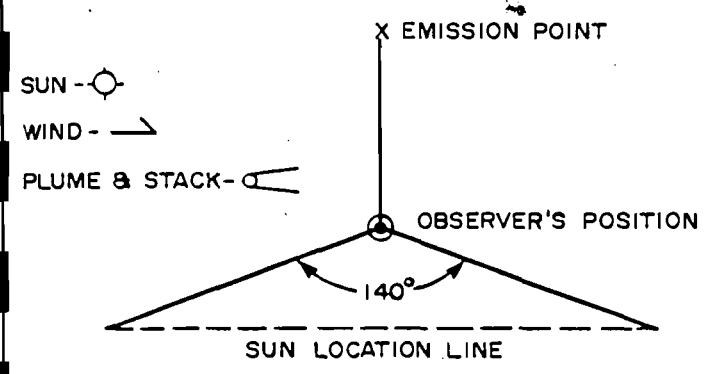
AMBIENT TEMP: START | STOP

WET BULB TEMP:

RH %

SOURCE LAYOUT SKETCH

DRAW NORTH ARROW



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					36				
7					37				
8					38				
9					39				
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21					51				
22					52				
23					53				
24					54				
25					55				
26					58				
27					57				
28					58				
29					59				
30					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): Sid Carter

OBSERVER'S SIGNATURE: Sid Carter

DATE: 6-16-89

ORGANIZATION: A.C.E.

CERTIFIED BY: E.T.D.

DATE:

VERIFIED BY:

DATE:

COMMENTS:

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS

SIGNATURE

TITLE | DATE

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

THIS IS TO CERTIFY THAT

SID J CARTER, 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 Sep 6, 1989

Michael R. Clark
CERTIFICATE OFFICER

BEARER'S SIGNATURE

VISIBLE EMISSIONS EVALUATOR

This is to certify that

Ted J. Carter

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

122176
Certificate Number

Willis S. Lee
Vice President

Orlando
Location

David Savage
Program Manager

March 8, 1989
Date of Issue

PRELIMINARY VELOCITY TRAVERSE

Air Consulting and Engineering

PLANT HARRIS
DATE 6-16-87
SOURCE VACUUM DEGASER - FLARE INLET
STACK I.D. 2" PIPE STACK AREA
BAROMETRIC PRES., in. Hg 30.24
STATIC PRES. in H_2O 1.0 STACK PRES. in. Hg.
PORT DIAM. NIPPLE LENGTH
PITOT TUBE NO. ORIFICE TYPE
OPERATORS Neck

600 GPM

1500 SCFH AT 15 PSIG 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 (START 1717)	VELOCITY HEAD (ΔP_s in. H_2O)	STACK TEMPERATURE (T_s, °F)
1240		129		1720	.21	177
1245		127		1725	.10	179
1250		158		1730	.10	176
1255	.135	160		1735	.085	174
1310		178		1740	.10	179
1315		175		1745	.10	162
1320		176		1750	.11	159
1325		176		1755	.145	159
1330	.13	177		1800	.145	146
1335	.12	179		1805	.205	150
1340	.115	176		1810	.205	146
1345	.115	175		1815	.11	165
1350	.115	173		1820	.125	147
1355	.13	179	.347, 176	1825	.13	167
1400	.125	177		1830	.12	163
1405	.115	176	47%	1835	.11	165
1410	.12	174	H_2O	1840	.12	148
1415	.125	174		END 1841		
1420	.125	175				
1425	.125	160				
1430	.125	160				
1450	.0					
AVERAGE				AVERAGE		

RUN 1 (1335–1420); RUN (1735–1750); RUN (1815–1840)

Margin notes: .40, 163, 34.8

Air Consulting and Engineering

PRELIMINARY VELOCITY TRAVERSE

PLANT _____

DATE _____

SOURCE _____

STACK I.D. _____ STACK AREA _____

BAROMETRIC PRES., in. Hg _____

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

PORT DIAM. _____ NIPPLE LENGTH _____

PITOT TUBE NO. _____ TYPE _____

OPERATORS _____

4.7% CO_2

7.7% O_2

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)
2140	.27	173				
2145	.15	172	165, .383			
2150	.14	173				
2155	.19	171	1% 11.0			
2200	.17	176	36.5 Run 3			
2205	.19	173		(Continued)		
2210	.18	174				
AVERAGE				AVERAGE		

T_{AVG} = 160 °F = 620 °R

APPENDIX F

FLARE SPECIFICATIONS

D

2,440 BTU/F

UTILITY STYLE FLARE BURNER
DATA SHEET

1. CUSTOMER: — REFERENCE NO.:
2. PLANT LOCATION: PALM BAY FIA — PROPOSAL NO.:
3. MODEL: EEF-U- 2 4 — ENGINEER: WS — DATE: 6-16
4. OVERALL LENGTH 10'-1" — NO. OF PILOTS 1
5. FIRING POSITION: VERTICAL — TYPE OF PILOTS: EEP-210 FUEL C3
6. DESIGN CONDITION — FUEL CONSUMPTION 22 SCFH @ 60 P
7. FLOW RATE: See Below MW: — SP. GR. — THERMOCOUPLE: YES No. Required 1
8. PRESS. DROP @ DESIGN: — Type: K (Chromel-Alumel)
9.
10. MATERIAL OF CONSTRUCTION

11. SECTION	MATERIAL
12. Flame Retention Ring	310 or equal
13. Upper Sect. FRR to 4'-0"	316 SS
14. Lower Sect. 4'-0" to 10'-1"	C. Stl.
15. Flange	A-105
16. Pilot(s)	309 SS

17.
18. WELDING PROCEDURES: AWS
19.
20.
21. FINISH: High temperature aluminum on carbon steel
22.

23. NOZZLE	NO.	SIZE IN.	TYPE
24. Inlet	N1	2	ANSI 150# RF
25. Pilot	C4	3/4	Plain End
26. Ignitor	C5	1	Plain End

27.
28.
29. REMARKS
30. 'H' Pattern Tip
31.
32. Design Gas 127#/DAY H_2S 1460 FT3
33. 1600#/DAY CO_2 14172 FT3
34. 418#/DAY C_3 * 370 FT3 = 15.4 CFM
35.
36. *Assist Gas 16002/24 66 CFH
37. .113 = 510 FPM
38.
39.
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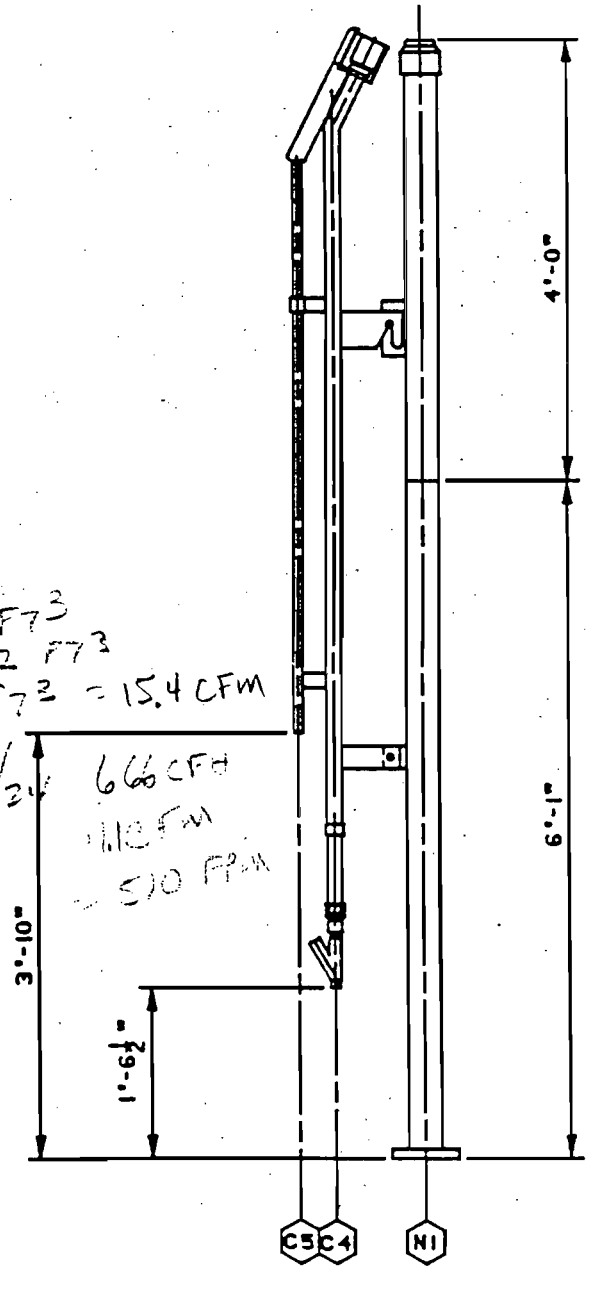
51.
52.



D

STACK DATA SHEET

1. CUSTOMER: REFERENCE NO.:
2. PLANT LOCATION: PALM BAY FIA ENGINEER: PROPOSAL NO.:
3. OVERALL HEIGHT: 20'0" (Including Flare Tip) DATE:
4. EARTHQUAKE ZONE: 2 WIND VELOCITY: 110 MPH STRUCTURAL CODE: ANSI A58.1
5. STRUCTURAL TYPE: SELF SUPPORT
6. DESIGN PRESSURE: OPERATING PRESSURE:
7. DESIGN TEMPERATURE: OPERATING TEMPERATURE: CORROSION ALLOWANCE:
8.
9. MATERIALS OF CONSTRUCTION:
10. FABRICATION: AISC WELD PROCEDURE: AWS CODE STAMP: NA
11. HYDROTEST: NA RADIOGRAPH: NA POST WELD HEAT TREAT: NA
12. OTHER:
13. LADDERS: PLATFORMS:
14. AIRCRAFT WARNING LIGHTS:
15. SURFACE PREPARATION: SP-6
16. PAINT: CZ-11
17.

18. NOZZLE	SIZE IN.	NO.	MATERIAL TYPE CONNECTION
19.			
20. Outlet	2"	1	150# RF ANSI
21. Inlet	2"	1	150# RF ANSI
22. Drain			

23.
24.
25. Inlet Elevation:
26.
27. REMARKS:
28.
29.
30.
31. NOTE: ALL DIMENSIONS ARE PRELIMINARY
32.
33.
34.
35.
36.
37.
38.
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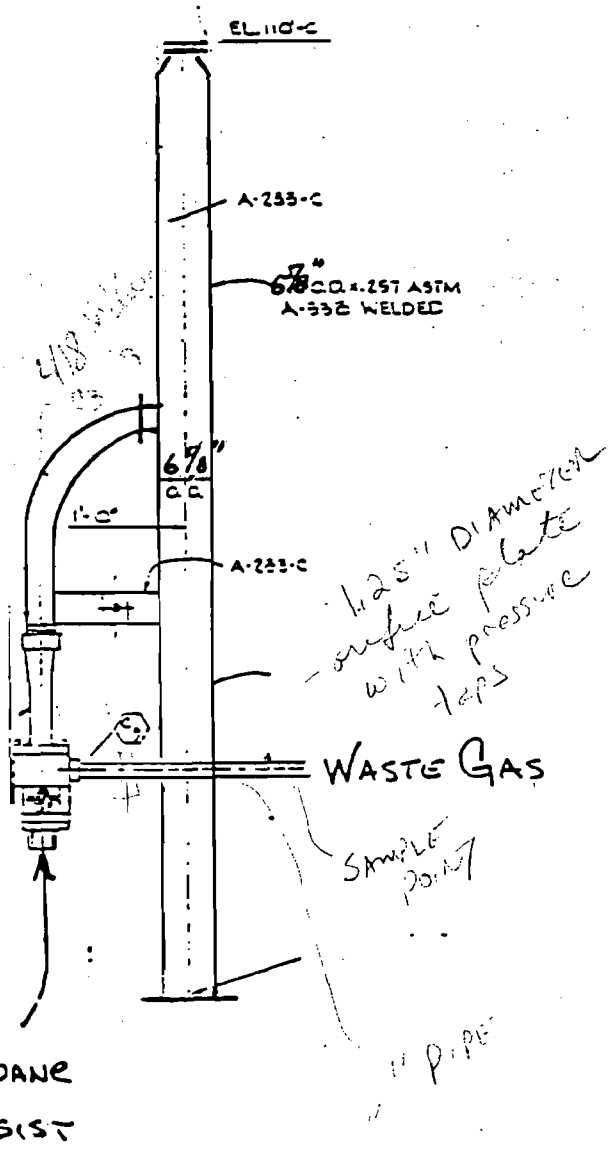
51.
53.



AUTOMATIC-MANUAL FLAME FRONT GENERATOR

DATA SHEET

1. CUSTOMER: United ENGR — REFERENCE NO.:
2. PLANT LOCATION: PALM BAY — PROPOSAL NO.:
3. DESCRIPTION: A/M with Pilot Reign. ENGINEER: WS — DATE:

	TYPE	SIZE	MATERIAL	SOLENOID VALVES	SIZE	MATERIAL
4. VALVES						
5. GAS:	NEEDLE	1/2 Inch	Carbon Steel	Gas	1/2 Inch	Brass
6. AIR	NEEDLE	3/4 Inch	Carbon Steel	Air	3/4 Inch	Brass

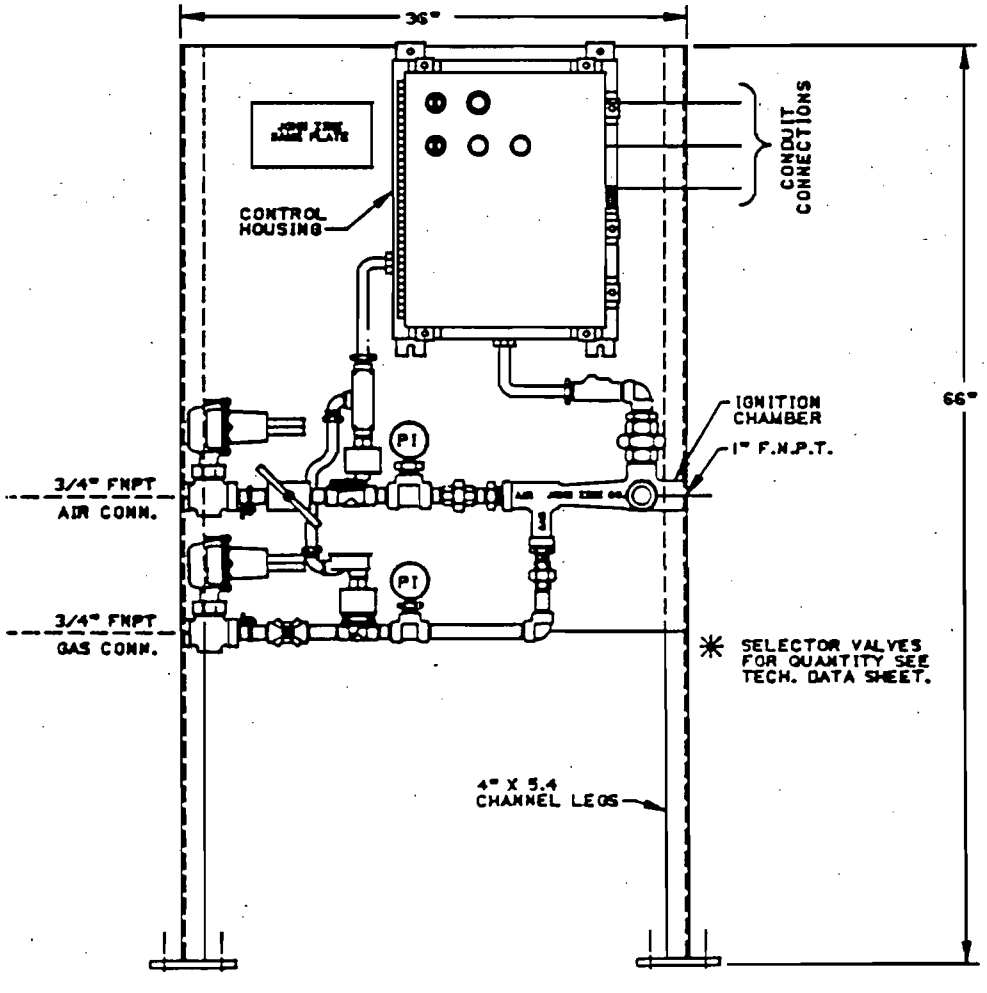
7. IGNITION LINES: -

	Pressure Range	Connection	PRESSURE REGULATORS:	Fisher 621 3/4 inch
8. PRESSURE GAUGES:				
9. GAS	0-30 Psig	¼ Inch MNPT	Gas:	3/4 Inch Inlet-Outlet
10. AIR	0-30 Psig	¼ Inch MNPT	Air:	3/4 Inch Inlet-Outlet
11.				Max. Inlet Pressure 200 Psig

12. ELECTRICAL TRANSFORMER: 120VAC/60HZ/1Ø
13. HOUSING CLASSIFICATION: NEMA 4
14. SURFACE PREPARATION: SP-1 Handclean, Zink Chromate Epoxy Primer, Polyurethane Enamel Finish Coat
15.

16. UTLITIES:	Pressure	SP.GR	Flow Rate	Connections	No.	Size	Type
17. Gas	15.0 Psig.	1.5	150 SCFH	Transformer	1	3/4 Inch	FNPT
18. Air	15.0 Psig.	1.0	1500 SCFH	Ignition Gas	1	1/2 Inch	FNPT
19. GAS OTHER				Air	1	3/4 Inch	FNPT
20. Electrical	3.0 Amps			Ignition Lines		1 Inch	FNPT
21.				Pilot Gas		3/4 Inch	FNPT
22. Temp. Switches:	Actionpack Type K Calibration			Thermocouple	1	3/4 Inch	FNPT

23.



24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52.

APPENDIX G

PROJECT PARTICIPANTS

PROJECT PARTICIPANTS

ACE	
Stephen L. Neck, P.E.	Field Testing Report Preparation
Sidney J. Carter	VE Testing
J. Colleen Hodge	Report Graphics
Karie L. Philman	Document Production
TECHNICAL SERVICES, INC.	
Harvey Gray	EPA Method 15 Testing EPA Method 15 Reporting
HARRIS CORPORATION	
Nancy Baldisserotto	Project Coordinator
FDER	
Pius Sanabani	Test Observer

P 274 007 535

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL
(See Reverse)

James R. Kolanek ~~Harris Corp.-Semiconductor Sec.~~ Street and No. P.O. Box 883	
P.O., State and ZIP Code Melbourne, FL 32901	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date AC 05-138795 (amendment) mailed: 12/15/88	

PS Form 3800, June 1985 ★ U.S.G.P.O. 1985-480-794

SENDER: Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.
Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.
1. ☒ Show to whom delivered, date, and addressee's address. *(Extra charge)* 2. ☐ Restricted Delivery *(Extra charge)*

3. Article Addressed to: James R. Kolanek Harris Corp.-Semiconductor Sector P.O. Box 883 Melbourne, FL 32901	4. Article Number P 274 007 535 Type of Service: ☐ Registered ☐ Insured ☒ Certified ☐ COD ☐ Express Mail ☐ Return Receipt for Merchandise Always obtain signature of addressee or agent and DATE DELIVERED.
5. Signature — Address X	8. Addressee's Address *(ONLY if requested and fee paid)*
6. Signature — Agent X Harris Semiconductor William L. Sayer	
7. Date of Delivery	

PS Form **3811**, Mar. 1988 ★ U.S.G.P.O. 1988-212-865 **DOMESTIC RETURN RECEIPT**

Main File Copy

Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Bob Martinez, Governor Dale Twachtmann, Secretary John Shearer, Assistant Secretary

December 13, 1988

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. James R. Kolanek, Manager
Environmental Services
Harris Semiconductor
Post Office Box 883
Melbourne, Florida 32901

Dear Mr. Kolanek:

Re: Amendment to Air Construction Permit No. AC 05-138795

The Department is in receipt of your letter dated November 16, 1988, which requested an extension of the expiration date for the above referenced permit. The following shall be changed and added:

Expiration Date:

From: January 31, 1989
To: October 1, 1989

Attachment to be Incorporated:

6. Mr. James R. Kolanek's letter dated November 16, 1988, and received November 28, 1988.

This letter must be attached to the construction permit, No. AC 05-138795, and shall become a part of the permit.

Sincerely,

Dale Twachtmann
Secretary

DT/ks

cc: C. Collins, CFD
B. Hewitt, Esq., DER
C. Bach, P.E.

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

For Routing To Other Than The Addressee	
To:	Location:
To:	Location:
To:	Location:
From:	Date:

Interoffice Memorandum

RECEIVED
DEC 14 1988
DER - BAQM

TO: Dale Twachtmann

FROM: Steve Smallwood

SUBJ: Approval of an Amendment to the Construction Permit
No. AC 05-138795
Harris Corporation

DATE: December 13, 1988

Attached for your approval and signature is an amendment prepared by Central Air Permitting for the above mentioned company to extend the expiration date of the construction permit, No. AC 05-138795.

I recommend your approval and signature.

SS/BM/s

attachment

PM
11-23-88

file copy

HARRIS

November 16, 1988

Mr. Claire Fancy
Deputy Chief
Bureau of Air Quality Management
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Subject: Extension of Construction Permit No. AC 05-138795

Dear Mr. Fancy:

In accordance with FAC Rule 17-4.09 and Specific Condition No. 11, the purpose of this letter is to request an extension of construction permit No. AC 05-138795 until October 1, 1989. This date will grant our facility adequate time to complete the delayed installation of the Industrial Grade water system with a vacuum degasifier and flare system, and to perform the compliance testing necessary to accompany the operating permit application.

Enclosed is a copy of the updated schedule for the Industrial Water Plant project.

Please feel free to phone me at (407) 724-7467 if you have any questions.

Sincerely,

James R. Kolanek

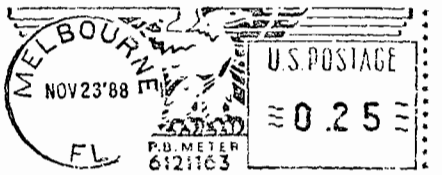
J.R. Kolanek, Manager
Environmental Services

/nab

Enclosures

copied: Bruce Mitchell
C. Collins
CHF 037

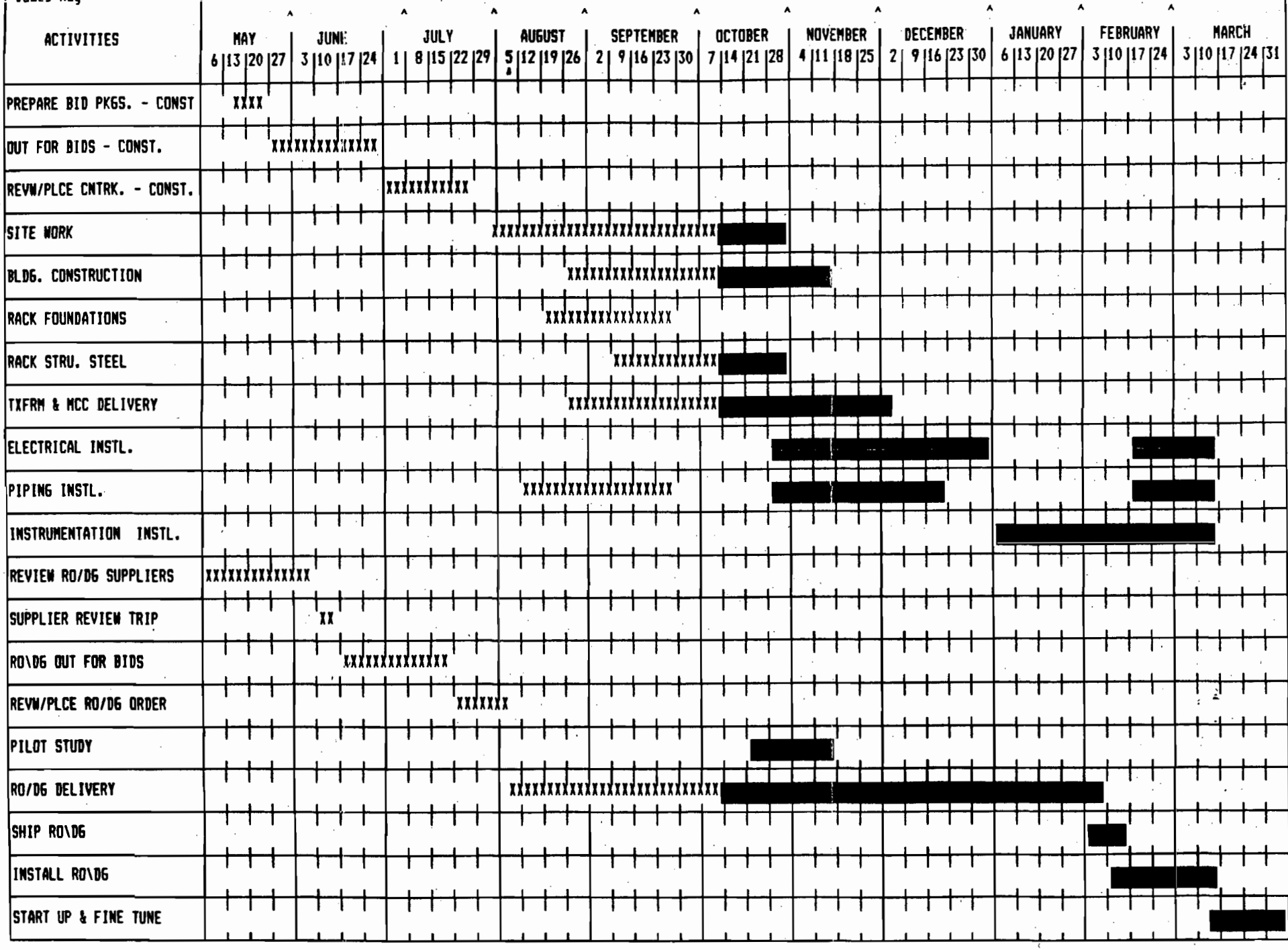
HARRIS
J. R. Kolanek, MS59-006
HARRIS CORPORATION
SEMICONDUCTOR SECTOR
P.O. BOX 883
MELBOURNE, FLORIDA 32901



Mr. Claire Fancy
Deputy Chief
Bureau of Air Quality Management
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

as of 10-7-88
James Hug

INDUSTRIAL WATER PLANT PROJECT



SCHEDULED EVENT XXXXXXX CURRENT/COMPLETED EVENT TOTAL DAYS LOST DUE TO WEATHER = 7

PM 6 Jan 1988 File Copy
Melbourne, Fl

CAPE PUBLICATIONS, INC.

The Times
Published Weekly on Wednesday

THE TRIBUNE
Published Weekly on Wednesday

STAR-ADVOCATE
Published Weekly on Wednesday

FLORIDA TODAY
Published Daily

DER

JAN 08 1988

BAQM

STATE OF FLORIDA
COUNTY OF BREVARD

Before the undersigned authority personally appeared **Linda L. Spicer** who on oath says that he/she is **Legal Advertising Clerk** of the **FLORIDA TODAY**, a newspaper published in Brevard County, Florida; that the attached copy of advertising being a Legal Notice in the matter of Permit to Harris Semiconductor in the Court was published in the **FLORIDA TODAY NEWSPAPER** in the issues of January 6, 1988

Affiant further says that the said **FLORIDA TODAY NEWSPAPER** is a newspaper published in said Brevard County, Florida and that the said newspaper has heretofore been continuously published in said Brevard County, Florida regularly as stated above, and has been entered as second class mail matter at the post office in **COCOA**, said Brevard County, Florida for a period of one year next preceeding the first publication of the attached copy of advertisement; and affiant further says that he has neither paid nor promised any person, firm or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in said newspaper.

Copied: Bruce Mitchell
Tom Sawicki - CF Dist } 1.12.88 mf

Linda L. Spicer

Sworn and subscribed to before me this

6th day of January A.D., 19 88

Notary Public, State of Florida at Large
My Commission Expires July 20, 1990

State of Florida
Department of Environmental Regulation
Notice of Intent

The Department of Environmental Regulation hereby gives notice of its intent to issue a permit to Harris Semiconductor to install/construct an industrial Grade Water System to provide water for the Deionized Water Plants in Buildings 52 and 59. The system will include a vacuum degasifier to remove hydrogen sulfide and carbon dioxide from the raw well water. The removed gases will be oxidized in a flare, which will be designed and built by the John Zink Company, Model EEF-U-2 Flare Tip with a manual/weatherproof pilot ignition panel. The pilot and enrichment fuel will be propane. The construction/installation will take place at the permittee's existing facility located in Palm Bay, Brevard County, Florida.

Persons whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative determination (hearing) in accordance with Section 120.57, Florida Statutes. The petition must conform to the requirements of Chapters 17-103 and 28-5, Florida Administrative Code, and must be filed (received) in the Department's Office of General Counsel, 2600 Blair Stone Road, Twin Towers Office Building, Tallahassee, Florida 32399-2400, within fourteen (14) days of publication of this notice. Failure to file a petition within this time period constitutes a waiver of any right such person has to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the proposed agency action. Therefore, persons who may not wish to file a petition may wish to intervene in the proceeding. A petition for intervention must be filed pursuant to Rule 28-5.207, Florida Administrative Code, at least five (5) days before the final hearing and be filed with the hearing officer if one has been assigned at the Division of Administrative Hearings, Department of Administration, 2009 Apalachee Parkway, Tallahassee, Florida 32301. If no hearing officer has been assigned, the petition is to be filed with the Department's Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Failure to petition to intervene within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, Florida Statutes.

The application is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Dept. of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dept. of Environmental Regulation
Central Florida District
3319 Maguire Blvd., Suite 232
Orlando, Florida 32803-3767

Any person may send written comments on the proposed action to Mr. Bill Thomas at the Department's Tallahassee address. All comments mailed within 14 days of the publication of this notice will be considered in the Department's final determination.

TO84595—1T—1/6, 1988, Wednesday

FLORIDA TODAY/USA TODAY
GANNETT PLAZA
P.O. BOX 363000
MELBOURNE, FL 32936

MELBOURNE JAN-8'87 FL U.S.POSTAGE .22

FLORIDA TODAY

USA TODAY

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241

Attn: Mr Bill Thomas
Bureau of Air Quality Management

PS Form 3811, July 1983 447-845

SENDER: Complete items 1, 2, 3 and 4.

Put your address in the "RETURN TO" space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for service(s) requested.

1. ☒ Show to whom, date and address of delivery.
2. ☐ Restricted Delivery.

3. Article Addressed to: James R. Kolanek, Mrg.
Environmental Services
Harris Semiconductor
Post Office Box 883
Melbourne, FL 32901

4. Type of Service:
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail

Article Number: P 274 007 630

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature – Addressee
X

6. Signature – Agent
X Harris Semiconductor Willie L Sayles

7. Date of Delivery

8. Addressee's Address (ONLY if requested and fee paid)

DOMESTIC RETURN RECEIPT

P 274 007 630

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL
(See Reverse)

Sent to James R. Kolanek, Mgr. Harris Semiconductor	
Street and No. P.O. Box 883	
P.O., State and ZIP Code Melbourne, FL 32901	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date Mailed: 12/8/87 Permit: AC 05-138795	

☆ U.S.G.P.O. 1985-480-794

PS Form 3800, June 1985

file

State of Florida
Department of Environmental Regulation
Notice of Intent

The Department of Environmental Regulation hereby gives notice of its intent to issue a permit to Harris Semiconductor to install/construct an Industrial Grade Water System to provide water for [illegible] Buildings 52 and 59. The system wi[illegible] sulfide a[illegible] gases wil[illegible] built by [illegible] manual/we[illegible] enrichmer[illegible] will take[illegible] Palm Bay[illegible]

Pers[illegible] Departme[illegible] administ[illegible] 120.57, [illegible] requirem[illegible] Code, an[illegible] General [illegible] Building[illegible] days of [illegible] within t[illegible] person h[illegible] under Se[illegible]

If [illegible] is desig[illegible] Departme[illegible] agency [illegible] petitio[illegible] interve[illegible] Adminis[illegible] hearing[illegible] assigne[illegible] of Admi[illegible] 32301. [illegible] to be f[illegible] Blair S[illegible] petitio[illegible] waiver [illegible] Sectio[illegible]

DEPARTMENT OF ENVIRONMENTAL REGULATION

ROUTING AND TRANSMITTAL SLIP

ACTION NO

ACTION DUE DATE

1. TO: (NAME, OFFICE, LOCATION)	Initial / Date
Mr. James R. Kolanek, Manager	
2.	Initial / Date
3.	Initial / Date
4.	Initial / Date

REMARKS:

Please publish this Notice of Intent and NOT the Notice of Intent that was included in you Preliminary Determination/Technical Evaluation Packet.

THANKS,

INFORMATION	
	Review & Return
	Review & File
	Initial & Forward

DISPOSITION	
	Review & Respond
	Prepare Response
	For My Signature
	For Your Signature
	Let's Discuss
	Set Up Meeting
	Investigate & Report
	Initial & Forward
	Distribute
	Concurrence
	For Processing
	Initial & Return

FROM:

Maggie Janes

DATE
12/8/87

PHONE
904-488-1344

State of Florida
Department of Environmental Regulation
Notice of Intent

The Department of Environmental Regulation hereby gives notice of its intent to issue a permit to Harris Semiconductor to install/construct an Industrial Grade Water System to provide water for the Deionized Water Plants in Buildings 52 and 59. The system will include a vacuum degasifier to remove hydrogen sulfide and carbon dioxide from the raw well water. The removed gases will be oxidized in a flare, which will be designed and built by the John Zink Company, Model EEF-U-2 Flare Tip with a manual/weatherproof pilot ignition panel. The pilot and enrichment fuel will be propane. The construction/installation will take place at the permittee's existing facility located in Palm Bay, Brevard County, Florida.

Persons whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative determination (hearing) in accordance with Section 120.57, Florida Statutes. The petition must conform to the requirements of Chapters 17-103 and 28-5, Florida Administrative Code, and must be filed (received) in the Department's Office of General Counsel, 2600 Blair Stone Road, Twin Towers Office Building, Tallahassee, Florida 32399-2400, within fourteen (14) days of publication of this notice. Failure to file a petition within this time period constitutes a waiver of any right such person has to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the proposed agency action. Therefore, persons who may not wish to file a petition may wish to intervene in the proceeding. A petition for intervention must be filed pursuant to Rule 28-5.207, Florida Administrative Code, at least five (5) days before the final hearing and be filed with the hearing officer if one has been assigned at the Division of Administrative Hearings, Department of Administration, 2009, Apalachee Parkway, Tallahassee, Florida 32301. If no hearing officer has been assigned, the petition is to be filed with the Department's Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Failure to petition to intervene within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, Florida Statutes.

The application is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Dept. of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dept. of Environmental Regulation
Central Florida District
3319 Maguire Blvd., Suite 232
Orlando, Florida 32803-3767

Any person may send written comments on the proposed action to Mr. Bill Thomas at the Department's Tallahassee address. All comments mailed within 14 days of the publication of this notice will be considered in the Department's final determination.

PS Form 3811, July 1983 447-845

SENDER: Complete items 1, 2, 3 and 4.

Put your address in the "RETURN TO" space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for service(s) requested.

1. XX Show to whom, date and address of delivery.
2. ☐ Restricted Delivery.

3. Article Addressed to:
James R. Kolanek, Mgr.
Environmental Services
Harris Semiconductor
Post Office Box 883
Melbourne, FL 32901

4. Type of Service:
☐ Registered ☐ Insured
XX Certified ☐ COD
☐ Express Mail

Article Number
P 274 007 428

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature – Addressee
X Harris Semi

6. Signature – Agent
X

7. Date of Delivery
12-9-87

8. Addressee's Address (ONLY if requested and fee paid)

DOMESTIC RETURN RECEIPT

P 274 007 428

RECEIPT FOR CERTIFIED MAIL
NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL
(See Reverse)

Sent to: James R. Kolanek, Mgr.
Harris Semiconductor
Street and No.: Post Office Box 883
P.O., State and ZIP Code: Melbourne, FL 32901

Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date	Mailed: 12/7/87 Permit: AC 05-138795

PS Form 3800, June 1985 ★ U.S.G.P.O. 1985-480-794

file

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

December 4, 1987

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. James R. Kolanek, Manager
Environmental Services
Harris Semiconductor
Post Office Box 883
Melbourne, Florida 32901

Dear Mr. Kolanek:

Attached is one copy of the Technical Evaluation and Preliminary Determination and proposed permit for Harris Semiconductor to install/construct and Industrial Grade Water System (IGWS) to provide water for the Deionized Water Plants in Buildings 52 and 59. The system will include a vacuum degasifier to remove hydrogen sulfide (H_2S) and carbon dioxide from the raw well water. The removed gases will be oxidized in flare, which will be designed and built by the John Zink Company, Model EEF-U-2 Flare Tip with manual weatherproof pilot ignition panel. The pilot and enrichment fuel will be propane.

Please submit, in writing, any comments which you wish to have considered concerning the Department's proposed action to Mr. Bill Thomas of the Bureau of Air Quality Management.

Sincerely,

C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CHF/bm

Attachments

cc: T. Sawicki, CF Dist.
C. Bach, P.E.

State of Florida
Department of Environmental Regulation
Notice of Intent

The Department of Environmental Regulation hereby gives notice of its intent to issue a permit to Harris Semiconductor to install/construct an Industrial Grade Water System (IGWS) to provide water for the Deionized Water Plants in Building 52 and 59. The system will include a vacuum degasifier to remove hydrogen sulfide (H_2S) and carbon dioxide from the raw well water. The removed gases will be oxidized in a flare, which will be designed and built by the John Zink Company, Model EEF-U-2 Flare Tip with manual/weatherproof pilot ignition panel. The pilot and enrichment fuel will be propane. The Department is issuing this Intent to Issue for the reasons stated in the attached Technical Evaluation and Preliminary Determination.

Persons whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative determination (hearing) in accordance with Section 120.57, Florida Statutes. The petition must conform to the requirements of Chapters 17-103 and 28-5, Florida Administrative Code, and must be filed (received) in the Department's Office of General Counsel, 2600 Blair Stone Road, Twin Towers Office Building, Tallahassee, Florida 32399-2400, within fourteen (14) days of publication of this notice. Failure to file a petition within this time period constitutes a waiver of any right such person has to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the proposed agency action. Therefore, persons who may not wish to file a petition may wish to intervene in the proceeding. A petition for intervention must be filed pursuant to Rule 28-5.207, Florida Administrative Code, at least five (5) days before the final hearing and be filed with the hearing officer if one has been assigned at the Division of Administrative Hearings, Department of Administration, 2009, Apalachee Parkway, Tallahassee, Florida 32301. If no hearing officer has been assigned, the petition is to be filed with the Department's Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Failure to petition to intervene within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, Florida Statutes.

The application is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Dept. of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dept. of Environmental Regulation
Central Florida District
3319 Maguire Blvd., Suite 232
Orlando, Florida 32803-3767

Any person may send written comments on the proposed action to Mr. Bill Thomas at the Department's Tallahassee address. All comments mailed within 14 days of the publication of this notice will be considered in the Department's final determination.

RULES OF THE ADMINISTRATIVE COMMISSION
MODEL RULES OF PROCEDURE
CHAPTER 28-5
DECISIONS DETERMINING SUBSTANTIAL INTERESTS

28-5.15 Requests for Formal and Informal Proceedings

(1) Requests for proceedings shall be made by petition to the agency involved. Each petition shall be printed, typewritten or otherwise duplicated in legible form on white paper of standard legal size. Unless printed, the impression shall be on one side of the paper only and lines shall be double spaced and indented.

(2) All petitions filed under these rules should contain:

(a) The name and address of each agency affected and each agency's file or identification number, if known;

(b) The name and address of the petitioner or petitioners;

(c) All disputed issues of material fact. If there are none, the petition must so indicate;

(d) A concise statement of the ultimate facts alleged, and the rules, regulations and constitutional provisions which entitle the petitioner to relief;

(e) A statement summarizing any informal action taken to resolve the issues, and the results of that action;

(f) A demand for the relief to which the petitioner deems himself entitled; and

(g) Such other information which the petitioner contends is material.

BEFORE THE STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

In the Matter of
Application for Permit by:

Harris Semiconductor
Palm Bay Road
Palm Bay, Florida 32901

DER File No. AC 05-138795

INTENT TO ISSUE

The Department of Environmental Regulation hereby gives notice of its intent to issue a permit (copy attached) to Harris Semiconductor to install/construct an Industrial Grade Water System (IGWS) to provide water for the Deionized Water Plants in Buildings 52 and 59. The system will include a vacuum degasifier to remove hydrogen sulfide (H_2S) and carbon dioxide from the raw well water. The removed gases will be oxidized in a flare, which will be designed and built by the John Zink Company, Model EEF-U-2 Flare Tip with manual/weatherproof pilot ignition panel. The pilot and enrichment fuel will be propane. The proposed installation/ construction will occur at the applicant's existing facility located on Palm Bay Road, in Palm Bay, Brevard County, Florida. The Department is issuing this Intent to Issue for the reasons stated in the attached Technical Evaluation and Preliminary Determination.

The applicant, Harris Semiconductor, applied on August 3, 1987, to the Department of Environmental Regulation for a construction permit.

The Department has permitting jurisdiction under Chapter 403, Florida Statutes (F.S.), and Florida Administrative Code (FAC) Rules 17-2 and 17-4. The project is not exempt from permitting procedures. The Department has determined that an air construction permit was needed for the proposed work.

Pursuant to Section 403.815, F.S., and FAC Rule 17-103.150, you (the applicant) are required to publish at your own expense the enclosed Notice of Proposed Agency Action on permit application. The notice must be published one time only in a

section of a major local newspaper of general circulation in the county in which the project is located and within thirty (30) days from receipt of this intent. Proof of publication must be provided to the Department within seven days of publication of the notice. Failure to publish the notice and provide proof of publication within the allotted time may result in the denial of the permit.

The Department will issue the permit with the attached conditions unless petition for an administrative proceeding (hearing) is filed pursuant to the provisions of Section 120.57, F.S. A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, F.S. Petitions must comply with the requirement of FAC Rules 17-103.155 and 28-5.201 (copies enclosed) and be filed with (received by) the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Petitions filed by the permit applicant must be filed within fourteen (14) days of receipt of this intent. Petitions filed by other persons must be filed within fourteen (14) days of publication of the public notice or within fourteen (14) days of receipt of this intent, whichever first occurs. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, F.S., concerning the subject permit application. Petitions which are not filed in accordance with the above provisions will be dismissed.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

Copies furnished to:

T. Sawicki, CF Dist.
C. Bach, P.E.

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this NOTICE OF INTENT TO ISSUE and all copies were mailed before the close of business on 12-7-87.

FILING AND ACKNOWLEDGEMENT
FILED, on this date, pursuant to §120.52(9), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Martha J Wise
Clerk

12-7-87
Date

Technical Evaluation
and
Preliminary Determination

Harris Corporation
Semiconductor Sector
Brevard County
Melbourne, Florida

Permit Number:
AC 05-138795

Florida Department of Environmental Regulation
Bureau of Air Quality Management
Central Air Permitting

December 7, 1987

I. Project Description

A. Applicant

Harris Corporation
Semiconductor Sector
Post Office Box 883
Melbourne, Florida 32901

B. Project Description and Location

The applicant proposes to install/construct an Industrial Grade Water System (IGWS) to provide water for the Deionized Water Plants in Buildings 52 and 59. The system will include a vacuum degasifier to remove hydrogen sulfide (H_2S) and carbon dioxide from the raw well water. The removed gases will be oxidized in a flare, which will be designed and built by the John Zink Company, Model EEF-U-2 Flare Tip with manual/weatherproof pilot ignition panel. The pilot and enrichment fuel will be propane.

The proposed installation/construction will occur at the applicant's existing facility located on Palm Bay Road in Palm Bay City, Brevard County, Florida. The UTM coordinates are Zone 17, 538.7 km East and 3100.9 km North.

The Standard Industrial Code is 3674, Semiconductors.

The Standard Classification Codes are:

- Miscellaneous Manufacturing Industries
  Major Group 39; Flares - Natural Gas: 3-99-900-23 (10^6 cubic feet burned)

C. Controls

Due to the foul smelling of H_2S extracted with the IGWS, the control measure is to capture, transport, and oxidize the gas in a flare. The resultant pollutant emissions will be sulfur dioxide (SO_2).

II. Rule Applicability

The applicant's intent is subject to preconstruction review pursuant to Florida Administrative Code (FAC) Rules 17-2 and 17-4, in accordance with Section 403, Florida Statutes.

The application package was deemed complete on October 23, 1987.

The proposed project and existing facility is located in an area designated attainment for all pollutants. Therefore, review of the potential pollutant emissions shall be in accordance with FAC Rule 17-2.500, Prevention of Significant Deterioration (PSD).

Based on the 1984 emissions inventory and subsequent modifications, the estimated facility's VOC and organic solvent emissions are greater than 100 tons per year (TPY), but less than 250 TPY. Therefore, the facility is a major facility in accordance with FAC Rule 17-2.100(111). The facility does not belong to any of the major facility categories listed in FAC Rule 17-2, Table 500-1.

The following Table 1 will exhibit the projected potential pollutant emissions for the proposed project:

Table 1

Source	Potential Pollutant Emissions	
	H_2S	SO_2
Flare System	0.22 TPY	27.61 TPY

Note: Based on 98.5% efficiency of the flare to oxidize H_2S to SO_2

Based on the table, the proposed increase in potential H_2S and SO_2 emissions would be a minor modification to a major facility and exempt from new source review requirements pursuant to FAC Rule 17-2.500, PSD, and is the first permitting activity of these specific pollutants at this facility. Therefore, the potential pollutant emissions will be reviewed in accordance with FAC Rule 17-2.520, Sources Not Subject to PSD or Nonattainment Requirements.

Since there is no specific emission limiting standard contained in FAC Rule 17-2.600 nor is there any standards of performance for new stationary sources contained in FAC Rule 17-2.660 for the proposed project, the modification will be permitted in accordance with FAC Rules 17-2.250, Excess Emissions, and 17-2.620, General Pollutant Emission Limiting Standards. Also, the source will be subject to the conditions of 40 CFR 60.18(c) thru (f), General Control Device Requirements.

FAC Rule 17-2.620(2) states that no person shall cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor. Objectionable odor is defined as any odor present in the outdoor atmosphere, which by itself or in combination with other odors, is or may be harmful or injurious to human health or welfare, which unreasonably interferes with the comfortable use and enjoyment of

life or property, or which creates a nuisance according to FAC Rule 17-2.100(131).

In accordance with FAC Rule 17-2.250(4), sources are to be properly operated and maintained so that excess emissions are minimized. FAC Rule 17-2.250(6), requires that the Department be notified in the case of excess emissions, and the Department, in this case, is the DER's Central Florida District office.

Pursuant to 40 CFR 60.18, the flare will be subject to no visible emissions (5% opacity), except for a total period of 5 minutes during any 2 consecutive hours. Compliance tests shall be performed using EPA Methods 2, 2A, 2C or 2D, as appropriate, 15 and 22, pursuant to FAC Rule 17-2.700 and 40 CFR 60, Appendix A.

III. Summary of Emissions

A. Emission Limitations

The regulated pollutant emissions from this modification are visible emissions, which is "no visible emissions (5% opacity), except for periods not to exceed a total of 5 minutes during any 2 consecutive hours".

Table 2 reflects the projected maximum potential pollutant emissions from the proposed modification for the purpose of tracking for PSD Rule applicability pursuant to FAC Rule 17-2.500.

Table 2

Source	Maximum Potential Pollutant Emissions	
	H_2S	SO_2
Flare System	0.06 lbs/hr (0.22 TPY)	7.06 lbs/hr (27.61 TPY)

*Based on 8760 hours per year operations.

The permitted emissions are in compliance with all requirements of Chapter 17-2, FAC.

B. Air Quality Impacts

From a technical review of the application and supplementary material, an air quality analysis is not required.

IV. Conclusion

The emission limitations to be imposed have been determined to be in compliance with all applicable requirements of Chapter

17-2, FAC. The permitted allowable emissions should not cause any violations of Florida's ambient air quality standards.

The General and Specific Conditions listed in the proposed permit will assure compliance with all applicable air pollution regulations..

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

PERMITTEE:
Harris Semiconductor
P. O. Box 883
Melbourne, Florida 32901

Permit Number: AC 05-138795
Expiration Date: January 31, 1989
County: Brevard
Latitude/Longitude: 28° 01' 20"N/
80° 36' 10" W
Project: Industrial Grade Water System with Vacuum Degasifier and Flare System

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

For the construction/installation of a 600 gallon per minute Industrial Grade water system with a vacuum degasifier and flare system. The vacuum degasifier will remove hydrogen sulfide and carbon dioxide from raw well water and the removed gases will be transported to and oxidized/combusted by the flare system. The nonassisted type flare will be designed and built by the John Zink Company, which includes a self-supported flare stack, a Model EEF-U-2 flare tip (John Zink Co.), and a manual weatherproof pilot ignition panel. The construction/installation will occur at the permittee's existing facility located on Palm Bay Road, City of Palm Bay, Florida. The UTM coordinates are Zone 17, 538.7 km East and 3100.9 km North.

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

Attachments to be Incorporated:

1. Application to Construct Air Pollution Source, DER Form 17-1.202(1), and Mr. James R. Kolanek's cover letter dated August 28, 1987, and received August 31, 1987.
2. Mr. C. H. Fancy's letter dated September 25, 1987.
3. Mr. J. R. Kolanek's letter with enclosures dated October 16, 1987, and received October 23, 1987.
4. Copy of 40 CFR 60.18, as revised July 1, 1986.
5. Technical Evaluation and Preliminary Determination dated December 4, 1987.

PERMITTEE:
Harris Semiconductor

Permit Number: AC 05-138795
Expiration Date: January 31, 1989

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions" and as such are binding upon the permittee and enforceable pursuant to the authority of Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is hereby placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants or representatives.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit does not constitute a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute state recognition or acknowledgement of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the state. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, plant or aquatic life or property and penalties therefore caused by the construction or operation of this permitted source, nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

GENERAL CONDITIONS:

6. The permittee shall at all times properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law, access to the premises, at reasonable times, where the permitted activity is located or conducted for the purpose of:

a. Having access to and copying any records that must be kept under the conditions of the permit;

b. Inspecting the facility, equipment, practices, or operations regulated or required under this permit; and

c. Sampling or monitoring any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately notify and provide the Department with the following information:

a. a description of and cause of non-compliance; and

b. the period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance.

GENERAL CONDITIONS:

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source, which are submitted to the Department, may be used by the department as evidence in any enforcement case arising under the Florida Statutes or Department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes.

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

11. This permit is transferable only upon department approval in accordance with Florida Administrative Code Rules 17-4.12 and 17-30.30, as applicable. The permittee shall be liable for any noncompliance of the permitted activity until the transfer is approved by the Department.

12. This permit is required to be kept at the work site of the permitted activity during the entire period of construction or operation.

13. This permit also constitutes:

( ) Determination of Best Available Control Technology (BACT)
( ) Determination of Prevention of Significant Deterioration (PSD)
( ) Compliance with New Source Performance Standards

14. The permittee shall comply with the following monitoring and record keeping requirements:

a. Upon request, the permittee shall furnish all records and plans required under Department rules. The retention period for all records will be extended automatically, unless otherwise stipulated by the Department, during the course of any unresolved enforcement action.

GENERAL CONDITIONS:

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

c. Records of monitoring information shall include:

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

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

SPECIFIC CONDITIONS:

1. Annual hours of operation are 8760.

2. The maximum potential sulfur dioxide (SO_2) emissions are 7.0 pounds per hour and 30.7 tons per year.

3. The maximum potential hydrogen sulfide (H_2S) emissions are 493 pounds per year, which is based on a flare efficiency of 98.5%.

SPECIFIC CONDITIONS:

4. The permittee shall comply with the conditions of 40 CFR 60.18(c) thru (f).

5. No visible emissions (5% opacity) shall be allowed, except for a total period of 5 minutes during any consecutive 2 hours, pursuant to 40 CFR 60.18(c). Compliance shall be demonstrated annually using EPA Method 22 pursuant to 40 CFR 60.18(f)(1).

6. EPA Method 15 shall be performed annually to determine the maximum concentration of the H_2S prior to being flared and the result should be in terms of dry standard conditions (14.7 psia and 68^0 F). A retest shall be required if the concentration of H_2S is to be increased.

7. The exit velocity of the flare shall be determined using the procedure in 40 CFR 60.18(f)(4) and either EPA Method 2, 2A, 2C or 2D, as appropriate.

8. EPA Methods shall be as described in 40 CFR 60, Appendix A.

9. The Central Florida District shall be notified in writing 15 days in advance of any compliance testing and the test reports shall be submitted within 45 days after the last test run.

10. Objectionable odors shall not be allowed off plant property pursuant to FAC Rule 17-2.620(2).

11. The construction shall reasonably conform to the plans and schedule submitted in the application. If the permittee is unable to complete construction on schedule, he must notify the Department in writing 60 days prior to the expiration date of the construction permit and submit a new schedule and request for an extension of the construction permit. (FAC Rule 17-4.09)

To obtain a permit to operate, the permittee must demonstrate compliance with the conditions of the construction permit and submit a complete application for an operating permit, including the application fee, along with compliance test results and Certificate of Completion, to the Department's District office 90 days prior to the expiration date of the construction permit. The permittee may continue to operate in compliance with all terms of the construction permit until its expiration date. Operation beyond the construction permit expiration date requires a valid permit to operate. (FAC Rules 17-4.22 and 17-4.23)

PERMITTEE:
Harris Semiconductor

Permit Number: AC 05-138795
Expiration Date: January 31, 1989

SPECIFIC CONDITIONS:

If the construction permit expires prior to the permittee requesting an extension or obtaining a permit to operate, then all activities at the project must cease and the permittee must apply for a new permit to construct which can take up to 90 days to process a complete application. (FAC Rule 17-4.10)

Issued this_____day of_____, 19__.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

_____
Dale Twachtmann, Secretary

as determined by the methods specified in paragraph (f), except for periods not to exceed a total of 5 minutes during any 2 consecutive hours.

(2) Flares shall be operated with a flame present at all times, as determined by the methods specified in paragraph (f).

(3) Flares shall be used only with the net heating value of the gas being combusted being 11.2 MJ/scm (300 Btu/scf) or greater if the flare is steam-assisted or air-assisted; or with the net heating value of the gas being combusted being 7.45 MJ/scm (200 Btu/scf) or greater if the flare is nonassisted. The net heating value of the gas being combusted shall be determined by the methods specified in paragraph (f).

(4)(i) Steam-assisted and nonassisted flares shall be designed for and operated with an exit velocity, as determined by the methods specified in paragraph (f)(4), less than 18.3 m/sec (60 ft/sec), except as provided in paragraphs (b)(4) (ii) and (iii).

(ii) Steam-assisted and nonassisted flares designed for and operated with an exit velocity, as determined by the methods specified in paragraph (f)(4), equal to or greater than 18.3 m/sec (60 ft/sec) but less than 122 m/sec (400 ft/sec) are allowed if the net heating value of the gas being combusted is greater than 37.3 MJ/scm (1,000 Btu/scf).

(iii) Steam-assisted and nonassisted flares designed for and operated with an exit velocity, as determined by the methods specified in paragraph (f)(4), less than the velocity, V_{max}, as determined by the method specified in paragraph (f)(5), and less than 122 m/sec (400 ft/sec) are allowed.

(5) Air-assisted flares shall be designed and operated with an exist velocity less than the velocity, V_{max}, as determined by the method specified in paragraph (f)(6).

(6) Flares used to comply with this section shall be steam-assisted, air-assisted, or nonassisted.

(d) Owners or operators of flares used to comply with the provisions of this subpart shall monitor these control devices to ensure that they are operated and maintained in conformance with their designs. Applicable subparts will provide provisions stating how owners or operators of flares shall monitor these control devices.

(e) Flares used to comply with provisions of this subpart shall be operated at all times when emissions may be vented to them.

(f)(1) Reference Method 22 shall be used to determine the compliance of flares with the visible emission provisions of this subpart. The observation period is 2 hours and shall be used according to Method 22.

(2) The presence of a flare pilot flame shall be monitored using a thermocouple or any other equivalent device to detect the presence of a flame.

§ 60.18 *General control device requirements.*

(a) *Introduction.* This section contains requirements for control devices used to comply with applicable subparts of Part 60 and Part 61. The requirements are placed here for administrative convenience and only apply to facilities covered by subparts referring to this section.

(b) *Flares.* Paragraphs (c) through (f) apply to flares.

(c)(1) Flares shall be designed for and operated with no visible emissions

(3) The net heating value of the gas being combusted in a flare shall be calculated using the following equation:

$$H_T = K \sum_{i=1}^{n} C_i H_i$$

where:

H_T = Net heating value of the sample, MJ/scm; where the net enthalpy per mole of offgas is based on combustion at 25 °C and 760 mm Hg, but the standard temperature for determining the volume corresponding to one mole is 20 °C;

$$K = \text{Constant}, \; 1.740 \times 10^{-7} \left(\frac{1}{ppm}\right) \left(\frac{g\ mole}{scm}\right) \left(\frac{MJ}{kcal}\right)$$

where the standard temperature for $\left(\frac{g\ mole}{scm}\right)$ is 20°C;

C_i = Concentration of sample component i in ppm on a wet basis, as measured for organics by Reference Method 18 and measured for hydrogen and carbon monoxide by ASTM D1946-77 (Incorporated by reference as specified in § 60.17); and

H_i = Net heat of combustion of sample component i, kcal/g mole at 25 °C and 760 mm Hg. The heats of combustion may be determined using ASTM D2382-76 (incorporated by reference as specified in § 60.17) if published values are not available or cannot be calculated.

(4) The actual exist velocity of a flare shall be determined by dividing the volumetric flowrate (in units of standard temperature and pressure), as determined by Reference Methods 2, 2A, 2C, or 2D as appropriate; by the unobstructed (free) cross sectional area of the flare tip.

(5) The maximum permitted velocity, V_{max}, for flares complying with paragraph (c)(4)(iii) shall be determined by the following equation.

$$\text{Log}_{10}(V_{max}) = (H_T + 28.8)/31.7$$

V_{max} = Maximum permitted velocity, M/sec

28.8 = Constant

31.7 = Constant

H_T = The net heating value as determined in paragraph (f)(3).

(6) The maximum permitted velocity, V_{max}, for air-assisted flares shall be determined by the following equation.

$$V_{max} = 8.706 + 0.7084\ (H_T)$$

V_{max} = Maximum permitted velocity, m/sec

8.706 = Constant

0.7084 = Constant

H_T = The net heating value as determined in paragraph (f)(3).

[51 FR 2701, Jan.21, 1986]

HARRIS

2101

November 4, 1987

Mr. C. H. Fancy, P.E.
Deputy Chief, Bureau of Air Quality Mgt.
State of Florida, DER
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399

Dear Mr. Fancy:

Enclosed is a check for $150.00 to cover the deficit amount of the construction permit application fee for Permit No. AC 05-138795.

Sincerely,

James R. Kolanek

J.R. Kolanek, Manager
Environmental Services

Enclosure

RECEIVED
DER - MAIL ROOM
1987 NOV -9 AM 11:04

1031

11/13/87

~~CHE~~ ~~BF~~ } FYI

Bruce

☺

THE FIRST NATIONAL BANK OF ATLANTA
AUGUSTA, GA.

HARRIS

HARRIS CORPORATION
SEMICONDUCTOR GROUP

64-1327
611

619701

2101

000000	11	04	87
ACCT. NO.	PAYABLE DATE		
CHECK NUMBER			

PAY **********150 DOLLARS AND 00******* CENTS

*******150 00***
CHECK AMOUNT

TO ORDER OF

DEPARTMENTAL OF ENVIRONMENTAL REG
2600 BLAIR STONE ROAD
TALLAHASSEE, FLA 32399

HARRIS SEMICONDUCTOR

COUNTERSIGNED

AUTHORIZED SIGNATURE

[redacted]

WOODBURY BUSINESS SYSTEMS, INC., ATLANTA, GEORGIA

HARRIS

HARRIS CORPORATION
SEMICONDUCTOR GROUP

REMITTANCE STATEMENT

2101 619701

VENDOR REFERENCE				HARRIS VOUCHER NUMBER	AMOUNT		
ACCOUNT NUMBER	INVOICE NUMBER	DATE MO.	DATE DAY		INVOICED	DISCOUNTED	PAID
	CONSTRUCTION PERMIT APPLICATION EEE FOR PERMIT #AC 05-138795						150 00

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

No 76194

RECEIPT FOR APPLICATION FEES AND MISCELLANEOUS REVENUE

Received from Harris Corp./Semiconductor Group Date NOV. 13, 1987

Address Palm Bay Rd., P.O. Box 883, Melbourne, FL 32901 Dollars $ 150.00

Applicant Name & Address J.R. Kolanek, Mgr. / Address Same as above

Source of Revenue √# 619701

Revenue Code 001031 Application Number AC 05-138795

By N. V. James

PM
20 oct. 1987
Orlando, FL

file copy

HARRIS

DER
OCT 23 1987
BAQM

FS-NAB-71-88

October 16, 1987

Mr. C. H. Fancy, P.E.
Deputy Chief, Bureau of Air Quality Mgt.
State of Florida, DER
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399

Re: Completeness Review of Construction Applications
Permit No.: AC 05-138794
AC 05-138795

Dear Mr. Fancy:

This letter is in reply to your request of September 25, 1987, for further information regarding permits AC 05-138794 and 138795. The following information is pertinent to Permit No. AC 05-138794:

1. The only piece of equipment containing organics that is proposed to be attached to the exhaust fan F54E17 is a gas cabinet containing two K-gas cylinders of halocarbon-23 (trifluoromethane). Under normal operating conditions, no emissions of this fluorocarbon will occur. In the unlikely event that an entire cylinder should be lost, a maximum of 70.12 lbs. of organic compounds would be released into the exhaust system. The rate of release would depend on the nature of the leak.

2. The facility designated identification numbers for the scrubber systems that will handle gas cylinder purges are F54S03 and F54S04.

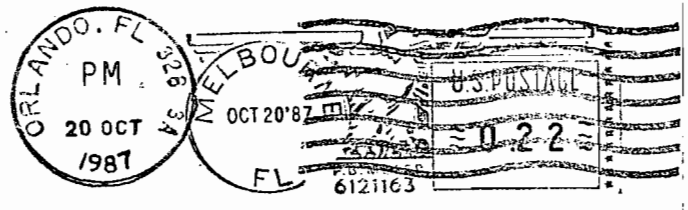
3 & 4.
The scrubber medium for F54S03 and F54S04 is water. After collection occurs, the water drains to the T112 sump where it is pumped to the wastewater treatment facility located on the Harris Semiconductor plant site. F54E17 is an exhaust fan with no control device.

The following information is pertinent to Permit No. AC 05-138795:

1. The heat capacity of propane is 330.39 BTU/gal.

2. In order to determine pollutant emissions generated by the firing of propane, design engineer Brian Duck of John Zink Co. was contacted. He explained that the flare pilot is a pre-mixed burner. The propane in the system is mixed with the process gases under the proper stoichiometric concentrations to allow for complete, smokeless combustion at the flare tip. This is performed under high pressure and high velocity conditions at the point of combustion. Consequently, propane burns clean and emissions attributed to propane are negligible.

HARRIS
J. R. Kolanek, MS58-055
HARRIS CORPORATION
SEMICONDUCTOR SECTOR
P.O. BOX 883
MELBOURNE, FLORIDA 32901



Mr. C. H. Fancy, P.E.
Deputy Chief, Bureau of Air Quality Management
State of Florida, DER
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399

3. Because the amount of both pilot and enrichment propane utilized will remain constant on the flare system, the maximum consumption of propane is equal to the average consumption stated in the permit application (43 SCFH for the pilot gas, and 21.37 SCFH for the enrichment gas).

4. We are currently processing the internal paper work for the deficient amount of $150.00. We shall forward the check under separate cover.

We trust the above information addresses all outstanding information. If you should have any questions, please feel free to contact me at (305) 724-7467.

Sincerely,

James R. Kolanek by SOP

J. R. Kolanek, Manager
Environmental Services

/pgc

Enclosures

Copied: BT/CHF
Bruce Mitchell
Tom Sawicki
10/26/87

ATTACHMENT A

Calculations:

AC 05-138794

1. 1 lb. propane = 21,591 BTU/lb

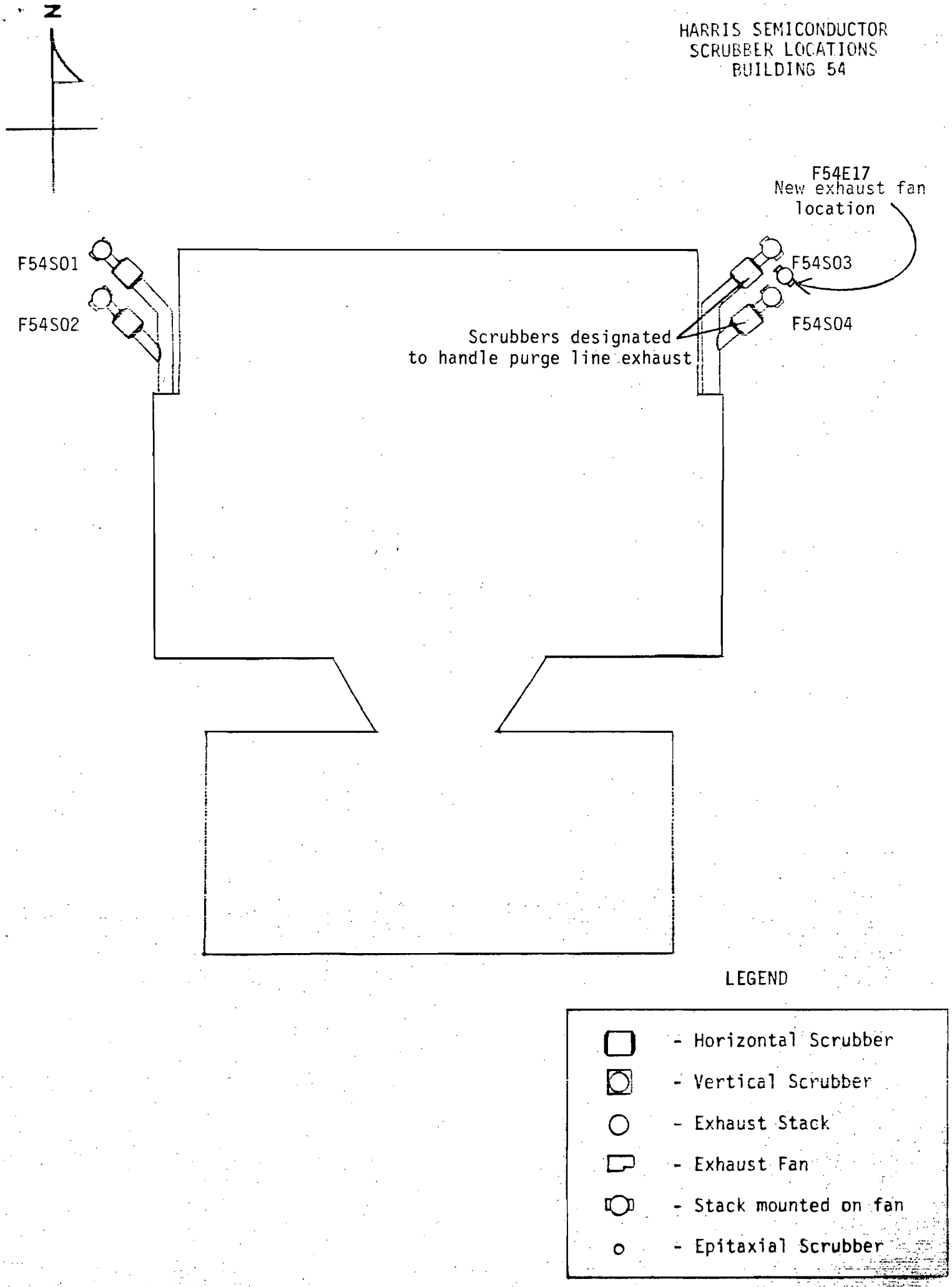
@ STP, 1 liter propane = 1.8324g propane

(1 liter = 0.2642 gallons)

(1 lb. = 453.59 grams)

$$\frac{21{,}591\ \text{BTU}}{1\ \text{lb propane}} \times \frac{1\ \text{lb propane}}{453.59\text{g propane}} \times \frac{1.8324\text{g propane}}{1\ \text{liter propane @ STP}} \times \frac{1\ \text{liter propane}}{0.264\ \text{gallon}}$$

$$= 330.39\ \text{BTU/gal}$$


N
HARRIS SEMICONDUCTOR
SCRUBBER LOCATIONS
BUILDING 54
F54E17
New exhaust fan
location
F54S01
F54S02
F54S03
F54S04
Scrubbers designated
to handle purge line exhaust
LEGEND
- Horizontal Scrubber
- Vertical Scrubber
- Exhaust Stack
- Exhaust Fan
- Stack mounted on fan
- Epitaxial Scrubber

PS Form 3811, July 1983 447-845

SENDER: Complete items 1, 2, 3 and 4.

Put your address in the "RETURN TO" space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for service(s) requested.

1. ☒ Show to whom, date and address of delivery.
2. ☐ Restricted Delivery.

3. Article Addressed to:

Mr. James R. Kolanek
Harris Semiconductor
P O Box 883
Melbourne, Fl 32901

4. Type of Service:

☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail

Article Number: P 274 007 683

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature – Addressee
X

6. Signature – Agent
X Willie J. Sanders Harris Semiconductor

7. Date of Delivery

8. Addressee's Address (ONLY if requested and fee paid)

DOMESTIC RETURN RECEIPT

AC 05-138794, -138795

P 274 007 683

AC 05-138794, -138795

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL
(See Reverse)

Sent to Mr. J. Kolanek, Harris Semicond.	
Street and No. P O Box 883	
P.O., State and ZIP Code Melbourne, Fl 32901	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date	

PS Form 3800, June 1985

☆ U.S.G.P.O. 1985-480-794

See the letter in AC05-138794

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

September 25, 1987

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. James R. Kolanek
Manager, Environmental Services
Harris Semiconductor
P. O. Box 883
Melbourne, Florida 32901

Dear Mr. Kolanek:

Re: Completeness Review on the Applications to Construct
Air Pollution Sources
Permit Nos. AC 05-138794 and -138795

The Department received your cover letter dated August 28, 1987, and the above reference applications on August 31, 1987. Based on a review of these applications, they have been deemed incomplete. The following information, including all reference material, calculations and assumptions, will have to be submitted to the Department's Bureau of Air Quality Management before the status can, again, be ascertained.

AC 05-138794

1. For the volatile organic compounds and organic solvents, quantify the potential emissions per chemical in pounds per hour, month, and year.

2. What is the facility designated identification for the scrubber to be used to handle the gas cyclinder purges?

3. Where will the scrubber medium be discharged after collection occurs?

4. What is the scrubber's medium?

AC 05-138795

1. What is the heat capacity in Btu per gallon of the propane?

2. Quantify the potential pollutant emissions in pounds per hour and annually from the firing of the propane.

3. What is the maximum consumption of propane per hour?

4. Based on the submitted potential pollutant emissions, the appropriate processing fee, pursuant to FAC Rule 17-4.05, is $250.00. Therefore, remit to the Department of Environmental Regulation the amount deficient, which is $150.00.

If there are any questions, please call Bruce Mitchell at (904)488-1344 or write to me at the above address.

Sincerely,

C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CHF/BM/s

cc: T. Sawicki

Subcode 05 PM
8-28-87
Purolator Courier
Ticket # 880612765

AC 05-138795
Rec'd: 8-31-87
Pd. $100.00
Rcipt: 76178
MR: 9-1-87

HARRIS

DER

AUG 31 1987

BAQM

FS-JRK-030-88

August 28, 1987
Subcode 05

Mr. C. H. Fancy
Deputy, Bureau Chief
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32301

SUBJECT: Air Permit Application - Vacuum Degasifier with Flare System - Harris Semiconductor

Dear Mr. Fancy:

Enclosed please find the original and three copies for the subject air permit application for Harris Semiconductor's facility in Palm Bay, Florida. Also enclosed is the construction permit application fee.

The subject source is a part of our Industrial Water Project. This project will utilize Floridan water as the source of industrial water which is currently being met by potable water. Potential emissions from this source are hydrogen sulfide, carbon dioxide, and sulfur dioxide. The flare is designed to control odors caused by the removal of hydrogen sulfide from the water. The projected sulfur dioxide emissions are 27.61 tons/year. This is less than the amount considered a significant emission rate as specified by 17-2.500(2)(e)2.

If you should have any questions, please feel free to contact me at (305) 724-7467.

Sincerely,

James R. Kolanek

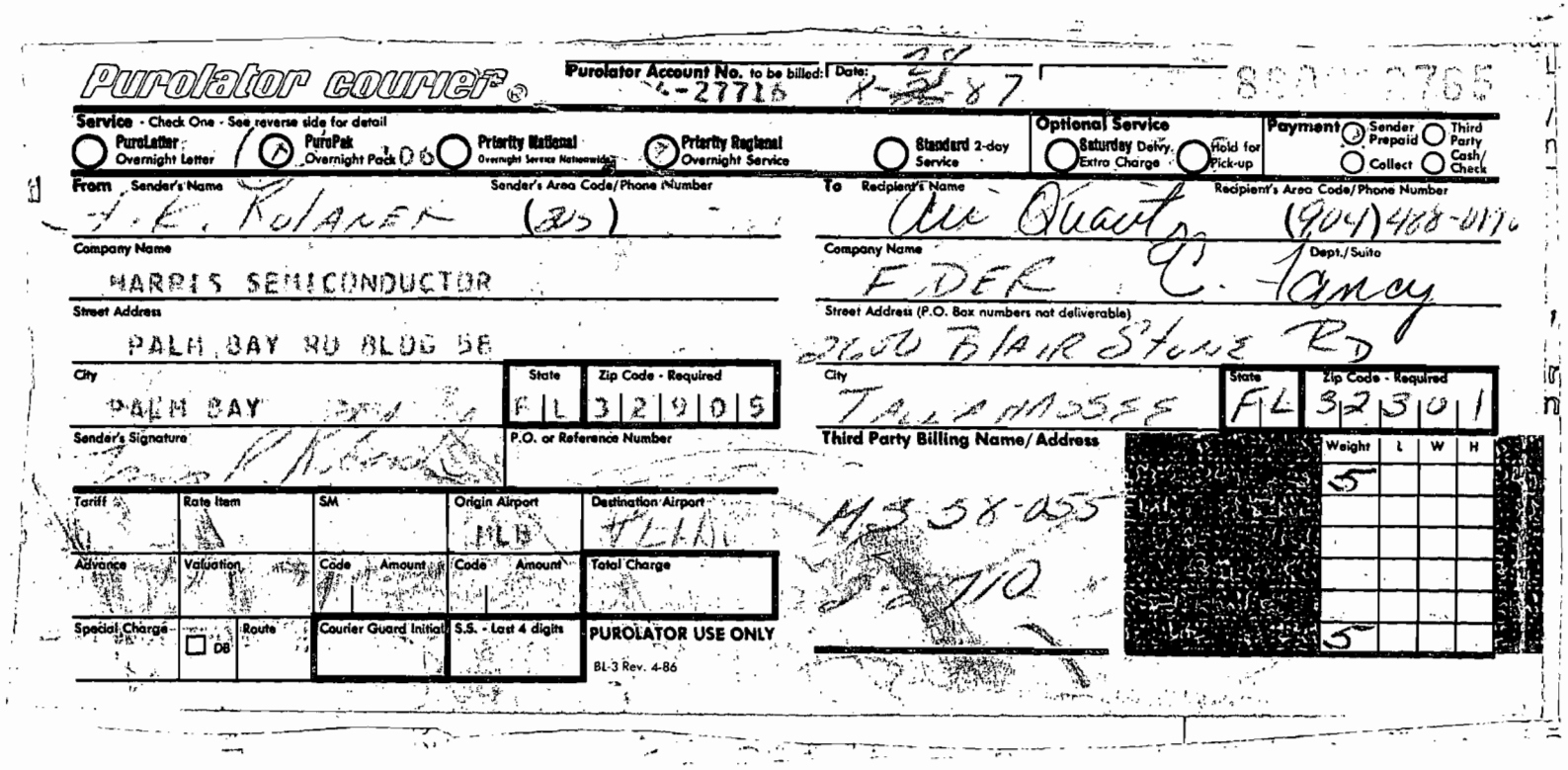
James R. Kolanek, Manager
Environmental Services

/pgc

enclosures

cc: FDER - Orlando

BEST AVAILABLE COPY



Purolator courier®

Purolator Account No. to be billed: 4-27716 Date: 2-2-87

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○ PuroLetter Overnight Letter ○ PuroPak Overnight Pack ○ Priority National Overnight Service Nationwide ○ Priority Regional Overnight Service ○ Standard 2-day Service

Optional Service ○ Saturday Delvy. Extra Charge ○ Hold for Pick-up

Payment ○ Sender Prepaid ○ Third Party ○ Collect ○ Cash/Check

From Sender's Name: A. E. Kolaker Sender's Area Code/Phone Number: (305)

Company Name: HARRIS SEMICONDUCTOR

Street Address: PALM BAY RD BLDG 5E

City: PALM BAY State: FL Zip Code - Required: 32905

Sender's Signature:

P.O. or Reference Number:

To Recipient's Name: Lee Quarterman Recipient's Area Code/Phone Number: (904) 488-0170

Company Name: FDER Dept./Suite: C. Toney

Street Address (P.O. Box numbers not deliverable): 2600 BLAIR STONE RD

City: TALLAHASSEE State: FL Zip Code - Required: 32301

Third Party Billing Name/ Address:

MS 58-055

710

Weight	L	W	H
5			
5			

Tariff	Rate Item	SM	Origin Airport	Destination Airport
			MLB	TLH

Advance	Valuation	Code	Amount	Code	Amount	Total Charge

Special Charge	☐ DB	Route	Courier Guard Initial	S.S. - Last 4 digits

PUROLATOR USE ONLY

BL-3 Rev. 4-86

HARRIS

FS-JRK-030-88

09/031

August 28, 1987

Mr. C. H. Fancy
Deputy, Bureau Chief
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32301

SUBJECT: Air Permit Application - Vacuum Degasifier with Flare System - Harris Semiconductor

Dear Mr. Fancy:

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If you should have any questions, please feel free to contact me at (305) 724-7467.

Sincerely,

James R. Kolanek, Manager
Environmental Services

/pgc

enclosures

cc: FDER - Orlando

DER

SEP 01 1987

BAQM

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DER - MAIL ROOM
1987 SEP -1 AM 10: 31

01-000-S1066 HARRIS SEMICONDUCTOR 00020335

VOUCHER NUMBER	INVOICE NUMBER	PURCHASE ORDER	INVOICE DATE	AMOUNT	DISCOUNT	NET AMOUNT
072362	081387		08-13-87	100.00	.00	100.00
		TOTALS		100.00	.00	100.00

REMITTANCE STATEMENT / DETACH BEFORE DEPOSITING

BEST AVAILABLE COPY

HARRIS SEMICONDUCTOR SECTOR

HARRIS

HARRIS CORPORATION
SEMICONDUCTOR SECTOR

THE FIRST NATIONAL BANK OF ATLANTA
AUGUSTA, GEORGIA
64-1327
611

020335
1989

DATE	CHECK NO.	NET AMOUNT
08/14/87	00020335	********100.00

PAY

NE HUNDRED AND 00/100 DOLLARS

TO THE ORDER OF
DEPT. OF ENVIRONMENTAL REG.
3319 MAGUIRE BLVD.
SUITE 232
ORLANDO,
FLA 32803

HARRIS CORPORATION
SEMICONDUCTOR SECTOR

COUNTERSIGNED

AUTHORIZED SIGNATURE

[redacted]

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

No 76178

RECEIPT FOR APPLICATION FEES AND MISCELLANEOUS REVENUE

Received from Harris Semiconductor Date Sept. 2, 1987

Address Palm Bay Rd., Palm Bay, FL 32901 Dollars $ 100.00

Applicant Name & Address J.R. Kolanek, Mgr., Env. Svs., P.O. Box 883, Melbourne, FL 32901

Source of Revenue √#00020335

Revenue Code 001031 Application Number AC 05-138795

By

STATE OF FLORIDA

AC 05-138795
Recd: 8-31-87
Pd. $100.00
MR: 9-1-87

DEPARTMENT OF ENVIRONMENTAL REGULATION

WIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241

DER

AUG 31 1987

BAOM

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Stationary [X] New[1] [ ] Existing[1]

APPLICATION TYPE: [X] Construction [ ] Operation [ ] Modification

COMPANY NAME: Harris Semiconductor COUNTY: Brevard

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peaking Unit No. 2, Gas Fired) Vacuum Degasifier with Flare System

SOURCE LOCATION: Street Palm Bay Road City Palm Bay

UTM: East 17-538700 North 17-3100900

Latitude 28 ° 1 ' 20 "N Longitude 80 ° 36 ' 10 "W

APPLICANT NAME AND TITLE: N. A. Baldisserotto Environmental Engineer, Environ. Science

APPLICANT ADDRESS: P.O. Box 883 Melbourne, FL 32901

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Harris Semiconductor

I certify that the statements made in this application for a construction permit are true, correct and complete to the best of my knowledge and belief. Further, I agree to maintain and operate the pollution control source and pollution control facilities in such a manner as to comply with the provision of Chapter 403, Florida Statutes, and all the rules and regulations of the department and revisions thereof. I also understand that a permit, if granted by the department, will be non-transferable and I will promptly notify the department upon sale or legal transfer of the permitted establishment.

*Attach letter of authorization

Signed: James R. Kolanek

James R. Kolanek Manager, Environmental Services
Name and Title (Please Type)

Date: 8-24-87 Telephone No. 305-724-7467

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

This is to certify that the engineering features of this pollution control project have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that

[1] See Florida Administrative Code Rule 17-2.100(57) and (104)

the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signed Chester C Bach

Chet Bach
Name (Please Type)

Harris Semiconductor
Company Name (Please Type)

P.O. Box 883, Melbourne, FL 32901
Mailing Address (Please Type)

Chester C Bach 8/25/87

Florida Registration No. 19110 Date: 8/25/87 Telephone No. 305-724-7324

SECTION II: GENERAL PROJECT INFORMATION

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in aource performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

Semiconductor will be utilizing an Industrial Grade Water System to provide water for the DeionizedWater Plants in Buildings 52 and 59. The system includes a vacuum degasifier to remove H_2S and CO_2 from the Raw Well water. The removed gases will be flared to oxidize the products and control H_2S emissions. (See Attachment A)

B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction 12/87 Completion of Construction 1/89

C. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

One (1) self-supported Flare Stack; One (1) Model EEF-U-2 flare tip; One (1) manual weatherproof pilot ignition panel: $6,000.00

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

None

E. Requested permitted equipment operating time: hrs/day 24 ; days/wk 7 ; wks/yr 52 ;

if power plant, hrs/yr _____; if seasonal, describe: _____

F. If this is a new source or major modification, answer the following questions. (Yes or No)

1. Is this source in a non-attainment area for a particular pollutant? No

   a. If yes, has "offset" been applied? _____

   b. If yes, has "Lowest Achievable Emission Rate" been applied? _____

   c. If yes, list non-attainment pollutants. _____

2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. No

3. Does the State "Prevention of Significant Deterioriation" (PSD) requirement apply to this source? If yes, see Sections VI and VII. No

4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? No

5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? No

H. Do "Reasonably Available Control Technology" (RACT) requirements apply to this source? No

   a. If yes, for what pollutants? _____

   b. If yes, in addition to the information required in this form, any information requested in Rule 17-2.650 must be submitted.

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

A. Raw Materials and Chemicals Used in your Process, if applicable:

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): 1200 lb/hr of CO_2; 90 lb/hr of H_2S

2. Product Weight (lbs/hr): _____

C. Airborne Contaminants Emitted: (Information in this table must be submitted for each emission point, use additional sheets as necessary)

Name of Contaminant	Emission[1]		Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission lbs/hr	Potential[4] Emission		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/yr	T/yr	
SO_2	7.059	27.61	Model No.		61836.84	27.61	
H_2S	0.05625	0.220			32,850	14.67	
CO_2	0.75	2.933			438,000	195.54	

[1]See Section V, Item 2.

[2]Reference applicable emission standards and units (e.g. Rule 17-2.600(5)(b)2. Table II, E. (1) - 0.1 pounds per million BTU heat input)

[3]Calculated from operating rate and applicable standard.

[4]Emission, if source operated without control (See Section V, Item 3).

D. Control Devices: (See Section V, Item 4)

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles Size Collected (in microns) (If applicable)	Basis for Efficiency (Section V Item 5)
Self-supported flare Stack (John Zink Co.)	H_2S	98.5%	N/A	See Attachment B
w/Model EEF-U-2 Flare tip (John Zink Co.)	CO_2	98.5%	N/A	"
and Manual/Weatherproof pilot ignition panel				

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
propane (pilot)	43 SCFH		108624.32 BTU/hr
propane (enrichment)	21.37 SCFH		53977.5 BTU/hr

*Units: Natural Gas--MMCF/hr; Fuel Oils--gallons/hr; Coal, wood, refuse, other--lbs/hr.

Fuel Analysis:

Percent Sulfur: 0 Percent Ash: 0

Density: 1.8324×10^{-3} g/m^3 lbs/gal Typical Percent Nitrogen: 0

Heat Capacity: 21,591 BTU/lb ~~If gaseous fuel include BTU/ft^3 and air to fuel ratio for scrubber include~~ BTU/gal

Other Fuel Contaminants (which may cause air pollution): _____

F. If applicable, indicate the percent of fuel used for space heating. N/A

Annual Average _____ Maximum _____

G. Indicate liquid or solid wastes generated and method of disposal.

N/A

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):

Stack Height: 20' ft. Stack Diameter: 6" ft.

Gas Flow Rate: 7.985 ACFM 7.985 DSCFM Gas Exit Temperature: 75 °F.

Water Vapor Content: _____ % Velocity: 5.712 FPS

SECTION IV: INCINERATOR INFORMATION

Type of Waste	Type 0 (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq.& Gas By-prod.)	Type VI (Solid By-prod.)
Actual lb/hr Incinerated							
Uncontrolled (lbs/hr)							

Description of Waste _____

Total Weight Incinerated (lbs/hr) _____ Design Capacity (lbs/hr) _____

Approximate Number of Hours of Operation per day _____ day/wk _____ wks/yr. _____

Manufacturer _____

Date Constructed _____ Model No. _____

	Volume $(ft)^3$	Heat Release (BTU/hr)	Fuel		Temperature (°F)
			Type	BTU/hr	
Primary Chamber					
Secondary Chamber					

Stack Height: _____ ft. Stack Diamter: _____ Stack Temp. _____

Gas Flow Rate: _____ ACFM _____ DSCFM* Velocity: _____ FPS

*If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air.

Type of pollution control device: [ ] Cyclone [ ] Wet Scrubber [ ] Afterburner

[ ] Other (specify) _____

Brief description of operating characteristics of control devices: _____

Ultimate disposal of any effluent other than that emitted from the stack (scrubber water, ash, etc.):

NOTE: Items 2, 3, 4, 6, 7, 8, and 10 in Section V must be included where applicable.

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

1. Total process input rate and product weight -- show derivation [Rule 17-2.100(127)]

2. To a construction application, attach basis of emission estimate (e.g., design calculations, design drawings, pertinent manufacturer's test data, etc.) and attach proposed methods (e.g., FR Part 60 Methods 1, 2, 3, 4, 5) to show proof of compliance with applicable standards. To an operation application, attach test results or methods used to show proof of compliance. Information provided when applying for an operation permit from a construction permit shall be indicative of the time at which the test was made.

3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test).

4. With construction permit application, include design details for all air pollution control systems (e.g., for baghouse include cloth to air ratio; for scrubber include cross-section sketch, design pressure drop, etc.)

5. With construction permit application, attach derivation of control device(s) efficiency. Include test or design data. Items 2, 3 and 5 should be consistent: actual emissions = potential (1-efficiency).

6. An 8 1/2" x 11" flow diagram which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate where raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particles are evolved and where finished products are obtained.

7. An 8 1/2" x 11" plot plan showing the location of the establishment, and points of airborne emissions, in relation to the surrounding area, residences and other permanent structures and roadways (Example: Copy of relevant portion of USGS topographic map).

8. An 8 1/2" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.

9. The appropriate application fee in accordance with Rule 17-4.05. The check should be made payable to the Department of Environmental Regulation.

10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit.

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?

[ ] Yes [ ] No

Contaminant	Rate or Concentration

B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy)

[ ] Yes [ ] No

Contaminant	Rate or Concentration

C. What emission levels do you propose as best availsble control technology?

Contaminant	Rate or Concentration

D. Describe the existing control and treatment technology (if any).

1. Control Device/System:
2. Operating Principles:
3. Efficiency:*
4. Capital Costs:

*Explain method of determining

5. Useful Life:

6. Operating Costs:

7. Energy:

8. Maintenance Cost:

9. Emissions:

Contaminant	Rate or Concentration

10. Stack Parameters

a. Height: ft.

b. Diameter: ft.

c. Flow Rate: ACFM

d. Temperature: °F.

e. Velocity: FPS

E. Describe the control and treatment technology available (As many types as applicable, use additional pages if necessary).

1.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

2.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

[1]Explain method of determining efficiency.
[2]Energy to be reported in units of electrical power - KWH design rate.

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

3.

a. Control Device:

b. Operating Principlee:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

4.

a. Control Device:

b. Operating Principlea:

c. Efficiency:[1]

d. Capital Costs:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

F. Describe the control technology selected:

1. Control Device:

2. Efficiency:[1]

3. Capital Cost:

4. Useful Life:

5. Operating Cost:

6. Energy:[2]

7. Maintenance Cost:

8. Manufacturer:

9. Other locations where employed on similar processes:

a. (1) Company:

(2) Mailing Address:

(3) City:

(4) State:

[1] Explain method of determining efficiency.
[2] Energy to be reported in units of electrical power - KWH design rate.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

b. (1) Company:

(2) Mailing Address:

(3) City: (4) State:

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

10. Reason for selection and description of systems:

[1]Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

SECTION VII - PREVENTION OF SIGNIFICANT DETERIORATION

A. Company Monitored Data

1. _____no. sites _____ TSP _____( ) SO^{2}* _____ Wind spd/dir

Period of Monitoring ____/____/____ to ____/____/____
month day year month day year

Other data recorded _____

Attach all data or statistical summaries to this application.

*Specify bubbler (B) or continuous (C).

2. Instrumentation, Field and Laboratory

a. Was instrumentation EPA referenced or its equivalent? [ ] Yes [ ] No

b. Was instrumentation calibrated in accordance with Department procedures?

[ ] Yes [ ] No [ ] Unknown

B. Meteorological Data Used for Air Quality Modeling

1. _____ Year(s) of data from _____/_____/_____ to _____/_____/_____
month day year month day year

2. Surface data obtained from (location)_____

3. Upper air (mixing height) data obtained from (location)_____

4. Stability wind rose (STAR) data obtained from (location)_____

C. Computer Models Used

1. _____ Modified? If yes, attach description.

2. _____ Modified? If yes, attach description.

3. _____ Modified? If yes, attach description.

4. _____ Modified? If yes, attach description.

Attach copies of all final model runs showing input data, receptor locations, and principle output tables.

D. Applicants Maximum Allowable Emission Data

Pollutant	Emission Rate
TSP	_____ grams/sec
SO_2	_____ grams/sec

E. Emission Data Used in Modeling

Attach list of emission sources. Emission data required is source name, description of point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time.

F. Attach all other information supportive to the PSD review.

G. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources.

H. Attach scientific, engineering, and technical material, reports, publications, journals, and other competent relevant information describing the theory and application of the requested best available control technology.

ATTACHMENT A

Flow diagram dwg. P-1 illustrates the Industrial Grade water system that Harris Semiconductor will be employing. The purpose of the operation is to produce industrial water for use in Buildings 52 and 59 Deionized (DI) plants. Initial design criteria is based on a 600 GPM water flow rate.

Floridian aquifer water will be drawn from two existing 1140 gpm wells and will be conveyed via a pipe rack to the facility. The system will be located between waste treatment plant and Building 58, as illustrated in Dwg. C-2.

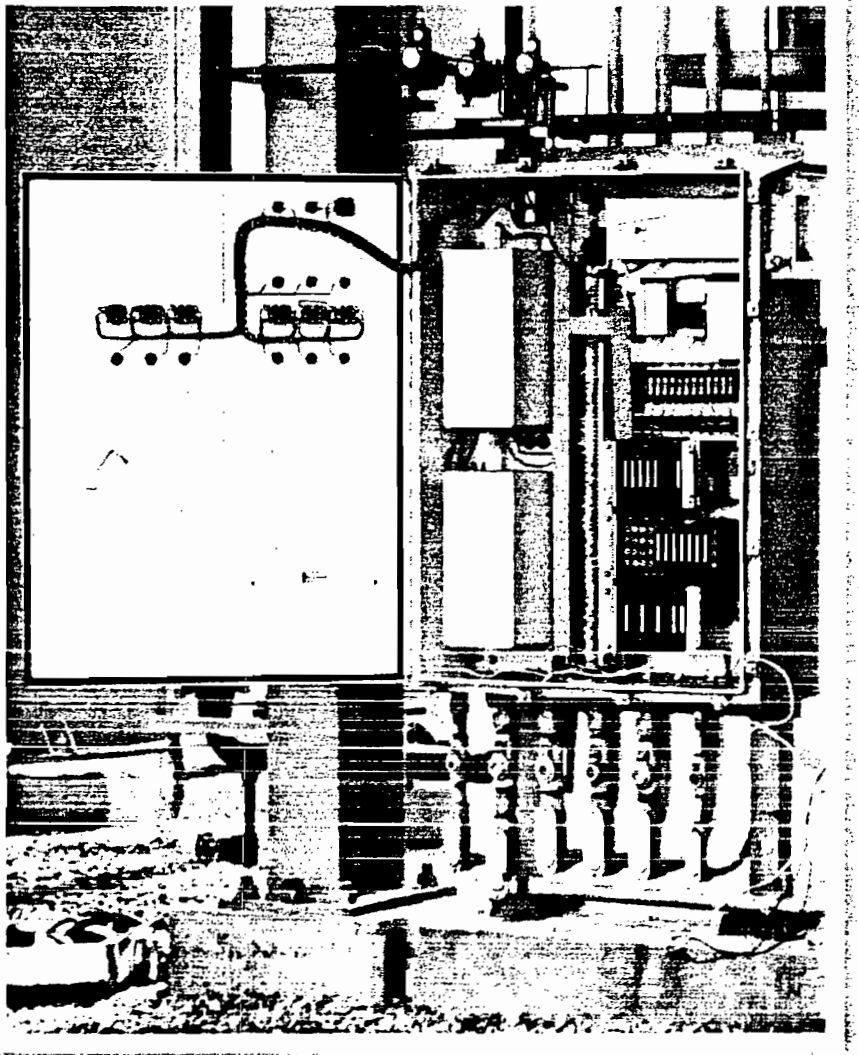
Following chemical treatment to reduce scaling and corrosive properties, the water will be filtered and pumped into the reverse osmosis (RO) membranes. A minimum of 75% of this water will pass through the membranes as purified water and will be treated in one of two vacuum degasifiers to remove hydrogen sulfide and carbon dioxide gases. The gas streams from the degasification process will be sent to a flare system to oxidize the hydrogen sulfide. The RO reject water will go to the deep well disposal system.

ATTACHMENT B

HARRIS SEMICONDUCTOR

CONTROL EQUIPMENT

JOHN ZINK COMPANY



FLARE SYSTEM CONTROLS

John Zink Company, the world's largest manufacturer of flare systems, offers complete flare control packages. Flare controls by John Zink ensure sole source compatibility and single point responsibility. John Zink's experience with thousands of flare systems ensures a well designed and proven control system.

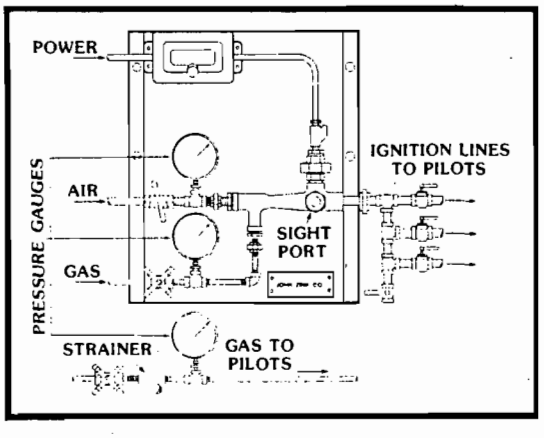
Pilot Ignition Systems

The single most important piece of control equipment in the flare system is the pilot ignition system. Safety of the entire plant depends upon proper operation of the ignition system. Each John Zink pilot ignition system offers the following features:

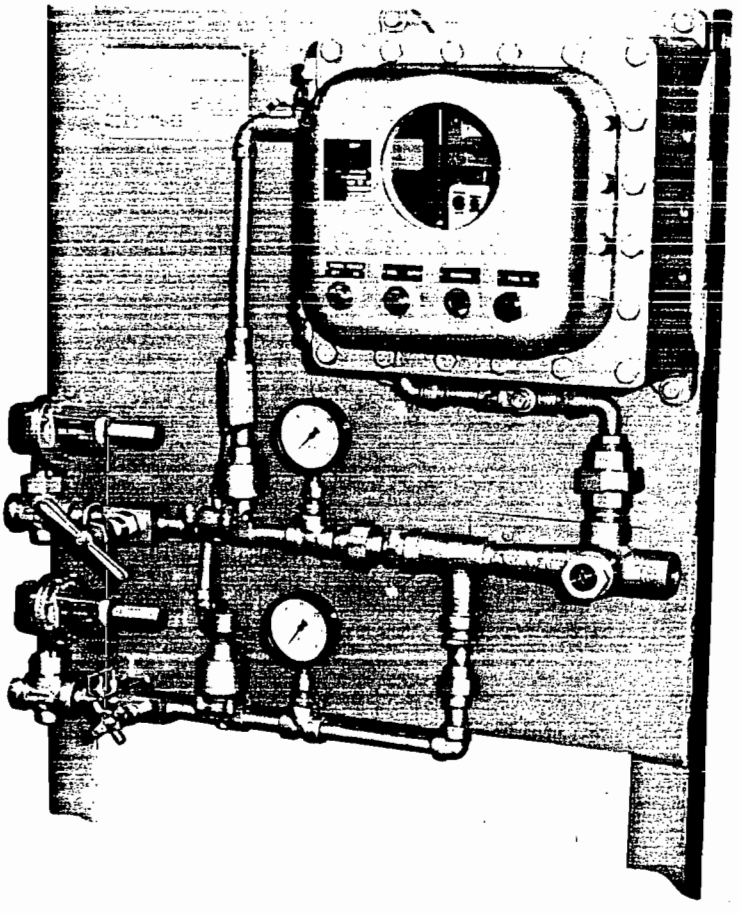
- All control components are easily accessible at grade
- Proven reliable ignition
- Complete shop testing prior to shipment
- All systems are designed to meet the required electrical area classifications

The following models are indicative of the variety of ignition systems available from John Zink:

Manual FFG (Flame Front Generator)
The industry standard for ignition of flare systems for over 30 years, the Manual FFG provides simple, reliable ignition where compressed air is available.



Automatic FFG (Flame Front Generator)
An additional level of safety is obtained by constant monitoring of the flare pilot. In the rare event of pilot failure, automatic reignition of the flare pilot is available with this packaged ignition system. This system features solid state controls reliable monitoring and automatic reignition.



Self Inspirating FFG (Automatic or Manual)
In the event compressed air is not available, the self inspirating ignition system utilizes fuel gas to inspirate air into a venturi mixer on the ignition line. This gas/air mixture is ignited and travels through the ignition line to light the pilot.

Pilot Monitoring

John Zink offers PilotEye, a unique dual-waveband infrared monitor. Mounted up to 1,000 feet away, the unit monitors the flare tip and signals in case of pilot flame-out. Simple installation requires no flare shut-down. Conventional thermocouple monitors and alarm packages are also available.

Special Ignition Systems

In areas where no electricity is available, battery powered or piezoelectric ignition systems can be provided.

In addition to ignition systems, other control systems are necessary for proper flare operation. These control systems include:

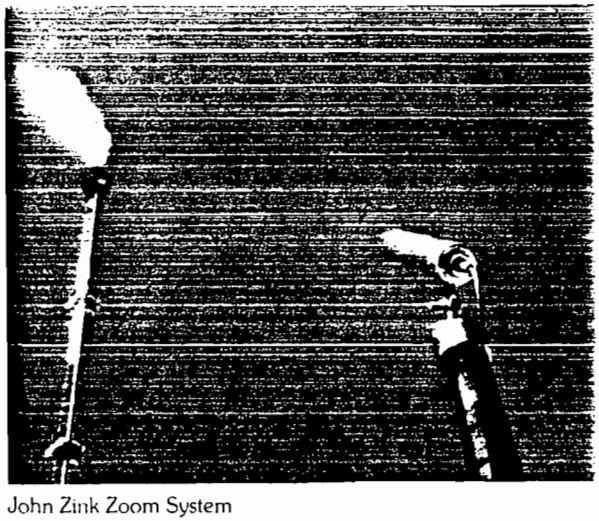
Purge Controls

Purge controls for molecular seals and airrestors can be provided to ensure proper flow of purge gas to the flare system and prevent air ingression into the flare header.

In the event high temperature purge gases are vented, John Zink can provide a patented *Tempurge system.* This system monitors pressure and temperature in the flare line and injects the proper amount of additional purge gas necessary to prevent the formation of a vacuum as the waste gases cool.

Steam Controls

John Zink offers a complete steam control package including steam control valves, restriction orifices, block valves, gauges and controllers all coordinated around and designed for use with the John Zink Zoom System.



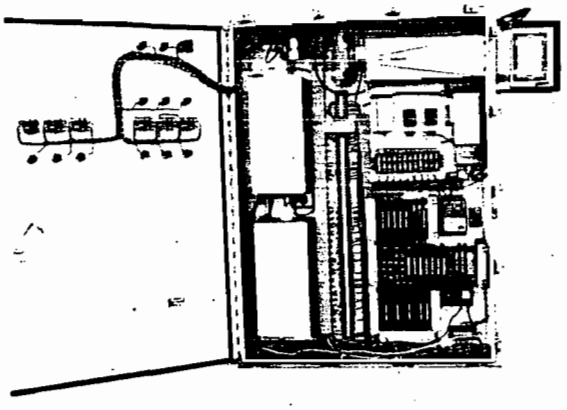
John Zink Zoom System

Details of this system are available in the John Zink Zoom System bulletin.

Special Flare Controls

John Zink special flare controls include:

- Patented staging controls
- Knock out and liquid seal drum controls including:
  - Level controls
  - Gauge glasses
  - Condensate pumps
  - Alarms
  - Temperature controls
  - Control valves

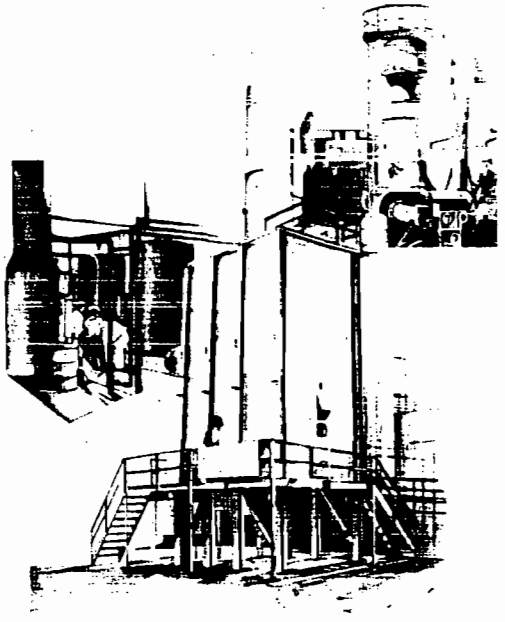


Staging Control Panel

- Blower controls for air assisted flares and other applications.

Typical Liquid Seal 'Knockout Drum Controls

- Explosion prevention systems for gases such as Hydrogen, Ethylene Oxide, Carbon disulfide, Acetylene and other explosive gases.
- Flame extinguishing systems
- Steam desuperheaters
- Skidded, assembled, completely prepiped control packages for flaring wastes



Rely on John Zink for:
- Flares
- Burners
- Packaged Burners
- Resource Recovery
- Incinerators
- Heat Recovery
- Heating & Air Conditioning and Associated Equipment

JOHN ZINK COMPANY

International Headquarters
4401 South Peoria
P.O. Box 702220
Tulsa, Oklahoma 74170
(918) 747-1371

Other offices are located in major cities around the world.

World's Largest Manufacturer of Flare Systems

Brochure 5022

EEF Series Flares

The EEF Series Flares are the latest development in flaring technology from the John Zink Company. More than half a century of combustion expertise has been incorporated with the latest technological advances and a stringent testing program to provide you with a dependable, efficient flaring system at substantially lower operating costs.

Normally, plant wastes are supplied to the flare system through safety relief valves. With this unpredictable source of waste, the only acceptable means of ignition is a continuously burning pilot. With today's high energy costs, utilities for a continuously burning pilot represent a substantial operating expenditure. John Zink has developed the EEF series flares, which reduce pilot gas consumption by as much as 80%.

Flare burner stability is accomplished with a combination of the flare pilot and a Flame Stability Tip. John Zink has developed a state of the art Flame Stability Tip for use specifically with the lower energy pilots of the EEF Series Flares. With smaller pilot capacities, the Flame Stability Tip assumes a critical role in the overall combustion stability of the flare.

The metallurgical selection for the EEF Series Flares is based upon actual field experience and continuing research and development efforts to ensure optimum design at lower costs.

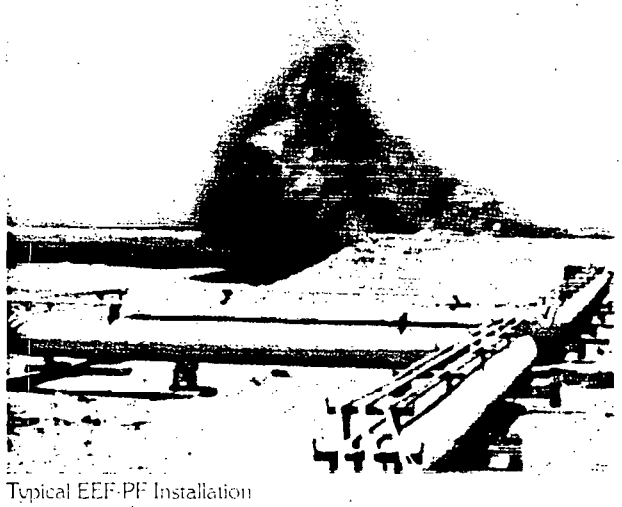
The following series of EEF flares will have an attractive pay back when considered for your next turnaround or in new plant construction. The nomograph on the back cover will help you estimate your energy savings.

EEF-U

The EEF-U is an excellent choice in services which do not require smokeless operation or where waste gases will not smoke. Where service conditions warrant, a very high temperature refractory, secured with a special stainless steel anchoring system and reinforced with high alloy needles, is installed.

EEF-PF

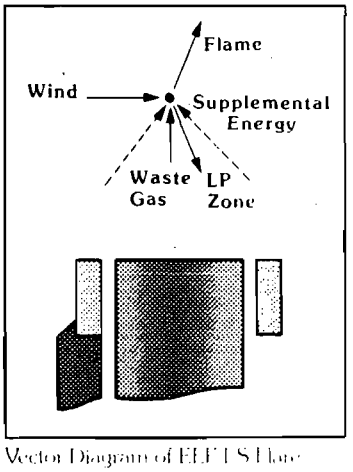
The EEF-PF flare is specifically designed for horizontal firing in a pit where two phase flow will exist. Proper installation of the PF flare and the pit design are critical to flare life. John Zink Company has the experience and the expertise to assist you with the necessary engineering to ensure proper operation.



Typical EEF-PF Installation

EEF-LS

John Zink has developed a special EEF-LS Flare which extends flare life.



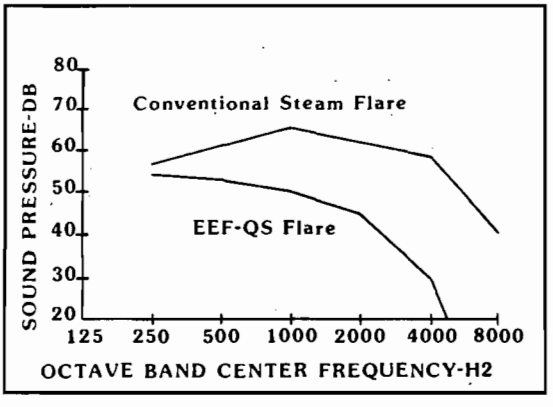
Vector Diagram of EEF-LS Flare

The EEF-LS design uses energy from a secondary source to overcome wind effects and move the flame away from the flare thus eliminating wind influenced flare damage. This flare can be utilized in a horizontal or vertical position.

The EEF-LS Flare effectively increases flare service life, reduces down time and cuts maintenance and replacement costs.

EEF-QS

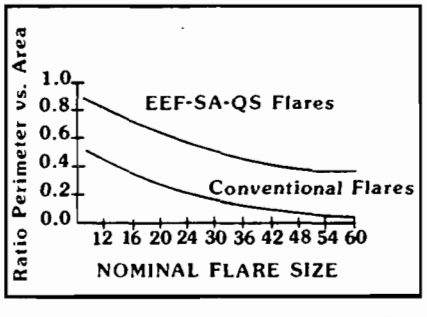
The EEF-QS Series Flares reduce noise levels up to one half that of conventional steam assisted smokeless flares. When smokeless flaring is required, the traditional solution has been steam injection. One of the most persistent problems with steam injection is the associated noise. The EEF-QS utilizes the well proven noise abatement effect of increased shear to flow area as depicted in the accompanying graph.



EEF-SA-QS

The EEF-SA-QS offers the maximum possible steam efficiency in a single point flare with the lowest possible noise levels and the highest smokeless flow rates available. During normal operation, noise levels may be 1/8 those of conventional steam flares.

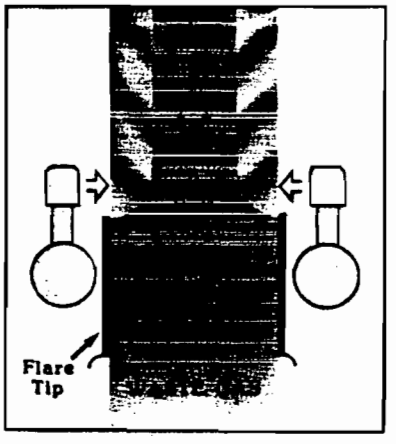
The perimeter of the flare, which is the site of air and steam injection, increases linearly with the diameter, simultaneously, the waste flow area increases as a squared function of the diameter. The net effect is a squared increase in the flow and a linear increase in the air and steam availability.

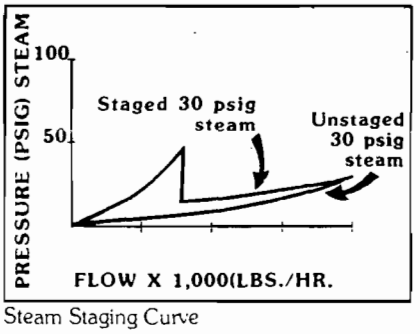


The EEF-SA-QS produces an artificial increase in the critical perimeter to area ratio by a multiplicity of steam/air injection points internally and externally.

EEF-SS

The EEF-SS Flare is designed to utilize low cost, low pressure steam. Traditionally, the use of this low pressure steam has resulted in poor steam efficiency at turndown. This phenomenon can be demonstrated by the adjacent diagram. In order to produce smokeless operation, it is necessary to completely mix the waste gas, steam and air. Low pressure steam at turndown does not have sufficient energy, in a traditional flare, to penetrate the waste. This results in an unnecessarily high steam usage at turndown. John Zink's concept of staged steam flaring produces a higher penetration of steam and air over the entire operating range.





Steam Staging Curve

The above steam staging curve demonstrates the improvement in energy levels. Significant cost savings can be achieved through the use of low pressure steam in the EEF-SS flare.

The new series of EEF flares has many advantages for your facility including:

- Lower utility costs
- Improved efficiency
- Lower steam noise levels
- Increased flare burner life

NOMOGRAPH SHOWING SAVINGS FOR EEF FLARE

INSTRUCTIONS FOR NOMOGRAPH:

1. Calculate difference of Energy Index.
2. Locate energy index difference on scale labeled Energy Index Scale.
3. Locate fuel cost in $/mmBTU on scale labeled Fuel Cost ($/mmBTU).
4. Use a straight edge to connect these two points.
5. Read yearly savings on center scale in $/yr.

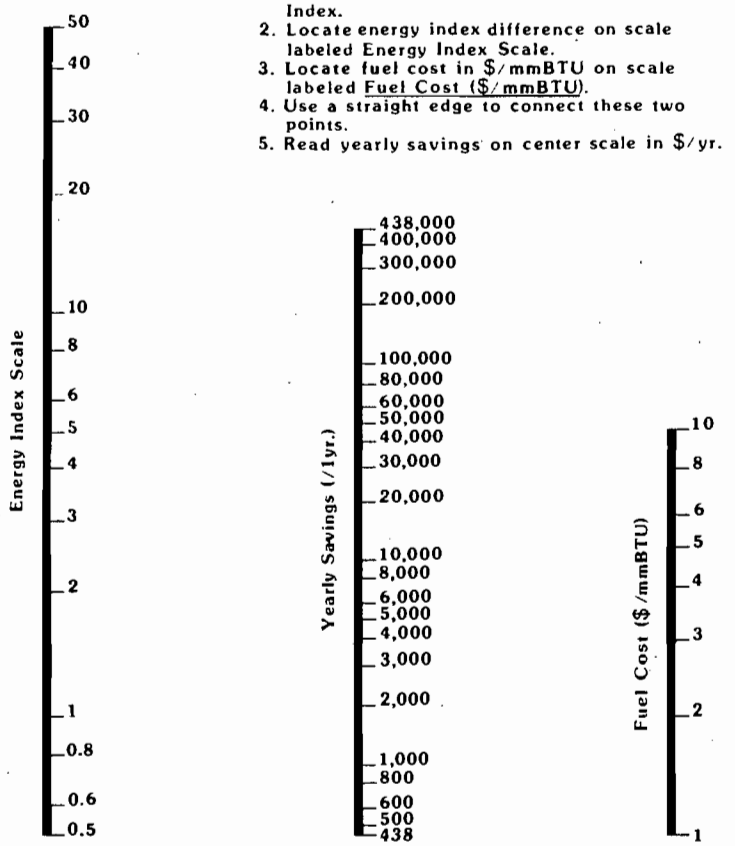


TABLE OF TYPICAL ENERGY INDEX OF EEF FLARES VS. IN USE FLARES

FLARE TIP SIZE	EEF FLARE	TYPICAL EXISTING FLARE
8"	1	7
12"	1	10.5
18"	2	10.5
24"	3	10.5
36"	3	14
48"	3	14
60"	3	14

UTILITY STYLE FLARE BURNER

DATA SHEET

1. CUSTOMER:			REFERENCE NO.:
2. PLANT LOCATION:			PROPOSAL NO.:
3. MODEL: EEF-U- **2**		ENGINEER:	DATE:
4. OVERALL LENGTH 10'-1"		NO. OF PILOTS 1	
5. FIRING POSITION: VERTICAL			TYPE OF PILOTS: EEP FUEL
6. DESIGN CONDITION			FUEL CONSUMPTION **43** SCFH
7. FLOW RATE:	MW:	SP. GR.	THERMOCOUPLE: No. Required
8. PRESS. DROP @ DESIGN:			Type: K (Chromel-Alumel)

9.	
10. MATERIAL OF CONSTRUCTION	
11. SECTION	MATERIAL
12. Flame Retention Ring	310 or equal
13. Upper Sect. FRR to 4'-0"	304 SS
14. Lower Sect. 4'-0" to 10'-1"	C. Stl.
15. Flange	A-105
16. Pilot(s)	309 SS
17.	
18. WELDING PROCEDURES: AWS	
19.	
20.	
21. FINISH: High temperature aluminum on carbon steel	
22.	

23.	NOZZLE	NO.	SIZE IN.	TYPE
24.	Inlet	N1	**2**	ANSI 150# RF
25.	Pilot	C4	3/4	Plain End
26.	Ignitor	C5	1	Plain End

27.

28.

29. REMARKS

30.

31.

32.

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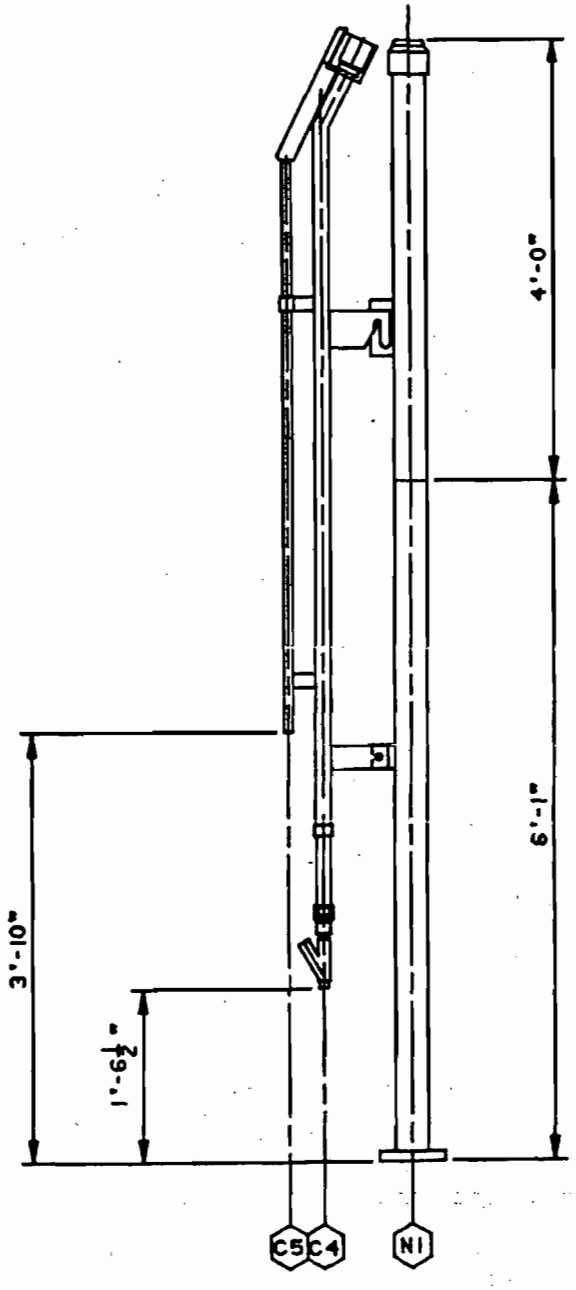


ATTACHMENT C

HARRIS SEMICONDUCTOR

MANUFACTURER TEST DATA

ATTACHMENT 3.

JOHN ZINK COMPANY

ALLEGHENY INTERNATIONAL

4401 South Peoria Avenue
P.O. Box 702220
Tulsa, Oklahoma 74170
918/747-1371 Telex 497414

July 17, 1987

Harris Corporation
P. O. Box 883
Melbourne, FL 32901

Attention: Nancy Bardisserotto
Mail Stop 58-55

Reference: Flare Efficiency Study
John Zink File F609-031DL

Dear Ms. Bardisserotto:

Pursuant to your recent request, attached find a report on a flare efficiency study performed by Engineering-Science. The study was sponsored by the U.S. Environmental Protection Agency and the Chemical Manufacturers Association and took place at the John Zink International Research Center in Tulsa, Oklahoma using John Zink Flare Equipment.

You will notice on page 1-4 of the report that the combustion efficiency of the gases with a low heating value averages approximately 99.0%. We would expect the same efficiency for your application.

The attached is a condensed version of the 123 page full report which may be obtained from Chemical Manufacturers Association, 2501 M. Street N.W., Washington, D.C. 20037. If you have any questions, or require further information, please do not hesitate to contact us.

Sincerely,

JOHN ZINK COMPANY

Brian Duck

Brian Duck

A REPORT ON

A

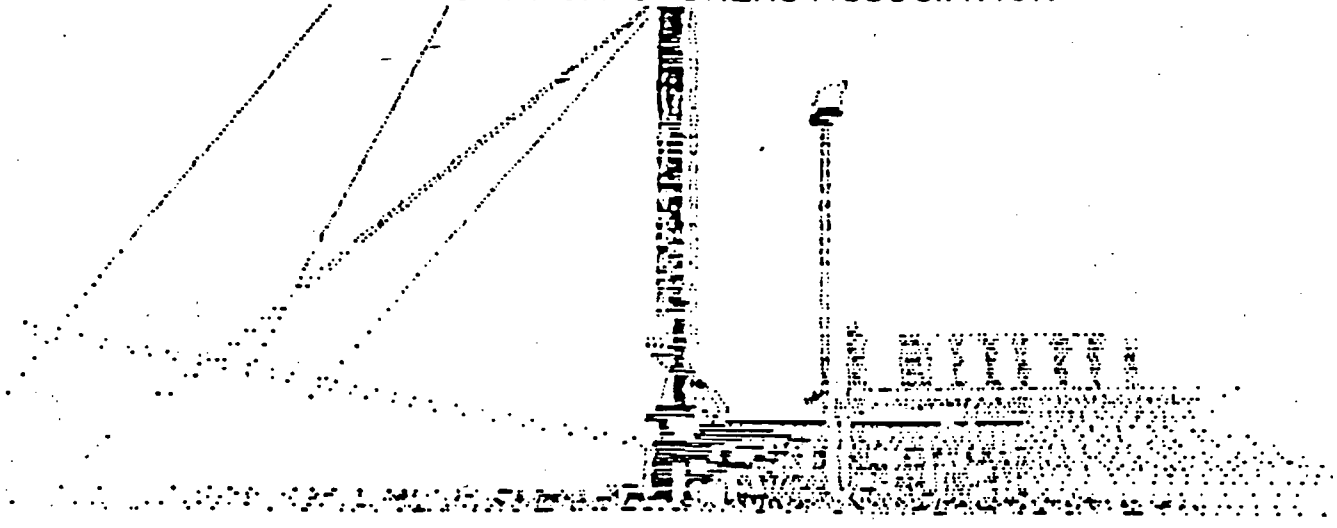
FLARE EFFICIENCY STUDY

VOLUME I

FOR

CMA

CHEMICAL MANUFACTURERS ASSOCIATION



PREPARED BY

ENGINEERING-SCIENCE

DESIGN • RESEARCH • PLANNING

3109 NORTH INTERREGIONAL AUSTIN, TEXAS 78722 • 512/477-9901

OFFICES IN PRINCIPAL CITIES

A REPORT ON A

FLARE EFFICIENCY STUDY

VOLUME I

Prepared for

CHEMICAL MANUFACTURERS ASSOCIATION
Washington, D.C.

September 1982

Prepared by:

Engineering-Science
Austin, Texas

CHAPTER 1

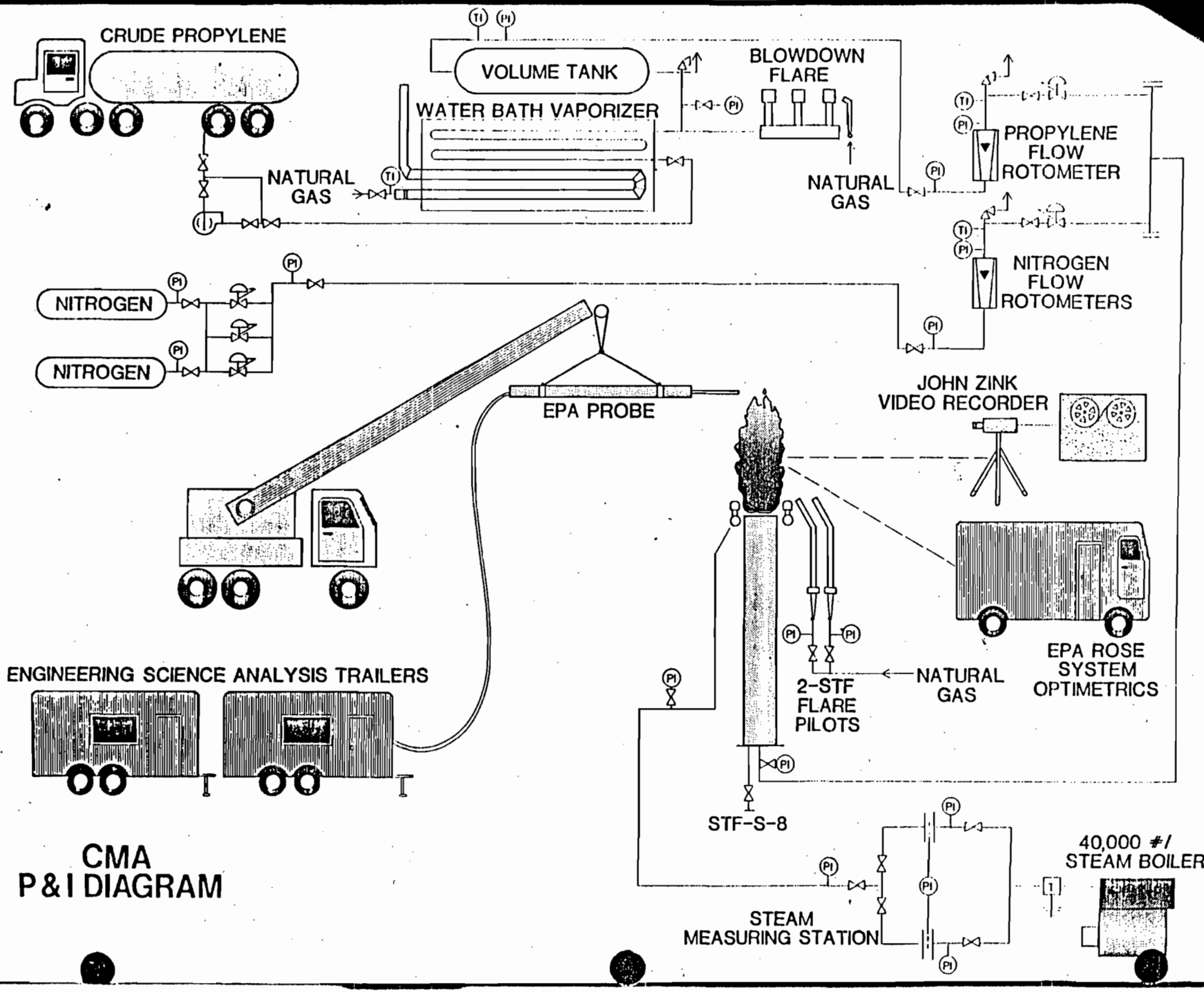
EXECUTIVE SUMMARY

PROJECT OVERVIEW

This document is a report on an experimental study to determine the efficiencies of flare burners as devices for the disposal of hydrocarbon emissions from refinery and petrochemical processes. The primary objectives of this study were to determine the combustion efficiency and hydrocarbon destruction efficiency for both air- and steam-assisted flares under a wide range of operating conditions. The test results indicate that flaring is generally an efficient means of hydrocarbon disposal.

Separate elements of this flare efficiency study were sponsored by the U.S. Environmental Protection Agency (EPA) and the Chemical Manufacturers Association (CMA). Other project participants included John Zink Company who provided the flares, test facility and flare operation, and Optimetrics, Inc. who operated the EPA's Remote Optical Sensing of Emissions (ROSE) system. Engineering-Science, Inc. operated the extractive flare sampling and analysis systems.

Figure 1.1 is an overview of the equipment used to operate and test the flares. The test methodology utilized during the study employed a specially constructed 27-foot sample probe suspended by a crane over the flare flame. The sample extracted by the probe was analyzed by continuous emission monitors to determine concentrations of carbon dioxide (CO_2), carbon monoxide (CO), total hydrocarbons (THC), sulfur dioxide (SO_2), oxides of nitrogen (NO_x) and oxygen (O_2). In addition, the probe tip temperature, ambient air temperature and wind speed and direction were measured. Integrated samples of the flare gas were collected for hydrocarbon specie analysis by gas chromatograph. Particulate matter samples were collected during the smoking flare tests. Sulfur was used as a tracer material in an effort to determine the dilution of the flare gas between the flare burner and the sampling probe location. However, the implementation of this untried sulfur balance method for determining dilution ratios encountered several difficulties. An alternate method of



CMA P&I DIAGRAM

determining dilution ratios using the CO_2 concentration data was substituted for the sulfur balance method.

The rigorous test program included flare testing under thirty-three different operating conditions during a three-week period in June 1982. Test variables included Btu content of the flare gas (propylene diluted with nitrogen), flare gas flow rates, steam flow rates and air flow rates. The range of flare gas heating values was 80 to 2,183 Btu/scf. Steam-to-flare gas ratios varied from 0:1 to 123:1. When the flares were operated under conditions which were representative of industrial operating practices, the combustion efficiencies at the sampling probe were determined to be greater than 98%. Combustion efficiencies were observed to decline under conditions of excessive steam (steam quenching) and high flow rates of low Btu gases. Table 1.1 summarizes the results of the thirty-three flare efficiency tests.

CONCLUSIONS AND OBSERVATIONS

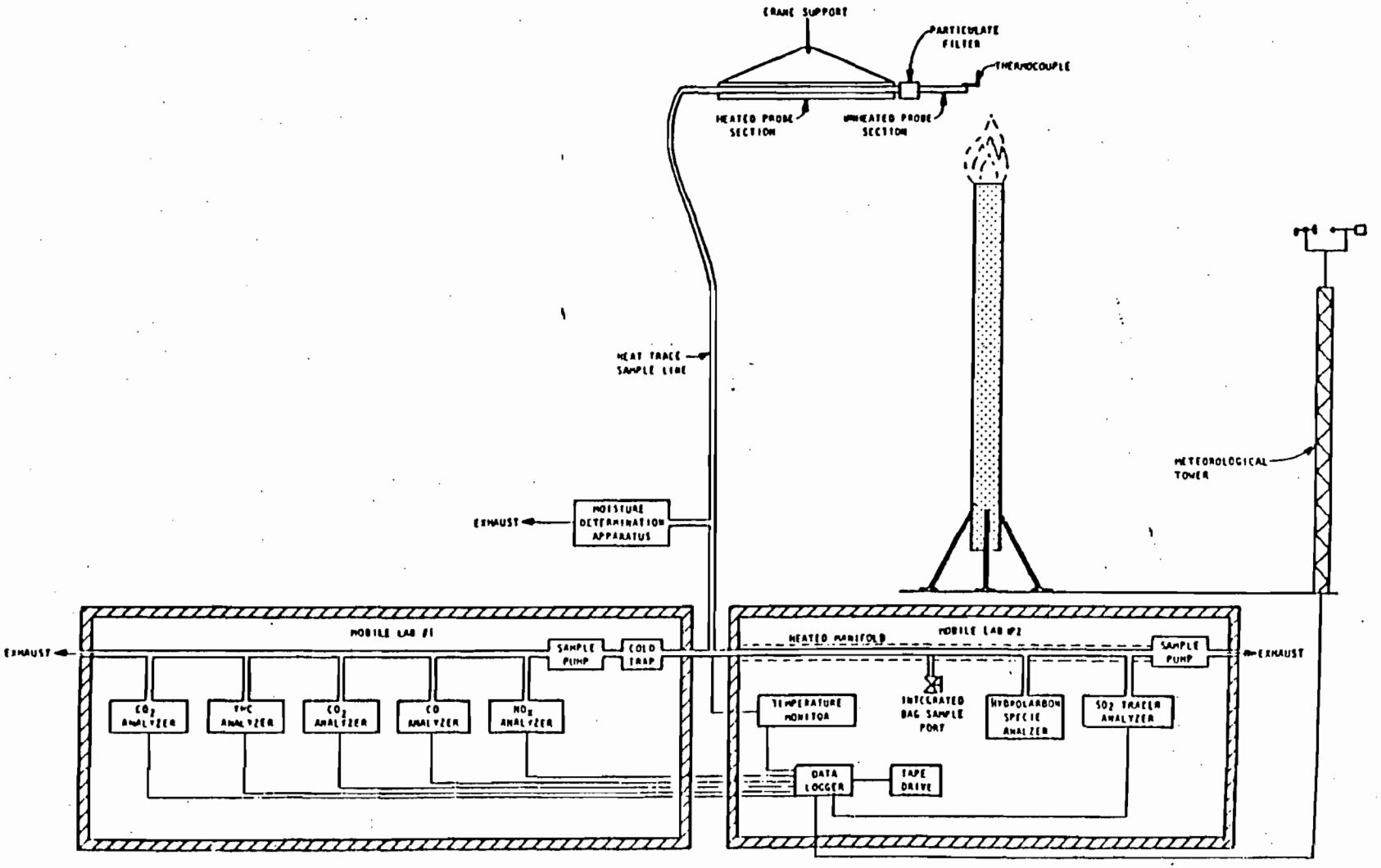
- Flares are generally an efficient means of hydrocarbon disposal over a wide range of operating conditions.
- Excess steam may contribute to lower combustion efficiencies.
- Flaring high volumes of low heating value gases may result in lower combustion efficiencies.
- Smoking flares do not necessarily indicate inefficient combustion.
- Although the use of sulfur as a tracer material shows promise, further development of the techniques are required.
- When the flares were operated under conditions that represent typical industrial operations, the combustion efficiencies observed at the sampling probe were equal to or greater than those commonly found in ambient air.

TABLE 1.1

FLARE EFFICIENCY TEST RESULTS

Test Number	Flare Gas Flow (SCFM)	Flare Gas Heating Value (Btu/SCF)	Steam-to-Flare Gas Ratio (Lb/Lb)	Combustion Efficiency (%)	Comments
STEAM-ASSISTED FLARE TESTS					
2	464	2183	0.508	99.82	
3	456	2183	0.448	99.82	Incipient smoking flare
1	473	2183	0.688	99.96	
5	149	2183	1.56	99.94	
67	148	2183	0.725	--	Sampling probe in flare flame
7	154	2183	0.757	99.84	Incipient smoking flare
17	24.5	2183	0.926	99.84	
50	24.4	2183	3.07	99.45	
51	325	309	0.168	98.66	
23	0.494	267	--	100.01	
52	0.556	268	77.5	98.82	
53	0.356	209	123	99.40	
54	0.356	209	--	99.90	
4	283	2183	--	99.80	Smoking flare
8	157	2183	--	98.81	Smoking flare
55	24.7	2183	6.86	68.95	Steam-quenched flare
56	24.5	2183	3.45	99.70	
11a	660	305	--	99.79	
11b	599	342	--	99.86	
11c	556	364	--	99.82	
57	703	294	0.150	99.90	
16a	320	339	--	99.73	No smoke
16b	252	408	--	99.75	No smoke
16c	194	519	--	99.74	Incipient smoking flare
16d	159	634	--	99.78	Smoking flare
59a	591	192	--	97.95	
59b	496	232	--	99.33	
60	334	298	--	98.92	
61	25.0	2183	5.67	82.18	Steam-quenched flame
AIR-ASSISTED FLARE TESTS					
28	157	2183	--	99.94	
31	22.7	2183	--	99.17	
26a	481.6	2183	--	100.00	
26b	481.6	2183	--	99.95	
66	639	158	--	61.94	Detached flame observed
29a	510	168	--	54.13	Detached flame; no air assistance
29b	392	146	--	64.03	Detached flame; with air assistanc
33	0.714	83	--	98.24	
32a	0.556	294	--	98.94	
32b	0.537	228	--	98.82	
62	217	153	--	94.18	Flame slightly detached
64	249	282	--	99.74	
63	121	289	--	99.37	
65	159	2183	--	99.57	Smoking flare; no air assistance

FLARE SAMPLING AND ANALYSIS SYSTEM



ATTACHMENT C

HARRIS SEMICONDUCTOR

CURRENT AIR PERMITS

CURRENT AIR PERMITS--HARRIS SEMICONDUCTOR--AUGUST 21, 1987

PERMIT NO.	SCRUB #	ISSUED	EXPIRES
AC 05-104512	F63S02	01/15/86	06/30/86
AC 05-104513	F62S02	01/15/86	06/30/86
AC 05-104515	F59S03	01/15/86	06/30/86
AC 05-104519	F61S01	01/15/86	06/30/86
AC 05-104521	F58S01	01/15/86	06/30/86
AC 05-104522	F57S01	01/15/86	06/30/86
AC 05-104523	F55S01	01/15/86	06/30/86
AC 05-104524	F04S03	01/15/86	06/30/86
AC 05-104525	F04S01	01/15/86	06/30/86
AC 05-104527	F58S02	01/15/86	06/30/86
AC 05-108260	F63S03	02/28/86	06/30/86
AO 05-109845	N/A (F04S07)	11/05/85	10/30/90
AO 05-109846	N/A (F04S06)	11/05/85	10/30/90
AO 05-109850	F04S04	11/05/85	10/30/90
AO 05-109852	N/A (F04S08)	11/05/85	10/30/90
AO 05-109853	F51S02	11/05/85	10/30/90
	F51S03	11/05/85	10/30/90
AO 05-109855	F51S04	11/05/85	10/30/90
AO 05-115803	F04S02	05/20/86	05/22/91
AO 05-115804	F54S03	05/20/86	05/22/91
	F54S04	05/20/86	05/22/91
AO 05-117084	F60S01	05/20/86	05/22/91
AO 05-117085	F51S01	05/20/86	05/22/91
AO 05-121924	F59S01	09/17/86	09/14/91
AO 05-121927	F62S01	09/18/86	09/14/91
AO 05-121930	F63S01	09/16/86	09/14/91
AO 05-121934	F04S05	09/16/86	09/14/91
AO 05-121939	F61S02	09/16/86	09/14/91
AO 05-65408	F54S01	05/03/83	05/02/88
	F54S02	05/03/83	05/02/88
AO 05-71405	F51S05	09/13/83	09/12/88

ATTACHMENT D

HARRIS SEMICONDUCTOR

EMISSIONS CALCULATIONS

Calculations - Flare Permit

$$90 \frac{\text{lb } H_2S/\text{day}}{24 \text{ hr/day}} = 3.75 \text{ lb/hr } H_2S.$$

$$1200 \frac{\text{lb } CO_2/\text{day}}{24 \text{ hr/day}} = 50 \text{ lb/hr}$$

$H_2S + {}^3O_2 = SO_2 + H_2O.$
$2H_2S + 3\ O_2 = 2\ SO_2 + 2\ H_2O.$

1 mol H_2S = 34g
1 mol SO_2 = 64g

grams x (2.205×10^{-3}) = lbs

at 100% efficiency (assuming all H_2S converted:)

$$(3.75 \frac{\text{lb } H_2S}{\text{hr}}) \left(\frac{1\text{g}}{2.205 \times 10^3 \text{lb}}\right) \left(\frac{1 \text{ mol } H_2S}{34\text{g}}\right) \left(\frac{1 \text{ mol } SO_2}{1 \text{ mol } H_2S}\right) \left(\frac{64\text{g } SO_2}{1 \text{ mol } SO_2}\right)$$

= 3201.3 g/hr SO_2 emited.

$$(3201.3 \frac{\text{g}SO_2}{\text{hr}}) \left(\frac{2.205 \times 10^{-3} \text{ lb}}{1\text{g}}\right) = 7.059 \frac{\text{lbs}}{\text{hr}}$$ max rate of SO_2 emitted

$$(7.059 \frac{\text{lbs } SO_2}{\text{hr}}) \left(\frac{1 \text{ Ton}}{2.0 \times 10^3 \text{ lb}}\right) \left(\frac{24 \text{ hr}}{1 \text{ day}}\right) \left(\frac{365 \text{ day}}{\text{yr}}\right)$$

= 30.92 Ton/~~day~~ yr SO_2

H_2S: Based on 98.5% Efficiency of flare sytem:

$$(32850 \frac{\text{lbs } H_2S}{\text{year}}) (0.985) = 32357.25 \frac{\text{lbs}}{\text{yr}}$$ of H_2S converted

32850 - 32357.25 = 492.75 $\frac{\text{lbs}}{\text{yr}}$ potential H_2S emission

$$(492.75 \frac{\text{lbs}}{\text{yr}}) \left(\frac{1 \text{ yr}}{365 \text{ day}}\right) \left(\frac{1 \text{ day}}{24 \text{ hr}}\right) = 0.05625 \text{ lb/yr}$$ potential H_2S emission

$$(492.75 \frac{\text{lbs } H_2S}{\text{yr}}) \left(\frac{1 \text{ Ton}}{2.0 \times 10^3 \text{ lb}}\right) = 0.246 \text{ Ton/year}$$

CO_2 $(438.000 \frac{\text{lbs } CO_2}{\text{yr}}) (0.985) = 431430 \frac{\text{lbs } CO_2}{\text{yr}}$ removed

438.000 - 431430 = 6570 $\frac{\text{lbs } CO_2}{\text{yr}}$ potential emission

$$(6570 \frac{\text{lbs } CO_2}{\text{yr}}) \left(\frac{1 \text{ yr}}{365 \text{ day}}\right) \left(\frac{1 \text{ day}}{24 \text{ hr}}\right) = 0.75 \frac{\text{lb } CO_2}{\text{hr}}$$

$$(6570 \frac{\text{lb}}{\text{yr}}) \left(\frac{1 \text{ Ton}}{2.0 \times 10^3 \text{ lb}}\right) = 3.285 \frac{\text{Ton}}{\text{yr}} CO_2$$

Enrichment Fuels: (2.5#/hr propane) $\left(\frac{ft^3}{0.117\#}\right)$ = 21.37 SCFH

1# Propane = 21,591 BTU

Enrichment gas--> (2.5 lb/hr) $\left(\frac{21591 \text{ BTU}}{\text{lb}}\right)$ = 53977.5 BTU/hr

Pilot gas--> (43 FT^3/hr) $\left(\frac{0.117 \text{ lb}}{FT^3}\right)$ $\left(\frac{21591 \text{ BTU}}{\text{lb}}\right)$ == 108624.32 $\frac{\text{BTU}}{\text{hr}}$

C_3H_8 at STP --> (1.8324 $\frac{g}{L}$) $\left(\frac{1 \times 10^{-3} \text{ L}}{1 \text{ m}^3}\right)$ = $1.83 \times 10^{-3} \frac{g}{m^3}$

Gas Flow Rate:

$H_2S = \frac{0.0892 \text{ lb}}{ft^3}$

$$(\frac{90 \text{ lb } H_2S}{\text{day}}) \left(\frac{1 \text{ day}}{24 \text{ hr}}\right) \left(\frac{1 \text{ hr}}{60 \text{ min}}\right) \left(\frac{ft^3}{0.0892 \text{ lb}}\right) = 0.7007 \text{ CFM } H_2S$$

$CO_2 = \frac{0.1144 \text{ lb}}{ft^3}$

$$(\frac{1200 \text{ lb } CO_2}{\text{day}}) \left(\frac{1 \text{ day}}{24 \text{ hr}}\right) \left(\frac{1 \text{ hr}}{60 \text{ min}}\right) \left(\frac{ft^3}{0.1144 \text{ lb}}\right) = 7.284 \text{ CFM } CO_2$$

0.7007 CFM + 7.284 CFM = 7.985 CFM Gas

Velocity:

(based on 2" Inlet from degasifier to flare)

2" Pipe area = 0.0233 ft^2

$$\frac{7.985 \text{ ft}^3/\text{min gas}}{0.0233 \text{ ft}^2} = 342.7 \text{ ft/min} \div 60 = 5.712 \text{ ft/sec}$$

TABLE 2

Sample Designation: New Feed Water Well for 58
Sample Analyzed by: S. Slasor, K. Hanley - Harris Corporation
Sample Analyzed: 8/08/86

REPORT OF ANALYSIS	MEASUREMENT UNITS
Total Dissolved Solids	2143-2175 mg/l
Suspended Solids	1.2-1.7 mg/l
Total Hardness as $CaCO_3$	659 mg/l
Calcium	122 mg/l
Magnesium	86 mg/l
Sodium	381 mg/l
Iron	< 0.1 mg/l
Manganese	< 0.1 mg/l
Sulphate	117 mg/l
Alkalinity	145 mg/l
Bicarbonate Alkalinity	< 0.5 mg/l
Carbonate Alkalinity	< 0.5 mg/l
Chloride	870 mg/l
Copper	< 0.1 mg/l
Lead	< 0.1 mg/l
Barium	< 0.5 mg/l
Silica	21.7 mg/l
Total Organic Carbon	9.4 mg/l
Nitrate	< 1 mg/l
Potassium	8.5 mg/l
Hydrogen Sulfide	12.4-12.6 mg/l
Carbon Droxide	< 0.1 mg/l
pH	7.35
Temperature	25.5°C
Conductivity, mucromho/cm	3330

RO UNIT PERFORMANCE PROJECTION
using "ROPRO" (c) v3.03U (1/16/87)
Provided to the San Diego Office
by Fluid Systems Division of UOP Inc.

PROJECT: PILOT DATE: 7/9/87
The unit has 32 Model 8031MP MAGNUM elements which are 1 yrs. old.
The Array is 5 / 3 with 4 element tubes
Permeate Flow = 288000. gpd (200.0 gpm) at 75.0% recovery.
Feed Temp. = 25.0 C (77.0 F) Avg. annual unit Temp. = 25.0 C (77.0 F)
Feed Press. = 378.9 psi Brine Press. = 339.5 psi
Feed Osmotic Press. = 21.2 psi Brine Osmotic Press. = 82.4 psi
The ratio of the concentration in the brine to the saturation level for
CaSO4 is 1.16 SiO2 is .52 SrSO4 is 2.52

If the precipitation inhibitor addition is interrupted for even a short time, the elements may become irreversibly fouled with CaSO4.

BANK	FEED		CONCENTRATE		AVERAGE	TUBE	FINAL	ELEMENT
	TOTAL	TUBE	TOTAL	TUBE	ELEMENT	DELTA P	BETA	% RECOVERY
	gpm	gpm	gpm	gpm	gpd	psi		
1	266.7	53.3	134.6	26.9	9510.9	22.4	1.099	18.9
2	134.6	44.9	66.8	22.3	8127.2	17.1	1.098	18.8

	RAW FEED mg/L	PRETREATED FEED mg/L	CONCENTRATE mg/L	PERMEATE mg/L
Ca	310.	310.	1233.	1.4
Mg	80.	80.	318.	.4
Na	405.	405.	1551.	21.7
K	9.	9.	33.	.5
NH4	0.	0.	0.	.0
CO3	0.	0.	0.	.0
HCO3	64.	64.	253.	4.9
SO4	572.	572.	2281.	.2
Cl	1120.	1120.	4358.	36.8
NO3	1.	1.	4.	.1
F	2.	2.	7.	.0
SiO2	18.	18.	65.	2.8
Sr	13.40	13.40	53.28	.06
SUM	2594.	2594.	10156.	64.8
TDS	2562.	2562.	10029.	64.3
CO2	542.	542.	542.	539.
pH	5.3	5.3	5.9	4.2
pHs		7.3	6.7	

This projection is the anticipated performance and is based on nominal properties of the elements. No allowance was made for fouling or for pressure losses in the manifolds.
This computer printout should not be considered a guarantee of system performance unless accompanied by a statement to that effect.

By BRENDA

ATTACHMENT E

HARRIS SEMICONDUCTOR

MATERIAL SAFETY DATA SHEETS

AIRCO
Division of The BOC Group, Inc.
575 Mountain Avenue
Murray Hill
New Jersey 07974
Telephone: 201-464-8100
TWX: 710-984-7970

MATERIAL SAFETY DATA SHEET

Welding Consumables
and Related Products
Conforms to OSHA 1910.1200

IDENTIFICATION

PRODUCT NAME: Hydrogen Sulfide

SYNONYMS: Dihydrogen Sulfide

CAS NUMBER: 7783-06-4

FORMULA: H_2S

CHEMICAL FAMILY: Nonmetal Hydride

DOT HAZARD CLASS: Flammable Gas

DOT IDENTIFICATION NUMBER: UN 1053

CHEMTREC: 800-424-9300

HEALTH HAZARD DATA

TIME WEIGHTED AVERAGE EXPOSURE LIMIT:

10 Molar PPM; STEL = 15 molar PPM (ACGIH, 1984-85). 20 PPM - Ceiling, 50 PPM - Peak for 10 minutes (OSHA).

SYMPTOMS OF EXPOSURE:

Continuous exposure to low (15-50 PPM) concentrations will generally cause irritation to mucous membranes and conjunctivae of the eyes. It may also cause headache, dizziness or nausea. Higher concentrations (200-300 PPM) can result in respiratory arrest leading to coma or unconsciousness. Exposures for more than 30 minutes at concentrations of greater than 700 PPM have been fatal. Continuous inhalation of low concentrations may cause olfactory fatigue or paralysis rendering the detection of its presence by odor ineffective.

TOXICOLOGICAL PROPERTIES:

Inhalation of hydrogen sulfide it is highly toxic. It is also an irritant to mucous tissue, membranes and the conjunctivae of the eyes. Continued exposure renders the olfactory sensors inopertive. Toxicologically its reaction with enzymes in the bloodstream inhibit cell respiration resulting in pulmonary paralysis, sudden collapse and death. This overshadows its irritant effect on mucous membranes and tissues which at worst will cause pulmonary edema or conjunctival lesions. Repeated exposures to low concentrations is reported to cause conjunctivites, photophobea, corneal bullae, tearing, pain and blurred vision.

DATE OF ISSUE 3/1/86

RECOMMENDED FIRST AID TREATMENT:

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO HYDROGEN SULFIDE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS. RESCUE PERSONNEL SHOULD RECOGNIZE THE HAZARDS OF OVEREXPOSURE DUE TO OLFACTORY FATIGUE.

Inhalation: Extreme fire hazard when rescuing semi-conscious or unconscious persons due to flammability of hydrogen sulfide. Avoid use of rescue equipment which might contain ignition sources or cause static discharge. Move affected person to any uncontaminated area. If breathing has stopped, give assisted respiration. Oxygen or a mixture of 5% carbon dioxide in oxygen should be administered by a qualified person. Keep the victim warm and calm. Seek immediate medical assistance. Further treatment should be symptomatic and supportive.

Eye Contact: PERSONS WITH POTENTIAL EXPOSURE TO HYDROGEN SULFIDE SHOULD NOT WEAR CONTACT LENSES.

Flush contaminated eye(s) with copious quantities of water. Part eyelids with fingers to assure complete flushing. Continue for minimum of 15 minutes.

Hazardous Mixtures of Other Liquids, Solids, or Gases:

Hydrogen sulfide will explode or burn over a wide range or mixtures in air. It becomes dangerously reactive when mixed with nitric acid or other strong oxidizers such as sulfuric acid. Vapors will combust spontaneously when mixed with vapors of chlorine, oxygen difluoride or nitrogen trifluoride.

PHYSICAL DATA

Boiling Point: -76°F (-60°C)

Liquid Density @ Boiling Point: 57.1 lb/ft^3 (915 kg/m^3)

Vapor Pressure @ 70°F (21.1°C): 267 psia (1840 kPa)

Specific Gravity @ 70°F, 1 atm (Air=1): 1.21

Solubility in Water: Soluble

Freezing Point: -117°F (-82.8°C)

Appearance and Odor: Shipped and stored as a liquid under its own vapor pressure. Vapor is colorless with a characteristic "rotten egg" odor.

FIRE/EXPLOSION HAZARDS DATA

Flash Point (Method Used): Gas

Auto Ignition Temperature: 554° (290°C)

LEL: 4.0 UEL: 44.0

Extinguishing Media: Carbon dioxide, dry chemical or water spray

Electrical Classification: NEC Class 1

Special Fire Fighting Procedures: Shut off flow of gas. Cool surrounding fire-exposed containers with water spray. Fire fighters should use self-contained breathing apparatus.

Unusual Fire and Explosion Hazards: Hydrogen sulfide is heavier than air so may accumulate in low spots and may "travel" a considerable distance to a flame or other source of ignition.

REACTIVITY DATA

Stability: Stable

Conditions to Avoid: Avoid heat, flame or other sources of ignition.

Incompatibility (Materials to Avoid): Concentrated nitric acid, chlorine, nitrogen trifluoride, oxygen difluoride or other strong oxidizing agents.

Hazardous Decomposition Products:
Oxides of sulfur

Hazardous Polymerization: Will not occur

Conditions to Avoid: None

SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Evacuate all personnel from affected area. Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with an inert gas prior to attempting repairs. If leak is in container or container valve, contact CHEMTREC for emergency assistance or call your closest Airco location.

Waste Disposal Method:

Do not attempt to dispose of waste or unused quantities. Return in the shipping container properly labeled, with any valve outlet plugs or caps secured and valve protection cap in place to Airco for proper disposal.

SPECIAL PROTECTION INFORMATION

Respiratory Protection: Positive pressure air line with mask or self-contained breathing apparatus should be available for emergency use.

Ventilation: Hood with forced ventilation.

Local Exhaust: To prevent accumulation above the TWA.

Special: None

Mechanical (Gen.): None

Other None

Protective Gloves: Neoprene or butyl rubber, PVC, polyethylene.

Eye Protection: Safety goggles or glasses.

Other Protective Equipment: Safety shoes, safety shower, eyewash "fountain".

SPECIAL PRECAUTIONS

Special Labeling Information:

DOT Shipping Name: Hydrogen sulfide (RQ-100/45.4)
DOT Shipping Label: Flammable Gas and Poison
DOT Hazard Class: Flammable Gas
I.D. No.: UN 1053

Special Handling Recommendations:

Use only in well-ventilated areas. Valve protection caps must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure reducing regulator when connecting cylinder to lower pressure (<750 psig) piping or systems. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder.

For additional handling recommendations, consult Compressed Gas Asssociation Pamphlets P-1 and G-12.

Special Storage Recommendations:

Protect cylinders from physical damage. Store in cool, dry, well-ventilated area of non-combustible construction away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 130°F (54°C). Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in-first out" inventory system to prevent full cylinders being stored for excessive periods of time. Post "No Smoking or Open Flames" signs in the storage or use area. There should be no sources of ignition in the storage or use area.

For additional recommendations, consult Compressed Gas Association Pamphlets P-1 and G-12.

Special Packaging Recommendations:

Many metals corrode rapidly with wet hydrogen sulfide. Anhydrous (water content -40f or C) hydrogen sulfide can be handled in carbon steel, aluminum, Inconel® , Stellite® and 304 and 316 stainless steels. Avoid hard steels which are highly stressed since they may be susceptible to hydrogen embrittlement from hydrogen sulfide.

Other Recommendations or Precautions:

Earth-ground and bond all lines and equipment associated with the hydrogen sulfide system. All electrical equipment should be non-sparking or explosion proof. Do not rely on the olfactory sense to detect the presence of hydrogen selenide. Analytical devices and instumentation are readily available for this purpose. Perform frequent analytical tests to be certain that the TWA is not exceeded.

Compressed gas cylinders should not be refilled except by qualified producers of compressed gases. Shipment of a compressed gas cylinder which has not been filled by the owner or with his (written) consent is a violation of Federal Law (49CFR).

AIRCO
Division of The BOC Group, Inc
575 Mountain Avenue
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Telephone: 201-464-8100
TWX: 710-984-7970

MATERIAL SAFETY DATA SHEET

Welding Consumables
and Related Products
Conforms to OSHA 1910.1200

IDENTIFICATION

PRODUCT NAME: Sulfur Dioxide

SYNONYMS: Sulfurous Acid Anhydride

CAS NUMBER: 7446-09-5

FORMULA: SO_2

CHEMICAL FAMILY: Inorganic Acid

DOT HAZARD CLASS: Nonflammable Gas

DOT IDENTIFICATION NUMBER: UN 1079

CHEMTREC: 800-424-9300

HEALTH HAZARD DATA

TIME WEIGHTED AVERAGE EXPOSURE LIMIT:

2 Molar PPM (ACGIH, 1984-85). 5 Molar PPM (OSHA, 1984-85).

Note: Prior to the 1984-85 issue of ACGIH's "TLVs Threshold Limit Values for Chemical Substances and Physical Agents in the Work Environment and Biological Exposure Indices with Intended Changes", Sulfur Dioxide had a STEL of 5 Molar PPM. This STEL value is deleted in the 1984-85 issue.

SYMPTOMS OF EXPOSURE:

Corrosive and irritating to the upper and lower respiratory tracts, skin and eyes. Symptoms depend on the concentration and duration of exposure and vary from mild irritation to severe destruction of tissues. They may also include burning sensations, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting. If the sulfur dioxide penetrates the lower airway, it can produce bronchitis, chemical pneumonitis and pulmonary edema. Eye contact results in pain, lacrymation, inflammation, swelling of tissue and possible destruction of the eye. Skin contact causes irritation or chemical-like burns. Contact with rapidly evaporating liquid can cause cryogenic "burns" or frostbite.

TOXICOLOGICAL PROPERTIES:

Inhalation human TC_{LO} = 3 PPM/5 days

Exposure to atmospheres contaminated with sulfur dioxide is extremely irritating. Its odor and prompt irritant action provide a warning of exposure to toxic conditions. High concentrations are extremely destructive to tissues of the airway, eyes and skin. Inhalation may have fatal consequences as a result of spasm, inflammation and edema of the larynx and bronchi, chemical pneumonitis and pulmonary edema. Exposure of the eyes to high concentrations may result in ulceration of the conjunctiva and cornea and destruction of all ocular tissues. Contact with the skin causes severe burns. Systemic toxicity due to sulfur dioxide is not known to occur. Frost-bite effects are a change in color of the skin to gray or white, possibly followed by blistering.

RECOMMENDED FIRST AID TREATMENT:

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO SULFUR DIOXIDE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS.

Inhalation: Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Unconscious persons should be moved to an uncontaminated area, and given mouth-to-mouth resuscitation and supplemental oxygen. Keep the victim warm and quiet. Assure that mucous or vomited material does not obstruct the airway by positional drainage. The physician should be informed that the patient has inhaled acidic vapors.

Eye Contact: PERSONS WITH POTENTIAL EXPOSURE TO SULFUR DIOXIDE SHOULD NOT WEAR CONTACT LENSES.

Flush contaminated eye(s) with copious quantities of water. Part eyelids to assure complete flushing. Continue for a minimum of 15 minutes.

Skin Contact: Flush affected area with copious quantities of water. Remove affected clothing as rapidly as possible.

Dermal Contact or Frostbite: Remove contaminated clothing and flush affected areas with lukewarm water. DO NOT USE HOT WATER. A physician should see the patient promptly if the cryogenic "burn" has resulted in blistering of the dermal surface or deep tissue freezing.

Hazardous Mixtures of Other Liquids, Solids, or Gases:

Sulfur dioxide reacts violently with peroxides, chromates, bichromates, permanganates and oxygen difluoride. It also reacts with chlorates to form chlorine which at elevated temperatures may become an exlosive reaction.

PHYSICAL DATA

Boiling Point: 14.0°F (-10.0°C)

Liquid Density @ Boiling Point: 91.1 lb/ft^3 (1460 kg/m^3)

Vapor Pressure @ 70°F (21.1°C): 49.1 psia (339 kPa)

Specific Gravity @ 70°F, 1 atm (Air=1): 2.26

Solubility in Water: Soluble

Freezing Point: Gas Mixtures; -103.9°F (-75.5°C)

Appearance and Odor: Colorless gas with highly irritating, pungent odor.

SPECIAL PROTECTION INFORMATION

Respiratory Protection:

Positive pressure air line with mask or self-contained breathing apparatus should be available for emergency use.

Ventilation: Hood with forced ventilation

Local Exhaust: To prevent accumulation above the TWA.

Special: N/A

Mechanical (Gen.): N/A

Other: N/A

Protective Gloves: Plastic or rubber

Eye Protection: Safety goggles or glasses.

Other Protective Equipment: Safety shoes, safety shower, eyewash "fountain", face shield.

SPECIAL PRECAUTIONS

Special Labeling Information:

DOT Shipping Name: Sulfur dioxide
DOT Shipping Label: Nonflammable gas
DOT Hazard Class: Nonflammable gas
I.D. No.: UN 1079

Special Handling Recommendations:

Use only in well-ventilated areas. Valve protection caps must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure reducing regulator when connecting cylinder to lower pressure ($<$150) psig) piping or systems. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder.

For additional handling recommendations, consult Compressed Gas Asssociation's Pamphlet P-1 and G-3.

Special Storage Recommendations:

Protect cylinders from physical damage. Store in cool, dry, well-ventilated area away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 130°F (54°C). Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in-first out" inventory system to prevent full cylinders being stored for excessive periods of time.

For additional storage recommendations, consult Compressed Gas Association's Pamphlet P-1 and G-3.

FIRE/EXPLOSION HAZARDS DATA

Flash Point (Method Used): None

Auto Ignition Temperature: None

LEL: None UEL: None

Extinguishing Media: Nonflammable gas

Electrical Classification: Nonhazardous

Special Fire Fighting Procedures: None

Unusual Fire and Explosion Hazards: None

REACTIVITY DATA

Stability: Stable

Conditions to Avoid: None

Incompatibility (Materials to Avoid): Oxidizing materials.

Hazardous Decomposition Products: None

Hazardous Polymerization: Will not occur

SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Evacuate all personnel from affected area. Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with an inert gas prior to attempting repairs. If leak is in container or container valve, contact CHEMTREC for emergency assistance or your closest Airco location.

Waste Disposal Method:

Do not attempt to dispose of waste or unused quantities. Return in the shipping container properly labeled, with any valve outlet plugs or caps secured and valve protection cap in place to Airco for proper disposal.

Special Packaging Recommendations:

Most metals corrode rapidly with wet sulfur dioxide.

Other Recommendations or Precautions:

Compressed gas cylinders should not be refilled except by qualified producers of compressed gases. Shipment of a compressed gas cylinder which has not been filled by the owner or with his (written) consent is a violation of Federal Law (49CFR).

HARRIS SEMICONDUCTOR
A DIVISION OF HARRIS CORPORATION

TITLE: CARBON DIOXIDE

CONTROLLED

DOCUMENT

PROPRIETARY DATA

VERTICAL BAR IN RIGHT MARGIN INDICATES REVISION.

CHEMICAL SAFETY SPECIFICATION	CODE IDENT. NO. 34371	REVISION	1
		SPECIFICATION NUMBER	856068
		PAGE	1 OF 7

1.0 PURPOSE

This specification defines the chemical safety requirements for Carbon Dioxide supplied by the applicable manufacturer(s) or distributor(s) of the product.

TITLE	REVISION	SPECIFICATION NUMBER
CARBON DIOXIDE	D	856068
HARRIS SEMICONDUCTOR	CODE IDENT. NO. 34371	DATE OF REVISION 1-8-86
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L-4574-B
July 1986

MATERIAL SAFETY DATA SHEET

An explanation of the terms used herein may be found in OSHA 29 CFR 1910.1200, available from OSHA regional or area offices.

(Similar to U.S. Department of Labor Form OMB No. 1218-0072 and generally accepted in Canada for information purposes)
Do Not Duplicate This Form. Request an Original.

PRODUCT Carbon Dioxide

CHEMICAL NAME	Carbon Dioxide	**SYNONYMS**	Carbonic Anhydride, Carbonic Acid Gas
FORMULA	CO_2	**CHEMICAL FAMILY**	Acid Anhydride
		MOLECULAR WEIGHT	44.01

TRADE NAME Carbon Dioxide

For mixtures of this product request the respective component Material Data Safety Sheets. See Section IX.

MATERIAL (CAS NO.)	Wt (%)	1985-1986 ACGIH TLV-TWA (OSHA-PEL)	
Carbon Dioxide (124-38-9)	100	5000 ppm	(5000 ppm)

SUBLIMATION POINT, 760 mm. Hg	−78.5°C (−109.3°F)	**FREEZING POINT**	Not applicable
SPECIFIC GRAVITY (H_2O = 1)	Not applicable	**VAPOR PRESSURE AT 21°C.**	830 psig
VAPOR DENSITY (air = 1)	1.522 @ 21°C	**SOLUBILITY IN WATER, % by wt.**	Slight
PERCENT VOLATILES BY VOLUME	100	**EVAPORATION RATE (Butyl Acetate = 1)**	High

APPEARANCE AND ODOR Colorless gas at normal temperature and pressure; odorless.

IN CASE OF EMERGENCIES involving this material, further information is available at all times:
In the USA 1-800-UCC-HELP (1-800-822-4357) In Canada 514 — 645-5311
For routine information contact your local supplier

L-4574 B

Union Carbide requests the users of this product to study this Material Safety Data Sheet (MSDS) and become aware of product hazards and safety information. To promote safe use of this product a user should (1) notify its employees, agents and contractors of the information on this MSDS and any product hazards and safety information, (2) furnish this same information to each of its customers for the product, and (3) request such customers to notify their employees and customers for the product of the same product hazards and safety information.

UNION CARBIDE CORPORATION ☐ LINDE DIVISION
UNION CARBIDE CANADA LIMITED ☐ LINDE DIVISION

TITLE	REVISION	SPECIFICATION NUMBER
CARBON DIOXIDE	1	856068

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A DIVISION OF HARRIS CORPORATION

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M123-1B (Rev. 6/76)

THRESHOLD LIMIT VALUE: 5,000 ppm – ACGIH (1985-86).

EFFECTS OF A SINGLE (ACUTE) OVEREXPOSURE:

SWALLOWING — *A highly unlikely route of exposure. Frostbite of the lips and mouth may result from contact with the liquid.*

SKIN ABSORPTION — No evidence of adverse effects from available information.

INHALATION — Asphyxiant. Moderate concentrations may cause headache, drowsiness, dizziness, stinging of the nose and throat, excitation, rapid breathing, excess salivation, vomiting, and unconsciousness. Lack of oxygen can cause death.

SKIN CONTACT — No harmful effect expected from vapor. Liquid may cause frostbite.

EYE CONTACT — Vapor may cause a stinging sensation; liquid may cause frostbite.

EFFECTS OF REPEATED (CHRONIC) OVEREXPOSURE: No evidence of adverse effects from available information.

OTHER EFFECTS OF OVEREXPOSURE: Damage to retinal ganglion cells and central nervous system may occur.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: A knowledge of the available toxicology information and of the physical and chemical properties of the material suggest that overexposure is unlikely to aggravate existing medical conditions.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH HAZARD EVALUATION: None currently known.

EMERGENCY AND FIRST AID PROCEDURES:

SWALLOWING — This product is a gas at normal temperature and pressure.

SKIN CONTACT — For exposure to liquid, immediately warm frostbite area with warm water (not to exceed 105°F). In case of massive exposure, remove clothing while showering with warm water. Call a physician.

INHALATION — Remove to fresh air. Give artificial respiration if not breathing. Give oxygen if breathing is difficult. Call a physician.

EYE CONTACT — In case of splash contamination, immediately flush eyes thoroughly with water for at least 15 minutes. See a physician, preferably an ophthalmologist, immediately.

NOTE TO PHYSICIAN: *There is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and the clinical condition.*

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FLASH POINT (test method)	Not applicable	**AUTOIGNITION TEMPERATURE**	Not applicable
FLAMMABLE LIMITS IN AIR, % by volume	**LOWER** Not applicable	**UPPER**	Not applicable

EXTINGUISHING MEDIA: Carbon Dioxide cannot catch fire. Use media appropriate for surrounding fire.

SPECIAL FIRE FIGHTING PROCEDURES: Evacuate all personnel from danger area. Immediately deluge containers with water spray from maximum distance until cool, then move containers away from fire area if without risk.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Gas cannot catch fire. Container may rupture due to heat of fire. No part of a container should be subjected to a temperature higher than 52°C (approximately 125°F). Most containers are provided with a pressure relief device designed to vent contents when they are exposed to elevated temperature.

STABILITY	
UNSTABLE	**STABLE**
	X

CONDITIONS TO AVOID: See Section IX.

INCOMPATIBILITY (materials to avoid): Alkali metals, alkaline earth metals, metal acetylides, chromium, titanium above 550°C, uranium above 750°C.

HAZARDOUS DECOMPOSITION PRODUCTS: In the presence of an electrical discharge, carbon dioxide is decomposed to form carbon monoxide and oxygen.

HAZARDOUS POLYMERIZATION	
May Occur	**Will not Occur**
	X

CONDITIONS TO AVOID: None currently known.

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED

Evacuate all personnel from danger area. Use self-contained breathing apparatus where needed. Shut off leak if without risk. Ventilate area of leak or move leaking container to well-ventilated area. Test area, especially confined areas, for sufficient oxygen content prior to permitting re-entry of personnel.

WASTE DISPOSAL METHOD: Slowly release into atmosphere outdoors. Discard any product, residue, disposable container or liner in an environmentally acceptable manner, in full compliance with federal, state and local regulations.

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RESPIRATORY PROTECTION (specify type): Select in accordance with OSHA 29 CFR 1910.134. Respirators shall be acceptable to MSHA and NIOSH.

VENTILATION	**LOCAL EXHAUST** — Preferred
	MECHANICAL (general) — Acceptable
	SPECIAL — Not applicable
	OTHER — Not applicable

PROTECTIVE GLOVES: Insulated Neoprene

EYE PROTECTION: Select in accordance with OSHA 29 CFR 1910.133

OTHER PROTECTIVE EQUIPMENT: Metatarsal shoes for cylinder handling. Select in accordance with OSHA 29 CFR 1910.132 and 1910.133.

CAUTION: High pressure liquefied gas. Use piping and equipment adequately designed to withstand pressures to be encountered. Can cause rapid suffocation due to oxygen deficiency. Store and use with adequate ventilation. Close valve when not in use and when empty. Carbon dioxide, being heavier than air, tends to accumulate near the floor of an enclosed space displacing the air upward and creates an oxygen-deficient atmosphere. Ventilate space before entry. Verify sufficient oxygen concentration.

MIXTURES: When two or more gases, or liquefied gases are mixed, their hazardous properties may combine to create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an Industrial Hygienist, or other trained person when you make your safety evaluation of the end product. Remember, gases and liquids have properties which can cause serious injury or death.

Be sure to read and understand all labels and other instructions supplied with all containers of this product.

For safety information on general handling of compressed gas cylinders, obtain a copy of pamphlet P-1, "Safe Handling of Compressed Gases in Containers" from the Compressed Gas Association, Inc., 1235 Jefferson Davis Highway, Arlington, VA 22202.

OTHER HANDLING AND STORAGE CONDITIONS: Never work on a pressurized system. If there is a leak, close the cylinder valve, blow down the system by venting to a safe place, then repair the leak. Store in well ventilated, cool dark place.

LINDE
UNION CARBIDE

GENERAL OFFICES

IN THE USA:
Union Carbide Corporation
Linde Division
39 Old Ridgebury Road
Danbury, CT 06817-0001

IN CANADA:
Union Carbide Canada Limited
Linde Division
123 Eglinton Avenue East
Toronto, Ontario M4P 1J3

Other offices in principal cities all over the world.

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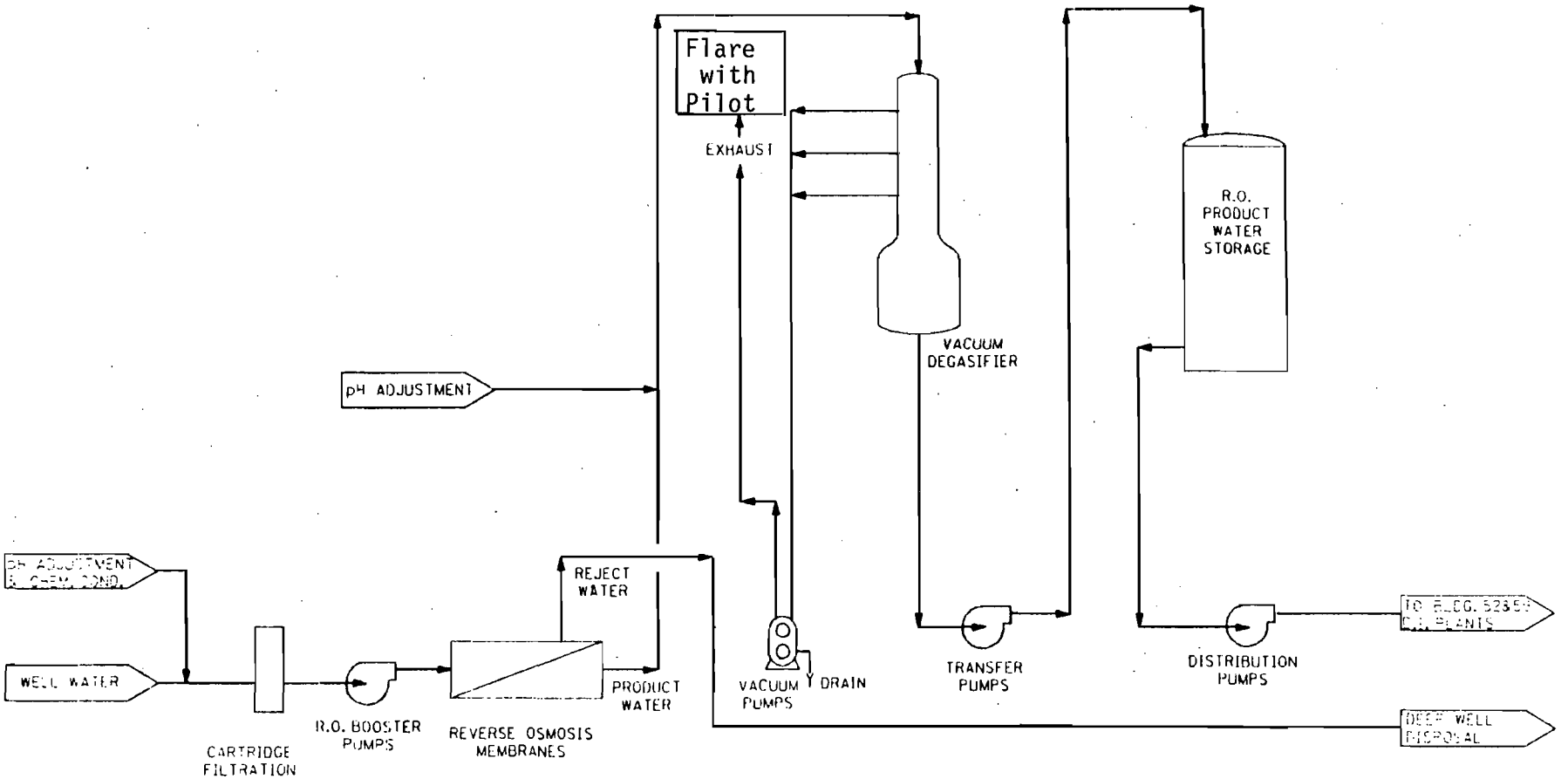
ATTACHMENT F

HARRIS SEMICONDUCTOR

SUPPLEMENTAL INFORMATION

PROCESS FLOW DIAGRAM DRAWING NO. P-1



LOCKWOOD GREENE
Planners/Engineers/Architects/Managers

SHEET TITLE: PROCESS FLOW DIAGRAM INDUSTRIAL WATER SYSTEM

JOB NAME: HARRIS

SCALE: NONE

DRAWN BY: AR