

P 256 396 166

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED  
NOT FOR INTERNATIONAL MAIL

(See Reverse).

U.S.G.P.O. 1989-234-555

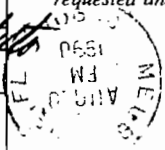
PS Form 3800, June 1985

Sent to	Alvin Critzer
Street and No.	P.O. Box 883
City, State and ZIP Code	Harris Semiconductor Melbourne, FL
Postage	
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	\$
Postmark or Date	8-16-90 AC 05-180707

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

1.  Show to whom delivered, date, and addressee's address. (Extra charge)      2.  Restricted Delivery (Extra charge)

3. Article Addressed to: Alvin N. Critzer, P.H. Mgr Harris Semiconductor P.O. Box 883 Melbourne, FL 32901	4. Article Number P 256 396 166 Type of Service: <input type="checkbox"/> Registered <input type="checkbox"/> Insured <input checked="" type="checkbox"/> Certified <input type="checkbox"/> COD <input type="checkbox"/> Express Mail <input type="checkbox"/> Return Receipt for Merchandise
5. Signature — Addressee X	8. Addressee's Address (ONLY if requested and fee paid)
6. Signature — Agent X <i>Harris Semiconductor</i>	
7. Date of Delivery 8-20-90	





# 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 PERMIT

Mr. Alvin N. Critzer  
Plant Manager  
Harris Semiconductor  
Post Office Box 883  
Melbourne, Florida 32901


August 16, 1990

Enclosed is construction permit No. AC 05-180707 for Harris Semiconductor to modify Building 59 to allow for an increase in permitted pollutant emissions at your existing facility in Palm Bay, Brevard County, Florida. This permit is issued pursuant to Section 403, Florida Statutes.

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

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT  
OF ENVIRONMENTAL REGULATION

  
\_\_\_\_\_  
C. H. Fancy, P.E.  
Chief  
Bureau of Air Regulation

Copy furnished to:

C. Collins, C. District  
K. Smith, 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 buisness on 8-16-90.

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.

Keri Daber  
Clerk

8-16-90  
Date

Final Determination

Harris Semiconductor  
Brevard County  
Palm Bay, Florida

Construction Permit Number:  
AC 05-180707

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

August 13, 1990

## Final Determination

The construction permit application has been reviewed by the Department. Public Notice of the Department's Intent to Issue was published in the Florida Today on July 14, 1990. The Technical Evaluation and Preliminary Determination were available for public inspection at the DER's Central Florida District office and the DER's Bureau of Air Regulation office.

There were no comments received during the public notice period. Therefore, it is recommended that the construction permit be issued as drafted.



# 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  
P.O. Box 883  
Melbourne, Florida 32901

Permit Number: AC 05-180707  
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, Florida Statutes, and Florida Administrative Code (F.A.C.) Chapters 17-2 and 17-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

For the modification to Building 59, which is an existing source used for the manufacture of semiconductors, to allow for an increase in allowable emissions. The Reliability Lab is vented to scrubbers F59S01 and F59S02 and the Probe Card Repair Shop is 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 control VOC/solvent vapors. F59S01 is a 40,000 cfm horizontal cross-flow wet scrubber, using polypropylene packing, and with a mist eliminator, manufactured by Beverly Pacific, and installed to control acid vapors. The existing building/source is located 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 Standard Classification Codes are:

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

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

Attachments are listed below:

1. Application to Construct Air Pollution Source, DER Form 17-1.202(1), received May 14, 1990.
2. Technical Evaluation and Preliminary Determination dated June 25, 1990.

PERMITTEE:  
Harris Semiconductor

Permit Number: AC 05-180707  
Expiration Date: January 31, 1991

**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.

PERMITTEE:  
Harris Semiconductor

Permit Number: AC 05-180707  
Expiration Date: January 31, 1991

**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.



PERMITTEE:  
Harris Semiconductor

Permit Number: AC 05-180707  
Expiration Date: January 31, 1991

**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

PERMITTEE:  
Harris Semiconductor

Permit Number: AC 05-180707  
Expiration Date: January 31, 1991

**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 8.37 tons per year. The projected potential acid vapor emissions are 0.1 tons per year.
2. The VOC/solvent and acid vapor exhaust scrubbers shall be operating during working hours.
3. This operation is allowed to operate continuously (8,760 hours/year).
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.

PERMITTEE:  
Harris Semiconductor

Permit Number: AC 05-180707  
Expiration Date: January 31, 1991

**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 , shall 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.

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 05-180707  
Expiration Date: January 31, 1991

SPECIFIC CONDITIONS:

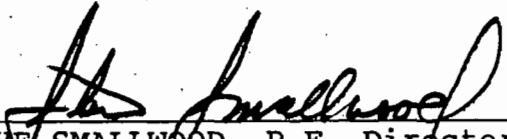
12. This permit supercedes all permits previously issued for this source.

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 15<sup>th</sup> day  
of August, 1990

STATE OF FLORIDA DEPARTMENT  
OF ENVIRONMENTAL REGULATION

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



State of Florida  
DEPARTMENT OF ENVIRONMENTAL REGULATION

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

# Interoffice Memorandum

TO: Steve Smallwood  
 FROM: Clair Fancy *CAF*  
 DATE: August 13, 1990  
 SUBJ: Approval of Construction Permit No. AC 05-180707  
 Harris Semiconductor

Attached for your approval and signature is a permit prepared by the Bureau of Air Regulation for the above mentioned company to modify Building 59 to allow for an increase in permitted pollutant emissions at the existing facility in Palm Bay, Brevard County, Florida.

No comments were received during the public notice period.

Day 90, after which this permit will be issued by default, is September 12, 1990.

I recommend your approval and signature.

CF/BM/plm

Attachments

*Check 5c 6(re)  
7(a)*

*Please  
and double check,  
return ASAP correct, if needed,  
8-14-90*

Check Sheet

Company Name: Harris Semiconductor  
Permit Number: AC 09-180707  
PSD Number: \_\_\_\_\_  
Permit Engineer: \_\_\_\_\_

**Application:**

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

**Cross References:**

- 
- 
- 

**Intent:**

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

**Final Determination:**

- Final Determination
- Signed Permit
- BACT Determination
- Other

**Post Permit Correspondence:**

- Extensions/Amendments/Modifications
- Other

P 832 539 788



**Certified Mail Receipt**

No Insurance Coverage Provided  
Do not use for International Mail  
(See Reverse)

Sent to	<i>Alvin Crutger</i>	
Street & No.	<i>Harris Semiconductor</i>	
P.O., State & ZIP Code	<i>PO Box 803</i>	
Postage	<i>Melbourne, FL</i>	<i>\$1</i>
Certified Fee		
Special Delivery Fee		
Restricted Delivery Fee		
Return Receipt Showing to Whom & Date Delivered		
Return Receipt Showing to Whom, Date, & Address of Delivery		
TOTAL Postage & Fees		<b>\$</b>
Postmark or Date		

PS Form 3800, June 1990

*Certified  
Green card  
not received  
as of 11-22-91*

*File Copy*



# Florida Department of Environmental Regulation

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

Lawton Chiles, Governor

Carol M. Browner, Secretary

June 4, 1991

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Alvin N. Critzer, Plant Manager  
Harris Semiconductor  
Post Office Box 883  
Melbourne, Florida 32901

Dear Mr. Critzer:

Re: Amendments to Construction Permit AC 05-180707

The Department has reviewed Mr. Constantine Triantafyllidis' letter received May 1, 1991, requesting amendments to the above referenced permit and to notification of the installation of two gas trap units. The Department acknowledges the installation of the gas traps; and, is in agreement with the request for amendments. Therefore, the following will be changed and added:

Expiration Date

FROM: January 31, 1991  
TO: December 31, 1991

Specific Conditions Nos. 6 & 7

FROM:

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);



Mr. Alvin N. Critzer

June 4, 1991

Page 2

- 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, shall 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.

TO:

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.

7. Each scrubber system's efficiency and actual VOC/solvent 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 pursuant to F.A.C. Rule 17-2.700 and 40 CFR 60, Appendix A;
- b) the DER's Central District office shall receive 15 days notice in writing prior to sampling;
- 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;
- d) the efficiency of each control system shall be established by tests (inlet and outlet) once every five years for operation permit renewal; and,
- e) the annual VOC emissions shall be calculated using actual emissions data derived from stack test sampling results and the actual operating hours for the affected source/building.

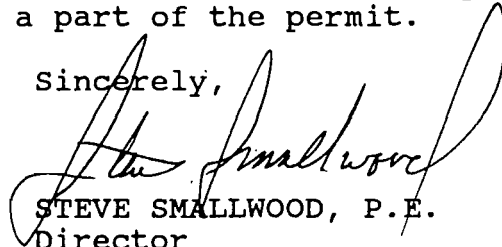
Mr. Alvin N. Critzer  
June 4, 1991  
Page 3

Attachment to be Incorporated:

o Mr. Constantine Triantafyllidis' letter received May 1, 1991.

This letter must be attached to your air construction permit, No. AC #5-180707, and shall become a part of the permit.

Sincerely,



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

SS/BM/plm

c: C. Collins, Central Dist.  
C. Triantafyllidis, HS

Ready File }  
B. M. Mitchell } 6-10-91 RT



State of Florida  
DEPARTMENT OF ENVIRONMENTAL REGULATION

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

# Interoffice Memorandum

TO: Steve Smallwood  
FROM: Clair Fancy *CAF*  
DATE: June 3, 1991  
SUBJ: Amendments to Construction Permit AC 05-180707  
Harris Semiconductor - Building 59

Attached for your approval and signature is a letter that will amend the above referenced construction permit issued to Harris Semiconductor. There is no controversy regarding this action.

I recommend your approval and signature.

CF/BM/plm

*Clair - I don't understand the reason for the change. It is not clear to me that it is an improvement. Please explain.*

*6-6-91*

April 22, 1991

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

RECEIVED

MAY 2 1991

DER-BAQM

Re: Permit Number AC 05-180707  
Building 59 Air Permit, Harris Semiconductor.

Dear Mr. Fancy:

By this letter, Harris Semiconductor Sector (HSS) hereby requests some minor additions and/or modifications to the above mentioned permit.



First, the facility is providing the Department with notice of its intent to add as a point source emission control two gas trap units (dry scrubbers) in conjunction with two dry vacuum pumps to treat emissions exhausted from the aluminum etching equipment located at the northwest of the fab area in Building 59. The gas traps will be located in the basement of Building 59 and are the Ebara gas traps, model GTE-3 along with the Ebara 50x20 Dry Vacuum Pumps.

The filter material of these units consists primarily of activated calcium hydroxide and charcoal. This alkaline media of the filters reacts with any boron trichloride and aluminum chloride emissions that may result from the aluminum etching process and forms a non-hazardous by-product. Information on the proposed gas trap units is provided in Attachment I. If the Department has no objection, we will proceed with the course of action described, with completion by the end of June.

Second, it is requested that specific condition 6, referencing the Annual Mass Balance requirement, be deleted from the above permit in favor of annual emissions monitoring. Similar to other Building permits, the annual emission sampling requirement provides accurate data on the nature and amount of VOC emissions emanating from Building 59. Also, annual emissions for this Building will be calculated through averaged monitored emissions and actual operating hours.

Lastly, based on the Department's approval of the above, it is requested that the above mentioned permit expiration date be extended from June 30, 1991 to December 31, 1991 to provide adequate time for the installation and final field adjustments of the proposed gas adsorption units.

BEST AVAILABLE COPY

FORM OF PAYMENT				SERVICES			
CASH <input type="checkbox"/> GBL <input type="checkbox"/> CBL <input type="checkbox"/> <input type="text"/> FCCOD <input type="checkbox"/> PPD <input type="checkbox"/> COL <input type="checkbox"/> OTH <input type="checkbox"/> COMAT <input type="checkbox"/>				UNITED STATES / CANADA <input type="checkbox"/> Same Day <input type="checkbox"/> <input type="checkbox"/> AM <input type="checkbox"/> PM <input checked="" type="checkbox"/> Second Day <input type="checkbox"/> Saturday Delivery		INTERNATIONAL Express <input type="checkbox"/> Business Documents <input type="checkbox"/> Preferred <input type="checkbox"/> Customs Clearance <input type="checkbox"/> Standard <input type="checkbox"/> Delivery <input type="checkbox"/>	
Shipper's Account Number <b>E 539427716</b>						Date <input type="text"/> Origin <input type="text"/> Shipment Number <input type="text"/> <b>4/29/91 ORL 246282511 2</b>	
From: CONSTANTINE TRIANTAFILLIDIS -07-729-5301			To: M <sup>Y</sup> CLAIRE FANCE 924-4821344			Tariff Dest. Gateway	
HARRIS SEMICONDUCTOR R-9250			DEPARTMENT OF ENVIRONMENTAL REGULATION			Check to Shipper \$	
BLDG 59 PALM BAY ROAD			2600 BLAIR STONE ROAD			Hold for Pick Up <input type="checkbox"/>	
PALM BAY FL			TALLAHASSEE FL USA.			Canada <input type="checkbox"/>	
Customer's Reference Numbers		Zip 32905		Consignee's Account Number E		Zip 32390-2400	
Description				FOR INFORMATION OR RATES CALL 1-800 HI EMERY (1-800-443-6379)		Declared Value \$	
R-9250							
TODSR <input type="checkbox"/> Haz Mat <input type="checkbox"/> Edit <input type="checkbox"/>				Dimensions: L W H Total Pieces: 1 2 3 4 5 6 Total Weight (In Lbs.): 7 8 9 0 1 2			
Shipper's Signature: <i>Constantine Triantafyllidis</i>				Envelope <input checked="" type="checkbox"/> Pack <input checked="" type="checkbox"/> 9X12 <input checked="" type="checkbox"/> 12X15 <input checked="" type="checkbox"/>			
International Shipments		Third Party Account Number					
Commodity Code		Third party Account Number mandatory for Third party billing.		E			
Free Domicile <input type="checkbox"/>		International Customs Value		International Insurance			
Base Charge		Total Transportation Charges		Other Charges/Advance at Origin			
				OC/AO <input type="checkbox"/>		\$	

2 JAX A

Terms and Conditions on Back

If you have any questions or require any additional information concerning the above material, please contact me at (407) 729-5301.

Sincerely,

*Constantine Triantafyllidis*

Constantine Triantafyllidis, R.E.P.  
Environmental Engineer

cc: B. Mitchell, Tallahassee  
C. Collins, Orlando  
K. Smith  
J. Steiner

**ATTACHMENT I.**

**EBARA GAS TRAP (DRY SCUBBER) UNITS  
BUILDING 59**

## EBARA EXHAUST GAS TRAP

### DESCRIPTION AND PRINCIPLE OF OPERATION

#### INTRODUCTION

The Ebara Gas Trap has been developed to remove fluorinated ( $\text{SiF}_4$ ) and chlorinated components from exhaust gases produced in semiconductor manufacturing processes. Removal of fluorinated and chlorinated components is achieved by the chemical reactions of these components (in gas phase) and proprietary alkaline reactants in the gas trap. The proprietary alkaline reactants used in the gas trap have such a strong affinity for fluorinated and chlorinated chemicals that virtually complete removal of these compounds from the exhaust gas stream occurs.

#### CHEMISTRY AND OPERATION

The reaction vessel of the gas trap contains dry, alkaline solids which selectively seek the fluorinated and chlorinated compounds present in the exhaust gas. The alkali pellets chemically react with such gases as boron trichloride, chlorine, aluminum chloride, phosgene, and silicon tetrafluoride. The products of reaction are precipitated out and captured within the reaction vessel. Additives are available which can be included in the reaction vessel for catalyzing the conversion of carbon monoxide to carbon dioxide in the presence of air.

Exhaust gas containing fluorinated/chlorinated compounds is introduced at the bottom of the reaction bed. The gas passes through the reaction bed and emerges at the top. Virtually all the fluorinated/chlorinated compounds are chemically converted and captured in the reaction vessel contents as the gas flows through the bed.

Under normal operation, exhaust gas emerging from the gas trap will contain less than the maximum allowable concentrations of chlorinated and fluorinated compounds for human health and safety as established in standard health codes (ACGIH, NIOSH-IDLH). During operation, the weight of the reaction vessel will increase the fluorinated/chlorinated compounds are chemically reacted and captured. The reaction vessel is designed to be replaced when it has increased in weight by a specified quantity. The reaction vessel has a capacity to capture substantially more fluorinated/chlorinated compounds than the capacity specified for replacement.

Ebara gas traps are provided with sensitive scales, alarm lamps, and terminals which warn the operator when the reaction vessel has reached its design removal capacity.



## REACTION VESSEL REMOVAL AND REPLACEMENT

WHEN THE REACTION VESSEL HAS REACHED ITS DESIGN CAPTURE CAPACITY, IT MUST BE ISOLATED USING A SERIES OF ISOLATION VALVES. THE REACTION VESSEL, A POLYETHYLENE CANISTER, CONTAINS SPENT CHEMICALS CONSISTING PRIMARILY OF CALCIUM HYDROXIDE.

THE RATE OF REACTION VESSEL REPLACEMENT DEPENDS ON THE SEMICONDUCTOR PROCESS AND WAFER PRODUCTION RATE.

THE SPENT REACTION VESSEL WEIGHT AND DIMENSIONS FOR THE GT3 GAS TRAP ARE PROVIDED BELOW:

SHAPE	:	CYLINDRICAL
WEIGHT	:	73 KGS AT REMOVAL (65 KGS NEW)
DIMENSIONS	:	15" DIAM. X 33" HIGH
VOLUME	:	15 GAL.

## SAFETY FEATURES

IN ADDITION TO THE ALARM INDICATING SPENT WEIGHT OF THE REACTION VESSEL, ANOTHER ALARM WARNS THE OPERATOR OF AN ABNORMAL BACK PRESSURE AT THE GAS TRAP INLET. WHEN THE INLET PRESSURE IS HIGHER THAN A PRESET VALUE, AN ALARM LAMP IS LIT AND A SIGNAL CAN BE SENT TO A REMOTE RECEIVER.

## ATTACHMENTS

FIGURE 1 - THIS FIGURE SHOWS TYPICAL PERFORMANCE OF A MODEL GT3 GAS TRAP ASSUMING AN INLET STREAM CONTAINING ONLY CHLORINATED COMPOUNDS.

FIGURE 2 - THIS FIGURE SHOWS THE OUTLINE DIMENSIONS AND KEY COMPONENTS OF THE GAS TRAP.

FIGURE 3 - THIS FIGURE SHOWS GAS FLOW THROUGH THE GAS TRAP.

INSTRUCTION MANUAL FOR GAS TRAP (GTE-3/4AA)

1. Summary

This system treats waste gas from chloricarbon dry etching to render it harmless. The adsorbent in the vessel eliminates the toxic components through chemical and physical reaction. The timing of adsorbent replacement is known by detecting the increase of vessel weight.

This system is to be used under the pressure less than 1 kgf/cm<sup>2</sup>(G) (usually less than 0.5 kgf/cm<sup>2</sup>(G))

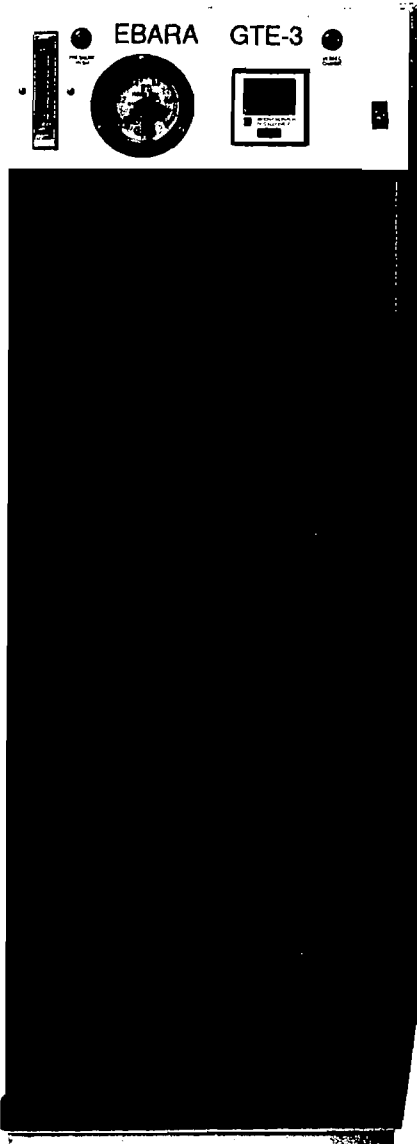
2. Specifications

Gas flow rate :	Maximum <sup>15</sup> liter/min (including 1 liter/min N <sub>2</sub> gas for purging on the pump side)
* Inflow gas concentration :	Maximum 2.4 % of BCl <sub>3</sub> Maximum 1.2 % of Cl <sub>2</sub> Maximum 1.7 % of CO Maximum 0.5 % of COCl <sub>2</sub>
Treated gas concentration :	BCl <sub>3</sub> less than 1 ppm Cl <sub>2</sub> less than 1 ppm CO less than 50 ppm COCl <sub>2</sub> less than 0.1 ppm (before the amount of treatment exceeds the normal value of 10 kg)
Adsorption volume :	Normal 10 kg Maximum 14 kg (However, these values are subject to change, depending on the inflow gas concentration and composition.)



**EBARA**

## **SAFE - CLEAN - RELIABLE EXHAUST TREATMENT SYSTEMS FOR THE SEMICONDUCTOR INDUSTRY**



Ebara has installed more Dry Scrubbers and Exhaust Treatment Systems than any other manufacturer in the world. We are the only manufacturer that can supply the total vacuum system including a proven dry vacuum pump and an exhaust treatment system to handle the needs of your facility. Ebara's safe, reliable Exhaust Treatment Systems provide a unique solution to the toxic emission problems every semiconductor facility is faced with today. The Ebara Exhaust Treatment Systems are currently used in difficult applications such as metal etch, EPI and CVD. Only Ebara has looked at the overall vacuum pumping system as a package and designed the solution to answer all of your facility's problems.

The Ebara Exhaust Treatment Systems offer you the following advantages over others:

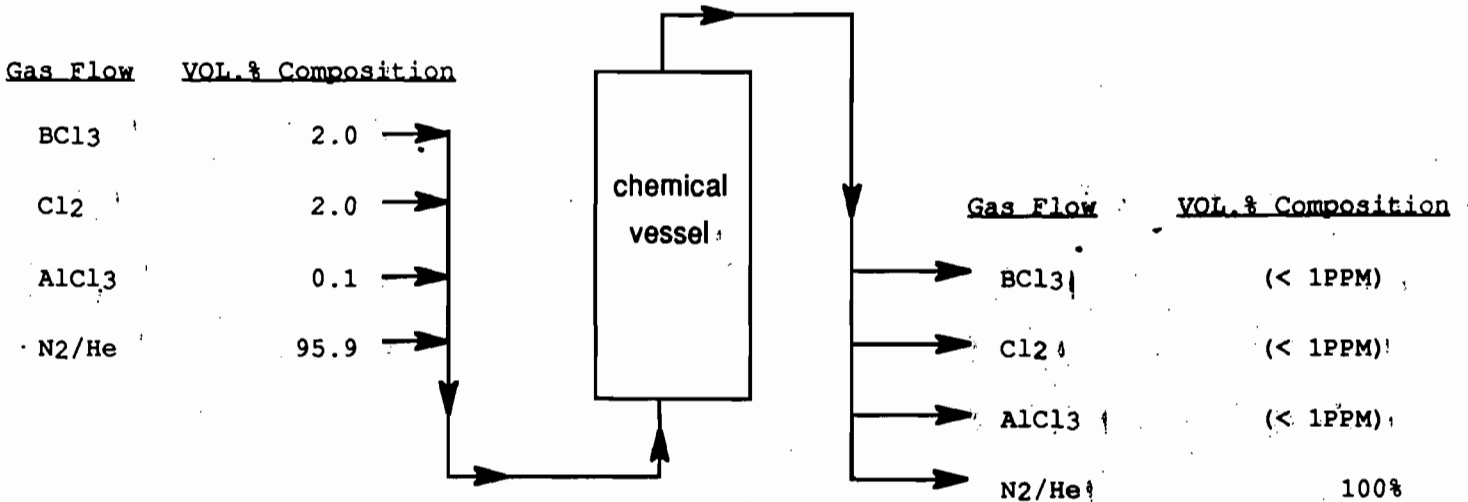
- .. Improved operating safety
- .. Improved and more economical environmental waste handling
- .. Dry Exhaust Treatment Systems for appropriate applications
- .. CDO (Controlled Decomposition and Oxidation) Systems where necessary
- .. Total vacuum system responsibility

**Experience the meaning of Ebara. . .**

**SAFE, CLEAN, RELIABLE  
EXHAUST TREATMENT SYSTEMS**

Ebara's exhaust treatment technology meets all the design objectives required by the semiconductor industry -- enhanced reliability, improved safety, cleaner vacuum, reduced toxic exhaust management problems, increased efficiency, ease of operation, and lower cost of ownership. Even in the harshest of processes, the Ebara Oil-Free Dry Pump and Exhaust Treatment System is clearly superior to conventional systems.

To cope with the demands of the Semiconductor industry, various types of individual treatment methods have been developed to overcome the shortcomings of conventional central wet treatment or dilution methods. There are three alternatives to conventional wet exhaust treatment: full-dry, semi-dry, and CDO. An example of the first full-dry method is Ebara's GTE-3 Dry Scrubber developed to remove fluorinated (SiF4) and chlorinated (Cl) components from exhaust gases produced in dry etching processes. Removal of the fluorinated and chlorinated components is achieved by chemically reacting the exhaust gas components with proprietary alkaline reactants contained in the GTE-3 Dry Scrubber. The Dry Scrubbers employ a removable reaction vessel which the exhaust gas flows through, and when this vessel has reached its design capacity, sensitive load cells trigger alarms which warn the operator that it has to be changed. Under most process conditions the contents of the reaction vessel is able to be disposed of in a non-hazardous Class 3 landfill. The diagram below shows the gas flow through a typical GTE Dry Scrubber system.



Additional systems for other processes, including silane, are also available without the hazards of an open flame. Ebara is the only vacuum technology company which designs and tests its products under actual operating conditions before they are released to production. Only with such a strong commitment can a company manufacture such reliable products. With our variety of field proven Exhaust Treatment Systems, Ebara can solve your hazardous waste management problems you are facing today, as well as those you will encounter in the future.

**If you care about improving your process, minimizing downtime and operating costs, improving your wafer production, improving your wafer yield, and improving the environment we live in, turn to the company that does also --**

# EBARA

**WESTERN U.S.A.**

**EASTERN U.S.A.**

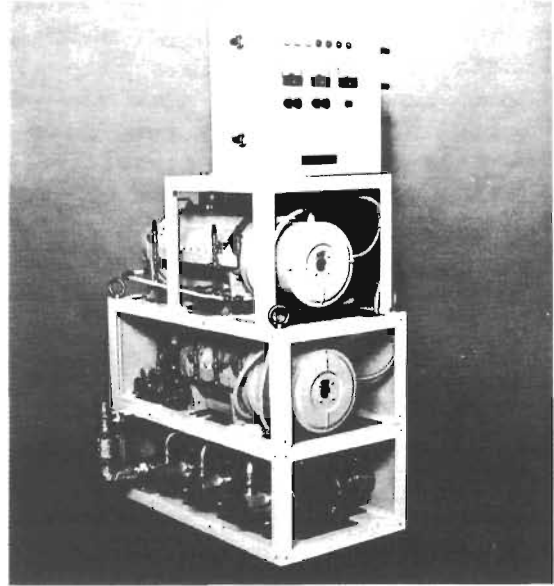
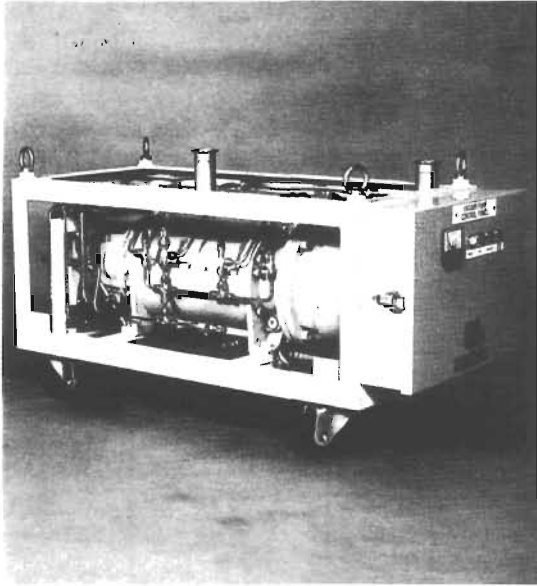
**EBARA TECHNOLOGIES INCORPORATED**  
 3560 BASSETT STREET  
 SANTA CLARA, CALIFORNIA 95838  
 (800) 535-5376 FAX (408) 496-2801

**EBARA TECHNOLOGIES INCORPORATED**  
 ONE PARKLAWN DRIVE  
 BETHEL, CONNECTICUT 06801  
 (203) 790-1080 FAX (203) 790-7404



**EBARA**

## **CLEAN RELIABLE OIL-FREE VACUUM PUMPS FOR THE SEMICONDUCTOR INDUSTRY**



Ebara has installed more Dry Vacuum Pumps than any other manufacturer in the world. Our rugged construction and proven roots-type design ensures continuous, reliable oil-free performance. The Ebara Dry Pump is the oil-free pump which survives where other dry pumps fail: in applications such as SiN<sub>2</sub> LPCVD, PECVD, CVD, Metal Etch, PVD, Ion Implantation, load locks, and others. Other manufacturers claim their vacuum pumps are designed specifically for harsh semiconductor processes, but Ebara is the only vacuum pump designed and tested under actual operating conditions in our process clean room before it's released to production. Only with such a strong commitment like this can a company manufacture such a reliable product. The Ebara Dry Pump stands up to the most aggressive gases and vapors months, even years, longer than other pumps in the same application.

Ebara Dry Oil-Free Vacuum Pumps offer you the following advantages over others

- .. Improved process repeatability
- .. Increased operating safety
- .. Improved environmental waste handling with our Dry Exhaust Treatment System option
- .. Clean vacuum with no oil backstreaming with designs up to 640 CFM
- .. Lower operating cost -- no consumables for oils, filters or exhaust silencers
- .. Increased reliability - virtually maintenance free operation with field proven, continuous operation for over 12 months with no breakdowns in harsh applications

**Experience the meaning of Ebara. . . . .**

**CLEAN RELIABLE OIL-FREE VACUUM**

Ebara's oil-free vacuum pumping technology meets all the design objectives for vacuum pumping systems in the semiconductor industry -- enhanced reliability, improved safety, cleaner vacuum, reduced toxic exhaust management problems, reduced maintenance, increased efficiency, ease of operation, lower operating costs, and lower cost of ownership. The Ebara Oil-Free Pump is clearly superior to conventional vacuum pumps in the harshest of processes.

Ebara Dry Pumps do not allow backstreaming of oil into the vacuum process from the pumping mechanism. While other dry pumping systems claim to produce oil-free pumping, they must incorporate a standard roots-type booster stage for most process requirements. This roots type booster has a seal design which puts only one seal between the process gas and the gear lubrication fluid. This allows the gas to migrate freely into and out of the oil filled gear casing chamber from the pumping chamber, resulting in a system not truly dry as claimed. The Ebara Dry Pump uses an improved, purged double seal design and is the only oil-free dry pump in capacities up to 640 CFM as listed below. It has been field proven to be superior to these other systems and to the conventional oil-sealed systems for harsh processing conditions. Therefore, in the semiconductor industry, the yield or wafer quality can only be improved with an Ebara vacuum system.

Pump Size	40 x 20	65 x 40	50 x 20	80 x 25	150 x 40
Number of stages	5	5	6	6	6
Displacement (swept volume)	53	124	164	383	824
Peak speed (CFM)	41	99	127	297	636
Ultimate vacuum (TORR) with full purge	30 x 10 <sup>-3</sup>	30 x 10 <sup>-3</sup>	4 x 10 <sup>-3</sup>	4 x 10 <sup>-3</sup>	4 x 10 <sup>-3</sup>
Cooling water flow (l/m)	5-8	5-8	5-8	5-8	5-8
Motor Power (HP)	3 HP	5 HP	5 HP	8 HP	10 HP

If you care about improving your process, minimizing downtime and operating costs, improving your wafer production, improving your wafer yield, and improving the environment we live in, turn to the company who does also --

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WESTERN U.S.A.

**EBARA TECHNOLOGIES INCORPORATED**  
 3560 BASSETT STREET  
 SANTA CLARA, CALIFORNIA 95038  
 (800) 535-5376 FAX (408) 496-2801

EASTERN U.S.A.

**EBARA TECHNOLOGIES INCORPORATED**  
 ONE PARKLAWN DRIVE  
 BETHEL, CONNECTICUT 06801  
 (203) 790-1080 FAX (203) 790-7404



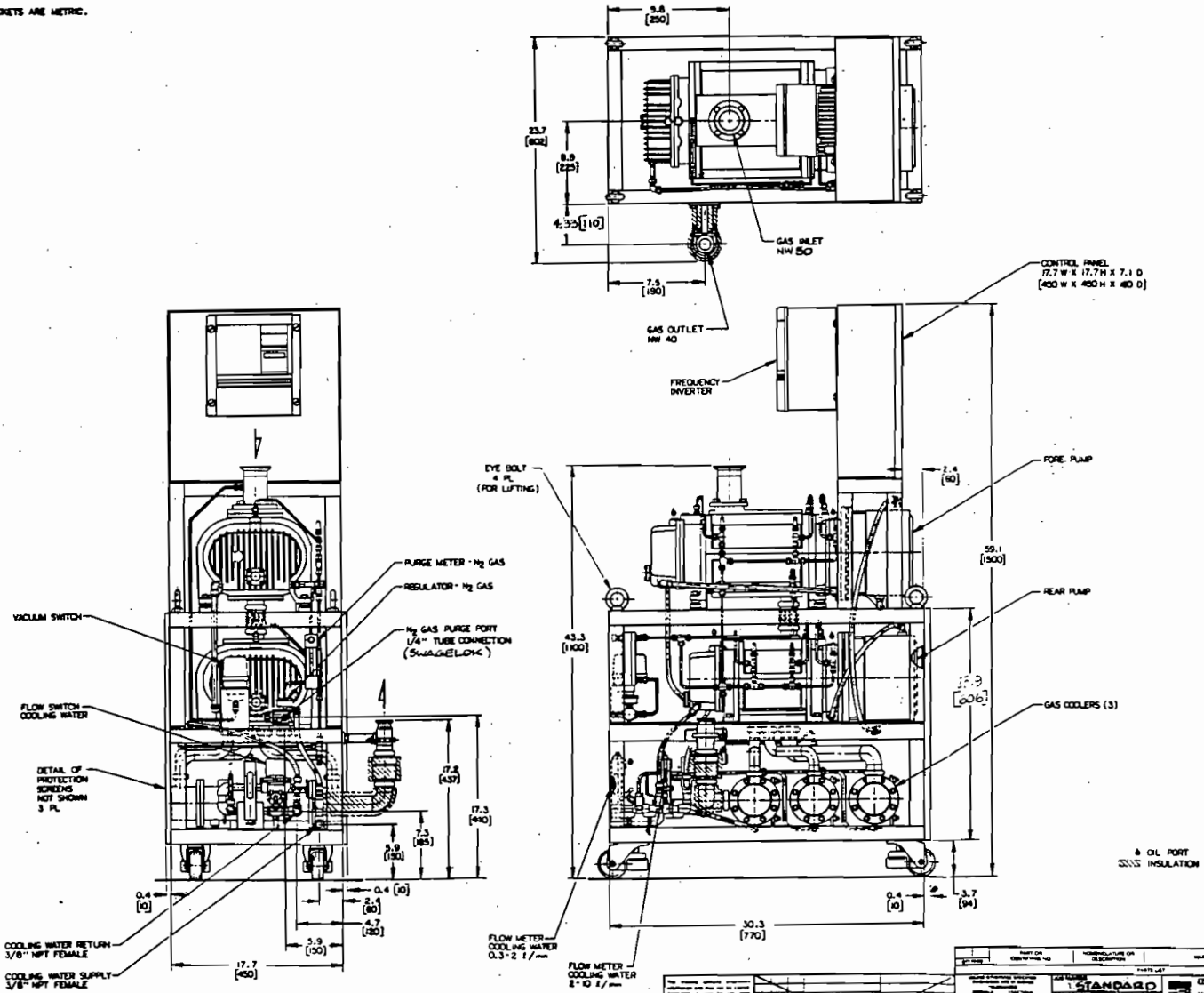
**SPECIFICATION OF MULTI-STAGE DRY PUMP**

**MODEL 50 X 20 UERR6M**

	<u>ENGLISH</u>	<u>METRIC</u>
PUMPING SPEED		
60 Hz	127 CFM	3600 L/MIN
50 HZ	106 CFM	3000 L/MIN
ULTIMATE PRESSURE	4 X 10 <sup>-3</sup>	4 X 10 <sup>-3</sup>
FLANGE RATING:		
INLET	..... KF 50 .....	
OUTLET	..... KF 40 .....	
N <sub>2</sub> PURGE:		
INLET CONNECTION	..... 1/4" TUBE CONNECTOR .....	
PRESSURE		
REQUIRED INLET	14 TO 100 PSIG	1 - 7 KgF/CM <sup>2</sup> G
REGULATOR GAUGE	14 PSIG	1 KgF/CM <sup>2</sup> G
QUANTITY FOR SHAFT SEAL FOREPUMP	..... 9.5 SLM .....	
COOLING WATER:		
INLET & OUTLET CONNECTIONS	..... 3/8" NPT FEMALE .....	
PRESSURE	57 PSIG	4 KgF/CM <sup>2</sup>
DIFFERENTIAL PRESSURE	14 - 28 PSI	1 - 2 KgF/CM <sup>2</sup>
QUANTITY	1.3 - 2.0 GPM	5 - 8 L/MIN
LUBRICATION FLUID:		
QUANTITY	27 FLUID OZ.	0.8 LITERS
WEIGHT: TOTAL	740 LBS.	340 Kg
MOTOR - 5 HP:		
POWER	..... 3.7 KW .....	
VOLTAGE	..... 208 VOLT/3 PH .....	
CURRENT	..... 19.1 AMP .....	
FREQUENCY	..... 60 Hz .....	
ROTATING SPEED	..... 3440 RPM .....	

REMARKS:

- NOTES: UNLESS OTHERWISE SPECIFIED
1. INTERPRET DRAWING PER OGD-STD-100.
  2. INTERPRET DIMENSIONS AND TOLERANCES PER ANSI Y14.5M.
  3. DIMENSIONS AND VALUES IN BRACKETS ARE METRIC.



TITLE: <b>STANDARD</b> DATE: 11/77 DRAWN BY: E. KELLY CHECKED BY:		MANUFACTURE OR REPRODUCTION EBARA INTERNATIONAL CORPORATION VACUUM PRODUCTS DIVISION TORONTO, CANADA	
THIS DRAWING IS THE PROPERTY OF EBARA INTERNATIONAL CORPORATION. IT IS TO BE USED ONLY FOR THE PROJECT AND FOR THE PURPOSES SPECIFIED HEREIN. IT IS NOT TO BE REPRODUCED, COPIED, OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF EBARA INTERNATIONAL CORPORATION.		<b>MULTISTAGE VACUUM PUMP</b> <b>OUTLINE DRAWING</b> 30 X 20 UPRISM <b>VPI10013</b>	



CAPE PUBLICATIONS, INC.

The Times

Published Weekly on Wednesday

RECEIVED

JUL 18 1990

DER-BAQM

THE TRIBUNE

Published Weekly on Wednesday



Published Daily

STATE OF FLORIDA
COUNTY OF BREVARD

Before the undersigned authority personally appeared Cynthia Frith 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

Harris Semiconductor

in the Court

was published in the FLORIDA TODAY NEWSPAPER

in the issues of July 14, 1990

Affiant further says that the said FLORIDA TODAY NEWSPAPER

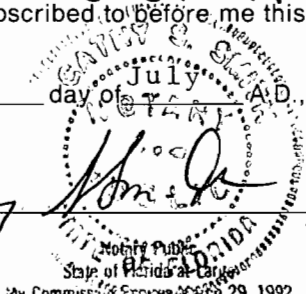
is a newspaper published in said Brevard County, Florida and that the said newspaper has heretofore been continuously published in said Brevard County, Florida regularly as stated above, and has been entered as second class mail matter at the post office in COCOA, said Brevard County, Florida for a period 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.

Cynthia Frith

Sworn and subscribed to before me this

14 day of July 1990

Gabby [Signature]



My Commission Expires March 29, 1992

cc: B. Mitchell
C. Collins

State of Florida
Department of
Environmental Regulation
Notice of Intent to Issue
The Department of Environ-
mental Regulation hereby gives
notice of its intent to issue a per-
mit to Harris Semiconductor, Post
Office Box 883, Melbourne, Flori-
da 32901, to modify Building 59 to
allow for an increase in permitted
pollutant emissions. The pro-
posed project will occur at the
applicant's existing facility locat-
ed in Brevard County, Florida. A day
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 inter-
ests are affected by the De-
partment's proposed permitting
decision may petition for an ad-
ministrative proceeding (hear-
ing) in accordance with Section
120.57, Florida Statutes. The peti-
tion must contain the information
set forth below and must be filed,
(received) in the Office of Gener-
al Counsel of the Department at
2600 Blair Stone Road, Tallahas-
see, 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 indicat-
ed 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 adminis-
trative determination (hearing)
under Section 120.57, Florida
Statutes.

The petition shall contain the
following information:

- (a) The name, address, and
telephone number of each peti-
tioner, 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 re-
versal or modification of the De-
partment'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 pre-
cisely the action petitioner wants
the Department to take with re-
spect to the Department's action
or proposed action.

If a petition is filed, the admin-
istrative hearing process is de-
signed to formulate agency ac-
tion. 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
application have the right to peti-
tion to become a party to the pro-
ceeding. The petition must con-
form to the requirements
specified above and be filed (re-
ceived) within 14 days of publica-
tion of this notice in the Office of
General Counsel at the above ad-
dress 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 subse-
quent intervention will only be at
the approval of the presiding offi-
cer upon motion filed pursuant to
Rule 28-5.207, F.A.C.

The application is available for
public inspection during normal
business hours, 8:00 a.m. to 5:00
p.m., Monday through Friday ex-
cept 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 Maquire Blvd., Suite 232
Orlando, Florida 32803-3767
Any person may send written
comments on the proposed action
to Mr. Barry Andrews at the De-
partment's Tallahassee address.
All comments mailed within 14
days of the publication of this no-
tice will be considered in the De-
partment's final determination.
T0104558-1T-7/14, 1990,
Saturday

P 256 396 133

**RECEIPT FOR CERTIFIED MAIL**

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

\* U.S.G.P.O. 1989-234-555

PS Form 3800, June 1985

Sender <i>Alvin Critzer</i>	
Street and No. <i>Harris Semi Cond.</i>	
P.O., State and ZIP Code <i>P.O. BOX 883</i>	
Postage <i>Melbourne FL</i>	
Certified Fee	<i>1</i>
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	<i>5</i>
Postmark or Date <i>AC 05-180707</i> <i>6-29-90</i>	

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

1.  Show to whom delivered, date, and addressee's address: (Extra charge)      2.  Restricted Delivery (Extra charge)

3. Article Addressed to: <i>Alvin N. Critzer Plant Mgr. Harris Semiconductor P.O. BOX 883 Melbourne, FL 32901</i>	4. Article Number <i>P 256.396.133</i>
	Type of Service: <input type="checkbox"/> Registered <input type="checkbox"/> Insured <input checked="" type="checkbox"/> Certified <input type="checkbox"/> COD <input type="checkbox"/> Express Mail <input type="checkbox"/> Return Receipt for Merchandise
5. Signature - Address <i>X Harris Semi</i>	8. Addressee's Address (ONLY if requested and fee paid)
6. Signature - Agent <i>X [Signature]</i>	
7. Date of Delivery <i>7-2-90</i>	

Always obtain signature of addressee or agent and **DATE DELIVERED.**



# 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

June 25, 1990

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. Alvin N. Critzer  
Plant Manager  
Harris Semiconductor  
Post Office Box 883  
Melbourne, Florida 32901

Dear Mr. Critzer:

Attached is one copy of the Technical Evaluation and Preliminary Determination and proposed permit for Harris Semiconductor to modify Building 59 to allow for an increase in permitted pollutant emissions.

Please submit any written comments you wish to have considered concerning the Department's proposed action to Mr. Barry Andrews of the Bureau of Air Regulation.

Sincerely,

C. H. Fancy, P.E.  
Chief  
Bureau of Air Regulation

CHF/BM/plm

Attachments

c: C. Collins, C District  
K. Smith, HS

BEFORE THE STATE OF FLORIDA  
DEPARTMENT OF ENVIRONMENTAL REGULATION

In the Matter of  
Application for Permit by:

Harris Semiconductor  
Post Office Box 883  
Melbourne, Florida 32901

DER File No. AC 05-180707

---

INTENT TO ISSUE

The Department of Environmental Regulation hereby gives notice of its intent to issue a permit (copy attached) for the proposed project as detailed in the application specified above. The Department is issuing this Intent to Issue for the reasons stated in the attached Technical Evaluation and Preliminary Determination.

The applicant, Harris Semiconductor, applied on May 14, 1990, to the Department of Environmental Regulation for a permit to modify Building 59 to allow for an increase in permitted pollutant emissions.

The Department has permitting jurisdiction under Chapter 403, Florida Statutes, and Florida Administrative Code Chapters 17-2 and 17-4. The project is not exempt from permitting procedures. The Department has determined that an air construction permit is required for the proposed work.

Pursuant to Section 403.815, F.S. and DER Rule 17-103.150, F.A.C., you (the applicant) are required to publish at your own expense the enclosed Notice of Intent to Issue Permits. The notice shall be published one time only within 30 days, in the legal ad section of a newspaper of general circulation in the area affected. For the purpose of this rule, "publication in a newspaper of general circulation in the area affected" means publication in a newspaper meeting the requirements of Sections 50.011 and 50.031, F.S., in the county where the activity is to take place. The applicant shall provide proof of publication to the Department, at the address specified within seven days of publication. Failure to publish the notice and provide proof of publication within the allotted time may result in the denial of the permit.

The Department will issue the permit with the attached conditions unless a petition for an administrative proceeding (hearing) is filed pursuant to the provisions of Section 120.57, F.S.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, 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. Petitions filed by the permit applicant and the parties listed below must be filed within 14 days of receipt of this intent. Petitions filed by other persons must be filed within 14 days of publication of the public notice or within 14 days of receipt of this intent, whichever first occurs. 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

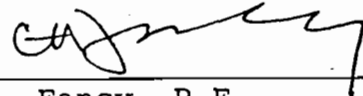
(g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

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 application 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 in 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.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT  
OF ENVIRONMENTAL REGULATION



---

C. H. Fancy, P.E.

Chief

Bureau of Air Regulation

Copies furnished to:

C. Collins, C District

K. Smith, HS

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this NOTICE OF INTENT TO ISSUE and all copies were mailed before the close of business on 6-29-90.

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.

Kenn Deber  
Clerk

6-29-90  
Date

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 a permit to Harris Semiconductor, Post Office Box 883, Melbourne, Florida 32901, to modify Building 59 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 application 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 application is available for public inspection during 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. Barry Andrews 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.

Technical Evaluation  
and  
Preliminary Determination

Harris Semiconductor  
Brevard County  
Palm Bay, Florida

Construction Permit Number:  
AC 05-180707

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

June 25, 1990

I. Application

A. Applicant

Harris Semiconductor  
Post Office Box 883  
Melbourne, Florida 32901

B. Project and Location

The applicant has applied for a construction permit to modify Building No. 59 to allow for an increase in permitted pollutant emissions due to an increase in activity and operations.

The existing facility is 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.

C. Process and Controls

1. Building No. 59

Building 59 houses a water fabrication operation on the first floor. The water 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. 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 VOC/solvents; one of which is heated. The acid stations exhaust to the existing wet scrubber system F59S01 and the VOC/solvent stations exhaust to the existing wet scrubber F59S02.

On the same floor and east of the water fabrication operations is the probe card repair shop. Four VOC/solvent stations are presently employed. The VOC/solvent emissions from the existing four stations are being vented through an exhaust system (F59E04). The stations are covered when not in use.

The first floor also houses the Reliability Lab operations, which is located to the west of the water fabrication operations. In the Reliability Lab operations, integrated circuits are tested for a wide variety of parameters, including tolerance to temperature and humidity changes, endurance, and electrical conductivity. Two VOC/solvent stations and four acid stations are installed and their emissions are vented to existing scrubbers F59S01 (acid) and F59S02 (VOC/solvent).

## 2. General

A material balance scheme will be used to account for the annual VOC/solvent emissions released into the atmosphere by the building/source and facility. A program of sampling and analysis will be used to assess the VOC/solvent emissions from each building/source.

The Standard Industrial Classification Code:

- o Industry No. 3674: Semiconductors and Related Devices

The Source Classification Codes:

- o Building 59: Cold Solvent 4-01-003-99 Tons VOC/Solvent  
Cleaning/Stripping consumed

## II. Rule Applicability

The proposed project is subject to preconstruction review under the provisions of Chapter 403, Florida Statutes, Florida Administrative Code (F.A.C.) Chapters 17-2 and 17-4, and 40 CFR (July 1, 1988 version).

The application package was deemed complete on May 14, 1990.

The existing facility is located in an area designated attainment for all pollutants.

Since the facility is not one of those contained in Table 500-1, F.A.C. Chapter 17-2, the VOC/solvent threshold for triggering new source review pursuant to F.A.C. Rule 17-2.500(5) is 250 TPY.

The following table presents the net projected potential pollutant emissions associated with the proposed modification:

Source	Net Potential Pollutant Emissions (TPY) VOC/Solvent
Building 59	+6.0

Note: o Allowed continuous operation (i.e., 8760 hrs/yr).

The following table presents the projected potential pollutant emissions from the current existing facility:

Table 2

Source	Potential Pollutant Emissions (TPY)		
	VOC/Solvent	SO <sub>2</sub>	H <sub>2</sub> S
Building 4	10.96		
51	27.29*		
54	95.65		
55	0.28 (fugitive)		
57	1.66		
58	3.24		
59	2.37		
60	0.75		
61	0.25		
62	0.83		
63	6.14		
IGWS: Flare System		30.7	0.25
Total: 149.42                      30.7                      0.25			

Note: o Allowed continuous operation (i.e., 8760 hrs/yr).  
 \* Building 51 (AC 05-157786) had a decrease in the allowable emissions via an amendment dated May 14, 1990.

The projected potential acid emissions from Building 59 is 0.1 TPY (F59S01).

The following table presents the projected potential pollutant emissions from the facility after the modification:

Table 3

Source	Potential Pollutant Emissions (TPY)		
	VOC/Solvent	SO <sub>2</sub>	H <sub>2</sub> S
Building 4	10.96		
51	27.29		
54	95.65		
55	0.28 (fugitive)		
57	1.66		
58	3.24		
59	8.37		
60	0.75		
61	0.25		
62	0.83		
63	6.14		
IGWS: Flare System		43.8	0.35
Total: 155.42                      43.8                      0.35			

Note: o Allowed continuous operation (i.e., 8760 hrs/yr).

Based on the tables, the proposed project is a minor modification to a major facility for VOC. Therefore, the potential pollutant emissions shall be subject to review in

accordance with F.A.C. Rule 17-2.520, Sources Not Subject to Prevention of Significant Deterioration or Nonattainment Requirements.

Since there is no specific emission limiting standard contained in F.A.C. Rule 17-2.600 nor is there any standards of performance for new stationary sources contained in F.A.C. Rule 17-2.660, the modification to the source/Building 59 will be permitted in accordance with F.A.C. Rule 17-2.620, General Pollutant Emission Limiting Standards.

In F.A.C. Rule 17-2.620(1)(a), no person shall store, pump, handle, process, load, unload or use in any process or installation volatile organic compounds or organic solvents without applying known and existing vapor emission control devices or systems deemed necessary and ordered by the Department. Pursuant to F.A.C. Rule 17-2.620(2), no person shall cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor. Objectionable odor is defined as any odor present in the outdoor atmosphere, which by itself or in combination with other odors, is or may be harmful or injurious to human health or welfare, which unreasonably interferes with the comfortable use and enjoyment of life or property, or which creates a nuisance according to F.A.C. Rule 17-2.100(135), Objectionable Odor (October, 1989 version).

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.

### III. Summary of Emissions

#### A. Emission Limitations

The regulated pollutant emissions from Building 59 are VOC/solvents.

Specific acid solutions are also being used during the manufacturing operations in Building 59. There are no specific emission limiting standards for these specific acids. However, the acid vapors will be scrubbed to reduce emissions.

The following table presents the allowable VOC/solvent emissions and the potential acid vapor emissions from Building 59:

Source	Maximum Allowable Pollutant Emissions/Limitations VOC/Solvent	Potential Acid Emissions
Building 59	8.37	0.1 TPY

Note: o Allowed continuous operations (i.e., 8760 hrs/yr).

The permitted emissions/limitations are in compliance with all requirements of F.A.C. Chapter 17-2 (October, 1989 version).

B. Air Quality Impacts

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

IV. Conclusion

Based on the information provided by Harris Semiconductor, the Department has reasonable assurance that the proposed modification to Building 59, as described in this evaluation, and subject to the conditions proposed herein, will not cause or contribute to a violation of any air quality standard, PSD increment, or any other technical provision of Chapter 17-2 of the Florida Administrative Code.





# 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  
P.O. Box 883  
Melbourne, Florida 32901

Permit Number: AC 05-180707  
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, Florida Statutes, and Florida Administrative Code (F.A.C.) Chapters 17-2 and 17-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

For the modification to Building 59, which is an existing source used for the manufacture of semiconductors, to allow for an increase in allowable emissions. The Reliability Lab is vented to scrubbers F59S01 and F59S02 and the Probe Card Repair Shop is 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 control VOC/solvent vapors. F59S01 is a 40,000 cfm horizontal cross-flow wet scrubber, using polypropylene packing, and with a mist eliminator, manufactured by Beverly Pacific, and installed to control acid vapors. The existing building/source is located 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 Standard Classification Codes are:

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

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

Attachments are listed below:

1. Application to Construct Air Pollution Source, DER Form 17-1.202(1), received May 14, 1990.
2. Technical Evaluation and Preliminary Determination dated June 25, 1990.



PERMITTEE:  
Harris Semiconductor

Permit Number: AC 05-180707  
Expiration Date: January 31, 1991

**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.

PERMITTEE:  
Harris Semiconductor

Permit Number: AC 05-180707  
Expiration Date: January 31, 1991

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.

PERMITTEE:  
Harris Semiconductor

Permit Number: AC 05-180707  
Expiration Date: January 31, 1991

**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

PERMITTEE:  
Harris Semiconductor

Permit Number: AC 05-180707  
Expiration Date: January 31, 1991

**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 8.37 tons per year. The projected potential acid vapor emissions are 0.1 tons per year.

2. The VOC/solvent and acid vapor exhaust scrubbers shall be operating during working hours.

3. This operation is allowed to operate continuously (8,760 hours/year).

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.

PERMITTEE:  
Harris Semiconductor

Permit Number: AC 05-180707  
Expiration Date: January 31, 1991

**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.

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 05-180707  
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 \_\_\_\_\_ day  
of \_\_\_\_\_, 1990

STATE OF FLORIDA DEPARTMENT  
OF ENVIRONMENTAL REGULATION

---

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



May 3, 1990

Mr. C. H. Fancy  
Deputy Bureau Chief  
Department of Environmental Regulation  
Bureau of Air Quality Management  
2600 Blair Stone Road  
Tallahassee, Florida 32301

RECEIVED

MAY 10 1990

DER-BAQM

Subject: HARRIS SEMICONDUCTOR, PALM BAY  
B-59 & B-51 Consolidated Air Permit Modifications  
Permit nos. AC 05-174445 & AC 05-157786

Dear Mr. Fancy:

On March 30, 1990, Harris Semiconductor submitted the required 1989 solvent mass balance report for the Palm Bay facility. The results of this report showed building 59's solvent (VOC) emissions to be 5.46 tons/year. The current permit estimates the building's emissions to be 2.37 tons/year.

While activity and operations in building 59 has increased, consolidation of wafer fabrication operations in building 51 indicate a decrease in chemical activity and the resulting air emissions. The current permit limit for building 51 is 33.29 tons/year; however, mass balance results for 1989 demonstrated that the emissions for this building are considerably less (17.30 tons/year.)

As discussed in the 'Conclusions and Recommendations' section of the mass balance report, we specifically request that the annual VOC emission limit for building 59 be increased to 8.37 tons/year to account for the emissions, and, in turn, the permit limit for building 51 be reduced to 27.29 tons/year.

Consequently, the following table presents the projected potential VOC emissions from the facility:

SOURCE	POTENTIAL VOC EMISSIONS (tpy)
BUILDING 4	10.96
51	27.29
54	95.65
55	0.28 (fugitive)
57	1.66
58	3.24
59	8.37
60	0.75
61	0.25
62	0.83
63	6.14
TOTAL	155.42

Please note that the requested modifications do not effect the current VOC emission limit for the site.

Enclosed are the modified permit applications for buildings 51 and 59. If you should have any questions about the enclosed information, please contact Nancy Baldisserotto at (407) 729-4061.

Sincerely,

A handwritten signature in cursive script, appearing to read "Al N. Critzer".

Al N. Critzer  
Plant Manager

cc: C. Collins  
B. Mitchell



**HARRIS**  
 HARRIS CORPORATION  
 SEMICONDUCTOR SECTOR

THE FIRST NATIONAL BANK OF ATLANTA  
 AUGUSTA, GEORGIA 64-1327  
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DATE	CHECK NO.	NET AMOUNT
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AY  
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TO THE ORDER OF  
 FLORIDA DEPT OF ENVIRONMENTAL REGULATION  
 2400 BLAIR STONE ROAD  
 TALLAHASSEE, FL

HARRIS CORPORATION  
 SEMICONDUCTOR SECTOR

*Nancy Baldissierotto*  
 COUNTERSIGNED  
 32399




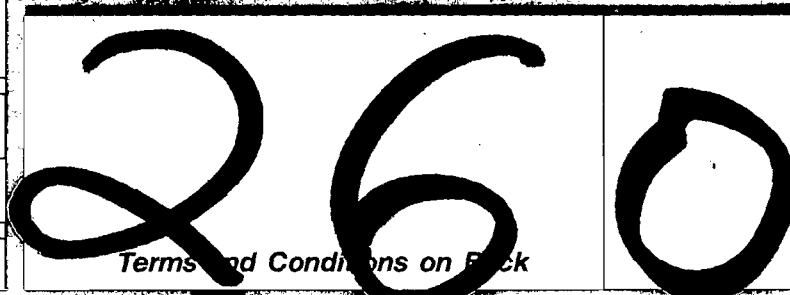
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#400 pd.  
5-14-90

DEPARTMENT OF ENVIRONMENTAL REGULATION *Recpt # 151123*

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



*AC05-180707*

BOB GRAHAM  
GOVERNOR  
VICTORIA J. TSCHINKEL  
SECRETARY

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Stationary [ ] New<sup>1</sup> [X] Existing<sup>1</sup>

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. Line  
Kiln No. 4 with Venturi Scrubber; Peaking Unit No. 2, Gas Fired) Building 59

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: Al N. Critzer, Plant Manager

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. Further I agree to maintain and operate the pollution control source and pollution control facilities in such a manner as to comply with the provision of Chapter 403, Florida Statutes, and all the rules and regulations of the department and revisions thereof. I also understand that a permit, if granted by the department, will be non-transferable and I will promptly notify the department upon sale or legal transfer of the permit establishment.

\*Attach letter of authorization

Signed: *Alvin N. Critzer*

Alvin N. Critzer, Plant Manager  
Name and Title (Please Type)

Date: 5/9/90 Telephone No. (407) 724-7078

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

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

<sup>1</sup> 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)

Florida Registration No. 35972

Date: 5/9/90

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 05-174445.

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

Start of Construction N/A Completion of Construction \_\_\_\_\_

- 2. 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 3/31/89; expires 12/5/89. AC 05-174445 issued 3/27/90; expires 1/31/91.

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 (SACT) 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 justifi-  
cation 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 <sup>1</sup>		Allowed Emission Rate per Rule 17-2	Allowable <sup>3</sup> Emission lbs/hr	Potential <sup>4</sup> Emission		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/yr	T/yr	
---SEE ATTACHMENT B ---							

<sup>1</sup>See Section V, Item 2.

<sup>2</sup>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)

<sup>3</sup>Calculated from operating rate and applicable standard.

<sup>4</sup>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.

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-----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) <sup>3</sup>	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 permanent structures and roadways (Example: Copy of relevant portion of USGS topographic map).
8. An 8 1/2" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.

9. The appropriate application fee in accordance with Rule 17-4.05. The check should be 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:<sup>1</sup> d. Capital Cost:
- e. Useful Life: f. Operating Cost:
- g. Energy:<sup>2</sup> h. Maintenance Cost:
- i. Availability of construction materials and process chemicals:
- j. Applicability to manufacturing processes:
- k. Ability to construct with control device, install in available space, and operate within proposed levels:

2.

- a. Control Device: b. Operating Principles:
- c. Efficiency:<sup>1</sup> d. Capital Cost:
- e. Useful Life: f. Operating Cost:
- g. Energy:<sup>2</sup> h. Maintenance Cost:
- i. Availability of construction materials and process chemicals:

<sup>1</sup>Explain method of determining efficiency.

<sup>2</sup>Energy to be reported in units of electrical power - KWH design rate.

1. 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:<sup>1</sup>

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:<sup>2</sup>

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:<sup>1</sup>

d. Capital Costs:

e. Useful Life:

f. Operating Cost:

g. Energy:<sup>2</sup>

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:<sup>1</sup>

3. Capital Cost:

4. Useful Life:

5. Operating Cost:

6. Energy:<sup>2</sup>

7. Maintenance Cost:

8. Manufacturer:

9. Other locations where employed on similar processes:

a. (1) Company:

(2) Mailing Address:

(3) City:

(4) State:

Explain method of determining efficiency.

Energy to be reported in units of electrical power - KWH design rate.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:<sup>1</sup>

Contaminant

Rate or Concentration

Contaminant	Rate or Concentration

(8) Process Rate:<sup>1</sup>

b. (1) Company:

(2) Mailing Address:

(3) City:

(4) State:

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:<sup>1</sup>

Contaminant

Rate or Concentration

Contaminant	Rate or Concentration

(8) Process Rate:<sup>1</sup>

10. Reason for selection and description of systems:

<sup>1</sup>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<sub>2</sub> \_\_\_\_\_ 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 <sub>2</sub>	_____ 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

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 "aligners" 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. Four solvent stations are presently employed.

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.)

During March of 1990, Semiconductor consolidated its Reliability operations. The operations are housed 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 were added. The wet benches are exhausted to the existing scrubber systems described above.

**ATTACHMENT B.**  
**AIR EMISSIONS**

## SOLVENT EMISSIONS - BUILDING 59

A solvent mass balance was performed on building 59 for calendar year 1989, with the following results;

1. 1988 ENDING INVENTORY = 4.62 tons
2. SOLVENTS PURCHASED = 52.65 tons
3. WASTE SHIPMENTS = 46.25 tons
4. TRACE AMOUNTS DEEPWELL INJECTED = 1.73 tons
5. 1989 ENDING INVENTORY = 3.83 tons
6. VOC AIR EMISSIONS = 5.46 tons

Note: Please refer to 1989 Solvent Mass Balance Report for lists of assumptions.

**TOTAL PROJECTED VOC EMISSIONS FOR BUILDING 59 = 8.37 TONS/YEAR.**

## SOLVENT MONITORING--BUILDING 59

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

FID test results are expressed as propane. Monitoring results during production hours showed average VOC concentrations of 0.27 pounds/hour. 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.

AUGUST 1989

EPA METHOD 25-A (F.I.D. ANALYSIS) BUILDING 59  
AVERAGE MONITORED VOC EMISSIONS DURING PRODUCTION HOURS

TEST DATE	SCRUBBER #	VOC EMISSIONS (LB/HR)
12/09/86	F59S02	0.27

## ACID MONITORING--BUILDING 59

Monitoring was performed on the building 59 scrubber F59S01 in August of 1989. Samples were collected using modified EPA method 8 sampling train. The impinger medium consisted of a 0.1 N sodium hydroxide solution. The analytical methodology utilized to determine the ions of highest concentration is as follows:

Chloride ion--EPA Method 325.3

Fluoride ion--EPA Method 340.2

Nitrate, phosphite, and sulfate ions--ion chromatography

All results were in pounds per hour as "X", where "X" represents the acid compound present in highest concentration.

The test results revealed that the total accumulative monitored acid emissions for the building were 0.876 tons/year expressed as hydrochloric, hydrofluoric, nitric, phosphoric and sulfuric acids. This figure is based on a hypothetical production schedule of 8760 hours a year. The monitoring was performed over an 8 hour time interval when the full production was occurring.

When a resulting acid concentration was expressed as a "less than 'y' " value, where 'y' represents the lowest detectable limit possible using the analytical methodology employed, acid emissions were taken to be equal to this 'y' limit value.

RESULTS OF ACID MONITORING--BUILDING 59  
 PERFORMED IN AUGUST OF 1989

Scrubber # OUTLET		HCl	HF	Nitric Acid	Phosphoric Acid	Sulfuric Acid	TOTAL (TON/YR)
F59S01	(lb/hr)	0.0930	0.0040	0.0010	0.0010	0.1010	
	(ton/yr)	0.4073	0.0175	0.0044	0.0044	0.4424	0.8760

TOTAL ACID EMISSIONS INTO SCRUBBER OUTLET = 0.8760 TONS/YEAR

**ATTACHMENT C.**  
**RAW MATERIALS & CHEMICALS**



BUILDING 59  
PROCESS CHEMICALS

---

ACETIC ACID  
AMMONIA  
AMMONIUM FLUORIDE  
AMMONIUM FLUORIDE  
AMMONIUM HYDROXIDE  
AMYL ACETATE  
ETHYLENE GLYCOL  
GLYCERINE  
HYDROCHLORIC ACID  
HYDROFLUORIC ACID  
HYDROGEN BROMIDE  
HYDROGEN PEROXIDE  
METHOXYSILANE  
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

BUILDING 59  
SOLVENTS

-----

1,1,1 TRICHLOROETHANE  
1-METHOXY-2-PROPANOL  
2-ETHOXYETHYL ACETATE  
ACETONE  
BUTYL CELLOSOLVE  
CARBON TETRACHLORIDE  
CELLOSOLVE ACETATE  
CHLOROPENTAFLUOROETHANE  
DICHLORODIFLUOROETHANE  
DICHLORODIFLUOROMETHANE  
EDTA  
ETHYL ALCOHOL  
ETHYL BENZENE  
ETHYLENE DIAMINE  
ETHYLENE GLYCOL MONOMETHYL ETHER  
FLUOROCARBON-72  
FREON 5311  
FREON TF  
FREON TMS  
ISOPARAFFINIC HYDROCARBONS  
ISOPROPYL ALCOHOL  
METHANOL  
METHYL ETHYL KETONE  
METHYLPHENYL ETHER  
METHYL-2-PYRROLIDINONE  
MINERAL SPIRITS  
MONOETHANOLAMINE  
N,N-DIMETHYLFORMAMIDE  
N-BUTYL ACETATE  
N-BUTYL ALCOHOL  
N-METHYL PYRROLIDONE  
ORGANIC POLYMER  
PERFLUOROALKYLETHER  
PROPYLENE GLYCOL 1,2 PROPANEDIOL  
TELOMERS OF TETRAFLUOROETHYLENE  
TOLUENE  
TRICHLOROFLUOROMETHANE  
TRICHLOROTRIFLUOROETHANE  
XYLENE

BUILDING 59  
PROCESS GASES

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

**ATTACHMENT D.**  
**CONTROL EQUIPMENT**

SCRUBBER INFORMATION

-----  
HARRIS ID # : F59501  
MANUFACTURER : BEVERLY PACIFIC      MODEL NUMBER : PS-40HT  
SERIAL NUMBER: F-600                  MATERIAL : FIBERGLASS  
DESCRIPTION : HORIZONTAL CROSS FLOW, NON-CLOGGING PUC SPRAY NOZZLES,  
POLYPROPYLENE PACKING, PUC 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

VOLUME FLOW RATE (CFM):                  SPEED (RPM): 764      DATE: SUBMITTED  
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 # : F59502  
MANUFACTURER : BEVERLY PACIFIC MODEL NUMBER : PS-240T  
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: 12/09/88  
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

VOLUME FLOW RATE (CFM): 5,494 SPEED (RPM): 1094 DATE: SUBMITTAL  
STATIC PRESS (IN): DATE: 12/09/88

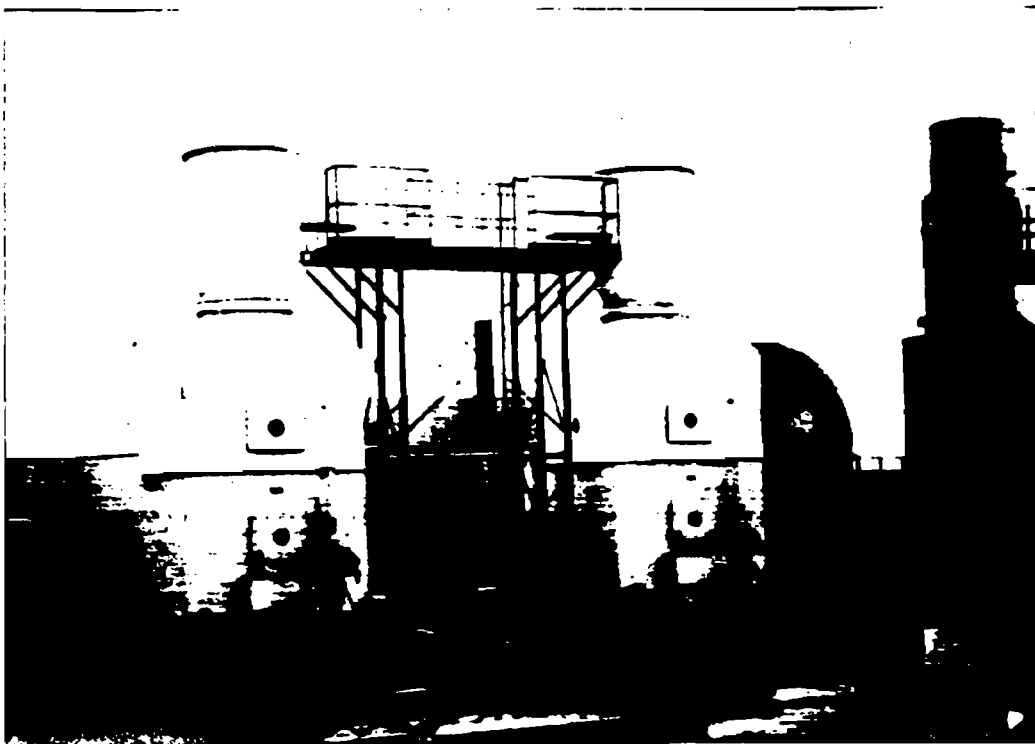
FAN MOTOR INFORMATION

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



**BEVERLY PACIFIC** CORPORATION

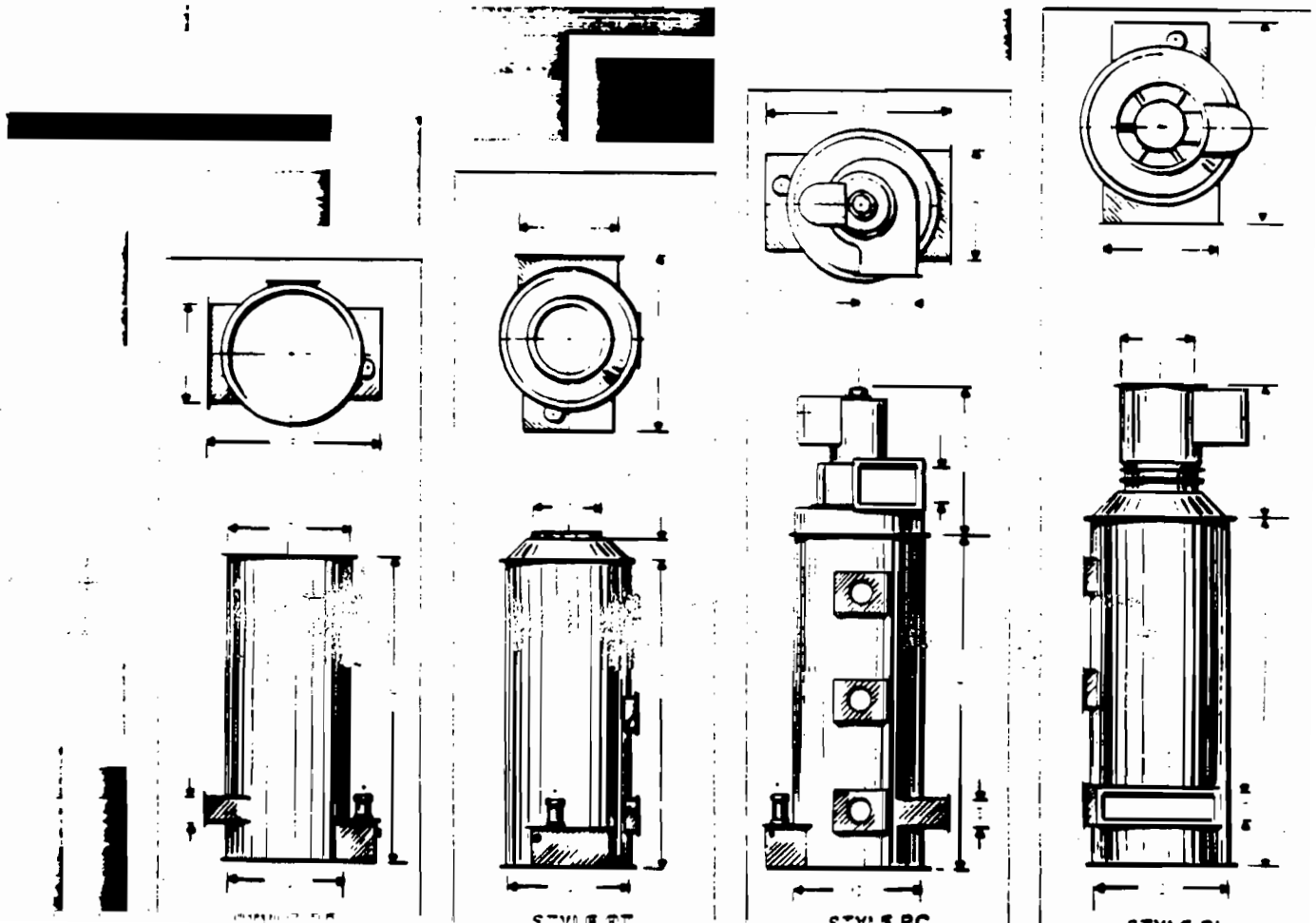
SCRUBBERS



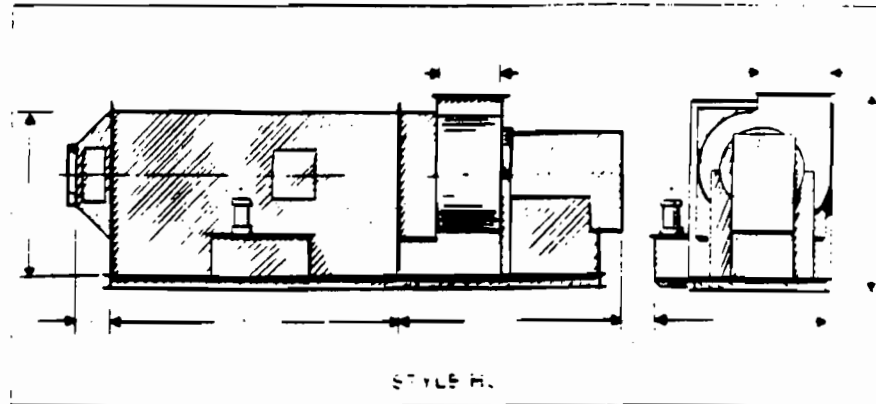
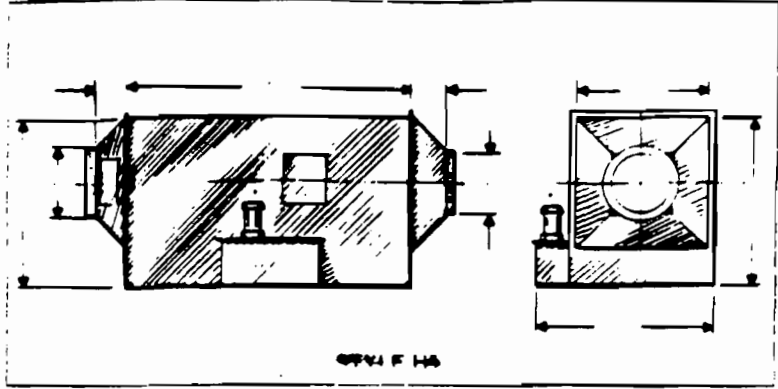
FIBERGLASS REINFORCED PLASTIC

**PACKED SCRUBBER DIMENSIONAL CHART**  
 MODEL NUMBERS  
 DIMENSIONS IN INCHES

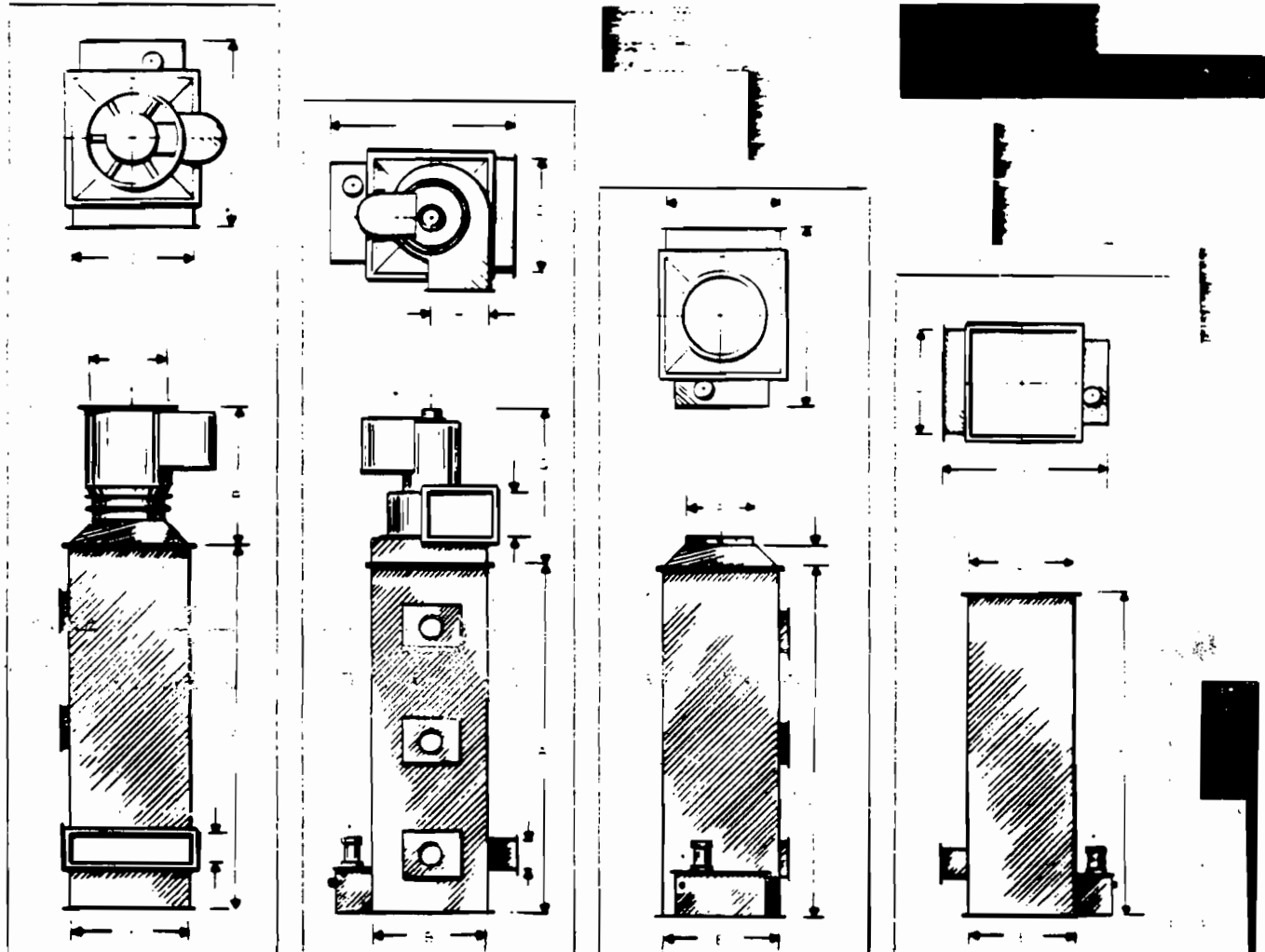
	PS-2	PS-4	PS-6	PS-8	PS-12	PS-18	PS-24	PS-30	PS-40	PS-50
A	78	82	84	94	101	108	112	114	118	118
B	24	36	42	48	60	72	84	96	108	120
C	28	40	48	58	72	84	96	108	120	136
D	22	34	40	46	58	70	80	92	104	116
E	6	8	10	11	12	16	18	20	24	24
F	46	58	68	76	90	102	114	126	138	154
G	42	54	60	66	78	90	102	114	126	138
H	13 1/4	16 1/4	22 1/2	26 1/4	29 1/2	35 1/4	39	47 1/4	52 1/2	63 1/2
I	10 1/4	12 1/4	17	20 1/2	22 1/4	27	30	37 1/2	40 1/2	49 1/2
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	83	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.	12 1/4	15	20	24 1/2	27	33	38 1/2	44 1/2	50	60
CFM x 1000	1-2	2-4	4-6	6-8	8-12	12-18	18-24	24-30	30-40	40-50
RECIRC. GPM	7	15	25	35	45	75	105	135	175	225
MAKE-UP GPM	0.7	1.5	2.0	3.0	4.0	7.0	10.0	13.0	17.0	22.0
HT OP. WT.	388	745	1110	1570	2690	4085	5670	7595	10000	16040
HT SHIP WT.	220	385	550	770	1210	1925	2750	3795	5000	7040
VT OP. WT.	318	660	1060	1500	2630	3910	5470	7400	11850	15800
VT SHIP WT.	150	300	500	700	1150	1750	2550	3600	5250	6800







\*May require one or more pumps.



## 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 tower unit 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 circulation 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+<sup>+</sup>% moisture particle entrainment 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.

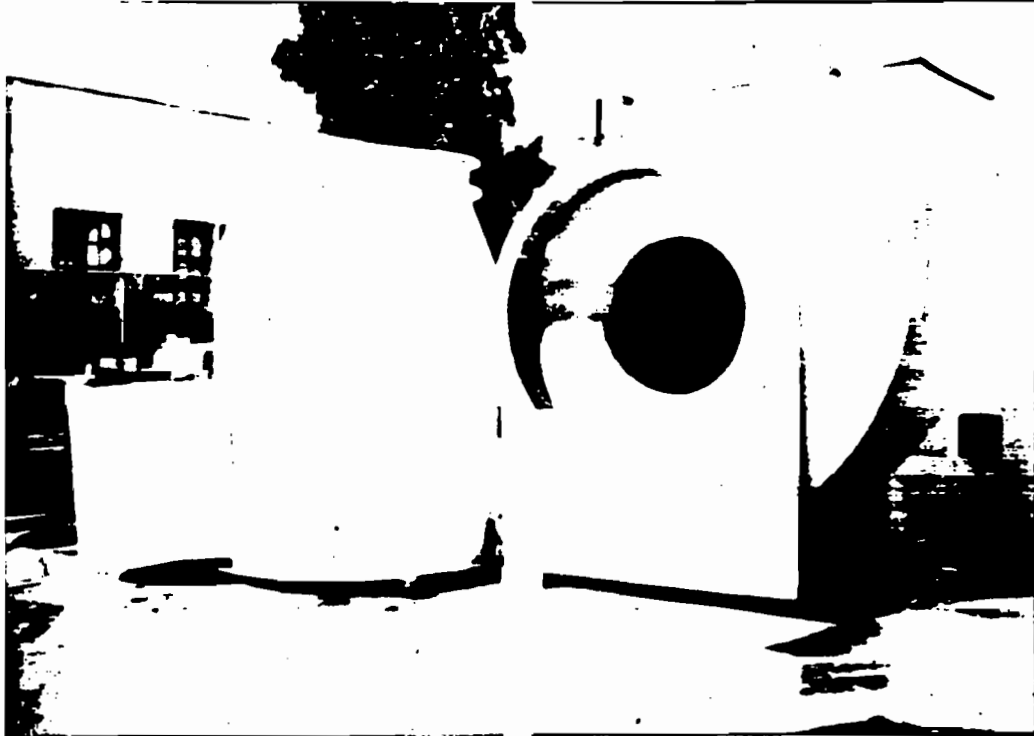
**pH CONTROL SENSING METERING** equipment can be provided where contaminate absorption requires the addition of acid or caustic to the recirculated scrubbing liquid.



**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 12 $\frac{1}{4}$ " 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.

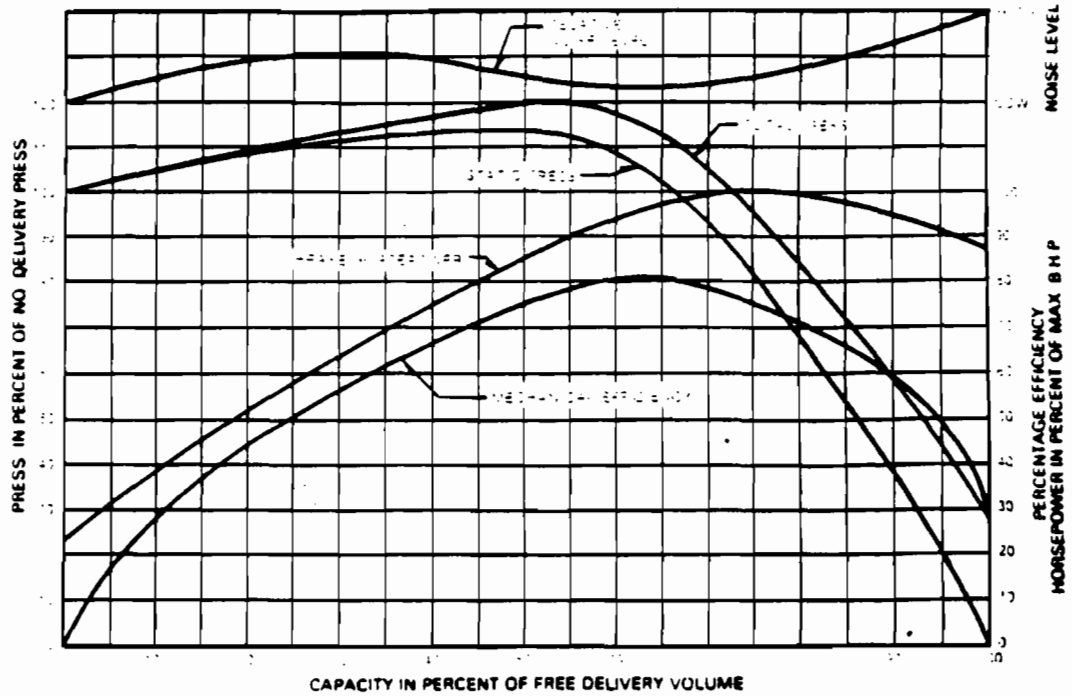
Should your particular requirement involve moving a volume of only a few hundred CFM at  $\frac{1}{4}$ " S.P. or over 80,000 CFM at 6" S.P., Beverly Pacific has a proven standard size to meet your requirement.

## EXHAUST FANS STANDARD AND OPTIONAL EQUIPMENT

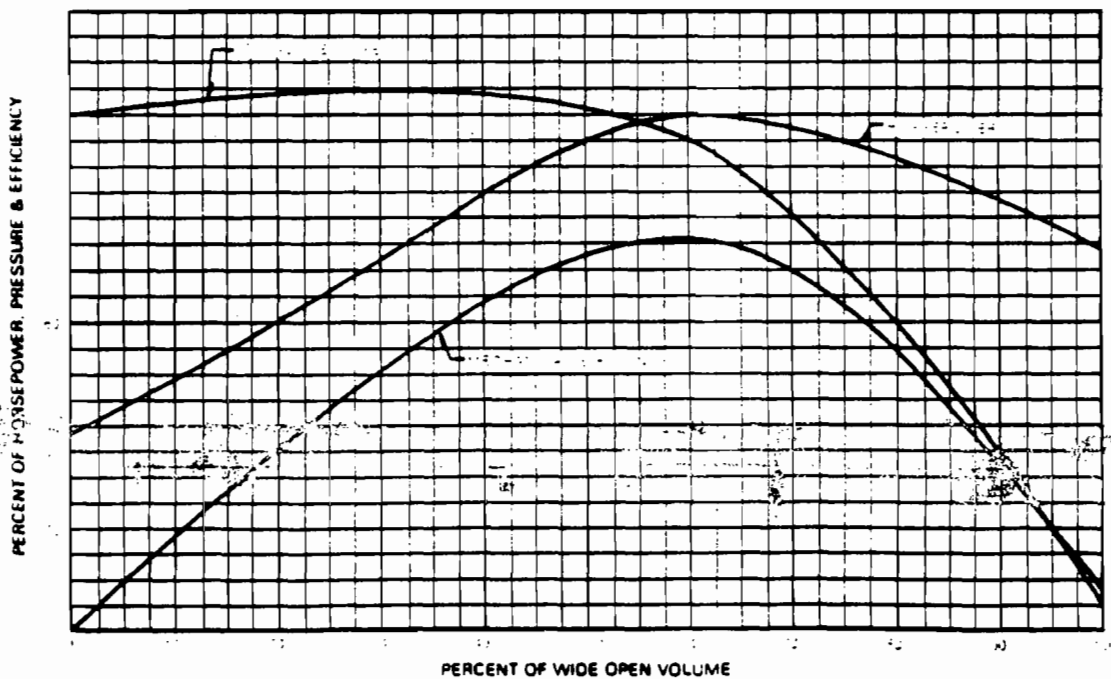
**Standard Equipment:** Beverly Pacific's centrifugal fans are equipped with a scroll bottom drain and flanged discharge outlet, and are furnished with a purchaser's choice of twelve (12) discharge outlet directions and a choice of right or left fan wheel rotation. Both of our fan styles, centrifugal 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 Rex taper-lock, single-duty, Type B, steel sprockets 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  $\frac{3}{4}$ " — 1 $\frac{1}{4}$ " diameter round bars of 1045, include a tensile strength of 98,000 PSI, yield strength of 59,000 PSI and a Brinell Hardness of 212.

### BEVERLY PACIFIC CORPORATION CENTRIFUGAL FAN CHARACTERISTIC CURVE



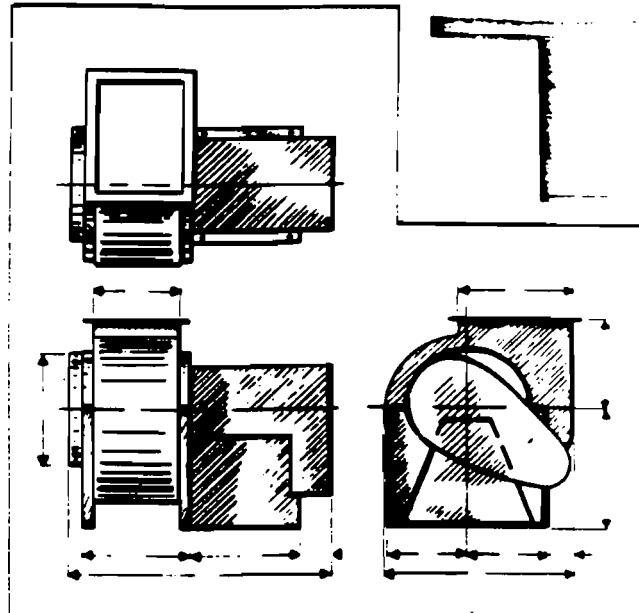
### BEVERLY PACIFIC CORPORATION INLINE FAN CHARACTERISTIC CURVE





**DIMENSIONAL CHART**

8-36	CB-40	CB-44	CB-48	CB-54	CB-60	CB-66	
9.150	23.375	28.525	34.675	42.450	51.775	63.175	MID-RANGE CFM RECOMMENDED
6 1/2	40 1/4	44 1/2	48 1/2	54 1/4	60	66	FAN WHEEL DIAMETER
10	44 1/2	49	54 1/2	60	66	72	A
10	34 1/2	37 1/2	40 1/2	44 1/4	49 1/2	54 1/4	B
19	43	47 1/2	52 1/2	57 1/4	63 1/2	70 1/4	C
19 1/2	79 1/2	84 1/2	89 1/2	93	97 1/2	104 1/2	D
15 1/2	72 1/2	79 1/2	85 1/2	97	108	119	E
11 1/2	42	46 1/2	49 1/2	54	59	64	F
10 1/2	34 1/2	37 1/2	41 1/2	48	50 1/2	55	G
14	40 1/2	43 1/2	46 1/2	50 1/4	53 1/2	60 1/4	H
16	27 1/2	29 1/2	31 1/2	31 1/4	33	33	I
17	8	8	8	8	8	8	J
17	26 1/2	26 1/2	30 1/2	34	37	40	K
17	25 1/2	26 1/2	30 1/2	34	37	40	L
10 1/2	11 1/2	12 1/2	14 1/2	15 1/4	17 1/2	19 1/2	M
7 1/8	2 3/8	2 7/16	2 7/8	2 1/8	2 1/8	2 1/8	DRIVE SHAFT DIAMETER
610	2.050	2.300	2.600	3.110	3.525	4.000	SHIPPING WEIGHT POUNDS



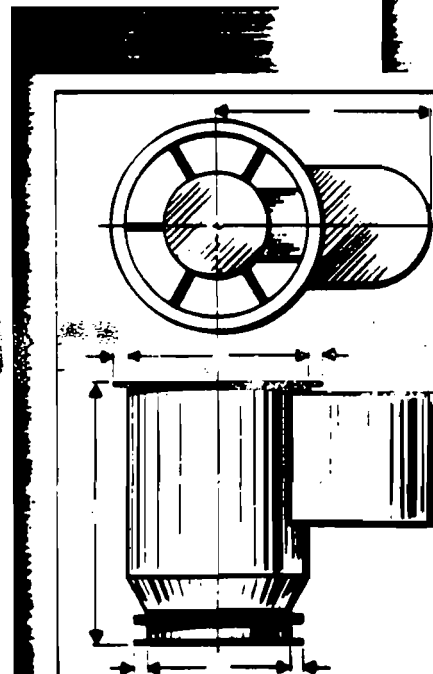
Based on a 100% STIMP constructed fan have a Type "A" classification for spark resistance.

**STANDARD CLASSIFICATIONS FOR SPARK RESISTANT CONSTRUCTION**

TYPE	CONSTRUCTION
	All parts of the fan in contact with the air or gas being handled shall be made of non-ferrous material.
	The fan shall have an entirely non-ferrous wheel and non-ferrous ring about the opening through which the shaft passes.
	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**

8-44	1B-49	1B-54	1B-60	1B-66	
7.822	33.733	41.349	50.579	61.201	MID-RANGE CFM RECOMMENDED
		54"	60"	66"	FAN WHEEL DIAMETER
9"	84"	93"	104"	116"	P
5"	54"	60"	66"	72"	Q
2"	66"	72"	80"	88"	R
	3"	3"	3"	3"	S
3"	65"	68"	72"	76"	T
	3"	3"	3"	3"	U
7/8	2 1/8	2 1/8	2 1/8	2 1/8	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 680  
 II 1120

Volume of air (CFM)	1" SP.	2" SP.	3" SP.	4" SP.	5" SP.	6" SP.	7" SP.	8" SP.	9" SP.	10" SP.	11" SP.	12" SP.	13" SP.	14" SP.	15" SP.	16" SP.	17" SP.	18" SP.	19" SP.	20" SP.
7400	262	47	777	0.01																
8010	280	50	800	0.05	300	1.02														
8500	275	60	823	1.10	407	2.01														
10200	293	81	836	1.20	417	2.23	0.00	3.34												
11270	317	98	840	1.44	429	2.59	0.00	3.82												
12150	330	114	870	1.64	462	2.77	0.07	4.08												
13000	348	132	887	1.87	484	2.87	0.16	4.20												
14075	368	155	898	2.13	470	3.29	0.29	4.69												
14950	388	179	923	2.42	488	3.73	0.43	5.11	0.00	0.04	0.67	0.07	0.00	0.70	7.07	11.4				
16090	408	207	941	2.73	502	4.11	0.60	5.50	0.07	0.06	0.67	0.62	0.00	1.02	7.01	12.0				
16820	428	237	958	3.07	517	4.50	0.80	5.90	0.20	0.11	0.67	0.21	0.00	1.00	7.00	12.4				
17700	448	268	978	3.46	534	4.93	0.98	6.34	0.30	0.16	0.70	0.06	0.00	1.00	7.00	12.4				
18700	470	304	993	3.84	551	5.40	1.20	6.82	0.47	0.22	0.68	0.16	0.00	1.00	7.00	14.1				
19820	491	340	916	4.28	569	5.92	1.47	7.33	0.61	0.30	0.68	0.12	0.00	1.00	7.00	13.1				
20870	512	376	938	4.70	587	6.48	1.83	7.87	0.84	0.38	0.70	0.12	0.00	1.00	7.00	13.0				
21800	533	415	958	5.20	606	7.07	2.20	8.40	1.00	0.48	0.68	0.12	0.00	1.00	7.00	14.0				
22840	556	458	978	5.68	624	7.68	2.67	8.92	1.19	0.60	0.68	0.12	0.00	1.00	7.00	15.7				
23770	577	511	987	6.27	642	8.36	3.24	9.43	1.43	0.73	0.68	0.16	0.00	1.00	7.00	16.7				
24310	599	571	916	7.04	660	9.10	3.93	10.11	1.61	0.90	0.68	0.16	0.00	1.00	7.00	18.3				
25240	621	632	938	7.68	678	9.88	4.70	10.77	1.90	1.00	0.68	0.16	0.00	1.00	7.00	19.6				
26180	643	711	958	8.38	697	10.67	5.56	11.43	2.20	1.10	0.68	0.17	0.00	1.00	7.00	21.0				
27110	665	800	978	9.10	717	11.5	6.50	12.1	2.60	1.20	0.68	0.17	0.00	1.00	7.00	22.7				
28050	687	902	993	1.04	730	12.4	7.70	12.8	3.00	1.30	0.68	0.18	0.00	1.00	7.00	24.6				
29000	712	1010	1016	1.12	744	13.3	9.00	13.5	3.50	1.40	0.68	0.18	0.00	1.00	7.00	26.6				
30000	735	1120	1040	1.20	757	14.3	10.50	14.3	4.00	1.50	0.68	0.19	0.00	1.00	7.00	28.8				
31000	758	1230	1060	1.30	771	15.3	12.00	15.1	4.60	1.60	0.68	0.20	0.00	1.00	7.00	31.0				
32000	780	1340	1080	1.40	784	16.3	13.80	16.0	5.20	1.70	0.68	0.20	0.00	1.00	7.00	33.4				
33000	800	1450	1100	1.50	797	17.3	15.80	16.9	5.90	1.80	0.68	0.21	0.00	1.00	7.00	35.9				

## CB-44



WHEEL 44" DIA  
 INLET 49" DIA  
 CLASS MAX RPM  
 I 825  
 II 1015

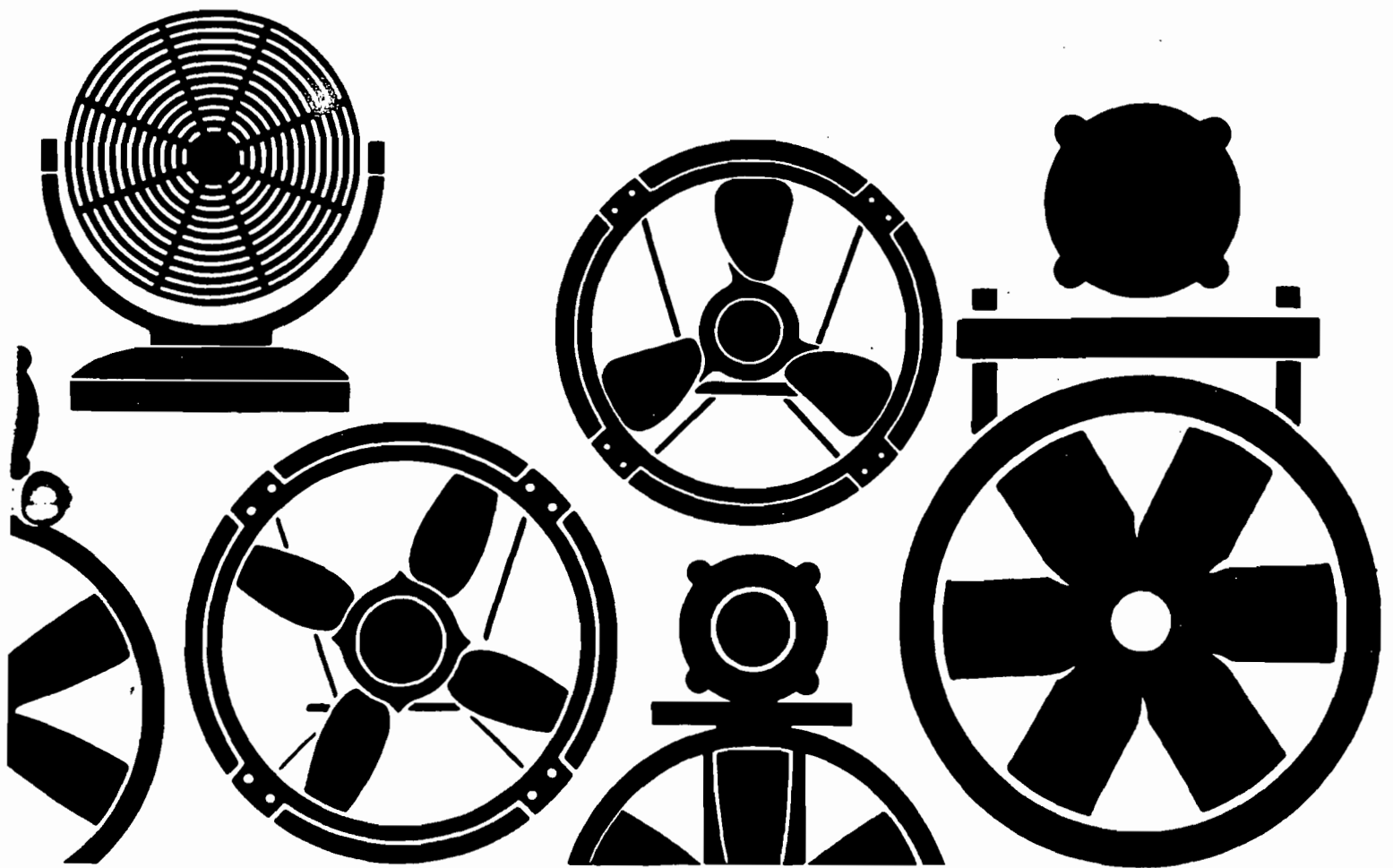
Volume of air (CFM)	1" SP.	2" SP.	3" SP.	4" SP.	5" SP.	6" SP.	7" SP.	8" SP.	9" SP.	10" SP.	11" SP.	12" SP.	13" SP.	14" SP.	15" SP.	16" SP.	17" SP.	18" SP.	19" SP.	20" SP.
9120	216	57	760	0.00																
10200	232	60	800	1.16	381	2.22														
11010	246	82	822	1.34	384	2.46														
12651	265	90	800	1.84	377	2.73	0.42	4.00												
13002	282	117	821	1.70	380	3.04	0.00	4.43												
14032	300	130	838	2.01	400	3.28	0.00	4.87												
16074	318	163	850	2.20	412	3.70	0.07	5.20												
17116	333	180	860	2.61	420	4.18	0.10	5.70												
18200	351	210	882	3.00	430	4.66	0.11	6.20	7.00	0.00	0.00	0.02	11.0	0.70	14.0					
19207	360	233	890	3.23	434	5.00	0.00	6.60	0.00	0.00	0.00	0.00	12.0	0.80	15.0	0.70	14.7			
20230	380	250	910	3.70	450	5.50	0.10	7.00	0.10	0.10	0.10	0.10	13.0	0.90	16.0	0.80	16.0			
21070	398	280	920	4.22	467	6.00	0.10	7.50	0.10	0.10	0.10	0.10	14.1	1.00	16.4					
22070	416	300	930	4.70	480	6.60	0.00	8.00	0.00	0.00	0.00	0.00	15.0	1.10	17.3					
23001	434	320	940	5.20	490	7.20	0.10	8.50	0.10	0.10	0.10	0.10	16.0	1.20	18.0					
24000	452	340	950	5.70	500	7.80	0.10	9.00	0.10	0.10	0.10	0.10	17.0	1.30	18.7					
25000	470	360	960	6.20	510	8.40	0.10	9.50	0.10	0.10	0.10	0.10	18.0	1.40	19.4					
26000	488	380	970	6.70	520	9.00	0.10	10.00	0.10	0.10	0.10	0.10	19.0	1.50	20.1					
27000	506	400	980	7.20	530	9.60	0.10	10.50	0.10	0.10	0.10	0.10	20.0	1.60	20.8					
28000	524	420	990	7.70	540	10.20	0.10	11.00	0.10	0.10	0.10	0.10	21.0	1.70	21.5					
29000	542	440	1000	8.20	550	10.80	0.10	11.50	0.10	0.10	0.10	0.10	22.0	1.80	22.2					
30000	560	460	1010	8.70	560	11.40	0.10	12.00	0.10	0.10	0.10	0.10	23.0	1.90	22.9					
31000	578	480	1020	9.20	570	12.00	0.10	12.50	0.10	0.10	0.10	0.10	24.0	2.00	23.6					
32000	596	500	1030	9.70	580	12.60	0.10	13.00	0.10	0.10	0.10	0.10	25.0	2.10	24.3					
33000	614	520	1040	10.20	590	13.20	0.10	13.50	0.10	0.10	0.10	0.10	26.0	2.20	25.0					
34000	632	540	1050	10.70	600	13.80	0.10	14.00	0.10	0.10	0.10	0.10	27.0	2.30	25.7					
35000	650	560	1060	11.20	610	14.40	0.10	14.50	0.10	0.10	0.10	0.10	28.0	2.40	26.4					
36000	668	580	1070	11.70	620	15.00	0.10	15.00	0.10	0.10	0.10	0.10	29.0	2.50	27.1					
37000	686	600	1080	12.20	630	15.60	0.10	15.50	0.10	0.10	0.10	0.10	30.0	2.60	27.8					
38000	704	620	1090	12.70	640	16.20	0.10	16.00	0.10	0.10	0.10	0.10	31.0	2.70	28.5					
39000	722	640	1100	13.20	650	16.80	0.10	16.50	0.10	0.10	0.10	0.10	32.0	2.80	29.2					
40000	740	660	1110	13.70	660	17.40	0.10	17.00	0.10	0.10	0.10	0.10	33.0	2.90	29.9					
41000	758	680	1120	14.20	670	18.00	0.10	17.50	0.10	0.10	0.10	0.10	34.0	3.00	30.6					
42000	776	700	1130	14.70	680	18.60	0.10	18.00	0.10	0.10	0.10	0.10	35.0	3.10	31.3					
43000	794	720	1140	15.20	690	19.20	0.10	18.50	0.10	0.10	0.10									



BEST AVAILABLE COPY

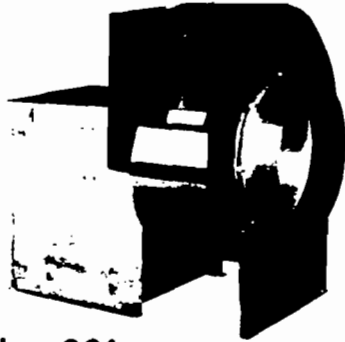
# Hartzell Stock Fans and Blowers

W. K. OUSLEY INC  
P. O. DRAWER 750  
650 AVE. B, S.W.  
WINTER HAVEN, FLA. 33850  
813 - 324-4000



# HRS 1983

# 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

Shaded area available under the 20 day modified plan.

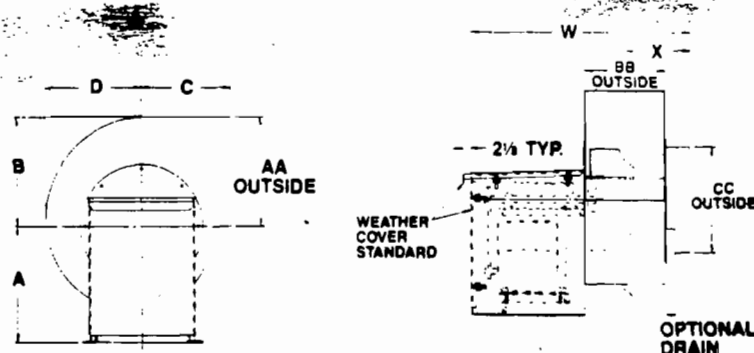
Size	Max. HP	Fan RPM Range	CFM @ SP						
			½"	1"	1½"	2"	2½"	3"	3½"
12	2	1520-3045	1233-2833	957-2709	1276-2589	920-2472	1130-2358	1268-2239	1417-1923
15	2	1295-2060	2303-4029	1871-3792	1168-3547	1985-3284	2391-2995	1839-2663	—
18	3	1115-1775	3506-5984	3002-5724	2142-5442	1922-5140	2452-4806	2788-4361	—
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	7104-10294	8-8975
27	7½	610-1195	6263-14006	4326-13415	5854-12779	6553-12164	8617-11409	7104-10294	—
30	10	610-1145	8256-17240	6463-16584	5565-15849	6079-15168	8759-14386	10768-14386	150-12188
33	10	455-980	7570-19695	6781-18836	8921-17912	11135-16966	9097-15887	11379-14386	—

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	36⅝	11	13⅜	9⅞	12⅝
15	18¾	16⅝	16⅞	14⅞	38⅞	12	16¼	12⅞	16⅞
18	22	20	18⅞	17⅞	46	13	20⅞	14⅞	19½
22	26¾	24⅞	22	21⅞	51⅞	15	24⅞	17⅞	23¼
24	28½	26⅞	23⅞	23½	53⅞	15	26⅞	19⅞	25⅞
27	32¼	29⅞	25¼	26⅞	56¼	17	29⅞	21¼	28⅞
30	34¾	32⅞	27½	28⅞	61⅞	17	32⅞	23⅞	31⅞
33	38	35⅞	30	31⅞	64⅞	19	35⅞	25⅞	34½

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

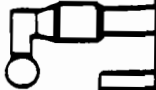


**ATTACHMENT E.**  
**LOCATION MAPS**

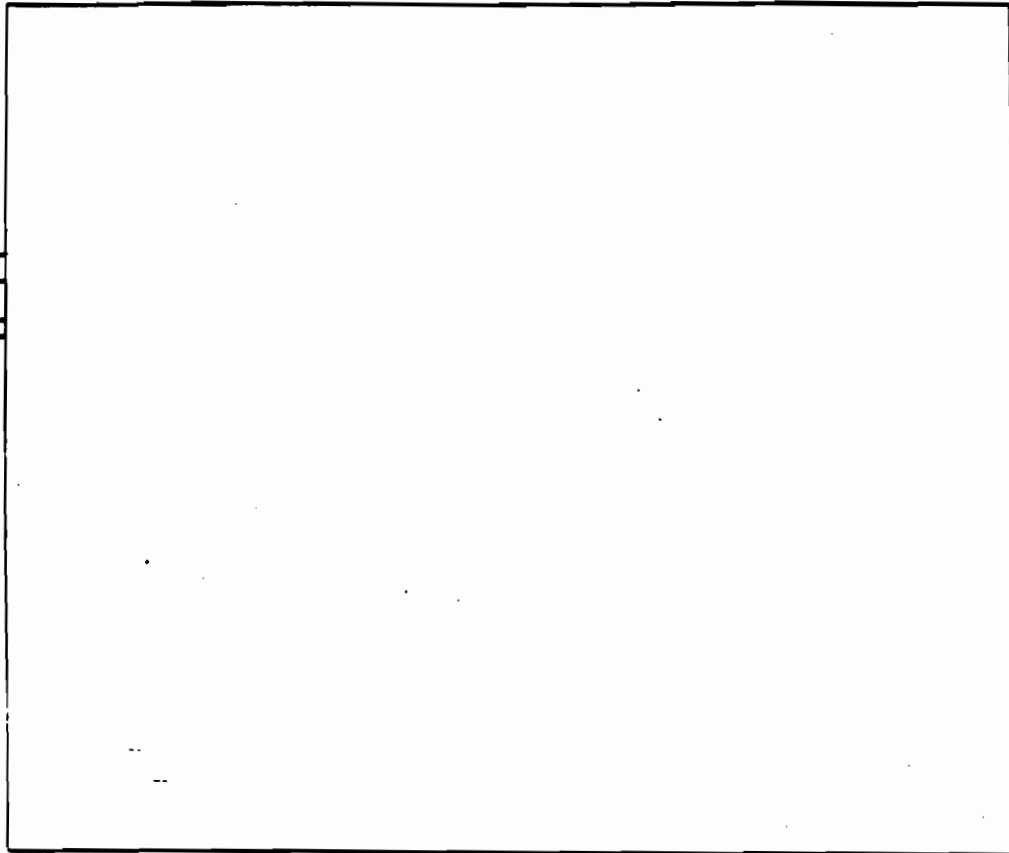
HARRIS SEMICONDUCTOR  
SCRUBBER LOCATIONS  
BUILDING 59









F59S01



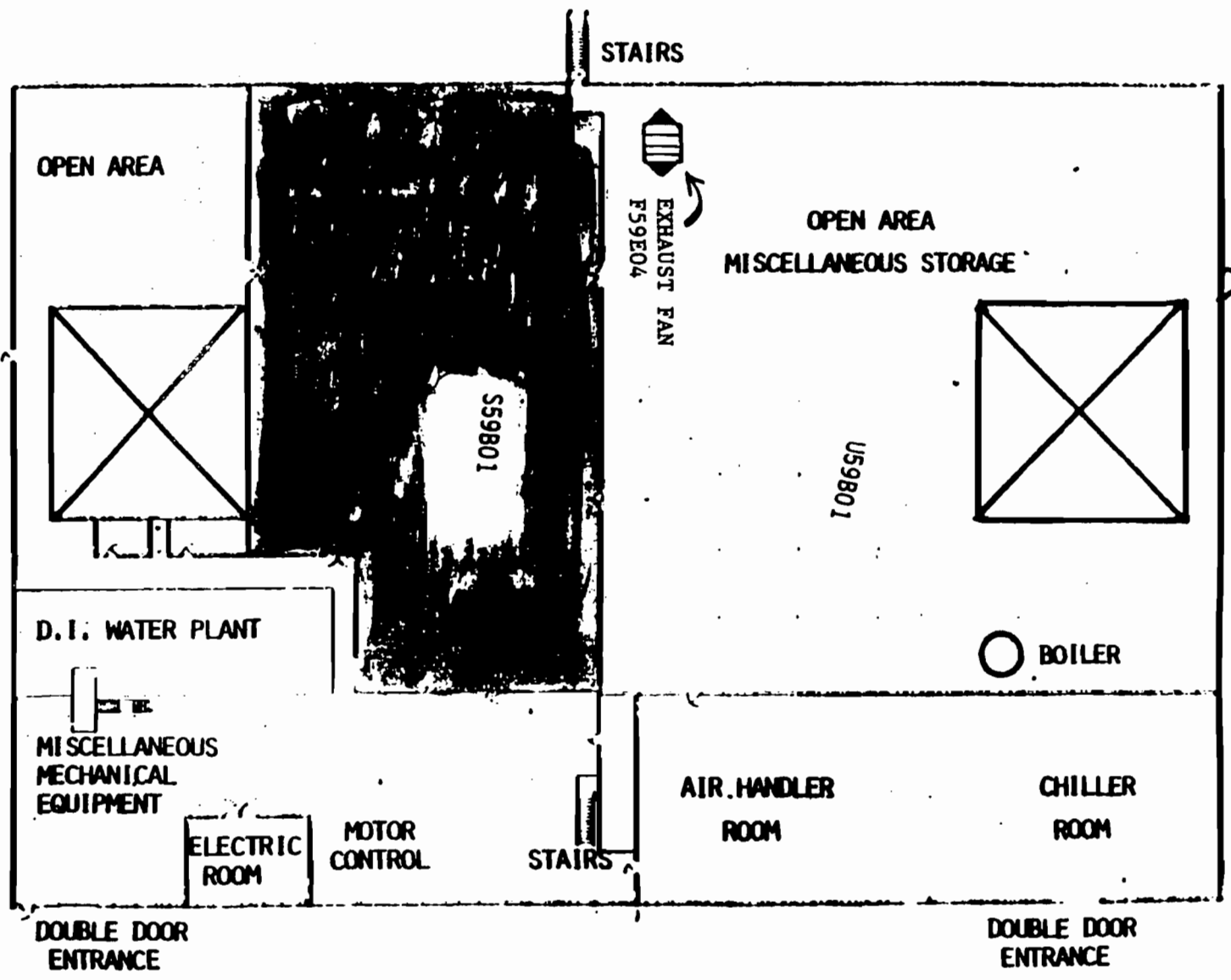
F59S02



LEGEND

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

BLDG. 59 - GROUND FLOOR



BLDG. 59 - GROUND FLOOR

09/81

# Harris Semiconductor Complex

## SCRUBBER LOCATIONS

