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

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
NOTICE OF PERMITS

Mr. L. R. Hutker
Director, Facilities Department
Harris Semiconductor
Post Office Box 883
Melbourne, Florida 32901

March 27, 1990

Enclosed are construction permits Nos. AC 05-174445 and AC 50-174446 for Harris Semiconductor to modify Building 59 and the Industrial Grade Water System to allow for an increase in permitted pollutant emissions at their facility in Brevard County, Florida. These permits are issued pursuant to Section 403, Florida Statutes.

Any party to these permits has the right to seek judicial review of these permits 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 these permits are filed with the Clerk of the Department.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

Patricia G. Adams
for C. H. Fancy, P.E.
Chief
Bureau of Air Regulation

Copy furnished to:

C. Collins, Central District
N. Baldisserotto, HS

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this NOTICE OF PERMIT and all copies were mailed before the close of business on 3-28-90.

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.

Lynn Tober — Clerk

3-28-90 — Date

Final Determination

Harris Semiconductor
Brevard County
Palm Bay, Florida

Construction Permit Numbers:
AC 05-174445
AC 05-174446

Department of Environmental Regulation
Division of Air Resources Management
Bureau of Air Regulation

March 27, 1990

Final Determination

The construction permit applications have been reviewed by the Department. Public Notice of the Department's Intent to Issue was published in the Florida Today on March 3, 1990. The Technical Evaluation and Preliminary Determination were available for public inspection at the DER's Central District and Bureau of Air Regulation offices.

There were no comments received on the proposed action. Therefore, it is recommended that the proposed construction permits be issued as drafted.

CAPE PUBLICATIONS, INC.

The Times
Published Weekly on Wednesday

THE TRIBUNE
Published Weekly on Wednesday

FLORIDA TODAY
Published Daily

RECEIVED
MAR 7 1990
DER-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

Issue permits to Harris Semiconductor

in the Court

was published in the **FLORIDA TODAY NEWSPAPER**

in the issues of March 3, 1990

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.

Linda L. Spicer

Sworn and subscribed to before me this

3rd day of March A.D., 19 90

Notary Public
State of Florida at Large
My Commission Expires March 29, 1992

cc: L. Mitchell
C. Collins, E Dist.

State of Florida
Department of
Environmental Regulation
Notice of Intent to Issue

The Department of Environmental Regulation hereby gives notice of its intent to issue permits to Harris Semiconductor, Post Office Box 883, Melbourne, Florida 32901, to modify Building 59 and the Industrial Grade Water System to allow for an increase in permitted pollutant emissions. The proposed project will occur at the applicant's existing facility located in Brevard County, Florida. A determination of Best Available Control Technology (BACT) was not required. The Department is issuing this intent to issue for the reasons stated in the Technical Evaluation and Preliminary Determination.

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, Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within fourteen (14) days of publication of this notice. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. 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, Florida Statutes.

The petition shall contain the following information:

(a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;

(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;

(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;

(d) A statement of the material facts disputed by Petitioner, if any;

(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;

(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and

(g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

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 position taken by it in this Notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the applications have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

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

Department of Environmental Regulation
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Department of Environmental Regulation
Central 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.

TO106279—1T—3/3, 1990.
Saturday

Florida Department of Environmental Regulatio

Twin Towers Office Bldg. ● 2600 Blair Stone Road ● Tallahassee, Florida 32399-24

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

PERMITTEE:
Harris Semiconductor
PO Box 883
Melbourne, Florida 32901

Permit Number: AC 05-174445
Expiration Date: January 31, 1991
County: Brevard
Latitude/Longitude: 28°01'20"N
80°36'10"W
Project: Building 59
Manufacturing Lab

This permit is issued under the provisions of Chapter 403, Florid Statutes, and Florida Administrative Code (F.A.C.) Chapters 17- and 17-4, and 40 CFR (July 1, 1988 version). The above name permittee is hereby authorized to perform the work or operate th facility shown on the application and approved drawing(s), plans and other documents attached hereto or on file with the Departmen and made a part hereof and specifically described as follows:

For the modification to Building 59, which is an existing sourc used for the manufacture of semiconductors. The modification wil include the installation of the Reliability Lab (RL) operation (with 2 VOC/solvent and 4 acid stations) and the permitting of th existing Probe Card Repair Shop (PCRS) operations (with VOC/solvent stations and 2 future VOC/solvent stations planned); the RL is vented to scrubbers F59S01 and F59S02 and the PCRS i vented to the atmosphere through the exhaust system F59E04 F59S02 is a 24,000 cfm vertical counter-current flow wet scrubber using polypropylene packing, and with a mist eliminator manufactured by Beverly Pacific, and installed to contro VOC/solvent vapors. F59S01 is a 40,000 cfm horizontal cross-flo wet scrubber, using polypropylene packing, and with a mis eliminator, manufactured by Beverly Pacific, and installed t control acid vapors. The existing building/source is located a the permittee's existing facility located on Palm Bay Road, Cit of Palm Bay, Florida. The UTM coordinates are Zone 17, 538.7 k East and 3100.9 km North.

The Standard Classification Codes are:

o	Building 59: Cold Solvent cleaning/stripping	40-01-003-99	Tons VOC/solvent consumed

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

Attachments are listed below:

1. Application to Construct Air Pollution Source, DER Form 17-1.202(1), received December 20, 1989.
2. 40 CFR (July 1, 1988 version).
3. Technical Evaluation and Preliminary Determination date February 22, 1990.

GENERAL CONDITIONS:

6. The permittee shall 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 and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:

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

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

c. Sample or monitor 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 provide the Department with the following information:

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

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

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 for 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 involving the permitted source arising under the Florida Statutes or Department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

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 17-4.120 and 17-30.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

12. This permit or a copy thereof shall be kept at the work site of the permitted activity.

13. The permittee shall comply with the following:

a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.

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

GENERAL CONDITIONS:

three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.

c. Records of monitoring information shall include:

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

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

SPECIFIC CONDITIONS:

1. The maximum allowable VOC/solvent emissions from Building 59 shall be 2.37 tons per year. The projected potential acid vapor emissions are 0.1 tons per year.

2. The VOC/solvent and acid vapor exhaust scrubbers must be on during the working hours.

3. Annual hours of operation shall be 8760.

4. Objectionable odors shall not be allowed off plant property pursuant to F.A.C. Rule 17-2.620(2).

5. An inspection and maintenance plan shall be submitted to the DER's Central District office as part of the operating permit application. The plan shall include provisions for the prevention and correction of VOC/solvent losses from leaks and equipment malfunctions.

SPECIFIC CONDITIONS:

6. By March 31 of each calendar year, an annual operating report shall be submitted to the DER's Central District office demonstrating compliance with the VOC/solvent emissions limit for Building 59 and shall be determined by a material balance scheme, which includes the following:

a) a beginning inventory of full containers, cylinders and storage tanks at the beginning of each calendar year;
b) plus all purchased deliveries after the beginning inventory (verifiable by invoices);
c) minus all quantities picked-up and shipped-off the premise after the beginning inventory (verifiable by invoices);
d) minus all quantities deep well injected during the calendar year, justified by assumptions and established scrubber efficiencies; and,
e) minus an ending inventory of full containers, cylinders, and storage tanks; and , should occur at the beginning of the following calendar year.

7. Each scrubber system's efficiency and potential VOC/solvent and acid emissions shall be established by a sampling and analysis program, which includes:

a) a sample shall be taken annually from each scrubber stack and analyzed using EPA Reference Method 25A;
b) the DER's Central District office shall receive 15 days notice in writing prior to sampling; and,
c) the report, summarizing the sampling results, shall be submitted to the DER's Central District office within 45 days after the last test run is completed.

8. A meter to measure the pressure drop shall be installed on each scrubber system.

9. The source/Building 59 is subject to all applicable provisions of F.A.C. Chapters 17-2 and 17-4, and 40 CFR (July 1, 1988 version).

10. Building 59 is subject to the provisions of F.A.C. Rules 17-2.240: Circumvention; 17-2.250: Excess Emissions; and, 17-4.130: Plant Operation-Problems.

11. Any modification pursuant to F.A.C. Rule 17-2.100(123), modification (October, 1989 version), shall be submitted to the DER's Central District office and the Bureau of Air Regulation office for approval.

PERMITTEE:
Harris Semiconductor

Permit Number: AC 05-174445
Expiration Date: January 31, 1991

SPECIFIC CONDITIONS:

12. This permit supercedes all permits previously issued for this source.

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

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

Issued this 27 day
of March, 1990

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

for

STEVE SMALLWOOD, P.E, Director
Division of Air Resources
Management

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

PERMITTEE:
Harris Semiconductor
PO Box 883
Melbourne, Florida 32901

Permit Number: AC 05-174446
Expiration Date: January 31, 1991
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 (F.A.C.) Chapters 17-2 and 17-4, and 40 CFR (July 1, 1988 version). 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 modification to an existing 600 gallon per minute Industrial Grade Water System (IGWS) 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 was 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 modification 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 constructed in accordance with the permit application, plans, documents, amendments and drawings, except as otherwise noted in the General and Specific Conditions.

The Standard Classification Codes are:

o	IGWS: Flare Sys.	3-99-900-23	10^6 ft^3	burned-propane
		3-99-900-24	10^6 ft^3	burned-hydrogen sulfide

Attachments are listed below:

1. Application to Construct Air Pollution Source, DER Form 17-1.202(1), received December 20, 1989.
2. Copy of 40 CFR 60.18, as revised July 1, 1986.
3. 40 CFR (July 1, 1988 version).
4. Technical Evaluation and Preliminary Determination dated February 22, 1990.

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

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. Neither 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 is not 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, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; 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 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 and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:

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

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

c. Sample or monitor 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 provide the Department with the following information:

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

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

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 for 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 involving the permitted source arising under the Florida Statutes or Department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

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 17-4.120 and 17-30.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

12. This permit or a copy thereof shall be kept at the work site of the permitted activity.

13. The permittee shall comply with the following:

a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.

b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and

GENERAL CONDITIONS:

records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.

c. Records of monitoring information shall include:

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

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

SPECIFIC CONDITIONS:

1. Annual hours of operation are 8760.

2. The maximum potential sulfur dioxide (SO_2) emissions are 10.0 pounds per hour and 43.8 tons per year.

3. The maximum potential hydrogen sulfide (H_2S) emissions are 695 pounds per year, which is based on a flare efficiency of 98.5%.

4. All references to the 40 CFR shall mean the July 1, 1988 version.

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

6. 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).

SPECIFIC CONDITIONS:

7. 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°F). A retest shall be required if the concentration of H_2S is to be increased.

8. 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.

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

10. The Central 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.

11. Objectionable odors shall not be allowed off plant property pursuant to F.A.C. Rule 17-2.620(2).

12. This permit supercedes all permits previously issued for this source.

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

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

Issued this 27 day
of March, 1990

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

for _____
STEVE SMALLWOOD, P.E, Director
Division of Air Resources
Management

HARRIS SEMICONDUCTOR

HARRIS RCA GE INTERSIL

December 18, 1989

Mr. Bruce Mitchell
Engineer
Bureau of Air Quality Management
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

SUBJECT: HARRIS SEMICONDUCTOR, Palm Bay, Fl
Permit modification; Permit No. AC 05-150794
Building 59 Consolidated Air Permit

Dear Mr. Mitchell:

Enclosed is a modified permit application for building 59. The following changes have resulted in the revised levels of solvent emissions from this building:

A. The current construction permit specifically identifies two wet scrubber systems used to control acid and solvent vapors resulting from manufacturing operations. The modified application requests that a third exhaust system be included in the permit. This system is a Hartzell model 061 size 12 exhaust fan (2000 cfm at 2" static pressure.) The fan currently provides exhaust for two degreasing stations, with future plans to service two additional hoods. In our haste to file the construction permit for building 59, we overlooked this operation. Maximum solvent emissions from this source are estimated to be 0.46 tons/year.

B. By March of 1990, the first floor of the building will house the consolidated reliability lab operations for the site. Equipment additions include two solvent stations. The wet benches will be ducted to the existing scrubber technology described in the previous paragraph. An increase of 0.13 tons/year of solvent emissions is anticipated from the wet stations.

F5901
F5902
Solvent J.

C. The permit limit for VOC/solvents, 0.5 tons per year, was based on data collected during an eight hour monitoring timeframe in 1987. Monitoring data for 1988 and 1989 indicated an increase in the quantity of emissions from the building. This may be the result of the following events:

1. Analytical error caused the results of the initial monitoring to be an underestimate.

2. The production activities of building 59 wafer fabrication area have increased, hence resulting in increased emissions.

Monitoring data for 1988 and 1989 show maximum solvent emissions to be 1.78 tons/year and 1.18 tons/year, respectively.

Hence, we specifically request that the annual emission limit for building 59 be increased to 2.37 tons/year.

Verification of the emission estimations will be accomplished during the site's annual monitoring program. If you have any questions, please call me at (407) 729-4061.

Funding for this modification is being sent to you under separate cover.

Sincerely,

Nancy Baldisserotto

Nancy Baldisserotto
Environmental Engineer
Environmental Services Dept.

\perminfo\59modify

$200 pd. 12-20-89 Recpt #11711

DEPARTMENT OF ENVIRONMENTAL REGULATION

AC05-174445

RECEIVED
DEC 20 1989
BER-FACA

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 [ ] New[1] [X] Existing[1]

APPLICATION TYPE: [ ] Construction [ ] Operation [X] 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) _____

SOURCE LOCATION: Street Palm Bay Road City Palm Bay

UTM: East 17-538700 North 17-3100900

Latitude 28 ° 01 ' 20 "N Longitude 80 ° 36 ' 10 "W

APPLICANT NAME AND TITLE: _____

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 modified permit are true, correct and complete to the best of my knowledge and belief. Furth I agree to maintain and operate the pollution control source and pollution cont facilities in such a manner as to comply with the provision of Chapter 403, Flor Statutes, and all the rules and regulations of the department and revisions thereof. also understand that a permit, if granted by the department, will be non-transfera and I will promptly notify the department upon sale or legal transfer of the permit establishment.

*Attach letter of authorization

Signed: Lawrence R Hutker

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

Date: _____ Telephone No. (407) _____

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 h been designed/examined by me and found to be in conformity with modern engineer principles applicable to the treatment and disposal of pollutants characterized in permit application. There is reasonable assurance, in my professional judgment, t

[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, Florida 32901
Mailing Address (Please Type)

lorida 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.

This is a modification of building 59 consolidated air permit no. AC 05-150794.

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

Start of Construction N/A 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.)

N/A

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

AC 05-104521 issued 1/15/86; expires 6/30/86

AC 05-104527 issued 1/15/86; expires 4/1/86

AC 05-150794 issued 3/31/1989; expires 12/5/89

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		
---SEE ATTACHMENT C ----				

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

1. Total Process Input Rate (lbs/hr): not applicable

2. Product Weight (lbs/hr): not applicable

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	
---SEE ATTACHMENT B ----							

[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).

J. 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)
---SEE ATTACHMENT D ---				

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	

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

Fuel Analysis:

Percent Sulfur: _____ Percent Ash: _____

Density: _____ lbs/gal Typical Percent Nitrogen: _____

Heat Capacity: _____ BTU/lb _____ BTU/gal

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

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

Annual Average _____ Maximum _____

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

Waste water from air scrubbers is discharged to on-site Waste Water Treatment Plant--discharge to deepwell under UIC - Permit #UC05-126519.

--------SEE ATTACHMENT D--------

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

Stack Height: _____ ft. Stack Diameter: _____ ft.

Gas Flow Rate: _____ ACFM _____ DSCFM Gas Exit Temperature: _____ °F.

Water Vapor Content: _____ % Velocity: _____ FPS

SECTION IV: INCINERATOR INFORMATION

not applicable

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 Diameter: _____ 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 permenent 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 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 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 operat 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 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.

PROCESS DESCRIPTION

PROCESS DESCRIPTION

Building 59 houses a wafer fabrication facility on the first floor. The wafer fabrication area employs a series of manufacturing procedures referred to as layering, patterning, doping and heating. The frequency and sequence of these processes can vary depending on the desired nature of the final product.

In the controlled environment of the fabrication clean room, wafer surfaces first undergo acid and/or solvent cleaning, followed by thermal oxidation in furnaces to form a layer of silicon dioxide on the wafer surface.

During the patterning process, the wafers are initially baked and primed. Coaters then spin a thin layer of "photoresist" on the wafer, after which the wafers are soft baked. Next, the circuit pattern is projected onto the wafers via "alligners" or "steppers." Developers are then applied to remove unpolymerized areas of photoresist. This is followed by a solvent rinse.

Next, the wafers are hard-baked, inspected to determine accuracy, and etched by wet (acid bath) or dry (plasma vapor) mechanisms. Once etching is complete, the photoresist is stripped off the wafer using chemical baths or plasma techniques. In another step of the fabrication process, "dopant" atoms are either diffused into the wafer in diffusion furnaces, or accelerated into the wafer using "ion implantation." Fumes from the vapor deposition furnaces are oxidized in 'burn boxes.' The oxidized gases are then exhausted to scrubber systems. Additional material may be layered on the wafer surface in vapor and crystal (epitaxial) deposition furnaces. Metallization to interconnect uppermost circuit layers is performed by deposition (using "sputtering" systems) or evaporation. Thirteen exhausted wet stations that house vats containing a variety of acid and caustic compounds are in the fabrication facility. Five of these stations contain solvents; one of which is heated.

To the east of the 'fab' is a probe card repair shop. Two solvent stations are presently employed, and plans call for two more to be installed in early 1990.

The ground floor houses a process equipment support room that contains gas cabinets, chemical storage cabinets, vacuum pumps and drains. These exhausted units service the process equipment which safely hold virgin chemicals until they are ready for use. Gas cabinets house cylinders that supply process gases to the fab operations. In addition, several waste collection areas are exhausted. The ground floor also houses the site's distilled water plant, and a mechanical equipment storage area.

Exhausted equipment on the ground floor and in the wafer fabrication area are ducted to one of two scrubbers; acid vapors are vented to scrubber number F59S01, while solvent exhaust streams are ducted to scrubber number F59S02. Both systems reside on the site grounds directly outside the west wall of the building (see scrubber location maps attached.)

Probe card repair shop equipment is ducted to exhaust fan no. F59E04, which is housed in the building on the ground floor (east side; see location map.)

By March of 1990, Semiconductor plans to consolidate its Reliability operations and house the activity on the first floor of the building (to the west of the fabrication area.) In Reliability, integrated circuits are tested for a wide variety of parameters including tolerance to temperature and humidity changes, endurance, and electrical conductivity. Two solvent stations and four acid stations will be added. The wet benches will be exhausted to the existing scrubber systems described above.

ATTACHMENT B.

AIR EMISSIONS

SOLVENT MONITORING--BUILDING 59

Monitoring work was conducted on the building 59 solvent scrubber system F59S02 in December of 1986, August of 1988, and August of 1989. The Test employed was EPA method 25A (flame ionization detection.)

FID test results are expressed as propane. This figure is based on a hypothetical production schedule of 8760 hours a year. The following assumptions were made regarding monitoring work on this building:

-VOC values refer to all organic emissions including organic solvents.

-All data was corrected for 2 ppm background noise that is normally present in the ambient air.

-The F.I.D. accumulative emission figure is based on the maximum concentration of VOC's observed during the monitoring time frame.

EPA METHOD 25A -- F.I.D. ANALYSIS
MONITORING HISTORY -- BUILDING 59
SCRUBBER NO. F59S02
BASED ON 8760 HRS/YR PRODUCTION SCHEDULE

1987 SOLVENT EMISSIONS (TONS/YEAR)	1988 SOLVENT EMISSIONS (TONS/YEAR)	1989 SOLVENT EMISSIONS (TONS/YEAR)
0.50	1.78	1.18

CALCULATIONS & ASSUMPTIONS

The following assumptions and calculations were used to arrive at emission estimates for the wet stations

1. Wet station activity occurs 365 days a year.

2. A non-moving, static diffusion film of air over the surface of the process chemical, due to the laminar flow hoods, creates a diffusion barrier which reduces the normal rate of evaporation at a given temperature. Therefore, the assumption is made that the effective vapor pressure of the vapor at the top of the static diffusion film is only 30% (0.3) of the saturation vapor pressure at the surface of the liquid.

3. Mass Liquid evaporated/time = $\frac{0.3(P^{\circ})}{P_t} \times \frac{\text{Mass Liquid Used}}{\text{time}}$

NOTE: Verification of these emission estimations will be accomplished via the site's annual monitoring program.

ESTIMATED SOLVENT EMISSIONS FROM PROPOSED EQUIPMENT ADDITIONS
BUILDING 59 RELIABILITY LAB

STATION	CHEMICALS	Vapor pressure	use rate (gal/day)	weight (lb/gal)	use rate (lb/day)	evap rate (lb/day)	evap rate (ton/yr)
#1026 x	ACETONE	182	0.10	6.65	0.66	0.0478	0.0087
	ETHANOL	40	0.10	6.62	0.66	0.0105	0.0019
	ETHYLENE DIAMINE	10	0.10	7.51	0.75	0.0030	0.0005
	FREON TF	334	0.10	13.09	1.31	0.1726	0.0315
	IPA	33	0.10	6.55	0.66	0.0085	0.0016
	METHANOL	97	0.10	6.60	0.66	0.0253	0.0046
	PHOTORESIST	7.2	0.10	8.51	0.85	0.0024	0.0004
	TOLUENE	22	0.10	7.51	0.75	0.0065	0.0012
	NEGATIVE DEVELOPER	5	0.10	6.26	0.63	0.0012	0.0002
	XYLENE	5	0.10	7.17	0.72	0.0014	0.0003
#1415 xx	ACETONE	182	0.10	6.65	0.66	0.0478	0.0087
	AMYL ACETATE	4	0.10	7.26	0.73	0.0011	0.0002
	DYNASOLVE 100	3.7	0.10	7.92	0.79	0.0012	0.0002
	FC-72	232	0.10	14.18	1.42	0.1298	0.0237
	FREON TF	334	0.10	13.09	1.31	0.1726	0.0315
	METHYL ETHYL KETONE	100	0.10	6.71	0.67	0.0265	0.0048
	METHANOL	97	0.10	6.60	0.66	0.0253	0.0046
	IPA	33	0.10	6.55	0.66	0.0085	0.0016
	TOLUENE	22	0.10	7.51	0.75	0.0065	0.0012
	URESOLVE	2.62	0.10	8.09	0.81	0.0008	0.0002
	XYLENE	5	0.10	7.17	0.72	0.0014	0.0003
						TOTAL =	0.1279

ESTIMATED SOLVENT EMISSIONS FROM F59E04 -- November 1989

STATION	CHEMICALS	vapor pressure	use rate (gal/day)	weight (lb/gal)	use rate (lb/day)	evap rate (lb/day)	evap rate (ton/yr)	
#1232	acetone	182.00	1.00	6.65	6.65	0.48	0.087	
	methanol	97.00	2.00	6.60	13.20	0.51	0.092	
#1233	acetone	182.00	0.50	6.65	3.33	0.24	0.044	
	blaco-tron IMS plus	300.00	0.50	13.00	6.50	0.77	0.140	
	markem 320 cleaner	69.00	0.10	7.00	0.70	0.02	0.003	
	methanol	97.00	0.20	6.60	1.32	0.05	0.009	
							.375	
FUTURE	freon 5311	300.00	0.10	13.10	1.31	0.16	0.028	
	freon tms	275.00	0.10	12.70	1.27	0.14	0.025	
	ioa	33.00	0.10	6.60	0.66	0.01	0.002	wet station
	freon ts	300.00	0.10	13.00	1.30	0.15	0.028	
FUTURE	spray paint	500.00	0.10	1.00	0.10	0.02	0.004	wet stations
						---	---	
					totals...	2.52	0.459	
							.375	
							.084	

MAXIMUM ESTIMATED VOC/SOLVENT EMISSIONS

SUMMARY OF RESULTS

BUILDING 59

MAXIMUM EMISSIONS OBSERVED BY STACK MONITORING	=	1.78 tons/year
ESTIMATED SOLVENT EMISSIONS FROM SOURCE F59E04	=	0.46 tons/year
ESTIMATED SOLVENT EMISSIONS FROM PROPOSED EQUIPMENT ADDITIONS; RELIABILITY LAB	=	0.13 tons/year
TOTAL	=	2.37 tons/year

TOTAL PROJECTED VOC EMISSIONS FOR BUILDING 59 = 2.37 TONS/YEAR

ATTACHMENT C.

RAW MATERIALS & CHEMICALS

BUILDING 59
PROCESS SOLVENTS

1,1,1 TRICHLOROETHANE
2-ETHOXYETHYL ACETATE
ACETONE
BUTYL CELLOSOLVE
CARBON TETRACHLORIDE
CELLOSOLVE ACETATE
CHLOROPENTAFLUOROETHANE
DICHLORODIFLUOROETHANE
EDTA
ETHYL ALCOHOL
ETHYL BENZENE
ETHYLENE DIAMINE
ETHYLENE GLYCOL MONOMETHYL ETHER
FLUOROCARBON-72
FREON 5311
FREON TF
FREON TMS
ISOPROPYL ALCOHOL
ISOPARAFFINIC HYDROCARBONS
METHANOL
METHYL ETHYL KETONE
METHYLPHENYL ETHER
METHYL-2-PYRROLIDINONE
MONOETHANOLAMINE
N,N-DIMETHYLFORMAMIDE
N-BUTYL ACETATE
N-BUTYL ALCOHOL
N-METHYL PYRROLIDONE
PROPYLENE GYLCOL 1,2 PROPANEDIOL
TOLUENE
TRICHLOROTRIFLUOROETHANE
XYLENE

BUILDING 59
PROCESS GASSES

ARGON
BORON TRIBROMIDE
BORON TRIFLUORIDE
CHLORINE
DICHLOROSILANE
HELIUM
HEXAFLUOROETHANE
HYDROGEN
HYDROGEN CHLORIDE
NITROGEN
NITROGEN TRIFLUORIDE
NITROUS OXIDE
OXYGEN
OZONE
PHOSPHINE
PHOSPHOROUS OXYCHLORIDE
SILANE
SULFUR HEXAFLUORIDE
TRIMETHYL BORATE
TRIMETHYL PHOSPHATE
TUNGSTEN HEXAFLUORIDE

BUILDING 59
PROCESS CHEMICALS

AMYL ACETATE
AMMONIA
AMMONIUM FLUORIDE
AMMONIUM HYDROXIDE
ETHYLENE GLYCOL
GLYCERINE
HYDROCHLORIC ACID
HYDROFLUORIC ACID
HYDROGEN PEROXIDE
MOLYBDENUM DISULFIDE
NITRIC ACID
OIL
PHOSPHORIC ACID
POTASSIUM DICHROMATE
POTASSIUM PHOSPHATE
RED PHOSPHOROUS
SODIUM CARBONATE
SODIUM HYDROXIDE
SODIUM PHOSPHATE
SULFURIC ACID
TETRAMETHYL AMMONIUM HYDROXIDE
TRISODIUM PHOSPHITE

ATTACHMENT D.

CONTROL EQUIPMENT

SCRUBBER INFORMATION

HARRIS ID # : FS9501
MANUFACTURER : BEVERLY PACIFIC MODEL NUMBER : PS-40HT
SERIAL NUMBER: F-600 MATERIAL : FIBERGLASS
DESCRIPTION : HORIZONTAL CROSS FLOW, NON-CLOGGING PVC SPRAY NOZZLES, POLYPROPYLENE PACKING, PVC MIST ELIMINATOR, DWG. F-600-1

DESIGN DATA
VOLUME FLOW RATE (CFM): 40,000 PRESSURE DROP (IN):
RECIRCULATION RATE (GPM): 175 MAKE UP RATE (GPM): 17.5

ACTUAL DATA
VOLUME FLOW RATE (CFM): PRESSURE DROP (IN): N/E DATE:
RECIRCULATION RATE (GPM): 90 MAKE UP RATE (GPM): 2.5 DATE: 01/16/87

RECIRCULATION PUMP INFORMATION

MANUFACTURER : FILTER PUMP INC MODEL NUMBER : 36E188-105
SERIAL NUMBER: F1280 HP : 3 RPM : 3450
BRKR LOCATION: NEXT TO UNIT FED FROM MCC : 5912

FAN INFORMATION

HARRIS ID # :
MANUFACTURER : BEVERLY PACIFIC MODEL NUMBER: CB-49
SERIAL NUMBER: F-600 MATERIAL : FIBERGLASS
DESCRIPTION : CENTRIFUGAL TYPE, CLASS II, BACKWARD CURVED BLADES, DWG. F-600-1

DESIGN DATA
VOLUME FLOW RATE (CFM): 33,384 STATIC PRESS (IN): 5.0

ACTUAL DATA SPEED (RPM): 764 DATE: SUBMITTAL
VOLUME FLOW RATE (CFM): STATIC PRESS (IN): DATE:

FAN MOTOR INFORMATION

MANUFACTURER : MODEL NUMBER :
SERIAL NUMBER: HP : RPM :
BRKR LOCATION: NEXT TO UNIT FED FROM MCC : 5913

SCRUBBER INFORMATION

HARRIS ID # : F59S02
MANUFACTURER : BEVERLY PACIFIC MODEL NUMBER : PS-24VT
SERIAL NUMBER: F-600 MATERIAL : FIBERGLASS
DESCRIPTION : VERTICAL COUNTER-CURRENT, NON-CLOGGING PVC SPRAY NOZZLES, POLYPROPYLENE PACKING, PVC MIST ELIMINATOR, DWG. F-600-2

DESIGN DATA
VOLUME FLOW RATE (CFM): 24,000 PRESSURE DROP (IN):
RECIRCULATION RATE (GPM): 105 MAKE UP RATE (GPM): 10.5

ACTUAL DATA
VOLUME FLOW RATE (CFM): 5,494 PRESSURE DROP (IN): N/E DATE: 12/09/86
RECIRCULATION RATE (GPM): 30 MAKE UP RATE (GPM): 2.5 DATE: 01/16/87

RECIRCULATION PUMP INFORMATION

MANUFACTURER : FILTER PUMP IND MODEL NUMBER : 36E188-105
SERIAL NUMBER: F1280 HP : 3 RPM : 3450
BRKR LOCATION: NEXT TO UNIT FED FROM MCC : 5912

FAN INFORMATION

HARRIS ID # :
MANUFACTURER : BEVERLY PACIFIC MODEL NUMBER: CB-36
SERIAL NUMBER: F-600 MATERIAL : FIBERGLASS
DESCRIPTION : CENTRIFUGAL TYPE, CLASS II, BACKWARD CURVED BLADES, DWG. F-600-2

DESIGN DATA
VOLUME FLOW RATE (CFM): 16,000 STATIC PRESS (IN): 6.0

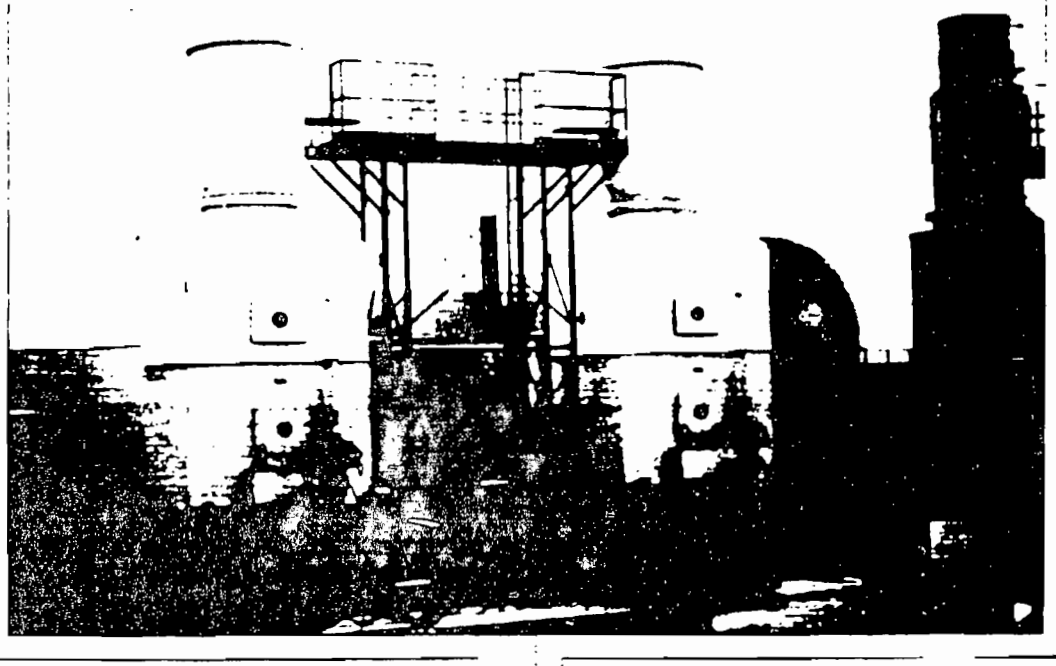
ACTUAL DATA SPEED (RPM): 1094 DATE:SUBMITTAL
VOLUME FLOW RATE (CFM): 5,494 STATIC PRESS (IN): DATE: 12/09/86

FAN MOTOR INFORMATION

MANUFACTURER : MODEL NUMBER :
SERIAL NUMBER: HP : RPM :
BRKR LOCATION: NEXT TO UNIT FED FROM MCC : 5913

BEVERLY PACIFIC CORPORATION

SCRUBBERS

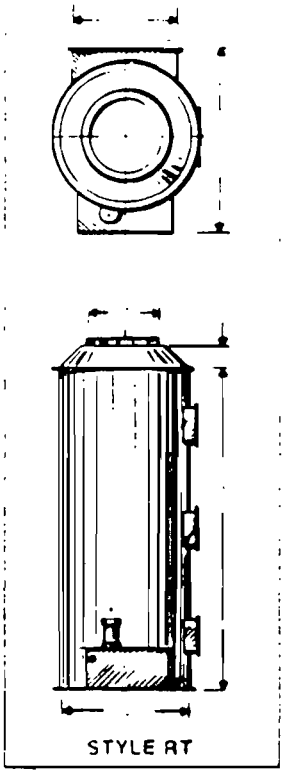


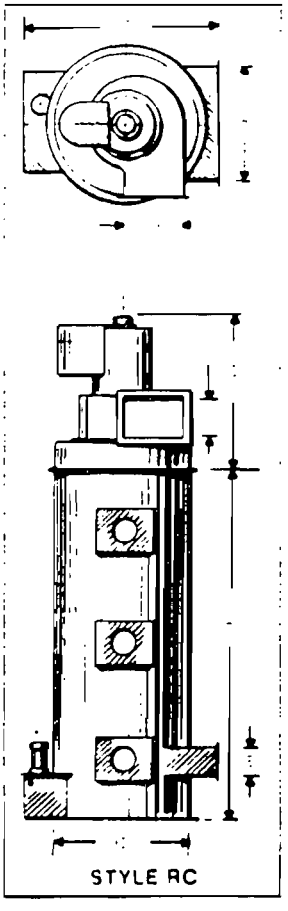
FIBERGLASS REINFORCED PLASTIC

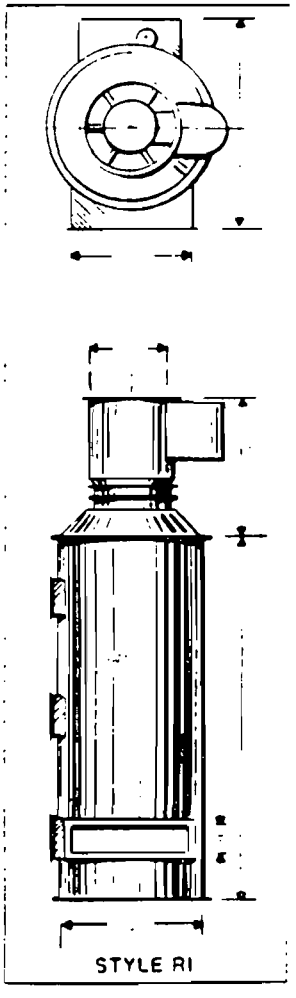
PACKED SCRUBBER DIMENSIONAL CHART
MODEL NUMBERS
DIMENSIONS IN INCHES

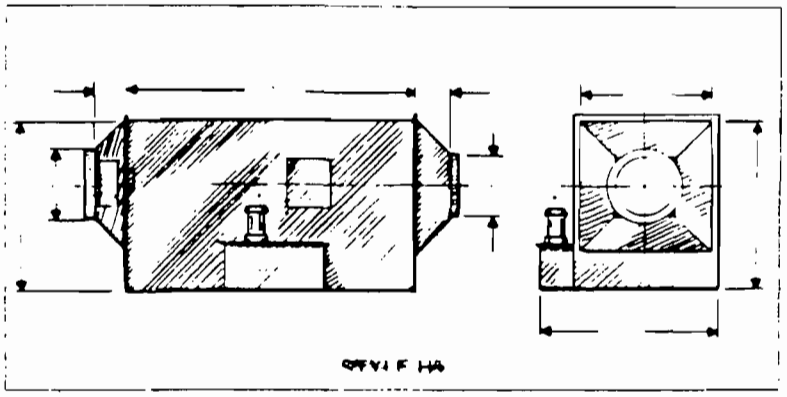
	PS-2	PS-4	PS-6	PS-8	PS-12	PS-18	PS-24	PS-30	PS-40	PS-50
A	78	82	84	94	101	108	112	114	118	118
B	24	36	42	48	60	72	84	96	108	120
C	28	40	48	58	72	84	96	108	120	136
D	22	34	40	46	58	70	80	92	104	116
E	6	8	10	11	12	16	18	20	24	24
F	46	58	66	76	90	102	114	126	138	154
G	42	54	60	66	78	90	102	114	126	138
H	13⅜	16⅜	22½	26¼	29½	35¼	39	47¼	52¾	63
I	10⅛	12⅛	17	20½	22¾	27	30	37½	40¾	49¼
J	18	22	28	34	38	45	50	62	66	80
K	6	8	10	10	12	16	19	20	24	24
L	84	87	89	104	112	118	122	124	128	128
M	64	64	70	77	89	102	102	102	114	114
N	35	49	55	62	76	88	103	116	128	142
O	38	52	58	65	79	91	106	119	131	145
P	14	16	22	26	30	36	42	50	54	66
Q	45	50	61	64	68	72	78	86	93	103
R	35	44	55	65	75	85	94	108	120	141
S	46	52	59	69	72	79	82	97	100	110
T	36	48	54	60	72	84	96	108	120	132
WHEEL DIA.	12¼	15	20	24½	27	33	36½	44½	[illegible]	60
CFM x 1000	1-2	2-4	4-6	6-8	8-12	12-18	18-24	24-30	[illegible]40	40-50
RECIRC. GPM	7	15	25	35	45	75	105	135	[illegible]75	225
MAKE-UP GPM	0.7	1.5	2.0	3.0	4.0	7.0	10.0	13.0	[illegible].0	22.0
HT OP. WT.	388	745	1110	1570	2690	4085	5670	7595	[illegible]790	16040
HT SHIP WT.	220	385	550	770	1210	1925	2750	3795		7040
VT OP. WT.	318	660	1060	1500	2630	3910	5470	7400	11650	15800
VT SHIP WT.	150	300	500	700	1150	1750	2550	3600	5250	6800


STYLE RO

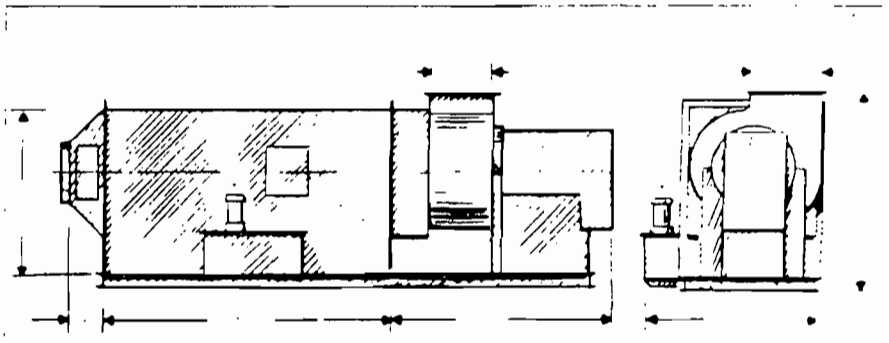

STYLE RT


STYLE RC


STYLE RI

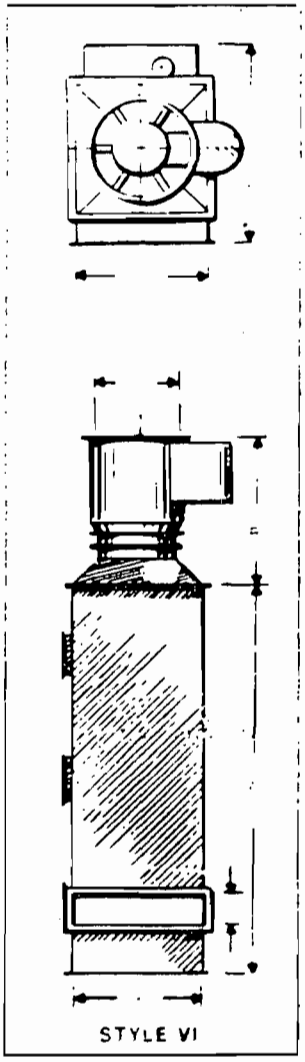


STYLE HA

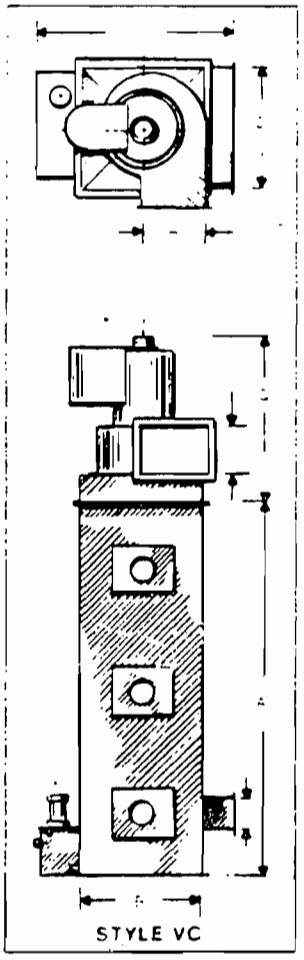


STYLE H.

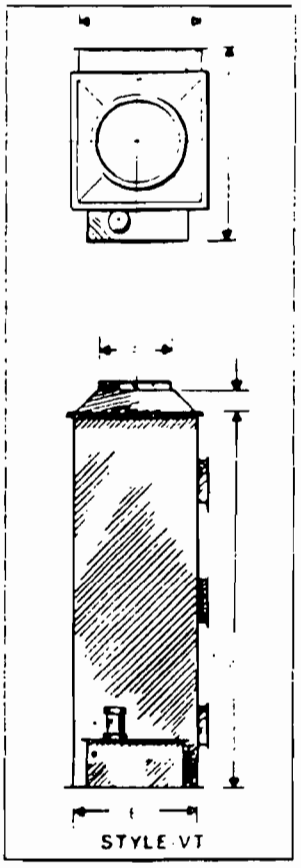
*May require one or more pumps.



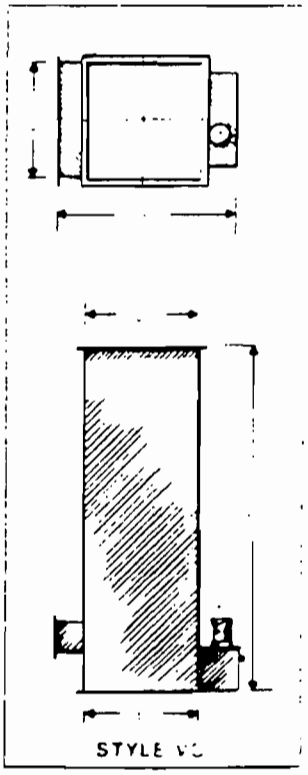
STYLE VI



STYLE VC



STYLE VT



STYLE VC

COMPUTERIZED PACKING MEDIA SELECTION

The most common mistake made by scrubber manufacturers today is the use of only one type of packing media for all types of contaminant removal. Beverly Pacific Corporation scrubbers are designed with a computer program assist to determine the most beneficial packing media to achieve high removal efficiency coupled with low pressure drop providing the user with the ultimate in lower operating costs consistent with the contaminant removal requirements.

SCRUBBER CONFIGURATIONS

Beverly Pacific Corporation manufactures scrubbers of both crossflow and counter-current configurations.

The CROSSFLOW design is of low profile, rectangular shape wherein the contaminated air stream moves horizontally through the packing media and is scrubbed by the liquid flowing downward through the packing. This configuration is ideal for roof-top mounting and is available in ten (10) standard sizes with or without integral centrifugal fans.

The COUNTER-CURRENT design is offered in two (2) configurations, round or rectangular. While the round tower unit is the most economical in initial cost, the rectangular towerunit permits larger CFM volume using the same amount of floor space. In the counter-current design, the contaminated airstream flows up through the packing media and is scrubbed by the liquid flowing downward. The round and rectangular tower units are each offered in ten (10) sizes and are available with or without integral inline or centrifugal fans.

SCRUBBER MAKE-UP WATER CONSUMPTION

Beverly Pacific's scrubber design is based on a scrubbing liquid recirculation rate of 5 GPM per 1000 CFM of contaminated air. Of that 5 GPM, losses due to absorption and or evaporation range from 0.2 GPM to 0.6 GPM, depending on inlet gas temperature and gas stream dust load.

ENTRAINMENT SEPARATION

The unique design of Beverly Pacific's mist eliminator section provides up to 99+% moisture particle entrapment at a pressure drop of approximately 0.5" W.G.

CONSTRUCTION

The structural housings are fabricated of Fiberglass Reinforced Plastic (FRP) materials which provide structural strength, are corrosion-resistant and light in weight. Resin selection depends on the corrosive element involved. Resins can also be of fire-retardant grade if required. Our construction technique employs the use of female molds resulting in an extremely smooth, attractive, gelcoated exterior surface (note the upper right photo on the facing page). Beverly Pacific Corporation's construction methods meet or exceed the requirements of NBS-PS 15-69 for custom contact-molded reinforced polyester chemical resistant process equipment.

OPTIONAL EQUIPMENT, FITTINGS AND ACCESSORIES

FITTINGS, such as drain, overflow, make-up water, access doors, etc. can usually be located to facilitate installation and maintenance.

RECIRCULATION RESERVOIR(S) are normally an integral part of the scrubber but, if required, can be furnished for remote installation.

RECIRCULATION PUMP(S) can be located within the built-in reservoir, but can also be installed in remote reservoir units.

SPECIAL RESERVOIR(S) can be furnished in applications where it is necessary to remove non-soluble particulate accumulation to prevent pump damage and minimize maintenance.

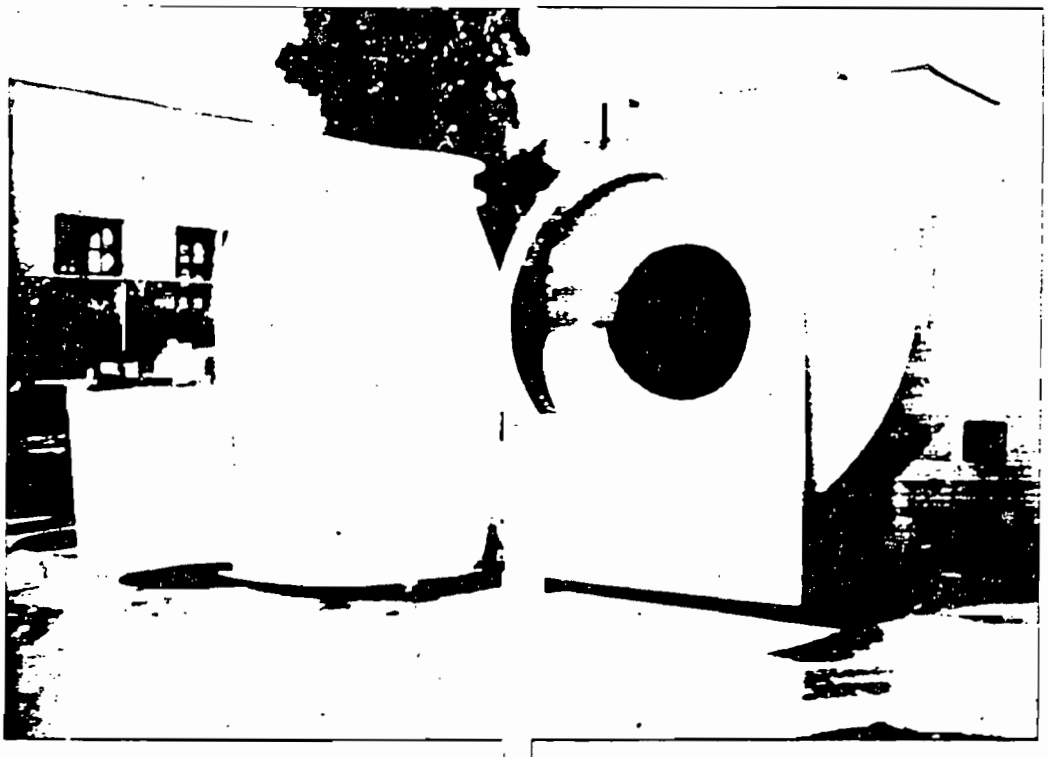
pH CONTROL SENSING/METERING equipment can be provided where contaminate absorption requires the addition of acid or caustic to the recirculated scrubbing liquid.

[redacted]

BEVERLY PACIFIC CORPORATION

Industrial Systems Division

EXHAUST FANS



FIBERGLASS REINFORCED PLASTIC

EXHAUST FAN INTRODUCTION

Beverly Pacific's complete line of centrifugal and inline exhaust fans have proven their reliability with years of successful, continuous corrosive service throughout the nation and around the world.

Our solid "FRP" construction defies corrosion and each is designed to provide smooth, quiet and maintenance-free operation . . . this superior combination permits peak performance with the lowest possible power consumption.

A wide selection of standard models, types and sizes are available to meet your specific requirements.

FAN WHEEL SUPERIORITY

The Beverly Pacific fan wheels are fabricated of corrosion-resistant Fiberglass Reinforced Plastic (FRP) materials. The fan wheel design is that of a "backward curve blade," Class II construction, and are available in standard sizes of 12¼" through 66" diameters.

All of Beverly Pacific's fan wheels are both statically and dynamically balanced and run on a test stand prior to final assembly to insure continuous, vibration-free performance.

Every surface in contact with the air stream is corrosion resistant. The steel hub (providing the positive-lock connection to the drive shaft) is totally encapsulated in the wheel laminate and even the weight added during the wheel balancing process is corrosion resistant, Fiberglass Reinforced Plastic materials.

Should your particular requirement involve moving a volume of only a few hundred CFM at ¼" S.P. or over 80,000 CFM at 6" S.P., Beverly Pacific has a proven standard size to meet your requirement.

EXHAUST FANS STANDARD AND OPTIONAL EQUIPMENT

Standard Equipment: Beverly Pacific's centrifugal fans are equipped with a scroll bottom drain and flanged discharge outlet, and are furnished with a purchaser's choice of twelve (12) discharge outlet directions and a choice of right or left fan wheel rotation. Both of our fan styles, centrifugal and inline, are equipped with an OSHA approved belt guard and powered by 230-460 30 60 Hz motors . . . totally enclosed, fan-cooled, (TEFC) up to 20 horsepower, and Multi-guard motors are furnished when horsepower requirements are 25 or larger. Also, as standard equipment, Beverly Pacific furnishes the following list of first-line, top quality drive components which were selected based on motor horsepower, RPM, tip speed and weight of fan wheel, with a safety factor of 1.3 times the motor horsepower.

a. BEARINGS — Beverly Pacific furnishes Dodge-Type K pillow blocks on the inline model. These Dodge bearings have Timken-tapered roller bearings, are fully self-aligning and designed to meet the stringent demands of power transmission. Based on radial and thrust load computations, bearing life expectancy is in excess of 100,000 hours.

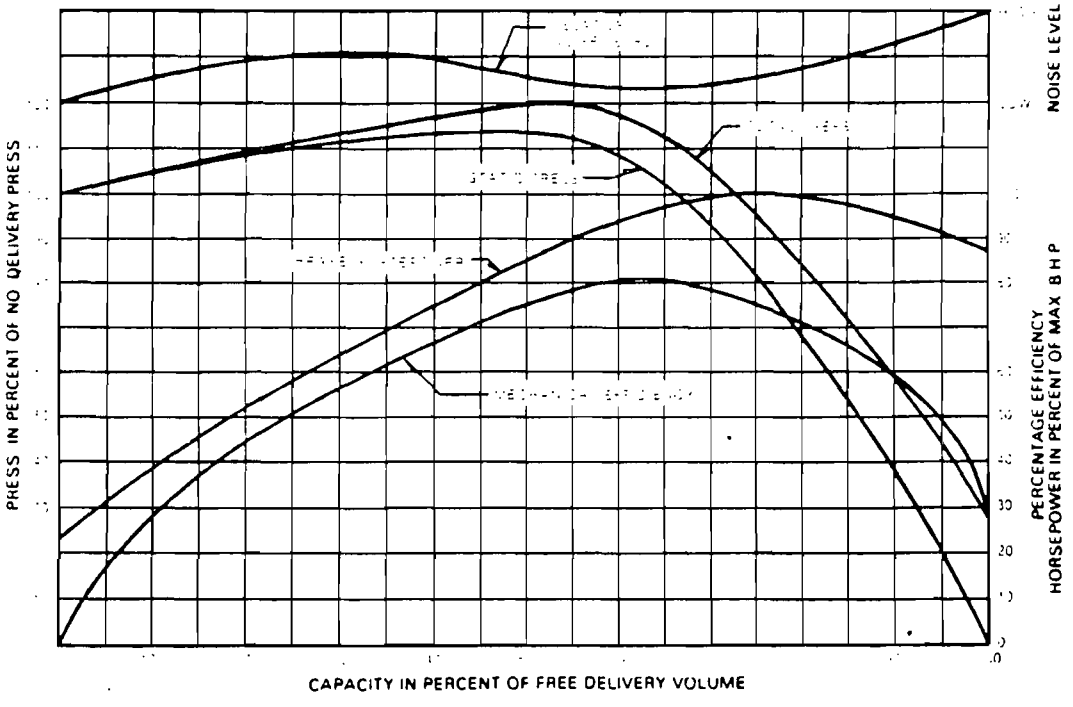
b. SHEAVES — Beverly Pacific Corporation furnishes Dodge sheaves, which are cast from the finest quality gray iron and machined to rigid quality control specifications. Groove design and spacing conforms to ASA, MPTA and RMA standards. These sheaves are equipped with Taper-Lock bushings, a superior mounting well recognized and widely used in industry.

c. V-BELTS — Beverly Pacific furnishes Dodge Sealed-Life Belts, Type A, B and C which have a longer wearing protective cover, crowned top, concave sidewall, exceptional stability and an improved cord section which prevents failures caused by cord separation.

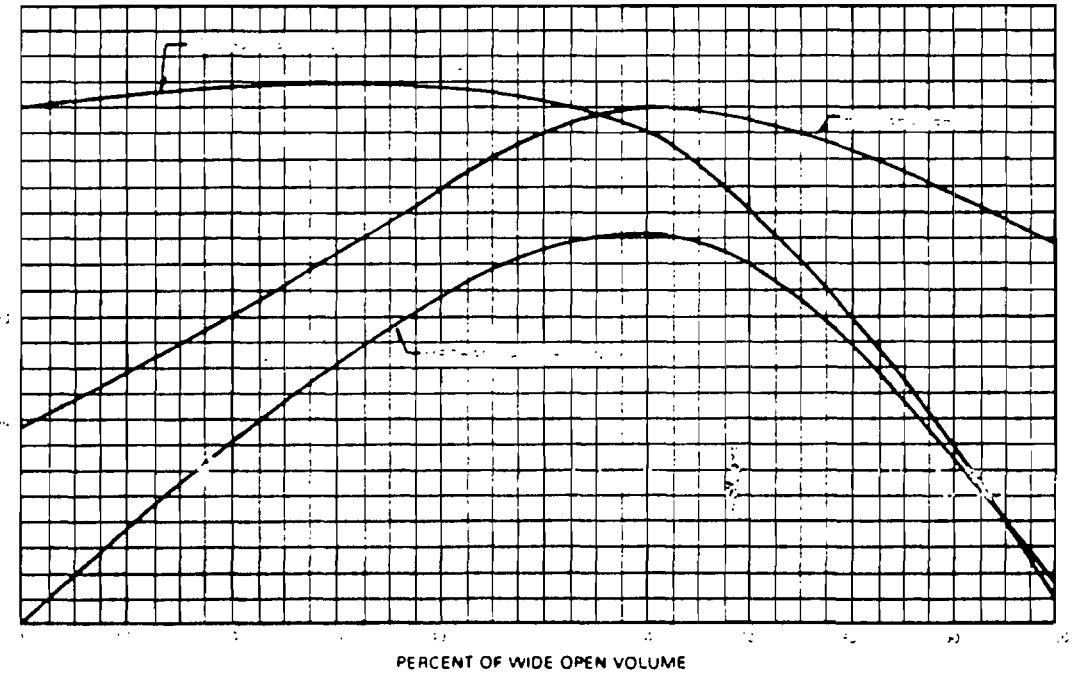
d. WHEEL BACKING PLATES — Beverly Pacific uses Flex taper-lock, single-duty, Type B, steel sprocket, in the backing plate of all FRP fan wheels. This steel sprocket is completely embedded and encased with FRP materials to prevent corrosion attack.

e. DRIVE SHAFTS — Beverly Pacific uses ground and polished, 1045 TGP shafting rounds, as produced by Inland Steel. This medium carbon steel is used because of its greater strength and hardness. The mechanical properties, based on ¾" — 1¼" diameter round bars of 1045, include a tensile strength of 98,000 PSI, yield strength of 59,000 PSI and a Brinnel Hardness of 212.

BEVERLY PACIFIC CORPORATION
CENTRIFUGAL FAN CHARACTERISTIC CURVE



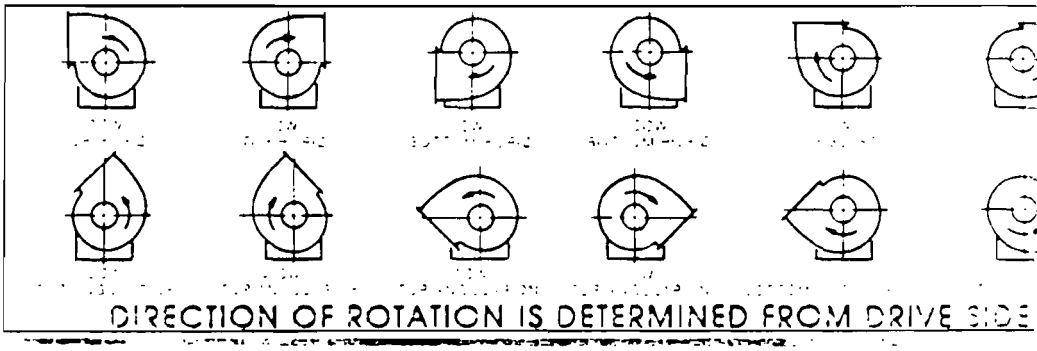
BEVERLY PACIFIC CORPORATION
INLINE FAN CHARACTERISTIC CURVE



CENTRIFUGAL INDUSTRIAL EXHAUST FANS

	CB-12	CB-13	CB-15	CB-16	CB-18	CB-20	CB-22	CB-24	CB-27	CB-30	CB-33
MID-RANGE CFM RECOMMENDED	2,150	2,625	3,200	3,900	4,750	5,800	7,075	8,650	10,550	12,875	15,700
FAN WHEEL DIAMETER	12¼	13½	15	16½	18¼	20	22¼	24½	27	30	33
A	13½	14½	16½	18¼	20	22	24½	26	29¼	32¼	36
B	10⅜	11⅜	12⅞	14⅜	15	17	18¾	20½	22¾	25	27
C	13⅜	14⅞	16⅜	18⅜	20	22½	24	26¼	29½	32	35¼
D	34¼	35¼	40⅞	42⅞	45	47¾	54	57¼	61½	64¾	66¾
E	22¼	22½	27¼	29¾	32⅜	36½	39¼	43¼	49	53	58¼
F	15	16	18	19	20	23	26	26	30	33	36
G	11	11½	12½	14	15½	17¼	19	21½	23	25½	28½
H	13⅜	14⅜	15⅞	17⅜	18	21	22¾	24½	26¾	29	31
I	16	16	18¼	16¾	20	20½	23	23	25	26	26
J	3	3	4	4	4	4	6	6	6	6	6
K	9¼	10¼	11¼	12½	13½	15	16	16	20½	22	24
L	9¼	10¼	11¼	12½	13½	15	16	16	20½	22	24
M	3½	3¾	4¼	4½	5	5¾	6⅞	6⅞	7⅞	8¼	9½
DRIVE SHAFT DIAMETER	1	1	1⅜	1⅜	1⅞	1⅞	1 11/16	1 11/16	1 15/16	1 15/16	1 15/16
SHIPPING WEIGHT POUNDS	170	205	230	400	550	600	650	720	850	1,000	1,380

DESIGNATION OF DIRECTION OF ROTATION AND DISCHARGE



DIRECTION OF ROTATION IS DETERMINED FROM DRIVE SIDE

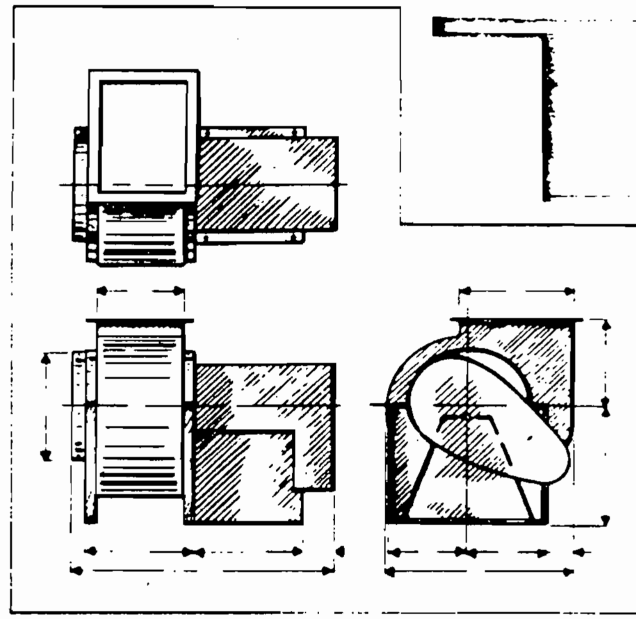
INLINE EXHAUST FANS

	IB-12	IB-15	IB-18	IB-20	IB-22	IB-24	IB-27	IB-30	IB-33	IB-36	IB-40
MID-RANGE CFM RECOMMENDED	2,550	3,842	4,648	5,614	6,948	8,424	10,242	12,644	15,300	18,718	22,761
FAN WHEEL DIAMETER	12¼	15	18¼	20	22¼	24½	27	30	33	36½	40½
P	21"	28"	32½"	36½"	40"	47"	53"	55"	58"	63⅜"	70"
Q	14"	16"	20"	22"	24"	26"	30"	32"	36"	42"	46"
R	16"	22"	26"	28"	32"	34"	38"	42"	45"	50"	56"
S	2"	2"	2"	2"	2"	3"	3"	3"	3"	3"	3"
T	23"	28"	31"	32"	34"	35"	37"	39"	40½"	45"	52"
U	2"	2"	2"	2"	2"	3"	3"	3"	3"	3"	3"
DRIVE SHAFT DIAMETER	1	1⅜	1⅞	1⅞	1 11/16	1 11/16	1 15/16	1 15/16	1 15/16	2 3/16	2 3/16
SHIPPING WEIGHT POUNDS	90	130	290	320	350	380	450	525	730	850	1,110

BEST AVAILABLE COPY

DIMENSIONAL CHART

CB-36	CB-40	CB-44	CB-49	CB-54	CB-60	CB-66	
9,150	23,375	28,525	34…	42,450	51,775	63,175	MID-RANGE CFM RECOMMENDED
6½	40¼	44½	49…	54¼	60	66	FAN WHEEL DIAMETER
0	44½	49	54…	60	66	72	A
0	34½	37½	40…	44¾	49¾	54¾	B
9	43	47¼	52…	57⅝	63⅞	70¼	C
9¾	79¾	84¾	88…	93	97⅜	104⅜	D
5¼	72½	79½	88…	97	108	119	E
1½	42	49¾	49…	54	59	64	F
0½	34½	37½	41…	48	50½	55	G
4	40½	43½	48…	50¾	53¾	60¾	H
6	27½	29½	29…	31¼	33	33	I
	8	8	8	8	8	8	J
7	25¾	26¾	30…	34	37	40	K
7	25¾	26¾	30…	34	37	40	L
0¼	11¼	12¼	14…	15 5/16	17⅝	19⅞	M
3/16	2 3/16	2 7/16	2 7/…	2 15/16	2 15/16	2 15/16	DRIVE SHAFT DIAMETER
.610	2,050	2,300	2,…0	3,110	3,525	4,000	SHIPPING WEIGHT POUNDS



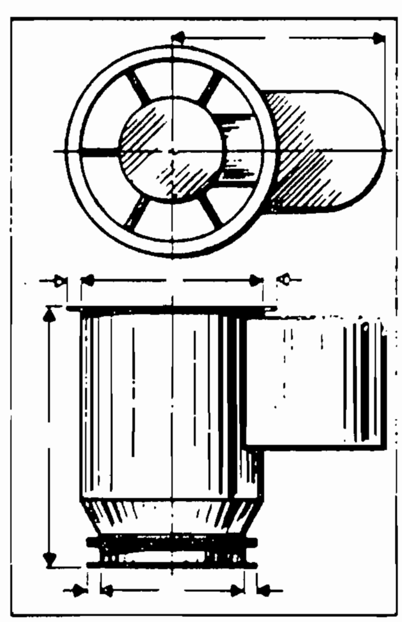
… FRP constructed fans have a Type "A" classification for spark resistance

STANDARD CLASSIFICATIONS FOR SPARK RESISTANT CONSTRUCTION

TYPE	CONSTRUCTION
[illegible]	All parts of the fan in contact with the air or gas being handled shall be made of non-ferrous material.
[illegible]	The fan shall have an entirely non-ferrous wheel and non-ferrous ring about the opening through which the shaft passes.
[illegible]	The fan shall be so constructed that a shift of the wheel or shaft will not permit two ferrous parts of the fan to rub or strike.

DIMENSIONAL CHART

-44	IB-49	IB-54	IB-60	IB-66	
7,822	33,733	41,349	50,579	61,201	MID-RANGE CFM RECOMMENDED
4½	49	54¼	60	66	FAN WHEEL DIAMETER
8"	84"	93"	104"	116"	P
0"	54"	60"	68"	72"	Q
2"	66"	72"	80"	88"	R
	3"	3"	3"	3"	S
3"	65"	68"	72"	76"	T
	3"	3"	3"	3"	U
7/16	2 7/16	2 15/16	2 15/16	2 15/16	DRIVE SHAFT DIAMETER
250	1,420	1,650	1,800	2,100	SHIPPING WEIGHT POUNDS



CENTRIFUGAL CAPACITY RATING TABLES

DATA ON WHITE BACKGROUND APPLIES TO CLASS I WHEELS
DATA ON BLUE BACKGROUND APPLIES TO CLASS II WHEELS

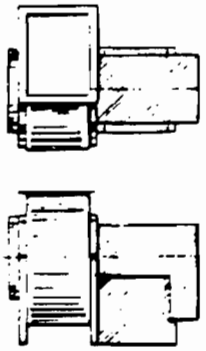
CB-40

WHEEL 40" DIA
INLET 44" DIA
CLASS MAX RPM
I 880
II 1120

CB-44

WHEEL 44½DIA
INLET 49" DIA
CLASS MAX RPM
I 825
II 1015

CB-48

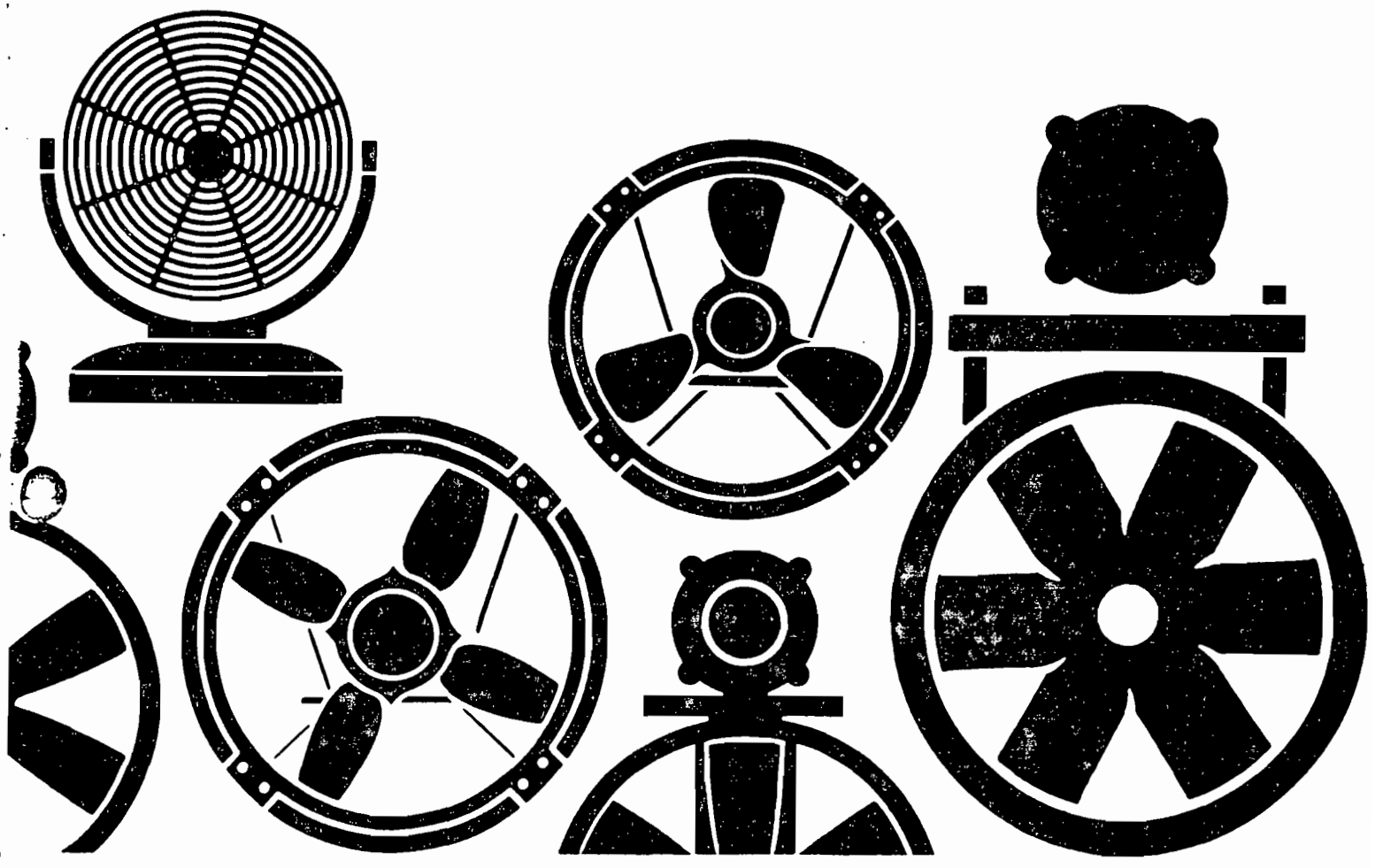


WHEEL 48" DIA
INLET 54" DIA
CLASS MAX RPM
I 725
II 920

USE CAPACITY TABLES AS GUIDE ONLY

Hartzell Stock Fans and Blowers

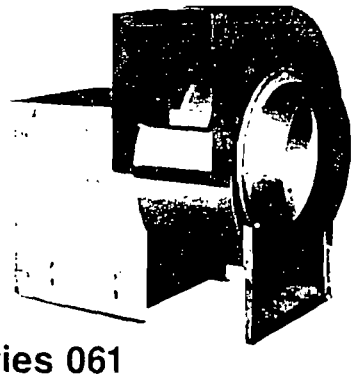
W. K. OUSLEY INC
P. O. DRAWER 750
650 AVE. B, S.W.
WINTER HAVEN, FLA. 33880
813 - 324-4000



HRS 1983

Hartzell Fan, Division of Castle Hills Corporation, Piqua, Ohio

Utility Fan (Belt Drive)



Series 061

Sizes 24" - 33" available under 20 day modified plan.

- Sizes 12", 15", 18", 22", 24", 27", 30" and 33" wheel diameters. Static pressures to 3" W.G. SWSI only.
- Packaged unit, either supply or exhaust, for industrial clean air applications. Temperatures up to 250° F.
- Combination weather and drive cover standard.
- Available in Arrangement #10 from stock.
- Clockwise rotation. Top horizontal discharge. **Rotatable in field.**
- Class I construction. Housing of heavy gauge hot rolled steel. Wheels consist of non-overloading backward curved single thickness airfoil blades fitted with taperlock bushing.
- Motors are open end drip proof, 1750 RPM as standard. Special motors available from stock at extra cost.
- Bearings are heavy duty, self-aligning ball bearings shielded and mechanically sealed in cast iron or malleable housing. Relubricable type for continuous service.
- Drive assembly consists of oversized V-Belts, adjustable motor sheave and machined cast iron pulley keyed to the shaft. Motor base has slotted sides for adjusting belt tension.
- Bolted inlet and outlet flanges available as an option.
- Standard finish is an industrial grade enamel.
- For complete information on Utility Fans, see Bulletin A-147.

Rating Table – Units laded area available under the 20 day modified plan.

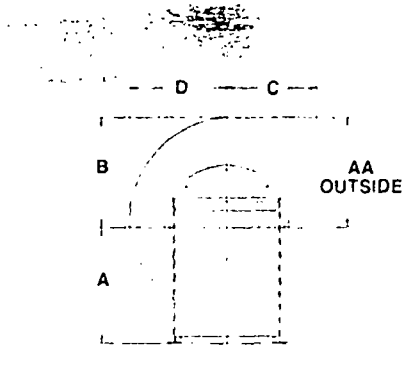
Size	Max. HP	Fan RPM Range	CFM @ SP						
			½"	1"	1½"	2"	2½"	3"	3½"
12	2	1520-3045	1233-2833	957-2709	1276-2589	920-2472	1130-2358	1268-2239	1417-1923
15	2	1295-2060	2303-4029	1871-3792	1168-3547	1985-3284	2391-2995	1839-2663	—
18	3	1115-1775	3506-5984	3002-5724	2142-5442	1922-5140	2452-4806	2788-4361	—
22	5	800-1505	4412-9307	3373-8934	2664-8539	2859-8101	5388-7651	4214-7068	—
24	7½	670-1450	4830-12107	3140-11689	4338-11209	4051-10769	5087-10294	7226-9708	6123-8975
27	7½	610-1195	6263-14006	4326-13415	5854-12779	6553-12164	8617-11409	7164-10426	—
30	10	610-1145	8256-17240	6463-16584	5565-15849	6079-15168	8759-14386	10768-13377	9150-12188
33	10	455-980	7570-19695	6781-18836	8921-17912	11135-16966	9097-15887	11379-14501	—

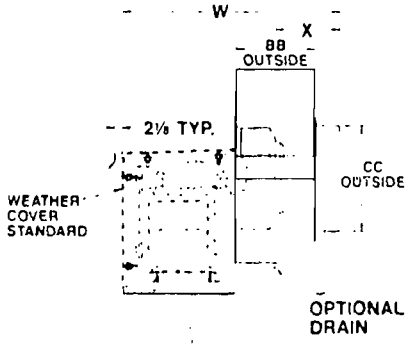
Performance shown is for belt drive fans with inlet and outlet ducts.
RPM shown is nominal and performance is based on actual speed of test.
Brake horsepower does not include drive losses.

Principal Dimensions

Fan Size	A	B	C	D	W	X	AA	BB	CC
12	16	13¼	14¼	11¾	36⅛	11	13⅜	9 9/16	12 15/16
15	18¾	16⅝	16 9/16	14 11/16	38 9/16	12½	16¾	12 3/16	16 3/16
18	22	20	18⅞	17 11/16	46	13½	20⅛	14⅝	19½
22	26¾	24 7/16	22	21 9/16	51 9/16	15½	24 9/16	17⅞	23¾
24	28½	26 9/16	23 9/16	23½	53⅜	15 13/16	26 11/16	19 7/16	25 13/16
27	32¼	29 13/16	25½	26 5/16	56¼	17	29⅞	21¾	28 15/16
30	34¾	32⅜	27½	28 9/16	61 1/16	17 15/16	32 7/16	23⅝	31⅜
33	38	35 9/16	30	31 7/16	64⅞	19 1/16	35 11/16	25 15/16	34½

Note: Dimensions and specifications are subject to change.
Certified prints are available.

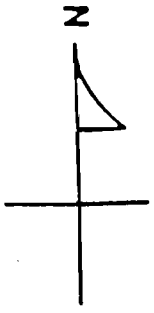


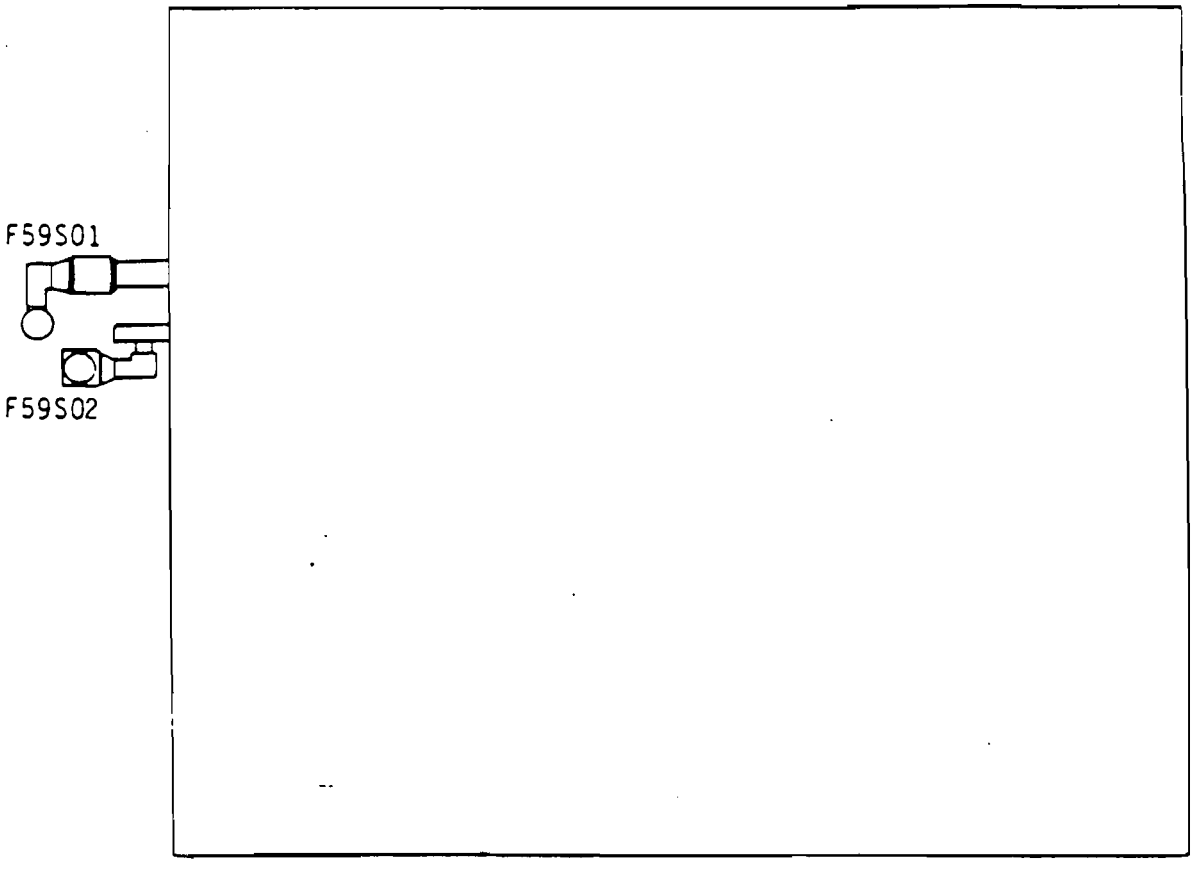


ATTACHMENT E.

LOCATION MAPS

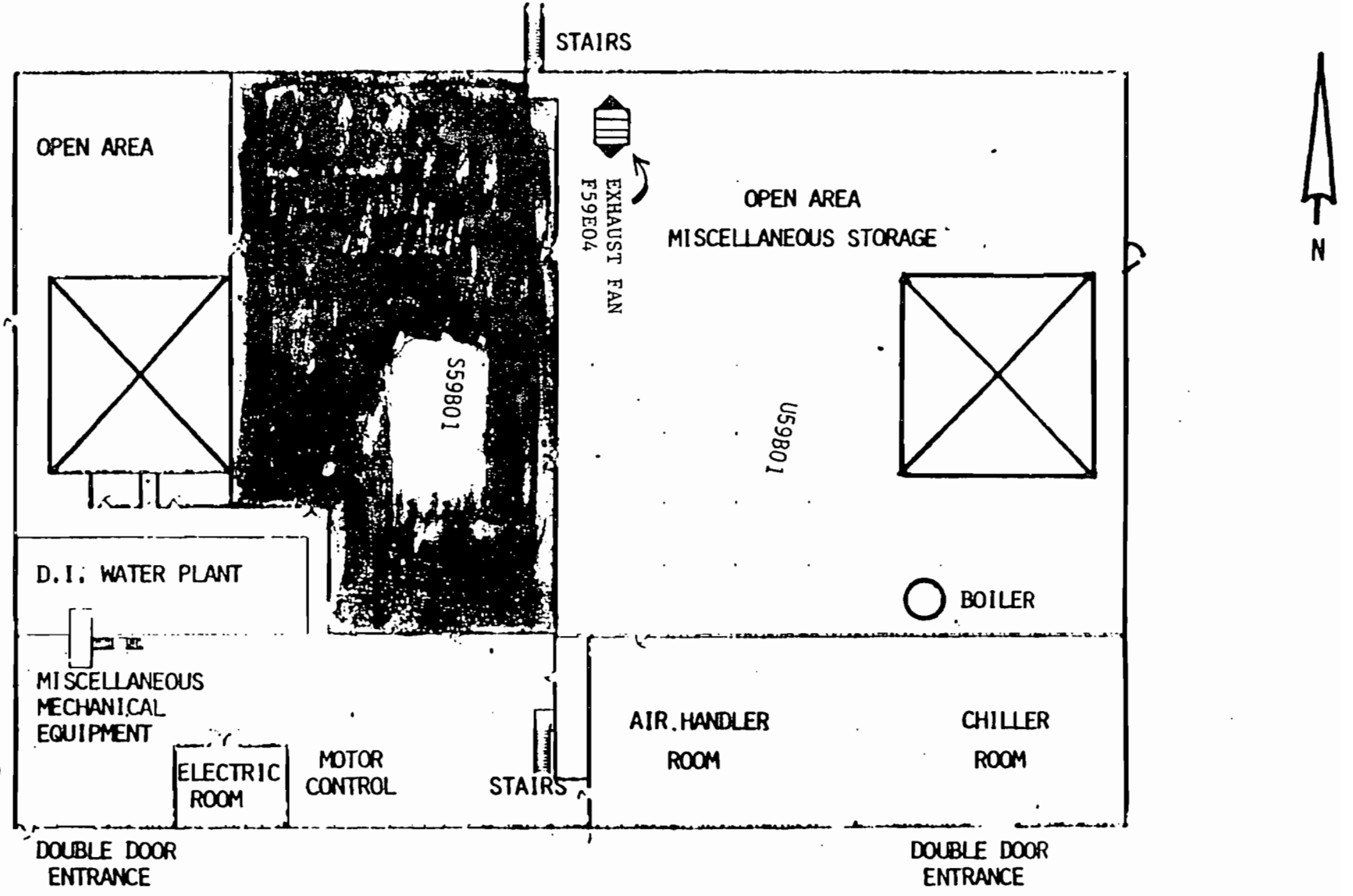
HARRIS SEMICONDUCTOR
SCRUBBER LOCATIONS
BUILDING 59





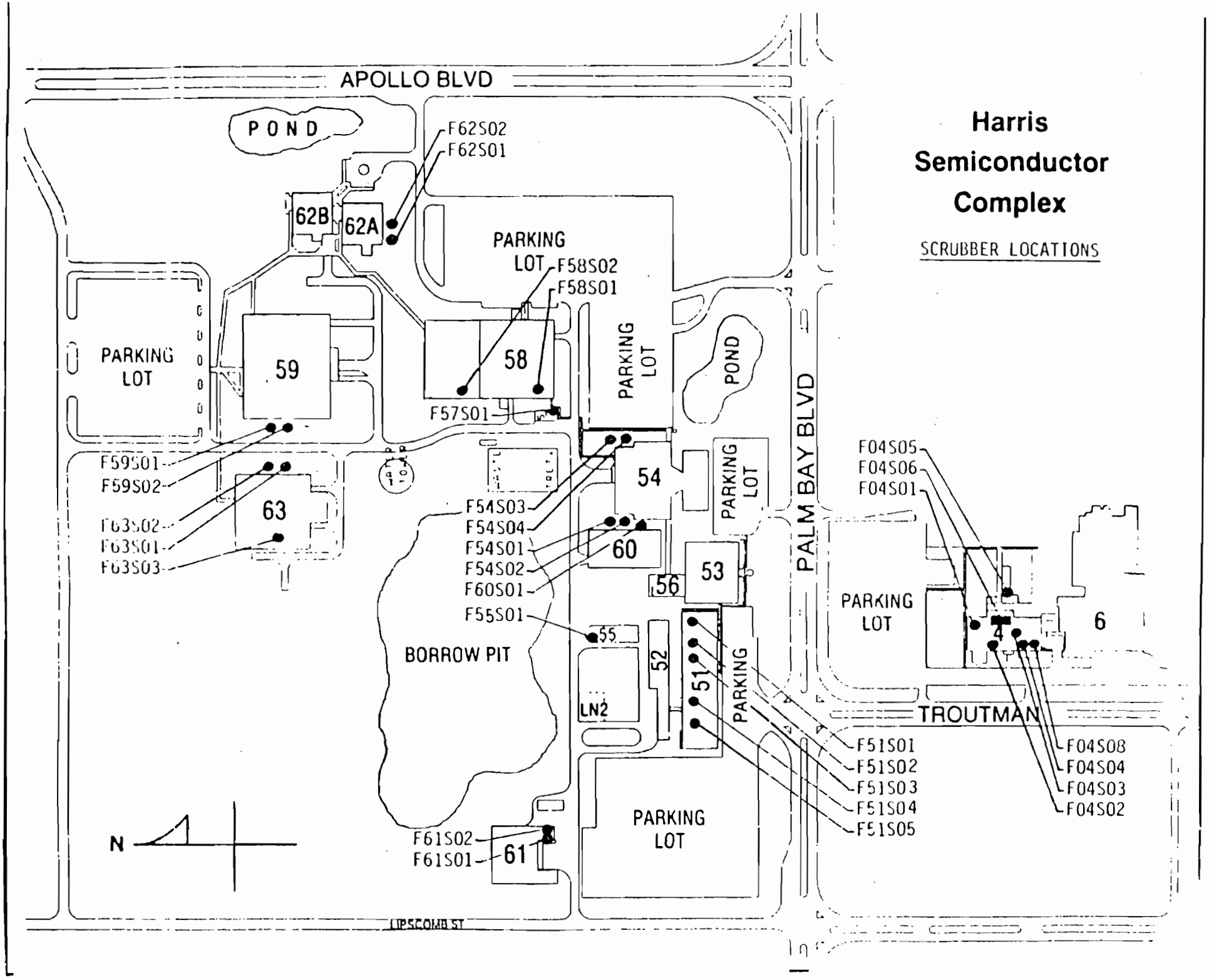
LEGEND

- Horizontal Scrubber
- Vertical Scrubber
- Exhaust Stack
- Exhaust Fan
- Stack mounted on fan
- Epitaxial Scrubber



BLDG. 59 - GROUND FLOOR

BLDG. 59 - GROUND FLOOR


Harris
Semiconductor
Complex
SCRUBBER LOCATIONS
APOLLO BLVD
POND
F62S02
F62S01
62B
62A
PARKING
LOT
F58S02
F58S01
PARKING
LOT
59
58
POND
PALM BAY BLVD
F57S01
F59S01
F59S02
63
F63S02
F63S01
F63S03
F54S03
F54S04
F54S01
F54S02
F60S01
F55S01
54
PARKING
LOT
60
53
56
55
BORROW PIT
52
51
LN2
PARKING
F04S05
F04S06
F04S01
PARKING
LOT
6
4
TROUTMAN
F51S01
F51S02
F51S03
F51S04
F51S05
F04S08
F04S04
F04S03
F04S02
N
F61S02
F61S01
61
PARKING
LOT
LIPSCOMB ST

HARRIS SEMICONDUCTOR

HARRIS · RCA · GE · INTERSIL

RECEIVED

DEC 20 1989

DER - BAQM

December 18, 1989

Mr. Bruce Mitchell
Engineer
Bureau of Air Quality Management
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

SUBJECT: Construction permit modification; Permit no. AC 05-138795
Vacuum Degasifier with Flare System
HARRIS SEMICONDUCTOR

Dear Mr. Mitchell:

Enclosed is a modified permit application for Harris Semiconductor's facility in Palm Bay, Florida. The subject source is a part of our Industrial Water Plant. Floridan water is used as the source of industrial water. The flare is designed to control odors caused by the removal of hydrogen sulfide from the water.

Initial design criteria for the flare system were based on design gas input rates of 3.75 pounds per hour of hydrogen sulfide, and 50.0 pounds per hour of carbon dioxide. However, final design criteria were based on process input rates of 5.29 pounds per hour of hydrogen sulfide, and 66.67 pounds per hour of carbon dioxide. This is due to the efficiency of the selected degasifier unit at removing these gases from the process water.

We specifically request that the maximum potential hydrogen sulfide emissions be increased to 695.11 pounds per year, and that the maximum potential sulfur dioxide emissions be increased to 9.99 pounds per hour (43.61 tons/year.)

A check for $400.00 is enclosed; $200.00 of this check is to fund this modified permit application, and $200.00 is to fund building 59's modified construction permit application. The second application is being sent to you under separate cover.

Please call me at (407) 729-4061 if you have any questions.

Sincerely,

Nancy Barbarotto

Nancy Barbarotto
Environmental Engineer

$200 pd.
12-30-89
Recpt.#117686

DEPARTMENT OF ENVIRONMENTAL REGULATION

RECEIVED
DEC 20 1989
DER - BAQM

AC05-174446

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 [ ] New[1] [X] Existing[1]

APPLICATION TYPE: [ ] Construction [ ] Operation [X] 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 ° 01 ' 20 "N Longitude 80 ° 36 ' 10 "W

APPLICANT NAME AND TITLE:

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 modified permit are true, correct and complete to the best of my knowledge and belief. Furt I agree to maintain and operate the pollution control source and pollution con facilities in such a manner as to comply with the provision of Chapter 403, Flo Statutes, and all the rules and regulations of the department and revisions thereof also understand that a permit, if granted by the department, will be non-transfer and I will promptly notify the department upon sale or legal transfer of the permi establishment.

*Attach letter of authorization

Signed: Laurence P. Hutter

Name and Title (Please Type)

Date: Telephone No. (407)

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 been designed/examined by me and found to be in conformity with modern engine principles applicable to the treatment and disposal of pollutants characterized i permit application. There is reasonable assurance, in my professional judgment,

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

the pollution control facilities, when properly maintained and operated, will discharg 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 prope 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, Florida 32901
Mailing Address (Please Type)

lorida 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.

This is a modification of construction permit no. AC 05-138795. Semiconductor is using industrial grade water system to provide water for the deionized water plants in bldgs.52& The system includes a vacuum degasifier to remove H_2S and CO_2 from well water. The remove 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 date.

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 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): 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 Emission		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/yr	T/yr	
SO_2	9.96	5.39			9.96	5.39	
H_2S	0.0794	0.04			0.0794	0.04	
CO_2	126.6	333.8			126.6	333.8	

[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.

J. 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)	148.7 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: 17.4 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: _____ F

*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 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 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 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 constructi permit.

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

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

[ ] Yes [ ] No

Contaminant	Rate or Concentration

B. Has EPA declared the best available control technology for this class of sources (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:

Contaminent	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. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and oper 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 o 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 applica ble technologies (i.e., jobs, payroll, production, taxes, energy, etc.). Includ assessment of the environmental impact of the sources.

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

HARRIS SEMICONDUCTOR

ATTACHMENT A

PROCESS DESCRIPTION

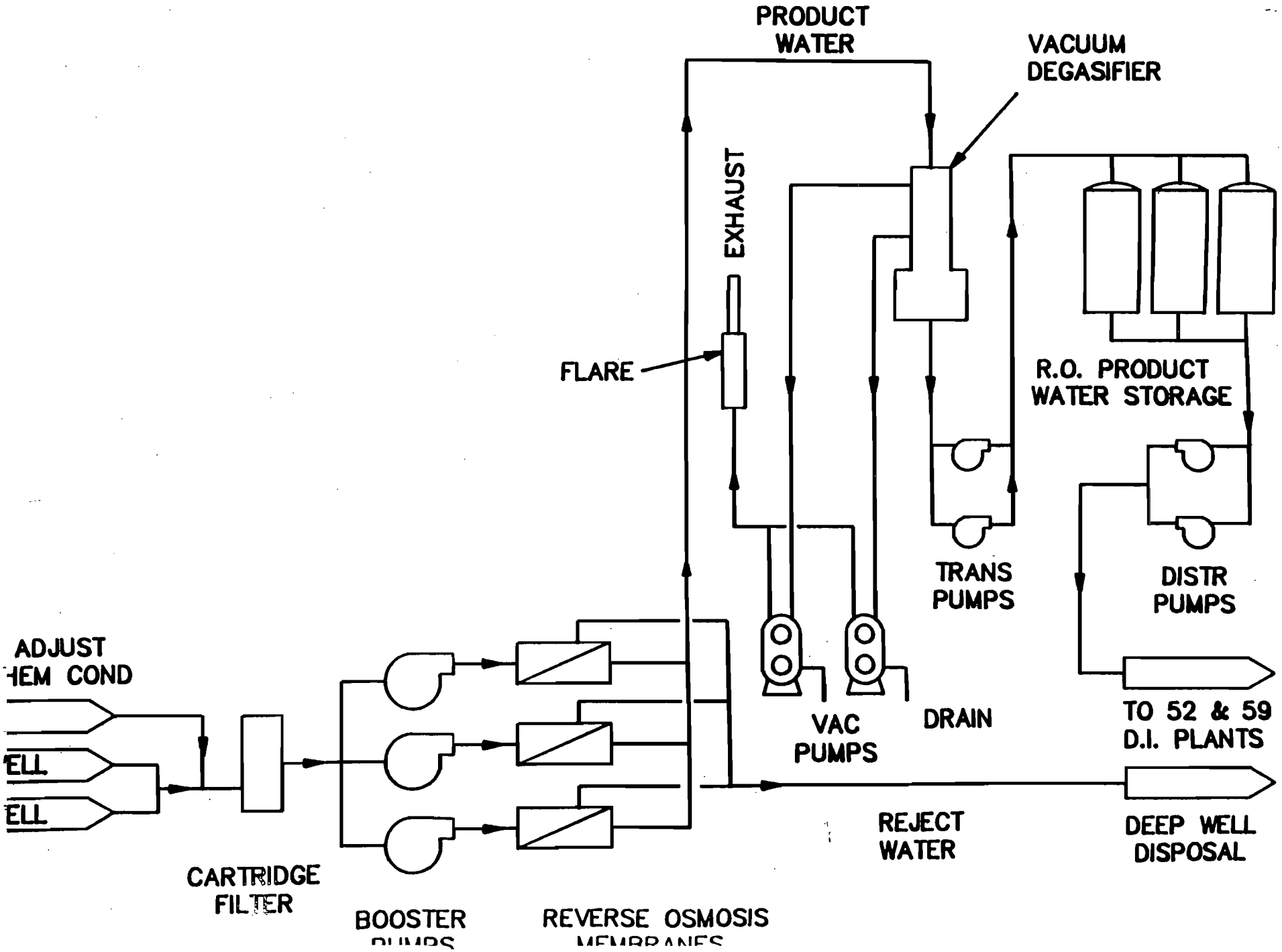
ATTACHMENT A

Flow diagram Dwg. 1 illustrates the Industrial Grade water system that Harris Semiconductor is employing. The purpose of the operation is to produce industrial water for use in building 52 and 59 deionized (DI) plants. Design criteria is based on 600 gpm water flow rate.

Floridian aquifer water is drawn from two existing 1140 gpm wells and is conveyed via a pipe rack to the facility. The system is located between the on-site waste treatment plant and building 58 (see location map in attachment F.)

Following chemical treatment to reduce scaling and corrosive properties, the water is filtered and pumped into the reverse osmosis (RO) membranes. A minimum of 75% of this water passes through the membranes as purified water and is treated in a vacuum degasifier to remove hydrogen sulfide and carbon dioxide gases. The gas streams from the degasification process are sent to a flare system to oxidize the hydrogen sulfide. The RO reject water is sent the basin of the wastewater treatment plant.

DWG 1.



HARRIS SEMICONDUCTOR

ATTACHMENT B

POLLUTION CONTROL SYSTEM COSTS

HARPER
mechanical corporation

5401 benchmark lane
sanford, florida 32771
(407) 321-8100

May 4, 1989

Harris Semiconductor
P.O. Box 883
Melbourne, FL 32901

Attention: Nancy Baldisserotto
Mail Stop 59-006

Reference: Harris Industrial Water Plant
Harper Job No. 2052

Subject: **FLARE SYSTEM COST**

Gentlemen:

In response to your request for a price breakdown on the flare system installed at the Industrial Water Plant, please accept the following:

Equipment	$ 16,610.00
Piping Material	500.00
Sales Tax	1,026.00
Installation Labor	1,000.00
Overhead & Profit	4,018.00
TOTAL.....	$ 23,154.00

If you have any questions regarding this matter, please contact myself at our Sanford office.

Very truly yours

HARPER MECHANICAL CORPORATION

Scott Delbridge
Project Manager

SD:lj

cc: 2052-3A/JAP
SD

JOHN ZINK COMPANY

International Headquarters
P.O. Box 702220
Tulsa, Oklahoma 74170
(918) 747-1371

October 5, 1988

Harris Semiconductor
Palm Bay Road
Palm Bay, Fl 32905

Attention: Jim Longo

Reference: John Zink File F806-032CEN-1

Gentlemen:

We appreciate your interest in John Zink products.

We would propose the following equipment to meet the needs outlined in your inquiry:

Item 1 - One EEF-U-2H flare tip, OAL 10'1" with EEP-210 pilot complete with thermocouple and contacts for remote indication (by others) of pilot failure.

The upper 4'0" of the flare is 316 L St. Stl.

Item 2 - One Stack to provide OAH of 20 ft.

Base flange 6"
A-283C or equal material of construction
2" flare inlet
Foundation to be adequate for 6" base flange

Item 3 - One ZFF-2 mixer to provide motive power using assist gas. This is in lieu of the blower in the specification.

Item 4 - One Auto/Manual Flame Front Generator.

Item 5 - One flow indicator consisting of orifice with flanges and differential pressure indicator. Actual readout is in PSIG.

Item 6 (Optional) - Grade mounted Pilot Monitor in NEMA 4X Housing.

Data sheets are attached.

The gas to be burned (127 #/day H_2S and 1600 #/day CO_2) requires additional assist gas to provide a combustible mixture. Our intent is to utilize this assist gas, and use the motive power o the gas to move the waste gas into the flare.

Price, F.O.B. Skiatook, OK (Items 1-5) - $8875

Price, F.O.B. Skiatook, OK (Item 6 - Optional) - $7735

This price reflects standard John Zink Terms and Conditions and Warranty.

Delivery

1. Customer drawings can be furnished 2-4 weeks after receipt of purchase order.

2. Shipment can be made 6-8 weeks after receipt of approved drawings.

Attached is our typical service agreement and terms and conditions.

Please contact us if you have any questions, please contact us.

Sincerely,

JOHN ZINK COMPANY

Brian Duck

BD/tac

cc: EPSCO
John Zink Southeast

HARRIS SEMICONDUCTOR

ATTACHMENT C

CONTROL EQUIPMENT

D

UTILITY STYLE FLARE BURNER
DATA SHEET

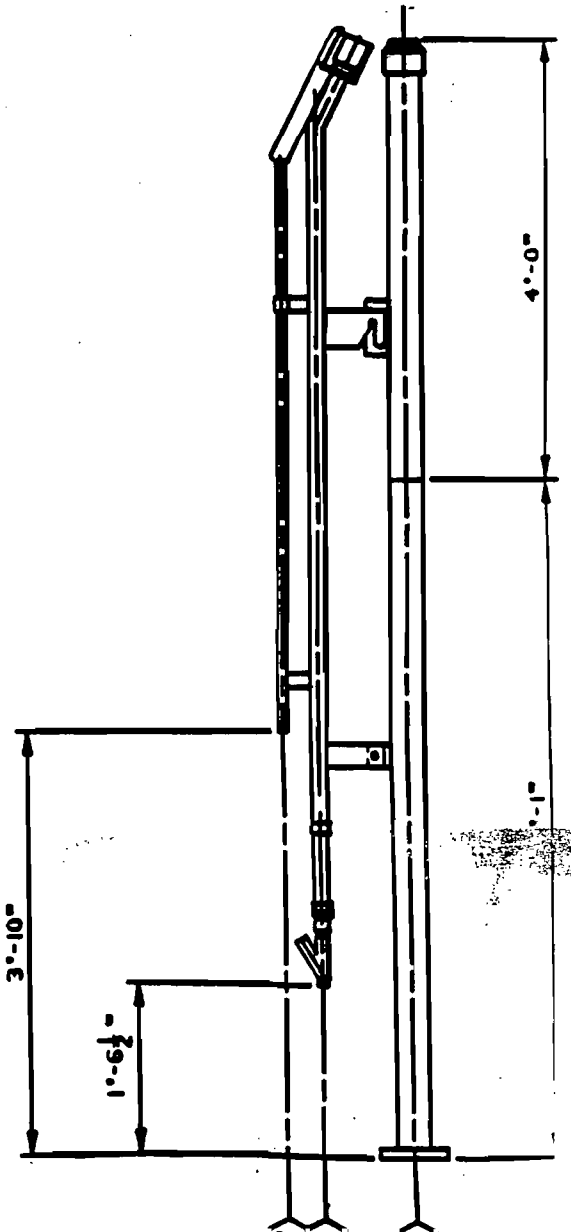
1. CUSTOMER: REFERENCE NO.:
2. PLANT LOCATION: PALM BAY FLA PROPOSAL NO.:
3. MODEL: EEP-U- 8 H ENGINEER: WS DATE: 6-16
4. OVERALL LENGTH 10'-1" NO. OF PILOTS 1
5. FIRING POSITION: VERTICAL TYPE OF PILOTS: EEP-310 FUEL G
6. DESIGN CONDITION FUEL CONSUMPTION 22 SCFH@
7. FLOW RATE: See Below MW: SP. GR. THERMOCOUPLE: YES No. Requir
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: ANS
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
33. 1600 #/DAY CO_2
34. 918 #/DAY C_3 *
35.
36. * Assist Gas
37.
38.
39.
40.
41.
42.
43.
44.
45.
46.
47.
48.



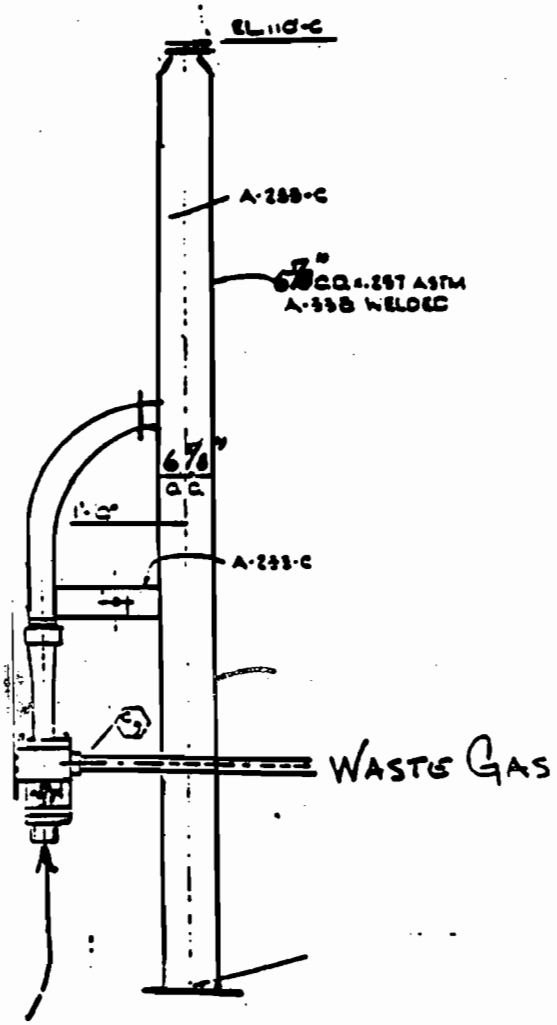
D

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.
39.
40.
41.
42.
43.
44.
45.
46.
47.



Drawing

AUTOMATIC-MANUAL FLAME FRONT GENERATOR
DATA SHEET

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

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

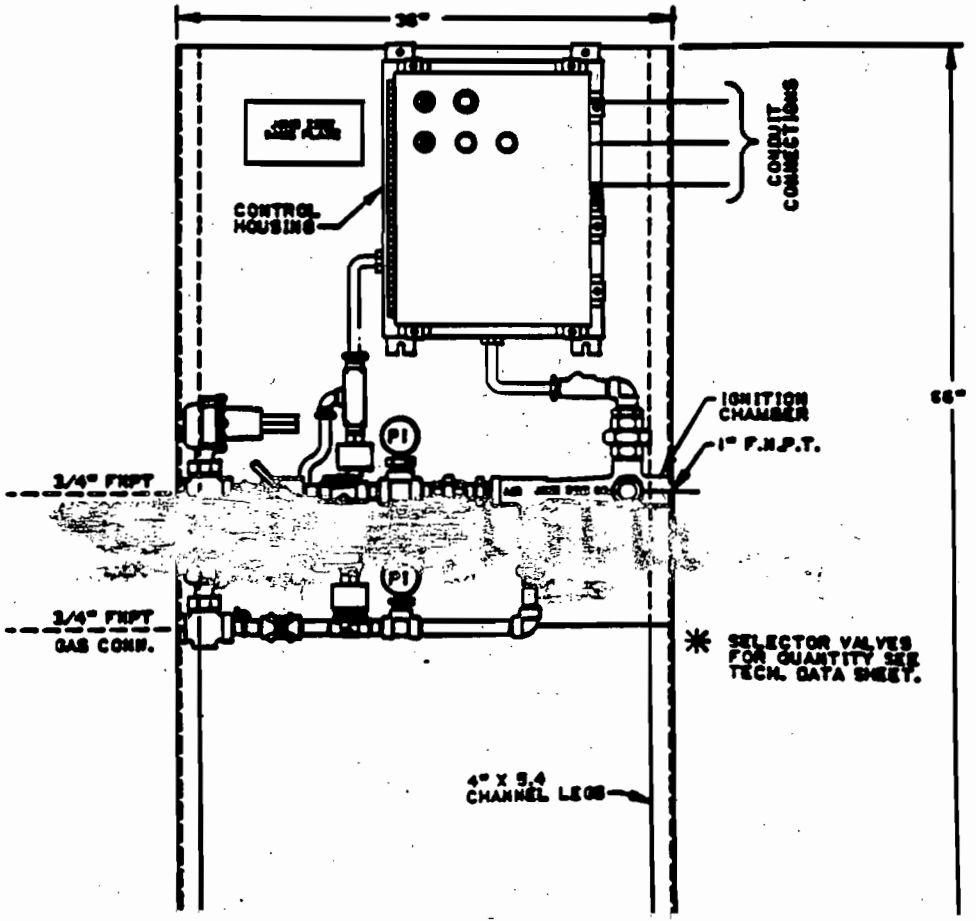
7. IGNITION LINES:

8. PRESSURE GAUGES:	Pressure Range	Connection	PRESSURE REGULATORS:	Fisher 621 3
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

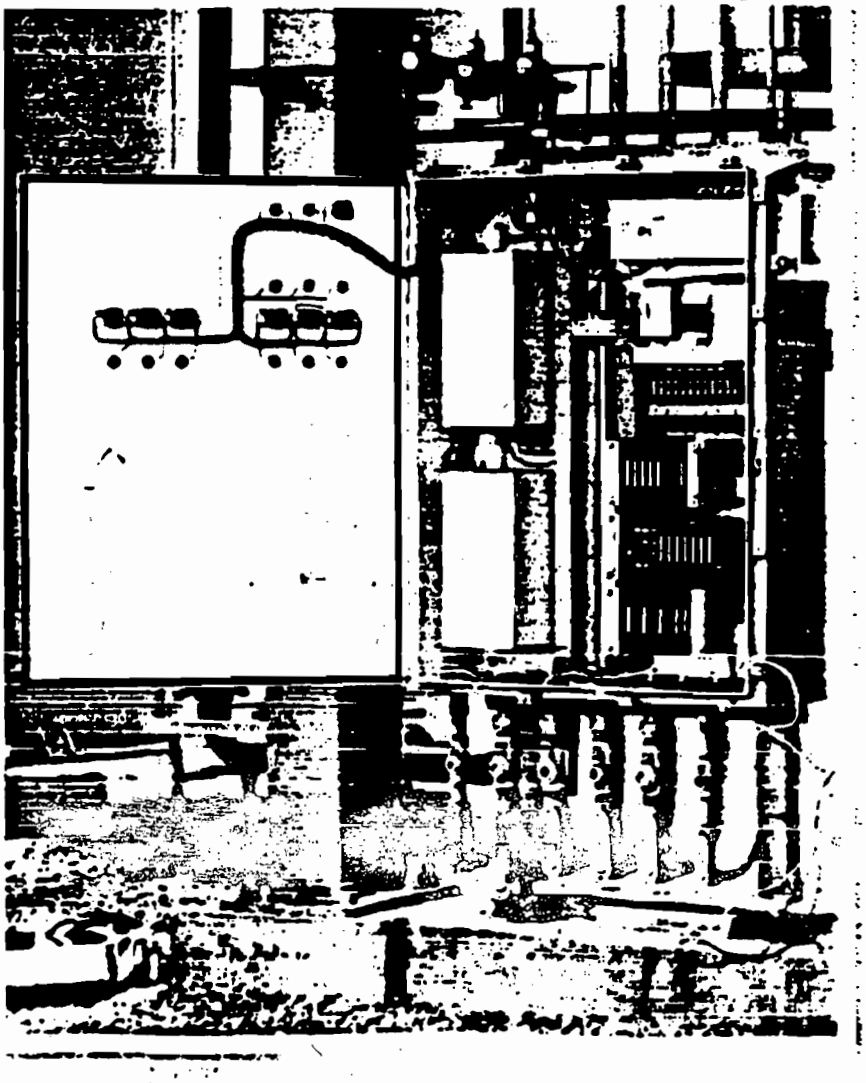
12. ELECTRICAL TRANSFORMER: 120VAC/60HZ/1Ø
13. HOUSING CLASSIFICATION: NEMA 4
14. SURFACE PREPARATION: SP-1 Sandclean, Zink Chromate Epoxy Primer, Polyurethane Enamel Finish Coat
15.

16. UTILITIES:	Pressure	SP.GR	Flow Rate	Connections	No.	Size	
17. Gas	15.0 Psig.	.5	150 SCFH	Transformer	1	3/4 Inch	
18. Air	15.0 Psig.	1.0	1500 SCFH	Ignition Gas	1	1/2 Inch	
19. GAS OTHER				Air	1	3/4 Inch	
20. Electrical	3.0 Amps			Ignition Lines		1 Inch	
21.				Pilot Gas		3/4 Inch	
22. Temp. Switches:	Actionpack Type K Calibration			Thermocouple	1	3/4 Inch	

23.



JOHN ZINK COMPANY



FLARE SYSTEM CONTROLS

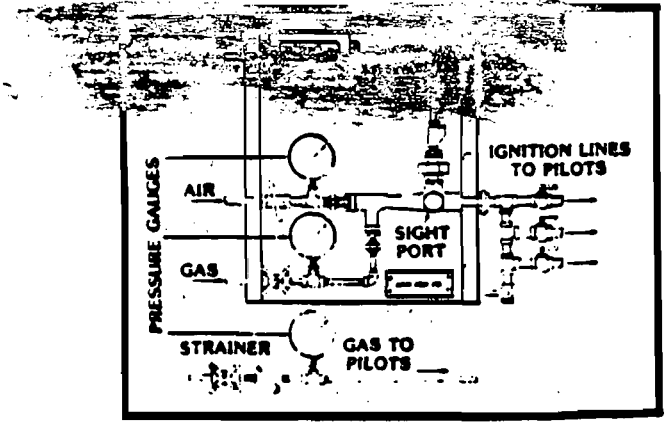
John Zink Company, the world's largest manufacturer of flare systems, offers complete flare control packages. Flare controls by John Zink ensure sole source compatibility and single point responsibility. John Zink's experience with thousands of flare systems ensures a well designed and proven control 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:

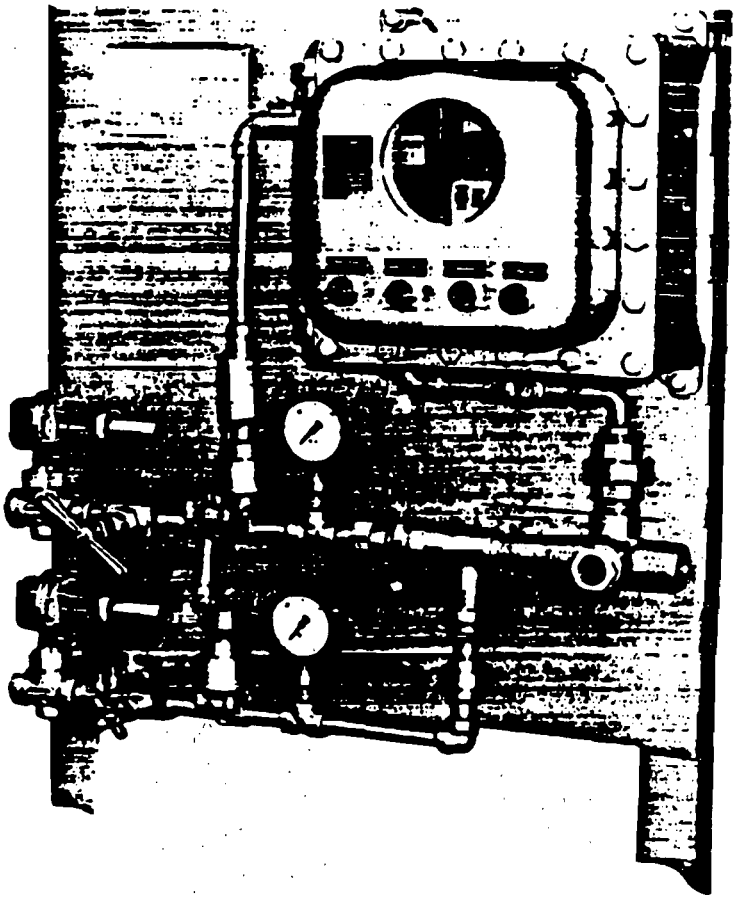
- All control components are easily accessible at grade
- Proven reliable ignition
- Complete shop testing prior to shipment
- All systems are designed to meet the required electrical area classifications

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.



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 gas to inspirate air into a 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

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.

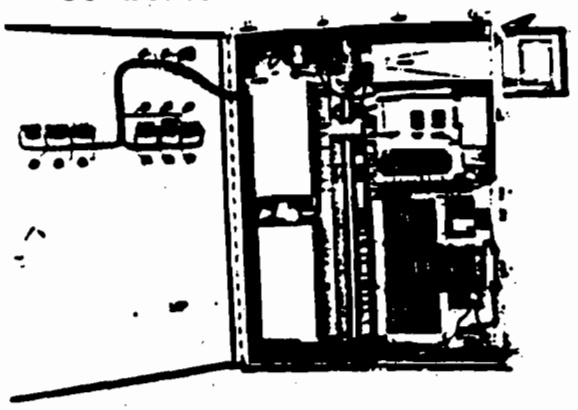
Steam Controls

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.

Special Flare Controls

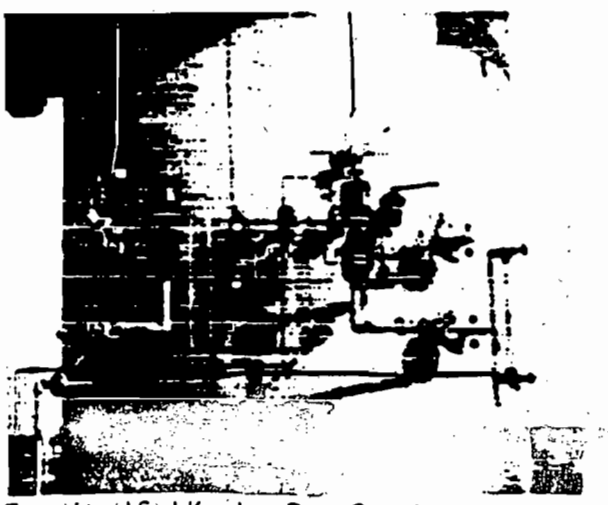
John Zink special flare controls include:

- Patented staging controls
- Knock out and liquid seal drum controls including:
  - Level controls
  - Gauge glasses
  - Condensate pumps
  - Alarms
  - Temperature controls
  - Control valves



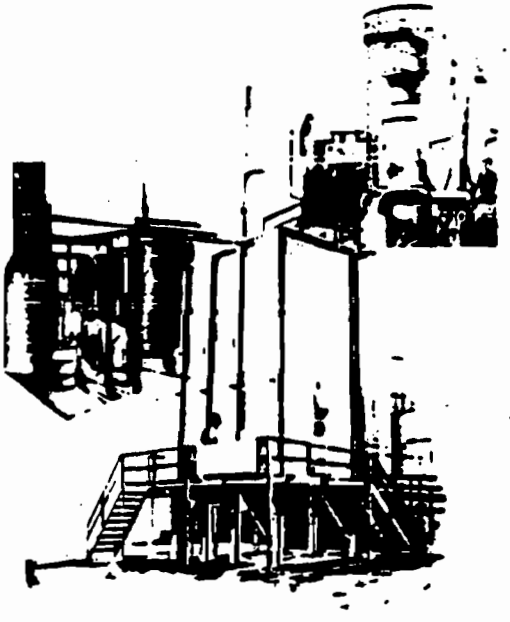
Staging Control Panel

- Blower controls for air assisted flares and other applications.



Typical Liquid Seal Knockout Drum Controls

- Explosion prevention systems for gas such as Hydrogen, Ethylene Oxide, Carbon disulfide, Acetylene and othe explosive gases.
- Flame extinguishing systems
- Steam desuperheaters



Rely on John Zink for:
- Flares
- Burners
- Packaged Burners
- Resource Recovery
- Incinerators
- Heat Recovery
- Heating & Air Conditioning and Associated Equipment

JOHN ZINK COMPANY

4402 S[illegible] Road
P.O. B[illegible] 702270
Tulsa, Oklahoma 74170
(918) 747-1371

Other offices are located in major cities around the world.

World's Largest Manufacturer of Flare Systems

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.

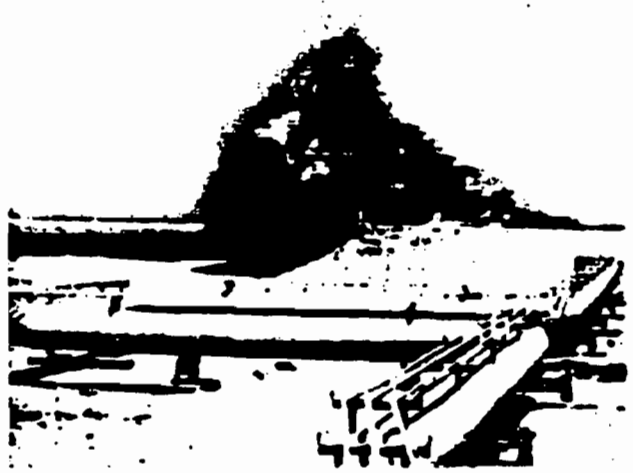
The metallurgical selection for the EEF Series Flares is based upon actual field experience and continuing research and development efforts to ensure optimum design at lower costs.

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.

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

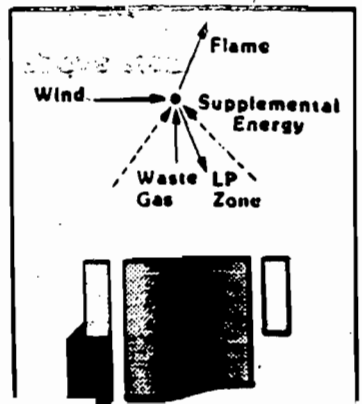
The EEF-PF flare is specifically designed for horizontal firing in a pit where two phase flow will exist. Proper installation of the PF flare and the pit design are critical to flare life. John Zink Company has the experience and the expertise to assist you with the necessary engineering to ensure proper operation.



Typical EEF PF Installation

EEF-LS

John Zink has developed a special EEF-LS Flare which extends flare life.

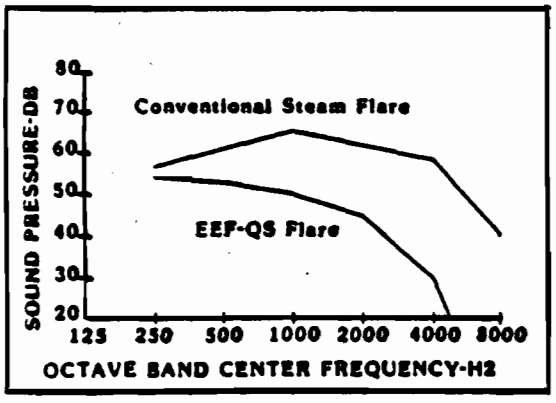


The EEF-LS design uses energy from a secondary source to overcome wind effects and move the flame away from the flare thus eliminating wind influenced flare

The EEF-LS Flare effectively increases flare service life, reduces down time and cuts maintenance and replacement costs.

EEF-QS

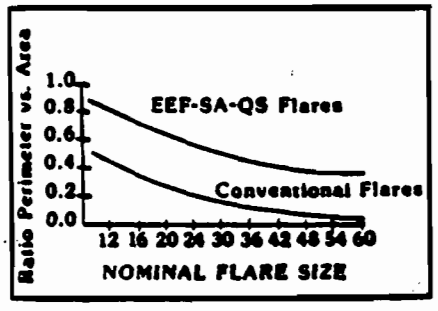
The EEF-QS Series Flares reduce noise levels up to one half that of conventional steam assisted smokeless flares. When smokeless flaring is required, the traditional solution has been steam injection. One of the most persistent problems with steam injection is the associated noise. The EEF-QS utilizes 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.

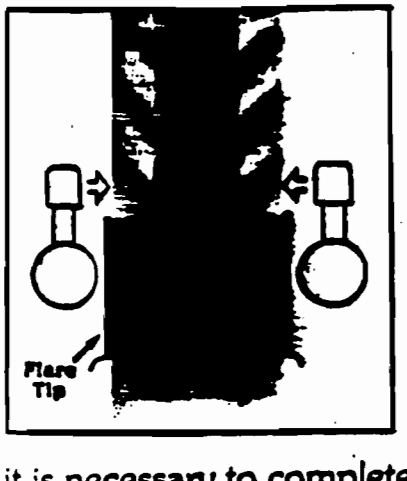
The perimeter of the flare, which is the site of air and steam injection, increases linearly with the diameter, simultaneously, the waste flow area increases as a squared

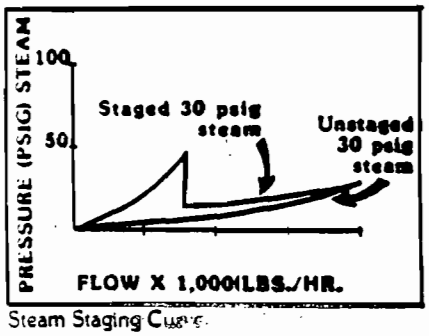


The EEF-[illegible]-QS produces an artificial increase in the critical perimeter to area ratio by a multiplicity of steam/air injection points internally and externally

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 higher penetration of steam and air over the entire operating range.





Steam Staging Curve

The above steam staging curve demonstrates the improvement in energy le Significant cost savings can be achie through the use of low pressure stea in the EEF-SS flare.

The new series of EEF flares has ma advantages for your facility including
· Lower utility costs

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.

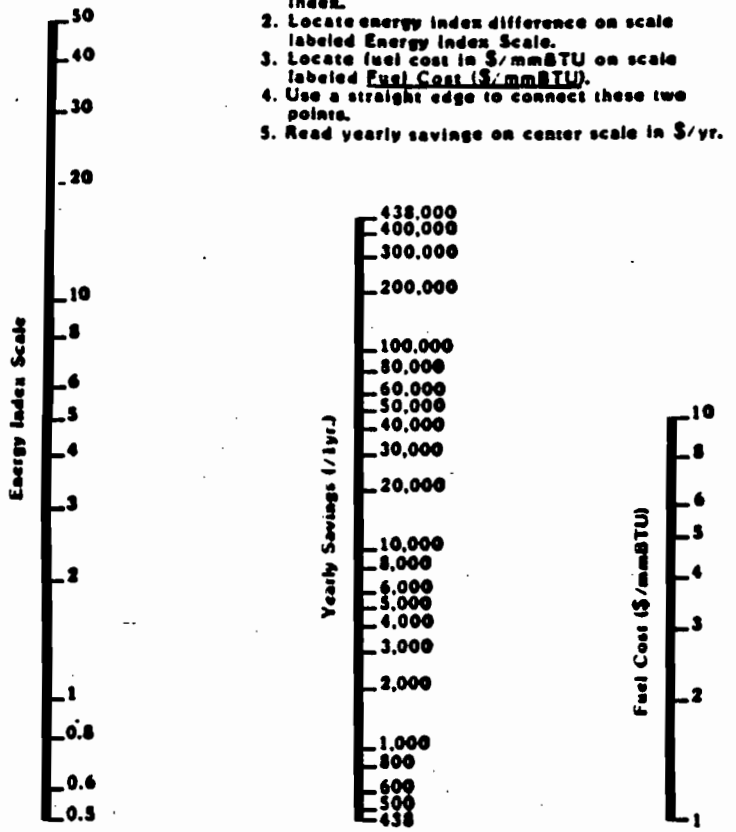


TABLE OF TYPICAL ENERGY INDEX OF EEF FLARES VS. IN USE FLARES

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

ATTACHMENT

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

Sincerely,

JOHN ZINK COMPANY

Brian Duck

Brian Duck

A REPORT ON

A

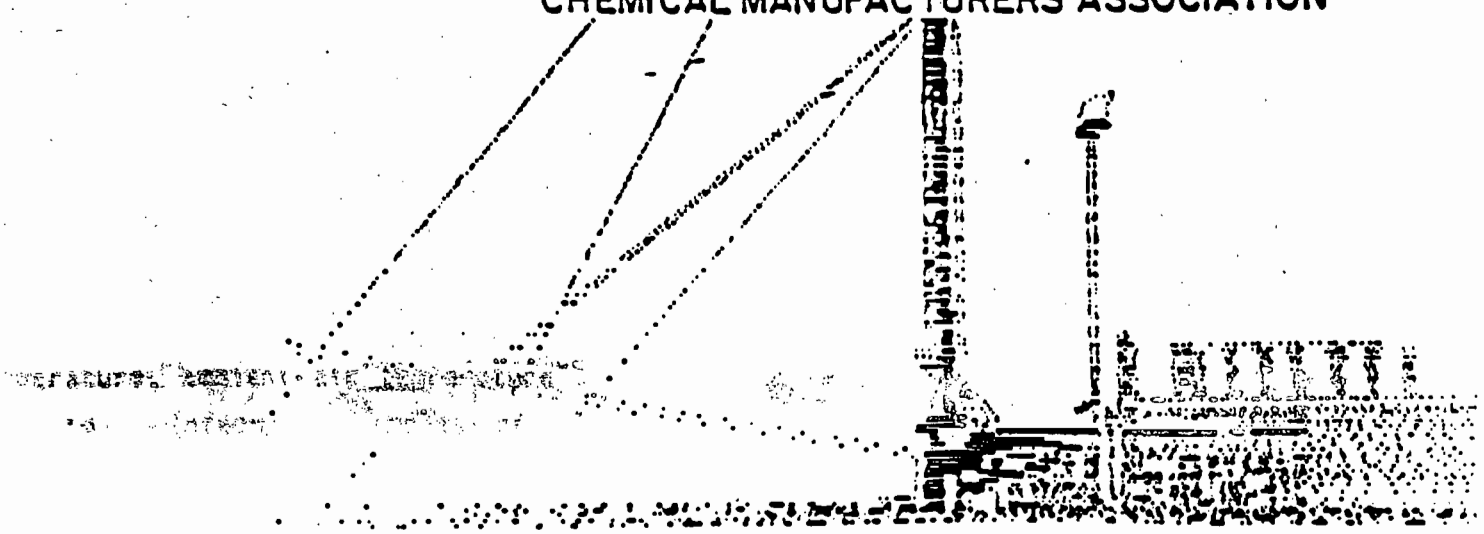
FLARE EFFICIENCY STUDY

VOLUME I

FOR

CMA

CHEMICAL MANUFACTURERS ASSOCIATION



PREPARED BY

A REPORT ON A

FLARE EFFICIENCY STUDY

VOLUME I

Prepared for

CHEMICAL MANUFACTURERS ASSOCIATION
Washington, D.C.

September 1982

Prepared by:

Engineering-Science
Austin

CHAPTER 1

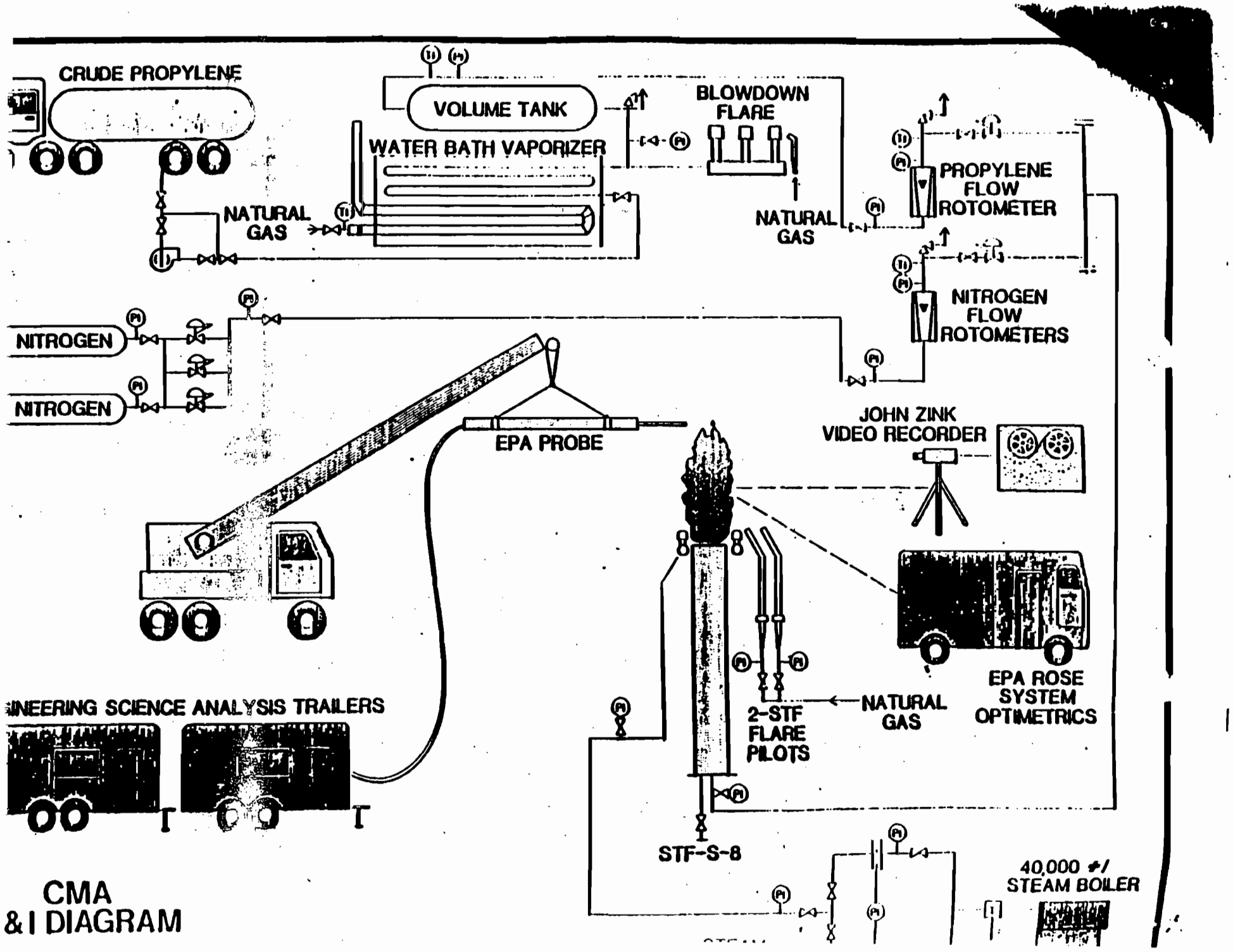
EXECUTIVE SUMMARY

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 temp[illegible] and wind speed and direction were measured. [illegible] 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
&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.

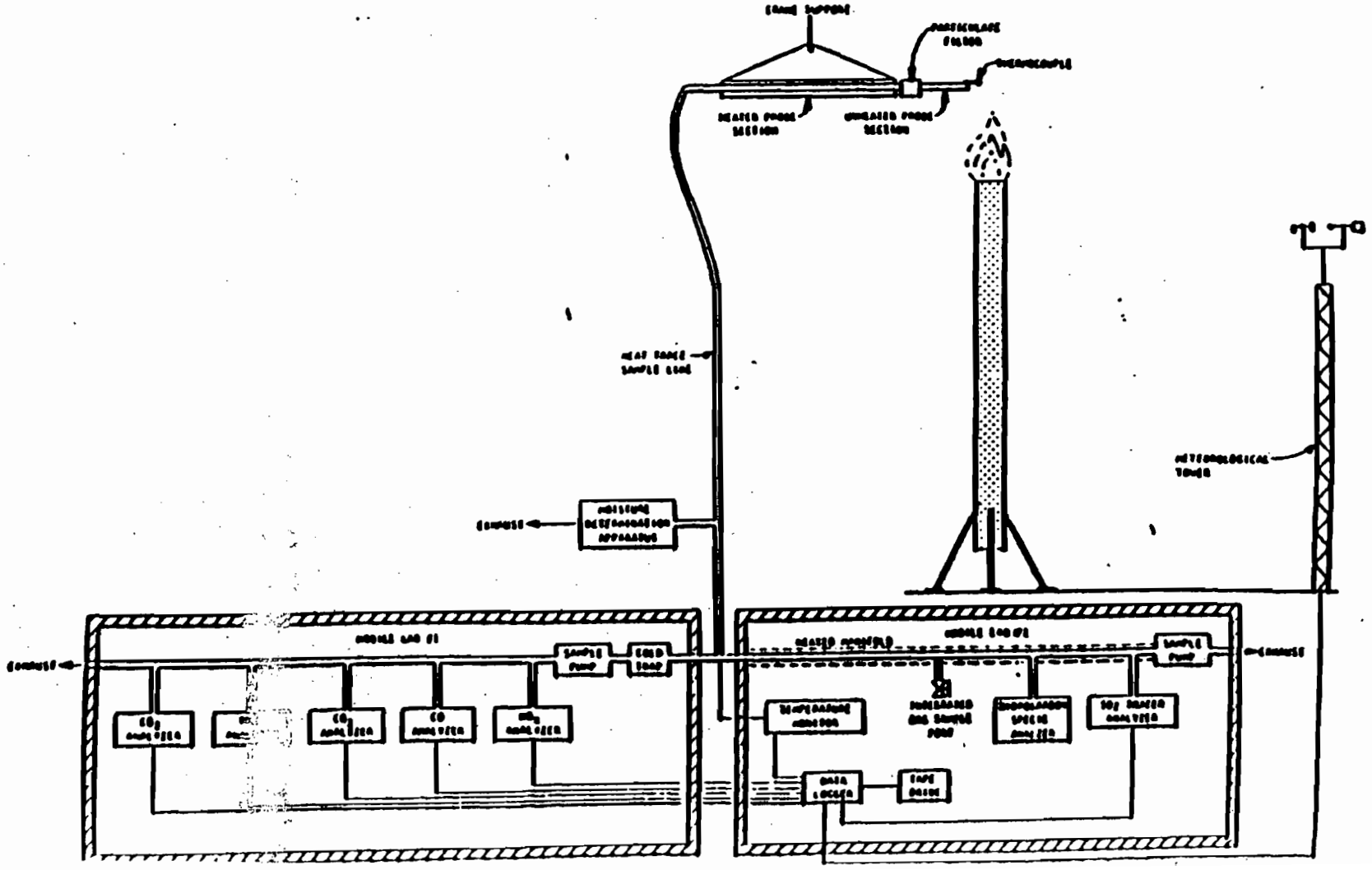
CONCLUSIONS AND OBSERVATIONS

- 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 technique is 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 f
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 a
29b	392	146	--	64.03	Detached flame; with air
33	0.714	83	--	98.24	
[illegible]	0.556	259	--	[illegible]	
[illegible]	0.537	226	--	[illegible]	
62	217	153	--	[illegible]	[illegible] slightly detached
64	249	282	--	99.74	
63	121	289	--	99.37	
65	159	2183	--	99.57	Smoking flare; no air a

FLARE SAMPLING AND ANALYSIS SYSTEM



PILOT MONITORING UNIT

Grade-mounted System for Remote Monitoring of Flare Stack Pilots

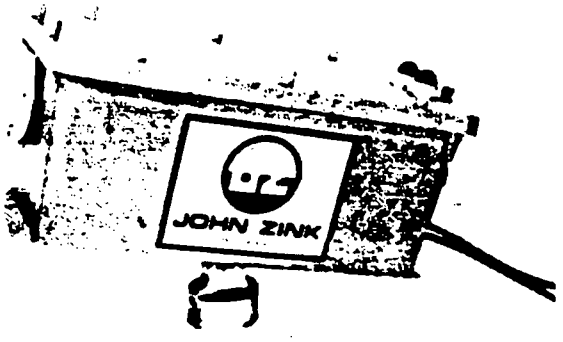
Model RPM - 100

The Model RPM-100 Unit is used to monitor the presence of pilot flames on flare stacks. It is specifically designed to inform the operator if a flame-out condition occurs. The unit is located at ground level and operates in all climate conditions.

The sensor element features dual wavelength radiometry. The instrument determines flame presence by computing the ratio of the radiant energies emitted from the target in two adjacent wavebands. These signals are processed through one lead sulfide detector for long-term stability and drift-free operation.

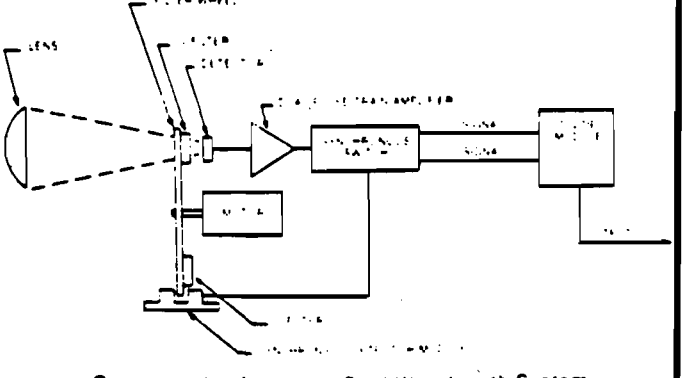
These unique design features combine high performance with automatic elimination of application errors due to low and varying emissivity, hostile environments, and undersized or unsteady targets which do not completely encompass the viewing area. The instrument measures the hottest source in the field of view (flames can move) and ensures accuracy regardless of working distance and/or intervening media (rain, fog, snow, etc.).

The sensor is packaged in a weatherproof NEMA 4X enclosure for outdoor operation, and bracketed for post mounting. The built-in alarm system includes a relay contact for remote indication, and local status lights. The system is simple to install, is maintenance free, and is located at grade for easy access or adjustment. Installation of this unit complies with the U.S. EPA's flare pilot monitoring requirement.



Unit Specifications:

Energy Sensitivity:	0-100%
Field of View:	10' diameter at a 500' working distance
Sighting:	visual aiming
Ambient Exposure:	0-120°F
Alarm Output:	on/off alarm (relay contacts rated for 5 amps/110 volts)
Power Requirements:	115V/50 - 60 Hz
Environmental Protection:	NEMA 4X enclosure
Mounting:	adjustable tilt and scan bracket for sensor, mounts on 1-3/4" OD post (1-1/4" pipe)
Approximate Weight:	20 lbs.
Approximate Dimensions:	20" L x 9" W x 8" H
Range:	15 to 300 meters
Options Available:	• -20°F ambient • 200°F ambient • Z purge package • 220 volt power • NEMA 7 enclosure



Components of a typical Dual-Wavelength System

JOHN ZINK COMPANY

International Headquarters
P.O. Box 702220
Tulsa, Oklahoma 74170
(918) 747-1371

November 11, 1988

Harper Mechanical Corp.
5401 Benchmark Lane
Sanford, FL 32771

Attention: Mr. Scott Delbridge

Reference: John Zink S.O. FS-S69674

Gentlemen:

Enclosed please find installation and operating instructions for your RPM-100 pilot monitoring unit. This unit is aportion of your P.O. #2052-30296. If you have any questions, please do not hesitate to contact me.

Sincerely,

JOHN ZINK COMPANY

Les Barrett

LB/tac

JOHN ZINK COMPANY

PILOTEYE

INSTALLATION AND OPERATING MANUAL

John Zink Company
4401 South Peoria
Tulsa, Oklahoma 74105

918-747-1371

PILOTEYE

TECHNICAL DISCUSSION

Because single wavelength radiometers determine the temperature of an object by measuring the total energy being emitted by that object, there are many applications in which a single wavelength device is limited. A dual wavelength radiometer, on the other hand, measures the intensity of energy being emitted by the object in two narrow wavebands, and translates a ratio of these two energy levels into a temperature reading. A major advantage of the ratio technique is that any signal dilution in both wavebands will not affect the ability of a dual wavelength instrument to sense a hot object, such as a flame.

Dual wavelength systems were developed to accurately measure the high temperatures which are encountered in steel making, cement manufacturing, vacuum chambers and combustion efficiency studies. The purpose of the dual wavelength ratioing radiometer in these applications is to reduce application errors due to such factors as changing surface emissivity, and the presence of intervening media. The PILOTEYE, a dual wavelength design, is filtered at 2.4 and 2.9 microns, as illustrated in Figure 1. These design features not only yield high sensitivity to flames that have low and varying emissivity, but they also minimize the application errors encountered in an outdoor environment. In contrast, an instrument with single wavelength design would be affected by changing emissivity of the flame as well as any change in intervening media due to climatic conditions. In addition, the performance of the PILOTEYE is not affected by any flame movement.

The Zink PILOTEYE utilizes a single detector approach and a filter wheel, as illustrated in Figure 2. The accuracy, stability and long-term operation of the instrument is enhanced by using a single detector. The sensor utilizes a quartz lens and a dichroic mirror which reflects the infrared energy through a filter wheel and on to the lead sulfide detector. The detector receives these alternating pulses and, through a synchronous electronic circuit, the alpha and beta signals are separated and passed through an electronic ratioing module. This signal is then further conditioned and linearized so it can be used as a means for detecting the presence of flames.

The unique design features of dual wavelength radiometry are further illustrated in Figure 3 where some simple blackbody curves are used to illustrate the ratioing principle with varying emissivities of 1, 0.5 and 0.1. Even though the energy levels are changing, the ratio factor remains constant. In terms of the PILOTEYE, the presence of a rain shower may lower the absolute level of energy reaching the instrument, but PILOTEYE's ratioing ability is able to compensate, thereby allowing the sensor to detect the flame's presence.

APPLICATION FEATURES

Not affected by low emissivity flames

Not affected by varying emissivity flames

Not affected by moving targets

Not affected by undersized targets/long distances (measures the hottest heat source in the field of view)

Not affected by high or low ambient exposure

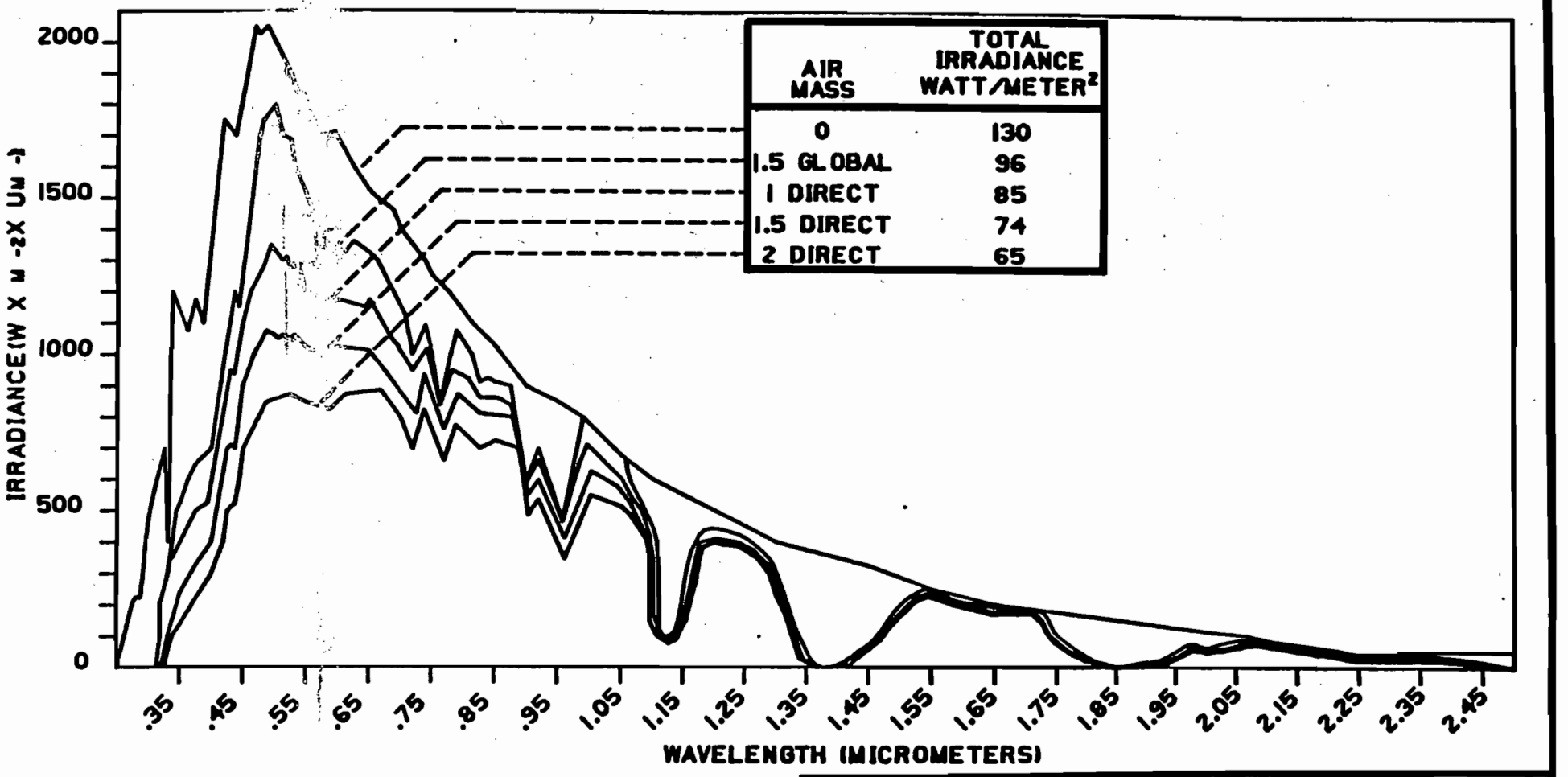
Readily accessible from grade for maintenance

CA-ST-0948

SCALE

CK.

SOLAR SPECTRAL IRRADIANCE



AIR MASS	TOTAL IRRADIANCE WATT/METER^2
0	130
1.5 GLOBAL	96
1 DIRECT	85
1.5 DIRECT	74
2 DIRECT	65

FIGURE 4

JOHN ZINK COMPANY

TULSA OKLAHOMA

PILOTEYE FLARE STACK

PILOT MONITOR

SOLAR SPECTRAL IRRADIANCE CHART

FOR: STANDARD

DR. HODGES

CK.

DRAWING NUMBER CA-ST-0946

REV. 0

SCALE

FIELD OF VIEW

(FIGURE 6)

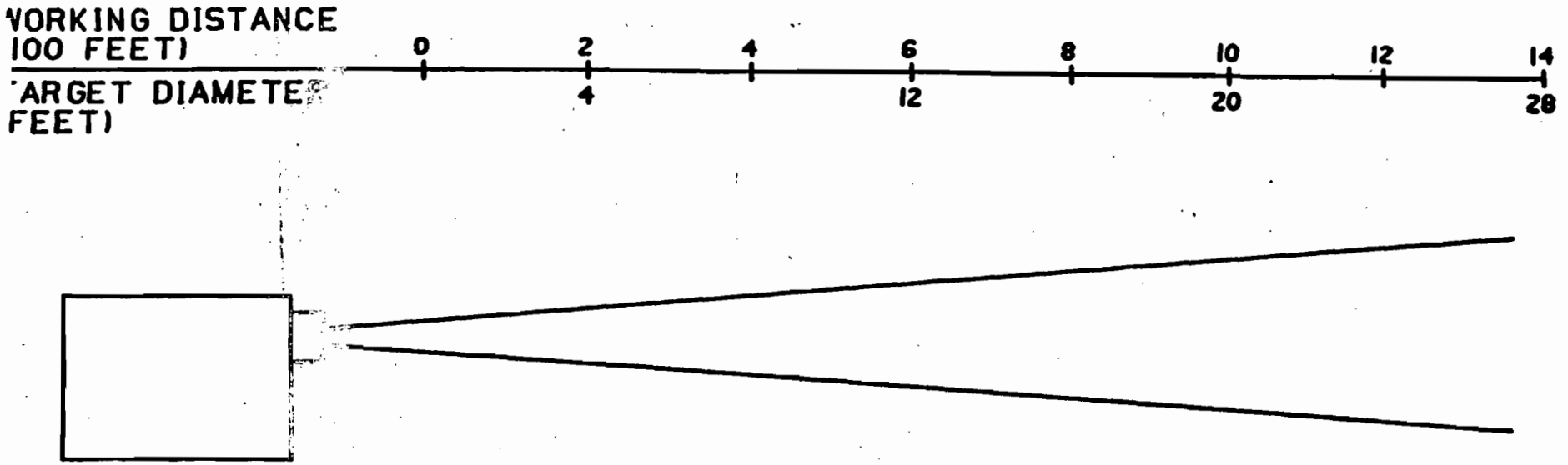
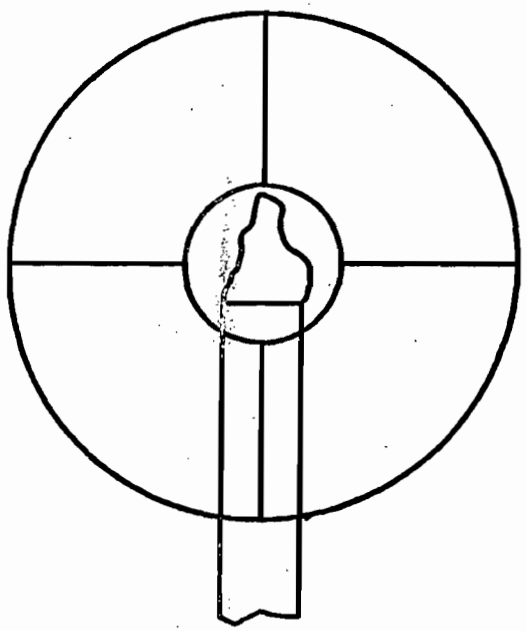
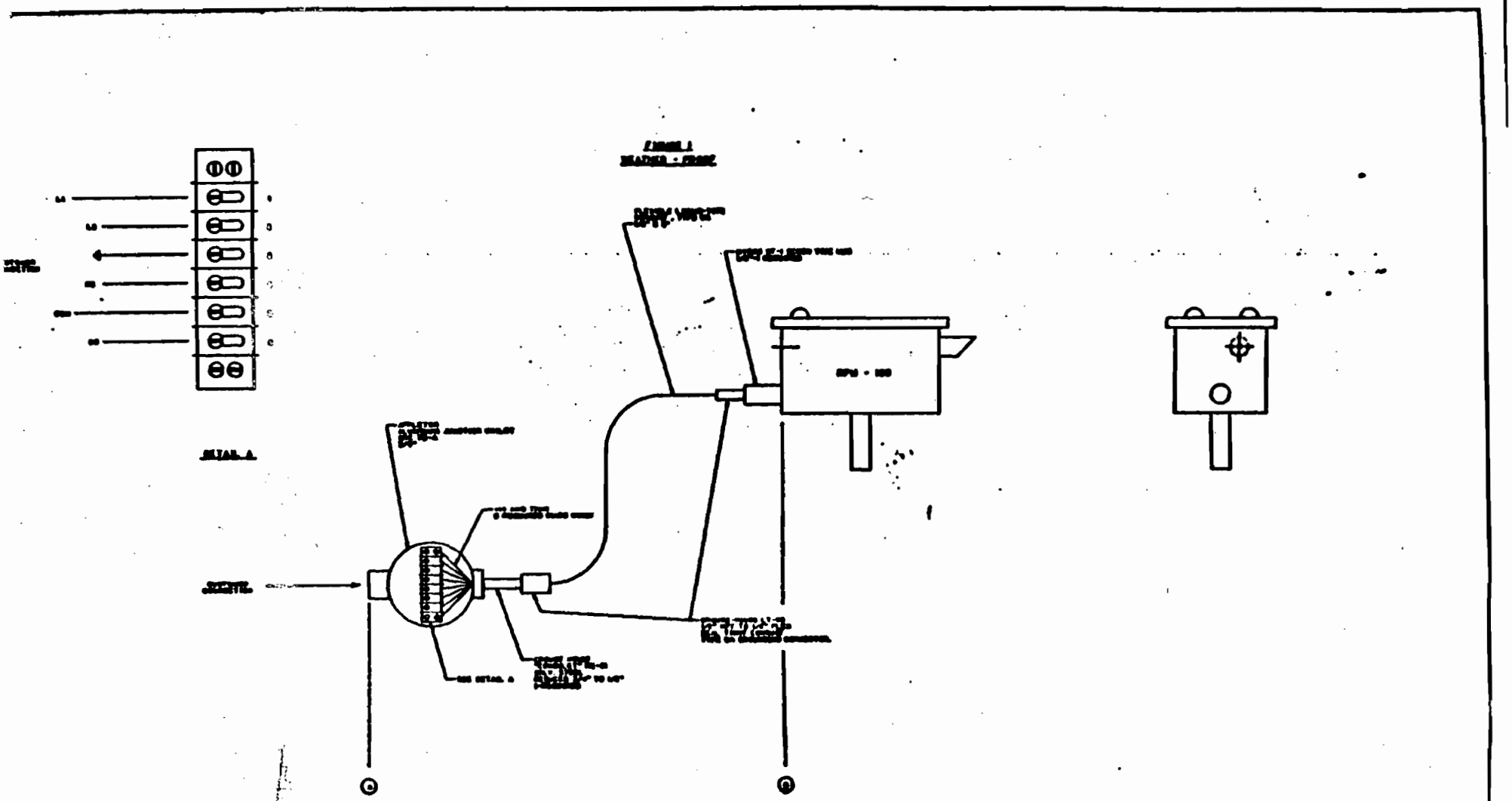


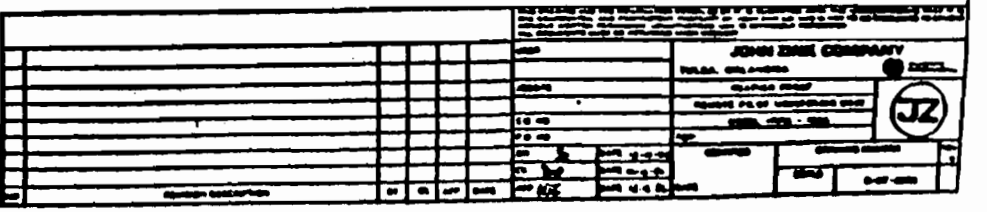
FIGURE 5



VISUAL AIMING

JOHN ZINK COMPANY		
TULSA		OKLAHOMA
PILOTEYE FLARE STACK		
PILOT MOITOR		
CHART OF FIELD OF VIEW		
FOR: STANDARD		
DR HODGES	DRAWING NUMBER CA-ST-0945	REV. 0
CK.	SCALE	





JOHN ZINK COMPANY

International Headquarters
P.O. Box 702220
Tulsa, Oklahoma 74170
(918) 747-1371

January 18, 1989

Harper Mechanical Corp.
5401 Benchmark Lane
Sandford, FL 32771

RECEIVED
JAN 23 1989
HARPER MECHANICAL CORPORATION

Attention: Scott Delbridge

Reference: John Zink S.O. FS-S69674

Gentlemen:

Enclosed please find operating instructions for your flare and ignition panel. If you have any questions, please do not hesitate to contact me.

Sincerely,

JOHN ZINK COMPANY

Les Barrett

LB:tld

ORIG: 2052
CC: S. DelBridge
C. Williams

INSPECTION AND CLEANING OF FLARE PILOT MIXER ASSEMBLIES

Refer to flare assembly drawings. Pilot mixer assembly is the only part of the flare that may require inspection.

The orifice and venturi for mixing air and gas have been set at the factory and no field adjustment is required. This orifice may become plugged with dirt or rust. Remove orifice spud and inspect orifice opening.

OPERATING DESCRIPTION

FLARE STACK

NOTE: There is danger of severe explosion in the flare system if the flare pilots are ignited before the flare system has been purged from the beginning of the system all the way to the flare with a volume of non-condensable gas equal to three or more times the volume of the flare system to assure low or zero oxygen levels. The flare system includes all piping from relief valves toward the valve and the riser to the elevation of the flare at the burning point.

Suitable purge gases are natural gas, propane, nitrogen, inert gas, carbon dioxide or butane, if the temperature level is above 32°F. Steam as purge volume is not recommended for two reasons. The first is that the steam is at elevated temperature and the steam content of the flare will shrink as the steam cools and condenses to draw air back into the flare system. The second is that as the steam condenses, water will be left in the flare system to partially block the system, present freezing hazard and by its "wetting" action, encourage accelerated corrosion.

The pilots should be ignited only after the system purge as we recommend and preferably as the purge gas is still being admitted. If the purge gas is combustible, the burning of the purge gas at the flare will be proof of pilot ignition.

GENERAL COMMENT FOR SAFETY IN FLARE OPERATION

It is to be understood that safety for flare operation requires that there be no air-oxygen present in the flared gases as the gases reach the presence of the pilots. Purge gases are used in quantity to avoid entry of air to the flare system while the flare is in operation of a flare system only if the pilots are burning. If it is required that the flare system be opened for any reason, extinguish the pilots before the work begins and do not re-ignite them until after the system has been thoroughly purged. The flare system must be absolutely gas tight.

INSPECTION AND CLEANING OF FLARE PILOT MIXER ASSEMBLIES

Refer to flare assembly drawings. STF pilot mixer assembly is the only part of the flare that may require inspection.

The orifice and venturi for mixing air and gas have been set at the factory and no field adjustment is required. This orifice may become plugged with dirt or rust. To remove, break 3/4" union and remove 3/4" by 6½" long nipple at bottom of mixer. Remove orifice spud and inspect orifice opening.

Replace orifice spud and seat up snugly. Reassemble nipple an union.

Each pilot mixer may be inspected and cleaned as described above.

PURGE RATES FOR FLARES AND PURGE GASES WHICH ARE SUITABLE

Suitable Purge Gases

Any gas or mixture of gases which cannot reach dew point at any condition of ambient temperature normal to the jobsite, can be used as purge gas for flare systems. This gas may be referred to as "sweep" gas.

Admission Point for Purge Gas

In all cases, the purge gas must enter the flare system ahead of or before the first relief valve so that the purge gas will "sweep" the entire system. If there is more than one header feeding into the flare duct, each header must be purged or there must be entry of purge gas to each header which enters the system.

Alarm for Purge Failure

It is recommended that there be a pressure switch immediately upstream of the orifice which regulates purge volume so that an alarm will sound if the pruge gas pressure upstream of the limiting or regulating orifice falls below a set point. It is further recommended that the purge gas in the up to the limiting orifice pass through a stainer in which the mesh openings are not more than one-quarter of the diameter of the limiting orifice for purge gas regulation.

Purge Volume Required

A normal recommended purge volume where John Zink Molecular Seal is used for the flare, is that purge gas volume which will create upward velocity in the flare riser at .01 feet per second. If a John Zink Airrestor is used the purge gas velocity would be 0.03 feet per second. If the Molecular Seal or Airrestor is not used, purge gas volume for upward velocity at 1 to 2 feet per second is considered adequate for safety.

If the average molecular weight of the flared gases exceeds 30, there should be calculation of the dew point potential for the flared gases and the volume of the flared gases which can go to dew point should be added to the volume required for calculated velocity.

Since dew point can occur only during the cold season, and in order to save purge gas volume which can be quite expensive, it is suggested that the extra purge gas volume be on temperature control for atmospheric temperature and for admission only when a fall in atmospheric temperature can cause dew point hazard to exist.

ZFF-2 INSTALLATION INSTRUCTIONS

1. Connect the auxilary gas to the 3/4" connection on the ZFF-2.

2. Connect the waste gas supply to the waste gas connection.

3. Connect the 1" ignition line on the ZFF-2 to the 1" connection on the flame front generator. (This line should be 1" Sch. 80 if threaded or Sch. 40 if socket weld.)

OPERATING INSTRUCTIONS

1. Purge the waste gas line per instructions.

2. After the purge is complete open the auxilary gas to the ZFF-2.

3. Refer to the Flame Front Generator Operating Instructions to ignite the auxilary gas.

4. After the ZFF-2 auxilary gas has been ignited and verified by the pilot monitor you are ready to introduce the waste gas.

8/12/88

OPERATING INSTRUCTIONS
for
JOHN ZINK AUTOMATIC-MANUAL FLAME FRONT GENERATOR

1. Purge flare with nitrogen, natural gas or any gas that will not go to dew point, until all oxygen has been replaced with purge gas (10 times volume of the system, then continue purge at the recommended rate for the flare tip or purge seal.

2. Blow down gas line to Flame Front Generator at blow down valve (furnished by customer) to remove condensate.

3. Switch "FFG Auto-Man." switch to the "MANUAL" position.

4. With customer gas supply valve closed, turn power on and depress the "Ignition" pushbutton to check for spark at the sight port on the pilot.

5. When the "Power OFF-ON" switch is in the "ON" position, it will energize the red "PILOT FAILURE" light, as well as the air and gas solenoid valves.

6. Open the fuel gas valve for the pilot and set gas regulator at 8 psig (furnished by customer). FOR NATURAL GAS 5-6 PSI FOR PROPANE

7. Set air and gas regulators on the FFG panel at 15 psig. FOR NATURAL GAS 6-8 FOR PROPANE 8-10 FOR AIR

8. Purge the ignition line to the pilot for two to three minutes. Purge time will depend on distance from Flame Front Generator to pilots.

9. Depress the manual ignition pushbutton. (DO NOT HOLD SWITCH IN - PUSH AND RELEASE QUICKLY.) Note: When the pilot thermocouple is lit, the red "PILOT FAILURE" light will be off. Observe the "PILOT FAILURE" light for indication that the thermocouple senses the pilot flame.

10. If pilot does not light, repeat steps #8 and #9.

11. If repeating #8 and #9 two or three times does not light pilot, reduce pilot gas pressure slightly. Repeat steps #8 and #9; or increase gas pressure and repeat until pilot lights.

12. The set point knob on the temperature switch should be set at "3" on the 0-10 scale.

13. Once the pilot is proved, the red "PILOT FAILURE" light, and the air and gas solenoid valves will be de-energized. Only the white "POWER ON" light will be on. The temperature switch will indicate reading above "3". Switch automatic-manual switch to the "AUTO" position.

14. After the pilot is lighted and ignition verified, the flare is ready for service.

15. If pilot failure occurs, the red "PILOT FAILURE" light and the air and gas solenoid valves will be energized. The ignition transformer will be energized for one second automatically approximately every fifteen seconds until the temperature switch detects the pilot is on and de-energizes the solenoid valves.

HARRIS SEMICONDUCTOR

ATTACHMENT D

EMISSIONS CALCULATIONS

CALCULATIONS
OPERATING PERMIT - FLARE

127 lb/day H_2S/24 hr/day = 5.29 lb/hr H_2S

1600 lb/day CO_2/24 hr/day = 66.67 lb/hr CO_2

$2H_2S + 3O_2 = 2SO_2 + 2H_2O$

SO_2:

1 mol H_2S = 34 g
1 mol SO_2 = 64 g

At 100% efficiency (assuming all H_2S converted);

(5.29 lb H_2S/hr) (1 mol H_2S/34 g) (1 mol SO_2/1 mol H_2S) (64 g SO_2/1 mol SO_2) = 9.96 lb/hr max. rate of SO_2 emitted

(9.96 lb/hr) (8760 hr/year) = 87249.6 lb/yr SO_2 emitted

(87249.6 lb/yr) (1 ton/2000 lb) = 43.6 Tons/yr SO_2

BASED ON 98.5% EFFICIENCY OF FLARE SYSTEM:

H_2S:

(127 lb H_2S/day) (365 days/year) = 46355 lb/yr H_2S = 23.2 Tons/yr H_2S

(46355 lb/yr H_2S) (0.985) - 45659.68 lb/yr of H_2S converted

46355 lb/yr - 45659.68 lb/yr = 0.0794 lb/hr max. H_2S emission

Calculations - Flare (continued)

CO_2

Emission from oxidized propane:

$$C_3H_8 + 6\ O_2 + 2\ H_2 \rightarrow 3\ CO_2 + 6\ H_2O$$

1 mol C_3H_8 = 3 mol CO_2
1 mol C_3H_8 = 44g
1 mol CO_2 = 44g

2.574 lb/hr C_3H_8 pilot gas + 17.4 lb/hr C_3H_8 enrichment gas = 19.97 lb/hr C_3H_8 utilized.

At 100% efficiency (assuming all propane oxidized);

(19.97 lb C_3H_8/hr) (1 mol C_3H_8/44g) (3 mol CO_2/1 mol C_3H_8) (44g/mol CO_2) = 59.92 lb/hr C_3H_8

(59.92 lb/hr C_3H_8) (8760 hr/yr) = 524917 lb/yr = 262.5 Ton/yr CO_2 emissions from propane.

Emission from water:
(1600 lb CO_2/day) (365 day/yr) = 584000 lb CO_2/yr

584,000 lb CO_2/yr + 524917 lb CO_2/yr = 1108917 lb/yr = 554 Tons/yr = 126.6 lb/hr

Max. CO_2 emitted from process

Propane fuel:

1 lb propane = 21591 BTU

C_3H_8 at STP →
1 Liter c_3H_8 = 1.8324g

(1.8324 g/L) (1 lb/454g) (1 L/0.03531 ft^3) = 0.114 lb/ft^3

Propane (pilot gas)→ 22 SCFH

(22 SCFH) (0.114 lb/ft^3) = 2.51 lb/hr
(2.51 lb/hr) (21591 btu/lb) = 54193.4 BTU/hr

Propane (enrichment gas)→ 418 lb/day

(418 lb/day) (1 day/24 hr) = 17.4 lb/hr
(17.4 lb/hr) (21591 BTU/lb) = 375683.4 BTU/hr
(418 lb/day) (1 day/1440 min) (ft^3/0.114 lb) = 2.55 SCFM C_3H_8

@ 60 °C, propane = 4.24 lb/gal.

Gas Flow Rate:

H_2S = 0.0892 lb/ft^3

(127 lb H_2S/day) (1 day/1440 min) (ft^3/0.0892 lb) =
0.9887 CFM H_2S

CO_2 = 0.1144 lb/ft^3

(1600lb CO_2/day) (1 day/1440 min) (ft^3/0.1144 lb) =
9.7125 CFM CO_2

0.9887 SCFM H_2 S + 9.7125 SCFM CO_2 + 2.55 SCFM C_3H_8 =
13.18 SCFM maxium gas flow rate

Calculations based on Monitoring Results

Based on 98.5% effeciency of Flare System:

(7.5 CFH H_2S) (0.0892 lb/ft^3) = 0.669 lb/hr H_2S

(0.669 lb/hr H_2S) (8760 hr/yr) (1 ton/2000 lb) =
2.93 Ton/year H_2S prior to flaring.

(2.93 Ton/yr H_2S) (0.985) = 2.89 Tons/yr H_2S converted

2.93 Tons/yr - 2.89 Tons/yr = 0.04 Tons/yr
H_2S emission.

SO_2:
(1.23 lb/hr SO_2 emission) (8760 hr/yr) (1 ton/2000 lb) =
5.39 Tons/year

CO_2:
(578 ft^3/hr total degasifier flow) (0.246) = 142.2 ft^3/hr CO_2

(142.2 ft^3/hr CO_2) (0.1144 lb/ft^3) = 16.27 ^{lb}/hr CO_2

(16.27 lb/hr CO_2) (8760 hr/1 yr) (1 Ton/2000 lb) =
71.25 Tons/yr CO_2 from water.

Gas Flow Rate:
(578 ft^3/hr) (1 hr/60 min.) = 9.63 CFM

HARRIS SEMICONDUCTOR

ATTACHMENT E

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:

Upon inhalation of hydrogen sulfide it is highly toxic. It is also an irritant to [illegible] and the conjunctivae of the eyes. Continued exposure [illegible] renders the olfactory sensors inoperative. 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.

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 source 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 pl 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 lo pressure (<750 psig) piping or systems. Do not heat cylinder by any means increase the discharge rate of product from the cylinder. Use a check valv or trap in the discharge line to prevent hazardous back flow into the cylir

For additional handling recommendations, consult Compressed Gas Asssociatic Pamphlets P-1 and G-12.

Special Storage Recommendations:

Protect cylinders [illegible] Store in cool, dry, well-ventilat area of non-combustible construction away from heavily trafficked areas an emergency exits. Do not allow the temperature where cylinders are stored exceed 130°F (54°C). Cylinders should be stored upright and firmly secure 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 ignition in the storage or use area.

For additional recommendations, consult Compressed Gas Association Pamphle 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
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: 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

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 of 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' 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 th 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 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).

068

L-4574-B
July 1988

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 02.

MATERIAL (CAS NO.)	Wt (%)	1988-1989 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

CODE

DATE OF REVISION
2-13-87

THRESHOLD LIMIT VALUE: 5,000 ppm – ACGIH (1988-89).

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.

TITLE	REVISION	SPECIFICATION NUMBER
CARBON DIOXIDE	1	856068

CODE DATE OF REVISION

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.

TITLE	REVISION	SPECIFICATION NUMBER
CARBON DIOXIDE	1	856068

DATE OF REVISION

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 creating 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

Additional offices in principal cities all over the world.

E2-6836 7/83 1M

Lithographed in U.S.A.

TITLE	REVISION	SPECIFICATION NUMBER
CARBON DIOXIDE	1	856068

CODE

DATE OF REVISION 2-13-87

PETROLANE MATERIAL SAFETY DATA SHEET

P.O. Drawer 1410 - 1600 E. Hill St., Long Beach, CA 90801
Contact: Safety Department - Telephone: (213) 427-5471

WARNING STATEMENT

DANGER! Extremely Flammable.
Vapor reduces oxygen available for breathing and may cause suffocation in confined spaces.
Liquid may cause freeze burn similar to frostbite.

I. Product Identification

Product Name: Petrolane Propane
Chemical Name: Propane
Synonyms: LP-Gas, Bottled Gas
Chemical Family: Paraffinic Hydrocarbon
Chemical Formula: C_3H_8
DOT Proper Shipping Name: Liquefied Petroleum Gas
DOT Hazard Class: Flammable Gas
DOT I.D. Number: UN1075

Transportation Emergency Telephone:
800-424-9300 (CHEMTREC)

NFPA Classification:

Health	1	Slightly Toxic
Fire	4	Extremely Flammable
Reactivity	0	Stable

II. Hazardous Ingredients

Component	CAS Number	%	OSHA PEL	ACGIH TLV
Ethane	74-84-0	0-6	None established	Simple asphyxiant
Propane	74-98-6	87-97	1000 ppm (8hr)	Simple asphyxiant
Propylene	115-07-1	0-5	None established	Simple asphyxiant
Butane	106-97-8	0-2.5	None established	800 ppm (8 hr)

III. Physical Data

Boiling Point: -44°F
Melting Point: -309°F
Vapor Pressure: 208 psig (max.) @ 100°F
Vapor Density (Air=1): 1.5
Specific Gravity (H_2O=1): 0.504
% Volatile by Volume: 100%
Solubility in Water: Insoluble
Evaporation Rate(Bu Ac=1): N/A
Gas Volume @ Atm. Pressure & 60°F (Cu. ft. gas/gal. liquid): 36.4
Appearance and Odor: Colorless liquefied petroleum gas. Odorless in pure form. Propane sold for fuel contains a foul smelling, skunk-like warning agent (odorant). The odorant is effective, but the ability of people to detect odors varies widely. Also, certain chemical reactions in the propane system can reduce the propane odor level. No odorant can be 100% effective in all circumstances. If odor level appears to be weak, notify your propane supplier immediately.

IV. Fire and Explosion Data

Flash Point (Method Used): -156°F (estimated)
Flammable Limits (% Volume in Air): Lower 2.1% Upper 9.5%

Extinguishing Media: Dry chemical, foam or CO_2 for small fires. Stop flow of gas first.

Special Fire Fighting Procedures and Precautions: Evacuate area. Notify fire department. Allow only properly protected personnel in area. Shut off source of gas, if possible. Allow fire to burn until gas flow is shut off. Water spray can be used to cool exposed equipment and vapor space of containers. Approach a flame enveloped container from the side, never the head ends. For massive, uncontrollable fires and when flame is impinging on vapor space of containers, withdraw all personnel and evacuate surrounding vicinity immediately.

Unusual Fire and Explosion Hazards: Products of combustion may yield carbon monoxide. Uncontrolled vapors spread rapidly, are heavier than air and are extremely flammable.

V. Reactivity Data

Stability: Stable
Materials to Avoid: Strong oxidizing agents
Hazardous Decomposition Products: Incomplete combustion can cause carbon monoxide.

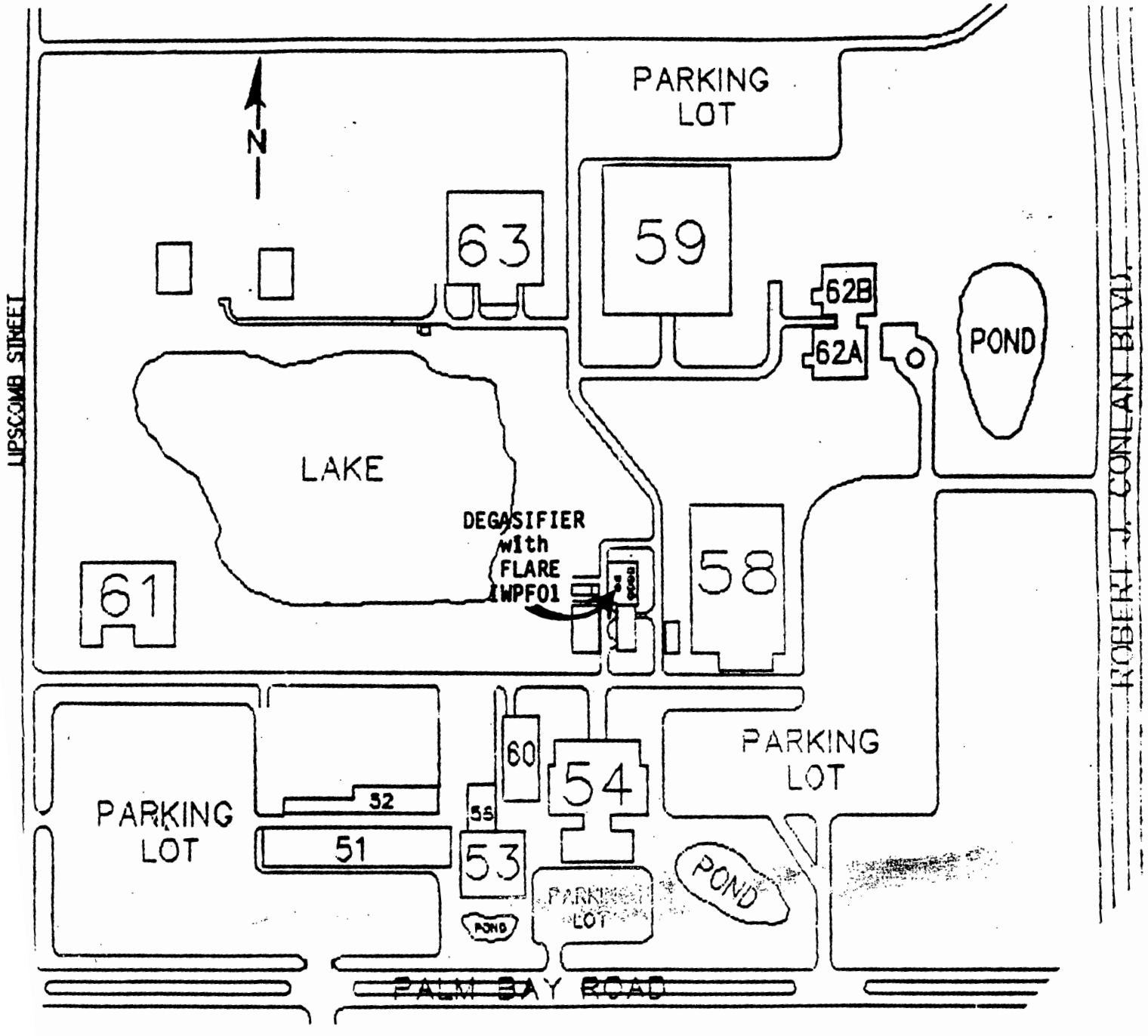
HARRIS SEMICONDUCTOR

ATTACHMENT F

SUPPLEMENTAL INFORMATION

FLARE LOCATION

HARRIS SEMICONDUCTOR SITE



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

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.

RECEIVED
JAN 12 1989
J. R. KOLANEK

BEST AVAILABLE COPY

01-000-S8094 HARRIS SEMICONDUCTOR 00058093

VOUCHER NUMBER	INVOICE NUMBER	PURCHASE ORDER	INVOICE DATE	AMOUNT	DISCOUNT	NET AMOUNT
202913	PERMIT		04-17-89	1,500.00	.00	1,500.00
		T O T A L S		1,500.00	.00	1,500.00

EMITTANCE STATEMENT / DETACH BEFORE DEPOSITING

HARRIS SEMICONDUCTOR SECTOR

HARRIS

HARRIS CORPORATION
SEMICONDUCTOR SECTOR

THE FIRST NATIONAL BANK OF ATLANTA
AUGUSTA, GEORGIA

64-1327
611

058093

'AY

DATE	CHECK NO.	NET AMOUNT
05/05/89	00058093	******1,500.00

ONE THOUSAND FIVE HUNDRED AND 00/100 DOLLARS

TO THE ORDER OF

FLORIDA DEPT OF ENVIRONMENTAL
REGULATION
2600 BLAIR STONE ROAD
TALLAHASSEE,
FL 32399

HARRIS CORPORATION
SEMICONDUCTOR SECTOR

COUNTERSIGNED

AUTHORIZED SIGNATURE

[redacted]

[redacted]

HARRIS

HARRIS CORPORATION
SEMICONDUCTOR SECTOR

THE FIRST NATIONAL BANK OF ATLANTA
AUGUSTA, GEORGIA

64-1327
611

079432

DATE	CHECK NO.	NET AMOUNT
12/15/89	00079432	********400.00

PAY

FOUR HUNDRED AND 00/100 DOLLARS

TO THE ORDER OF

DEPT. OF ENVIRONMENTAL REG
2600 BLAIR STONE ROAD
TALLAHASSEE,
FLA
32399

HARRIS CORPORATION
SEMICONDUCTOR SECTOR

Nancy Baldisserotto
COUNTERSIGNED

AUTHORIZED SIGNATURE

[redacted]

[redacted]

[redacted]