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

October 25, 1988

Enclosed are permit Nos. AC 05-147321 and AC 05-150794 for Harris Semiconductor to consolidate multiple permits previously issued for Buildings No. 54 and No. 59, which are water fabrication sources and located at the permittee's existing facility on Palm Bay Road in the City of Palm Bay, Brevard County, Florida. These permits are issued pursuant to Section 403, Florida Statutes.

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

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

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

Copy furnished to:

C. Collins, CF District
L. R. Hutker, P.E.

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this NOTICE OF PERMIT and all copies were mailed before the close of business on 10/27/88.

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.

Judy Rogers
Clerk

10/27/88
Date

Final Determination

Harris Semiconductor
Brevard County
Palm Bay, Florida

Construction Permit Numbers:

AC 05-147321
AC 05-150794

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

October 19, 1988

Final Determination

The construction permit applications have been reviewed by the Department. Public Notice of the Department's Intent to Issue was published in The Tribune on September 30, 1988. The Technical Evaluation and Preliminary Determination were available for public inspection at the DER's Central Florida District and Bureau of Air Quality Management offices.

Comments were received from Mr. James R. Kolanek, with Harris Semiconductor, clarifying issues that were discussed by phone with Mr. Bruce Mitchell and related to conditions contained in the proposed construction permits. The Bureau concurs with the comments. Therefore, it is recommended that the construction permits be issued as drafted, with Mr. Kolanek's letter incorporated as an attachment.

Attachment to be Incorporated:

AC 05-147321

9. Mr. James R. Kolanek's letter received October 4, 1988.

AC 05-150794

5. Mr. James R. Kolanek's letter received October 4, 1988.

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 05-147321
Expiration Date: April 30, 1990
County: Brevard
Latitude/Longitude: 28° 01' 20" N
80° 36' 10" W
Project: Building 54
Manufacturing Fab

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code (F.A.C.) Rules 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 permitting of hood type work stations for the manufacture of semiconductors in Building 54. Two 20,000 cfm and two 23,000 cfm horizontal cross-flow plastic saddle packed wet scrubbers, manufactured by Harrison, are installed to control VOC/solvent vapors. The building/source is located at the permittee's existing facility located on Palm Bay Road in the City of Palm Bay. The UTM coordinates are Zone 17, 538.7 km East and 3100.9 km North.

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

Attachments to be Incorporated:
1. Application to Construct Air Pollution Sources, DER Form 17-1.202(1), and Mr. James R. Kolanek's cover letter received March 3, 1988.
2. Mr. James R. Kolanek's letter with a processing fee received March 24, 1988.
3. Mr. C. H. Fancy's letter dated April 20, 1988.
4. Mr. James R. Kolanek's letter with attachments received May 20, 1988.
5. Mr. C. H. Fancy's letter dated June 6, 1988.
6. Mr. James R. Kolanek's letter and attachments received July 1, 1988.
7. Mr. James R. Kolanek's letter and addendum received September 12, 1988.
8. Technical Evaluation and Preliminary Determination dated September 19, 1988.
9. Mr. James R. Kolanek's letter received October 4, 1988.

PERMITTEE:
Harris Semiconductor

Permit Number: AC 05-147321
Expiration Date: April 30, 1990

GENERAL CONDITIONS:

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

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

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

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

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

PERMITTEE:
Harris Semiconductor

Permit Number: AC 05-147321
Expiration Date: April 30, 1990

GENERAL CONDITIONS:

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

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

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

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

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

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

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

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

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

GENERAL CONDITIONS:

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

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

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

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

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

13. This permit also constitutes:

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

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

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

GENERAL CONDITIONS:

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

c. Records of monitoring information shall include:

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

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

SPECIFIC CONDITIONS:

1. The maximum allowable VOC/solvent emissions from Building No. 54 shall be 95.7 tons per year.

2. The VOC/solvent vapor exhaust scrubber must be operating during the working hours.

3. Annual operation is authorized for up to 8760 hours per year.

4. Objectionable odors shall not be allowed off plant property.

SPECIFIC CONDITIONS:

4. An inspection and maintenance plan shall be submitted to the DER's Central Florida 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.

5. By March 31 of each calendar year, an annual operating report shall be submitted to the DER's Central Florida District office demonstrating compliance with the VOC/solvent emissions limit for Building No. 54 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.

6. Each scrubber system's efficiency and potential 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 25;
b) the DER's Central Florida 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 Florida District office within 45 days after the last test run is completed.

7. This permit will supercede all other permits previously issued on this source/Building No. 54.

8. To obtain a permit to operate, the permittee must demonstrate compliance with the conditions of the construction permit and submit an application for an operating permit, including the application fee, along with the material balance results, compliance test results and Certificate of Completion, to the DER's Central Florida District office 90 days prior to the expiration date of the construction permit. The permittee may

PERMITEE:
Harris Semiconductor

Permit Number: AC 05-147321
Expiration Number: April 30, 1990

SPECIFIC CONDITIONS:

continue to operate in compliance with all terms of the construction permit until its expiration date in accordance with F.A.C. Rules 17-2 and 17-4.

If the construction permit expires prior to the permittee filing an application for a permit to operate, then all activities at the project must cease pursuant to F.A.C. Rule 17-4.

9. Building No. 54 is subject to the provisions of F.A.C. Rules 17-2.240: Circumvention; 17-2.250: Excess Emissions; 17-4.130: Plant Operation-Problems; and, 17-4.140: Reports.

10. Any modification pursuant to F.A.C. Rule 17-2.100(119) shall be submitted to the DER's Central Florida District and the Bureau of Air Quality Management for approval.

Issued this 19 day of Oct, 1988.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

Dale Twachtmann

Dale Twachtmann, Secretary

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 05-150794
Expiration Date: April 30, 1990
County: Brevard
Latitude/Longitude: 28° 01' 20" N
80° 36' 10" W
Project: Building 59
Manufacturing Fab

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code (F.A.C.) Rules 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 permitting of hood type work stations for the manufacture of semiconductors in Building 59. A 24,000 cfm vertical counter-current flow wet scrubber, using polypropylene packing, and with a mist eliminator, manufactured by Beverly Pacific, is installed to control VOC/solvent vapors. A 40,000 cfm horizontal cross-flow wet scrubber, using polypropylene packing, and with a mist eliminator, manufactured by Beverly Pacific, is installed to control acid vapors. The building/source is located at the permittee's existing facility located on Palm Bay Road in the City of Palm Bay. The UTM coordinates are Zone 17, 538.7 km East and 3100.9 km North.

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

Attachments to be Incorporated:
1. Application to Construct Air Pollution Sources, DER Form 17-1.202(1), along with the processing fee, and Mr. James R. Kolanek's cover letter received June 10, 1988.
2. Mr. James R. Kolanek's letter and attachments received July 1, 1988.
3. Mr. James R. Kolanek's letter and addendum received September 12, 1988.
4. Technical Evaluation and Preliminary Determination dated September 19, 1988.
5. Mr. James R. Kolanek's letter received October 4, 1988.

PERMITTEE:
Harris Semiconductor

Permit Number: AC 05-150794
Expiration Date: April 30, 1990

GENERAL CONDITIONS:

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

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

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

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

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

GENERAL CONDITIONS:

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

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

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

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

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

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

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

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

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

GENERAL CONDITIONS:

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

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

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

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

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

13. This permit also constitutes:

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

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

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

PERMITTEE:
Harris Semiconductor

Permit Number: AC 05-150794
Expiration Date: April 30, 1990

GENERAL CONDITIONS:

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

c. Records of monitoring information shall include:

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

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

SPECIFIC CONDITIONS:

1. The maximum allowable VOC/solvent emissions from Building No. 59 shall be 0.50 tons per year. The projected potential acid vapor emissions are 0.1 tons per year.

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

3. Annual operation is authorized for up to 8760 hours per year.

4. Objectionable odors shall not be allowed off plant property.

PERMITTEE:
Harris Semiconductor

Permit Number: AC 05-150794
Expiration Date: April 30, 1990

SPECIFIC CONDITIONS:

4. An inspection and maintenance plan shall be submitted to the DER's Central Florida 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.

5. By March 31 of each calendar year, an annual operating report shall be submitted to the DER's Central Florida District office demonstrating compliance with the VOC/solvent emissions limit for Building No. 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.

6. 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 25;
b) the DER's Central Florida 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 Florida District office within 45 days after the last test run is completed.

7. This permit will supercede all other permits previously issued on this source/Building No. 59.

8. To obtain a permit to operate, the permittee must demonstrate compliance with the conditions of the construction permit and submit an application for an operating permit, including the application fee, along with the material balance results, compliance test results and Certificate of Completion, to the DER's Central Florida District office 90 days prior to the expiration date of the construction permit. The permittee may

PERMITEE:
Harris Semiconductor

Permit Number: AC 05-150794
Expiration Number: April 30, 1990

SPECIFIC CONDITIONS:

continue to operate in compliance with all terms of the construction permit until its expiration date in accordance with F.A.C. Rules 17-2 and 17-4.

If the construction permit expires prior to the permittee filing an application for a permit to operate, then all activities at the project must cease pursuant to F.A.C. Rule 17-4.

9. Building No. 59 is subject to the provisions of F.A.C. Rules 17-2.240: Circumvention; 17-2.250: Excess Emissions; 17-4.130: Plant Operation-Problems; and, 17-4.140: Reports.

10. Any modification pursuant to F.A.C. Rule 17-2.100(119) shall be submitted to the DER's Central Florida District and the Bureau of Air Quality Management for approval.

Issued this 19 day of Oct,
1988.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

Dale Twachtmann

Dale Twachtmann, Secretary

For Routing To Other Than The Addressee

To: Location:
To: Location:
To: Location:
From: Date:

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

Interoffice Memorandum

RECEIVED
OCT 19 1988
Office of the Secretary

TO: Dale Twachtmann

for FROM: Steve Smallwood

SUBJ: Approval of Construction Permits Nos. AC 05-147321
AC 05-150794
Harris Semiconductor

DATE: October 19, 1988

Attached for your approval and signature are permits prepared by Central Air Permitting for the above mentioned company to consolidate multiple permits previously issued for Buildings No. 54 and No. 59, which are wafer fabrication sources and located at the permittee's existing facility on Palm Bay Road in the City of Palm Bay, Brevard County, Florida.

Comments were received during the public notice period.

Day 90, after which these permits will be issued by default, is October 28, 1988.

I recommend your approval and signature.

SS/aqm/bm

attachments

<u>Check Sheet</u>

Company Name: Harris Semiconductor
Permit Number: AC 05-147321, -150794
PSD Number:
Permit Engineer:

Application:

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

Cross References:

- [x] AO 05-65408
- [ ] -115804
- [ ]

Intent:

- [x] Intent to Issue
- [x] Notice of Intent to Issue
- [x] Technical Evaluation
- [ ] BACT Determination
- [x] Unsigned Permit

Correspondence with:

- [ ] EPA
- [ ] Park Services
- [ ] Other

- [x] Proof of Publication
  - [ ] Petitions - (Related to extensions, hearings, etc.)
  - [ ] Waiver of Department Action
  - [ ] Other

Final Determination:

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

Post Permit Correspondence:

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

AC05-147321
Bldg. #54

HARRIS SEMICONDUCTOR
HARRIS · RCA · GE · INTERSIL

RECEIVED

DEC 17 1990

DER - BAQM

December 12, 1990

Mr. Garry Kuberski
Engineer
Florida Department of Environmental Regulation
3319 Maguire Boulevard, Suite 232
Orlando, Fl 32803

SUBJECT: HARRIS SEMICONDUCTOR, Source Test Report
Scrubber Systems F04S04, F51S03, F54S02, F63S02.

Dear Mr. Kuberski:

Enclosed are two copies of the test report for the aforementioned scrubber systems as required by the conditions of the Amendments to Construction permits AC 05-147321, AC 05-168460 and AC 05-157786 dated June 15, 1990.

The testing also included the remaining scrubber systems of Buildings 54 and 51 to evaluate the effects of certain chemical changes and structural solvent hood changes in the fabs. These changes were implemented over the last few months as part of a continuing effort to reduce VOC/Solvent emissions at the process level.

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

Sincerely,

Constantine Triantafyllidis

Constantine Triantafyllidis
Environmental Engineer
Environmental Services Dept.

cc: C. Collins, P.E., Central Distr.
B. Mitchell, Tallahassee
P. Sanabani, Central Distr.
K. Smith

File,
AC 05-147321

HARRIS SEMICONDUCTOR
HARRIS · RCA · GE · INTERSIL

RECEIVED
DEC 10 1990
DER - BAQM

November 30, 1990

Charles M. Collins, P.E.
Program Administrator
Air Resources Management
Florida Department of Environmental Regulation
Central District
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803-3767

Dear Mr. Collins:

This letter serves a follow-up to our phone conversation of November 21, 1990 in which I notified you of a problem with one of the scrubbers located on the Harris Semiconductor (Semiconductor) facility in Palm Bay. As mentioned in that conversation, this letter documents the activities undertaken to bring the scrubber back into operation.

The problem occurred at approximately 11:00 am on November 21st at which time the fan servicing scrubber F54S04 (see attachment) failed. The failure resulted in damage to the fan housing and stack, thereby rendering the scrubber inoperative. The scrubber was brought back on-line Friday, November 23rd at approximately 4:00 pm.

Immediately upon being notified of the malfunction, Building 54 personnel began shutting off non-essential operations within the fab. Over the holiday weekend, production was also curtailed. In addition, all emissions from the east side of the building were immediately diverted through scrubber F54S03. This configuration was then maintained throughout the period during which repairs were completed. This allowed production to continue, on a limited basis, until the scrubber was repaired.

As mentioned, the repair to the F54S04 scrubber occurred over Thanksgiving. The replacement fan for the system came from the scrubber that was removed from the west side of the building a few weeks ago. The replacement fan is designated as Harris Identification Number F54E01. As you will recall, we recently retrofitted the B54 west side scrubbers with a larger unit that was transferred from B63. As such, the information concerning the replacement fan is summarized below:

HARRIS ID #:	F54E01	MODEL NUMBER:	41-40-FP3
MANUFACTURER:	HARTZELL	MATERIAL:	FIBERGLASS
SERIAL NUMBER:	NA		
BRKR LOCATION:	NEXT TO UNIT		
DESCRIPTION:	CENTRIFUGAL BLOWER, BACKWARD INCLINED BLADES		

Information concerning this fan is also available in documentation previously submitted to the Department.

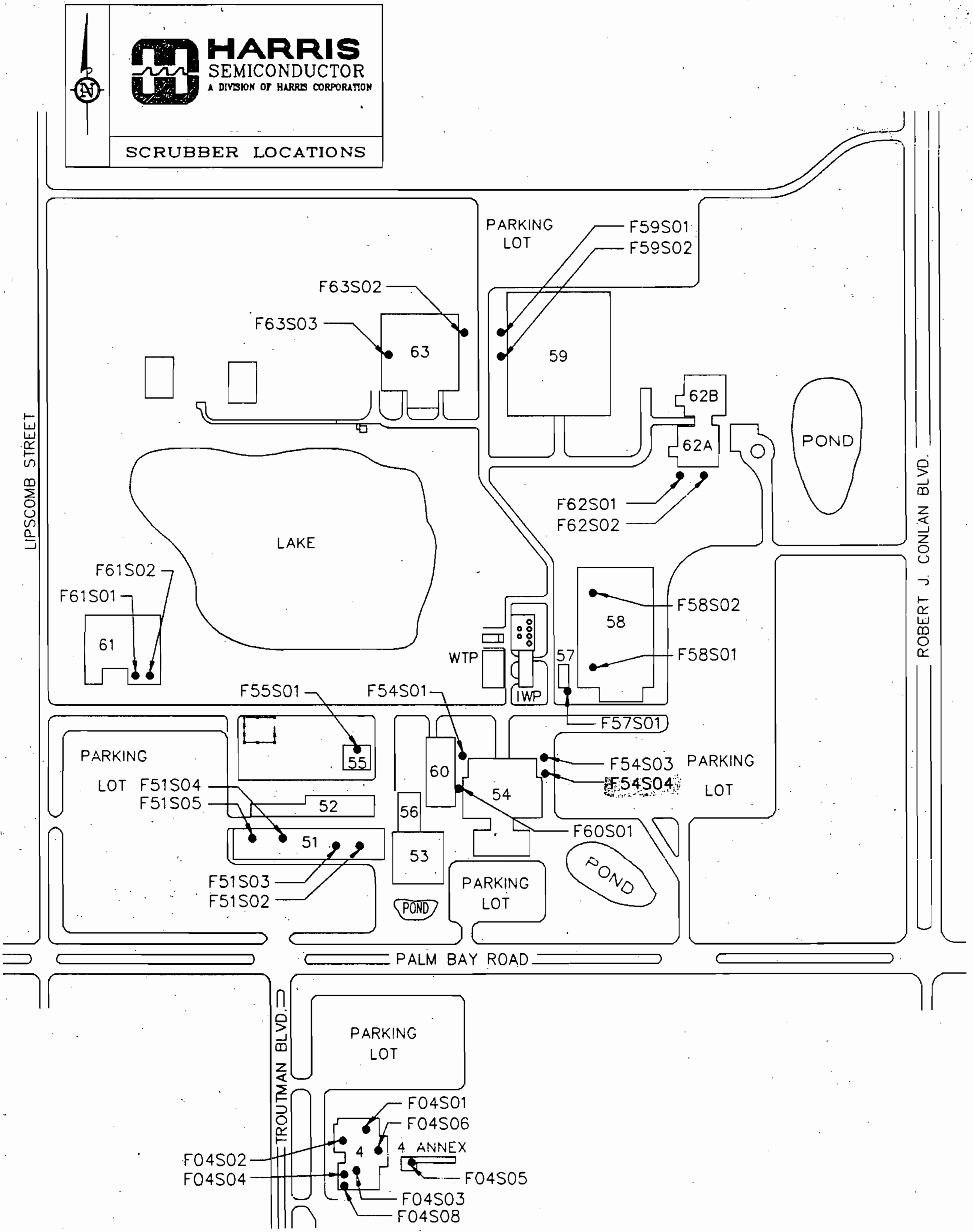
The current configuration of the replacement fan will provide the same operational and treatment capabilities as the previous stack set-up. If you have any questions concerning this issue, please contact me at (407) 729-5736.

Sincerely,

Kent Smith

Kent Smith
Manager, Environmental Services

cc: Bruce Mitchell, FDER - Tallahassee
Caroline Shine, FDER - Orlando
Rob Sands
Dennis Erdley
Bob Cappadona
Larry Hutker


HARRIS
SEMICONDUCTOR
A DIVISION OF HARRIS CORPORATION
SCRUBBER LOCATIONS
N
PARKING LOT
F59S01
F59S02
F63S02
F63S03
63
59
62B
62A
POND
LIPSCOMB STREET
ROBERT J. CONLAN BLVD.
F62S01
F62S02
LAKE
F61S02
F61S01
61
F58S02
58
F58S01
WTP
57
IWP
F55S01
F54S01
F57S01
PARKING
LOT
F51S04
F51S05
55
60
F54S03
F54S04
PARKING
LOT
54
52
56
F60S01
51
53
POND
F51S03
F51S02
POND
PARKING LOT
PALM BAY ROAD
TROUTMAN BLVD.
PARKING LOT
F04S01
F04S06
4 ANNEX
4
F04S02
F04S04
F04S05
F04S03
F04S08

AC05-147321
Bldg.# 54

HARRIS
SEMICONDUCTOR
HARRIS · RCA · GE · INTERSIL

RECEIVED
OCT 5 1990
DER-BAQM

October 3, 1990

Mr. Garry Kuberski
Engineer
Florida Department of Environmental Regulation
3319 Maguire Boulevard, Suite 232
Orlando, Fl 32803

SUBJECT: HARRIS SEMICONDUCTOR, BUILDINGS 4, 51, 54, 63.
Notification of Monitoring
Scrubber Systems FO4SO4, F51SO3, F54SO2, F63SO2.

Dear Mr. Kuberski:

Per our telephone conversation of 10/01/90 this letter is to notify the Central District Office that the monitoring of the above mentioned scrubber systems has been rescheduled for October 31, 1990. The monitoring period will last approximately three days.

The scrubber systems efficiency will be established utilizing EPA Method 25A or EPA Method 8 as required. The monitoring work will be performed by Air Consulting & Engineering, Inc. of Gainesville.

Should you have any questions or require any additional information please contact our office at (407) 729-5301.

Sincerely,

Constantine Triantafyllidis

Constantine Triantafyllidis, R.E.P.
Environmental Services

cc: C. Collins, P.E., Central Dist.
S. Smallwood, P.E., Tallahassee
B. Mitchell, Tallahassee
P. Sanabani
K. Smith

Enclosures

HARRIS
SEMICONDUCTOR
HARRIS · RCA · GE · INTERSIL

September 12, 1990

Mr. Pius Sanabani
Engineer
Florida Department of Environmental Regulation
3319 Maguire Boulevard, Suite 232
Orlando, Fl 32803

SUBJECT: HARRIS SEMICONDUCTOR, bUILDINGS 4, 51, 54, 63.
Notification of Monitoring
Scrubber Systems F04S04, F51S03, F54S02, F63S02.

Dear Mr. Sanabani:

In accordance with the conditions of the Amendments to Construction Permit numbers AC 05-147321, AC 05-168460 and AC 05-157786 dated June 15, 1990, the purpose of this letter is to notify the Central Florida District Office that monitoring of scrubbers F51S03, F63S02 and F54S01 (previously named F63S01) has been scheduled for a three day period beginning October 2, 1990.

As mentioned in previous correspondence, the original scrubbers F54S01 and F54S02 servicing Building 54 have been replaced by scrubber F63S01 from Building 63. Scrubber F63S01 will be renamed F54S01. Furthermore, scrubber F04S04 will be monitored at this time because it was being repaired during the last round of monitoring in June, 1990.

The scrubber systems efficiency will be established utilizing EPA Method 25A or EPA Method 8 as required. The monitoring work will be performed by Air Consulting & Engineering, Inc. of Gainesville.

Should you have any questions or require any additional information please contact our office at (407) 729-5301.

Sincerely,

Constantine Triantafyllidis

Constantine Triantafyllidis, R.E.P.
Environmental Services

cc: C. Collins, P.E., Central Dist.
S. Smallwood, P.E., Tallahassee
B. Mitchell, Tallahassee

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

August 29, 1990

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Kent Smith, Environmental Manager
Harris Semiconductor
P. O. Box 883
Melbourne, Florida 32902-0883

Dear Mr. Smith:

Re: Amendment of Construction Permits

AC 05-165757	Bldg.	04
-157786		51
-147321		54
-164544		55
-161706		57
-159484		58
-150794		59
-168460		60
-157787		62
-158237		63

The Department has reviewed Constantine Triantafyllidis' letter received July 19, 1990, requesting that the above referenced air construction permits' expiration dates be extended. The Department is in agreement with the request and the following will be changed and added:

Expiration Date:

From: December 31, 1990
To: June 30, 1991

Attachment to be Incorporated:

o Constantine Triantafyllidis' letter received July 19, 1990.

This letter must be attached to your air construction permits, as referenced above, and shall become a part of the permits.

Sincerely,

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

SS/BM/plm

Attachment

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

HARRIS SEMICONDUCTOR
HARRIS · RCA · GE · INTERSIL

July 17, 1990

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

JUL 19 1990
DER-BAQM

Subject: Extension of Consolidated Construction Permits
Harris Semiconductor, Melbourne

Permit Nos.	Bldg.
AC 05-165757	04
AC 05-157786	51
AC 05-147321	54
AC 05-164544	55
AC 05-161706	57
AC 05-159484	58
AC 05-150794	59
AC 05-168460	60
AC 05-157787	62
AC 05-158237	63

Dear Mr. Fancy:

This letter is submitted, on behalf of Harris Semiconductor Sector, Inc. ("Semiconductor"), to request an extension of the expiration dates of the above-referenced permits until March 31, 1991. We believe the extension is justified for the following reasons. The current specific conditions of these permits require the submission of applications for operating permits by the end of September. As you are aware, over the last several months we have been working with the Department to reduce the potential for Semiconductor's operations to contribute to odors in the areas adjacent to the facility. It is possible that some of the projects we currently have underway to accomplish this objective may not be completed by the end of September. The stack extensions associated with the Building 54 operations should be completed by the end of September. However, another major element of our odor reduction efforts which consists of a facility-wide substitution of certain phenolic process chemicals with non-phenolic ones, where reasonably possible, may not be completed by October 1st. We believe this program is important because these non-phenolic compounds should prove to be much less odoriferous in nature.

HARRIS CORPORATION SEMICONDUCTOR SECTOR P.O. BOX 883 MELBOURNE, FL 32902-0883 407-724-7000 FAX 407-729-5691 TWX 510-959-6259

This program is considerably more complex and difficult to implement than the stack extensions. Due to the sophisticated and sensitive nature of the integrated circuits manufactured at the facility, in many instances, a substitution of process chemicals requires customer (which in many instances is the U.S. Government) approval.

The whole project, including necessary customer approval and the actual chemical substitutions, may take several months or more. We believe, from the Department's and Semiconductor's perspective, it would be better to complete this process prior to submission of the applications for operating permits. It should be noted that some chemical changes may not be possible if the U.S. Government objects to the substitution. Should the Department have any questions or require any additional information, please contact our office at 407/729-5301.

Yours sincerely,

Constantine Triantafyllidis

Constantine Triantafyllidis
Environmental Engineer
Environmental Services

cc: T. Sawicki
B. Mitcell 7/24/90
C. Collins

E/929/90

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

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

Interoffice Memorandum

TO: Steve Smallwood

FROM: Clair Fancy

DATE: August 29, 1990

SUBJ: Amendment of Construction Permits
Harris Semiconductor

Attached for your approval and signature is a letter that will amend ten construction permits issued to the above mentioned company to extend their expiration dates. There is no controversy regarding this action.

I recommend your approval and signature.

CF/BM/plm

HARRIS SEMICONDUCTOR
HARRIS · RCA · GE · INTERSIL

RECEIVED
JUL 16 1990
DER - BAQM

July 13, 1990

Charles M. Collins, P.E.
Program Administrator
Air Resources Management
Florida Department of Environmental Regulation
3319 Maguire Boulevard, Suite 232
Orlando, Fl 32803

SUBJECT: HARRIS SEMICONDUCTOR
Notification of Stack Height Extensions
Scrubber Nos. F54S01, F54S02, F54S03, F54S04
Air Permit No. AC 05-147321

Dear Mr. Collins:

As a follow up to our previous correspondence (March 23 and May 2, 1990) an engineering evaluation has been completed for the design and structural feasibility to add stack extensions. Consequently, this letter is to notify the Central Florida District office that installation of stack height extensions for scrubber nos. F54S03 and F54S04 has been scheduled to begin July 23, 1990.

In addition, pursuant to the Department's approval (see correspondence of June 15, 1990), the replacement of the existing scrubber nos. F54S01 and F54S02 with scrubber no. F63S01 will be conducted at that time. Barring unforeseen problems, the construction activities should be completed by the first week of September.

Should you have any questions, require any additional information or wish to have a representative present during the construction activities, please call our office at (407) 729-5301.

Sincerely,

Constantine Triantafyllidis

Constantine Triantafyllidis
Environmental Services

cc: G. Kuberski
C. Fancy
B. Mitchell

P 423 104 515

RECEIPT FOR CERTIFIED MAIL

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

☆U.S.G.P.O. 1989-234-555

Sent to Kent Smith	
Street and No. Harris Semiconductor	
P.O., State and ZIP Code P.O. BOX 883	
Postage Melbourne, Fl	$
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 6-15-90 AC05-168460 -147321 -157786	

PS Form 3800, June 1985

● **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:
Kent Smith, Env. Mgr.
Harris Semi Conductor
P.O. BOX 883
Melbourne, Fl 32902-0883

4. Article Number
P 423 104 515

Type of Service:
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature — Address
X Harris Semi

6. Signature — Agent
X [signature]

7. Date of Delivery
6-18-90

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

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

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 15, 1990

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Kent Smith
Environmental Manager
Harris Semiconductor
P. O. Box 883
Melbourne, Florida 32902-0883

Dear Mr. Smith:

Re: Amendment to Construction Permit: AC 05-147321
Harris Semiconductor: Building 54

The Department has reviewed Ms. Nancy Baldisserotto's letter dated May 21, 1990, and received May 24, 1990. The purpose of the letter was to notify the Department of your intent to replace the existing scrubbers (F54S01 & F54S02) servicing Building 54 with an existing scrubber from Building 63 (F63S01). The Department acknowledges the notification with the following conditions:

- The scrubber system's efficiency shall be established for VOC/Solvents using EPA Method 25A pursuant to F.A.C. Rule 17-2.700 and 40 CFR 60, Appendix A. Other test methods may be used with prior written Departmental approval pursuant to F.A.C. Rule 17-2.700(3).

- The potential VOC/Solvent emissions shall be calculated using the results (actual emissions) from the efficiency test and prorated to 8760 hrs/hr. The result shall then be compared with the current permitted allowable emission limit for the building/source to determine if any permitting action is necessary.

- The Department's Central District office shall be notified in writing 15 days prior to conducting tests.

- The results of the tests shall be submitted to the Department's Central District office within 45 days after the last test run is completed.

Attachment to be Incorporated:

- Ms. Nancy Baldisserotto's letter with attachments received May 24, 1990.

This letter must be attached to your air construction permit, AC 05-147321, and shall become a part of the permit.

Sincerely,

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

SS/BM/plm

Attachment

c: C. Collins, Central Dist.
N. Baldisserotto, HS

ATTACHMENTS AVAILABLE UPON REQUEST

HARRIS SEMICONDUCTOR
HARRIS · RCA · GE · INTERSIL

RECEIVED
MAY 24 1990
DER-BAQM

May 21, 1990

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

Re: Exhaust system modification; Permit no. AC 05-147321
Building 54 Consolidated Air Permit

Dear Mr. Fancy:

By this letter, Harris Semiconductor is providing the Department with notice of the replacement of scrubber nos. F54S01 and F54S02 with scrubber no. F63S01.

Scrubber no. F63S01 is a Beverly Pacific model CB-60 horizontal cross flow scrubber rated for 50,000 cfm of air flow. Notification of the deactivation of this system was submitted to the department on April 7, 1990 (see attachment I.) The scrubber will be relocated to the northwest grounds of building 54 and will replace the two 20,000 cfm rated Harrison scrubbers currently servicing the west half of the building (see attachment II for scrubber system information.) The two Harrison scrubbers exhibit water carry-over problems that the manufacturers' representatives and our engineers have been unable to resolve.

Because the Beverly Pacific scrubber has a greater capacity than scrubbers F54S01 and F54S02 combined, it is anticipated that the scrubber will function better than the present systems.

If the Department has no objection, we will proceed with the course of action described above with completion by the end of June. If you have any questions, please feel free to call me at (407) 729-4061.

Sincerely,

Nancy Baldisserotto

Nancy Baldisserotto
Senior Environmental Engineer

cc: B. Mitchell, Tallahassee
C. Collins, Orlando

ATTACHMENT I.

HARRIS
SEMICONDUCTOR
HARRIS · RCA · GE · INTERSIL

April 7, 1990

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

Re: Exhaust system modification; Permit No. AC 05-168460
Building 63 Consolidated Air Permit

Dear Mr. Fancy:

By this letter, Harris Semiconductor is providing the Department with notice of the phase-out of one of our wafer fabrication areas. Prior to January of 1990, one of the primary processes occurring in Building 63 was wafer fabrication. The VHSIC wafer fabrication area employed a series of manufacturing procedures that utilized a variety of manufacturing equipment and chemicals in order to produce the desired product. During the late months of 1989, the area was shut down, and wafer fabrication in this building was discontinued. Exhausted Equipment removed included aligners, developers, coaters, furnaces, wet stations, burn boxes, chemical and gas cabinets, vacuum pumps, and chemical drains.

The two scrubbers that handled equipment exhaust from Building 63's wafer fab were F63S01 and F63S02. The systems are located on the east side of the building at ground level. F63S01 provided exhaust and pollution control for acid exhaust drawn from the equipment in the wafer fab and chemical mix room, while F63S02 provided solvent exhaust for the fab, the chemical mix room, and one of the assembly areas.

Prior to the phase-out of the Building 63 fab, equipment requiring approximately 27,000 cfm of exhaust was ducted to scrubber nos. F63S01 and F63S02.

Scrubber no. F63S02 is a Beverly Pacific 10,000 scfm vertical counter-current scrubber. The system has adequate capacity to handle the remaining equipment, which requires only 3,000 cfm of exhaust.

If the Department has no objection, we will be deactivating scrubber no. F63S01 sometime this month. If you have any questions, please give me a call at (407)729-4061.

Sincerely,

Nancy Baldisserotto

Nancy Baldisserotto
Senior Environmental Engineer
Harris Semiconductor

cc: B. Mitchell
C. Collins

ATTACHMENT II.

HARRIS SEMICONDUCTOR -- AIR PERMIT INFORMATION

CURRENT PERMIT

BUILDING: 54
PERMIT NUMBER: AO 05-65408
PERMIT TYPE : OPERATING

DATE ISSUED : 05/03/83
RENEWAL DATE: 03/03/88
DATE EXPIRES: 05/02/88

AREA SERVED:
PROCESS DESCRIPTION: WEST MODULE DUAL SCRUBBERS

PERMIT LIMITS

VOL. RATE (SCFM): 20,000
ACID MIST (LB/HR): 0.058
SOLVENTS (LB/HR): 0.0543
VOCS (LB/HR): 0.0969
OPER. (HRS/YEAR): 6336

SPECIFIC CONDITIONS

ANNUAL OPERATING REPORT : 03/01
NOTIFICATION OF VE TEST : 10/30
ANNUAL VIS EMISSION TEST: 11/09

EQUIPMENT INFORMATION

MANUFACTURER : HARRISON
HARRIS ID NUMBER : F54S01
VOLUME FLOW RATE (CFM): 20,000
RECIRCULATION RATE (GPM): 95
MAKEUP WATER RATE (GPM): 9.0

MODEL NUMBER : HF-200
STACK HEIGHT (FT):
STACK DIAMETER (IN):
STACK VELOCITY (FPM):
DUCT MATERIAL :

PERMIT HISTORY

PERMIT NUMBER:
DATE EXPIRED :

PERMIT NUMBER:
DATE EXPIRED :

PERMIT NUMBER:
DATE EXPIRED :

CHEMICALS LISTED IN PERMIT

CHEMICALS	EMISSIONS (lbs/hr)	COLLECTION EFFICIENCY
: HYDROFLUORIC ACID	0.045	NOT SPEC.
SULFURIC ACID	0.286	NOT SPEC.
HYDROGEN PEROXIDE	0.026	NOT SPEC.
HYDROCHLORIC ACID	0.012	NOT SPEC.
NITRIC ACID	0.007	NOT SPEC.
1,1,1 TRICHLOROETHANE	0.0415	NOT SPEC.
XYLENE	0.0554	NOT SPEC.
IPA	0.0106	NOT SPEC.
METHANOL	0.0436	NOT SPEC.

:

SCRUBBER INFORMATION

HARRIS ID # : F54S02
MANUFACTURER : HARRISON   MODEL NUMBER : HF-200
SERIAL NUMBER: N/A   MATERIAL : POLYPRO
DESCRIPTION : HORIZONTAL CROSS-FLOW, PLASTIC SADDLE PACKING, LIQUID DISTRIBUTION THROUGH MAIN HEADER, NO SPRAY NOZZLES

DESIGN DATA
VOLUME FLOW RATE (CFM): 20,000   PRESSURE DROP (IN):
RECIRCULATION RATE (GPM): 95   MAKE UP RATE (GPM): 9.0

ACTUAL DATA
VOLUME FLOW RATE (CFM):   PRESSURE DROP (IN): N/E DATE: 06/03/87
RECIRCULATION RATE (GPM): 30   MAKE UP RATE (GPM): 5.0 DATE: "

RECIRCULATION PUMP INFORMATION

MANUFACTURER : FRANKLIN ELECTRIC   MODEL NUMBER : 1303012101
SERIAL NUMBER: N/A   HP : 1/2 RPM : 3450
BRKR LOCATION: NEXT TO UNIT   FED FROM MCC : P

FAN INFORMATION

HARRIS ID # : F54E02
MANUFACTURER : HARTZELL   MODEL NUMBER: 41-40-FP3
SERIAL NUMBER: N/A   MATERIAL : FIBERGLASS
DESCRIPTION : CENTRIFUGAL BLOWER, BACKWARD CURVED BLADES

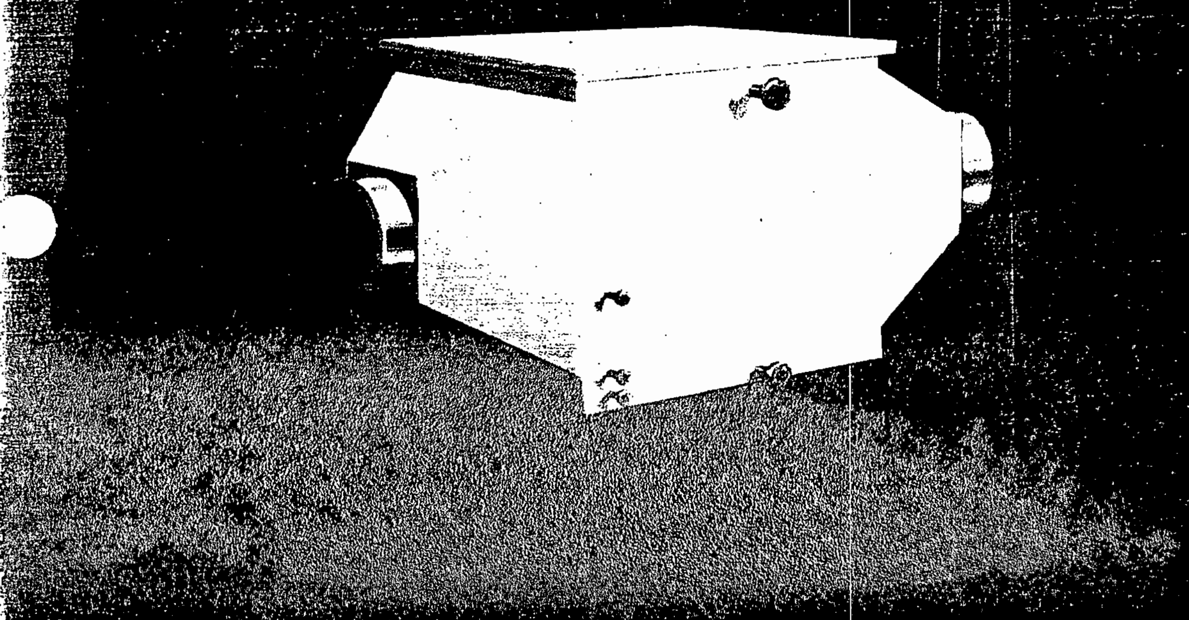
DESIGN DATA
VOLUME FLOW RATE (CFM): 20,000   STATIC PRESS (IN): 3.3

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

FAN MOTOR INFORMATION

MANUFACTURER :   MODEL NUMBER :
SERIAL NUMBER: HP : 30 RPM : 1725
BRKR LOCATION: NEXT TO UNIT   FED FROM MCC : U

Plastic Packed Scrubbers



THE HARRISON SYSTEM

Harrison is a prime designer and producer of complete plastic exhaust systems, custom engineered scrubbing systems, as well as duct and fittings, tanks, and hoods. As a result of this capability and experience, design and manufacture of standard, pre-engineered fume scrubbers is a natural extension.

MATERIALS

Self-supporting or fiberglass armored PVC and Polypropylene, fiberglass armored Kynar, and solid fiberglass construction offers a wide range of resistance to acids, alkalis, solvents, and other corrosives at operating temperatures to approximately 250°F. Harrison systems do not use any metal in contact with the process stream.

PRE-ENGINEERING

Pre-engineered design reduces cost by eliminating the necessity to re-invent each item ordered. It results in more reliable service thru improved workmanship achieved by repetitive production control, and speeds quotations and approval drawings because costs and designs are immediately available. In addition to significant savings in approval and order time, Harrison reduces delivery time by stocking scrubber components including packing, support grids, distributor plates, nozzles, duct reducers, and sheet stock.

SCRUBBER CONFIGURATION

Most fume removal applications can be served by the two scrubber designs shown in this catalog Vertical Counter Current style directs liquid down vertically, and unwanted fumes upward in the opposite direction. Horizontal Cross Flow unit directs liquid down vertically, but unwanted fumes are driven horizontally at 90° to the liquid. In both designs, liquid and fumes are inter-mixed in the packed bed section of the scrubber where fumes are removed by chemical reaction or water solubility. Scrubber shape does not affect performance. Horizontal design presents a low profile and is suitable where head room is limited. Verticals require more head room, but use only minimum floor space.

SCRUBBER DESIGN AND OPERATION

Highest scrubber efficiency (volumetric % of contaminate removed) is obtained by having the proper amount of contact surface area (packing) wetted by sufficient liquid (recirculated liquid rate) for an optimum residence time (packing depth) to allow unwanted fumes to take a treacherous path thru the wetted packing to permit their maximum removal from the carrier air stream by chemical reaction or water solubility

Air stream resistance encountered in the packing (static pressure loss) is a function of air velocity, cross-sectional packing area, and packing depth. Harrison scrubbers utilize proven packing depth to achieve efficiencies approaching 99+%, when operated within recommendations.

LIQUID DISTRIBUTION AND MIST ELIMINATION

Simple liquid distribution is achieved thru a main header pipe feeding perforated laterals, without use of troublesome spray nozzles. Nozzles are subject to plugging, and produce a difficult-to-remove atomized mist carryover. In the Harrison design, any large droplets of liquid caught in the upward moving air stream are easily and efficiently removed by a short bed of dry packing located above the liquid distributor.

STATIC PRESSURE LOSS

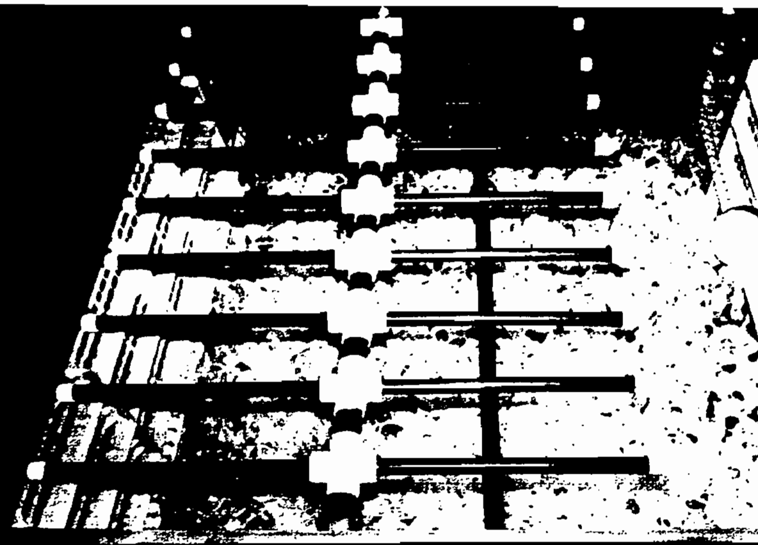
Use of high-surface-area, low-pressure-drop plastic saddles in a balanced design result in low static pressure loss of only 0.4 inches H_2O (w.g.) per foot of packed depth in Vertical Counter Current scrubbers, and 0.33 in Horizontal Cross Flow units. At the same time, sufficient irrigation rates constantly keep saddles clear of potential sludge buildup. Thereby, continuous, non-clogging operation at a proper rate of intermixing turbulence between liquid and fumes is achieved for 99+% efficiency.

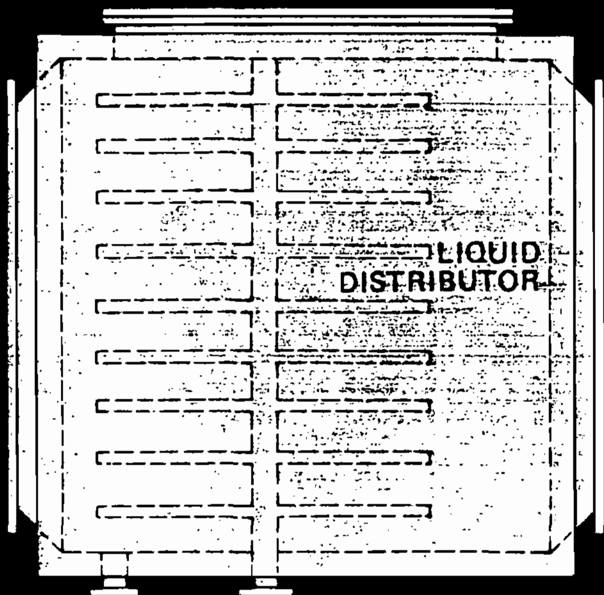
LIQUID SUMP OPERATION

Harrison scrubbers employ an integral liquid recirculating sump which reduces amount of liquid consumption required by 90 to 95% in most applications. Therefore, considerably less effluent must be handled and treated. The sump reservoir is contained within the scrubber itself. Harrison recommends optimum rate of effluent removal. When effluent is acidic only, additional liquid conservation can be obtained with either scrubber design with the simple optional recovery system shown with the vertical scrubber drawing on page 4. If central treating facilities exist, no sump, recirculation, or independent recovery is needed. In this case, treated liquid would be directed over the packing in a single pass, then treated, then returned to the scrubber, etc. In both instances where effluent is treated, liquid consumption would be reduced to only that amount lost by evaporation.

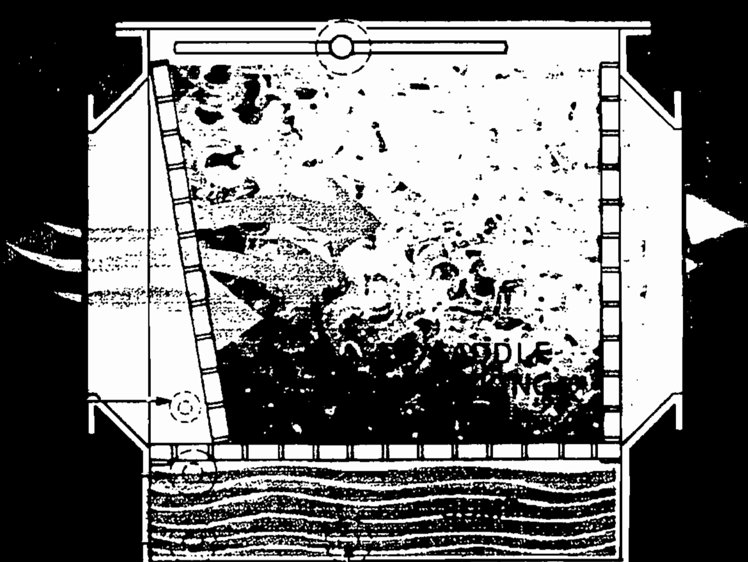
Harrison

Box 184 Aurora Ohio 44202/216-562-9545

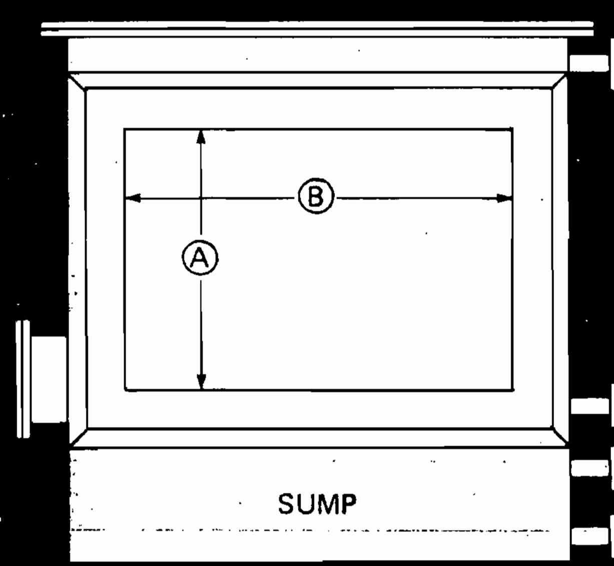




TOP VIEW



SIDE VIEW (CUT-A-WAY)



INLET SIDE VIEW

HORIZONTAL CROSS-FLOW

Model	CFM	Inlet & Outlet A x B In.	Length L Ft.	Width W In.	C In.	D In.	E In.	F In.	G In.	Sump Capacity Gal.	Req. Liquid GPM	Overall Height In.	Ship* Wt. Lbs.	Operating Wt. Lbs.
HF-8	800	11x11	6	17	¾	1	1	1½	1	68	17	35	182	646
HF-12	1,200	14x14	6	20	¾	1	1	1½	1	69	21	38	224	781
HF-17	1,700	18x18	6	24	¾	1	1	1½	1½	82	24	42	276	926
HF-21	2,100	21x21	[illegible]	27	¾	1	1	1½	1½	92	28	45	316	1028
HF-25	2,500	24x24	6	30	¾	1½	1½	1½	1½	102	[illegible]	48	357	1166
HF-31	3,100	27x27	[illegible]	33	¾	1½	1½	1½	1½	113	[illegible]	51	419	1313
HF-37	3,700	30x30	[illegible]	36	¾	1½	1½	1½	1½	125	[illegible]	54	481	1445
HF-45	4,500	33x33	[illegible]	39	¾	1½	1½	1½	1½	134	42	57	503	1609
HF-50	5,000	36x36	[illegible]	42	¾	1½	1½	1½	1½	144	[illegible]	[illegible]	615	1223
HF-67	6,700	39x39	[illegible]	48	1	2	2	1½	1½	165	51	5.5	690	1980

:

SCRUBBER INFORMATION

HARRIS ID # : F63S01
MANUFACTURER : BEVERLY PACIFIC   MODEL NUMBER : CB-60
SERIAL NUMBER: F-600   MATERIAL : FIBERGLASS
DESCRIPTION : HORIZONTAL CROSS FLOW, NON-CLOGGING PVC SPRAY NOZZLES, 2" POLYPROPYLENE PACKING, PVC MIST ELIMINATOR DWG. F-600-6

DESIGN DATA
VOLUME FLOW RATE (CFM): 50,000   PRESSURE DROP (IN):
RECIRCULATION RATE (GPM): 225   MAKE UP RATE (GPM): 22

ACTUAL DATA
VOLUME FLOW RATE (CFM):   PRESSURE DROP (IN): N/E DATE: 87-06-03
RECIRCULATION RATE (GPM): 90   MAKE UP RATE (GPM): 7.5 DATE: "

RECIRCULATION PUMP INFORMATION

MANUFACTURER : FILTER PUMP IND   MODEL NUMBER : 36E 188-105
SERIAL NUMBER: F 1280   HP : 3 RPM : 3450
BRKR LOCATION: NEXT TO UNIT   FED FROM MCC : 634

FAN INFORMATION

HARRIS ID # :
MANUFACTURER : BEVERLY PACIFIC   MODEL NUMBER: CB-60
SERIAL NUMBER: F-600   MATERIAL : FIBERGLASS
DESCRIPTION : CENTRIFUGAL TYPE, CLASS II, BACKWARD CURVED BLADES, DWG. F-600-6

DESIGN DATA
VOLUME FLOW RATE (CFM): 50,000   STATIC PRESS (IN): 5.0

ACTUAL DATA   SPEED (RPM): 632 DATE: SUBMITTAL
VOLUME FLOW RATE (CFM):   STATIC PRESS (IN):   DATE:

FAN MOTOR INFORMATION

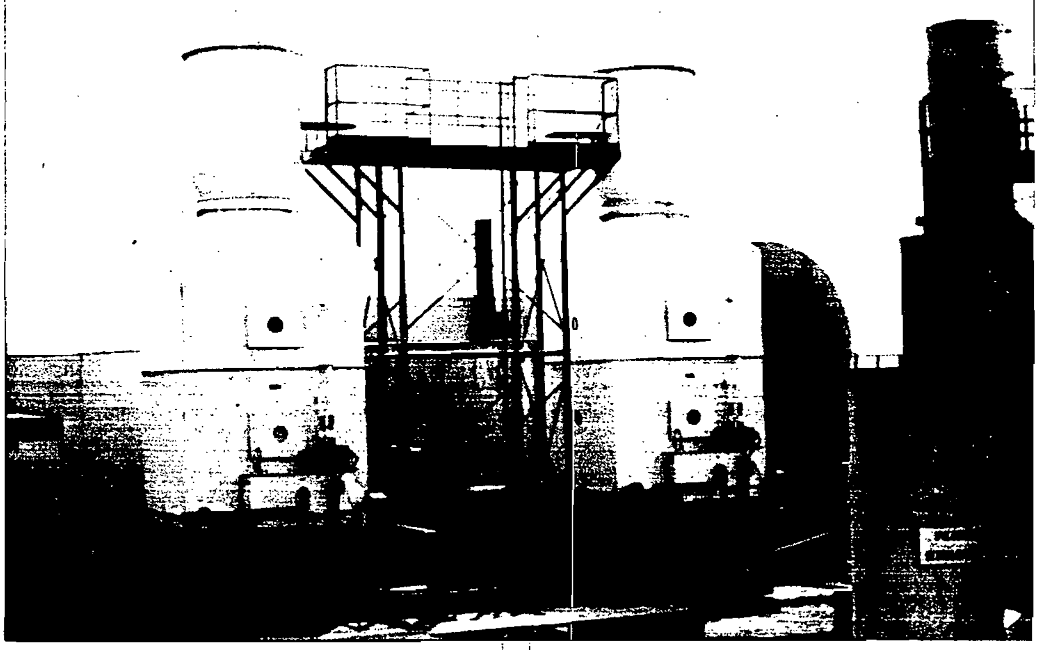
MANUFACTURER :   MODEL NUMBER :
SERIAL NUMBER: HP : 75 RPM :
BRKR LOCATION: NEXT TO UNIT   FED FROM MCC : 634

Attachment :

[redacted]

BEVERLY PACIFIC CORPORATION

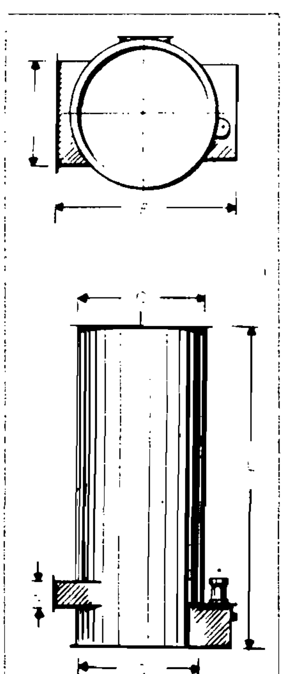
SCRUBBERS



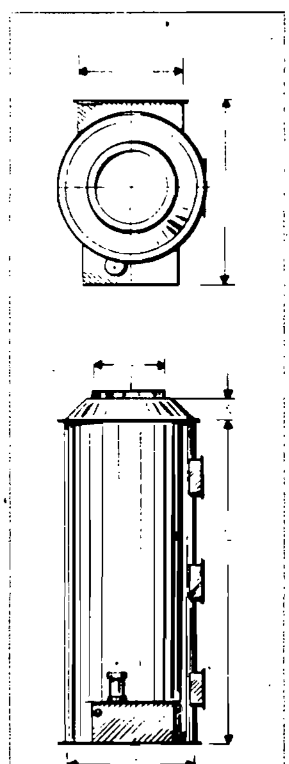
FIBERGLASS REINFORCED PLASTIC

PACKED SCRUBBER DIMENSIONAL CHART
MODEL NUMBERS
DIMENSIONS IN INCHES

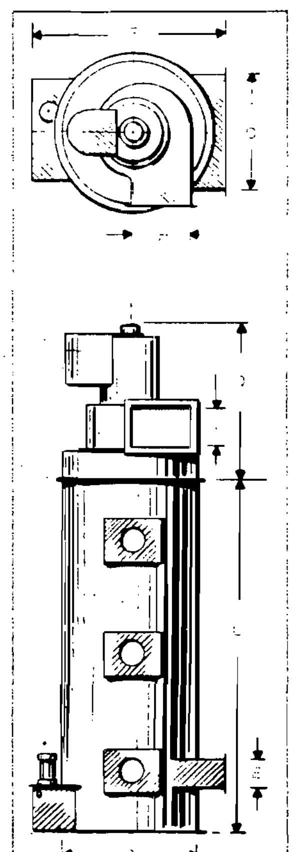
	PS-2	PS-4	PS-6	PS-8	PS-12	PS-18	PS-24	PS-30	PS-40	PS-50
A	78	82	84	94	101	108	112	114	118	**118**
B	24	36	42	48	60	72	84	96	108	**120**
C	28	40	48	58	72	84	96	108	120	**136**
D	22	34	40	46	58	70	80	92	104	**116**
E	6	8	10	11	12	16	18	20	24	**24**
F	46	58	66	76	90	102	114	126	138	**154**
G	42	54	60	66	78	90	102	114	126	**138**
H	13⅜	16⅜	22½	26¼	29½	35¼	39	47¼	52⅜	**63⅞**
I	10⅜	12⅞	17	20½	22¾	27	30	37½	40¾	**49¾**
J	18	22	28	34	38	45	50	62	66	**80**
K	6	8	10	10	12	16	19	20	24	**24**
L	84	87	89	104	112	118	122	124	128	**128**
M	64	64	70	77	89	102	102	102	114	**114**
N	35	49	55	62	76	88	103	116	128	**142**
O	38	52	58	65	79	91	106	119	131	**145**
P	14	16	22	26	30	36	42	50	54	**66**
Q	45	50	61	64	68	72	78	86	93	**103**
R	35	44	55	65	75	85	94	108	120	**141**
S	46	52	59	69	72	79	82	97	100	**110**
T	36	48	54	60	72	84	96	108	120	**132**
WHEEL DIA.	12¼	15	20	24½	27	33	36½	44½	49	**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	11790	**16040**
HT SHIP WT.	220	385	550	770	1210	1925	2750	3795	5390	**7040**
VT OP. WT.	318	660	1060	1500	2630	3910	5470	7400	11650	**15800**
VT SHIP WT.	150	300	500	700	1150	1750	2550	3600	5250	**6800**



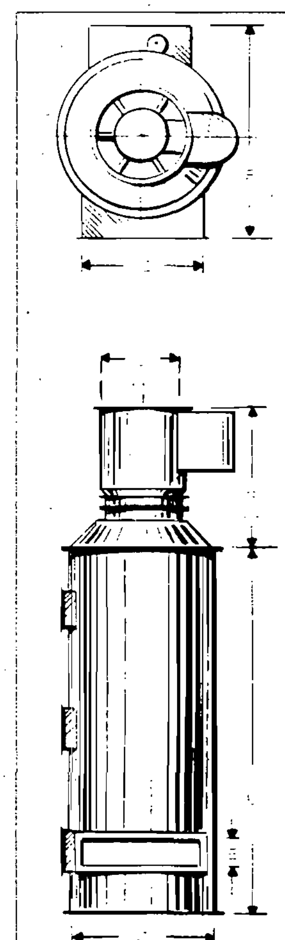
STYLE RO



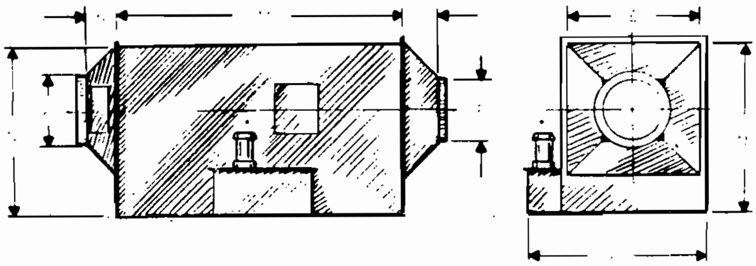
STYLE RT



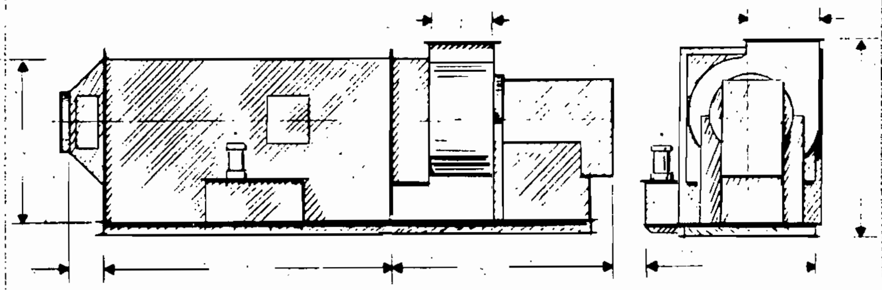
STYLE RC



STYLE RI

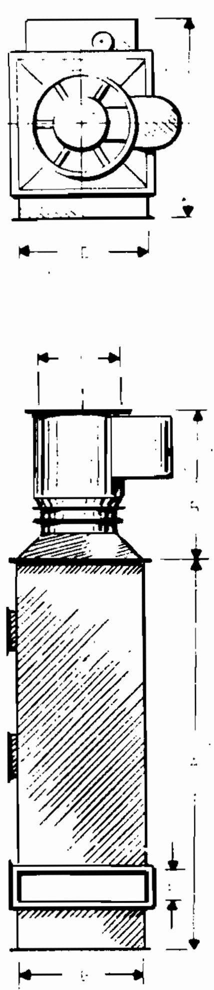


STYLE HT

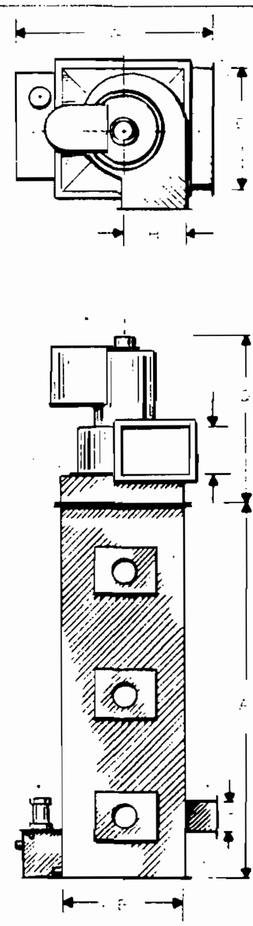


STYLE HC

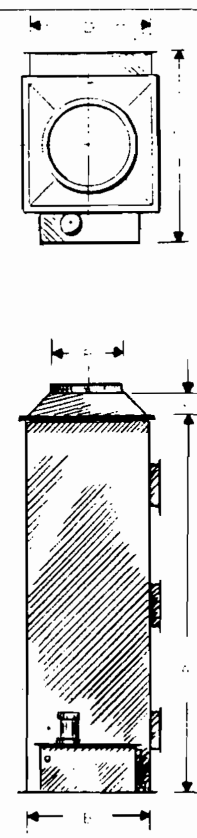
*May require one or more pumps.



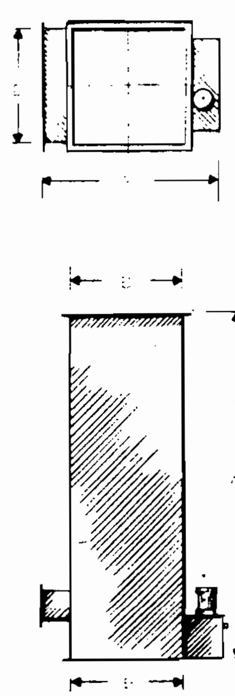
STYLE VI



STYLE VC



STYLE VT



STYLE VO

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 recirculation rate of 5 GPM per 1000 CFM of contaminated air. Of that 5 GPM, losses due to absorption and/or evaporation range from 0.2 GPM to 0.6 GPM, depending on inlet gas temperature and gas stream dust load.

ENTRAINMENT SEPARATION

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

CONSTRUCTION

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

OPTIONAL EQUIPMENT, FITTINGS AND ACCESSORIES

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

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

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

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

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

P 052 482 260

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

Sent to Kent Smith	
Street and No. Harris SemiConductor	
P.O., State and ZIP Code P.O. BOX 883 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 5-15-90 AC 05-147321 150794	

PS Form 3800, June 1985

● **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: Kent Smith, Env. Mgr. Harris Semi Conductor P.O. BOX 883 Melbourne, Fl 32902-0883	4. Article Number P052 482 260 Type of Service: ☐ Registered ☐ Insured ☒ Certified ☐ COD ☐ Express Mail ☐ Return Receipt for Merchandise Always obtain signature of addressee or agent and DATE DELIVERED.
5. Signature — Address X	8. Addressee's Address *(ONLY if requested and fee paid)*
6. Signature — Agent Harris Semiconductor X [illegible]	
7. Date of Delivery 5-17-90	

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

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

May 8, 1990

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Kent Smith, Environmental Manager
Harris Semiconductor
P. O. Box 883
Melbourne, Florida 32902-0883

Dear Mr. Smith:

Re: Amendment of Construction Permits Nos. AC 05-147321 and -150794

An amendment package was signed on April 27, 1990, which contained a reference to Building 59, a source at HS (Harris Semiconductor). Based on a phone conversation with Ms. Nancy Baldisserotto, with HS, and Mr. Bruce Mitchell, with FDER's BAR, on May 2, 1990, it was noted that the affected source is Building 54, and not 59. Therefore, the following will be changed and added:

A. AC 05-147321

- Specific Condition

11. (New)
If the strategies relating to Building 54, as outlined in Mr. Kent Smith's letters dated March 12 and April 19, 1990, do not eliminate objectionable odor complaints, then the entire facility, on a per building basis, will have to be evaluated for eliminating objectionable odors.

B. AC 05-150794

- Specific Condition

FROM:

11. (New)
If the strategies relating to Building 59, as outlined in Mr. Kent Smith's letters dated March 12 and April 19, 1990, do not eliminate objectionable odor complaints, then the entire facility, on a per building basis, will have to be evaluated for eliminating objectionable odors.

TO:

11. Deleted.

C. Attachments to be Incorporated

- o Ms. Nancy Baldisserotto's letter received March 12, 1990.
- o Mr. Kent Smith's letter dated March 12, 1990.
- o Mr. Kent Smith's letter dated April 19, 1990.

This letter must be attached to your air construction permits, as referenced above, and shall become a part of the permits.

Sincerely,

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

SS/BM/plm

Attachment

c: C. Collins, Central Dist.
N. Baldisserotto, HS

HARRIS SEMICONDUCTOR
HARRIS RCA GE INTERSIL

RECEIVED

MAR 12 1990

DER - BAQM

March 8, 1990

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

Subject: Extension of Consolidated Construction Permits
Harris Semiconductor, Melbourne

Permit Nos.	Bldg.
AC 05-147321	54
AC 05-150794	59
AC 05-157786	51
AC 05-157787	62
AC 05-158237	63
AC 05-159484	58
AC 05-161706	57
AC 05-164544	55
AC 05-168460	60

Dear Mr. Fancy:

In accordance with F.A.C. rule 17-4.09 and Specific Condition No. 13 of the above mentioned air permits, the purpose of this letter is to request an extension of the expiration dates until December 30th, 1990.

Harris Semiconductor and the Orlando FDER are currently undergoing negotiations concerning an objectionable odor warning notice issued to the Palm Bay site in December (warning notice OWN-AP-89-0151.) The Orlando FDER has indicated that Semiconductor will not be issued operating permits in June if the odor issue is not resolved by that time. If the Department requires Semiconductor to submit applications for operating permits in March which it intends to deny because a solution to this issue has not been fully implemented by June, Semiconductor will be forced to initiate administrative litigation or operate without permits. If Semiconductor and the Agency are both working to resolve this issue, you may agree that this dilemma would not be desirable from the perspective of either Semiconductor or the Department.

To avoid an unnecessary permitting crisis while the Department and Semiconductor reach agreement on the means of solving the odor issue, Semiconductor is requesting that the Department extend the expirations dates by a period of six (6) months. This is currently the expiration date of the construction permit for building 4 (permit no. AC 05-165757.)

If this extension is granted, operating permit applications for all applicable buildings on the site will be submitted by September 30th, 1990. Please note that this will not affect the submittal of the annual operating reports and mass balance information for 1989, which is currently due by March 31st.

Please feel free to phone me at (407) 729-4061 if you have any questions.

Sincerely,

Nancy Baldisserotto

Nancy Baldisserotto
Senior Environmental Engineer
Environmental Services

cc: T. Sawicki
B. Mitchell

\extnrqst.2

HARRIS SEMICONDUCTOR

March 12, 1990

Express Mail

Charles M. Collins, P.E.
Program Administrator
Air Resources Management
Central Florida District
Florida Department of Environmental Regulation
3319 Maguire Blvd., Suite 232
Orlando, Florida 32803

RE: Brevard County - AP
Warning Notice - OWN-AP-89-0151

Dear Mr. Collins:

This letter is submitted on behalf of Harris Corporation, Semiconductor Sector ("Semiconductor") to follow-up on our letter of February 16. In that letter, it was stated that Semiconductor would, within 30 days, submit a schedule outlining the activities that will be undertaken to identify reasonable and appropriate solutions to the odor issue.

As mentioned in previous correspondence, Jacobs Engineering Group, Inc. ("Jacobs") has been retained by Semiconductor to facilitate the odor issue investigation. In a recent meeting, Jacobs recommended a revision of the suggested activities as outlined in the February 16 letter. As such, Jacobs has recommended that the odor investigation continue as follows:

Work Item One : Chemical inventory and historical stack monitoring information will be reviewed and used in a dispersion model to determine areas that may be affected by odors. This change was recommended by Jacobs as opposed to running stack analyses on all emission points from Bldg. 54. Jacobs feels that previous monitoring activities will provide the information needed for the dispersion modeling.

This item is scheduled to be completed by March 30, 1990.

Work Item Two: Through the use of an Organic Vapor Analyzer in GC mode, investigate the level of constituents present at likely "odor hot spots." These areas would be determined through the use of the computer dispersion model outlined in Work Item One.

This item is scheduled for completion by April 27, 1990.

This is the plan of action Semiconductor intends to pursue.

Subsequent to these activities, Semiconductor will submit a completed report, by May 4, 1990, detailing the information obtained during completion of the Work Items. This report will include any proposed modifications or process changes.

To supplement these activities, Semiconductor has already contracted with Air Consulting and Engineering (ACE) to conduct GC/MS sampling from one of the stacks at Building 54. The stack chosen is the most likely candidate to be contributing to the alleged odor problem. Due to the prohibitive cost of running complete analyses on all stacks ($60,000 per stack for 24 hours of sampling as quoted by Jacobs), we chose to sample one stack for a period of 10 operating hours. This will give us total coverage of first shift activities along with 1 hour on either side of shift changes. This data will subsequently be utilized in the dispersion model to add further background information to the investigation.

In addition to these activities, Semiconductor has taken a close look at the processes within the Building 54 wafer fabrication area that may be a source of the odor issue. We are contacting our customers to determine if it may be possible to replace some of the process chemicals currently in use with substitutes that may have less potential to cause or contribute to odors at the facility. We are also continuing to review operating procedures and process configurations in order to ensure that reasonable steps have been taken in the proper control of the subject chemicals.

As indicated in my telephone conversation with Caroline Shine on March 8, Semiconductor has requested the Tallahassee DER office for an extension on the submission of appropriate operating permit applications for this facility. It does not appear worthwhile for either DER or Semiconductor to put effort into obtaining operating permits that will be ultimately denied.

Please contact me at 729-5736 if I can provide any further assistance in this matter.

Yours truly,

Kent Smith

Kent Smith
Manager, Environmental Services

cc: D. R. Erdley
R. R. Sands
L. R. Hutker
J. R. Steiner

RECEIVED

APR 23 1990

DER - BAQM

HARRIS SEMICONDUCTOR
HARRIS · RCA · GE · INTERSIL

April 19, 1990

Express Mail

Charles M. Collins, P.E.
Program Administrator
Air Resources Management
Central Florida District
Florida Department of Environmental Regulation
3319 Maguire Blvd., Suite 232
Orlando, Florida 32803

RE: Brevard County - AP
Warning Notice - OWN-AP-89-0151

Dear Mr. Collins:

This letter is submitted on behalf of Harris Corporation, Semiconductor Sector as an update of our odor abatement activities. It is my intention to send you regular updates on our activities until such a time as the problem is resolved. Please understand that this letter and subsequent correspondence in no way relieves us of any obligation under our continuing response activities concerning the above referenced warning notice. In addition, this information is a synopsis of a discussion I had with Caroline Shine on April 13th.

We have continued to attack the odor issue from several different angles. Within the production areas, we have begun to look at chemical substitution as a potential solution. We have established a testing protocol designed to remove certain phenol-based chemicals and substituting a chemical with less "odor potential." Due to customer testing requirements, this change should take approximately three to four months to implement.

Lids have also been installed on some of these phenol-based processes effective the week of April 9th. This will reduce the potential for emissions from these processes to contribute to the odor issue. We have also reduced the use of these processes from eight hours per shift to four hours per shift. This reduces the exposure of these baths to the exhaust system thereby reducing emissions. Unfortunately, these actions have also resulted in some difficult, although manageable, production issues.

Jacobs Engineering (JE) has completed three days of on-site sampling this week. The sampling was accomplished with an Organic Vapor Analyzer and will be used to determine what chemicals may be contributing to the odor issue. Results are due back late this week. JE also completed an initial pass of dispersion modeling but with limited results. These were faxed to Caroline last week. JE will be running additional dispersion models to add to the depth of this analysis.

Finally, JE ran dispersion models to determine the effects of additional stack height. The initial results, run at a 20 foot extension, showed that emissions could be reduced 75% at ground level. As such, we are requesting additional modeling with a ten foot extension. Our facilities department is currently obtaining quotes and determining appropriate engineering requirements for these stack additions.

The items in this memo will be discussed in more detail in our subsequent correspondence due to you by May 4th. Please contact me at 729-5736 if I can clarify any of the items discussed in this letter.

Yours truly,

Kent Smith

Kent Smith
Manager, Environmental Services

cc: D. R. Erdley
R. R. Sands
L. R. Hutker
J. R. Steiner
C. Shine (FDER)
B. Mitchell (FDER)

For Routing To Other Than The Addressee

To: ______ Location: ______

To: ______ Location: ______

To: ______ Location: ______

From: ______ Date: ______

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

Interoffice Memorandum

TO: Steve Smallwood

FROM: for Clair Fancy JKP

DATE: May 8, 1990

SUBJ: Amendment of Construction Permits: AC 05-147321
AC 05-150794

Harris Semiconductor (HS)

Attached for your approval and signature is a letter that will amend two construction permits issued to the above mentioned company to correct a reference of a source (Building 54 vs 59) made in an amendment package signed April 27, 1990.

CF/plm

Reading File

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

January 8, 1990

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Kent Smith, Environmental Manager
Harris Semiconductor
P. O. Box 883
Melbourne, Florida 32902-0883

Dear Mr. Smith:

Re: Amendment of Construction Permits:

AC 05-147321	Bldg. 54
-150794	59
-157786	51
-157787	62
-158237	63
-159484	58
-161706	57
-164544	55

The Department has reviewed Ms. Nancy Baldisserotto's letter received December 13, 1989, requesting that the above referenced air construction permits' expiration dates be extended. The Department is in agreement with the basic request and the following will be changed and added:

A. AC 05-147321, -150794, -157786, -157787, -158237, -159484, -161706 and -164544.

- <u>Expiration Date</u>

  From: April 30, 1990
  To: June 30, 1990

B. Attachment to be Incorporated

- Ms. Nancy Baldisserotto's letter received December 13, 1989.

This letter must be attached to your air construction permits, as referenced above, and shall become a part of the permits.

Sincerely,

Dale Twachtmann
Secretary

DT/plm

Attachment

c: C. Collins, Central Dist.
N. Baldisserotto, HS

PM
8-10-89
Melbourne, FL

file copy

HARRIS

August 9, 1989

RECEIVED
AUG 14 1989
DER-BAQM

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

SUBJECT: Correction to Consolidated Air Permit No. AC 05-150794
BUILDING 59

Dear Mr. Fancy,

The purpose of this letter is to note a change in the Facilities identification number assigned to the 24,000 cfm Beverly Pacific scrubber that is used to control VOC/solvent vapors of building 59. Facilities I.D. numbers are physically spray-painted onto the unit to assist in system identification. Initially, two numbers were accidentally sprayed onto this scrubber system; F59S02 AND F59S03. Because the last two digits of the numbering system are sequential for each building, Facilities I.D. number F59S03 has been removed (there are only two scrubber systems servicing building 59; F59S01 and F59S02.) Hence, the appropriate number for the solvent scrubber is F59S02. Please note that the construction permit application and the associated scrubber location maps submitted in June of 1988 referred to this system as F59S03.

I have attached corrected copies of scrubber location maps for the building and for the Melbourne site. In the future, all permit correspondence and monitoring reports will refer to the scrubber by its correct number.

Please feel free to call me if you have any questions.

Sincerely,

Nancy Baldisserotto

Nancy Baldisserotto
Environmental Engineer
Environmental Services Dept.

copied: B. Mitchell
C. Collins
eHF/BT

HARRIS
SEMICONDUCTOR
HARRIS · RCA · GE · INTERSIL

HARRIS CORPORATION
SEMICONDUCTOR SECTOR
P.O. BOX 883
MELBOURNE, FLORIDA 32902-0883

MELBOURNE FL
AUG 10'89
U.S. POSTAGE
0.25
P.B. METER
6121163

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

PM
8-10-89
Melbourne, FL

BEST AVAILABLE COPY

HARRIS

August 9, 1989

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

SUBJECT: Correction to Consolidated Air Permit No. AC 05-150794
BUILDING 59

Dear Mr. Fancy,

The purpose of this letter is to note a change in the Facilities identification number assigned to the 24,000 cfm Beverly Pacific scrubber that is used to control VOC/solvent vapors of building 59. Facilities I.D. numbers are physically spray-painted onto the unit to assist in system identification. Initially, two numbers were accidentally sprayed onto this scrubber system; F59S02 AND F59S03. Because the last two digits of the numbering system are sequential for each building, Facilities I.D. number F59S03 has been removed (there are only two scrubber systems servicing building 59; F59S01 and F59S02.) Hence, the appropriate number for the solvent scrubber is F59S02. Please note that the construction permit application and the associated scrubber location maps submitted in June of 1988 referred to this system as F59S03.

I have attached corrected copies of scrubber location maps for the building and for the Melbourne site. In the future, all permit correspondence and monitoring reports will refer to the scrubber by its correct number.

Please feel free to call me if you have any questions.

Sincerely,

Nancy Baldisserotto
Environmental Engineer
Environmental Services Dept.

cc: B. Mitchell
C. Collins
CHF/BT

RECEIVED
AUG 14 1989
DER - BAQM

HARRIS SEMICONDUCTOR
HARRIS · RCA · GE · INTERSIL

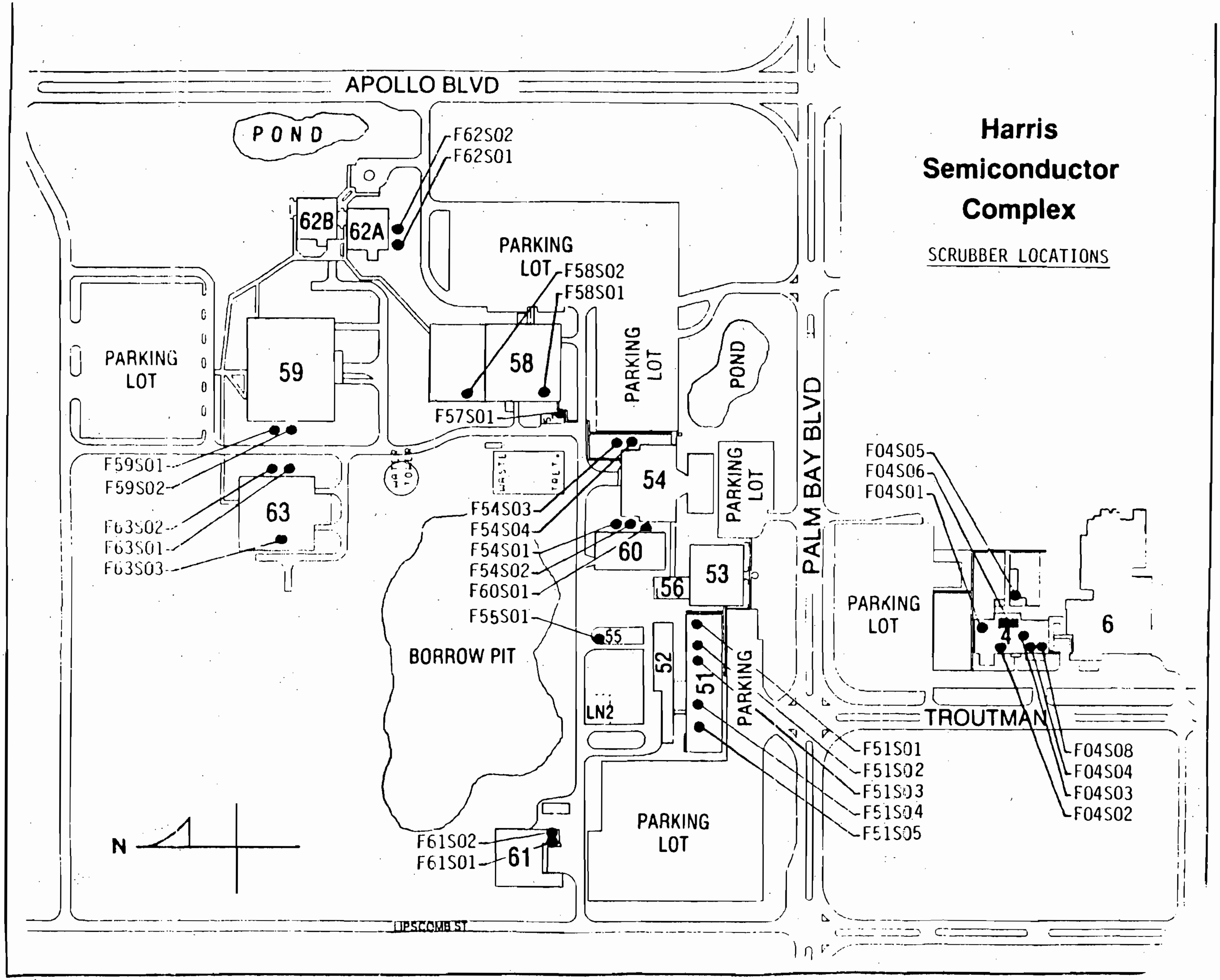
HARRIS CORPORATION
SEMICONDUCTOR SECTOR
P.O. BOX 883
MELBOURNE, FLORIDA 32902-0883

ORLANDO, FL 328 PM 10 AUG 1989

MELBOURNE FL AUG 10'89

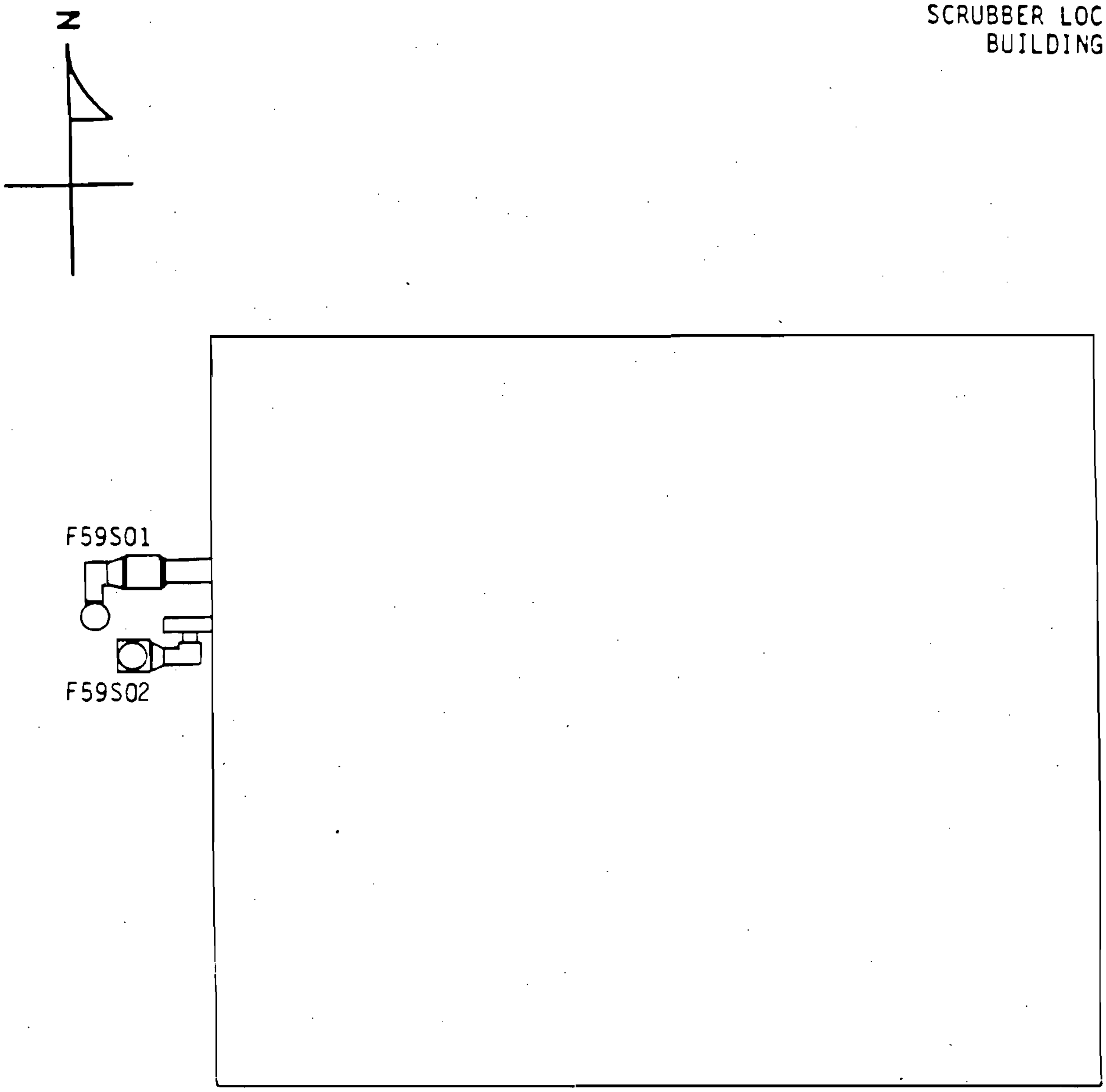
US POSTAGE 0.25
P.B. METER 6121163

Bruce Mitchell
Engineer
FDER
2600 Blair Stone Road
Tallahassee, FL 32399-2400



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

HARRIS SEMICONDUCTOR
SCRUBBER LOCATIONS
BUILDING 59



LEGEND

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

P 274 007 487

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL

(See Reverse)

★ U.S.G.P.O. 1985-480-794

Sent to Mr. James R. Kolanek	
Street and No. Harris Corp. P.O. Box 883	
P.O., State and ZIP Code Melbourne, FL 32901	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date Mailed: 10-27-88 Permit: AC 05-147321 AC 05-150794	

PS Form 3800, June 1985

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: Mr. James R. Kolanek Manager, Environmental Services Harris Semiconductor P. O. Box 883 Melbourne, FL 32901	4. Article Number P 274 007 487 Type of Service: ☐ Registered ☐ Insured ☒ Certified ☐ COD ☐ Express Mail Always obtain signature of addressee or agent and DATE DELIVERED.
5. Signature — Addressee X	8. Addressee's Address (ONLY if requested and fee paid) MELBOURNE, FL OCT 31 1988 USPS
6. Signature — Agent Harris Semiconductor X Willie J. Boyd	
7. Date of Delivery	

PS Form 3811, Mar. 1987 ★ U.S.G.P.O. 1987-178-268 DOMESTIC RETURN RECEIPT

PM
10-3-88
Orlando, FL

file copy

CAPE PUBLICATIONS, INC.

The Times
Published Weekly on Wednesday

THE TRIBUNE
Published Weekly on Wednesday

RECEIVED
OCT 6 1988
DER - BAQM

FLORIDA TODAY
Published Daily

STATE OF FLORIDA
COUNTY OF BREVARD

Before the undersigned authority personally appeared **Linda L. Spicer** who on oath says that he/she is **Legal Advertising Clerk** of the **FLORIDA TODAY**, a newspaper published in Brevard County, Florida; that the attached copy of advertising being a Notice of Intent in the matter of permits to Harris Semiconductor in the Court was published in the **FLORIDA TODAY NEWSPAPER** in the issues of September 30, 1988

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

Linda L. Spicer

Sworn and subscribed to before me this 30th day of September A.D., 19 88

Cathy [illegible]
Notary Public
State of Florida at Large
My Commission Expires March 29, 1992

State of Florida
Department of
Environmental Regulation
Notice of Intent

The Department of Environmental Regulation hereby gives notice of its intent to issue a permit to Harris Semiconductor to consolidate multiple permits previously issued for Buildings No. 54 and No. 59, which are wafer fabrication sources and located at the applicant's existing facility on Palm Bay Road in the City of Palm Bay, Brevard County, Florida. The Department is issuing this Intent to Issue for the reasons stated in the Technical Evaluation and Preliminary Determination.

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

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

The applications are available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:
Dept. of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

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

Any person may send written comments on the proposed action to Mr. Bill Thomas at the Department's Tallahassee address. All comments mailed within 14 days of the publication of this notice will be considered in the Department's final determination.
TO93315—1T—9/30/1988, Friday

copied: Bruce Mitchell
Chuck Collins

FLORIDA TODAY/USA TODAY
P.O. BOX 363000
Gannett Plaza
Melbourne, FL 32936

ADDRESS CORRECTION REQUESTED
POSTMASTER-DO NOT FORWARD

ORLANDO, FL 328
PM
OCT 3
1988

MELBO
OCT 2 '88
U.S. POSTAGE
.25
FL
DR 077910

FLORIDA TODAY

CAPE PUBLICATIONS, INC.

(407) 242-3500

The Times   THE TRIBUNE   STAR-ADVOCATE

ADVERTISING
Statement/Invoice

881

DEPARTMENTAL OF ENVIROMENTAL
TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
ATTN: BILL THOMAS
TALLAHASSEE FL 32301-3241

CUSTOMER NO.	INVOICE NO.
6DE241	167726

DUE DATE	AMOUNT DUE
12/12/88	.00

FOR THE PERIOD	THRU
10/31/88	11/27/88

DATE	EDT	CLASS	DESCRIPTION	COL	DEPTH	TIMES RUN	TOTAL SIZE	RATE	AMOUNT
			PREVIOUS BALANCE						96.60
1121			INV # 93315						96.60-

CURRENT	OVER 30 DAYS	OVER 60 DAYS	OVER 90 DAYS	OVER 120 DAYS	TOTAL DUE
.00	.00	.00	.00	.00	.00

CONTRACT TYPE	CONTRACT QUANTITY	EXPIRATION DATE	CURRENT USAGE	TOTAL USED	QUANTITY REMAINING	SALES PERSON
						SPICER

CUSTOMER NUMBER	NAME	INVOICE NUMBER	AMOUNT PAID
6DE241	DEPARTMENTAL OF ENVIROMENTAL	167726	

DETACH THIS STUB AND RETURN WITH PAYMENT PAYABLE TO: CAPE PUBLICATIONS, INC. • P.O. BOX 20099 • ORLANDO, FLORIDA 32889-0016

12/12/88

FLORIDA TODAY

CAPE PUBLICATIONS, INC.

ADVERTISING
Statement/Invoice

(407) 242-3500

The Times THE TRIBUNE STAR-ADVOCATE

RECEIVED

NOV 4 1988

DER - BAQM

837

CUSTOMER NO.	INVOICE NO.
6DE241	159463

DUE DATE	AMOUNT DUE
11/14/88	96.60

FOR THE PERIOD	THRU
09/26/88	10/30/88

DEPARTMENTAL OF ENVIROMENTAL
TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
ATTN: BILL THOMAS
TALLAHASSEE FL 32301-8241

DATE	EDT	CLASS	DESCRIPTION	COL	DEPTH	TIMES RUN	TOTAL SIZE	RATE	AMOUNT
			PREVIOUS BALANCE						.00
1011	DLY		93315						96.60

Kathy Smith
407/242-3711 (direct)
Call her if we receive another bill - She'll give Harris time to pay & invoice directly if they don't

Talked to Kathy Smith 11:15 11-4-88

Will research + call back if a problem

CURRENT	OVER 30 DAYS	OVER 60 DAYS	OVER 90 DAYS	OVER 120 DAYS	TOTAL DUE
96.60	.00	.00	.00	.00	96.60

CONTRACT TYPE	CONTRACT QUANTITY	EXPIRATION DATE	CURRENT USAGE	TOTAL USED	QUANTITY REMAINING	SALES PERSON
						SPICER

CUSTOMER NUMBER	NAME	INVOICE NUMBER	AMOUNT PAID
6DE241	DEPARTMENTAL OF ENVIROMENTAL	159463	

DETACH THIS STUB AND RETURN WITH PAYMENT PAYABLE TO: CAPE PUBLICATIONS, INC. • P.O. BOX 20099 • ORLANDO, FLORIDA 32889-0016

11/14/88

HARRIS

Purolator courier® Pkg. 1 of

722047882

10-3-88
Palm Bay, FL

RECEIVED

OCT 4 1988

DER - BAQM

file copy

October 3, 1988

Express Mail

Mr. Bruce Mitchell
State of Florida
Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahasee, Florida 32399-2400

Subject: Harris Semiconductor
DER Permit Nos.: AC 05-147321 and AC 05-150794

Dear Bruce:

This letter is written to follow-up on and confirm the results of our phone conversation on Friday, September 30, 1988 concerning the above-referenced permits. You will recall from our conversation that Harris Semiconductor had a couple of concerns with respect to specific conditions four (4) and five (5) of both permits. As a result of our conversation, I think we have resolved these issues.

With respect to the inspection and maintenance plans referred to in specific conditions four (4) of both permits, it is our understanding that the plans are for the scrubber systems covered by both permits. With respect to the material balance requirements imposed on buildings 54 and 59 by specific conditions five (5) of both permits, it is our understanding that these requirements will not apply in a segregated fashion for calendar year 1988. In other words, the annual VOC/solvents report submitted by March 31, 1989 will continue to pertain to the facility as a whole. Starting with the material balance for calendar year 1989, we will be required to submit separate annual reports for buildings 54 and 59.

If the above clarifications of these specific permit conditions are not accurate, please give me a call right away at (407)724-7467. As you are aware, we have a limited amount of time to file for an extension or petition for a hearing while we work out any problems.

Thank you for your time and consideration.

Sincerely,
HARRIS SEMICONDUCTOR

James R. Kolanek

James R. Kolanek
Manager, Environmental Engineering

cc: C. Collins
B. Pittman
A. T. Sawicki
CHF/BT
E/675/88

P 274 007 454

RECEIPT FOR CERTIFIED MAIL

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

★ U.S.G.P.O. 1985-480-794

Sent to Mr. James R. Kolanek, Harris Semiconduct	
Street and No. P.O. Box 883	
P.O., State and ZIP Code Melbourne, FL 32901	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date Mailed: 9-19-88 Permit: AC 05-147321 AC 05-150794	

PS Form 3800, June 1985

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:	4. Article Number
Mr. James R. Kolanek Manager, Environmental Services Harris Semiconductor P. O. Box 883 Melbourne, FL 32901	P 274 007 454 Type of Service: ☐ Registered ☐ Insured ☒ Certified ☐ COD ☐ Express Mail Always obtain signature of addressee or agent and DATE DELIVERED.
5. Signature — Addressee X	8. Addressee's Address *(ONLY if requested and fee paid)*
6. Signature — Agent Harris Semiconductor X Willie [illegible]	
7. Date of Delivery SEP 21 1988	

PS Form **3811**, Mar. 1987 ★ U.S.G.P.O. 1987-178-268 **DOMESTIC RETURN RECEIPT**

File Copy

Florida Department of Environmental Regulation

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

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

September 19, 1988

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

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

Dear Mr. Kolanek:

Attached is one copy of the Technical Evaluation and Preliminary Determination and proposed permits for Harris Semiconductor for Buildings No. 54 and No. 59, in order to consolidate multiple permits previously issued for the sources/buildings. Buildings No. 54 and No. 59 are wafer fabrication sources.

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

Sincerely,

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

CHF/

Attachments

cc: C. Collins, Cent. FL Dist.
L. R. Hutker, P.E., HS
B. Pittman, Esq., DER

BEFORE THE STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

In the Matter of
Application for Permits by:

Harris Semiconductor
Post Office Box 883
Melbourne, Florida 32901

DER File Nos. AC 05-147321
AC 05-150794

INTENT TO ISSUE

The Department of Environmental Regulation hereby gives notice of its intent to issue permits (copy attached) for the proposed project as detailed in the applications 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 March 3, 1988 and June 10, 1988, respectively, to the Department of Environmental Regulation for permits to consolidate multiple permits issued previously for Buildings No. 54 and No. 59, which are wafer fabrication sources. The sources/buildings are located at the applicant's existing facility on Palm Bay Road in the City of Palm Bay, Brevard County, Florida.

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

Pursuant to Section 403.815, F.S. and DER Rule 17-103.150, FAC, you (the applicant) are required to publish at your own expense the enclosed Notice of Proposed Agency Action on the permit applications. The notice must be published one time only in a section of a major local newspaper of general circulation in the county in which the project is located and within thirty (30) days from receipt of this intent. Proof of publication must be provided to the Department within seven days of publication of the notice. Failure to publish the notice and provide proof of publication within the allotted time may result in the denial of the permits.

The Department will issue the permits 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. Petitions must comply with the requirements of Florida Administrative Code Rules 17-103.155 and 28-5.201 (copy enclosed) and be filed with (received by) the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Petitions filed by the permit applicant must be filed within fourteen (14) days of receipt of this intent. Petitions filed by other persons must be filed within fourteen (14) days of publication of the public notice or within fourteen (14) days of receipt of this intent, whichever first occurs. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, Florida Statutes, concerning the subject permit applications. Petitions which are not filed in accordance with the above provisions will be dismissed.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

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

Copies furnished to:

C. Collins, Cent. FL Dist.
L. R. Hutker, P.E., HS
B. Pittman, Esq., DER

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 9-19-88.

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.

Judy Rogers
Clerk

9-19-88
Date

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

28-5.15 Requests for Formal and Informal Proceedings

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

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

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

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

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

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

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

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

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

State of Florida
Department of Environmental Regulation
Notice of Intent

The Department of Environmental Regulation hereby gives notice of its intent to issue permits to Harris Semiconductor to consolidate multiple permits previously issued for Buildings No. 54 and No. 59, which are wafer fabrication sources and located at the applicant's existing facility on Palm Bay Road in the City of Palm Bay, Brevard County, Florida. The Department is issuing this Intent to Issue for the reasons stated in the Technical Evaluation and Preliminary Determination.

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

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

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

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

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

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

Technical Evaluation
and
Preliminary Determination

Harris Semiconductor
Brevard County
Palm Bay, Florida

Construction Permit Numbers:
AC 05-147321
AC 05-150794

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

September 19, 1988

I. Application

A. Applicant

Harris Semiconductor
Post Office Box 883
Melbourne, Florida 32901

B. Project and Location

The applicant has applied for construction permits for Buildings No. 54 and No. 59, in order to consolidate multiple permits previously issued for these sources/buildings.

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 54

Building 54 is a wafer fabrication facility. The second floor of the two-story building houses two clean room modules. Both fabrication areas employ a series of manufacturing procedures referred to as layering, patterning, doping and heating processes. The frequency and sequence of these processes can vary depending on the desired nature of the final product.

Wet stations that house vats containing a variety of acid and caustic compounds are located throughout the clean rooms. Storage cabinets safely hold virgin chemicals until they are ready for use. The first floor of the building contains exhausted gas cabinets that supply process gases to the 'fab' operations.

The exhaust system for the building is divided into two sections. The west half exhaust is fed into a common duct that is divided into two wet scrubber systems, F54S01 and F54S02, at ground level. The east portion of the building exhaust is ducted to a common line that divides into two wet scrubbers (F54S03 and F54S04) on the east side of building. Also on the east side of Building 54 is a non-scrubbed exhaust fan F54E17 that handles air flow from several alligners, furnace source cabinets, and gas cabinets.

2. Building 59

Building 59 houses a wafer fabrication facility on the second floor. The fabrication area employs a series of manufacturing procedures referred to as layering, patterning, doping and heating processes. 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 solvents, one of which is heated.

The ground floor of the two-story manufacturing area 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 resides above it in the fabrication area. Storage cabinets 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.

The exhaust system for the building is divided between two scrubbers. Acid vapors are vented to scrubber number F59S01, while solvent exhaust streams are ducted to scrubber number F59S03. Both systems reside on the site grounds directly outside the west wall of the building.

3. General

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

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

Next, the wafers are hard-baked, inspected to determine accuracy, and etched by wet (acid bath) or dry (plasma vapor) mechanisms. Once etching is complete, the photoresist is stripped off the wafer using chemical baths or plasma techniques.

In another step of the fabrication process, "dopant" atoms are either diffused into the wafer in diffusion furnaces, or accelerated into the wafer using "ion implantation." Fumes from the vapor deposition furnaces are oxidized in burn boxes. The oxidized gases are then exhausted to scrubber systems. Additional material may be layered on the wafer surface in vapor and crystal (epitaxial) deposition furnaces. Metallization to interconnect uppermost circuit layers is performed by deposition (using "sputtering" systems) or evaporation.

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

The Standard Industrial Classification Codes are:

- o Major Group 36: Electrical and Electronic Machinery, Equipment, and Supplies
- o Industry Group No. 367: Electronic Components and Accessories
- o Industry No. 3674: Semiconductors and Related Devices

The Source Classification Codes are:

- o Major Group 36: Organic Solvent Evaporation
- o Building 54 4-01-003-99 Tons VOC/solvent consumed
- o Building 59 4-01-003-99 Tons VOC/solvent consumed

II. Rule Applicability

The proposed project is subject to preconstruction review under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code (FAC) Rules 17-2 and 17-4.

The application packages were deemed complete on July 1, 1988.

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

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

The following table presents the projected potential VOC/solvent emissions:

Table 1

Source	Potential VOC/solvent Emissions (TPY)
Building 54	
o F54S01	15.24
o F54S02	15.24
o F54S03	32.59
o F54S04	32.59
Building 59	
o F59S03	0.50
Total:	96.16

Note: 1. Annual hours of operation at 8760.

The following table presents the projected potential VOC/ solvent emissions from the facility:

Table 2

Building	Potential VOC/solvent Emissions (TPY)
4	10.96
51	33.29
54	95.65
57	1.66
58	3.24
59	0.50
60	min.
61	0.25
62	0.83
63	6.14
Total:	152.50

Since the potential emissions are less than 250 TPY for the facility, the potential emissions projected from Buildings 54 and 59 will be reviewed pursuant to FAC Rule 17-2.520, Sources Not Subject to PSD or Nonattainment Requirements.

Since there is no specific emission limiting standard contained in FAC Rule 17-2.600 nor is there any standards of performance for new stationary sources contained in FAC Rule 17-2.660, the sources will be permitted in accordance with FAC Rule 17-2.620, General Pollutant Emission Limiting Standards.

In FAC 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 FAC 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 FAC Rule 17-2.100(132).

The buildings operations/sources are subject to the provisions of FAC Rules 17-2.240: Circumvention; 17-2.250: Excess Emissions; 17-4.130: Plant Operation-Problems; and, 17-4.140: Reports.

III. Summary of Emissions

A. Emission Limitations

The regulated pollutant emissions from these buildings/ sources are VOC/solvents in accordance with FAC Rule 17-2.620.

Specific acid solutions are also being used during the manufacturing operations. 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 Buildings 54 and 59 in TPY:

Table 3

Building	Maximum Allowable VOC/Solvent Emissions	Potential Acid Vapor Emissions
54	95.7	
59	0.5	0.1

Note: Hours of operation are 8760.

The permitted emissions are in compliance with all requirements of FAC Rules 17-2 and 17-4.

B. Air Quality Impacts

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

V. Conclusion

The maximum allowable VOC/solvent emissions from Buildings 54 and 59 are in compliance with FAC Rules 17-2 and 17-4. Even though there are no emission standards for acid vapors, the applicant has installed scrubber systems to control their emissions.

A system of material balance and sampling/analysis will be used to account for and verify pollutant emissions from each building and their scrubber systems.

The General and Specific Conditions listed in the proposed permits (attached) will ensure compliance with all applicable requirements of FAC Rules 17-2 and 17-4.

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 05-147321
Expiration Date: April 30, 1990
County: Brevard
Latitude/Longitude: 28° 01' 20" N
80° 36' 10" W
Project: Building 54
Manufacturing Lab

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code (FAC) Rules 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 permitting of hood type work stations for the manufacture of semiconductors in Building 54. Two 20,000 cfm and two 23,000 cfm horizontal cross-flow plastic saddle packed wet scrubbers, manufactured by Harrison, are installed to control VOC/solvent vapors. The building/source is located at the permittee's existing facility located on Palm Bay Road in the City of Palm Bay. The UTM coordinates are Zone 17, 538.7 km East and 3100.9 km North.

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

Attachments to be Incorporated:
1. Application to Construct Air Pollution Sources, DER Form 17-1.202(1), and Mr. James R. Kolanek's cover letter received March 3, 1988.
2. Mr. James R. Kolanek's letter with a processing fee received March 24, 1988.
3. Mr. C. H. Fancy's letter dated April 20, 1988.
4. Mr. James R. Kolanek's letter with attachments received May 20, 1988.
5. Mr. C. H. Fancy's letter dated June 6, 1988.
6. Mr. James R. Kolanek's letter and attachments received July 1, 1988.
7. Mr. James R. Kolanek's letter and addendum received September 12, 1988.

GENERAL CONDITIONS:

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

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

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

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

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

GENERAL CONDITIONS:

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

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

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

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

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

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

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

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

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

GENERAL CONDITIONS:

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

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

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

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

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

13. This permit also constitutes:

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

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

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

GENERAL CONDITIONS:

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

c. Records of monitoring information shall include:

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

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

SPECIFIC CONDITIONS:

1. The maximum allowable VOC/solvent emissions from Building No. 54 shall be 95.7 tons per year.

2. The VOC/solvent vapor exhaust scrubber must be on during the working hours.

3. Annual operation shall be 8760 hours per year.

4. Objectionable odors shall not be allowed off plant property.

PERMITTEE:
Harris Semiconductor

Permit Number: AC 05-147321
Expiration Date: April 30, 1990

SPECIFIC CONDITIONS:

4. An inspection and maintenance plan shall be submitted to the DER's Central Florida 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.

5. By March 31 of each calendar year, an annual operating report shall be submitted to the DER's Central Florida District office demonstrating compliance with the VOC/solvent emissions limit for Building No. 54 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.

6. Each scrubber system's efficiency and potential 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 25;
b) the DER's Central Florida 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 Florida District office within 45 days after the last test run is completed.

7. This permit will supercede all other permits previously issued on this source/Building No. 54.

8. To obtain a permit to operate, the permittee must demonstrate compliance with the conditions of the construction permit and submit an application for an operating permit, including the application fee, along with the material balance results, compliance test results and Certificate of Completion, to the DER's Central Florida District office 90 days prior to the expiration date of the construction permit. The permittee may

SPECIFIC CONDITIONS:

continue to operate in compliance with all terms of the construction permit until its expiration date in accordance with FAC Rules 17-2 and 17-4.

If the construction permit expires prior to the permittee filing an application for a permit to operate, then all activities at the project must cease pursuant to FAC Rule 17-4.

9. Building No. 54 is subject to the provisions of FAC Rules 17-2.240: Circumvention; 17-2.250: Excess Emissions; 17-4.130: Plant Operation-Problems; and, 17-4.140: Reports.

10. Any modification pursuant to FAC Rule 17-2.100(119) shall be submitted to the DER's Central Florida District office and the Bureau of Air Quality Management office for approval.

Issued this_____day of_________,
19___.

**STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION**

____
Dale Twachtmann, Secretary

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

Permit Number: AC 05-150794
Expiration Date: April 30, 1990
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 (FAC) Rules 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 permitting of hood type work stations for the manufacture of semiconductors in Building 59. A 24,000 cfm vertical counter-current flow wet scrubber, using polypropylene packing, and with a mist eliminator, manufactured by Beverly Pacific, is installed to control VOC/solvent vapors. A 40,000 cfm horizontal cross-flow wet scrubber, using polypropylene packing, and with a mist eliminator, manufactured by Beverly Pacific, is installed to control acid vapors. The building/source is located at the permittee's existing facility located on Palm Bay Road in the City of Palm Bay. The UTM coordinates are Zone 17, 538.7 km East and 3100.9 km North.

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

Attachments to be Incorporated:
1. Application to Construct Air Pollution Sources, DER Form 17-1.202(1), along with the processing fee, and Mr. James R. Kolanek's cover letter received June 10, 1988.
2. Mr. James R. Kolanek's letter and attachments received July 1, 1988.
3. Mr. James R. Kolanek's letter and addendum received September 12, 1988.

GENERAL CONDITIONS:

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

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

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

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

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

PERMITTEE:
Harris Semiconductor

Permit Number: AC 05-150794
Expiration Date: April 30, 1990

GENERAL CONDITIONS:

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

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

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

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

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

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

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

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

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

GENERAL CONDITIONS:

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

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

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

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

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

13. This permit also constitutes:

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

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

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

GENERAL CONDITIONS:

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

c. Records of monitoring information shall include:

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

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

SPECIFIC CONDITIONS:

1. The maximum allowable VOC/solvent emissions from Building No. 59 shall be 0.50 tons per year. The projected potential acid vapor emissions are 0.1 tons per year.

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

3. Annual operation shall be 8760 hours per year.

4. Objectionable odors shall not be allowed off plant property.

SPECIFIC CONDITIONS:

4. An inspection and maintenance plan shall be submitted to the DER's Central Florida 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.

5. By March 31 of each calendar year, an annual operating report shall be submitted to the DER's Central Florida District office demonstrating compliance with the VOC/solvent emissions limit for Building No. 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.

6. 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 25;
b) the DER's Central Florida 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 Florida District office within 45 days after the last test run is completed.

7. This permit will supercede all other permits previously issued on this source/Building No. 59.

8. To obtain a permit to operate, the permittee must demonstrate compliance with the conditions of the construction permit and submit an application for an operating permit, including the application fee, along with the material balance results, compliance test results and Certificate of Completion, to the DER's Central Florida District office 90 days prior to the expiration date of the construction permit. The permittee may

PERMITEE:
Harris Semiconductor

Permit Number: AC 05-150794
Expiration Number: April 30, 1990

SPECIFIC CONDITIONS:

continue to operate in compliance with all terms of the construction permit until its expiration date in accordance with FAC Rules 17-2 and 17-4.

If the construction permit expires prior to the permittee filing an application for a permit to operate, then all activities at the project must cease pursuant to FAC Rule 17-4.

9. Building No. 59 is subject to the provisions of FAC Rules 17-2.240: Circumvention; 17-2.250: Excess Emissions; 17-4.130: Plant Operation-Problems; and, 17-4.140: Reports.

10. Any modification pursuant to FAC Rule 17-2.100(119) shall be submitted to the DER's Central Florida District office and the Bureau of Air Quality Management office for approval.

Issued this_____day of_________,
19___.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

____
Dale Twachtmann, Secretary

Palm Bay, FL
9-9-88

Purolator courier
722047855
Pkg. 1 Of

file copy

HARRIS

FS-JRK-036-89

September 9, 1988

RECEIVED
SEP 12 1988
DER
RECEIVED
SEP 12 1988
DER-BAQM

Mr. Bruce Mitchell
State of Florida
Department of Environmental Regulations
Twin Tower Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301

Subject: Technical Evaluation and Preliminary Determination AC05-147321 & AC05-150794

Dear Mr. Mitchell:

Per our conversation of August 19, 1988, we have reviewed the subject Technical Evaluation. In addition we have reviewed the methods utilized to calculate the projected air emissions from Building 54 and Building 59.

We are in agreement that the methods used to calculate the emissions should be consistent on each permit modification. As a result we have revised the calculation to established the annual emissions based on 8760 hours of production.

Please find enclosed a revised list of projected emissions from the Semiconductor facility on a by source basis. We would like these numbers incorporated in Tables 1 and 2 of the Technical Review.

If you should have any questions please call me at (407) 724-7467.

Sincerely,

James R. Kolanek

J. R. Kolanek, Manager
Environmental Services

/pgc

cc: N. A. Baldisserotto
D. R. Erdley
L. R. Hutker
R. R. Sands

copied: Bruce Mitchell
Chuck Collins, CF Dist.
CHF/BT

ADDENDUM TO BUILDING 54 & 59 PERMIT APPLICATIONS

When solvent emission limits included in the building 54 permit application were initially estimated, the building's production and nonproduction hours were taken into account, and values were based on monitoring work performed during these time intervals. The building's projected emissions were based on a an extrapolation derived from the following proportion:

$$\frac{A\ tpy}{B\ tpy} = \frac{C\ tpy}{D\ tpy}$$

where:
- A = maximum building emissions determined by EPA method 25-A monitoring.
- B = maximum Semiconductor site emissions determined by EPA method 25-A monitoring.
- C = building's projected emissions.
- D = site's emission limit as discussed in the meeting between Semiconductor and FDER in February of 1988.

However, a problem arises with this method due to the potential for fluctuating production activity, as was the case when the methodology had to be altered to accommodate the increased production activity when applying for building 59's air permit. In order to establish consistency in estimating VOC emissions from Semiconductor's buildings, releases will be calculated based on the maximum potential production schedule for each building; 24 hours a day, 365 days a year (in other words, 8760 hours a year.) The total yearly VOC emissions listed in attachment represent maximum yearly atmospheric loading, which equates to 152.50 tons/yr.

Total projected VOC emissions for building 54 is 95.65 tons/year as opposed to 94.34 tons/year initially calculated and submitted in the application.

Total projected VOC emissions for building 59 is 0.50 tons/year instead of 0.57 tons/year initially extrapolated for this building.

Assumptions previously stated remain consistent:

-Emission values for F54S02 & F54S04 are assumed to be equal to F54S01 & F54S03, respectively. This is because each pair handle exhaust from a common duct.
-VOC values refer to all organic emissions including organic solvents.
-All data is corrected for 2 ppm background concentration of VOC's that is present in the ambient air.
-The F.I.D. acumulative emission figure is based on the maximum concentration observed during the monitoring timeframe.

SOLVENT SCRUBBERS--HARRIS SEMICONDUCTOR

BLDG	SCRUBBER#	PRODUCTION SCHEDULE (hrs/yr)	TOTAL YEARLY VOC EMISSIONS (ton/yr)	total by bldg
04	F04S01	8760	0.26	10.96
04	F04S02	8760	min	
04	F04S03	8760	1.93	
04	F04S08	8760	8.77	
51	F51S02	8760	11.39	33.29
51	F51S03	8760	3.72	
51	F51S04	8760	1.71	
51	F51S05	8760	16.47	
54	F54S01	8760	15.24	95.65
54	F54S02	8760	15.24	
54	F54S03	8760	32.59	
54	F54S04	8760	32.59	
57	F57S01	8760	1.66	1.66
58	F58S01	8760	2.82	3.24
58	F58S02	8760	0.41	
59	F59S03	8760	0.50	0.50
60	F60S01	8760	min	min
61	F61S01	8760	0.25	0.25
62	F62S02	8760	0.83	0.83
63	F63S02	8760	2.02	6.14
63	F63S03	8760	4.12	
			152.50	

* When multiple testing was performed, values are indicative of highest VOC concentrations observed.

Purolator #7220506?3
8-9-84

file copy

HARRIS

August 8, 1988

RECEIVED

AUG 10 1988

DER-BAQM

Mr. Bruce Mitchell
State of Florida
Department of Environmental Regulation
Twin Tower Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Subject: Harris Semiconductor - Building 54 Permit Consolidation - AC05-147321

Dear Mr. Mitchell:

This letter is submitted to follow-up on our telephone conversation of July 27, 1988 concerning the subject air permit. I have also recently talked to John Turner about some of these issues.

Below, I have attempted to segregate the issues into distinct categories:

1.) The status of the original applications for the ten operation permits. The specific applications referenced were as follows: AC05-104512, AC05-104513, AC05-104515, AC05-104519, AC05-104521, AC05-104522, AC05-104523, AC05-104524, AC05-104525 and AC05-104527. Mr. Turner indicated that submittal of a Waiver of the ninety (90) time limit for review of these applications would resolve this issue. These forms have been sent to Mr. Collins of the Orlando Office under separate cover. A copy is enclosed for your information.

2.) An unanswered letter from A. T. Sawicki, dated Oct. 13, 1987. We are in receipt of a letter from A. T. Sawicki dated October 29, 1987. We assume that this is the letter to which you were referring. The items raised in this letter were addressed in detail in my letter of October 5, 1987, which was submitted in response to Mr. Sawicki's letter of August 19, 1987. In fact, Mr. Sawicki's letter of October 29, 1987 was nothing more than a restatement of the earlier letter. In addition, many of these issues were also fully addressed during our February 17, 1988 meeting in Orlando. For your information, I have included a copy of my October 5, 1987 letter. The 1987 solvent balance was submitted on June 29, 1988. If there are any other outstanding issues of which we are unaware, please call me.

3.) Annual Chemical Inventory. During our conversation, you expressed concern that the 1987 solvent material balance did not account for 84,000 out of 957,000 pounds of solvents which were projected to have been purchased during 1987. As I indicated, this amounted to less than ten (10) percent of the total VOC/solvents projected to have been used during that year. During our February, 1988 meeting, we indicated that we anticipated the report would have a range of error of approximately twenty (20) percent. A significant effort was put forth to lower the range of error to this level.

BEST AVAILABLE COPY

Purolator courier®

Purolator Account No. to be billed: 53-94-27799
Date: 8/9/88

7220506

Service · Check One · See reverse side for detail

- PuroLetter Overnight Letter
- ✓ PuroPak Overnight Pack
- Priority National Overnight Service Nationwide
- ✓ Priority Regional Overnight Service
- Standard 2-day Service

Optional Service

- Saturday Delvy. Extra Charge
- Hold for Pick-up

Payment

- ✓ Sender Prepaid
- Third Party
- Collect
- Cash/Check

From Sender's Name: T. K. Kilandh
Sender's Area Code/Phone Number: (407) 724-7467
Company Name: HARRIS SEMICONDUCTOR
Street Address: PALM BAY RD BLDG
City: PALM BAY
State: FL
Zip Code - Required: 32905
Sender's Signature: Thomas K. Kilandh
P.O. or Reference Number:

To Recipient's Name: BRUCE MITCHELL
Recipient's Area Code/Phone Number: 904 / 488
Company Name: FDER
Dept./Suite:
Street Address (P.O. Box numbers not deliverable): 2600 BLAIR STONE RD
City: TALLAHASSEE
State: FL
Zip Code - Required: 323

Third Party Billing Name/Address

MS 58-55

3-2710

Weight	L	W	H
1			

Tariff	Rate Item	SM	Origin Airport	Destination Airport
			MLB	

Advance	Valuation	Code	Amount	Code	Amount	Total Charge

Special Charge	DB	Route	Courier Guard Initial	S.S. Last 4 digits

PURCLATOR USE ONLY

BL-3 Rev. 4-86

RECIPIENT'S COPY

The 957,000 pound figure cited above is based, in part, on information contained in material safety data sheets ("MSDS") and other sources of data from the manufacturers and vendors of the chemicals. Much of this information was not precise; ranges of concentration were frequently given. Rather than manipulate the chemical inventory figures to reflect an exact balance, we used average values. If the concentration of VOC/solvents was actually less than these values some or all of the 84,000 pound deficit would vanish.

In addition, during our meeting we indicated that our shipping documents and other records revealed that over 783,000 pounds of solvent bearing wastes were shipped off-site to treatment and disposal facilities. As with the incoming chemicals, we took a conservative approach and used a figure of 560,000 pounds to represent the total amount of VOC/solvents shipped off-site. The 560,000 pound figure was derived from waste stream profile information and random sampling activities. As with the problem with incoming chemicals, there is some error inherent in this method of calculation since there is not precise information on every shipment of waste materials containing VOC/solvents. The actual amount of VOC/solvents shipped off-site could be much higher. This too would reduce the deficit. Significantly increasing sampling activities would increase the accuracy of this data. However, at an annual cost of many thousands of dollars, Harris Semiconductor currently analyzes more of its waste shipments than current laws require or are generally sampled by comparable facilities. At this time, given the limits of current analytical technology, significantly increasing these sampling activities would be prohibitively expensive.

The main point of this discussion is that regardless of their frequency or whether they are by building or the facility at large, because of current data limitations concerning the precise concentrations of VOC/solvents, a range of error of, at least, ten (10) percent will be present when mass balances are conducted.

4.) <u>The most appropriate and accurate means of determining compliance with emission limitations was the last topic of our conversation</u>. In addition to the reasons already noted, a mass balance system is not the most effective or accurate means of determining compliance because such a system will be fraught with human error. At Harris Semiconductor, VOC/solvents are utilized at several hundred work stations scattered throughout the facility which manufacture many different types of integrated circuits. Research and development activities are also conducted in some areas. Over the course of any monthly period, perhaps as many as a thousand people work in these areas. Thousands of different chemicals may be used during the course of any given year. To have a mass balance system which is precise to the point of having a range of error of less than ten (10) percent is not currently possible. Because of the type of manufacturing, the amount of people involved and the other problems previously noted, we cannot guarantee the accuracy of a mass balance system regardless of how frequently it is conducted and whether it is by building or the entire facility.

Instead, we are proposing, as we have in the past, annual stack monitoring of emission points utilizing EPA approved Method 25A to determine compliance with the emission limitations. Using the analytical technology to confirm compliance will significantly reduce the impact of human error. In addition, DER personnel can monitor the sampling activities to insure the samples are taken during periods of significant manufacturing activity to confirm that the analytical values are truly representative of worse case emission levels. It should be noted that it was this technology which first identified the true emission rates for the sources at the facility. Harris Semiconductor will, of course, continue to honor its previous commitments and submit the chemical inventory report on an annual basis.

As per your request, Harris would like to propose the following wording for the special conditions addressing emission limitation compliance and related issues.

A.) Compliance with the VOC/solvent emissions limits for the system shall be determined through sampling and analysis. Once a year, a sample shall be taken and analyzed for each stack, utilizing EPA Method 25A. DER shall receive reasonable prior notice of any scheduled sampling event to enable agency review and participation. An annual report, summarizing the sampling results, shall be due to DER's Central Florida District Office on or before March 1st of each year.

B.) A report shall be submitted, annually on or before July 1st of each year, to DER's Central Florida District Office. The report shall adress the entire Harris Semiconductor facility and reflect the amounts of all VOC/solvents purchased, reclaimed or disposed of during the previous calendar year.

We trust that the above discussion and enclosed information addresses all of the issues raised in our recent conversation. Once again, we would like to extend an invitation to you and other appropriate DER personnel to visit our facility to better understand the nature of our operations.

Harris Semiconductor appreciates your cooperation in this matter, and we look forward to dealing with you in the future. If you should have any questions or would like to discuss this matter further, please call me at (407)724-7467.

Sincerely,
HARRIS SEMICONDUCTOR

James R. Kolanek

James R. Kolanek
Manager, Environmental Engineering

cc: C. Collins
A.T. Sawicki

E/607/88

copied: Bruce Mitchell
CHF/BT 8-11-88

HARRIS

August 8, 1988

Mr. Charles M. Collins
State of Florida
Department of Environmental Regulation
3319 Maguire Boulevard
Suite 232
Orlando, FL 32803

SUBJECT: HARRIS SEMICONDUCTOR - CONSTRUCTION AIR PERMITS

Dear Mr. Collins:

This letter is in response to recent telephone conversations that I have had with John Turner of the DER, Orlando office and Bruce Mitchell of the DER, Tallahassee office, on the following applications for air operating permits:

AC05-104512
AC05-104513
AC05-104515
AC05-104519
AC05-104521
AC05-104522
AC05-104523
AC05-104524
AC05-104525
AC05-104527

Enclosed please find "Waiver of 90 Day Time Limit" forms on the referenced applications. It is our understanding from my conversations with Mr. Turner and Mr. Mitchell that these permits still appear on the DER's active time schedule. It is also our understanding that submittal of the enclosed forms will put these permits on hold and allow Harris to continue on with the objectives which were agreed upon at our meeting of February 17, 1988. Those objectives were as follows:

1. Harris would prepare and submit applications for air permits; which would consolidate the existing permits on a by-building basis.

2. Harris would continue to evaluate economically feasible methods of reducing current levels of air emissions.

3. Harris would submit the following information to the Department for their information.

   a). Industrial Hygiene Data on a by-building basis
   b). Air Dispersion Model Information
   c). Cogeneration schedule
   d). 1987 Solvent Material Balance

The information identified in item three above was submitted to the Department on June 29, 1988. Preparation of the consolidated permit application is proceeding on schedule with two of the applications already submitted.

If you should have any questions about the enclosed information, please contact me at (407) 724-7467.

Sincerely,
HARRIS SEMICONDUCTOR

James R. Kolanek

James R. Kolanek
Manager, Environmental Engineering

cc: John Turner, Orlando
Bruce Mitchell, Tallahassee

/enclosure

WAIVER OF 90 DAY TIME LIMIT

UNDER SECTION 120.60(2), FLORIDA STATUTES

License (Permit, Certification) Application No. AO 05-104512
Applicant's Name: HARRIS SEMICONDUCTOR

The undersigned has read Section 120.60(2), Florida Statutes, and fully understands the Applicant's rights under that section.

With regard to the above referenced license (permit, certification) application, the Applicant hereby with full knowledge and understanding of (his) (her) (its) rights under Section 120.60(2), Florida Statutes, waives the right under Section 120.60(2), Florida Statutes, to have the application approved or denied by the State of Florida Department of Environmental Regulation within the 90 day time period prescribed in Section 120.60(2), Florida Statutes. Said waiver is made freely and voluntarily by the Applicant, is in (his) (her) (its) self-interest, and without any pressure or coercion by anyone employed by the State of Florida Department of Environmental Regulation.

This waiver shall expire on the 01 day of NOV. 1988.

The undersigned is authorized to make this waiver on behalf of the applicant.

James R. Kolanek
Signature

James R. Kolanek
Name of Signee

Sworn to and subscribed before me this ____ day of ____________ 19____.

8/8/88
Date

Section 120.60, Florida Statutes

(2) When an application for a license is made as required by law, the agency shall conduct the proceedings required with reasonable dispatch and with due regard to the rights and privileges of all affected parties or aggrieved persons. Within 30 days after receipt of an application for a license, the agency shall examine the application, notify the applicant of any apparent errors or omissions, and request any additional information the agency is permitted by law to require. Failure to correct an error or omission or to supply additional information shall not be grounds for denial of the license unless the agency timely notified the applicant within this 30 day period. The agency shall notify the applicant if the activity for which he seeks a license is exempt from the licensing requirement and return any tendered application fee within 30 days after receipt of the original application or within 10 days after receipt of the timely requested additional information or correction of errors or omissions. Every application for license shall be approved or denied within 90 days after receipt of the original application or receipt of the timely requested additional information or correction of errors or omissions. Any application for a license not approved or denied within the 90-day period or within 15 days after conclusion of a public hearing held on the application, whichever is latest, shall be deemed approved and, subject to the satisfactory completion of an examination, if required as a prerequisite to licensure, [2](the license) shall be issued. The Public Service Commission, when issuing a license, and any other agency, if specifically exempted by law, shall be exempt from the time limitations within this subsection. Each agency, upon issuing or denying a license, shall state with particularity the grounds or basis for the issuance or denial of same, except where issuance is a ministerial act. On denial of a license application on which there has been no hearing, the denying agency shall inform the applicant of any right to a hearing pursuant to s. 120.57.

WAIVER OF 90 DAY TIME LIMIT

UNDER SECTION 120.60(2), FLORIDA STATUTES

License (Permit, Certification) Application No. AO 05-104513
Applicant's Name: HARRIS SEMICONDUCTOR

The undersigned has read Section 120.60(2), Florida Statutes, and fully understands the Applicant's rights under that section.

With regard to the above referenced license (permit, certification) application, the Applicant hereby with full knowledge and understanding of (his) (her) (its) rights under Section 120.60(2), Florida Statutes, waives the right under Section 120.60(2), Florida Statutes, to have the application approved or denied by the State of Florida Department of Environmental Regulation within the 90 day time period prescribed in Section 120.60(2), Florida Statutes. Said waiver is made freely and voluntarily by the Applicant, is in (his) (her) (its) self-interest, and without any pressure or coercion by anyone employed by the State of Florida Department of Environmental Regulation.

This waiver shall expire on the 01 day of NOV 1988.

The undersigned is authorized to make this waiver on behalf of the applicant.

James R. Kolanek
Signature

James R. Kolanek
Name of Signee

Sworn to and subscribed
before me this _____ day
of ____________ 19____.

8/8/88
Date

Section 120.60, Florida Statutes

(2) When an application for a license is made as required by law, the agency shall conduct the proceedings required with reasonable dispatch and with due regard to the rights and privileges of all affected parties or aggrieved persons. Within 30 days after receipt of an application for a license, the agency shall examine the application, notify the applicant of any apparent errors or omissions, and request any additional information the agency is permitted by law to require. Failure to correct an error or omission or to supply additional information shall not be grounds for denial of the license unless the agency timely notified the applicant within this 30 day period. The agency shall notify the applicant if the activity for which he seeks a license is exempt from the licensing requirement and return any tendered application fee within 30 days after receipt of the original application or within 10 days after receipt of the timely requested additional information or correction of errors or omissions. Every application for license shall be approved or denied within 90 days after receipt of the original application or receipt of the timely requested additional information or correction of errors or omissions. Any application for a license not approved or denied within the 90-day period or within 15 days after conclusion of a public hearing held on the application, whichever is latest, shall be deemed approved and, subject to the satisfactory completion of an examination, if required as a prerequisite to licensure, [2](the license) shall be issued. The Public Service Commission, when issuing a license, and any other agency, if specifically exempted by law, shall be exempt from the time limitations within this subsection. Each agency, upon issuing or denying a license, shall state with particularity the grounds or basis for the issuance or denial of same, except where issuance is a ministerial act. On denial of a license application on which there has been no hearing, the denying agency shall inform the applicant of any right to a hearing pursuant to s. 120.57.

WAIVER OF 90 DAY TIME LIMIT

UNDER SECTION 120.60(2), FLORIDA STATUTES

License (Permit, Certification) Application No. AO 05-104515
Applicant's Name: HARRIS SEMICONDUCTOR

The undersigned has read Section 120.60(2), Florida Statutes, and fully understands the Applicant's rights under that section.

With regard to the above referenced license (permit, certification) application, the Applicant hereby with full knowledge and understanding of (his) (her) (its) rights under Section 120.60(2), Florida Statutes, waives the right under Section 120.60(2), Florida Statutes, to have the application approved or denied by the State of Florida Department of Environmental Regulation within the 90 day time period prescribed in Section 120.60(2), Florida Statutes. Said waiver is made freely and voluntarily by the Applicant, is in (his) (her) (its) self-interest, and without any pressure or coercion by anyone employed by the State of Florida Department of Environmental Regulation.

This waiver shall expire on the 01 day of NOV 1988.

The undersigned is authorized to make this waiver on behalf of the applicant.

James R. Kolanek
Signature

James R. Kolanek
Name of Signee

Sworn to and subscribed before me this _____ day of __________ 19____.

8/8/88
Date

Section 120.60, Florida Statutes

(2) When an application for a license is made as required by law, the agency shall conduct the proceedings required with reasonable dispatch and with due regard to the rights and privileges of all affected parties or aggrieved persons. Within 30 days after receipt of an application for a license, the agency shall examine the application, notify the applicant of any apparent errors or omissions, and request any additional information the agency is permitted by law to require. Failure to correct an error or omission or to supply additional information shall not be grounds for denial of the license unless the agency timely notified the applicant within this 30 day period. The agency shall notify the applicant if the activity for which he seeks a license is exempt from the licensing requirement and return any tendered application fee within 30 days after receipt of the original application or within 10 days after receipt of the timely requested additional information or correction of errors or omissions. Every application for license shall be approved or denied within 90 days after receipt of the original application or receipt of the timely requested additional information or correction of errors or omissions. Any application for a license not approved or denied within the 90-day period or within 15 days after conclusion of a public hearing held on the application, whichever is latest, shall be deemed approved and, subject to the satisfactory completion of an examination, if required as a prerequisite to licensure, [2](the license) shall be issued. The Public Service Commission, when issuing a license, and any other agency, if specifically exempted by law, shall be exempt from the time limitations within this subsection. Each agency, upon issuing or denying a license, shall state with particularity the grounds or basis for the issuance or denial of same, except where issuance is a ministerial act. On denial of a license application on which there has been no hearing, the denying agency shall inform the applicant of any right to a hearing pursuant to s. 120.57.

WAIVER OF 90 DAY TIME LIMIT

UNDER SECTION 120.60(2), FLORIDA STATUTES

License (Permit, Certification) Application No. AO -5-104519
Applicant's Name: HARRIS SEMICONDUCTOR

The undersigned has read Section 120.60(2), Florida Statutes, and fully understands the Applicant's rights under that section.

With regard to the above referenced license (permit, certification) application, the Applicant hereby with full knowledge and understanding of (his) (her) (its) rights under Section 120.60(2), Florida Statutes, waives the right under Section 120.60(2), Florida Statutes, to have the application approved or denied by the State of Florida Department of Environmental Regulation within the 90 day time period prescribed in Section 120.60(2), Florida Statutes. Said waiver is made freely and voluntarily by the Applicant, is in (his) (her) (its) self-interest, and without any pressure or coercion by anyone employed by the State of Florida Department of Environmental Regulation.

This waiver shall expire on the 01 day of NOV 1988.

The undersigned is authorized to make this waiver on behalf of the applicant.

James R. Kolanek
Signature

James R. Kolanek
Name of Signee

8/8/88
Date

Sworn to and subscribed before me this ____ day of __________ 19___.

Section 120.60, Florida Statutes

(2) When an application for a license is made as required by law, the agency shall conduct the proceedings required with reasonable dispatch and with due regard to the rights and privileges of all affected parties or aggrieved persons. Within 30 days after receipt of an application for a license, the agency shall examine the application, notify the applicant of any apparent errors or omissions, and request any additional information the agency is permitted by law to require. Failure to correct an error or omission or to supply additional information shall not be grounds for denial of the license unless the agency timely notified the applicant within this 30 day period. The agency shall notify the applicant if the activity for which he seeks a license is exempt from the licensing requirement and return any tendered application fee within 30 days after receipt of the original application or within 10 days after receipt of the timely requested additional information or correction of errors or omissions. Every application for license shall be approved or denied within 90 days after receipt of the original application or receipt of the timely requested additional information or correction of errors or omissions. Any application for a license not approved or denied within the 90-day period or within 15 days after conclusion of a public hearing held on the application, whichever is latest, shall be deemed approved and, subject to the satisfactory completion of an examination, if required as a prerequisite to licensure, [2](the license) shall be issued. The Public Service Commission, when issuing a license, and any other agency, if specifically exempted by law, shall be exempt from the time limitations within this subsection. Each agency, upon issuing or denying a license, shall state with particularity the grounds or basis for the issuance or denial of same, except where issuance is a ministerial act. On denial of a license application on which there has been no hearing, the denying agency shall inform the applicant of any right to a hearing pursuant to s. 120.57.

WAIVER OF 90 DAY TIME LIMIT

UNDER SECTION 120.60(2), FLORIDA STATUTES

License (Permit, Certification) Application No. AO 05-104521
Applicant's Name: HARRIS SEMICONDUCTOR

The undersigned has read Section 120.60(2), Florida Statutes, and fully understands the Applicant's rights under that section.

With regard to the above referenced license (permit, certification) application, the Applicant hereby with full knowledge and understanding of (his) (her) (its) rights under Section 120.60(2), Florida Statutes, waives the right under Section 120.60(2), Florida Statutes, to have the application approved or denied by the State of Florida Department of Environmental Regulation within the 90 day time period prescribed in Section 120.60(2), Florida Statutes. Said waiver is made freely and voluntarily by the Applicant, is in (his) (her) (its) self-interest, and without any pressure or coercion by anyone employed by the State of Florida Department of Environmental Regulation.

This waiver shall expire on the 01 day of NOV 19 88.

The undersigned is authorized to make this waiver on behalf of the applicant.

James R. Kolanek

Signature

James R. Kolanek

Name of Signee

Sworn to and subscribed before me this ____ day of __________ 19____.

8/8/88

Date

Section 120.60, Florida Statutes

(2) When an application for a license is made as required by law, the agency shall conduct the proceedings required with reasonable dispatch and with due regard to the rights and privileges of all affected parties or aggrieved persons. Within 30 days after receipt of an application for a license, the agency shall examine the application, notify the applicant of any apparent errors or omissions, and request any additional information the agency is permitted by law to require. Failure to correct an error or omission or to supply additional information shall not be grounds for denial of the license unless the agency timely notified the applicant within this 30 day period. The agency shall notify the applicant if the activity for which he seeks a license is exempt from the licensing requirement and return any tendered application fee within 30 days after receipt of the original application or within 10 days after receipt of the timely requested additional information or correction of errors or omissions. Every application for license shall be approved or denied within 90 days after receipt of the original application or receipt of the timely requested additional information or correction of errors or omissions. Any application for a license not approved or denied within the 90-day period or within 15 days after conclusion of a public hearing held on the application, whichever is latest, shall be deemed approved and, subject to the satisfactory completion of an examination, if required as a prerequisite to licensure, [2](the license) shall be issued. The Public Service Commission, when issuing a license, and any other agency, if specifically exempted by law, shall be exempt from the time limitations within this subsection. Each agency, upon issuing or denying a license, shall state with particularity the grounds or basis for the issuance or denial of same, except where issuance is a ministerial act. On denial of a license application on which there has been no hearing, the denying agency shall inform the applicant of any right to a hearing pursuant to s. 120.57.

WAIVER OF 90 DAY TIME LIMIT

UNDER SECTION 120.60(2), FLORIDA STATUTES

License (Permit, Certification) Application No. AO 05-104522
Applicant's Name: HARRIS SEMICONDUCTOR

The undersigned has read Section 120.60(2), Florida Statutes, and fully understands the Applicant's rights under that section.

With regard to the above referenced license (permit, certification) application, the Applicant hereby with full knowledge and understanding of (his) (her) (its) rights under Section 120.60(2), Florida Statutes, waives the right under Section 120.60(2), Florida Statutes, to have the application approved or denied by the State of Florida Department of Environmental Regulation within the 90 day time period prescribed in Section 120.60(2), Florida Statutes. Said waiver is made freely and voluntarily by the Applicant, is in (his) (her) (its) self-interest, and without any pressure or coercion by anyone employed by the State of Florida Department of Environmental Regulation.

This waiver shall expire on the 01 day of NOV 1988.

The undersigned is authorized to make this waiver on behalf of the applicant.

James R. Kolanek
Signature

James R. Kolanek
Name of Signee

Sworn to and subscribed before me this ____ day of ____________ 19____.

8/8/88
Date

Section 120.60, Florida Statutes

(2) When an application for a license is made as required by law, the agency shall conduct the proceedings required with reasonable dispatch and with due regard to the rights and privileges of all affected parties or aggrieved persons. Within 30 days after receipt of an application for a license, the agency shall examine the application, notify the applicant of any apparent errors or omissions, and request any additional information the agency is permitted by law to require. Failure to correct an error or omission or to supply additional information shall not be grounds for denial of the license unless the agency timely notified the applicant within this 30 day period. The agency shall notify the applicant if the activity for which he seeks a license is exempt from the licensing requirement and return any tendered application fee within 30 days after receipt of the original application or within 10 days after receipt of the timely requested additional information or correction of errors or omissions. Every application for license shall be approved or denied within 90 days after receipt of the original application or receipt of the timely requested additional information or correction of errors or omissions. Any application for a license not approved or denied within the 90-day period or within 15 days after conclusion of a public hearing held on the application, whichever is latest, shall be deemed approved and, subject to the satisfactory completion of an examination, if required as a prerequisite to licensure, [2](the license) shall be issued. The Public Service Commission, when issuing a license, and any other agency, if specifically exempted by law, shall be exempt from the time limitations within this subsection. Each agency, upon issuing or denying a license, shall state with particularity the grounds or basis for the issuance or denial of same, except where issuance is a ministerial act. On denial of a license application on which there has been no hearing, the denying agency shall inform the applicant of any right to a hearing pursuant to s. 120.57.

WAIVER OF 90 DAY TIME LIMIT

UNDER SECTION 120.60(2), FLORIDA STATUTES

License (Permit, Certification) Application No. A0 05-104523
Applicant's Name: HARRIS SEMICONDUCTOR

The undersigned has read Section 120.60(2), Florida Statutes, and fully understands the Applicant's rights under that section.

With regard to the above referenced license (permit, certification) application, the Applicant hereby with full knowledge and understanding of (his) (her) (its) rights under Section 120.60(2), Florida Statutes, waives the right under Section 120.60(2), Florida Statutes, to have the application approved or denied by the State of Florida Department of Environmental Regulation within the 90 day time period prescribed in Section 120.60(2), Florida Statutes. Said waiver is made freely and voluntarily by the Applicant, is in (his) (her) (its) self-interest, and without any pressure or coercion by anyone employed by the State of Florida Department of Environmental Regulation.

This waiver shall expire on the 01 day of NOV 1988.

The undersigned is authorized to make this waiver on behalf of the applicant.

James R. Kolanek
Signature

James R. Kolanek
Name of Signee

Sworn to and subscribed before me this _____ day of __________ 19____.

8/8/88
Date

Section 120.60, Florida Statutes

(2) When an application for a license is made as required by law, the agency shall conduct the proceedings required with reasonable dispatch and with due regard to the rights and privileges of all affected parties or aggrieved persons. Within 30 days after receipt of an application for a license, the agency shall examine the application, notify the applicant of any apparent errors or omissions, and request any additional information the agency is permitted by law to require. Failure to correct an error or omission or to supply additional information shall not be grounds for denial of the license unless the agency timely notified the applicant within this 30 day period. The agency shall notify the applicant if the activity for which he seeks a license is exempt from the licensing requirement and return any tendered application fee within 30 days after receipt of the original application or within 10 days after receipt of the timely requested additional information or correction of errors or omissions. Every application for license shall be approved or denied within 90 days after receipt of the original application or receipt of the timely requested additional information or correction of errors or omissions. Any application for a license not approved or denied within the 90-day period or within 15 days after conclusion of a public hearing held on the application, whichever is latest, shall be deemed approved and, subject to the satisfactory completion of an examination, if required as a prerequisite to licensure, [2](the license) shall be issued. The Public Service Commission, when issuing a license, and any other agency, if specifically exempted by law, shall be exempt from the time limitations within this subsection. Each agency, upon issuing or denying a license, shall state with particularity the grounds or basis for the issuance or denial of same, except where issuance is a ministerial act. On denial of a license application on which there has been no hearing, the denying agency shall inform the applicant of any right to a hearing pursuant to s. 120.57.

WAIVER OF 90 DAY TIME LIMIT

UNDER SECTION 120.60(2), FLORIDA STATUTES

License (Permit, Certification) Application No. AO 05-105524
Applicant's Name: HARRIS SEMICONDUCTOR

The undersigned has read Section 120.60(2), Florida Statutes, and fully understands the Applicant's rights under that section.

With regard to the above referenced license (permit, certification) application, the Applicant hereby with full knowledge and understanding of (his) (her) (its) rights under Section 120.60(2), Florida Statutes, waives the right under Section 120.60(2), Florida Statutes, to have the application approved or denied by the State of Florida Department of Environmental Regulation within the 90 day time period prescribed in Section 120.60(2), Florida Statutes. Said waiver is made freely and voluntarily by the Applicant, is in (his) (her) (its) self-interest, and without any pressure or coercion by anyone employed by the State of Florida Department of Environmental Regulation.

This waiver shall expire on the 01 day of NOV 1988.

The undersigned is authorized to make this waiver on behalf of the applicant.

James R. Kolanek

Signature

James R. Kolanek

Name of Signee

8/8/88

Date

Sworn to and subscribed
before me this _____ day
of ___________ 19____.

Section 120.60, Florida Statutes

(2) When an application for a license is made as required by law, the agency shall conduct the proceedings required with reasonable dispatch and with due regard to the rights and privileges of all affected parties or aggrieved persons. Within 30 days after receipt of an application for a license, the agency shall examine the application, notify the applicant of any apparent errors or omissions, and request any additional information the agency is permitted by law to require. Failure to correct an error or omission or to supply additional information shall not be grounds for denial of the license unless the agency timely notified the applicant within this 30 day period. The agency shall notify the applicant if the activity for which he seeks a license is exempt from the licensing requirement and return any tendered application fee within 30 days after receipt of the original application or within 10 days after receipt of the timely requested additional information or correction of errors or omissions. Every application for license shall be approved or denied within 90 days after receipt of the original application or receipt of the timely requested additional information or correction of errors or omissions. Any application for a license not approved or denied within the 90-day period or within 15 days after conclusion of a public hearing held on the application, whichever is latest, shall be deemed approved and, subject to the satisfactory completion of an examination, if required as a prerequisite to licensure, [2](the license) shall be issued. The Public Service Commission, when issuing a license, and any other agency, if specifically exempted by law, shall be exempt from the time limitations within this subsection. Each agency, upon issuing or denying a license, shall state with particularity the grounds or basis for the issuance or denial of same, except where issuance is a ministerial act. On denial of a license application on which there has been no hearing, the denying agency shall inform the applicant of any right to a hearing pursuant to s. 120.57.

WAIVER OF 90 DAY TIME LIMIT

UNDER SECTION 120.60(2), FLORIDA STATUTES

License (Permit, Certification) Application No. AO 05104525
Applicant's Name: HARRIS SEMICONDUCTOR

The undersigned has read Section 120.60(2), Florida Statutes, and fully understands the Applicant's rights under that section.

With regard to the above referenced license (permit, certification) application, the Applicant hereby with full knowledge and understanding of (his) (her) (its) rights under Section 120.60(2), Florida Statutes, waives the right under Section 120.60(2), Florida Statutes, to have the application approved or denied by the State of Florida Department of Environmental Regulation within the 90 day time period prescribed in Section 120.60(2), Florida Statutes. Said waiver is made freely and voluntarily by the Applicant, is in (his) (her) (its) self-interest, and without any pressure or coercion by anyone employed by the State of Florida Department of Environmental Regulation.

This waiver shall expire on the 01 day of NOV 19 88.

The undersigned is authorized to make this waiver on behalf of the applicant.

James R. Kolanek
Signature

James R. Kolanek
Name of Signee

Sworn to and subscribed before me this _____ day of __________ 19____.

8/8/88
Date

Section 120.60, Florida Statutes

(2) When an application for a license is made as required by law, the agency shall conduct the proceedings required with reasonable dispatch and with due regard to the rights and privileges of all affected parties or aggrieved persons. Within 30 days after receipt of an application for a license, the agency shall examine the application, notify the applicant of any apparent errors or omissions, and request any additional information the agency is permitted by law to require. Failure to correct an error or omission or to supply additional information shall not be grounds for denial of the license unless the agency timely notified the applicant within this 30 day period. The agency shall notify the applicant if the activity for which he seeks a license is exempt from the licensing requirement and return any tendered application fee within 30 days after receipt of the original application or within 10 days after receipt of the timely requested additional information or correction of errors or omissions. Every application for license shall be approved or denied within 90 days after receipt of the original application or receipt of the timely requested additional information or correction of errors or omissions. Any application for a license not approved or denied within the 90-day period or within 15 days after conclusion of a public hearing held on the application, whichever is latest, shall be deemed approved and, subject to the satisfactory completion of an examination, if required as a prerequisite to licensure, [2](the license) shall be issued. The Public Service Commission, when issuing a license, and any other agency, if specifically exempted by law, shall be exempt from the time limitations within this subsection. Each agency, upon issuing or denying a license, shall state with particularity the grounds or basis for the issuance or denial of same, except where issuance is a ministerial act. On denial of a license application on which there has been no hearing, the denying agency shall inform the applicant of any right to a hearing pursuant to s. 120.57.

WAIVER OF 90 DAY TIME LIMIT

UNDER SECTION 120.60(2), FLORIDA STATUTES

License (Permit, Certification) Application No. AC 05-104527
Applicant's Name: HARRIS SEMICONDUCTOR

The undersigned has read Section 120.60(2), Florida Statutes, and fully understands the Applicant's rights under that section.

With regard to the above referenced license (permit, certification) application, the Applicant hereby with full knowledge and understanding of (his) (her) (its) rights under Section 120.60(2), Florida Statutes, waives the right under Section 120.60(2), Florida Statutes, to have the application approved or denied by the State of Florida Department of Environmental Regulation within the 90 day time period prescribed in Section 120.60(2), Florida Statutes. Said waiver is made freely and voluntarily by the Applicant, is in (his) (her) (its) self-interest, and without any pressure or coercion by anyone employed by the State of Florida Department of Environmental Regulation.

This waiver shall expire on the 01 day of NOV 1988.

The undersigned is authorized to make this waiver on behalf of the applicant.

James R. Kolanek
Signature

James R. Kolanek
Name of Signee

Sworn to and subscribed before me this ____ day of __________ 19____.

8/8/88
Date

Section 120.60, Florida Statutes

(2) When an application for a license is made as required by law, the agency shall conduct the proceedings required with reasonable dispatch and with due regard to the rights and privileges of all affected parties or aggrieved persons. Within 30 days after receipt of an application for a license, the agency shall examine the application, notify the applicant of any apparent errors or omissions, and request any additional information the agency is permitted by law to require. Failure to correct an error or omission or to supply additional information shall not be grounds for denial of the license unless the agency timely notified the applicant within this 30 day period. The agency shall notify the applicant if the activity for which he seeks a license is exempt from the licensing requirement and return any tendered application fee within 30 days after receipt of the original application or within 10 days after receipt of the timely requested additional information or correction of errors or omissions. Every application for license shall be approved or denied within 90 days after receipt of the original application or receipt of the timely requested additional information or correction of errors or omissions. Any application for a license not approved or denied within the 90-day period or within 15 days after conclusion of a public hearing held on the application, whichever is latest, shall be deemed approved and, subject to the satisfactory completion of an examination, if required as a prerequisite to licensure, [2](the license) shall be issued. The Public Service Commission, when issuing a license, and any other agency, if specifically exempted by law, shall be exempt from the time limitations within this subsection. Each agency, upon issuing or denying a license, shall state with particularity the grounds or basis for the issuance or denial of same, except where issuance is a ministerial act. On denial of a license application on which there has been no hearing, the denying agency shall inform the applicant of any right to a hearing pursuant to s. 120.57.

Interoffice Mail
Rec'd 7.13.88

file

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

AC 05-150794

CENTRAL FLORIDA DISTRICT
3319 MAGUIRE BOULEVARD
SUITE 232
ORLANDO, FLORIDA 32803-3767

BOB MARTINEZ
GOVERNOR
DALE TWACHTMANN
SECRETARY
ALEX ALEXANDER
DISTRICT MANAGER

October 29, 1987

COMPLETENESS SUMMARY AIR POLLUTION SOURCES

SOURCE NAME: Harris Semiconductor

DATE RECEIVED: 10/9/87

DATE REVIEWED: 10/13/87

APPLICANT NAME: James Kolanek
Harris Semiconductor

REVIEWED BY: John Turner

APPLICANT ADDRESS: Post Office Box 883
Melbourne, Florida
32901-0101

11 permits (see next page)

Your application for a permit to construct/operate this referenced project has been reviewed for completeness. The following checked items are needed to complete your application.

( ) Application fee of $________. Make check payable to the Department of Environmental Regulation.

( ) Letter authorizing applicant to represent owner.

( ) 8-1/2" x 11" diagram of flow process.

( ) 8-1/2" x 11" location map.

( ) 8-1/2" x 11" plant layout sketch showing emission points.

( ) Test results showing compliance with emission limitations of the department.

( ) Air diffusion modeling results showing compliance with ambient air standards and PSD increment.

( ) Engineer's report pursuant to Florida Administrative Code Rule 17-4.21(1)(c).

( ) See comments on application attached.

(X) Other: (Any section of the application which is incomplete or lacks sufficient information to be evaluated).

DER Form 17-1.202(2), Effective Date November 30, 1982

	Bldg		Bldg		Bldg
Permit Numbers: AC05-104519	61	AC05-104521	58	AC05-104512	63
AC05-104527	58	AC05-104525	4	AC05-104513	62
AC05-104522	57	AC05-104524	4	AC05-104515	59
AC05-104523	55	AC05-108260	63		

1. Due to incomplete information, the department has not been able to adequately assess the overall facility-wide VOC emissions and usage, including the waste water treatment plant, as required in specific condition number 8 or 9 of the referenced permits. The chemical inventory report submitted January 1987 was not complete and adequate to fulfill the intent of Specific Condition No. 8 or 9 and improvements in procedures should be implemented to produce an accurate report in February 1988.

? June 29, 1988 report adequate ?

~~2. State the amount of VOC emissions from the waste water treatment plant.~~

~~3. Explain the apparent failure of the tested scrubbers to remove VOC's from the gas streams.~~ Note that the scrubber covered by permit ~~No.~~ AC05-104523 has yet to be tested and this should be ~~accomplished as soon as possible.~~

Pursuant to Section 120.60(2) Florida Statutes, the department may deny an application if the applicant, after receiving timely notice fails to correct errors, omissions or supply additional information within a reasonable period of time.

The last VOC emission test report appears to indicate at least seven and possibly eight of the eleven scrubber outlets are not in compliance with the specified emission limits. Therefore, these sources are not in compliance with the referenced permits. The report also indicates that the VOC removal efficiencies of the scrubbers is very low, being zero percent in most cases. ~~Your October 5, 1987 letter references your July 29, 1987 letter regarding the sampling schedule for the wastewater treatment plant and the scrubbers.~~ As agreed in our September 17, 1987 meeting please provide, in November 1987, a schedule of objectives and achievements of progress towards compliance with the referenced air construction permits.

If there are any questions, please call John Turner at 305/894-7555 or write to me at the above address.

Is this an issue anymore?

Sincerely,

A. T. Sawicki

A. T. Sawicki, P.E., Supervisor
Air Section

ATS/jtc

cc: Bruce Mitchell
CHF/BT

7.13.88

Is an update needed?

DEPARTMENT OF ENVIRONMENTAL REGULATION

ROUTING AND TRANSMITTAL SLIP

ROUTING AND TRANSMITTAL SLIP	ACTION NO
	ACTION DUE DATE

1. TO: (NAME, OFFICE, LOCATION) Bruce Mitchell	Initial	
	Date	
2. Bureau of Air Quality Manag.	Initial	
	Date	
3.	Initial	
	Date	
4.	Initial	
	Date	

REMARKS:

Day 30 is July 30, 1988.

RECEIVED

JUL 13 1988

DER - BAQM

INFORMATION	
	Review & Return
	Review & File
	Initial & Forward

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

FROM: John Turner

DATE 7/12/88

PHONE SC 325-1266

Purolator
6-30-88
#722046613

HARRIS

file copy

June 29, 1988

RECEIVED
JUL 1 1988
DER - BAQM

Mr. C.H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality Management
Florida Department of Environmental Regulation
Twin Towers Office Bldg.
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Subject: C.H. Fancy Letter of June 6, 1988
Building 54 - Permit Consolidation AC 05-147321

Dear Mr. Fancy:

This letter is in reply to Harris Semiconductors' consolidated permit application AC 05-147321 and your letter of June 6, 1988. Enclosed for your review is the report entitled Harris Semiconductor, 1987 Solvent Material Balance, dated June 27, 1988.

Harris believes that the enclosed report supports our previous position that the annual air emissions from the facility are within the range represented by the permit application.
It is our understand that submittal of the enclosed information provides all of the outstanding information requested by the Florida Department of Environmental Regulation.

If you should have any questions about the enclosed information, please call me at (407) 724-7467.

Sincerely,
HARRIS SEMICONDUCTOR

James R. Kolanek

James R. Kolanek
Manager, Environmental Services

c.c. A.T. Sawicki, FDER Orlando
Bruce Mitchell
CHF/BT

BEST AVAILABLE COPY

Purolator courier®

Purolator Account No. to be billed: 13-01-27795

Date: 1-30-88

722046613

Service · Check One · See reverse side for detail

- PuroLetter Overnight Letter
- PuroPak Overnight Pack (checked)
- Priority National Overnight Service Nationwide
- Priority Regional Overnight Service (checked)
- Standard 2-day Service

Optional Service: Saturday Delvy. Extra Charge · Hold for Pick-up

Payment: Sender Prepaid (checked) · Third Party · Collect · Cash/Check

From	
Sender's Name	R. K. KANEK
Sender's Area Code/Phone Number	(407) 721 7467
Company Name	[illegible]RIS SEMICONDUCTOR
Street Address	[illegible] BAY RD BLDG
City	[illegible] BAY
State	FL
Zip Code - Required	32905
Sender's Signature	[illegible]
P.O. or Reference Number	

To	
Recipient's Name	C.H. FANCY
Recipient's Area Code/Phone Number	(904) 488-[illegible]
Company Name	Florida DER
Dept./Suite	
Street Address (P.O. Box numbers not deliverable)	2600 Blair Stone Rd.
City	Tallahassee
State	Fl
Zip Code - Required	32399

Third Party Billing Name/Address

MS/58-055

2-2710

Tariff	Rate Item	SM	Origin Airport	Destination Airport
			MLB	TLH

Advance	Valuation	Code	Amount	Code	Amount	Total Charge

Special Charges	DB	Route	Courier Guard Initial	S.S. - Last 4 digits

Weight	L	W	H
1			

PURALATOR USE ONLY

BL-3 Rev. 4-86

RECIPIENT'S COPY

RECEIVED
JUL 1 1988
DER-BAQM

HARRIS SEMICONDUCTOR

1987 SOLVENT MATERIAL BALANCE

JUNE 27, 1988

TABLE OF CONTENTS

Introduction:

This report addresses the Harris Semiconductor facility and reflects the amounts of all VOC / solvents, purchased, reclaimed, disposed of off-site, discharged in waste water, or released to the atmosphere. This report covers the period of January 1, 1987 through December 31, 1987. All available sources of information were utilized. The following reports and sources of information were used in preparing this report:

1.) In-house Accounting Reports
2.) In-house COM Stock Reports
3.) Harris Waste Profiles
4.) Harris Waste Analysis Reports
5.) Shipping Manifests
   a.) Bulk Shipments
   b.) Drum Shipments
6.) ACE Air Monitoring Reports
7.) Daily Waste Water Reports
8.) Enviropact Lab Reports

The data was evaluated by comparing the chemical purchasing records with the known emission and shipping records. More detailed discussion of the data sources, data evaluation, error analysis, conclusions and recommendations are included in detail later in this report.

SUMMARY:

A similar report was prepared in 1987, which covered the period of calender year 1986. This was the most comprehensive attempt of this nature made to quantify the volume of VOC / solvents consumed by Harris Semiconductor and to identify their final disposition. Prior to the recent monitoring activities, it had been assumed that most of the chemicals were collected and transported off-site for ultimate disposal. Because the 1986 report, was the first attempt of this magnitude to reconcile this data much of the information was incomplete and suspect. Many of the recommendations proposed in the 1986 report, to improve the accuracy of the information, were implemented or are in the process of being implemented. Many of these improvements have increased the quality and accuracy of the 1987 report, which is far more comprehensive. As a result of these changes it is possible to draw more meaningful conclusions.

The following information is offered as a brief summary of

SUMMARY (cont.):

the detailed data which is included to document these results:

VOC's / Solvents Discharged by Source		
Waste Water	27,000	pounds
Air Emissions	262,000	pounds
Waste Shipments	584,000	pounds
Total	873,000	pounds
Chemicals Purchased	957,000	pounds
Quantity Variance	84,000	pounds
Percent Variance	8.8 %	

A comparison of the data would seem to indicate a high degree of accuracy. The percent variance number is presented for comparative purposes only. The data utilized in computing these figures are the most accurate available. However, there are a number of potential sources of error which would seem to indicate that the actual margin for error is greater than 9 percent. However, it is possible that the various sources of error cancel themselves out and yield a range of error of less than ten percent.

It is Semiconductor's intention to continue to reduce the potential for error in an attempt to continue to improve the quality of the data. A major improvement will be made in 1989 when the Title III SARA regulations require vendors to provide customers with more accurate data on the chemical composition of those chemicals which are purchased and are listed in the SARA regulations. This will improve some of data, but will not totally eliminate the inaccuracies relating to chemical composition due to the fact that not all of the chemicals of concern in this report are on the Title III list of chemicals.

DISCUSSION:

MATERIAL SAFETY DATA SHEETS:

Most of the chemicals used by Semiconductor in its manufacturing processes are not pure chemical compounds, but rather mixtures or trade name chemicals. Therefore, it is necessary to rely on the manufacturers' MSDS to obtain information on the specific components of the process chemicals used.

Many manufacturers consider the exact formulation of their products proprietary and therefore will provide only approximate concentrations for the specific components. The listed range of a particular component can be quite large. For purposes of this report when it was necessary to use a concentration range for a solvent the mid point of the range was used for purposes of calculation. This approach was utilized in an attempt to neither over nor under report on the quantity of chemical purchased.

WASTE PROFILES:

In 1984, Semiconductor began compiling and evaluating detailed chemical profiles of the specific waste streams generated by the manufacturing processes. These profiles are based on in house laboratory analysis. The chemical analysis is used to define a range for the individual components of the various constituents. These profiles are evaluated annually and changed to reflect any significant changes that may have occurred in the manufacturing processes. In addition, to evaluation of existing profiles, new profiles are added when a new process or chemical is introduced which does not fit any existing waste description. At the present time, there are 54 waste profiles that are managed by the environmental staff of Semiconductor.

Attachment 5 contains an example of a typical waste profile. As can be seen from the example, the profiles indicate a minimum and maximum range in percent for the individual constituents of concern. Some of these profiles are for very minor streams which are generated very infrequently. Others are wastes generated on a very regular basis.

WASTE ANALYSIS:

The most accurate data base on waste streams is currently on bulk shipments. Initially, this data base was created to insure the safe shipment of large quantities of chemicals over public roads by licensed transporters. A chemical analysis is performed on every bulk shipment.

These analysis accompany every bulk shipment which leaves the Semiconductor facility. The waste analysis is performed for these components which are likely to be present in the waste stream.

In addition to bulk shipments, Semiconductor collects and ships a significant amount of wastes in fifty-five gallon drums and smaller containers. Drummed wastes are collected at point of use locations and brought to a central location within the facility, where they are checked and temporarily stored prior to shipment. In 1987, Semiconductor shipped off site approximately 300,000 gallons of waste for disposal or recycle. Approximately 60 percent of this was in bulk shipments. The balance was in 55 gallon drums. This averages out to around 120 drums per month. The number of containers generated makes it impractical to analyze samples from every container. Therefore, drummed wastes are spot checked, and random samples are taken for analysis.

WASTE SHIPMENTS:

All shipments leaving Semiconductor's facility, whether sent for recycle or disposal, are accompanied by a Hazardous Waste Uniform Manifest. All current State, EPA, and DOT regulations are followed in the preparation, distribution, and retention of the waste manifests. In addition to the original hard copy retention of these records, detailed information is entered into a computer data base system for record retention, reporting, and tracking purposes. The information contained on the manifests was the primary source of information on those VOC/solvents shipped from Semiconductor for recycle or disposal off-site. Quantities of chemicals leaving the facility in bulk shipment were recorded in gallons based on visual inspection of the tankers before and after they had been filled. Quantities of chemicals leaving the facility in drums were based on an accurate drum count and the assumption that each drum contained 55 gallons of material.

Attachment 1 contains a list of all waste shipments made from Semiconductor during calender year 1987. All waste shipments with the following EPA ID's were included in the calculations:

D001, F001, F002, F003, F004, F005

Waste chemicals with the previous RCRA ID numbers, as a rule, will meet the Florida DER definition of VOCs. There were a number of lab pac shipments which may have met this definition but were not included in the calculation. The total volume of these materials was well under 100 gallons and would have had little if any impact on the outcome of the material balance.

WASTE SHIPMENTS (cont.):

Once the above information was compiled, the waste streams with the appropriate RCRA ID were selected from the waste profile list and compared with the shipping records. Table I was then prepared in order to calculate the quantity of solvents shipped off site. Total pounds shipped were then calculated from the gallons on the shipping records and the specific gravity information on the waste profile. If no specific gravity data was available, then a gravity of 0.9 was assumed. The following is an example of the calculation steps which were followed:

1987 shipments for Stream H005 - 28260 gallons.

28260 gal x 8.34 lbs/gal x 0.9 (sg) = 212,199 lbs.

H005 contains a minimum of 20 % acetone and a maximum of 55% acetone. From the waste profile. See Attachment 5.

212,000 lbs x 0.20 = 42,400 lbs acetone min.
212,000 lbs x 0.55 = 116,000 lbs acetone max.

This procedure was then repeated for each component on every waste profile. Like components were then added together to obtain the total quantities for each compound. The mid point quantity for each compound was then calculated. The following example is for acetone.

214,776 lbs of acetone (max.) shipped under all Profiles
79,034 lbs of acetone (min.) shipped under all Profiles

Mid point value = ((214,000 lbs - 79,034 lbs)/2) + 79,034
= 146,905 lbs of acetone

Once the total pounds of each waste was calculated, this information was used to calculate the quantity of the individual components present in the waste stream. During this stage of the calculation the minimum, maximum, and the calculated mean from the waste profiles was utilized. Using this information, it was determined that the minimum amount of solvents in the waste shipments would have been 266,000 pounds, the maximum amount would have been 901,000 pounds, and the average amount would have been 584,000 pounds. The average amount was used during the remainder of the report for comparison, because it is believed that it most accurately indicates the quantity of VOC/solvents which were shipped from Semiconductor for disposal or recycle.

WASTE WATER DISCHARGE:

Harris Semiconductor discharges it's Treated Industrial Waste Water in accordance with its Underground Injection Control Permit Number UC05-1265191. The industrial water treatment plant collects and treats all industrial water from the semiconductor manufacturing facility. All manufacturing and process support equipment discharges to the treatment plant and ultimately to the industrial deep well. There are no discharges to surface water or to POTWs from the facility. The only water discharged to the local POTW is water from the sanitary facility and cafeterias.

Attachment 2 contains flow and monitoring data from the treatment plant from the period of January 1, 1987 through December 31, 1987. During this time period the facility treated approximately 433 million gallons of water. Between February and December of 1987, Semiconductor monitored the waste water treatment plant to quantify potential VOC emissions. During this period, the samples were collected on a weekly basis and analyzed using EPA Methods 624 and 625 for priority pollutants and an additional selection of other compounds. Specifically, methanol, acetone, and IPA were also evaluated. Table II contains all of the parameters which had at least one positive response during the study. The average observed concentration was then utilized with the volume of water discharged to calculate the quantity of solvents which were discharge during the course of the year.

Table III lists the parameters which were included. The average flows during the month were used to calculate the quantity of solvents which were discharged during the respective months. These monthly volumes were then totaled to obtain the annual quantity discharged. The following is an example of the calculations which were utilized:

Average concentration of Acetone = 3538 ppb
= 3.54 ppm

3.54 ppb x 8.34 lbs / gal x 33.006 Mil Gal (jan) = 937.9 lbs

The above calculation was then repeated for each month of 1987. The monthly totals were then added. This same procedure was repeated for each parameter.

The information obtained indicated that during 1987 approximately 27,000 pounds of solvents were discharged in the industrial waste water. It should be noted that the trihalomethanes which were listed on table II, were present in the incoming water from the local drinking water utility.

These materials are not used in the manufacturing areas. Therefore, the loading of these compounds was not included in the 27,000 pounds which were calculated.

AIR EMISSIONS:

Between December 1986 and December 1987, Harris Semiconductor performed extensive monitoring of its point source discharges. Twenty one (21) different discharge points were monitored. Every point was monitored at least once during the monitoring program. In an attempt to evaluate the reliability of the monitoring results several of the larger sources were monitored more than once. Efforts were also taken to determine if there were any VOC / solvent emissions during the non-production hours. To accomplish this one source was monitoring on a Sunday when no production activities were scheduled.

All of the monitoring was performed by Air Consulting Engineers of Gainseville. Two different methods were employed. Method 25A utilizing a Flame Ionization Detector was the primary method of analysis. This method was selected because it was anticipated that due to the nature of the semiconductor manufacturing methods there would be very noticeable changes in the quantity of VOC emissions during the course of a normal shift. Some monitoring utilizing Total Organic Vapor collection tubes and GC/MS laboratory analysis to determine the exact chemical composition of the air stream was also performed. For the purposes of this report, Method 25A was superior because it enabled Harris to quantify the amount of VOCs which were being emitted far more accurately than the GC/MS. The on line monitoring capability of the FID allowed for the more accurate determination of the amount of VOC compounds which were potentially discharged over the course of the year.

Attachment 3 contains a list of the emission sources that were monitored during the course of the year along with the projected quantity of emissions which was calculated for each source. The emissions numbers were calculated utilizing the observed VOC emissions and the actual production schedule for the corresponding source. In addition, the observed non-production emissions loading was factored into the total yearly loading for each source. Based on the monitoring which was performed it was determined that the total emissions from the facility were approximately 262,000 pounds.

CHEMICAL INVENTORY:

During the months of December 1986 and January 1987, Harris Semiconductor conducted a detailed physical inventory of all chemicals currently in use at the facility.

This information has become the baseline for all process and process support chemicals used at the Palm Bay facility. This inventory was a joint project between Harris personnel in the Environmental, Health and Safety, and Quality Control Departments.

This survey became the basis for Semiconductors Master Chemical Inventory Data Base. This Data Base contains at the present time in excess of 2500 "chemicals". This does not mean that 2500 compounds are currently in use at the facility. In stead, it means that 2500 chemical names must be managed. This problem is caused by the use of trade name chemicals. More than one half of the chemicals used at Semiconductor are Trade Name Chemicals. The chemicals are generally a mixture of several components. This results in a compounding effect when the information is interred into a data management system. For example, Harris may use 10 trade name chemicals which all have the same four components in varying concentrations. This will result not in the management of four or ten chemicals but fourteen different chemicals.

Once all the chemicals had been identified the project of determining the quantity of each used during 1987 was first undertaken. The first attempt at this project was to utilize receiving records from the Shipping and Receiving Department. After overcoming several computer problems encountered retrieving the data, it was confirmed that only those chemicals entering the facility on the COM Stock system were included in the data base which was being recovered. This required utilization of an alternate data base to accomplish the objective. The Purchase Order Data Base was utilized to obtain the required information.

All information on materials from known chemical vendors and materials containing an appropriate chemical commodity code were recovered for the period of January 1, 1987 through December 31, 1987. Once this information had been obtained the "chemicals" had to be converted to appropriate units of measurement. The chemical records contain various units of measurement (i.e. gallons, pints, cubic feet, pounds, kilograms, drums, cases, etc.). These had to be converted to a common unit of measurement.

After recovery and conversion of the data described above, the most complicated part of the project had to be undertaken. This was the conversion of the trade name chemicals into their appropriate components. This was accomplished by loading the purchase records into the Chemical Inventory Data Base which lists the components for all chemicals and their known or estimated concentration. This part of the project was complicated by the fact that the material description from the purchasing records was not always exactly the same as the description in the chemical data base. This resulted in the need for a great deal of manual confirmation and data entry in order to load the purchased amounts into the computer data base system. This part of the program could be significantly improved if a unique code could be included on the purchase orders and matched to an exact code in the chemical data base system.

Once the above work had been accomplished, the information presented on Tables IV and V was tabulated. Once this information had been compiled, the raw data was reviewed and a determination was made as to whether or not the material was a solvent. Those chemicals which were determined to be solvents were assigned a code of "S". The data base was then sorted and totaled for all compounds which were identified as solvents. The chemicals listed on Table IV totaled 277,372 pounds of solvents received at the facility. The chemicals listed on Table V totaled 679,415 pounds of solvents received at the facility. This resulted in a total of approximately 957,000 pounds of solvents being received by Semiconductor during 1987. As a point of information, two tables are presented in this section because the chemicals on Table V were being reported in the facility's July 1, 1988 Title III SARA report. It was therefore easier to list these tables separately than to combine the data.

The accuracy of this information is primarily limited by the accuracy of the component concentration available from the vendors on trade name chemicals. As the accuracy of this information the accuracy of the chemical data base should also improve.

It was assumed during the course of this material balance that no net increase or decrease in the physical on site inventory took place during the course of the year. In other words it was assumed that the volume of chemicals received were used. Harris Semiconductor has extended significant amounts of time and energy in recent years in programs, such as JIT, to control inventories of materials. Just in Time (JIT) is the principle of delivering the material to the facility and work area just prior to the time that it is needed. This eliminates the need for large inventories of materials in the work place.

CONCLUSIONS AND RECOMMENDATIONS:

This report has been prepared and submitted to the Department of Environmental Regulations in accordance with Harris' previous agreements with the Department. The report has been prepared with the most accurate information available. Harris believes that the information accurately represents the VOC/solvents which were used and their ultimate disposition.

Harris believes that the air emissions data and the waste water discharge data is the most accurate data available. This information is based on actual monitoring data. Only a very limited number of required assumptions were employed. Harris intends to continue with its in house monitoring programs in these two areas. Very few modifications to the procedures are anticipated. Based on prior monitoring and other technical information, Harris is confident that the most accurate method of quantifing the facilities actual emissions is through a technically sound monitoring program.

The hazardous waste data is accurate within the range of assumptions that were made. If any errors have been made in the evaluation of the data, it has been on the conservative side. In other words, if any inaccuracies exist they have been on the side of underestimating the quantities of VOC/solvents which were sent off-site for disposal or recycling. Harris has plans to improve the accuracy in this area by more frequent analysis of drummed waste and the development of a computer data base system for the waste profile analysis.

The chemical data to the best of our knowledge is as accurate as is possible. The areas where we would like to see the most improvement, are the quality of the information on trade name chemicals and our ability to more easily retrieve the data from our internal information systems. Harris environmental, purchasing, accounting, safety, and MIS personnel will be meeting in the near future in an effort to reduce the problems we have encountered in the retrieval of the data. A far more difficult problem is the issue of trade name chemicals. As was indicated in the report, this will improve slightly the vendors are required to provide information on concentrations for chemicals on the SARA list. This problem will undoubtedly will be an issue for many years. Until manufacturers provide more accurate information on the concentrations of VOC/solvents the quality of our data connot be improved. Unfortunately, any real improvements, in this area, are outside of Harris' control.

HARRIS SEMICONDUCTOR

CALENDAR YEAR 1987

VOC - MATERIAL BALANCE

ATTACHMENT 1

WASTE SHIPMENTS OFFSITE

COMPOUND	HARRIS ID COMMON NAME	H005 MIX SOLV	H010 RESIST	H011 MICRO	H012 TRICH	H013 FREON	H025 WAT/SOLV	H026 MIX SOLV	H039 1165	H040 MARKEM	H041 ACET/TRI	H042 GLYCER	H43 WAT/MICRORESIST	H045	TOTAL AMOUNT SHIPPED		
	1987 GALLONS	28260	9955	23980	1320	2530	16904	10725	55	55	55	165	5115	440	101559		
	1987 TONS	106	31.5	99.9	7.2	13.8	78.8	39.5	0.25	0.25	0.28		21.3	0.24	399.02		
	1987 POUNDS	212000	63000	199800	14400	27600	157600	79000	500	500	560	0	42600	480	798040		
															Min.	Max.	Avg.
ACETONE		42400	630	19980	0	0	0	15800	0	0	224	0	0	0	79034		
		116600	6300	59940	0	0	0	31600	0	0	336	0	0	0		214775	146905
METHANOL		21200	630	0	0	0	1576	3950	0	0	0	0	0	0	27356		
		84800	3150	0	0	0	7880	19750	0	0	0	0	0	0		115580	71468
IPA		21200	0	0	0	0	1576	3950	0	0	0	0	0	0	26726		
		84800	0	0	0	0	7880	19750	0	0	0	0	0	0		112430	69578
N-BUTYL ACETATE		4240	630	0	0	0	0	0	10	150	0	0	0	0	5030		
		84800	3150	0	0	0	0	0	25	200	0	0	0	0		88175	46603
CELLOSOLVE ACE		2120	25200	1998	0	0	1576	790	1	5	0	0	0	0	31690		
		10600	44100	9990	0	0	7880	3950	10	15	0	0	0	0		76545	54117
XYLENE		2120	9450	1998	0	0	0	3950	0	0	0	0	0	0	17518		
		21200	25200	9990	0	0	0	7900	0	0	0	0	0	0		64290	40904
TOLUNE		2120	0	0	0	0	0	0	0	0	0	0	0	0	2120		
		21200	0	0	0	0	0	0	0	0	0	0	0	0		21200	11660
HMDS		0	0	0	0	0	0	3950	0	0	0	0	0	0	3950		
		0	0	0	0	0	0	3950	0	0	0	0	0	0		3950	3950
ETHYL ACETATE		0	0	0	0	0	0	0	0	0	0	0	0	0	0		
		0	0	0	0	0	0	0	0	0	0	0	0	0		0	0
FREON		0	0	0	0	26220	0	1580	0	0	0	0	0	0	27800		
		0	0	0	0	26220	0	7900	0	0	0	0	0	0		34120	30960
TRICHLOROETHANE		0	0	0	11520	0	0	3950	0	0	224	0	0	0	15694		
		0	0	0	11520	0	0	7900	0	0	336	0	0	0		19756	17725
PERCH		0	0	1998	0	0	0	0	0	0	0	0	0	0	1998		
		0	0	19980	0	0	0	0	0	0	0	0	0	0		19980	10989
AROMATICS		3180	0	1998	0	0	0	0	0	0	0	0	0	0	5178		
		21200	0	9990	0	0	0	0	0	0	0	0	0	0		31190	18184
ALAPHATICS		3180	630	1998	0	0	0	0	0	0	0	0	0	0	5808		
		21200	6300	9990	0	0	0	0	0	0	0	0	0	0		37490	21649
MISC.		2120	0	9990	0	0	0	3950	425	5	0	0	0	0	16490		
		10600	0	29970	0	0	0	19750	475	15	0	0	852	0		61662	39076

MINIMUM SHIPPED (LBS.) 266392

MAXIMUM SHIPPED (LBS.) 901144

AVERAGE SHIPPED (LBS.) 583768

TABLE I

date	transporter	tsdf	common name	dot description	dot class	un/na	epa id	gallons
10-Sep-87	hwc		diesel	na	na	na	na	55.00
-- Count								1
-- Sum								55.00
29-Sep-87	hwc		used oil	na	na	na	na	165.00
21-May-87	hwc		used oil	na	combust.	na	na	55.00
14-Oct-87	hwc		used oil	na	na	na	na	55.00
02-Jun-87	hwc		used oil	na	combust.	na1270	na	110.00
19-Jun-87	hwc		used oil	na	combust.	na1270	na	110.00
13-Jan-87	hwc		used oil	na	na	na	na	220.00
07-Jul-87	hwc		used oil	na	na	un2710	na	55.00
07-Apr-87	hwc		used oil	na	na	na	na	495.00
05-May-87	hwc		used oil	na	na	na	na	55.00
10-Mar-87	hwc		used oil	na	na	na	na	55.00
-- Count								10
-- Sum								1375.00
02-Jun-87	hwc,allw	allworth	freon	hazardous waste liquid, nos	orm-e	na9189	f001	110.00
08-Dec-87	hwc,allw	allworth	freon	hazardous waste liquid, nos	orm-e	na9189	f001	110.00
27-Jan-87	hwc,allw	allworth	freon	hazardous waste liquid, nos	orm-e	na9189	f001	165.00
24-Nov-87	hwc,allw	allworth	freon	hazardous waste liquid, nos	orm-e	na9189	f001	55.00
07-Jul-87	hwc,allw	allworth	freon	hazardous waste liquid, nos	orm-a	na9189	f001	110.00
10-Nov-87	hwc,allw	allworth	freon	hazardous waste liquid, nos	orm-e	na9189	f001	220.00
14-Oct-87	hwc,allw	allworth	freon	hazardous waste liquid, nos	orm-e	na9189	f001	220.00
07-Apr-87	hwc,allw	allworth	freon	hazardous waste liquid, nos	orm-e	na9189	f001	110.00
13-Jan-87	hwc	allworth	freon	hazardous waste liquid, nos	orm-e	na9189	f002	110.00
22-Sep-87	hwc,allw	allworth	freon	hazardous waste liquid, nos	orm-e	na9189	f001	110.00
25-Aug-87	hwc,allw	allworth	freon	hazardous waste liquid, nos	orm-a	na9189	f001	275.00
22-Dec-87	hwc,allw	allworth	freon	hazardous waste liquid, nos	orm-e	na9189	f001	165.00
19-Jun-87	hwc,allw	allworth	freon	hazardous waste liquid, nos	orm-a	na9189	f001	110.00
17-Feb-87	hwc	allworth	freon	hazardous waste liquid, nos	orm-e	na9189	f001	110.00
10-Mar-87	hwc,allw	allworth	freon	hazardous waste liquid, nos	orm-e	na9189	f001	275.00
24-Mar-87	hwc,allw	allworth	freon	hazardous waste liquid, nos	orm-e	na9189	f001	110.00
29-Sep-87	hwc,allw	allworth	freon	hazardous waste liquid, nos	orm-e	na9189	f001	165.00
-- Count								17
-- Sum								2530.00
10-Mar-87	hwc,allw	allworth	glycerine	waste glycerine	non-haz	na	na	165.00
-- Count								1
-- Sum								165.00
18-Jun-87	hwc,allw	allworth	mixed solv	waste flammable liquid, nos	flammable	un1993	d001	4500.00
22-Dec-87	hwc,allw	allworth	mixed solv	waste flammable liquid, nos	flammable	un1993	f003,5	385.00

date	transporter	tsdf	common name	dot description	dot class	un/na	epa id	gallons
25-Aug-87	hwc,allw	allworth	mixed solv	waste flammable liquid, nos	flammable	un1993	f003,5	495.00
29-Sep-87	hwc,allw	allworth	mixed solv	waste flammable liquid, nos	flammable	un1993	f003,5	110.00
10-Nov-87	hwc,allw	allworth	mixed solv	waste flammable liquid, nos	flammable	un1993	d001	55.00
14-Oct-87	hwc,allw	allworth	mixed solv	waste flammable liquid, nos	flammable	un1993	f003,5	220.00
13-Jan-87	hwc	allworth	mixed solv	waste flammable liquid, nos	flammable	un1993	d001	715.00
24-Nov-87	hwc,allw	allworth	mixed solv	waste flammable liquid, nos	flammable	un1993	f001	440.00
15-Sep-87	hwc,allw	allworth	mixed solv	waste flammable liquid, nos	flammable	un1993	f003,5	6000.00
04-Aug-87	hwc,allw	allworth	mixed solv	waste flammable liquid, nos	flammable	un1993	f001	1375.00
21-Jul-87	hwc,allw	allworth	mixed solv	waste flammable liquid, nos	flammable	un1993	d001	715.00
04-Aug-87	hwc,allw	allworth	mixed solv	waste flammable liquid, nos	flammable	un1993	f001	55.00
04-Aug-87	hwc,allw	allworth	mixed solv	waste flammable liquid, nos	flammable	un1993	f001	110.00
10-Nov-87	hwc,allw	allworth	mixed solv	waste flammable liquid, nos	flammable	un1993	f003,5	660.00
10-Feb-87	hwc	allworth	mixed solv	waste flammable liquid, nos	flammable	un1993	d001	6000.00
10-Sep-87	hwc,allw	allworth	mixed solv	waste flammable liquid, nos	flammable	un1993	d001	495.00
12-Aug-87	hwc,allw	allworth	mixed solv	waste flammable liquid, nos	flammable	un1993	d001	275.00
14-Dec-87	hwc,allw	allworth	mixed solv	waste flammable liquid, nos	flammable	un1993	f003,5	5760.00
27-Oct-87	hwc,allw	allworth	mixed solv	waste flammable liquid, nos	flammable	un1993	f003,5	770.00
29-Sep-87	hwc,allw	allworth	mixed solv	waste flammable liquid, nos	flammable	un1993	d001	495.00
27-Oct-87	hwc,allw	allworth	mixed solv	waste flammable liquid, nos	flammable	un1993	d001	165.00
08-Dec-87	hwc,allw	allworth	mixed solv	waste flammable liquid, nos	flammable	un1993	f003,5	330.00
27-Jan-87	hwc,allw	allworth	mixed solv	waste flammable liquid, nos	flammable	un1993	d001	550.00
22-Sep-87	hwc,allw	allworth	mixed solv	waste flammable liquid, nos	flammable	un1993	f003,5	110.00
-- Count								24
-- Sum								30785.00

10-Nov-87	hwc,allw	allworth	resist	waste flammable liquid, nos	flammable	un1993	d001	385.00
10-Mar-87	hwc,allw	allworth	resist	waste flammable liquid, nos	flammable	un1993	d001	660.00
24-Mar-87	hwc,allw	allworth	resist	Waste flammable liquid, nos	flammable	un1993	d001	660.00
27-Oct-87	hwc,allw	allworth	resist	waste flammable liquid, nos	flammable	un1993	d001	440.00
17-Feb-87	hwc	allworth	resist	waste flammable liquid, nos	flammable	un1993	d001	660.00
19-Jun-87	hwc,allw	allworth	resist	waste flammable liquid, nos	flammable	un1993	d001	660.00
05-May-87	hwc,allw	allworth	resist	waste flammable liquid, nos	flammable	un1993	d001	550.00
08-Dec-87	hwc,allw	allworth	resist	waste flammable liquid, nos	flammable	un1993	d001	165.00
29-Sep-87	hwc,allw	allworth	resist	waste flammable liquid, nos	flammable	un1993	d001	275.00
21-May-87	hwc,allw	allworth	resist	waste flammable liquid, nos	flammable	un1993	d001	330.00
13-Jan-87	hwc	allworth	resist	waste flammable liquid, nos	flammable	un1993	d001	440.00
04-Aug-87	hwc,allw	allworth	resist	waste flammable liquid, nos	flammable	un1993	f001	220.00
22-Dec-87	hwc,allw	allworth	resist	waste flammable liquid, nos	flammable	un1993	d001	440.00
22-Sep-87	hwc,allw	allworth	resist	waste flammable liquid, nos	flammable	un1993	d001	220.00
24-Nov-87	hwc,allw	allworth	resist	waste flammable liquid, nos	flammable	un1993	d001	330.00
07-Jul-87	hwc,allw	allworth	resist	waste flammable liquid, nos	flammable	un1993	d001	385.00
27-Jan-87	hwc,allw	allworth	resist	waste flammable liquid, nos	flammable	un1993	d001	385.00
25-Aug-87	hwc,allw	allworth	resist	waste flammable liquid, nos	flammable	un1993	d001	440.00
02-Jun-87	hwc,allw	allworth	resist	waste flammable liquid, nos	flammable	un1993	d001	330.00
12-Aug-87	hwc,allw	allworth	resist	waste flammable liquid, nos	flammable	un1993	d001	330.00
21-Jul-87	hwc,allw	allworth	resist	waste flammable liquid, nos	flammable	un1993	d001	440.00
14-Oct-87	hwc,allw	allworth	resist	waste flammable liquid, nos	flammable	un1993	d001	550.00
07-Apr-87	hwc,allw	allworth	resist	waste flammable liquid, nos	flammable	un1993	d001	385.00
10-Sep-87	hwc,allw	allworth	resist	waste flammable liquid, nos	flammable	un1993	f003,5	275.00
-- Count								24

date	transporter	tsdf	common name	dot description	dot class	un/na	epa id	gallons
-- Sum								
								9955.00
17-Feb-87	hwc	allworth	trich	waste 1,1,1 trichloroethane	orm-a	un2831	f001	55.00
24-Mar-87	hwc,allw	allworth	trich	waste 1,1,1 trichloroethane	orm-a	un2831	f001	55.00
07-Jul-87	hwc,allw	allworth	trich	waste 1,1,1 trichloroethane	orm-e	un2831	f001	110.00
22-Dec-87	hwc,allw	allworth	trich	waste 1,1,1 trichloroethane	orm-a	un2831	f001	165.00
22-Sep-87	hwc,allw	allworth	trich	waste 1,1,1 trichloroethane	orm-a	un2831	f001	110.00
13-Jan-87	hwc	allworth	trich	waste 1,1,1 trichloroethane	orm-a	un2831	f001	55.00
25-Aug-87	hwc,allw	allworth	trich	waste 1,1,1 trichloroethane	orm-e	un2831	f001	110.00
08-Dec-87	hwc,allw	allworth	trich	waste 1,1,1 trichloroethane	orm-a	un2831	f001	55.00
24-Nov-87	hwc,allw	allworth	trich	waste 1,1,1 trichloroethane	orm-a	un2831	f001	165.00
02-Jun-87	hwc,allw	allworth	trich	waste 1,1,1 trichloroethane	orm-a	un2381	f001	55.00
05-May-87	hwc,allw	allworth	trich	waste 1,1,1 trichloroethane	orm-a	un2831	f001	55.00
14-Oct-87	hwc,allw	allworth	trich	waste 1,1,1 trichloroethane	orm-a	un2831	f001	110.00
10-Mar-87	hwc,allw	allworth	trich	waste 1,1,1 trichloroethane	orm-a	un2831	f001	55.00
19-Jun-87	hwc,allw	allworth	trich	waste 1,1,1 trichloroethane	orm-e	un2381	f001	165.00
-- Count								
								14
-- Sum								
								1320.00
10-Sep-87	hwc,allw	allworth	used oil	na	na	na	na	55.00
-- Count								
								1
-- Sum								
								55.00
29-Sep-87	hwc	bayou metal	solder					110.00
-- Count								
								1
-- Sum								
								110.00
16-Apr-87	chem con	chem con	microstrip	waste flam., liq., corr., nos	flammable	un2924	d001,3	4840.00
-- Count								
								1
-- Sum								
								4840.00
06-May-87	chem con	chem met	microstrip	waste corrosive liquid, nos	corrosive	un1760	d002	385.00
30-Jun-87	chem con	chem met	microstrip	waste corrosive liquid, nos	corrosive	un1760	d002	385.00
26-May-87	chem con	chem met	microstrip	waste corrosive liquid, nos	corrosive	un1760	d002	165.00
-- Count								
								3
-- Sum								
								935.00
10-Sep-87	chem con	chem met	mixed acid	waste acid liquid, nos	corrosive	na1760	d002	4700.00

date	transporter	tsdf	common name	dot description	dot class	un/na	epa id	gallons
-- Count								
								1
-- Sum								
								4700.00
28-Jan-87	chem con	chem met	mixed hf	waste acid liquid, nos	corrosive	un1760	d002	4500.00
29-May-87	chem con	chem met	mixed hf	waste acid liquid, nos	corrosive	na1760	d002	4900.00
13-Jan-87	chem con	chem met	mixed hf	waste acid liquid, nos	corrosive	un1760	d002	4500.00
-- Count								
								3
-- Sum								
								13900.00
02-Sep-87	chem con	chem met	water/micro	waste corrosive liquid, nos	corrosive	un1760	d002	385.00
24-Nov-87	chem con	chem met	water/micro	waste corrosive liquid, nos	corrosive	un1760	d002	110.00
10-Nov-87	chem con	chem met	water/micro	waste corrosive liquid, nos	corrosive	un1760	d002	220.00
17-Feb-87	chem con	chem met	water/micro	waste corrosive liquid, nos	corrosive	un1760	d002	495.00
15-Dec-87	chem con	chem met	water/micro	waste corrosive liquid, nos	corrosive	un1760	d002	220.00
27-Oct-87	chem con	chem met	water/micro	waste corrosive liquid, nos	corrosive	un1760	d002	330.00
11-Mar-87	chem con	chem met	water/micro	waste corrosive liquid, nos	corrosive	un1760	d002	275.00
05-Apr-87	chem con	chem met	water/micro	waste corrosive liquid, nos	corrosive	un1760	d002	220.00
29-Sep-87	chem con	chem met	water/micro	waste corrosive liquid, nos	corrosive	un1760	d002	330.00
31-Jul-87	chem con	chem met	water/micro	waste corrosive liquid, nos	corrosive	un1760	d002	220.00
14-Jan-87	chem con	chem met	water/micro	waste corrosive liquid, nos	corrosive	un1760	d002	1155.00
16-Oct-87	chem con	chem met	water/micro	waste corrosive liquid, nos	corrosive	un1760	d002	220.00
-- Count								
								12
-- Sum								
								4180.00
16-Mar-87	cwm	cwm	ammon persul	waste ammonium persulfate	oxidizer	un1444	na	55.00
-- Count								
								1
-- Sum								
								55.00
15-Sep-87	cwm	cwm	arsen cont	hazardous waste solid, nos	orm-e	na9189	d4,6,7,8,	220.00
18-Jun-87	cwm	cwm	arsen cont	hazardous waste solid, nos	orm-e	na9189	d467811	165.00
12-Feb-87	cwm	cwm	arsen cont	hazardous waste solid, nos	orm-e	na9189	d4,6,7,8,	165.00
16-Mar-87	cwm	cwm	arsen cont	hazardous waste solid, nos	orm-e	na9189	d467811	110.00
-- Count								
								4
-- Sum								
								660.00
15-Sep-87	cwm	cwm	chrom triox	waste acid liquid, nos	corrosive	na1760	d002,7	220.00
12-Feb-87	cwm	cwm	chrom triox	waste acid liquid, nos	corrosive	na1760	d002,7	110.00
18-Jun-87	cwm	cwm	chrom triox	waste acid liquid, nos	corrosive	na1760	d002,7	165.00
16-Mar-87	cwm	cwm	chrom triox	waste acid liquid, nos	corrosive	na1760	d002,7	55.00

date	transporter	tsdf	common name	dot description	dot class	un/na	epa id	gallons
-- Count								
								4
-- Sum								
								550.00
15-Jan-87	chem con	cwm	cont. soil	hazardous waste solid, nos	orm-e	na9189	na	0.00
19-Jan-87	chem con	cwm	cont. soil	Hazardous waste solid, nos	orm-e	na9189	na	0.00
19-Jan-87	chem con	cwm	cont. soil	Hazardous waste solid, nos	orm-e	na9189	na	0.00
15-Jan-87	chem con	cwm	cont. soil	hazardous waste solid, nos	orm-e	na9189	na	0.00
-- Count								
								4
-- Sum								
								0.00
23-Dec-87	cwm	cwm	copp sulf	waste corrosive liquid, nos	corrosive	un1760	d002	55.00
16-Mar-87	cwm	cwm	copp sulf	waste corrosive liquid, nos	corrosive	un1760	d002	55.00
18-Jun-87	cwm	cwm	copp sulf	waste corrosive liquid, nos	corrosive	un1760	d002	55.00
12-Feb-87	cwm	cwm	copp sulf	waste corrosive liquid, nos	un1760	un1760	d002	55.00
-- Count								
								4
-- Sum								
								220.00
16-Mar-87	cwm	cwm	diesel/soil	hazardous waste solid, nos	orm-e	na9189	na	110.00
-- Count								
								1
-- Sum								
								110.00
16-Mar-87	cwm	cwm	hcl	waste hydrochloric acid	corrosive	un1789	d002	55.00
-- Count								
								1
-- Sum								
								55.00
15-Sep-87	cwm	cwm	lab pac	waste potassium permanganate	oxidizer	un1490	d001	55.00
15-Sep-87	cwm	cwm	lab pac	hazardous waste liquid, nos	orm-e	na9189	u122	55.00
15-Sep-87	cwm	cwm	lab pac	waste flammable liquid, nos	flammable	un1993	d1,3,u002	55.00
15-Sep-87	cwm	cwm	lab pac	hazardous waste solid, nos	orm-e	na9189	d006	55.00
15-Sep-87	cwm	cwm	lab pac	non hazaardous waste	na	na	na	55.00
15-Sep-87	cwm	cwm	lab pac	waste corrosive liquid, nos	corrosive	un1760	d002,u052	55.00
15-Sep-87	cwm	cwm	lab pac	waste poisonous liquid, nos	poison b	un2810	p106,d004	55.00
15-Sep-87	cwm	cwm	lab pac	waste corrosive liquid, nos	corrosive	un1760	d002,3	55.00
15-Sep-87	cwm	cwm	lab pac	waste carbon tetrachloride	orm-a	na1846	u211	110.00
15-Sep-87	cwm	cwm	lab pac	waste corrosive liquid, nos	corrosive	un1760	d002	110.00
15-Sep-87	cwm	cwm	lab pac	waste methylene chloride	orm-a	un1593	u080	110.00
15-Sep-87	cwm	cwm	lab pac	hazardous waste liquid, nos	orm-e	na9189	d007	55.00
15-Sep-87	cwm	cwm	lab pac	waste chloroform	orm-a	un1888	u044	55.00
15-Sep-87	cwm	cwm	lab pac	hazardous waste liquid, nos	orm-e	na9189	d008	55.00
15-Sep-87	cwm	cwm	lab pac	waste orm-a, nos	orm-a	na1693	u211,u044	110.00

date	transporter	tsdf	common name	dot description	dot class	un/na	epa id	gallons
15-Sep-87	cwm	cwm	lab pac	waste flammable liquid, nos	flammable	un1993	u162,d1,3	55.00
15-Sep-87	cwm	cwm	lab pac	waste battery, wet	corrosive	un2794	d002	110.00
15-Sep-87	cwm	cwm	lab pac					116.00
15-Sep-87	cwm	cwm	lab pac	waste oxidizer, nos	oxidizer	un1479	d001,3	55.00
15-Sep-87	cwm	cwm	lab pac	non hazardous waste	na	na	na	55.00
15-Sep-87	cwm	cwm	lab pac	waste battery, wet	corrosive	un2795	d002	55.00
15-Sep-87	cwm	cwm	lab pac	waste alkaline liquid, nos	corrosive	na1719	d002	55.00
15-Sep-87	cwm	cwm	lab pac	waste flammable liquid, nos	flammable	un1993	d001	55.00
-- Count								23
-- Sum								1601.00
15-Sep-87	cwm	cwm	mercury	waste mercury metallic	orm-b	un2809	d009,u151	110.00
18-Jun-87	cwm	cwm	mercury	waste mercury metallic	orm-b	na2809	d009	110.00
-- Count								2
-- Sum								220.00
18-Jun-87	cwm	cwm	mixed solv	waste flammable liquid, nos	flammable	un1993	f001,3	880.00
16-Mar-87	cwm	cwm	mixed solv	waste flammable liquid. nos	flammable	un1993	f001,3	1320.00
-- Count								2
-- Sum								2200.00
19-Jun-87	cwm	cwm	phosp	waste phosphorus,amporphous	flammable	un1338	d001	55.00
-- Count								1
-- Sum								55.00
13-Jan-87	chem con	cwm	soil	hazardous waste solid, nos	orm-e	na9189	na	0.00
13-Jan-87	chem con	cwm	soil	hazardous waste solid, nos	orm-e	na9189	na	0.00
-- Count								2
-- Sum								0.00
15-Sep-87	cwm	cwm	tin plate	waste sulfuric acid, spent	corrosive	un1832	d002,8	275.00
18-Jun-87	cwm	cwm	tin plate	waste sulfuric acid, spent	corrosive	un1832	d002,8	220.00
12-Feb-87	cwm	cwm	tin plate	waste sulfuric acid, spent	corrosive	un1832	d002,8	330.00
23-Dec-87	cwm	cwm	tin plate	waste sulfuric acid, spent	corrosive	un1832	d002,7	220.00
16-Mar-87	cwm	cwm	tin plate	waste sulfuric acid, spent	corrosive	un1832	d002,8	275.00
-- Count								5
-- Sum								1320.00

date	transporter	tsdf	common name	dot description	dot class	un/na	epa id	gallons
23-Apr-87	chem con	cwm	water/solv	hazardous waste liquid, nos	orm-e	na9189	f001	3500.00
23-Dec-87	cwm	cwm	water/solv	hazardous waste liquid, nos	orm-e	na9189	f003	990.00
04-Mar-87	chem con	cwm	water/solv	hazardous waste liquid, nos	orm-e	na9189	f003	5000.00
12-Feb-87	cwm	cwm	water/solv	hazardous waste liquid, nos	oem-e	na9189	f003	990.00
16-Feb-87	chem con	cwm	water/solv	hazardous waste liquid, nos	orm-e	na9189	f003	5000.00
16-Mar-87	cwm	cwm	water/solv	hazardous waste liquid, nos	orm-e	na9189	f003	330.00
03-Aug-87	chem con	cwm	water/solv	hazardous waste liquid, nos	orm-e	na9189	f003	3094.00
-- Count								7
-- Sum								18904.00
07-Oct-87	cyl recon	cyl recon	bf3 cyl	waste boron trifluoride	non flam	un1008	d002	0.00
-- Count								1
-- Sum								0.00
07-Oct-87	cyl recon	cyl recon	cl2 cly	waste chlorine	non flam	un1017	d002	0.00
-- Count								1
-- Sum								0.00
07-Oct-87	cyl recon	cyl recon	h2s cyl	waste hydrogen sulfide	flammable	un1053	u135	0.00
-- Count								1
-- Sum								0.00
07-Oct-87	cyl recon	cyl recon	n2 cyl	waste nitrogen	non flam	un1066	x905	0.00
-- Count								1
-- Sum								0.00
24-Feb-87	chem con	eei	1165	waste corrosive liquid, nos	corrosive	un1760	d002	55.00
-- Count								1
-- Sum								55.00
11-Mar-87	chem con	eei	8050	waste flammable liquid, nos	flammable	un1993	d001	55.00
-- Count								1
-- Sum								55.00

date	transporter	tsdf	common name	dot description	dot class	un/na	epa id	gallons
14-Jan-87	chem con	eei	acet/tric	waste flammable liquid, nos	flammable	un1993	d001	55.00
-- Count								1
-- Sum								55.00
24-Feb-87	chem con	eei	cool twr sld	hazardous waste solid, nos	orm-e	na9189	d002	605.00
-- Count								1
-- Sum								605.00
24-Nov-87	chem con	eei	developer	waste corrosive liquid, nos	corrosive	un1760	d002	1265.00
16-Oct-87	chem con	eei	developer	waste corrosive liquid, nos	corrosive	un1760	d002	1100.00
17-Feb-87	chem con	eei	developer	waste corrosive liquid, nos	corrosive	un1760	d002	1705.00
10-Nov-87	chem con	eei	developer	waste corrosive liquid, nos	corrosive	un1760	d002	990.00
24-Feb-87	chem con	eei	developer	waste corrosive liquid, nos	corrosive	un1760	d002	330.00
26-May-87	chem con	eei	developer	waste corrosive liquid, nos	corrosive	un1760	d002,6	770.00
29-Sep-87	chem con	eei	developer	waste corrosive liquid, nos	corrosive	un1760	d002	1155.00
30-Jun-87	chem con	eei	developer	waste corrosive liquid, nos	corrosive	un1760	d002,6	1595.00
27-Oct-87	chem con	eei	developer	waste corrosive liquid, nos	corrosive	un1760	d002	715.00
31-Jul-87	chem con	eei	developer	waste corrosive liquid, nos	corrosive	un1760	d002	1210.00
03-Apr-87	chem con	eei	developer	waste corrosive liquid, nos	corrosive	un1760	d002,6	1265.00
11-Mar-87	chem con	eei	developer	waste corrosive liquid, nos	corrosive	un1760	d002,006	550.00
06-May-87	chem con	eei	developer	waste corrosive lqiuid, nos	corrosive	un1760	d002,6	1210.00
15-Dec-87	chem con	eei	developer	waste corrosive liquid, nos	corrosive	un1760	d002	1265.00
02-Sep-87	chem con	eei	developer	waste corrosive liquid, nos	corrosive	un1760	d002	1210.00
-- Count								15
-- Sum								16335.00
02-Sep-87	chem con	eei	fixer	hazardous waste liquid, nos	corrosive	na9189	d006,11	55.00
30-Jun-87	chem con	eei	fixer	hazardous waste liquid, nos	orm-e	na9189	d006,11	55.00
26-May-87	chem con	eei	fixer	hazardous waste liquid, nos	orm-e	na9189	d006,11	55.00
03-Apr-87	chem con	eei	fixer	hazardous waste liquid, nos	orm-e	na1989	d006,11	55.00
29-Sep-87	chem con	eei	fixer	hazardous waste liquid, nos	orm-e	na9189	d006,11	55.00
14-Jan-87	chem con	eei	fixer	hazardous waste liquid, nos	orm-e	na9189	d006,011	110.00
-- Count								6
-- Sum								385.00
14-Jan-87	chem con	eei	formal.	waste formaldehyde solution	orm-a	un2209	na	330.00
29-Sep-87	chem con	eei	formal.	waste formaldehyde solution	orm-a	na9189	na	55.00
-- Count								2
-- Sum								385.00

date	transporter	tsdf	common name	dot description	dot class	un/na	epa id	gallons
29-Sep-87	chem con	eei	markem	waste flammable liquid, nos	flammable	un1993	d001	55.00
14-Jan-87	chem con	eei	markem	waste flammable liquid, nos	flammable	un1993	d001	165.00
-- Count								2
-- Sum								220.00
24-Nov-87	chem con	eei	microstrip	waste flam., liq., corr., nos	flammable	un2924	d001,2	825.00
16-Oct-87	chem con	eei	microstrip	waste flam., liq., corr., nos	flammable	un2924	d001,2	2310.00
15-Dec-87	chem con	eei	microstrip	waste flam., liq.,corr., nos	flammable	un2924	d001,2	1100.00
14-Jan-87	chem con	eei	microstrip	waste flam., liq., corr., nos	flammable	un2924	d001,002	2090.00
27-Oct-87	chem con	eei	microstrip	waste flam., liq., corr., nos	flammable	un1924	d001,2	605.00
15-Oct-87	chem con	eei	microstrip	waste flam., liq., corr., nos	flammable	un2924	d001,2	1980.00
10-Nov-87	chem con	eei	microstrip	waste flam., liq., corr., nos	flammable	un2924	d001,2	715.00
-- Count								7
-- Sum								9625.00
11-Nov-87	chem con	eei	mixed acid	waste acid liquid, nos	corrosive	na1760	d002	5000.00
16-Dec-87	chem con	eei	mixed acid	waste acid liquid, nos	corrosive	na1760	d002	5000.00
26-May-87	chem con	eei	mixed acid	waste acid liquid, nos	corroisve	na1760	d002,8	55.00
21-Apr-87	chem con	eei	mixed acid	waste acid liquid, nos	corrosive	na1760	d002	4700.00
25-Sep-87	chem con	eei	mixed acid	waste acid liquid, nos	corrosive	na1760	d002	4700.00
11-Mar-87	chem con	eei	mixed acid	waste acid liquid, nos	corrosive	un1760	d002	55.00
19-Oct-87	chem con	eei	mixed acid	waste acid liquid, nos	corrosive	un1760	d002	5000.00
14-May-87	chem con	eei	mixed acid	waste acid liquid, nos	corrosive	na1760	d002	4700.00
02-Sep-87	chem con	eei	mixed acid	waste acid liquid, nos	corrosive	na1760	d002,8	55.00
15-Jul-87	chem con	eei	mixed acid	waste acid liquid, nos	corrosive	na1760	d002	4700.00
14-Jan-87	chem con	eei	mixed acid	waste acid liquid, nos	corrosive	un1760	d002	110.00
19-Mar-87	chem con	eei	mixed acid	waste acid liquid, nos	corrosive	na1760	d002	4500.00
11-Aug-87	chem con	eei	mixed acid	waste acid liquid, nos	corrosive	un1760	d002	4700.00
-- Count								13
-- Sum								43275.00
18-Feb-87	chem con	eei	mixed hf	waste acid liquid, nos	corrosive	na1760	d002	4700.00
05-May-87	chem con	eei	mixed hf	waste acid liquid, nos	corrosive	na1760	d002	4800.00
12-Mar-87	chem con	eei	mixed hf	waste acid liquid, nos	corrosive	na1760	d002	4700.00
13-Jul-87	chem con	eei	mixed hf	waste acid liquid, nos	corrosive	na1760	d002	4500.00
05-Nov-87	chem con	eei	mixed hf	waste acid liquid, nos	corrosive	na1760	d002	5000.00
18-Nov-87	chem con	eei	mixed hf	waste acid liquid, nos	corrosive	na1760	d002	4300.00
21-Oct-87	chem con	eei	mixed hf	waste acid liquid, nos	corrosive	na1760	d002	5000.00
14-Dec-87	chem con	eei	mixed hf	waste acid liquid, nos	corrosive	na1760	d002	5000.00
29-Jul-87	chem con	eei	mixed hf	waste acid liquid, nos	corrosive	na1760	d002	5000.00
25-Feb-87	chem con	eei	mixed hf	waste acid liquid, nos	corrosive	na1760	d002	0.00
10-Jun-87	chem con	eei	mixed hf	waste acid liquid, nos	corrosive	na1760	d002	5000.00
04-Jun-87	chem con	eei	mixed hf	waste acid liquid, nos	corrosive	na1760	d002	5000.00
14-Apr-87	chem con	eei	mixed hf	waste acid liquid, nos	corrosive	na1760	d002	4800.00
08-Sep-87	chem con	eei	mixed hf	waste acid liquid, nos	corrosive	na1760	d002	4700.00
20-Aug-87	chem con	eei	mixed hf	waste acid liquid, nos	corrosive	na1760	d002	5275.00

date	transporter	tsdf	common name	dot description	dot class	un/na	epa id	gallons
01-Oct-87	chem con	eei	mixed hf	waste acid liquid, nos	corrosive	na1760	d002	4700.00
25-Mar-87	chem con	eei	mixed hf	waste acid liquid, nos	corrosive	na1760	d002	4900.00
03-Mar-87	chem con	eei	mixed hf	waste acid liquid, nos	corrosive	na1760	d002	5000.00
-- Count								18
-- Sum								82375.00
14-Jan-87	chem con	eei	scrub sld	hazardous waste solid, nos	orm-e	na9189	na	220.00
-- Count								1
-- Sum								220.00
24-Nov-87	chem con	eei	shipley	waste corrosive liquid, nos	corrosive	un1760	d002	165.00
15-Dec-87	chem con	eei	shipley	waste corrosive liquid, nos	corrosive	un1760	d002	55.00
31-Jul-87	chem con	eei	shipley	waste corrosive liquid, nos	corrosive	un1760	d002	55.00
02-Sep-87	chem con	eei	shipley	waste corrosive liquid, nos	corrosive	un1760	d002	55.00
14-Jan-87	chem con	eei	shipley	waste corrosive liquid, nos	corrosive	un1760	d002	165.00
11-Mar-87	chem con	eei	shipley	waste corrosive liquid, nos	corrosive	un1760	d002	55.00
03-Apr-87	chem con	eei	shipley	waste corrosive liquid, nos	corrosive	un1760	d002	110.00
24-Feb-87	chem con	eei	shipley	waste corrosive liquid, nos	corrosive	un1760	d002	55.00
26-May-87	chem con	eei	shipley	waste corrosive liquid, nos	corrosive	un1760	d002	165.00
17-Feb-87	chem con	eei	shipley	waste corrosive liquid, nos	corrosive	un1760	d002	110.00
14-Jan-87	chem con	eei	shipley	waste corrosive liquid, nos	corrosive	un1760	d002	165.00
27-Oct-87	chem con	eei	shipley	waste corrosive liquid, nos	corrosive	un1760	d002	165.00
30-Jun-87	chem con	eei	shipley	waste corrosive liquid, nos	corrosive	un1760	d002	165.00
-- Count								13
-- Sum								1485.00
10-Jul-87	chem con	eei	sulfuric	waste sulfuric acid	corrosive	un1830	d002	3200.00
-- Count								1
-- Sum								3200.00
10-Aug-87	chem con	farmland	sulfuric	waste sulfuric acid	corrosive	un1830	d002	3200.00
01-May-87	chem con	farmland	sulfuric	waste sulfuric acid	corrosive	un1830	d002	0.00
10-Nov-87	chem con	farmland	sulfuric	waste sulfuric acid	corrosive	un1830	d002	3200.00
09-Oct-87	chem con	farmland	sulfuric	waste sulfuric acid	corrosive	un1830	d002	3200.00
17-Mar-87	chem con	farmland	sulfuric	waste sulfuric acid	corrosive	un1830	d002	3200.00
27-Aug-87	chem con	farmland	sulfuric	waste sulfuric acid	corrosive	un1830	d002	3300.00
16-Feb-87	chem con	farmland	sulfuric	waste sulfuric acid	corrosive	un1830	d002	3200.00
21-May-87	chem con	farmland	sulfuric	waste sulfuric acid	corrosive	un1830	d002	3200.00
13-Feb-87	chem con	farmland	sulfuric	waste sulfuric acid	corrosive	un1830	d002	3200.00
-- Count								9
-- Sum								25700.00

date	transporter	tsdf	common name	dot description	dot class	un/na	epa id	gallons
12-Aug-87	hwc	marine shale	flam solid	waste flammable solid, nos	flammable	un1993	d001	110.00
-- Count								1
-- Sum								110.00
19-Jun-87	hwc	marine shale	microstrip	waste flam., liq., corr., nos	flammable	un2924	d001,2	4510.00
15-Jun-87	chem con	marine shale	microstrip	waste flam., liq.,corr., nos	flammable	un2924	d001,2	4840.00
19-Jun-87	hwc	marine shale	microstrip	waste flam., liq., corr., nos	flammable	un2924	d001,2	660.00
08-Sep-87	hwc	marine shale	microstrip	waste flam., liq., corr., nos	flammable	un2924	d001,2	1980.00
31-Jul-87	chem con	marine shale	microstrip	waste flam., liq., corr., nos	flammable	un2924	d001,2	2365.00
-- Count								5
-- Sum								14355.00
12-Aug-87	hwc	marine shale	paint	waste flammable solid, nos	flammable	UN1325	d001	87.00
10-Nov-87	hwc	marine shale	paint	waste flammable liquid, nos	flammable	un1993	d001	55.00
-- Count								2
-- Sum								142.00
12-Aug-87	hwc	marine shale	resist bags	waste flammable liquid, nos	flammable	UN1325	d001	220.00
10-Nov-87	hwc	marine shale	resist bags	waste flammable solid, nos	flammable	un1325	d001	110.00
12-Aug-87	hwc	marine shale	resist bags	waste flammable liquid, nos	flammable	UN1325	d001	110.00
-- Count								3
-- Sum								440.00
13-Jan-87	hwc	solid tek	developer	waste corrosive liquid, nos	corrosive	na9189	na	715.00
-- Count								1
-- Sum								715.00
17-Feb-87	hwc	solid tek	nick strip	waste corrosive liquid, nos	corrosive	un1760	d002,8	55.00
-- Count								1
-- Sum								55.00
04-Mar-87	amer chem	suttles	cyanide	waste cyanide solution, nos	poison b	un1935	f007	55.00
-- Count								1
-- Sum								55.00

date	transporter	tsdf	common name	dot description	dot class	un/na	epa id	gallons
28-Apr-87	chem con	tricil	mixed solv	waste flammable liquid, nos	flammable	un1993	d001	6000.00
-- Count								1
-- Sum								6000.00
== Count								284
== Sum								306702.00

HARRIS SEMICONDUCTOR

CALENDAR YEAR 1987

VOC – MATERIAL BALANCE

ATTACHMENT 2

INDUSTRIAL WASTEWATER DISCHARGE

	CHLOROFORM		BROMODICHLORO-METHANE		DIBROMOCHLORO-METHANE		12 DICHLORO-BENZENE		14 DICHLORO-BENZENE		ETHYL BENZENE		TETRACHLROETHENE		TRICHLORO-ETHANE		XYLENE		METHANOL		ACETONE		IPA		VINYL CHLORIDE	
DATE	INFL.	EFFL.	INFL.	EFFL.	INFL.	EFFL.	INFL.	EFFL.	INFL.	EFFL.	INFL.	EFFL.	INFL.	EFFL.	INFL.	EFFL.	INFL.	EFFL.	INFL.	EFFL.	INFL.	EFFL.	INFL.	EFFL.	INFL.	EFFL.	INFL.	EFFL.
13-Feb-87		41		7.8		0		0		0		0		0		0		0				1000				0
30-Apr-87	4.1	5.2	0	8.9	2.9	7.8	0	0	5	0	0	0	0	0	1.6	0	1.4	3.7	2600	3500	5400	1700	3500	2000	0	0
01-May-87	5.3	0	0	0	5.7	10	241	177	0	0	7	0	46	7.8	1.9	0	8.3	31	3300	3100	13300	24600	1800	1300	0	0
13-Aug-87	3	3	0	2	0	2	0	0	0	0	0	0	0	0	2	0	9	0	<1000	<1000	<250	340	<250	<250	0	0
20-Aug-87	11	2	8	2	11	2	0	0	0	0	0	0	0	0	0	0	0	0	<1000	<1000	<250	<250	<250	<250	0	0
27-Aug-87	5	4	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	<1000	<1000	290	450	<250	<250	0	0
03-Sep-87	3	2	0	2	0	4	0	0	0	0	0	0	0	0	0	0	0	0	<1000	<1000	2400	2000	1200	<250	0	0
10-Sep-87	4	3	2	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8800	<1000	5000	4400	4400	4400	0	0
17-Sep-87	5	4	3	6	0	9	0	0	0	0	0	0	0	0	0	0	0	0	<1000	22400	2200	2700	4100	2100	0	0
24-Sep-87																										
01-Oct-87	6	4	2	10	0	9	0	0	0	0	0	0	0	0	0	0	0	0	<1000	<1000	2100	<250	<250	<250	0	0
08-Oct-87	10.3	5.1	2.1	10.6	0	8.9	0	0	0	0	0	0	0	0	0	0	0	0	<1000	<1000	2400	1800	2700	<250	0	0
15-Oct-87	2.2	5	1.3	9.3	0	13.2	0	0	0	0	0	0	0	0	0	0	0	0	2500	<1000	2400	3300	3700	1300	0	0
22-Oct-87	6	2	3	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	5200	<1000	6100	3200	56800	1200	0	0
29-Oct-87																										
05-Nov-87	6	2	2	2	0	2	0	0	0	0	0	0	0	0	6	0	0	0	<1000	<1000	1200	1200	<250	<250	0	0
12-Nov-87	10	7	3	9	1	8	0	0	0	0	0	0	0	0	2	0	0	0	5200	1200	3300	3700	3000	2000	0	0
19-Nov-87	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	<1000	<1000	<250	2500	2900	<250	0	0
26-Nov-87	16	7	9	13	4	11	0	0	0	0	0	0	0	0	0	3	0	0	<1000	2200	1600	2400	11300	5700	0	0
03-Dec-87	8	7	4	9	2	4	0	0	0	0	0	0	0	0	36	8	0	0	<1000	2000	<250	1400	5800	3100	0	0
10-Dec-87																										
17-Dec-87																										
24-Dec-87																										
31-Dec-87																										
07-Jan-88																										
14-Jan-88																										
21-Jan-88																										
AVERAGE	5.4	6.2	1.8	5.2	1.6	5.4	20.1	13.6	0.4	0.0	0.6	0.0	3.8	0.6	0.5	0.0	1.6	2.7	1866.7	2833.3	3465.8	3537.7	6516.7	1025.0	0.0	0.0

all data reported in parts per billion (ppb)

TABLE II

CALENDAR YEAR 1987 SOLVENT MATERIAL BALANCE

MONTH 1987	FLOW MGM	FLOWS MGD	COMPOUND	BENZENE	1,2 DICHLORO- BENZENE	1,4 DICHLORO- BENZENE	ETHYL BENZENE	PERCHLORO- ETHYLENE	TRICHLORO- ETHANE	XYLENE	METHANOL	ACETONE	IPA
			AVG. CONC. (ppb)		13.6	0.0	0.0	0.6	0.0	2.7	2833.0	3538.0	1025.0
JAN	33.006	1.065			3.74	0.00	0.00	0.17	0.00	0.74	779.84	973.91	282.15
FEB	32.522	1.162			3.69	0.00	0.00	0.16	0.00	0.73	768.40	959.62	278.01
MAR	37.055	1.195			4.20	0.00	0.00	0.19	0.00	0.83	875.51	1093.38	316.76
APR	35.123	1.171			3.98	0.00	0.00	0.18	0.00	0.79	829.86	1036.37	300.25
MAY	38.45	1.241			4.36	0.00	0.00	0.19	0.00	0.87	908.47	1134.54	328.69
JUN	37.353	1.245			4.24	0.00	0.00	0.19	0.00	0.84	882.55	1102.17	319.31
JUL	39.967	1.289			4.53	0.00	0.00	0.20	0.00	0.90	944.31	1179.30	341.66
AUG	38.721	1.249			4.39	0.00	0.00	0.19	0.00	0.87	914.87	1142.54	331.01
SEP	36.326	1.211			4.12	0.00	0.00	0.18	0.00	0.82	858.28	1071.87	310.53
OCT	35.784	1.154			4.06	0.00	0.00	0.18	0.00	0.81	845.48	1055.88	305.90
NOV	33.817	1.127			3.84	0.00	0.00	0.17	0.00	0.76	799.00	997.84	289.08
DEC	34.698	1.119			3.94	0.00	0.00	0.17	0.00	0.78	819.82	1023.83	296.62
ANNUAL TOTALS	432.822	14.228			49.09	0.00	0.00	2.17	0.00	9.75	10226.38	12771.24	3699.98

TOTAL VOC (LBS) 26758.60
TOTAL VOC (TONS) 13.38

TABLE III

HARRIS SEMICONDUCTOR
DEEPWELL INJECTION REPORT
DISCHARGE VOLUMES (GALLONS)

DATE	TOTAL WELL # 1	TOTAL WELL # 2	TOTAL # 1 & # 2	TOTAL WWTP	TOTAL GOV. SYS.
01-Jan-87	0	821700	845000	940500	0
02-Jan-87	0	828600	853300	901200	0
03-Jan-87	0	928600	950300	1004200	0
04-Jan-87	0	996500	1019800	1087800	0
05-Jan-87	0	1045700	1069700	1050000	0
06-Jan-87	0	1108000	1131600	1050000	0
07-Jan-87	0	1139600	1161700	1202300	0
08-Jan-87	0	1092900	1115800	1166500	0
09-Jan-87	0	1105800	1128500	1191100	0
10-Jan-87	0	1051600	1072800	1156300	0
11-Jan-87	0	978000	998200	1096100	0
12-Jan-87	0	926700	951500	981800	0
13-Jan-87	0	1061500	1085800	1119300	0
14-Jan-87	0	1120700	1139800	911300	0
15-Jan-87	0	1102200	1120200	1144600	0
16-Jan-87	0	1086400	1103900	1176400	0
17-Jan-87	0	1077800	1095500	1180700	0
18-Jan-87	0	1043000	1060800	1131100	0
19-Jan-87	0	1043900	1060300	1136800	0
20-Jan-87	0	1084800	1104200	1202100	0
21-Jan-87	0	1053400	1070900	1131800	0
22-Jan-87	0	1066800	1083200	1167300	0
23-Jan-87	0	1072400	1090300	1150400	0
24-Jan-87	0	1093300	1110300	1147600	0
25-Jan-87	0	492600	498800	544600	0
26-Jan-87	0	690300	694500	657700	0
27-Jan-87	0	864500	874600	907100	0
28-Jan-87	0	1015500	1035100	1000000	0
29-Jan-87	0	1164000	1184900	1000000	0
30-Jan-87	0	1143300	1162800	1205500	0
31-Jan-87	0	1206900	1227100	1264000	0
== Sum =====					
	0	31507000	32101200	33006100	0
== Average =====					
	0	1016354.84	1035522.58	1064712.9	0
== Min =====					
	0	492600	498800	544600	0
== Max =====					
	0	1206900	1227100	1264000	0

HARRIS SEMICONDUCTOR
DEEPWELL INJECTION REPORT
DISCHARGE VOLUMES (GALLONS)

DATE	TOTAL WELL # 1	TOTAL WELL # 2	TOTAL # 1 & # 2	TOTAL WWTP	TOTAL GOV. SYS.
01-Feb-87	0	1316700	1339000	1360700	0
02-Feb-87	0	934800	951100	985500	0
03-Feb-87	0	923000	936900	963500	0
04-Feb-87	0	1078000	1096400	1164700	0
05-Feb-87	0	1172200	1192200	1274400	0
06-Feb-87	0	1058900	1078600	1154600	0
07-Feb-87	0	957200	973800	1057900	0
08-Feb-87	0	888800	908500	985900	0
09-Feb-87	0	782000	793100	871000	0
10-Feb-87	0	1019200	1037200	1090900	0
11-Feb-87	0	1153600	1173200	1210700	0
12-Feb-87	0	1182400	1201200	1242400	0
13-Feb-87	0	1152500	1170900	1209900	0
14-Feb-87	0	1169900	1190200	1237900	0
15-Feb-87	0	1034300	1052900	1101000	0
16-Feb-87	0	956600	376600	1059100	0
17-Feb-87	0	1121100	507600	1234200	0
18-Feb-87	0	1161100	486000	1253600	0
19-Feb-87	0	1138300	469800	1222400	0
20-Feb-87	0	1147700	385900	1218700	0
21-Feb-87	0	1134500	563200	1242600	0
22-Feb-87	0	1082400	365100	1183000	0
23-Feb-87	0	1003000	363700	1125000	0
24-Feb-87	0	1016800	428600	1100000	0
25-Feb-87	0	1087100	450900	1182600	0
26-Feb-87	0	1169300	515100	1256200	0
27-Feb-87	0	1151900	520800	1268700	0
28-Feb-87	0	1127200	507400	1265100	0
== Sum ==					
	0	30120500	22035900	32522200	0
== Average ==					
	0	1075732.14	786996.429	1161507.14	0
== Min ==					
	0	782000	363700	871000	0
== Max ==					
	0	1316700	1339000	1360700	0

HARRIS SEMICONDUCTOR
DEEPWELL INJECTION REPORT
DISCHARGE VOLUMES (GALLONS)

DATE	TOTAL WELL # 1	TOTAL WELL # 2	TOTAL # 1 & # 2	TOTAL WWTP	TOTAL GOV. SYS.
01-Mar-87	0	977000	394100	1116100	0
02-Mar-87	0	1075800	449000	1174700	0
03-Mar-87	1085300	63300	25400	1230400	0
04-Mar-87	1116900	100	0	1215500	0
05-Mar-87	1078200	0	0	1229300	0
06-Mar-87	1156500	0	0	1235400	0
07-Mar-87	1159000	0	0	1253300	0
08-Mar-87	1052000	0	0	1187500	0
09-Mar-87	1016500	0	0	1146700	0
10-Mar-87	1124700	0	0	1268100	0
11-Mar-87	1108200	0	0	1220600	0
12-Mar-87	1121600	0	0	1220000	0
13-Mar-87	1168600	0	0	1262800	0
14-Mar-87	1121100	0	0	1179900	0
15-Mar-87	1008000	0	0	1118000	0
16-Mar-87	973100	0	0	1075500	0
17-Mar-87	1093800	0	0	1217900	0
18-Mar-87	1111000	0	0	1228100	0
19-Mar-87	1064500	0	0	1184700	0
20-Mar-87	1070300	0	0	1251400	0
21-Mar-87	1107500	0	0	1241500	0
22-Mar-87	934800	0	0	1051900	0
23-Mar-87	976000	0	0	1112800	0
24-Mar-87	1125400	0	0	1276800	0
25-Mar-87	1043200	0	0	1237000	0
26-Mar-87	1006400	0	0	1209300	0
27-Mar-87	1098500	0	0	1296400	0
28-Mar-87	984100	0	0	1160000	0
29-Mar-87	878300	0	0	1092000	0
30-Mar-87	1010100	0	0	1178300	0
31-Mar-87	1041100	0	0	1182500	0
== Sum					
	30834700	2116200	868500	37054400	0
== Average					
	994667.742	68264.5161	28016.129	1195303.23	0
== Min					
	0	0	0	1051900	0
== Max					
	1168600	1075800	449000	1296400	0

HARRIS SEMICONDUCTOR
DEEPWELL INJECTION REPORT
DISCHARGE VOLUMES (GALLONS)

DATE	TOTAL WELL # 1	TOTAL WELL # 2	TOTAL # 1 & # 2	TOTAL WWTP	TOTAL GOV. SYS.
01-Apr-87	1080200	0	0	1194800	0
02-Apr-87	1124900	0	0	1229100	0
03-Apr-87	1144600	0	0	1288700	0
04-Apr-87	987600	0	0	1118400	0
05-Apr-87	755600	0	0	926500	0
06-Apr-87	936600	0	0	1029400	0
07-Apr-87	1115400	0	0	1227100	0
08-Apr-87	1171800	0	0	1266600	0
09-Apr-87	1066200	0	0	1208100	0
10-Apr-87	1106000	0	0	1273300	0
11-Apr-87	1043700	0	0	1204800	0
12-Apr-87	792200	0	0	967300	0
13-Apr-87	709100	0	0	935700	0
14-Apr-87	803400	0	0	1021200	0
15-Apr-87	1059400	0	0	1225500	0
16-Apr-87	1133400	0	0	1285900	0
17-Apr-87	1118600	0	0	1245300	0
18-Apr-87	1436800	0	0	1221400	0
19-Apr-87	682700	0	0	1150500	0
20-Apr-87	1005300	0	0	1535500	0
21-Apr-87	1113400	0	0	869100	0
22-Apr-87	1092700	0	0	1251000	0
23-Apr-87	1035400	0	0	1213100	0
24-Apr-87	680900	0	0	810800	0
25-Apr-87	1099100	0	0	1318100	0
26-Apr-87	882300	0	0	1126600	0
27-Apr-87	993100	0	0	1192700	0
28-Apr-87	1045600	0	686000	1229600	0
29-Apr-87	1115800	0	1139300	1306300	0
30-Apr-87	1056000	0	1079800	1250000	0
== Sum ====					
	30387800	0	2905100	35122400	0
== Average ====					
	1012926.67	0	96836.6667	1170746.67	0
== Min ====					
	680900	0	0	810800	0
== Max ====					
	1436800	0	1139300	1535500	0

HARRIS SEMICONDUCTOR
DEEPWELL INJECTION REPORT
DISCHARGE VOLUMES (GALLONS)

DATE	TOTAL WELL # 1	TOTAL WELL # 2	TOTAL # 1 & # 2	TOTAL WWTP	TOTAL GOV. SYS.
01-May-87	1044800	0	1068000	1250000	0
02-May-87	1095800	0	1119500	1250000	15600
03-May-87	966200	0	989800	1200400	0
04-May-87	983100	0	1007800	1229600	5200
05-May-87	1113600	0	1136000	1332200	18500
06-May-87	1157000	0	1150800	1373400	9800
07-May-87	1024300	0	1079000	1269700	12800
08-May-87	1098500	0	1121700	1313700	12100
09-May-87	915700	0	935200	1120200	10900
10-May-87	1038100	0	1062700	1286000	2700
11-May-87	1049800	0	1071800	1277200	1100
12-May-87	1111300	0	1132900	1324500	14000
13-May-87	927300	280200	1224900	1335400	12500
14-May-87	936500	108600	1060600	1208200	6600
15-May-87	1086800	0	1110300	1288400	21700
16-May-87	1006700	0	1031700	1226900	9600
17-May-87	1084900	0	1110900	1323500	2600
18-May-87	973500	0	996000	1229700	3300
19-May-87	1098500	0	1122600	1340300	14800
20-May-87	1154600	0	1179000	1332700	21800
21-May-87	1090500	0	1114800	1280000	12400
22-May-87	1095200	0	1119500	1262000	10600
23-May-87	1059600	0	1083100	1208100	15800
24-May-87	976100	0	1000700	1150700	0
25-May-87	727700	0	746400	926000	0
26-May-87	939000	0	961300	1079900	2500
27-May-87	1068000	0	1090800	1250800	6500
28-May-87	1063500	0	1085600	1221600	13400
29-May-87	1086500	0	1106500	1255900	12800
30-May-87	989400	0	1016400	1162900	9000
31-May-87	954600	0	978200	1140200	0
== Sum	31917100	388800	33014500	38450100	278600
== Average	1029583.87	12541.9355	1064983.87	1240325.81	8987.09677
== Min	727700	0	746400	926000	0
== Max	1157000	280200	1224900	1373400	21800

HARRIS SEMICONDUCTOR
DEEPWELL INJECTION REPORT
DISCHARGE VOLUMES (GALLONS)

DATE	TOTAL WELL # 1	TOTAL WELL # 2	TOTAL # 1 & # 2	TOTAL WWTP	TOTAL GOV. SYS.
01-Jun-87	955400	0	978300	1154900	5000
02-Jun-87	1300	1167100	1187500	1330800	11500
03-Jun-87	0	904300	919500	1075400	16000
04-Jun-87	0	1019300	1036600	1179100	24700
05-Jun-87	0	1164600	1183500	1287600	14100
06-Jun-87	0	1042300	1058600	1189300	19400
07-Jun-87	0	898800	915600	1043400	0
08-Jun-87	0	901100	916300	976700	12400
09-Jun-87	0	1152800	1172200	1195800	29200
10-Jun-87	0	1214900	1234500	1259400	20000
11-Jun-87	0	1236700	1256700	1316100	16100
12-Jun-87	0	1264100	1283900	1342400	19000
13-Jun-87	0	1240300	1260000	1308700	19700
14-Jun-87	0	1026200	1042200	1158500	0
15-Jun-87	0	1051000	1068100	1170100	8200
16-Jun-87	0	1177100	1196400	1309200	13200
17-Jun-87	0	1172700	1191800	1288000	12400
18-Jun-87	0	1223400	1243000	1379100	8900
19-Jun-87	0	1265500	1284200	1382700	19500
20-Jun-87	0	1162200	1180300	1300700	13600
21-Jun-87	0	1082500	1100200	1234700	9900
22-Jun-87	0	1090900	1108400	1227900	10000
23-Jun-87	0	1198900	1217400	1326100	23000
24-Jun-87	0	1196300	1214700	1295400	17300
25-Jun-87	0	1199300	1218900	1303600	12200
26-Jun-87	0	1209000	1227600	1333600	11700
27-Jun-87	0	1177600	1195800	1269600	13300
28-Jun-87	0	1072900	1089400	1173700	5800
29-Jun-87	0	1132300	1152400	1245800	4200
30-Jun-87	0	1186300	1203600	1294500	10500
== Sum ==					
	956700	32830400	34337600	37352800	400800
== Average ==					
	31890	1094346.67	1144586.67	1245093.33	13360
== Min ==					
	0	0	915600	976700	0
== Max ==					
	955400	1265500	1284200	1382700	29200

HARRIS SEMICONDUCTOR
DEEPWELL INJECTION REPORT
DISCHARGE VOLUMES (GALLONS)

DATE	TOTAL WELL # 1	TOTAL WELL # 2	TOTAL # 1 & # 2	TOTAL WWTP	TOTAL GOV. SYS.
01-Jul-87	1700	1203000	1222700	1314400	11300
02-Jul-87	0	1217200	1237400	1333700	7800
03-Jul-87	0	1124700	1139200	1208300	11400
04-Jul-87	0	995900	1007500	1120000	0
05-Jul-87	0	978100	984200	1097900	0
06-Jul-87	0	1048200	1059100	551300	2400
07-Jul-87	0	1190700	1209200	1954900	6000
08-Jul-87	0	1308100	1327400	1407900	9300
09-Jul-87	0	1177700	1197900	1308800	9400
10-Jul-87	0	1236200	1255000	1340900	14700
11-Jul-87	0	1220700	1240200	1339300	11300
12-Jul-87	0	1064800	1082700	1220500	0
13-Jul-87	0	1156000	1176300	1282800	1500
14-Jul-87	0	1325500	1349700	1411300	6700
15-Jul-87	0	1327100	1348600	1379200	10700
16-Jul-87	0	1343800	1366700	1398400	8900
17-Jul-87	0	1302400	1324700	1367000	10700
18-Jul-87	0	1210000	1232000	1347000	10500
19-Jul-87	0	29919000	1331300	1425900	0
20-Jul-87	0	0	936700	972300	3700
21-Jul-87	0	0	1185000	1304500	7300
22-Jul-87	0	0	1169300	1294600	13700
23-Jul-87	0	0	1243900	1376900	12400
24-Jul-87	0	0	1191900	1363200	10000
25-Jul-87	0	0	1419100	1537100	16000
26-Jul-87	0	0	1031300	1197200	0
27-Jul-87	0	0	780800	923700	3500
28-Jul-87	0	0	1122800	1275700	4400
29-Jul-87	0	0	1118800	1254900	19200
30-Jul-87	0	0	1192500	1317500	12500
31-Jul-87	0	0	1213800	1339300	8600
== Sum ====					
	1700	51349100	36697700	39966400	243900
== Average ====					
	54.8387097	1656422.58	1183796.77	1289238.71	7867.74194
== Min ====					
	0	0	780800	551300	0
== Max ====					
	1700	29919000	1419100	1954900	19200

HARRIS SEMICONDUCTOR
DEEPWELL INJECTION REPORT
DISCHARGE VOLUMES (GALLONS)

DATE	TOTAL WELL # 1	TOTAL WELL # 2	TOTAL # 1 & # 2	TOTAL WWTP	TOTAL GOV. SYS.
01-Aug-87	0	0	1194600	1301100	10400
02-Aug-87	0	0	1040700	1189600	0
03-Aug-87	0	0	1106500	1218300	10500
04-Aug-87	0	0	1239600	1373900	6800
05-Aug-87	0	0	1186600	1297900	10600
06-Aug-87	0	0	1175100	1305900	9200
07-Aug-87	0	0	1242200	1386200	7300
08-Aug-87	0	0	757200	888100	14800
09-Aug-87	0	0	773300	941800	0
10-Aug-87	0	0	1038000	1184800	900
11-Aug-87	0	0	1252200	1365700	3000
12-Aug-87	0	0	1247600	1330500	5200
13-Aug-87	0	0	1214000	1302600	9700
14-Aug-87	0	0	442600	1289700	0
15-Aug-87	0	0	0	1259200	15700
16-Aug-87	0	0	0	1180700	0
17-Aug-87	0	0	0	1199600	0
18-Aug-87	0	0	0	1291000	4300
19-Aug-87	0	0	0	1576500	12100
20-Aug-87	0	0	0	1170000	2000
21-Aug-87	0	0	0	1294000	9000
22-Aug-87	0	0	0	1180900	10800
23-Aug-87	3700	0	0	1006300	0
24-Aug-87	0	0	0	1104300	7100
25-Aug-87	1082200	0	0	1320400	4500
26-Aug-87	1152300	0	1103000	1349300	1800
27-Aug-87	1171600	0	1175700	1318300	8700
28-Aug-87	1030500	0	1195000	1374900	8500
29-Aug-87	1030500	0	1052400	1229100	3700
30-Aug-87	1112800	0	1136900	1337200	0
31-Aug-87	940200	0	964400	1152400	5200
== Sum ==					
	7523800	0	21537600	38720200	181800
== Average ==					
	242703.226	0	694761.29	1249038.71	5864.51613
== Min ==					
	0	0	0	888100	0
== Max ==					
	1171600	0	1252200	1576500	15700

HARRIS SEMICONDUCTOR
DEEPWELL INJECTION REPORT
DISCHARGE VOLUMES (GALLONS)

DATE	TOTAL WELL # 1	TOTAL WELL # 2	TOTAL # 1 & # 2	TOTAL WWTP	TOTAL GOV. SYS.
01-Sep-87	1436000	0	1461900	1671800	5600
02-Sep-87	904000	0	922800	1039800	2500
03-Sep-87	1171700	0	1192900	1305300	7300
04-Sep-87	744500	0	758100	1432600	13800
05-Sep-87	600	0	300	1137700	2800
06-Sep-87	0	0	0	1054800	1400
07-Sep-87	0	0	0	724700	10000
08-Sep-87	0	0	0	843200	9600
09-Sep-87	0	0	0	1293200	4700
10-Sep-87	0	0	0	1229100	8100
11-Sep-87	0	0	0	1242400	9100
12-Sep-87	0	0	0	1272800	2500
13-Sep-87	0	0	0	1249300	1600
14-Sep-87	0	0	0	1185200	6500
15-Sep-87	0	0	0	1350600	4300
16-Sep-87	0	0	0	1317000	5200
17-Sep-87	0	0	0	1354800	5300
18-Sep-87	0	0	0	1373400	7300
19-Sep-87	0	0	0	1290000	4800
20-Sep-87	0	0	0	1136500	0
21-Sep-87	0	0	0	726500	0
22-Sep-87	0	0	0	1781100	12000
23-Sep-87	0	0	0	1304000	2300
24-Sep-87	0	0	0	1352000	4500
25-Sep-87	0	0	0	1371700	5100
26-Sep-87	0	0	0	1162500	5300
27-Sep-87	0	0	0	703600	0
28-Sep-87	0	0	0	961700	4000
29-Sep-87	0	0	0	1166900	2800
30-Sep-87	0	0	0	1292000	7900
== Sum ==					
	4256800	0	4336000	36326200	156300
== Average ==					
	141893.333	0	144533.333	1210873.33	5210
== Min ==					
	0	0	0	703600	0
== Max ==					
	1436000	0	1461900	1781100	13800

HARRIS SEMICONDUCTOR
DEEPWELL INJECTION REPORT
DISCHARGE VOLUMES (GALLONS)

DATE	TOTAL WELL # 1	TOTAL WELL # 2	TOTAL # 1 & # 2	TOTAL WWTF	TOTAL GOV. SYS.
01-Oct-87	0	0	0	1202800	6200
02-Oct-87	0	0	0	1063600	6800
03-Oct-87	0	0	0	1308200	14700
04-Oct-87	0	0	0	954200	0
05-Oct-87	0	0	0	1149100	1600
06-Oct-87	0	0	0	1221600	7800
07-Oct-87	0	0	0	1196500	0
08-Oct-87	0	0	0	1219700	8700
09-Oct-87	0	0	0	1219700	5500
10-Oct-87	0	0	0	1215800	6200
11-Oct-87	0	0	0	1183500	400
12-Oct-87	0	0	0	1352800	7500
13-Oct-87	0	0	0	948100	3900
14-Oct-87	0	0	0	1222400	4400
15-Oct-87	0	0	0	1167000	6200
16-Oct-87	0	0	0	1266800	4200
17-Oct-87	0	0	0	1265500	10900
18-Oct-87	0	0	0	793500	200
19-Oct-87	0	0	0	1105900	0
20-Oct-87	0	0	0	1176500	12400
21-Oct-87	0	0	0	1197800	3300
22-Oct-87	0	0	0	1183000	9100
23-Oct-87	0	0	0	1175100	4800
24-Oct-87	0	0	0	1104100	10000
25-Oct-87	0	0	0	1093900	0
26-Oct-87	0	0	0	1067100	0
27-Oct-87	0	0	0	1095600	4700
28-Oct-87	0	0	0	1160300	5600
29-Oct-87	0	0	0	1150000	10700
30-Oct-87	0	0	0	1173500	8400
31-Oct-87	0	0	0	1149900	3900
== Sum ==					
	0	0	0	35783500	168100
== Average ==					
	0	0	0	1154306.45	5422.58065
== Min ==					
	0	0	0	793500	0
== Max ==					
	0	0	0	1352800	14700

HARRIS SEMICONDUCTOR
DEEPWELL INJECTION REPORT
DISCHARGE VOLUMES (GALLONS)

DATE	TOTAL WELL # 1	TOTAL WELL # 2	TOTAL # 1 & # 2	TOTAL WWTP	TOTAL GOV. SYS.
01-Nov-87	0	0	0	1114300	2500
02-Nov-87	0	0	0	1125900	3000
03-Nov-87	1181700	0	1205800	1312900	6600
04-Nov-87	1155400	0	1175900	1252200	10000
05-Nov-87	1097300	0	1121000	1305400	7800
06-Nov-87	1083400	0	1106100	1271800	6600
07-Nov-87	1087200	0	1110900	1189800	7800
08-Nov-87	899100	0	919900	1014800	0
09-Nov-87	988700	0	1012500	1118900	200
10-Nov-87	1051600	0	1074800	1185900	4700
11-Nov-87	1194700	0	1217500	1331000	3800
12-Nov-87	1162400	0	1185900	1244800	4300
13-Nov-87	1121400	0	1143700	1190300	6100
14-Nov-87	1102600	0	1126100	1174700	7300
15-Nov-87	988100	0	1010200	1102300	0
16-Nov-87	876000	0	896300	986300	6900
17-Nov-87	1196600	0	1219400	1326300	5800
18-Nov-87	1231100	0	1252900	1007500	5000
19-Nov-87	994200	0	1014600	1482400	8100
20-Nov-87	1170400	0	1193100	1249300	12900
21-Nov-87	1059500	0	1082100	1151600	9500
22-Nov-87	1074700	0	1098300	1158500	0
23-Nov-87	965200	0	987100	1078200	4000
24-Nov-87	860000	0	877400	1005900	8500
25-Nov-87	1057900	0	1078000	1170000	6300
26-Nov-87	3141400	0	3204200	3218100	6700
27-Nov-87	0	0	0	0	0
28-Nov-87	0	0	0	0	0
29-Nov-87	0	0	0	0	0
30-Nov-87	930800	0	949800	1047400	9700
== Sum ======					
	28671400	0	29263500	33816500	154100
== Average ======					
	955713.333	0	975450	1127216.67	5136.66667
== Min ======					
	0	0	0	0	0
== Max ======					
	3141400	0	3204200	3218100	12900

HARRIS SEMICONDUCTOR
DEEPWELL INJECTION REPORT
DISCHARGE VOLUMES (GALLONS)

DATE	TOTAL WELL # 1	TOTAL WELL # 2	TOTAL # 1 & # 2	TOTAL WWTP	TOTAL GOV. SYS.
01-Dec-87	1193000	0	1217200	1285500	7699
02-Dec-87	1102900	0	1124700	1191700	4101
03-Dec-87	1125100	0	1148300	1213799	7700
04-Dec-87	1232800	0	1282000	1336100	8200
05-Dec-87	1127000	0	1149800	1224801	4300
06-Dec-87	1110900	0	1135500	1123500	0
07-Dec-87	1024500	0	1049100	1072800	2400
08-Dec-87	1102600	0	1126600	1228800	4400
09-Dec-87	1159900	0	1184300	1285100	4300
10-Dec-87	1104500	0	1129300	1249000	7200
11-Dec-87	1140600	0	1164800	1297100	4900
12-Dec-87	1105700	0	1128300	1200800	3500
13-Dec-87	1001100	0	1024500	1099400	0
14-Dec-87	1070800	0	1094700	1166000	4100
15-Dec-87	1093300	0	1126400	1266400	5800
16-Dec-87	1013100	0	1174900	1314000	2300
17-Dec-87	1083700	0	1357000	1233800	6600
18-Dec-87	1046600	0	1019600	1198000	2500
19-Dec-87	1077200	0	1051300	1269900	2700
20-Dec-87	1042600	0	1016200	1267000	0
21-Dec-87	988600	0	960200	1156900	7700
22-Dec-87	1111100	0	1088600	1309600	7800
23-Dec-87	1125800	0	1100000	1340400	6000
24-Dec-87	677300	0	659200	802600	5300
25-Dec-87	0	0	0	0	0
26-Dec-87	0	0	0	0	0
27-Dec-87	2276600	0	2284800	2917600	0
28-Dec-87	615300	0	587600	750700	0
29-Dec-87	521700	0	500800	663400	0
30-Dec-87	595500	0	565400	732700	0
31-Dec-87	395300	0	375700	500400	0
== Sum ==					
	30265100	0	30826800	34697800	109500
== Average ==					
	976293.548	0	994412.903	1119283.87	3532.25806
== Min ==					
	0	0	0	0	0
== Max ==					
	2276600	0	2284800	2917600	8200

HARRIS SEMICONDUCTOR
CALENDAR YEAR 1987
VOC – MATERIAL BALANCE
ATTACHMENT 3
AIR EMISSIONS

SOLVENT SCRUBBERS--HARRIS SEMICONDUCTOR

BLDG	SCRUBBER#	ACTUAL PRODUCTION SCHEDULE (hrs/yr)	TOTAL YEARLY VOC EMISSIONS (ton/yr)
04	F04S01	8760	0.26
04	F04S02	8760	min
04	F04S03	8760	1.93
04	F04S08	8760	8.77
51	F51S02	7488	10.04
51	F51S03	7488	3.28
51	F51S04	7488	1.51
51	F51S05	7488	14.51
54	F54S01	4160	8.70
54	F54S02	4160	8.70
54	F54S03	8760	32.59
54	F54S04	8760	32.59
57	F57S01	4160	0.95
58	F58S01	7488	2.49
58	F58S02	520	0.10
59	F59S03	5980	0.37
60	F60S01	4160	min
61	F61S01	1040	0.07
62	F62S02	2112	0.32
63	F63S02	7488	1.78
63	F63S03	4160	2.35
			131.29

* Above emission data includes offshift emissions.
* When multiple testing was performed, values are indicative of highest VOC concentrations observed.

HARRIS SEMICONDUCTOR
CALENDAR YEAR 1987
VOC – MATERIAL BALANCE
ATTACHMENT 4
CHEMICAL USAGE

CB

TABLE IV

CODE	CHEMICAL	TRADE NAME	NO COMPONENT	COMPONENT	UNITS
S	1,1,1 TRIMETHYL-N-TRIMETHYL ETHER	HMDS	1234.320	0.000	P
S	1,1,1 TRIMETHYL-N-TRIMETHYL ETHER	HMDS 10%	37029.600		P
S	1,1,1 TRIMETHYL-N-TRIMETHYL ETHER	HMDS BTL	0.057		P
S	2-ETHOXYETHYL ACETATE	PHOTORESIST, WAYCOAT HPR 205		686.949	P
S	2-ETHOXYETHYL ACETATE	PHOTORESIST, SHIPLEY MICROPOSIT SAL 601-		2.819	P
S	2-ETHOXYETHYL ACETATE	PHOTORESIST, SHIPLEY THINNER A		1564.717	P
S	2-ETHOXYETHYL ACETATE	PHOTORESIST, WAYCOAT HPR 204		4538.028	P
S	2-ETHOXYETHYL ACETATE	PHOTORESIST, SHIPLEY S1400-27		4140.777	P
S	2-ETHOXYETHYL ACETATE	PHOTORESIST, HOECHST AZ 4903		5.594	P
S	2-ETHOXYETHYL ACETATE	PHOTORESIST, SHIPLEY S1400-17		2.992	P
S	2-ETHOXYETHYL ACETATE	PHOTORESIST, SHIPLEY S1400-21		22.898	P
S	2-ETHOXYETHYL ACETATE	PHOTORESIST, SHIPLEY ECX 1000		1.409	P
S	2-METHYOXYETHANOL	PHOTORESIST, KTI NEG 747		95.621	P
S	2-PENTANONE	2-PENTANONE	303.993		P
S	ALIPHATIC PETROLEUM DISTILLATES	DEVELOPER, KTI PROJECTION		1749.398	P
S	ALIPHATIC SOLVENTS	FLUX, KENCO 934-SA		2.752	P
S	BUTYL ACETATE	BUTYL ACETATE	52181.712		P
S	BUTYL ACETATE	PHOTORESIST, WAYCOAT HPR 204		383.987	P
S	BUTYL ACETATE	PHOTORESIST, WAYCOAT HPR 205		58.126	P
S	CELLOSOLVE ACETATE	CELLOSOLVE ACETATE	6593.187		P
S	CELLOSOLVE ACETATE	HMDS 10%		32326.841	P
S	CELLOSOLVE ACETATE	PHOTORESIST, SHIPLEY 1400-27		2166.772	P
S	CELLOSOLVE ACETATE	PHOTORESIST, ULTRAMAC PR 914		8.090	P
S	CELLOSOLVE ACETATE	PHOTORESIST, SHIPLEY AZ 1370		271.817	P
S	CERIC AMMONIUM NITRATE	CERIC AMMONIUM NITRATE	273.000		P
S	CHF3	CHF3	70.000		P
S	CHLORDIFLUOROMETHANE	FREON 22	4875.000		P
S	CHLORINATED HYDROCARBONS	STRIPPER, HUNT MICROSTRIP		45711.540	P
S	CHLOROTRIFLUOROMETHANE	FREON 13		1.000	EA
S	DICHLORODIFLUOROMETHANE	MS 240		24.000	P
S	DICHLORODIFLUOROMETHANE	MS 230 CONTACT RE-NU		0.800	P
S	DICHLORODIFLUOROMETHANE	MS 136		17.850	P
S	DICHLORODIFLUOROMETHANE	MS 190HD		7.200	P
S	DICHLORODIFLUOROMETHANE	MS 180		28.800	P
S	DICHLORODIFLUOROMETHANE	MS 220 AERO-DUSTER		12.000	P
S	DICHLORODIFLUOROMETHANE	MS 190		7.200	P
S	EDTA	HACH TOTAL CHLORINE REAGENT		0.100	EA
S	EDTA	HACH FREE CHLORINE REAGENT		0.050	PK
S	ETHANOL	MARKEM INK FORM C		18.250	P
S	ETHANOL	THINNER, KESTER 4163		629.080	P
S	ETHYL ACETATE	MARKEM INK FORM F		18.250	P
S	ETHYL ALCOHOL	FLUX, KENCO 934-SA		2.174	P
S	ETHYL ALCOHOL	ETHYL ALCOHOL	683.561		P
S	ETHYL ALCOHOL	BLACO-TRON TMS PLUS		151.200	P
S	FC 40	FC 40	1800.000		P
S	FC 70	FC 70	240.000		P
S	FC 71	FC 71	15.000		P
S	FC 77	FC 77	462.000		P
S	FC 84	FC 84	3220.000		P
S	FREON 115	FREON 115	40.000		P
S	HMDS	HMDS 10%		2851.279	P
S	HMDS	HMDS	950.426		P
S	IPA	THINNER, KESTER 4163		743.458	P
S	IPA	FLUX, ALPHA 100		3.294	P
S	IPA	FLUX, KESTER 2163		378.844	P
S	ISOPROPYL ALCOHOL	FLUX, KESTER 135		38.873	P
S	ISOPROPYL ALCOHOL	ISOPROPYL ALCOHOL	63329.623		P
S	ISOPROPYL ALCOHOL	ETHYL ALCOHOL		34.178	P
S	ISOPROPYL ALCOHOL	FLUX, ALPHA 611	79.063		P

CODE	CHEMICAL	TRADE NAME	NO COMPONENT	COMPONENT	UNITS
S	N-BUTYL	PHOTORESIST, SHIPLEY 1400-27		190.232	P
S	N-BUTYL	PHOTORESIST, SHIPLEY AZ 1370		17.514	P
S	N-BUTYL ACETATE	PHOTORESIST, SHIPLEY S1400-21		2.055	P
S	N-BUTYL ACETATE	PHOTORESIST, SHIPLEY ECX 1000		0.128	P
S	N-BUTYL ACETATE	PHOTORESIST, SHIPLEY S1400-17		0.257	P
S	N-BUTYL ACETATE	PHOTORESIST, SHIPLEY MICROPOSIT SAL 601-		0.257	P
S	N-BUTYL ACETATE	PHOTORESIST, SHIPLEY S1400-27		339.071	P
S	N-BUTYL ACETATE	PHOTORESIST, HOECHST AZ 4903		0.550	P
S	N-BUTYL ACTATE	PHOTORESIST, SHIPLEY THINNER A		145.316	P
S	N-METHYL-2-PYRROLIDONE	STRIPPER, SHIPLEY 1165		1299.372	P
S	PGMEA	THINNER, HOECHST AZ 1500	308.980		P
S	PGMEA	PHOTORESIST, HOECHST AZ 5206		26.211	P
S	PGMEA	PHOTORESIST, HOECHST AZ 5214		200.789	P
S	SDA 30 ALCOHOL	FREON TE		4.030	P
S	TELOMER OF TETRAFLUOROETHANE	MS 136		0.765	P
S	TETRAFLUOROMETHANE	FREON 14	140.000		P
S	TETRAFLUOROMETHANE	DE 100		637.560	CF
S	TETRAFLUOROMETHANE	FREON 14	840.000		P
S	TETRAFLUOROMETHANE	FREON 14	630.000		P
S	TRIFLOUROMETHANE	TRIFLOUROMETHANE			
== Sum			175799.523	101573.217	

CHEMICALS USED FER P/R SYSTEM DURING 1987

code	CHEMICAL NAME	TRADE NAME TRADE NAME	HSS PART NO	RECEIVED AMOUNT	ACTUAL LBS NO COMPONENT	COMPONENT	SG FOR CHEMICAL	FROM %	TO %
S	1,1,1 TRIMETHYL-N-TRIMETHYL ETHER	HMDS	0	148 GL	1234.320	0.000 P	1	0	0
S	1,1,1 TRIMETHYL-N-TRIMETHYL ETHER	HMDS 10%		4440 GL	37029.600	P	1	0	0
S	1,1,1 TRIMETHYL-N-TRIMETHYL ETHER	HMDS BTL		21.5 KG	0.057	P	0	0	0
	2,2 DIBROMO 3 NITRILOPROPIO	NALCO 2510		660 GL	5504.400	P	1	0	0
S	2-ETHOXYETHYL ACETATE	PHOTORESIST, SHIPLEY THINNER A		220 GL		1564.717 P	1.04 SG	82	0
S	2-ETHOXYETHYL ACETATE	PHOTORESIST, SHIPLEY S1400-27		770 GL		4140.777 P	1.04 SG	62	0
S	2-ETHOXYETHYL ACETATE	PHOTORESIST, SHIPLEY S1400-17		0.5 GL		2.992 P	1.04 SG	69	0
S	2-ETHOXYETHYL ACETATE	PHOTORESIST, WAYCOAT HPR 204		372 GL		4538.028 P	1.04 SG	60	0
S	2-ETHOXYETHYL ACETATE	PHOTORESIST, SHIPLEY MICROPOSIT SAL 601-ER7		0.5 GL		2.819 P	1.04 SG	65	0
S	2-ETHOXYETHYL ACETATE	PHOTORESIST, HOECHST AZ 4903		1.5 GL		5.594 P	1.04 SG	43	0
S	2-ETHOXYETHYL ACETATE	PHOTORESIST, WAYCOAT HPR 205		132 GL		586.749 P	1.04 SG	60	0
S	2-ETHOXYETHYL ACETATE	PHOTORESIST, SHIPLEY S1400-21		4 GL		22.398 P	1.04 SG	66	0
S	2-ETHOXYETHYL ACETATE	PHOTORESIST, SHIPLEY ECX 1000		0.25 GL		1.409 P	1.04 SG	65	0
S	2-METHYOXYETHANOL	PHOTORESIST, KTI NEG 747		197 GL		95.621 P	0.97 SG	6	0
S	2-PENTANONE	2-PENTANONE	210549	45 EA	303.993	P	0.81		
	ABRASIVES	Z-100		300 P		228.000 P		76	0
	ACETIC ACID	ACETIC ACID	210062-01	8010 P	8010.000	P	1.05		
S	ALIPHATIC PETROLEUM DISTILLATES	DEVELOPER, KTI PROJECTION		276 GL		1749.398 P	0.76 SG	100	0
S	ALIPHATIC SOLVENTS	FLUX, KENCO 934-SA		1 GL		2.752 P	1	33	0
	ALKALINE HYPOCHLORITE	Z-100		300 P		12.000 P		4	0
	ALKYL ARYL SULFONIC ACID	STRIPPER, HUNT MICROSTRIP		9135 GL		17522.757 P	1	23	0
	ANDE	NALCO 2510		660 GL		1651.320 P	1	20	40
	AMMONIUM FLUORIDE	AMMONIUM FLUORIDE	210062-01	41796 P	41796.000	P	1.32		
	AMMONIUM FLUORIDE	ETCH, BUFFERED OXIDE ETCH 9:1		1464 GL		14505.195 P	1.32	90	0
	AMMONIUM HYDROXIDE	ETCH, EDTA		68 KG	0.057	P	0.89	0	0
	AMMONIUM HYDROXIDE	AMMONIUM HYDROXIDE	210062-04	1965 L	375.303	P	0.89		
	AMMONIUM PERSULFATE	STRIPPER, BURMAR SA 80		2080 P	2080.000	P	1.98	0	0
	ANIT STATIC SPRAY AMERICAN SCI	ANIT STATIC SPRAY AMERICAN SCI	210577	22 GL	183.480	P	1		
	ARCOSOLV PM	ARCOSOLV PM	210062-12	8 GL	64.718	P	0.97		
	ARGON	ARGON	210269-00	35 CY					
	ARGON	ARGON	210269	8614 CF					
	BORON TRIBROMIDE	BORON TRIBROMIDE	210023	38.4 KG	84.657	P	2.65		
	BORON TRICHLORIDE	BORON TRICHLORIDE	210637	3 CY			1.35		
	BORON TRICHLORIDE	BORON TRICHLORIDE	210637-00	3 CY	42.000	P	1.35		
	BORON TRIFLUORIDE	BORON TRIFLUORIDE	210216	3.12 KG	6.878	P	3.07		
	BORON TRIFLUORIDE	BORON TRIFLUORIDE	210216-00	41 CY	7.231	P	3.07		
S	BUTYL ACETATE	BUTYL ACETATE	210062-03	7110 GL	52181.712	P	0.88		
S	BUTYL ACETATE	PHOTORESIST, WAYCOAT HPR 205		132 GL		58.126 P	0.88	6	0
S	BUTYL ACETATE	PHOTORESIST, WAYCOAT HPR 204		872 GL		383.987 P	0.88	6	0
	CALCIUM CARBONATE	COOL AMP		4 P		1.400 P	0	35	45
	CARBON DIOXIDE	CARBON DIOXIDE	215574-00	294 CY	19110.000	P	1.56		
S	CELLOSOLVE ACETATE	PHOTORESIST, SHIPLEY AZ 1370		48 GL		271.317 P	0.97	70	0
S	CELLOSOLVE ACETATE	PHOTORESIST, SHIPLEY 1400-27		432 GL		2166.772 P	0.97	62	0
S	CELLOSOLVE ACETATE	HMDS 10%		4440 GL		32326.341 P	0.97	90	0
S	CELLOSOLVE ACETATE	PHOTORESIST, ULTRAMAC PR 914		2 GL		8.090 P	0.97	50	0
S	CELLOSOLVE ACETATE	CELLOSOLVE ACETATE	210062-05	815 GL	6573.187	P	0.97		
S	CERIC AMMONIUM NITRATE	CERIC AMMONIUM NITRATE	210062-03	273 P	273.000	P			
	CERIC SULFATE	CERIC SULFATE	210062-02	63 KG	138.870	P			
S	CHF3	CHF3	210575-00	70 P	70.000	P			
S	CHLORDIFLUOROMETHANE	FREON 22	215283-00	4875 P	4875.000	P			
S	CHLORINATED HYDROCARBONS	STRIPPER, HUNT MICROSTRIP		9135 GL		45711.540 P	1	60	0
S	CHLOROTRIFLUOROMETHANE	FREON 13		1 EA		1.000 EA	0	0	100
	COMPRESSED AIR	COMPRESSED AIR	215577-00	1 CY					
	CYCLIZED POLYISOPREENE	PHOTORESIST, KTI NEG 747		197 GL		71.470 P	0.87 SG	5	15

CHEMICALS USED PER P/R SYSTEM DURING 1987

	DEVELOPER, SHIPLEY 1350	DEVELOPER, SHIPLEY 1350	210111-00	1150	GL	9591.000		P	1			
	DEVELOPER, SHIPLEY 318	DEVELOPER, SHIPLEY 318	210111-02	3416	GL	0.000		P	1			
S	DICHLORODIFLUOROMETHANE	MS 180		144	P		28.800	P	1.57	SG	0	20
S	DICHLORODIFLUOROMETHANE	MS 136		51	P		17.850	P	1.57	SG	35	40
S	DICHLORODIFLUOROMETHANE	MS 190		36	P		7.200	P	1.57	SG	0	20
S	DICHLORODIFLUOROMETHANE	MS 190HD		36	P		7.200	P	1.57	SG	0	20
S	DICHLORODIFLUOROMETHANE	MS 240		24	P		24.000	P	1.57	SG	0	100
S	DICHLORODIFLUOROMETHANE	MS 220 AERO-DUSTER		12	P		12.000	P	1.57	SG	100	0
S	DICHLORODIFLUOROMETHANE	MS 230 CONTACT RE-NU		4	P		0.800	P	1.57	SG	20	0
	DICHLOROSILANE	DICHLOROSILANE	210367-00	540	CY							
	DICHLOROSILANE	DICHLOROSILANE	210367	990	P	990.000		P				
	DIMETHYL FORMAMIDE	BURMAR EK34		24	P	24.000		P	0		0	0
	DODECYLBENZENE SULFONIC ACID	STRIPPER, BURMAR 712D		12740	GL		26562.900	P	1		25	0
	DPD SALT	HACH TOTAL CHLORINE REAGENT		2	EA		0.100	EA	2.49	SG	0	5
	DPD SALT	HACH FREE CHLORINE REAGENT		1	PK		0.050	PK	2.36	SG	0	5
S	EDTA	HACH TOTAL CHLORINE REAGENT		2	EA		0.100	EA	2.49	SG	0	5
S	EDTA	HACH FREE CHLORINE REAGENT		1	PK		0.050	PK	2.36	SG	0	5
S	ETHANOL	MARKEM INK FORM C		36.5	P		18.250	P	0.79	SG	30	70
S	ETHANOL	THINNER, KESTER 4163		217	GL		629.080	P	0.79	SG	44	0
	ETHANOLAMINE	ETHANOLAMINE	210062-12	2	GL	16.680		P	1			
S	ETHYL ACETATE	MARKEM INK FORM F		36.5	P		18.250	P	0		30	70
S	ETHYL ALCOHOL	ETHYL ALCOHOL	210062-04	4032	L	683.561		P	0.79			
S	ETHYL ALCOHOL	FLUX, KENCO 934-SA		1	GL		2.174	P	0.79		33	0
S	ETHYL ALCOHOL	BLACO-TRON TMS PLUS		3780	P		151.200	P	1.46	SG	4	0
	FATTY ACIDS	FLUX, KENCO 934-SA		1	GL		2.752	P	1		33	0
S	FC 40	FC 40	210062-05	1800	P	1800.000		P	1.9			
S	FC 70	FC 70	210062-11	240	P	240.000		P	1.9			
S	FC 71	FC 71	210062-08	15	P	15.000		P	1.9			
S	FC 77	FC 77	210062-00	462	P	462.000		P	1.8			
S	FC 84	FC 84	210062-12	3220	P	3220.000		P	1.7			
	FLUX, ALPHA 250 HF	FLUX, ALPHA 250 HF	210062-07	24	GL	200.160		P	1			
	FORMING GAS 10%	FORMING GAS 10%	210203	28600	CF	1879.252		P	0.89			
	FORMING GAS 5%	FORMING GAS 5%	210630-00	9	CY	117.798		P				
S	FREON 115	FREON 115	210635	2	CY	40.000		P				
	GREASE, SILICON, HIGH	GREASE, SILICON, HIGH	215454-00	53	TW	53.000		TW				
	GUM RESIN	FLUX, ALPHA 611		12	GL	30.024		P	0.3	SG	0	0
	HELIUM	HELIUM	215574-00	33	CY							
	HELIUM	HELIUM	215574-00	118	CY							
	HELIUM	HELIUM	210636-00	2	CY							
S	HMDS	HMDS 10%		4440	GL		2851.279	P	0.77		10	0
S	HMDS	HMDS	210062-02	148	GL	950.426		P	0.77			
	HYDROGEN	HYDROGEN	210144-00	14040	CF							
	HYDROGEN PEROXIDE	HYDROGEN PEROXIDE	210062-00	14364	GL	143754.912		P	1.2			
S	IPA	THINNER, KESTER 4163		217	GL		743.458	P	0.79	SG	52	0
S	IPA	FLUX, ALPHA 100		1	GL		3.294	P	0.79	SG	50	75
S	IPA	FLUX, KESTER 2163		125	GL		378.845	P	0.79	SG	46	0
	ISOPARAFFINIC HYDROCARBONS	DEVELOPER, WAYCOAT NEGATIVE		7546	GL	47825.730		P	0.75	SG	0	0
	ISOPHORONE	MARKEM INK FORM G		36.5	P		18.250	P	0.92	SG	30	70
S	ISOPROPYL ALCOHOL	FLUX, KESTER 135		10	GL		38.873	P	0.79		59	0
S	ISOPROPYL ALCOHOL	ISOPROPYL ALCOHOL	210062-01	9612	GL	63329.623		P	0.79			
S	ISOPROPYL ALCOHOL	FLUX, ALPHA 611		12	GL	79.063		P	0.79	SG	0	0
S	ISOPROPYL ALCOHOL	ETHYL ALCOHOL		4032	L		34.178	P	0.79		5	0
	JANUS GREEN B	JANUS GREEN B	210062-08	0.026	KG	0.057		P				
	LANTHANUM CHLORIDE	LANTHANUM CHLORIDE	210062-12	180	P	180.000		P				
	MARKEM 320	MARKEM 320	210285-00	100	GL	700.560		P	0.84			
	MARKEM 500	MARKEM 500	210285-01	28	GL	217.174		P	0.93			

CHEMICALS USED PER P/R SYSTEM DURING 1987

	MONOETHANOLAMINE	MARKEM 535		84 GL		35.729 P	1.02 SG	5	15
	NEUTRACIT	NEUTRACIT	215216-00	3 EA					
	NEUTRASOL	NEUTRASOL	215216-00	5 CT					
	NITROGEN	NITROGEN	215574-00	1 CY					
	NITROGEN	NITROGEN	215577-00	3 CY					
	NITROGEN	NITROGEN	210328	18758 CF					
	NITROGEN	NITROGEN	210328-00	63402 CF					
	NITROGEN TRIFLUORIDE	NITROGEN TRIFLUORIDE	210640-00	1 CY			0.19 P/CF		
	NITROGEN TRIFLUORIDE	NITROGEN TRIFLUORIDE	210640-00	1 CY			0.19 P/CF		
	NITROMETHANE	BLACO-TRON TMS PLUS		3780 P		20.790 P	1.46 SG	0	0.5
	NITROUS OXIDE	NITROUS OXIDE	210431-00	54 CY			1.23		
	NITROUS OXIDE	NITROUS OXIDE	210431	520 P	520.000	P	1.23		
S	N-BUTYL	PHOTORESIST, SHIPLEY AZ 1370		48 GL		17.614 P	0.88	5	0
S	N-BUTYL	PHOTORESIST, SHIPLEY 1400-27		432 GL		190.232 P	0.88	6	0
S	N-BUTYL ACETATE	PHOTORESIST, SHIPLEY S1400-21		4 GL		2.055 P	0.88	7	0
S	N-BUTYL ACETATE	PHOTORESIST, SHIPLEY ECX 1000		0.25 GL		0.128 P	0.88 SG	7	0
S	N-BUTYL ACETATE	PHOTORESIST, SHIPLEY MICROPOSIT SAL 601-ER7		0.5 GL		0.257 P	0.88 SG	7	0
S	N-BUTYL ACETATE	PHOTORESIST, SHIPLEY S1400-17		0.5 GL		0.257 P	0.88 SG	7	0
S	N-BUTYL ACETATE	PHOTORESIST, HOECHST AZ 4903		1.5 GL		0.550 P	0.88 SG	5	0
S	N-BUTYL ACETATE	PHOTORESIST, SHIPLEY S1400-27		770 GL		339.071 P	0.68 SG	6	0
S	N-BUTYL ACTATE	PHOTORESIST, SHIPLEY THINNER A		220 GL		145.316 P	0.88 SG	9	0
S	N-METHYL-2-PYRROLIDONE	STRIPPER, SHIPLEY 1165		164 GL		1299.372 P	1	95	0
	OIL, AQUA #590	OIL, AQUA #590	210062-06	3 GL	25.020	P	1		
	OIL, HOLLIS #600	OIL, HOLLIS #600	210062-08	345 GL	2877.300	P	1		
	OIL, HYDRAULIC RNOAW68	OIL, HYDRAULIC RNOAW68	215362-00	385 GL	3210.900	P	1		
	OIL, MOBIL DTE LIGHT	OIL, MOBIL DTE LIGHT	215477-00	220 GL	1596.276	P	0.87		
	ORAGNIC SALTS	FLUX, KENCO 934-SA		1 GL	8.340	P	1	0	0
	OXTYLPHENOL POLYETHOXYLATE	TRITON X-100		90 P		4.500 P	0	5	0
	OXYGEN	OXYGEN	210322-00	37164 CF			1.14		
	OXYGEN	OXYGEN	210322	5904 CF			1.14		
	OXYGEN	DE 100		693 CF		55.440 CF	1.14	8	0
	PALLADIUM CHLORIDE	RTM SOLUTION B		2 GL		0.167 P	1	1	0
	PDE 100	PDE 100	210321-00	21 CY					
	PDE 100	PDE 100	210321-00	915 CF					
S	PGMEA	PHOTORESIST, HOECHST AZ 5214		34 GL		200.789 P	0.97 SG	73	0
S	PGMEA	PHOTORESIST, HOECHST AZ 5206		4 GL		26.211 P	0.97 SG	81	0
S	PGMEA	THINNER, HOECHST AZ 1500		100 GL	808.980	P	0.97 SG	0	0
	PHOSPHATE	DEVELOPER, SHIPLEY MICROPOSIT		1341 GL	11743.137	P	1.05 SG	0	0
	PHOSPHINE 100%	PHOSPHINE 100%	210176-00	2 P	2.000	P			
	PHOSPHINE 15%	PHOSPHINE 15%	210215-00	108 CY	2504.779	P			
	PHOSPHINE 15%	PHOSPHINE 15%	210215	119 CF	2870.081	P			
	PHOSPHINE 1%	PHOSPHINE 1%	210176-00	4080 CF	296.153	P			
	PHOSPHINE 1%	PHOSPHINE 1%	210175-00	22 CY	383.256	P			
	PHOSPHOROUS OXYCHLORIDE	PHOSPHOROUS OXYCHLORIDE	210163	49.5 KG	109.128	P	1.68		
	PHOSPHOROUS TRIBROMIDE	PHOSPHOROUS TRIBROMIDE	210448	3.25 KG	7.165	P	2.85		
	POTASSIUM HYDROXIDE	Z-100		300 P		30.000 P	1.46	10	0
	POTASSIUM HYDROXIDE	CAB-O-SPERSE SC-3010		1980 GL		241.093 P	1.46	0	1
	POTASSIUM HYDROXIDE	POTASSIUM HYDROXIDE	210062-03	3140 GL	38233.096	P	1.46		
	POTASSIUM HYDROXIDE	DEVELOPER, HOECHST AZ 421K		13 GL		1.583 P	1.46 SG	1	0
	POTASSIUM HYDROXIDE, PELLETS	POTASSIUM HYDROXIDE, PELLETS	210062-02	1400 KG	3086.440	P	2.04		
	POTASSIUM IODATE	HACH TOTAL CHLORINE REAGENT		2 EA		0.600 EA	2.49 SG	0	30
	POTASSIUM PHOSPHATE	HACH TOTAL CHLORINE REAGENT		2 EA		1.000 EA	2.49 SG	0	50
	POTASSIUM PHOSPHATE	HACH FREE CHLORINE REAGENT		1 PK		0.700 PK	2.36 SG	0	70
	PROPRIETARY SUBSTITUTED HETEROCYCLE	PHOTORESIST, SHIPLEY MICROPOSIT SAL 601-ER7		0.5 GL		0.714 P	8.6 SG	1.9	0
	P-TOLUENE SULFONIC ACID	STRIPPER, SHIPLEY 140		1368 GL		1255.003 P	1.1 SG	10	0
	RESIN	PHOTORESIST, ULTRAMAC PR 914		2 GL		5.004 P	1	30	0

CHEMICALS USED PER P/R SYSTEM DURING 1987

	RESIN	FLUX, KESTER 135		10 GL		34.194 P	1	41	0
	RUST-LICK G-1066-D	RUST-LICK G-1066-D	210062-05	22550 GL	188067.000	P	1		
S	SDA 30 ALCOHOL	FREON TE		8 GL		4.030 P	1.51 SG	4	0
	SILANAMINE	HMDS 10%		4440 GL	37029.600	P	1	0	0
	SILANAMINE	HMDS		148 GL	1234.320	P	1	0	0
	SILANAMINE	HMDS BTL		21.6 KG	0.057	P	0	0	0
	SILANE 100%	SILANE 100%	210177	101.25 KG	223.216	P			
	SILANE 2%	SILANE 2%	210164-00	9 CY					
	SILANE 4%	SILANE 4%	210164-00	22080 CF	1608.653	P			
	SILICON DIOXIDE	CAB-O-SPERSE SC-1		4455 GL		13375.692 P	1.2 SG	30	0
	SILICON DIOXIDE	CAB-O-SPERSE SC-3010		1980 GL		4753.950 P	1	30	0
	SILICON TETRACHLORIDE	SILICON TETRACHLORIDE	210082	7800 P	7800.000	P			
	SODIUM CHLORIDE	COOL AMP		4 P		1.600 P	2.16	40	50
	SODIUM CITRATE	HACH SODIUM CITRATE REAGENT		3 GL		3.782 P	1.17 SG	30	0
	SODIUM HYPOPHSPHITE	RTM SOLUTION C		2 GL		0.000 P	0	16	0
	SODIUM METABISULFITE	HACH AMINO ACID SOLUTION		2 GL		1.785 P	1.07 SG	10	0
	SODIUM MOLYBDATE	HACH MOLYBDATE 3 REAGENT		3 GL		6.405 P	1.28 SG	20	0
	SODIUM PHOSPHATE	HACH TOTAL CHLORINE REAGENT		2 EA		0.600 EA	2.49 SG	0	30
	SODIUM PHOSPHATE	HACH FREE CHLORINE REAGENT		1 PK		0.400 PK	2.36 SG	40	0
	SODIUM SULFITE	HACH AMINO ACID SOLUTION		2 GL		0.892 P	1.07 SG	5	0
	STANNOUS SULFATE	STANNOUS SULFATE	210062-03	36 KG	79.366	P	3.95		
	SULFUR HEXAFLUORIDE	SULFUR HEXAFLUORIDE	210592	1380 P	1380.000	P	0.38 P/CF		
	SYLOID 244 X1661	SYLOID 244 X1661	210251	7170 P	7170.000	P			
	SYLOID 244 X1662	SYLOID 244 X1662	210251-00	3240 P	3240.000	P			
S	TELOMER OF TETRAFLUOROETHANE	MS 136		51 P		0.765 P	1	1	2
S	TETRAFLUOROMETHANE	DE 100		693 CF		637.560 CF	1	92	0
S	TETRAFLUOROMETHANE	FREON 14	210307-00	9 CY	630.000	P			
S	TETRAFLUOROMETHANE	FREON 14	210307-00	840 P	840.000	P			
S	TETRAFLUOROMETHANE	FREON 14	210307	140 P	140.000	P			
	TETRAMETHYL AMMONIUM HYDROXIDE	DEVELOPER, HOECHST AZ 327 MIF		184 GL		76.728 P	1 SG	5	0
	TETRAMETHYL AMMONIUM HYDROXIDE	DEVELOPER, SHIPLEY XP6043 CD 26.8		4 GL		0.667 P	1 SG	2	0
	TETRAMETHYL AMMONIUM HYDROXIDE	DEVELOPER, SHIPLEY MF 320		76 GL	633.840	P	1 SG	0	0
	TETRAMETHYL AMMONIUM HYDROXIDE	DEVELOPER, HOECHST AZ 440 MIF		128 GL		42.701 P	1 SG	4	0
	TETRAMETHYL AMMONIUM HYDROXIDE	DEVELOPER, SHIPLEY MF 319		460 GL		76.728 P	1 SG	2	0
	TETRAMETHYL AMMONIUM HYDROXIDE	DEVELOPER, SHIPLEY MF 314		1448 GL		362.290 P	1 SG	3	0
	TETRAMETHYL AMMONIUM HYDROXIDE	DEVELOPER, WAYCOAT HPRD 402		1168 GL		292.234 P	1 SG	3	0
	TIN ANODE ALPHA METAL	TIN ANODE ALPHA METAL	210193-00	24 EA					
	TRIBUTYL PHOSPHATE	MARKEM INK FORM J		36.5 P		18.250 P	0.98 SG	30	70
	TRICHLOROSILANE	TRICHLOROSILANE	210239	161320 P	161320.000	P	1.22		
S	TRIFLOUROMETHANE	TRIFLOUROMETHANE	210591	72 CY					
	UNDOPED SPIN-ON	UNDOPED SPIN-ON	210621	30 EA					
	V M & P NAPTHA	BURMAR EX34		24 P	24.000	P	0	0	0

TABLE V

JULY REPORT CHEMICAL	TRADE CHEMICAL	REC AMT	COMPONENT AMT	CODE
1,1,1 TRICHLOROETHANE	TCA BUBBLERS	13	22.178276	S
1,1,1 TRICHLOROETHANE	MS 136	51	9.69	S
1,1,1 TRICHLOROETHANE	TCA BUBBLERS/APACHE	11.2	24.69152	S
1,1,1 TRICHLOROETHANE	1,1,1 TRICHLOROETHANE	10098	10098	S
1,1,1 TRICHLOROETHANE	1,1,1 TRICHLOROETHANE	6024	72094.6296	S
1,1,1 TRICHLOROETHANE	CLEANER, ALPHA 565	11	118.48221	S
1,1,1 TRICHLOROETHANE	BURMAR EK34	24	24	S
-- Sum				
			82391.67161	
1,2,4 TRICHLOROBENZENE	STRIPPER, BURMAR 712D	12740	69329.169	S
-- Sum				
			69329.169	
ACETONE	ACETONE	37684	248284.8024	S
ACETONE	FREON TA 55	110	22	S
-- Sum				
			248306.8024	
AROMATIC PHENOL	STRIPPER, BURMAR 712D	12740	22633.71583	S
-- Sum				
			22633.71583	
BUTYL ALCOHOL	BUTYL ALCOHOL	8	52.0416	S
-- Sum				
			52.0416	
CARBON TETRACHLORIDE	CARBON TETRACHLORIDE	48	20.163744	S
-- Sum				
			20.163744	
CRESOL	MARKEM INK FORM D	36.5	18.25	S
CRESOL	STRIPPER, HUNT MICROSTRIP	9135	13292.66188	S
-- Sum				
			13310.91188	
DIMETHYL PHTHALATE	MARKEM INK FORM E	36.5	36.5	S
-- Sum				
			36.5	
ETHYLBENZENE	PHOTORESIST, WAYCOAT HNR 999	35	25.3953	S
ETHYLBENZENE	PHOTORESIST, WAYCOAT HR 200	1774	1415.896812	S
ETHYLBENZENE	PHOTORESIST, WAYCOAT HR 100	708	513.71064	S
ETHYLBENZENE	PHOTORESIST, WAYCOAT SC 100	176	127.70208	S
ETHYLBENZENE	PHOTORESIST, WAYCOAT NEG VHR 3	298	281.089692	S
-- Sum				
			2363.794524	
ETHYLENE GLYCOL MONOETHYL ACET	MARKEM INK FORM H	36.5	18.25	S
ETHYLENE GLYCOL MONOETHYL ACET	MARKEM INK FORM I	36.5	18.25	S
-- Sum				
			36.5	
METHANOL	METHANOL	11016	72580.0176	S
-- Sum				
			72580.0176	
METHYL ALCOHOL	FREON TMS 650	3780	226.8	S
METHYL ALCOHOL	FREON TMS	8780	965.8	S
METHYL ALCOHOL	ETHYL ALCOHOL	4032	42.0775488	S
-- Sum				
			1234.677549	
METHYLENE CHLORIDE	FREON TMC 55	189	102.06	S
METHYLENE CHLORIDE	MS 190	72	28.8	S
-- Sum				
			130.86	
TRICHLOROTRIFLUOROETHANE	MS 180	144	115.2	S
TRICHLOROTRIFLUOROETHANE	FREON TMC 55	189	86.94	S
TRICHLOROTRIFLUOROETHANE	FREON TA 55	110	66	S
TRICHLOROTRIFLUOROETHANE	FREON TMS 650	3780	3553.2	S

JULY REPORT CHEMICAL	TRADE CHEMICAL	REC AMT	COMPONENT AMT	CODE
TRICHLOROTRIFLUOROETHANE	FREON TE	8	100.560384	S
TRICHLOROTRIFLUOROETHANE	FREON TMS	8780	7814.2	S
TRICHLOROTRIFLUOROETHANE	FREON TF	73830	73830	S
TRICHLOROTRIFLUOROETHANE	MS 136	51	1.785	S
TRICHLOROTRIFLUOROETHANE	MS 230 CONTACT RE-NU	22	17.6	S
TRICHLOROTRIFLUOROETHANE	MS 190	72	29.088	S
TRICHLOROTRIFLUOROETHANE	ACIDITY TEST KIT - PFPE	25	22.7	S
-- Sum				
			85637.27338	
XYLENE	MARKEM INK FORM B	36.5	36.5	S
XYLENE	PHOTORESIST, HOECHST AZ 4903	1.5	0.430344	S
XYLENE	PHOTORESIST, WAYCOAT SC 100	176	908.886528	S
XYLENE	PHOTORESIST, KTI NEG 747	747	4607.693208	S
XYLENE	PHOTORESIST, WAYCOAT HPR 205	132	37.870272	S
XYLENE	PHOTORESIST, SHIPLEY AZ 1370	48	17.21376	S
XYLENE	PHOTORESIST, WAYCOAT HNR 999	35	223.42026	S
XYLENE	PHOTORESIST, SHIPLEY ECX 1000	0.25	0.125517	S
XYLENE	PHOTORESIST, WAYCOAT HR 200	1774	9924.593328	S
XYLENE	PHOTORESIST, SHIPLEY MICROPOSI	0.25	0.125517	S
XYLENE	PHOTORESIST, ULTRAMAC PR 914	2	0.71724	S
XYLENE	PHOTORESIST, SHIPLEY S1400-17	0.5	0.251034	S
XYLENE	PHOTORESIST, WAYCOAT HPR 204	872	250.173312	S
XYLENE	PHOTORESIST, SHIPLEY S1400-21	4	2.008272	S
XYLENE	PHOTORESIST, WAYCOAT HR 100	708	4417.911504	S
XYLENE	PHOTORESIST, SHIPLEY S1400-27	764	328.782816	S
XYLENE	PHOTORESIST, WAYCOAT NEG VHR 3	298	1581.657648	S
XYLENE	PHOTORESIST, SHIPLEY THINNER A	220	142.01352	S
XYLENE	XYLENE	8208	58871.0592	S
-- Sum				
			81351.43328	
== Sum				
			679415.5324	

JULY 1988 REPORTABLE CHEMICALS IN TOTAL POUNDS

S	X	METHYL ALCOHOL	FREON TMS 650	0.79	856218	1.52 SG	6	0	3780 P	226.8 P
S	X	METHYLENE CHLORIDE	FREON TMC 55	1.34	856216	0	54	0	189 P	102.06 P
S	X	METHYLENE CHLORIDE	MS 190	1.34	856886	0	40	0	72 P	28.8 P
	NL	NICKEL	NICKEL POWDER	8.9					2 EA	2 EA
	Y	NICKEL CHLORIDE	NICKEL PLATING SOLUTION			0	1	0	5 EA	0.05 EA
	Y	NICKEL SULFATE	NICKEL B		857093	1.1 SG	1	0	8 GL	0.08 GL
	Y	NICKEL SULPHATE	NICKEL PLATING SOLUTION			0	60	0	5 EA	3 EA
	X	NITRIC ACID	DS-9-314	1.42	856161	1.19 SG	5	0	1 P	0.05 P
		NITRIC ACID	NITRIC ACID	1.42					72534 P	72534.00 P
	X	NITRIC ACID	STRIPPER, ALLIED RT 2	1.42	856394	0	5	0 L	10044 P	502.2 P
	X	PHOSPHORIC ACID	DS-9-314	1.69	856161	1.19 SG	25	0	1 P	0.25 P
		PHOSPHORIC ACID	PHOSPHORIC ACID	1.69					43848 P	43848.00 P
	Y	SILVER CHLORIDE	COOL AMP		856750	0	10	0	4 P	0.4 P
	X	SODIUM HDYROXIDE	DEVELOPER, SHIPLEY AZ 351	2.13	856442	0	5	0	12 GL	10.65852 P
	X	SODIUM HYDROXIDE	DEVELOPER, CRONALAR CDC-B	2.13	856111	1.38 SG	5	0	6 GL	5.32926 P
		SOLDER, ALPHA 60/40	SOLDER, ALPHA 60/40						2709 P	2709.00 P
		SOLDER TIN/LEAD 62/36	SOLDER TIN/LEAD 62/36						50 P	50.00 P
	X	SULFURIC ACID	HACH MOLYBDATE 3 REAGENT	1.84	856602	1.28 SG	20	0	3 GL	9.20736 P
	X	SULFURIC ACID	STRIPPER, ALLIED RT 2	1.84	856394	0	80	0 G	10044 P	123304.9651 P
		SULFURIC ACID	SULFURIC ACID	1.84					762660 P	762660.00 P
S	X	TRICHLOROTRIFLUOROETHANE	ACIDITY TEST KIT - PFPE	1.57	857157	1.49 SG	90.9	0	25 EA	22.7 EA
S	X	TRICHLOROTRIFLUOROETHANE	FREON TA 55	1.57	856733	1.41 SG	60	0	110 P	66 P
S	X	TRICHLOROTRIFLUOROETHANE	FREON TE	1.57	856764	1.51 SG	96	0	8 GL	100.560384 P
S	X	TRICHLOROTRIFLUOROETHANE	FREON TF	1.57	856765	0	100	0	73830 P	73830 P
S	X	TRICHLOROTRIFLUOROETHANE	FREON TMC 55	1.57	856216	0	46	0	189 P	86.94 P
S	X	TRICHLOROTRIFLUOROETHANE	FREON TMS	1.57	856217	0	89	0	8780 P	7814.2 P
S	X	TRICHLOROTRIFLUOROETHANE	FREON TMS 650	1.57	856218	1.52 SG	94	0	3780 P	3553.2 P
S	X	TRICHLOROTRIFLUOROETHANE	MS 136	1.57	856885	0	3	4	51 P	1.785 P
S	X	TRICHLOROTRIFLUOROETHANE	MS 180	1.57	856884	0	0	80	144 P	115.2 P
S	X	TRICHLOROTRIFLUOROETHANE	MS 190	1.57	856886	0	0	40.4	72 P	29.088 P
S	X	TRICHLOROTRIFLUOROETHANE	MS 230 CONTACT RE-NU	1.57		1.57 SG	80	0	22 P	17.6 P
S	X	XYLENE	MARKEM INK FORM 8	0.86	856639	0.87 SG	40	0	36.5 P	36.5 P
S	X	XYLENE	PHOTORESIST, HOECHST AZ 4903	0.86	856763	1.08 SG	4	0	1.5 GL	0.430344 P
S	X	XYLENE	PHOTORESIST, KTI NEG 747	0.86	856455	0.87 SG	80	92	747 GL	4607.693208 P
S	X	XYLENE	PHOTORESIST, SHIPLEY AZ 1370	0.86	856304	0	5	0	48 GL	17.21376 P
S	X	XYLENE	PHOTORESIST, SHIPLEY ECX 1000	0.86	856820	0	7	0	0.25 GL	0.125517 P
S	X	XYLENE	PHOTORESIST, SHIPLEY MICROPOSI	0.86		8.6 SG	7	0	0.25 GL	0.125517 P
S	X	XYLENE	PHOTORESIST, SHIPLEY S1400-17	0.86	856309	1.04 SG	7	0	0.5 GL	0.251034 P
S	X	XYLENE	PHOTORESIST, SHIPLEY S1400-21	0.86	856542	0	7	0	4 GL	2.008272 P
S	X	XYLENE	PHOTORESIST, SHIPLEY S1400-27	0.86	856310	1.04 SG	6	0	764 GL	328.782816 P
S	X	XYLENE	PHOTORESIST, SHIPLEY THINNER A	0.86	856311	1.04 SG	9	0	220 GL	142.01352 P
S	X	XYLENE	PHOTORESIST, ULTRAMAC PR 914	0.86	856468	0	5	0	2 GL	0.71724 P
S	X	XYLENE	PHOTORESIST, WAYCOAT HNR 999	0.86	856328	0	89	0	35 GL	223.42026 P
S	X	XYLENE	PHOTORESIST, WAYCOAT HPR 204	0.86	856324	0	4	0	872 GL	250.173312 P
S	X	XYLENE	PHOTORESIST, WAYCOAT HPR 205	0.86	856325	0	4	0	132 GL	37.870272 P
S	X	XYLENE	PHOTORESIST, WAYCOAT HR 100	0.86	856318	0	87	0	708 GL	4417.711504 P
S	X	XYLENE	PHOTORESIST, WAYCOAT HR 200	0.86	856320	0	78	0	1774 GL	9924.593328 P
S	X	XYLENE	PHOTORESIST, WAYCOAT NEG VHR 3	0.86	856321	0	74	0	298 GL	1581.657648 P
S	X	XYLENE	PHOTORESIST, WAYCOAT SC 100	0.86	856317	0	72	0	176 GL	908.886528 P
S		XYLENE	XYLENE	0.86					8208 GL	58871.0592 P

JULY 1988 REPORTABLE CHEMICALS IN TOTAL POUNDS

		JULY REPORT CHEMICAL	TRADE CHEMICAL	DENS/PURE	MSDS	DENS/M	FROM %	TO %	INDIC	REC AMT		COMPONENT AMT
S		1,1,1 TRICHLOROETHANE	TCA BUBBLERS	1.435		0	0	0		13	BBL	22.178276 P
S	NL	1,1,1 TRICHLOROETHANE	TCA BUBBLERS/APACHE	1.435						11.2	KG	24.69152 P
S		1,1,1 TRICHLOROETHANE	1,1,1 TRICHLOROETHANE	1.435						6024	GL	72094.6296 P
S		1,1,1 TRICHLOROETHANE	1,1,1 TRICHLOROETHANE	1.435						10098	P	10098.00 P
S	X	1,1,1 TRICHLOROETHANE	BURMAR EK34	1.435	856918	0	0	0		24	P	24 P
S	X	1,1,1 TRICHLOROETHANE	CLEANER, ALPHA 565	1.435	856082	1.28 SG	90	0		11	GL	118.48221 P
S	X	1,1,1 TRICHLOROETHANE	MS 136	1.435	856885	0	16	22		51	P	9.69 P
S	X	1,2,4 TRICHLOROBENZENE	STRIPPER, BURMAR 712D	1.45	856396	0	40	50		12740	GL	69329.169 P
S		ACETONE	ACETONE	0.79						37684	GL	248284.80 P
S	X	ACETONE	FREON TA 55	0.79	856733	1.41 SG	10	30		110	P	22 P
	NL	ALUMINUM OXIDE	ALUMINUM POWDER	3.99						2800	P	2800 P
		ALUMINUM OXIDE	ALUMINUM OXIDE	3.99						900	P	900.00 P
		AMMONIA	AMMONIA							350	P	350.00 P
S	Y	AROMATIC PHENOL	STRIPPER, BURMAR 712D	1.0651	856396	0	15	25		12740	GL	22633.71383 P
		ARSINE 100 PPM	ARSINE 100 PPM				0.3			2320	CF	13.94 P
		ARSINE 100 PPM	ARSINE 100 PPM				0.3			10	CY	12.74 P
		ARSINE 15%	ARSINE 15%							45	CY	57.24 P
		ARSINE 15%	ARSINE 15%							58	CF	73.78 P
		ARSINE 25 PPM	ARSINE 25 PPM				0.2			3248	CF	19.40 P
		ARSINE 25 PPM	ARSINE 25 PPM				0.2			10	CY	12.72 P
		ARSINE 8000 PPM	ARSINE 8000 PPM				23.8			1392	CF	10.34 P
		ARSINE 8000 PPM	ARSINE 8000 PPM				23.8			5104	CF	37.90 P
		ARSINE 8000 PPM	ARSINE 8000 PPM				23.8			23	CY	36.20 P
S	NL	BUTYL ALCOHOL	BUTYL ALCOHOL	0.78						8	GL	52.0416 P
	Y	CADMIUM MERCURY SULFIDE	MARKEM INK FORM 4		856651	5.1 SG	40	0		36.5	P	14.6 P
	Y	CADMIUM SULFOSELENIDE RED	MARKEM INK FORM 3		856650	5.2 SG	40	0		36.5	P	14.6 P
S		CARBON TETRACHLORIDE	CARBON TETRACHLORIDE	1.59						48	L	20.163744 P
	NL	CHLORINE	CHLORINE CYLINDER	1.42						60	P	60 P
	Y	CHROMIC ACID	STRIPPER, ALLIED RT 2		856394	0	1	0		10044	P	100.44 P
S	X	CRESOL	MARKEM INK FORM D	1.026333	856641	1.03 SG	30	70		36.5	P	18.25 P
S	X	CRESOL	STRIPPER, HUNT MICROSTRIP	1.026333	856401	0	17	0		9135	GL	13292.66187 P
S	X	DIMETHYL PHTHALATE	MARKEM INK FORM E		856642	0	0	0		36.5	P	36.5 P
S	X	ETHYLBENZENE	PHOTORESIST, WAYCOAT HNR 999	0.87	856328	0	10	0		35	GL	25.3953 P
S	X	ETHYLBENZENE	PHOTORESIST, WAYCOAT HR 100	0.87	856318	0	10	0		708	GL	513.71064 P
S	X	ETHYLBENZENE	PHOTORESIST, WAYCOAT HR 200	0.87	856320	0	11	0		1774	GL	1415.896812 P
S	X	ETHYLBENZENE	PHOTORESIST, WAYCOAT NEG VHR 3	0.87	856321	0	13	0		298	GL	281.089692 P
S	X	ETHYLBENZENE	PHOTORESIST, WAYCOAT SC 100	0.87	856317	0	10	0		176	GL	127.70208 P
S	Y	ETHYLENE GLYCOL MONOETHYL ACET	MARKEM INK FORM H		856645	0.9 SG	30	70		36.5	P	18.25 P
S	Y	ETHYLENE GLYCOL MONOETHYL ACET	MARKEM INK FORM I		856646	0.98 SG	30	70		36.5	P	18.25 P
	X	HF	ETCH, BUFFERED OXIDE ETCH 9:1	1.18		0	10	0		1464	GL	1440.75168 P
		HYDROCHLORIC ACID	TUBE TRAILER									58480 P
	X	HYDROCHLORIC ACID	DS-9-314	1.19	856161	1.19 SG	10	0		1	P	0.1 P
		HYDROCHLORIC ACID	HYDROCHLORIC ACID	1.19						28080	P	28080.00 P
	X	HYDROCHLORIC ACID	NICKEL B	1.19	857093	1.1 SG	2	0		8	GL	1.574592 P
	X	HYDROCHLORIC ACID	RTM SOLUTION B	1.19	857136	0	1	0		2	GL	0.196824 P
		HYDROFLUORIC ACID	HYDROFLUORIC ACID	1.18						61560	P	61560.00 P
		HYDROFLUORIC ACID 10:1	HYDROFLUORIC ACID 10:1	1.18			10			1296	GL	1275.41952 P
		HYDROFLUORIC ACID 40:1	HYDROFLUORIC ACID 40:1	1.18			0.4			4320	GL	170.055936 P
		HYDROGEN CHLORIDE	HYDROGEN CHLORIDE	1.19						68	CY	4080 P
	X	HYDROQUINONE	DEVELOPER, CRONALAR CDC-A	1.31	856110	1.11 SG	16	0		6	GL	10.488384 P
		HYDROQUINONE	HYDROQUINONE	1.31						0.5	KG	1.10 P
	Y	LEAD CHROMATE	MARKEM INK FORM 2		856649	5.9 SG	40	0		36.5	P	14.6 P
S		METHANOL	METHANOL	0.79						11016	GL	72580.0175 P
S	X	METHYL ALCOHOL	ETHYL ALCOHOL	0.79	856171	0	5	0		4032	L	42.0775488 P
S	X	METHYL ALCOHOL	FREON TMS	0.79	856217	0	11	0		8780	P	965.8 P

HARRIS SEMICONDUCTOR

CALENDAR YEAR 1987

VOC - MATERIAL BALANCE

ATTACHMENT 5

WASTE PROFILES

HARRIS ID # : H-005-LB

WASTE COMMON NAME: MIXED SOLVENTS
DOT SHIPPING NAME: "RQ" WASTE FLAMMABLE LIQUID, NOS
DOT HAZARD CLASS : FLAMMABLE LIQUID
UN/NA NUMBER: UN1993
EPA ID # : F003, F005

AUTHORIZED BULK CONTAINER: SS: STEEL
AUTHORIZED DRUM CONTAINER: 17-E / 55 GALLON

***** CHEMICAL CHARACTERISTICS *****

COLOR: BROWN ODOR: MILD - SWEET pH: N/A
PHYSICAL STATE @70F: LIQUID SPECIFIC GRAVITY: 0.8-1.0
PERCENT VOLUME FREE LIQ.: 90% + LAYERS: 1 OR 2 FLASH POINT: < 70F
BTU/LB: ASH CONTENT: OTHER:

METALS (CONC. IN PPM)

ARSENIC: <5	BARIUM: <10	CADMIUM: <1
CHROMIUM: <5	MERCURY: <0.02	LEAD: <5
CHROMIUM (HEX): <5	SELENIUM: <1	SILVER: <5
COPPER: 5 - 50	NICKEL: <5	ZINC: 1 - 20
THALLIUM: --	OTHERS:	

CHEMICAL COMPOSITION	PERCENT	RQ
1.): ACETONE	1.): 20 - 55	1.): 5000
2.): METHANOL	2.): 10 - 40	2.): 5000
3.): ISOPROPANOL	3.): 10 - 40	3.): --
4.): N-BUTYL ACETATE	4.): 2 - 20	4.): --
5.): XYLENE	5.): 1 - 10	5.): 1000
6.): TOLUENE	6.): 1 - 10	6.): 1000
7.): HEXAMETHYLDISILAZANE	7.): 1 - 15	7.): --
8.): WATER	8.): 1 - 10	8.): --
9.): MIK, MEK, ETHYL ACETATE	9.): 1 - 5 @	9.): 5000 @
10.): CELLOSOLVE ACETATE,BENZENE	10.): 1 - 5 @	10.): 1000
11.): CHLORINATED HYDROCARBONS	11.): 1 - 5	11.): --
12.): AROM. & ALIPH. HYDROCARB.	12.): 3 - 20	12.): --

LABELS REQUIRED: FLAMMABLE

LOCATION: PROCESS SOURCE: MANUFACTURING FAB

MSDS (HARRIS SPEC. # 856---):

SAFETY EQUIPMENT:

SPECIAL INSTRUCTIONS: RQ = 1000#

APPROVAL/DATE Stephen Peffer 5/26/88 ENVIRONMENTAL SERVICES

REVISION DATE:

Attachment :

P 702 175 499

RECEIPT FOR CERTIFIED MAIL

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

Sent to Mr. James R. Kolanek, Mgr. Harris Semiconductor	
Street and No. P.O. Box 883	
P.O., State and ZIP Code Melbourne, FL 32901	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date Mailed: 06/06/88 Permit: AC 05-147321	

PS Form 3800, June 1985

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

3. Article Addressed to: Mr. James R. Kolanek, Manager Environmental Services Harris Semiconductor P.O. Box 883 Melbourne, FL 32901	4. Article Number P 702 175 499 Type of Service: ☐ Registered ☐ Insured XX Certified ☐ COD ☐ Express Mail Always obtain signature of addressee or agent and DATE DELIVERED.
5. Signature — Addressee X	8. Addressee's Address *(ONLY if requested and fee paid)*
6. Signature — Agent X Harris Semiconductor [signature]	
7. Date of Delivery JUN 08 1988	

PS Form 3811, Mar. 1987 ★ U.S.G.P.O. 1987-178-268 DOMESTIC RETURN RECEIPT

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 6, 1988

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

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

Dear Mr. Kolanek:

Re: Completeness Review of AC 05-147321
Building 54 - Permit Consolidation

The Department received your letter dated May 13, 1988, as a response to the Department's letter dated April 20., 1988, requesting additional information. Based on the response, the application package is deemed incomplete and the following information, including all assumptions, reference material and calculations, will have to be submitted before the status can, again, be ascertained.

1. Submit the facility's material balance report, which will be used to categorize the facility according to its annual emissions and to assess the emissions from each building.

If there are any questions, please call Bruce Mitchell at (904)488-1344 or write to me at the above address.

Sincerely,

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

CHF/BM/s

cc: T. Sawicki, Central FL District
L. Hutker, P.E., Harris Semiconductor
B. Pittman, Esq., DER

HARRIS

2423

FS-JRK-185-88

June 8, 1988

RECEIVED
JUN 13 1988
DER-BAQM

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

Reference: HARRIS SEMICONDUCTOR
B-59 Consolidated Air Permit

Dear Mr. Fancy:

On February 17, 1988, representatives from Harris and the Florida DER met in Orlando to discuss the status of air permits at Harris Semiconductor's facility in Palm Bay. At that meeting it was agreed that Harris would submit modified air permits. The purpose of the permit modifications was as follows:

1. Consolidate permits on a by building basis to reduce the existing number of permits.

2. To accurately quantify the current air emissions.

Enclosed is the modified permit application for Semiconductor's Building 59.

If you should have any questions about the enclosed information, please feel free to contact me at (407) 724-7467.

Sincerely,

James R. Kolanek

J. R. Kolanek, Manager
Environmental Services

/pgc

RECEIVED
DER - MAIL ROOM
1988 JUN 10 AM 10:30

cc: A. T. Sawicki
L. R. Hutker
D. R. Erdley
R. R. Sands

AC01031

Copied: Bruce Mitchell - 6.16.88

DEPARTMENT OF ENVIRONMENTAL REGULATION

$100 pd.
AC 05-150423
6-10-88

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

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

RECEIVED
JUN 10 1988
DER - BAQM

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

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

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

COMPANY NAME: Harris Semiconductor COUNTY: Brevard

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peaking Unit No. 2, Gas Fired) B-59 Manufacturing Fab

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: J. R. Kolanek, Manager Environmental Services

APPLICANT ADDRESS: P.O. Box 883, Melbourne, Florida 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 permitted establishment.

*Attach letter of authorization

Signed: James R. Kolanek

J. R. Kolanek, Manager, Environmental Services
Name and Title (Please Type)

Date: 5/18/88 Telephone No. (407) 724-7467

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

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

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

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

Signed Lawrence R. Hutker

Lawerence R. Hutker
Name (Please Type)

Harris Semiconductor
Company Name (Please Type)

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

lorida Registration No. 35972 Date: 5/18/88 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 and consolidation of existing air permits.

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

Start of Construction N/A Completion of Construction N/A

:. 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.

AO 05-121924 issued 9/17/86; expires 9/14/91

AC 05-104515 issued 1/15/86; expires 6/30/86

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

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

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

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

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

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

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

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

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

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

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

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

   a. If yes, for what pollutants?________________________

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

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

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

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

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

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

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

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

Name of Contaminant	Emission[1]		Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission lbs/hr	Potential[4] Emission		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/yr	T/yr	
---SEE ATTACHMENT B ----							

[1]See Section V, Item 2.

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

[3]Calculated from operating rate and applicable standard.

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

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

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles Size Collected (in microns) (If applicable)	Basis for Efficiency (Section V Item 5)
---SEE ATTACHMENT D ---				

E. Fuels

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

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

Fuel Analysis:

Percent Sulfur: ________________ Percent Ash: ________________

Density: ________________ lbs/gal Typical Percent Nitrogen: ________________

Heat Capacity: ________________ BTU/lb ________________ BTU/gal

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

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

Annual Average ________________ Maximum ________________

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

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

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

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

Stack Height: ______ ft. Stack Diameter: ______ ft.

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

Water Vapor Content: ______ % Velocity: ______ FPS

SECTION IV: INCINERATOR INFORMATION

not applicable

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

Description of Waste ______

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

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

Manufacturer ______ ______

Date Constructed ______ Model No. ______

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

Stack Height: ______ ft. Stack Diamter: ______ Stack Temp. ______

Gas Flow Rate: ______ ACFM ______ DSCFM* Velocity: ______ FPS

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

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

[ ] Other (specify) ______

Brief description of operating characteristics of control devices: ______________________

____

____

____

____

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

____

____

____

____

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

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

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

2. To a construction application, attach basis of emission estimate (e.g., design calculations, design drawings, pertinent manufacturer's test data, etc.) and attach proposed methods (e.g., FR Part 60 Methods 1, 2, 3, 4, 5) to show proof of compliance with applicable standards. To an operation application, attach test results or methods used to show proof of compliance. Information provided when applying for an operation permit from a construction permit shall be indicative of the time at which the test was made.

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

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

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

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

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

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

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

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

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?

[ ] Yes [ ] No

Contaminant	Rate or Concentration

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

[ ] Yes [ ] No

Contaminant	Rate or Concentration

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

Contaminant	Rate or Concentration

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

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

*Explain method of determining

5. Useful Life:

6. Operating Costs:

7. Energy:

8. Maintenance Cost:

9. Emissions:

Contaminant	Rate or Concentration

10. Stack Parameters

a. Height: ft.

b. Diameter: ft.

c. Flow Rate: ACFM

d. Temperature: °F.

e. Velocity: FPS

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

1.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

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

2.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

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

j. Applicability to manufacturing processes:

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

3.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

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

4.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Costs:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

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

F. Describe the control technology selected:

1. Control Device:

2. Efficiency:[1]

3. Capital Cost:

4. Useful Life:

5. Operating Cost:

6. Energy:[2]

7. Maintenance Cost:

8. Manufacturer:

9. Other locations where employed on similar processes:

a. (1) Company:

(2) Mailing Address:

(3) City:

(4) State:

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

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

b. (1) Company:

(2) Mailing Address:

(3) City: (4) State:

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

10. Reason for selection and description of systems:

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

SECTION VII - PREVENTION OF SIGNIFICANT DETERIORATION

A. Company Monitored Data

1. ______ no. sites ______ TSP ______ ( ) SO^{2*} ______ Wind spd/dir

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

Other data recorded ______________________

Attach all data or statistical summaries to this application.

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

2. Instrumentation, Field and Laboratory

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

b. Was instrumentation calibrated in accordance with Department procedures?

[ ] Yes [ ] No [ ] Unknown

B. Meteorological Data Used for Air Quality Modeling

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

2. Surface data obtained from (location)____________________

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

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

C. Computer Models Used

1. ____________________ Modified? If yes, attach description.

2. ____________________ Modified? If yes, attach description.

3. ____________________ Modified? If yes, attach description.

4. ____________________ Modified? If yes, attach description.

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

D. Applicants Maximum Allowable Emission Data

Pollutant	Emission Rate	
TSP	____________________	grams/sec
SO^2	____________________	grame/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.

HARRIS SEMICONDUCTOR

AIR PERMIT – BUILDING 59

ATTACHMENT A

PROCESS DESCRIPTION

Attachment A

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

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

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

Next, the wafers 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.

The ground floor of the two-story manufacturing area 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 resides above it in the fabrication area. Storage cabinets 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.

The exhaust system for the building is divided between two scrubbers. Acid vapors are vented to scrubber number F59S01, while solvent exhaust streams are ducted to scrubber number F59S03. Both systems reside on the site grounds directly outside the west wall of the building. (See site plan and scrubber location maps attached.)

HARRIS SEMICONDUCTOR

AIR PERMIT – BUILDING 59

ATTACHMENT B

AIR EMISSIONS

Attachment B

Monitoring work was performed on the building 59 solvent scrubber system in December of 1986. The test conducted to establish VOC emissions from the fab was EPA method 25A (flame ionization detector.)

The test results initially revealed that total accumulative monitored VOC emissions for the building were 0.37 tons/year expressed as propane. Building 59 houses the site's newest and most technologically sophisticated clean room. Due to increased customer interest in the products manufactured in this building, production schedules are likely to vary. In order to accomodate these fluctuations, total VOC emissions were adjusted to represent maximum loading. Hence, an 8760 hour a year production schedule was utilized to calculate emissions, and the loading was estimated to be 0.50 tons/year. Fluctuations in production schedules are common at Semiconductor, because manufacturing hours depend on product demand. The following assumptions was made regarding monitoring work on this building:

-VOC values refer to all organic emissions including organic solvents, as defined in the Florida Environmental Regulations.

Total projected VOC emissions for building 59 is 0.57 tons/year. This number is representative of maximum VOC emissions, and is an extrapolation of the building's monitored emission rate mentioned above. The site's projected VOC limit is 150 tons/year.

No monitoring work to estimate acid emissions has been performed to date. Scrubber removal efficiencies as prescribed by the scrubber manufacturer (Beverly Pacific Corporation) are provided in this attachment. Semiconductor's Environmental Services Department plans to verify these acid removal efficiencies sometime within the calendar year.

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

TEST DATE	SCRUBBER #	VOC EMISSIONS (TON/YR)
12/09/86	F59S03	0.50

NOTE: ABOVE BASED ON ACTUAL OPERATING HOURS.

TOTAL VOC EMISSIONS FROM BUILDING 59
AS DETECTED BY EPA METHOD 25-A

SCRUB#	PRODUCTN SCHEDULE	NONPRODUCTN SCHEDULE	PRODUCTN EMISSIONS (TON/YR)	NONPRODUCTN EMISSIONS (TON/YR)	TOTAL VOC EMISSNS (TON/YR)
F59S03	8760	0	0.50	0	0.50

TOTAL PROJECTED VOC EMISSIONS FOR BLDG 59 = 0.57 TONS/YEAR

Divisions . . . Beverly Mech. Contracting
Industrial Systems
Process Equipment
Refrigeration Service

BEVERLY PACIFIC CORP.

140 W. Providencia Ave., Burbank, CA 91502 • St. Contr. Lic. No. 156646 • Telex No. 674209 • (818) 841-1400

TABLE OF SCRUBBER EFFICIENCIES/CONTAMINANTS

Information given below is to be used as a guide only

CONTAMINANTS	TYPE (SEE NOTE A)	BPC APPROX. EFFICIENCY
Acetic Acid (CH3 CO2 H)	G & L	95.7%
Acetone (CH3 COCH3)	G	95%
Aluminum Bright Dip	G & L	40-65%
(2) Amines (RNH2)	G	98-99%
(2) Ammonia (NH2)	G	97-99%
Ammonia Hydroxide (NH4 OH)	L	97-99%
Ammonia Nitrate (NH4 NO3)	S & SS	98-99%
Anodizing Solutions	L	99%
Boric Acid (H3 BO3)	L	95-98%
(1) Bromine (BR2)	G	99%
(1) Carbon Dioxide (CO2)	G	80-90%
Caustic (NaOH)	L	99%
(1) Chlorine (Cl2)	G	99%
(3) Chlorine Dioxide (ClO2)	G	95-98%
Chromic Acid (H2 CrO4)	L	99%
Citric Acid	L	98-99%
Cyanide Salts	L	99%
Ethanol (CH3 CH2 OH)	G & L	99%
(1) Formaldehyde (HCHO)	G & L	98-99%
Formic Acid (HCO2 H)	G	98-99%
Hydrobromic Acid (HBr)	G & L	98-99%
Hydrochloric Acid (HCl)	G, L & SL	95-99%

Divisions . . . Beverly Mech. Contracting
Industrial Systems
Process Equipment
Refrigeration Service

BEVERLY PACIFIC CORP.

140 W. Providencia Ave., Burbank, CA 91502 • St. Contr. Lic. No. 158648 - Telex No. 674209 • (818) 841-1400

Hydrofluoric Acid (HF)	G	95-97%
Hydrogen Cyanide (HCN)	G	99%
Hydrogen Peroxide	G	95%
Hydrogen Sulfide (H2S)	G	99%
(3) Mercatans (RSH)	G & L	98-99%
Methanol (CH3 OH)	G	97.5%
Nitric Acid (HNO3)	L	95%
(1) Nitrogen Oxides (NOx)	G	30-40%
Oil Mists	L & SL	95-98%
Perchloric Acid	G	98-99%
Phenol (C6 H5 OH)	G & L	95-99%
Phosphate Salt Baths	L	98-99%+
Phosphoric Acid (H3 PO4)	L	98-99%+
Silicon Tetrachloride (SiCl4)	G	99%
Silicon Tetrafluoride (SiF4)	G	99%
Sodium Chloride (NaCl)	S & L	98-99%+
Sulfuric Acid (H2 SO4)	L	95%
(1) Sulfur Dioxide (SO2)	G	87-90%
Urea (H2 NCONH2)	S & SS	98-99%
(1) Hydrogen Sulfide (H2S)	G	98-99%
Xylene	L	95%

Divisions . . Beverly Mech. Contracting
Industrial Systems
Process Equipment
Refrigeration Service

BEVERLY PACIFIC CORP.

140 W. Providencia Ave., Burbank, CA 91502 • St. Contr. Lic. No. 158646 • Telex No. 674209 • (818) 841-1400

Note A: G = Gas
L = Liquid particulate above 3 microns
SL = Liquid particulate below 3 microns

S = Solid particulate above 3 microns
SS = Solid particulate below 3 microns

Notes:

(1) NaOH Scrubbing liquid required
(2) H2SO4 scrubbing liquid may be required
(3) Special scrubbing liquid required
Consult BPC for recommendation
4. Consult BPC if efficiencies other than shown are required or for contams. not shown

HARRIS SEMICONDUCTOR

AIR PERMIT – BUILDING 59

ATTACHMENT C

RAW MATERIALS AND CHEMICALS

HARRIS SEMICONDUCTOR
BUILDING 59 CONSOLIDATED AIR PERMIT
PROCESS GASSES

1 ARGON
2 BORON TRIBROMIDE
3 BORON TRIFLUORIDE
4 CHLORINE
5 DICHLOROSILANE
6 HELIUM
7 HYDROGEN
8 HYDROGEN CHLORIDE
9 NITROGEN
10 NITROGEN TRIFLUORIDE
11 NITROUS OXIDE
12 OXYGEN
13 OZONE
14 PHOSPHINE
15 PHOSPHOROUS OXYCHLORIDE
16 SILANE
17 SULFUR HEXAFLUORIDE
18 TRIMETHYL BORATE
19 TRIMETHYL PHOSPHATE
20 TUNGSTON HEXAFLUORIDE
21 HEXAFLUOROETHANE

JUNE 8, 1988

HARRIS SEMICONDUCTOR
BUILDING 59 CONSOLIDATED AIR PERMIT
PROCESS SOLVENTS

1 ACETONE
2 CARBON TETRACHLORIDE
3 1,1,1 TRICHLOROETHANE
4 FREON TF
5 FREON TMS
6 N-BUTYL ALCOHOL
7 METHANOL
8 BUTYL CELLOSOLVE
9 2-ETHOXYETHYL ACETATE
10 CELLOSOLVE ACETATE
11 DICHLORODIFLUOROETHANE
12 EDTA
13 ETHYL ALCOHOL
14 ETHYL BENZENE
15 ISOPROPYL ALCOHOL
16 METHYLPHENYL ETHER
17 MONOETHANOLAMINE
18 N-BUTYL ACETATE
19 TOLUENE
20 XYLENE
21 TRICHLOROTRIFLUOROETHANE
22 N-METHYL PYRROLIDONE
23 METHYL-2-PYRROLIDINONE
24 PROPYLENE GYLCOL 1,2 PROPANEDIOL

JUNE 8, 1988

HARRIS SEMICONDUCTOR
BUILDING 59 CONSOLIDATED AIR PERMIT
PROCESS CHEMICALS

1 AMMONIA
2 AMMONIUM FLUORIDE
3 AMMONIUM HYDROXIDE
4 ETHYLENE GLYCOL
5 GLYCERINE
6 HYDROCHLORIC ACID
7 HYDROFLUORIC ACID
8 HYDROGEN PEROXIDE
9 MOLYBDENUM DISULFIDE
10 NITRIC ACID
11 OIL
12 PHOSPHORIC ACID
13 POTASSIUM DICHROMATE
14 POTASSIUM PHOSPHATE
15 RED PHOSPHOROUS
16 SODIUM CARBONATE
17 SODIUM HYDROXIDE
18 SODIUM PHOSPHATE
19 SULFURIC ACID
20 TETRAMETHYL AMMONIUM HYDROXIDE
21 TRISODIUM PHOSPHITE

JUNE 8, 1988

HARRIS SEMICONDUCTOR

AIR PERMIT – BUILDING 59

ATTACHMENT D

CONTROL EQUIPMENT

HARRIS SEMICONDUCTOR -- AIR PERMIT INFORMATION

CURRENT PERMIT

BUILDING: 59
PERMIT NUMBER: AO 05-121924
PERMIT TYPE : OPERATING

DATE ISSUED : 09/17/86
RENEWAL DATE: 07/16/91
DATE EXPIRES: 09/14/91

AREA SERVED:
PROCESS DESCRIPTION: ACID VAPOR SCRUBBER

PERMIT LIMITS

VOL. RATE (SCFM): 40,000
ACID MIST (LB/HR): 0.0079
SOLVENTS (LB/HR): --
VOCS (LB/HR): --
OPER. (HRS/YEAR): 2112

SPECIFIC CONDITIONS

ANNUAL OPERATING REPORT : 03/01
NOTIFICATION OF VE TEST : 10/26
ANNUAL VIS EMISSION TEST: 11/10

EQUIPMENT INFORMATION

MANUFACTURER : BEVERLY PACIFIC
MODEL NUMBER : PS-40HT
LOCATION : B59 GROUND WEST SIDE
HARRIS ID NUMBER : F59S01
STACK HEIGHT (FT): 35
VOLUME FLOW RATE (CFM): 40,000
STACK DIAMETER (IN): 44
RECIRCULATION RATE (GPM): 175
STACK VELOCITY (FPM):
MAKEUP WATER RATE (GPM): 17.5
DUCT MATERIAL : polypro

PERMIT HISTORY

PERMIT NUMBER: AC 05-54991
DATE EXPIRED : 06/01/84

PERMIT NUMBER: AC 05-104516
DATE EXPIRED : 06/30/86

PERMIT NUMBER:
DATE EXPIRED :

:

SCRUBBER INFORMATION

HARRIS ID # : F59S01
MANUFACTURER : BEVERLY PACIFIC   MODEL NUMBER : PS-40HT
SERIAL NUMBER: F-600   MATERIAL : FIBERGLASS
DESCRIPTION : HORIZONTAL CROSS FLOW, NON-CLOGGING PVC SPRAY NOZZLES, POLYPROPYLENE PACKING, PVC MIST ELIMINATOR, DWG. F-600-1

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

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

RECIRCULATION PUMP INFORMATION

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

FAN INFORMATION

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

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

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

FAN MOTOR INFORMATION

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

HARRIS SEMICONDUCTOR -- AIR PERMIT INFORMATION

CURRENT PERMIT

BUILDING: 59	DATE ISSUED : 01/15/86
PERMIT NUMBER: AC 05-104515	RENEWAL DATE: 04/01/86
PERMIT TYPE : CONSTRUCTION	DATE EXPIRES: 06/30/86

AREA SERVED:
PROCESS DESCRIPTION: VOC/SOLVENT SCRUBBER

PERMIT LIMITS	SPECIFIC CONDITIONS
VOL. RATE (SCFM): 20,000	ANNUAL OPERATING REPORT :
ACID MIST (LB/HR): --	NOTIFICATION OF VE TEST :
SOLVENTS (LB/HR): 0.0018	ANNUAL VIS EMISSION TEST:
VOCS (LB/HR): --	
OPER. (HRS/YEAR): 2112	

EQUIPMENT INFORMATION

MANUFACTURER : BEVERLY PACIFIC	MODEL NUMBER : PS-24VT
LOCATION : B59 GROUND WEST SIDE	
HARRIS ID NUMBER : F59S03	STACK HEIGHT (FT): 35
VOLUME FLOW RATE (CFM): 24,000	STACK DIAMETER (IN): 42
RECIRCULATION RATE (GPM): 105	STACK VELOCITY (FPM):
MAKEUP WATER RATE (GPM): 10.5	DUCT MATERIAL : galv.

PERMIT HISTORY

PERMIT NUMBER: AC 05-54990
DATE EXPIRED : 06/01/84

PERMIT NUMBER: AC 05-104515
DATE EXPIRED : 06/30/86

PERMIT NUMBER:
DATE EXPIRED :

SCRUBBER INFORMATION

HARRIS ID # : F59503
MANUFACTURER : BEVERLY PACIFIC   MODEL NUMBER : PS-24VT
SERIAL NUMBER: F-600   MATERIAL : FIBERGLASS
DESCRIPTION : VERTICAL COUNTER-CURRENT, NON-CLOGGING PVC SPRAY NOZZLES, POLYPROPYLENE PACKING, PVC MIST ELIMINATOR, DWG. F-600-2

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

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

RECIRCULATION PUMP INFORMATION

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

FAN INFORMATION

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

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

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

FAN MOTOR INFORMATION

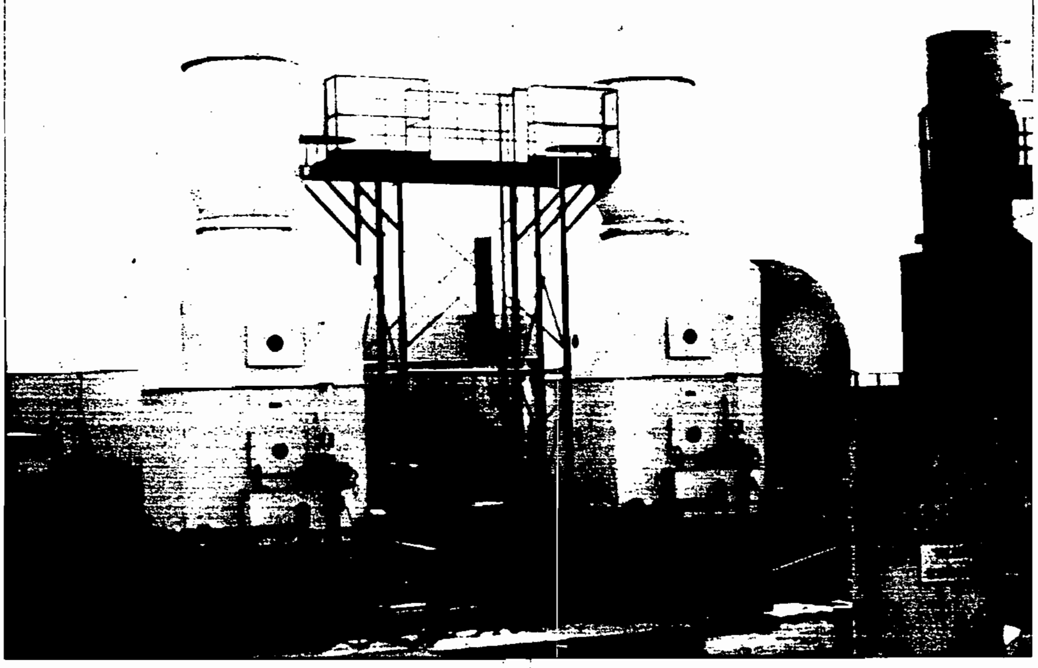
MANUFACTURER :   MODEL NUMBER :
SERIAL NUMBER: HP : RPM :
BRKR LOCATION: NEXT TO UNIT   FED FROM MCC : 5913

BEST AVAILABLE COPY

[redacted]

BEVERLY PACIFIC CORPORATION

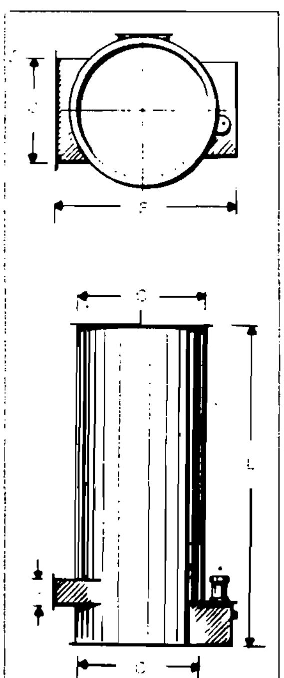
SCRUBBERS

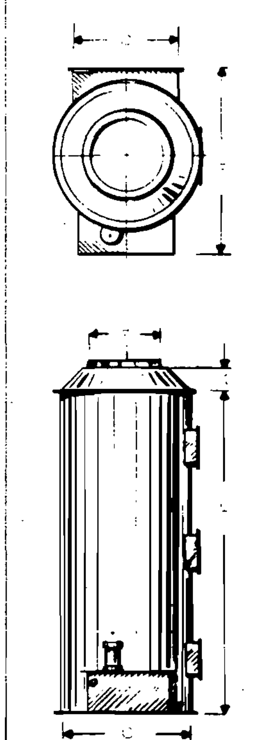


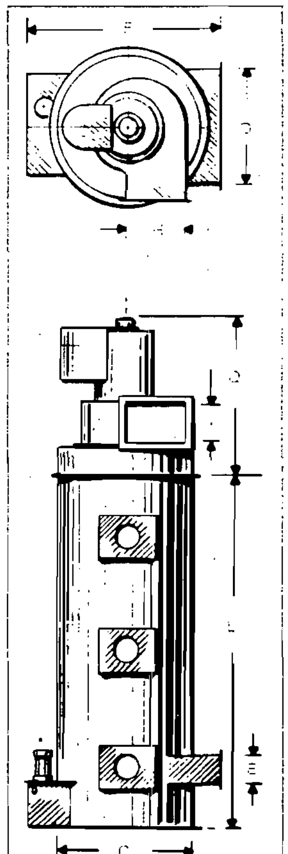
FIBERGLASS REINFORCED PLASTIC

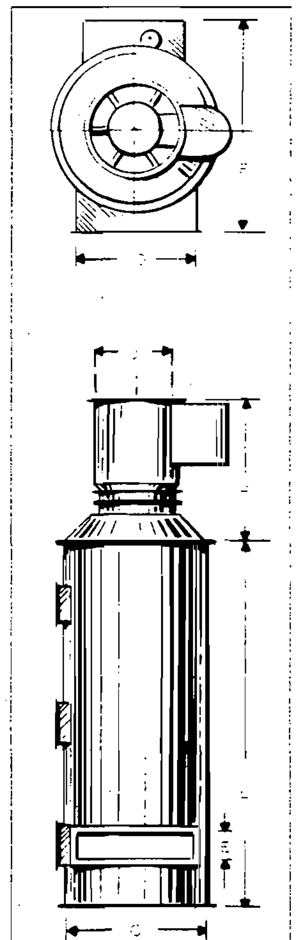
PACKED SCRUBBER DIMENSIONAL CHART
MODEL NUMBERS
DIMENSIONS IN INCHES

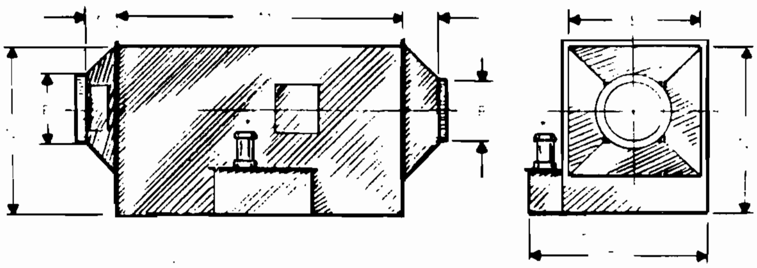
	PS-2	PS-4	PS-6	PS-8	PS-12	PS-18	PS-24	PS-30	PS-40	PS-50
A	78	82	84	94	101	108	112	114	118	118
B	24	36	42	48	60	72	84	96	108	120
C	28	40	48	58	72	84	96	108	120	136
D	22	34	40	46	58	70	80	92	104	116
E	6	8	10	11	12	16	18	20	24	24
F	46	58	66	76	90	102	114	126	138	154
G	42	54	60	66	78	90	102	114	126	138
H	13⅜	16⅜	22½	26¼	29½	35¼	39	47¼	52⅝	63⅞
I	10⅜	12⅞	17	20½	22¾	27	30	37½	40¾	49¾
J	18	22	28	34	38	45	50	62	66	80
K	6	8	10	10	12	16	19	20	24	24
L	84	87	89	104	112	118	122	124	128	128
M	64	64	70	77	89	102	102	102	114	114
N	35	49	55	62	76	88	103	116	128	142
O	38	52	58	65	79	91	106	119	131	145
P	14	16	22	26	30	36	42	50	54	66
Q	45	50	61	64	68	72	78	86	93	103
R	35	44	55	65	75	85	94	108	120	141
S	46	52	59	69	72	79	82	97	100	110
T	36	48	54	60	72	84	96	108	120	132
WHEEL DIA.	12¼	15	20	24½	27	33	36½	44½	49	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 MAKE-UP GPM	7 0.7	15 1.5	25 2.0	35 3.0	45 4.0	75 7.0	105 10.0	135 13.0	175 17.0	225 22.0
HT OP. WT. HT SHIP WT.	388 220	745 385	1110 550	1570 770	2690 1210	4085 1925	5670 2750	7595 3795	11790 5390	16040 7040
VT OP. WT. VT SHIP WT.	318 150	660 300	1060 500	1500 700	2630 1150	3910 1750	5470 2550	7400 3600	11650 5250	15800 6800


STYLE RO


STYLE RT

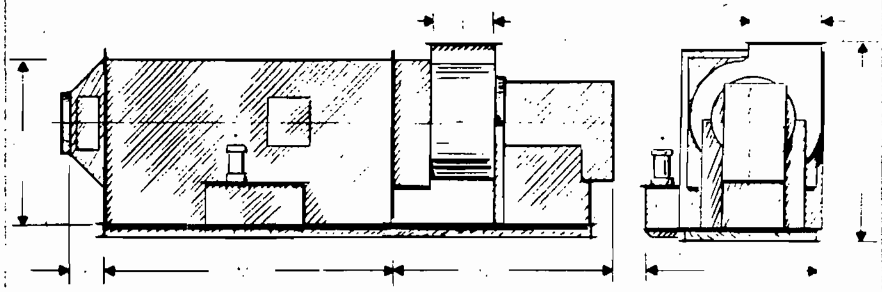

STYLE RC


STYLE RI

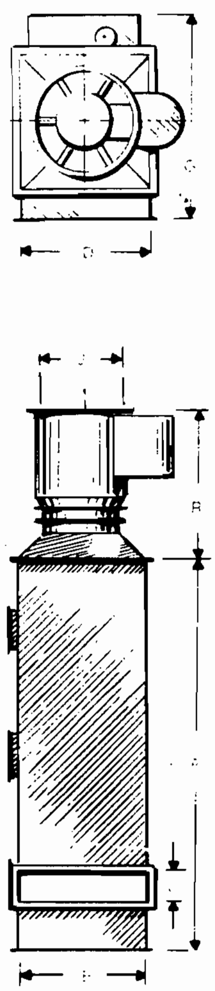


STYLE HE

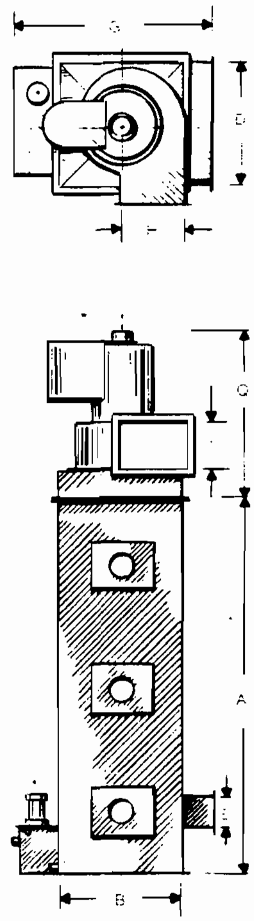
*May require one or more pumps.



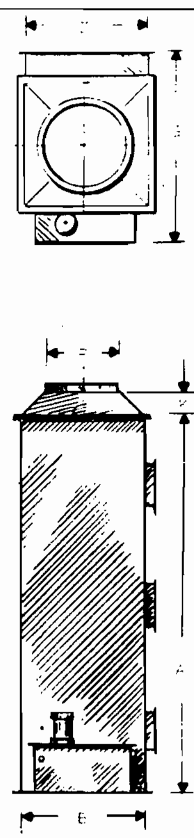
STYLE HC



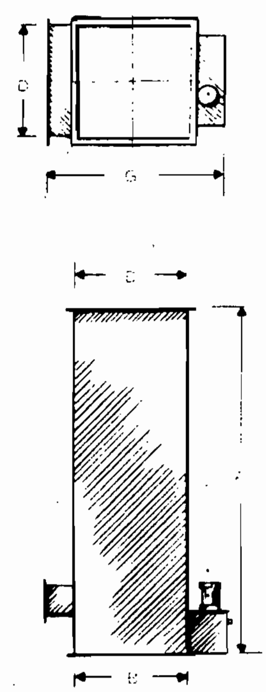
STYLE VI



STYLE VC



STYLE VT



STYLE VO

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 recirculation rate of 5 GPM per 1000 CFM of contaminated air. Of that 5 GPM, losses due to absorption and/or evaporation range from 0.2 GPM to 0.6 GPM, depending on inlet gas temperature and gas stream dust load.

ENTRAINMENT SEPARATION

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

CONSTRUCTION

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

OPTIONAL EQUIPMENT, FITTINGS AND ACCESSORIES

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

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

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

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

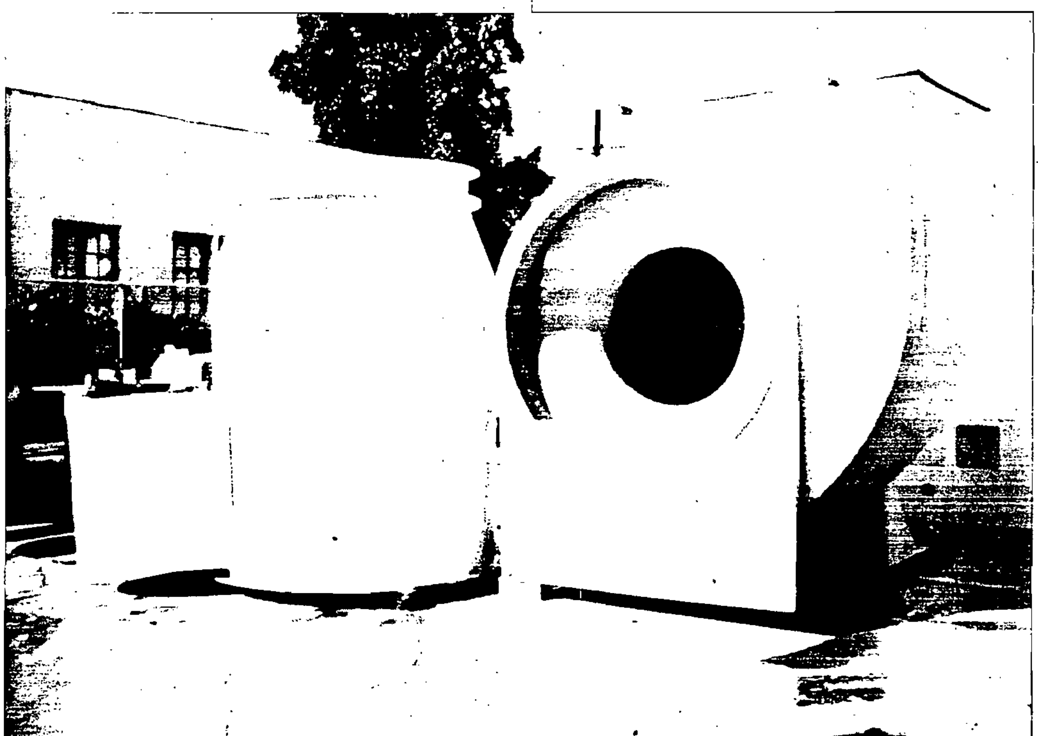
pH CONTROL SENSING/METERING equipment can be provided where contaminate absorption requires the addition of acid or caustic to the recirculated scrubbing liquid.

[redacted]

BEVERLY PACIFIC CORPORATION

Industrial Systems Division

EXHAUST FANS



FIBERGLASS REINFORCED PLASTIC

EXHAUST FAN INTRODUCTION

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

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

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

FAN WHEEL SUPERIORITY

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

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

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

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

EXHAUST FANS STANDARD AND OPTIONAL EQUIPMENT

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

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

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

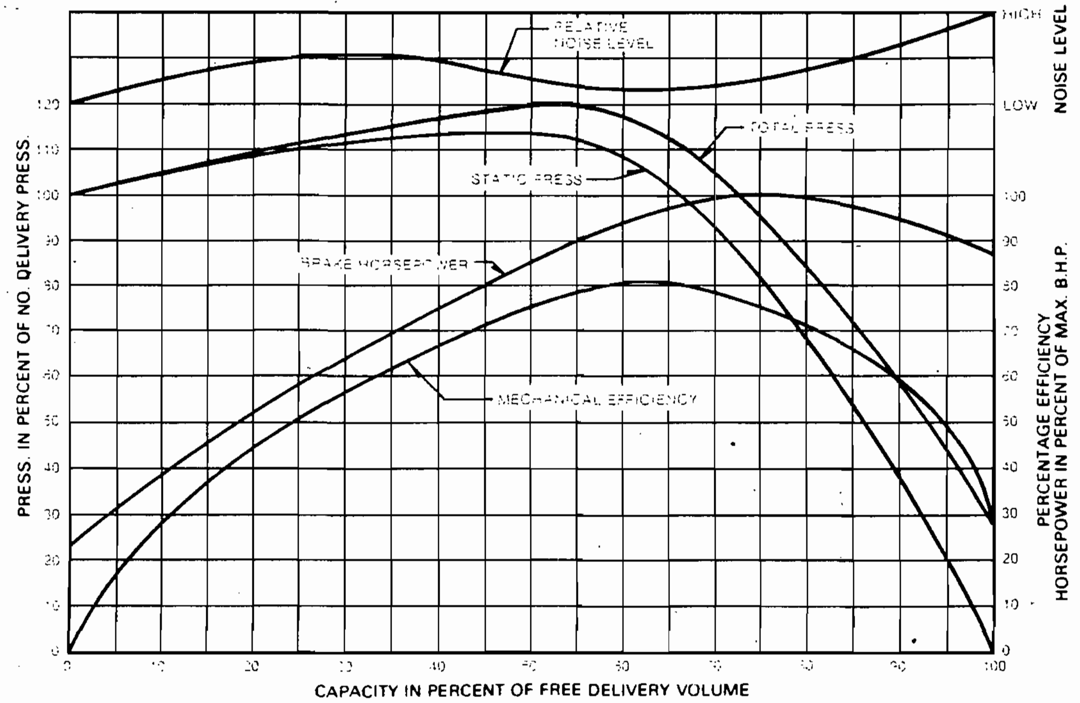
c. V-BELTS — Beverly Pacific furnishes Dodge Sealed-Life Belts, Type A, B and C which have a longer wearing protective cover, crowned top, concave sidewall, exceptional stability and an improved cord section which prevents failures caused by cord separation.

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

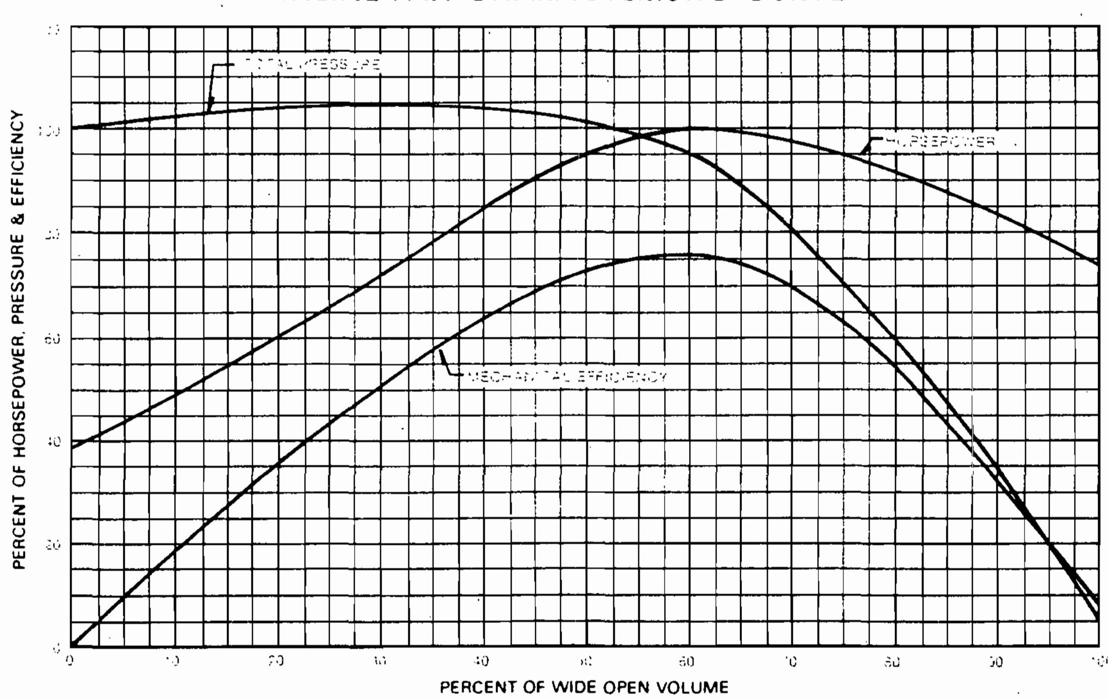
e. DRIVE SHAFTS — Beverly Pacific uses ground and polished, 1045 TGP shafting rounds, as produced by Inland Steel. This medium carbon steel is used because of its greater strength and hardness. The mechanical properties, based on ¾" — 1¼" diameter round bars of 1045, include a tensile strength of 98,000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

BEST AVAILABLE COPY

BEVERLY PACIFIC CORPORATION
CENTRIFUGAL FAN CHARACTERISTIC CURVE



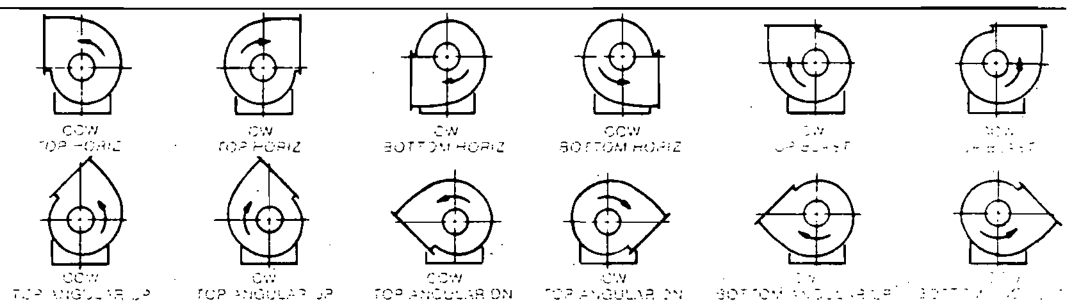
BEVERLY PACIFIC CORPORATION
INLINE FAN CHARACTERISTIC CURVE



CENTRIFUGAL INDUSTRIAL EXHAUST FANS

	CB-12	CB-13	CB-15	CB-16	CB-18	CB-20	CB-22	CB-24	CB-27	CB-30	CB-33	CB-
MID-RANGE CFM RECOMMENDED	2,150	2,625	3,200	3,900	4,750	5,800	7,075	8,650	10,550	12,875	15,700	19,1
FAN WHEEL DIAMETER	12¼	13½	15	16½	18¼	20	22¼	24½	27	30	33	36
A	13½	14½	16½	18¼	20	22	24½	26	29¼	32¼	36	40
B	10⅜	11⅜	12⅞	14⅜	15	17	18¾	20½	22¾	25	27	30
C	13⅜	14⅞	16⅜	18⅜	20	22½	24	26¼	29½	32	35¼	39
D	34¼	35¼	40 7/16	42 7/16	45	47¾	54	57¼	61½	64¾	66¾	69
E	22¼	22½	27¼	29¾	32⅜	36½	39¼	43¼	49	53	58¾	65
F	15	16	18	19	20	23	26	28	30	33	36	51
G	11	11½	12½	14	15½	17¼	19	21½	23	25½	28½	30
H	13⅜	14⅜	15⅞	17⅜	18	21	22¾	24½	26¾	29	31	34
I	16	16	18¼	18¾	20	20½	23	23	25	26	26	26
J	3	3	4	4	4	4	6	6	6	6	6	6
K	9¼	10¼	11¼	12½	13½	15	16	18	20½	22	24	27
L	9¼	10¼	11¼	12½	13½	15	16	18	20½	22	24	27
M	3½	3¾	4¼	4½	5	5¾	6⅜	6⅝	7⅜	8¼	9½	10
DRIVE SHAFT DIAMETER	1	1	1 3/16	1 3/16	1 7/16	1 7/16	1 11/16	1 11/16	1 15/16	1 15/16	1 15/16	2 3/1
SHIPPING WEIGHT POUNDS	170	205	230	400	550	600	650	720	850	1,000	1,380	1,6

DESIGNATION OF DIRECTION OF ROTATION AND DISCHARGE



DIRECTION OF ROTATION IS DETERMINED FROM DRIVE SIDE

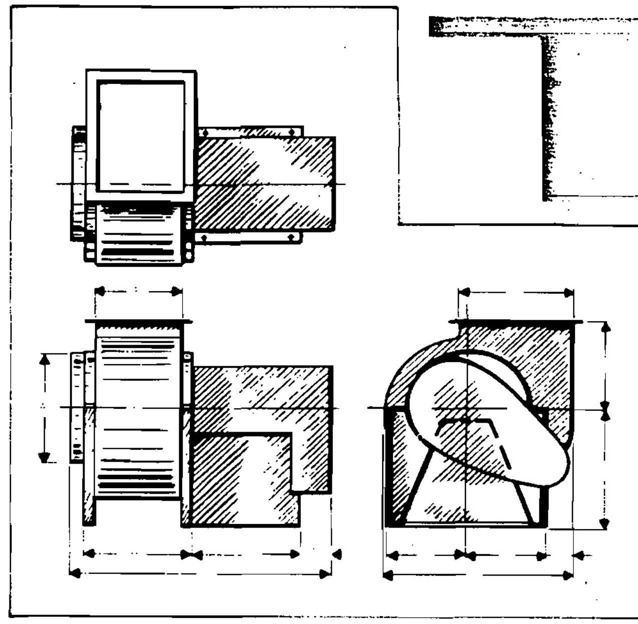
INLINE EXHAUST FANS

	IB-12	IB-15	IB-18	IB-20	IB-22	IB-24	IB-27	IB-30	IB-33	IB-36	IB-40	IB-
MID-RANGE CFM RECOMMENDED	2,550	3,842	4,648	5,614	6,948	8,424	10,242	12,644	15,300	18,718	22,761	27,8
FAN WHEEL DIAMETER	12¼	15	18¼	20	22¼	24½	27	30	33	36½	40½	44
P	21"	28"	32½"	36½"	40"	47"	53"	55"	58"	63¾"	70"	78"
Q	14"	16"	20"	22"	24"	26"	30"	32"	36"	42"	46"	50"
R	18"	22"	26"	28"	32"	34"	38"	42"	45"	50"	56"	62"
S	2"	2"	2"	2"	2"	3"	3"	3"	3"	3"	3"	3"
T	23"	28"	31"	32"	34"	35"	37"	39"	40½"	45"	52"	63"
U	2"	2"	2"	2"	2"	3"	3"	3"	3"	3"	3"	3"
DRIVE SHAFT DIAMETER	1	1 3/16	1 7/16	1 7/16	1 11/16	1 11/16	1 15/16	1 15/16	1 15/16	2 3/16	2 3/16	2 7/1
SHIPPING WEIGHT POUNDS	90	130	290	320	350	380	450	525	730	850	1,110	1,2

BEST AVAILABLE COPY

DIMENSIONAL CHART

B-36	CB-40	CB-44	CB-49	CB-54	CB-60	CB-66	
9,150	23,375	28,525	34,775	42,450	51,775	63,175	MID-RANGE CFM RECOMMENDED
6½	40¼	44½	49	54¼	60	66	FAN WHEEL DIAMETER
0	44½	49	54	60	66	72	A
0	34½	37½	40¾	44¾	49¾	54¾	B
9	43	47¼	52⅝	57⅝	63⅞	70¼	C
9¾	79¾	84¾	88	93	97⅜	104⅜	D
5¼	72½	79½	88¼	97	108	119	E
1½	42	49¾	49	54	59	64	F
0½	34½	37½	41	46	50½	55	G
4	40½	43½	46¾	50¾	53¾	60¾	H
6	27½	29½	29½	31¼	33	33	I
	8	8	8	8	8	8	J
7	25¾	26¾	30	34	37	40	K
7	25¾	26¾	30	34	37	40	L
0¼	11¼	12¼	14 [illegible]/16	15 5/16	17⅝	19⅞	M
3/16	2 3/16	2 7/16	2 7/16	2 15/16	2 15/16	2 15/16	DRIVE SHAFT DIAMETER
,610	2,050	2,300	2,650	3,110	3,525	4,000	SHIPPING WEIGHT POUNDS



Beverly Pacific's FRP constructed fans have a Type "A" classification for spark resistance.

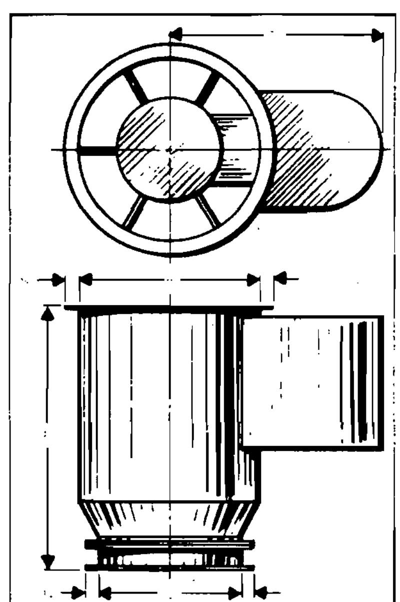
STANDARD CLASSIFICATIONS FOR SPARK RESISTANT CONSTRUCTION

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

AR UP

DIMENSIONAL CHART

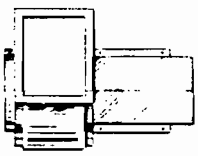
B-44	IB-49	IB-54	IB-60	IB-66	
7,822	33,733	41,349	50,579	61,201	MID-RANGE CFM RECOMMENDED
4½	49	54¼	60	66	FAN WHEEL DIAMETER
8"	84"	93"	104"	116"	P
0"	54"	60"	66"	72"	Q
2"	66"	72"	80"	88"	R
"	3"	3"	3"	3"	S
3"	65"	68"	72"	76"	T
"	3"	3"	3"	3"	U
7/16	2 7/16	2 15/16	2 15/16	2 15/16	DRIVE SHAFT DIAMETER
.250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

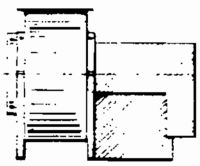


CENTRIFUGAL CAPACITY RATING TABLES

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

CB-40



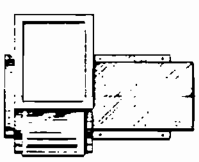


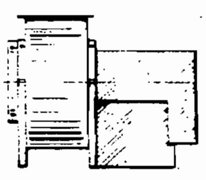
WHEEL 40¼" DIA
INLET 44¼" DIA

CLASS	MAX RPM
I	880
II	1120

Volume of air CFM	¼" S.P. RPM	¼" S.P. BHP	½" S.P. RPM	½" S.P. BHP	1" S.P. RPM	1" S.P. BHP	1½" S.P. RPM	1½" S.P. BHP	2" S.P. RPM	2" S.P. BHP	2½" S.P. RPM	2½" S.P. BHP	3" S.P. RPM	3" S.P. BHP	3½" S.P. RPM	3½" S.P. BHP	4" S.P. RPM	4" S.P. BHP	4½" S.P. RPM	4½" S.P. BHP	5" S.P. RPM	5" S.P. BHP	5½" S.P. RPM	5½" S.P. BHP	6" S.P. RPM	6" S.P. BHP
7480	243	.47	297	0.81																						
8415	258	.56	309	0.95	399	1.82																				
9350	275	.68	323	1.10	407	2.01																				
10285	293	.81	338	1.26	417	2.23	490	3.34																		
11220	312	.96	354	1.44	429	2.49	498	3.62																		
12155	330	1.14	370	1.64	442	2.77	507	3.95																		
13090	348	1.33	387	1.87	455	3.07	516	4.30																		
14025	368	1.55	405	2.13	470	3.39	529	4.69																		
14960	388	1.79	423	2.42	486	3.73	543	5.11	595	6.64	647	8.07	698	9.70	747	11.4										
15895	408	2.07	441	2.73	502	4.11	556	5.58	607	7.06	657	8.62	706	10.2	751	12.0	[illegible]	13.9								
16830	428	2.37	459	3.07	517	4.50	569	6.06	620	7.61	667	9.21	714	10.9	758	12.6	[illegible]	14.6	846	16.6						
17765	449	2.69	478	3.45	534	4.93	585	6.65	634	8.20	679	9.86	723	11.5	767	13.4	[illegible]	15.3	848	17.3	883	18.5				
18700	470	3.04	493	3.84	551	5.40	602	7.07	647	8.62	692	10.5	734	12.3	776	14.1	[illegible]	16.1	858	18.1	886	20.2	936	22.6		
19635	491	3.46	516	4.29	569	5.92	617	7.63	661	9.48	705	11.2	747	13.1	[illegible]	14.8	827	17.0	[illegible]	19.0	903	21.1	939	23.4	976	25.8
20570	512	3.94	536	4.76	587	6.48	633	8.24	677	10.1	719	12.0	759	13.9	[illegible]	15.8	837	17.8	874	20.0	910	22.1	947	24.4	981	26.7
21505	533	4.45	556	5.26	605	7.07	649	8.88	693	10.8	732	12.8	772	14.8	[illegible]	16.8	845	18.8	884	21.0	920	23.2	955	25.4	[illegible]	27.8
22440	555	5.05	576	5.83	624	7.68	667	9.57	709	11.5	748	13.6	786	15.7	[illegible]	17.8	859	19.9	893	22.0	930	24.3	964	26.6	996	29.0
23375	577	5.71	597	6.42	642	8.36	684	10.3	725	12.3	763	14.5	800	16.7	[illegible]	18.8	872	21.0	905	23.2	939	25.4	973	27.8	1005	30.3
24310	599	6.31	618	7.04	660	9.10	702	11.1	741	13.0	779	15.3	814	17.6	[illegible]	19.8	[illegible]	22.1	918	24.4	949	26.7	982	29.1	1016	31.6
25245	621	7.01	638	7.69	679	9.86	720	11.9	757	14.0	795	16.3	830	18.6	[illegible]	21.0	[illegible]	23.3	931	25.6	963	28.0	993	30.5	1025	32.8
26180	643	7.71	659	8.38	697	10.6	738	12.8	775	15.0	811	17.3	846	19.7	[illegible]	22.1	912	24.6	944	26.8	975	29.4	1006	31.9	1035	34.4
27115	665	8.48	680	9.19	717	11.5	756	13.7	793	16.0	828	18.3	862	20.7	[illegible]	23.3	926	25.8	958	28.3	989	30.8	1018	33.4	1047	35.9
28050	687	9.32	701	10.0	736	12.4	775	14.7	810	17.0	844	19.4	878	21.9	[illegible]	24.6	940	27.2	971	29.7	1001	32.3	1031	34.8	1060	37.6
29920	732	11.2	744	12.0	777	14.3	812	16.9	847	19.3	879	21.8	[illegible]	[illegible]	942	27.0	972	29.8	1000	32.6	1029	35.4	1058	38.2	1086	40.8
31790	776	13.2	786	14.3	817	18.5	849	19.2	[illegible]	21.8	914	24.5	944	27.1	974	29.9	1004	32.7	1032	35.7	[illegible]	38.7	[illegible]	41.7	1113	44.6
33660	820	15.6	831	16.8	858	18.9	[illegible]	21.6	920	24.5	951	27.3	[illegible]	30.1	1006	33.0	1035	[illegible]	1064	[illegible]	1090	42.1	1116	45.3		

CB-44



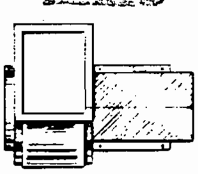


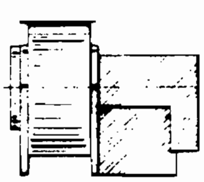
WHEEL 44½" DIA
INLET 49" DIA

CLASS	MAX RPM
I	825
II	1015

Volume of air CFM	¼" S.P. RPM	¼" S.P. BHP	½" S.P. RPM	½" S.P. BHP	1" S.P. RPM	1" S.P. BHP	1½" S.P. RPM	1½" S.P. BHP	2" S.P. RPM	2" S.P. BHP	2½" S.P. RPM	2½" S.P. BHP	3" S.P. RPM	3" S.P. BHP	3½" S.P. RPM	3½" S.P. BHP	4" S.P. RPM	4" S.P. BHP	4½" S.P. RPM	4½" S.P. BHP	5" S.P. RPM	5" S.P. BHP	5½" S.P. RPM	5½" S.P. BHP	6" S.P. RPM	6" S.P. BHP
9128	219	.57	269	0.89																						
10269	233	.68	280	1.16	361	2.22																				
11410	249	.82	292	1.34	368	2.46																				
12551	265	.99	306	1.54	377	2.73	443	4.08																		
13692	282	1.17	321	1.76	388	3.04	450	4.43																		
14833	298	1.39	335	2.01	400	3.38	459	4.82																		
15974	315	1.63	350	2.29	412	3.75	467	5.26																		
17115	333	1.89	366	2.61	425	4.15	479	5.74																		
18256	351	2.19	382	2.96	439	4.56	491	6.25	538	[illegible]	586	[illegible]	632	11.8	675	14.0										
19397	369	2.53	399	3.33	464	5.03	503	6.82	549	8.63	595	10.5	638	12.5	679	14.7	[illegible]	17.0								
20638	388	2.90	416	3.76	468	5.50	516	7.41	561	9.30	603	11.2	646	13.3	686	15.5	[illegible]	17.8	[illegible]	20.3						
21879	406	3.28	432	4.22	483	6.03	529	8.01	573	10.0	614	12.0	654	14.1	693	16.4	[illegible]	18.7	[illegible]	21.2	[illegible]	23.8				
22820	425	3.71	445	4.70	499	6.60	544	8.64	586	10.7	626	12.8	664	15.0	702	17.3	[illegible]	19.7	776	22.2	810	24.7	[illegible]	27.5		
23961	444	4.22	467	5.24	515	7.24	558	9.33	598	11.5	638	13.7	675	16.0	[illegible]	[illegible]	[illegible]	20.7	783	23.2	816	25.8	[illegible]	28.6	[illegible]	30.8
25102	463	4.81	485	5.81	531	7.93	572	10.0	612	12.3	650	14.7	687	17.0	[illegible]	[illegible]	767	21.0	781	24.4	[illegible]	27.0	857	[illegible]	887	32.4
26243	482	5.44	503	6.43	547	8.84	587	10.8	627	13.2	663	15.7	[illegible]	18.1	[illegible]	20.6	765	23.0	[illegible]	[illegible]	[illegible]	28.0	[illegible]	31.1	[illegible]	34.0
27384	502	6.17	521	7.13	564	8.39	603	11.6	642	14.1	676	16.7	711	19.2	[illegible]	21.7	777	24.3	[illegible]	[illegible]	841	29.7	872	32.6	901	35.5
28525	522	6.97	540	7.85	580	10.2	619	12.6	656	15.0	691	17.7	724	20.4	[illegible]	23.0	[illegible]	[illegible]	819	[illegible]	[illegible]	31.1	[illegible]	34.0	[illegible]	37.0
29666	542	7.77	559	8.61	597	11.1	635	13.5	670	16.1	705	18.6	736	21.6	[illegible]	24.3	800	27.0	831	[illegible]	[illegible]	32.7	[illegible]	[illegible]	919	[illegible]
30807	562	8.57	577	9.40	614	12.0	651	14.6	685	17.2	719	19.9	751	22.8	[illegible]	25.7	812	28.5	842	31.4	871	[illegible]	[illegible]	37.3	927	40.2
31948	582	9.42	596	10.2	631	13.0	668	15.6	701	18.3	734	21.1	766	24.0	[illegible]	27.1	825	30.0	[illegible]	33.0	[illegible]	[illegible]	910	39.0	[illegible]	42.0
33089	602	10.3	615	11.2	648	14.0	684	16.8	717	19.5	749	22.4	780	25.4	[illegible]	28.8	837	31.6	[illegible]	34.6	[illegible]	37.7	921	40.8	947	44.0
34230	622	11.3	634	12.3	666	15.1	701	18.0	733	20.8	763	23.7	794	26.8	[illegible]	30.0	[illegible]	33.2	878	36.3	[illegible]	[illegible]	[illegible]	42.7	[illegible]	[illegible]
36512	662	13.7	673	14.6	702	17.5	734	20.6	766	23.6	795	26.6	[illegible]	[illegible]	[illegible]	33.1	879	[illegible]	[illegible]	[illegible]	931	43.3	957	46.7	[illegible]	50.0
38794	702	16.1	711	17.6	739	20.2	768	23.4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	881	[illegible]	[illegible]	40.0	[illegible]	[illegible]	[illegible]	47.3	[illegible]	51.0	1007	54.5
41076	742	18.0	751	20.5	776	23.1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	910	40.3	[illegible]	43.9	[illegible]	47.8	[illegible]	51.8	[illegible]	55.4		

CB-49





WHEEL 49" DIA
INLET 54" DIA

CLASS	MAX RPM
I	725
II	920

Volume of air CFM	¼" S.P. RPM	¼" S.P. BHP	½" S.P. RPM	½" S.P. BHP	1" S.P. RPM	1" S.P. BHP	1½" S.P. RPM	1½" S.P. BHP	2" S.P. RPM	2" S.P. BHP	2½" S.P. RPM	2½" S.P. BHP	3" S.P. RPM	3" S.P. BHP	3½" S.P. RPM	3½" S.P. BHP	4" S.P. RPM	4" S.P. BHP	4½" S.P. RPM	4½" S.P. BHP	5" S.P. RPM	5" S.P. BHP	5½" S.P. RPM	5½" S.P. BHP	6" S.P. RPM	6" S.P. BHP
11128	199	.69	244	1.21																						
12519	212	.83	254	1.41	328	2.70																				
13910	226	1.00	266	1.63	334	2.99																				
15301	241	1.20	277	1.87	343	3.31	402	4.95																		
16692	256	1.42	291	2.14	353	3.68	409	5.37																		
18083	271	1.68	304	2.44	363	4.10	416	5.85																		
19474	286	1.97	318	2.78	374	4.55	424	6.38																		
20865	302	2.30	332	3.16	386	5.03	435	6.96																		
22256	319	2.65	347	3.58	399	5.53	446	7.58	488	8.89	532	11.9	574	14.3	613	17.0										
23647	335	3.07	362	4.04	412	6.10	457	8.27	499	10.4	540	12.7	580	15.2	617	17.8	[illegible]	20.7								
25038	352	3.51	377	4.55	425	6.67	467	8.98	509	11.2	548	13.6	586	16.1	623	18.8	[illegible]	21.8	[illegible]	24.8						
26429	369	3.98	392	5.12	438	7.31	481	9.72	520	12.1	558	14.6	594	17.1	630	19.9	[illegible]	22.7	[illegible]	25.6	[illegible]	28.9				
27820	386	4.50	405	5.70	453	8.01	494	10.4	532	13.0	569	15.6	603	18.2	638	21.0	672	[illegible]	[illegible]	[illegible]	736	30.0	[illegible]	33.4		
29211	403	5.12	424	6.36	467	8.78	499	11.3	543	14.0	579	16.7	613	19.4	[illegible]	[illegible]	679	[illegible]	711	[illegible]	741	31.4	771	[illegible]	[illegible]	[illegible]
30602	421	5.84	440	7.05	482	9.61	520	12.7	556	15.0	590	17.8	624	20.6	[illegible]	[illegible]	687	[illegible]	718	[illegible]	747	[illegible]	778	[illegible]	[illegible]	[illegible]
31993	438	6.59	456	7.80	497	10.4	533	13.1	569	16.0	602	19.0	634	21.9	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	31.1	[illegible]	[illegible]	[illegible]	37.7	812	41.3
33384	456	7.49	473	8.65	512	11.3	548	14.1	583	17.1	614	20.2	646	23.3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	32.7	[illegible]	[illegible]	[illegible]	[illegible]	918	43.0
34775	474	8.45	490	9.52	527	12.4	562	15.2	595	18.3	627	21.4	657	24.7	[illegible]	27.8	[illegible]	31.1	[illegible]	34.4	771	37.7	[illegible]	41.3	[illegible]	44.8
36166	492	9.42	507	10.4	547	13.4	576	16.4	609	19.5	640	22.8	[illegible]	26.2	[illegible]	[illegible]	727	32.8	[illegible]	[illegible]	[illegible]	[illegible]	807	43.1	[illegible]	[illegible]
37557	510	10.3	524	11.4	557	14.5	591	17.7	622	20.8	653	24.1	682	27.6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	791	41.8	[illegible]	45.2	842	[illegible]
38948	528	11.4	541	12.4	573	15.7	606	19.0	637	22.2	666	25.6	695	29.2	[illegible]	32.8	[illegible]	36.4	[illegible]	40.0	801	[illegible]	[illegible]	47.3	[illegible]	51.0
40339	546	12.5	559	13.6	589	17.0	621	20.3	651	23.7	680	27.2	708	30.8	[illegible]	34.6	760	[illegible]	[illegible]	42.0	812	45.7	837	[illegible]	[illegible]	[illegible]
41730	565	13.8	576	14.9	605	18.4	636	21.9	665	25.3	683	28.8	721	32.5	[illegible]	[illegible]	772	40.1	[illegible]	44.1	[illegible]	47.8	847	51.7	871	55.7
44512	601	16.6	611	17.8	638	21.2	667	25.0	696	28.7	722	32.3	[illegible]	[illegible]	[illegible]	40.1	[illegible]	44.2	822	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
47294	637	19.5	646	21.3	671	24.5	687	28.4	[illegible]	[illegible]	[illegible]	[illegible]	770	[illegible]	800	44.3	[illegible]	48.6	847	52.8	[illegible]	57.4	[illegible]	61.8	914	66.1
50076	674	23.1	682	24.9	704	28.1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	46.7	[illegible]	[illegible]	[illegible]	53.3	[illegible]	57.8	[illegible]	62.4	916	67.1		

USE CAPACITY TABLES AS GUIDE ONLY

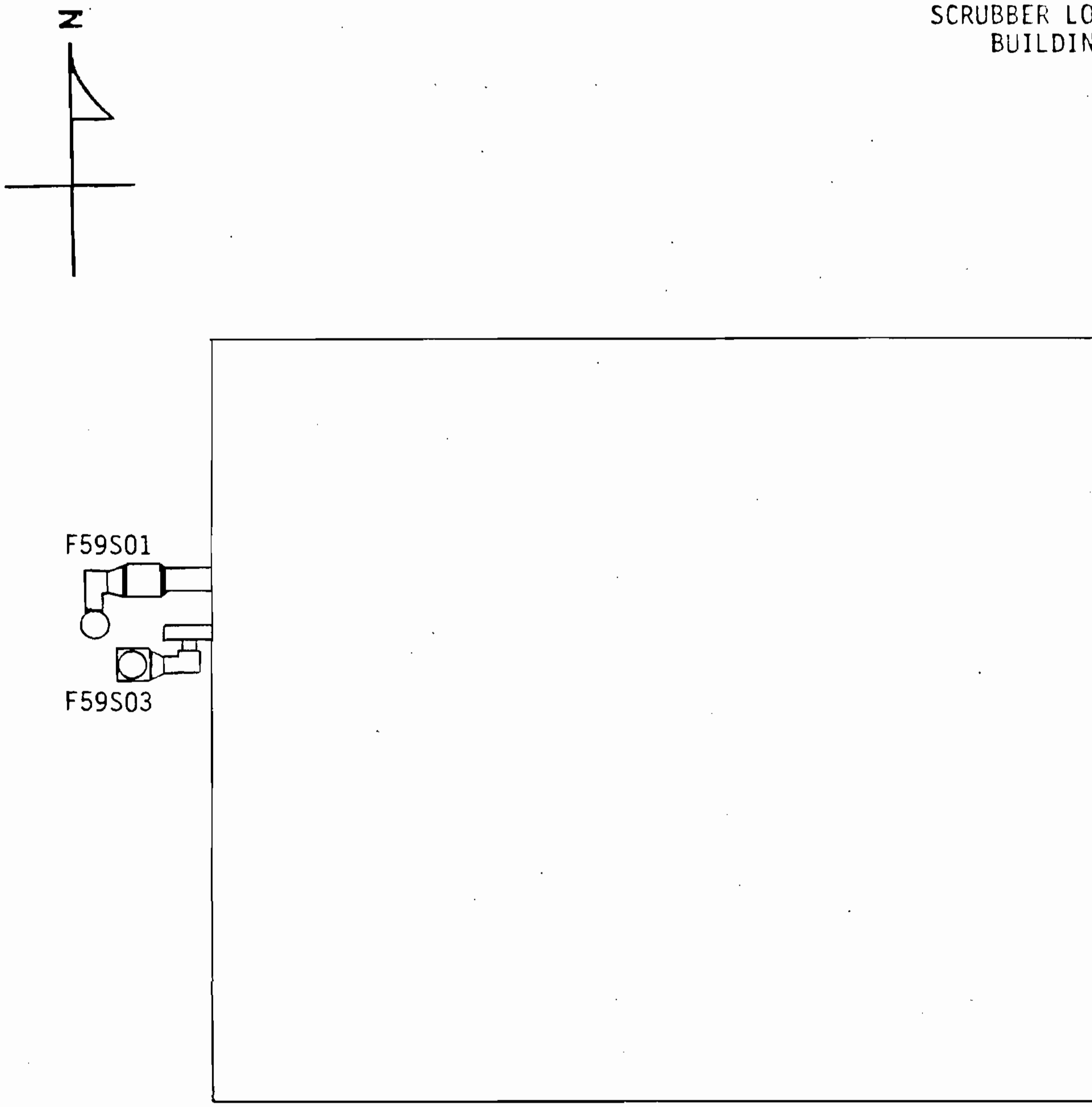
HARRIS SEMICONDUCTOR

AIR PERMIT – BUILDING 59

ATTACHMENT E

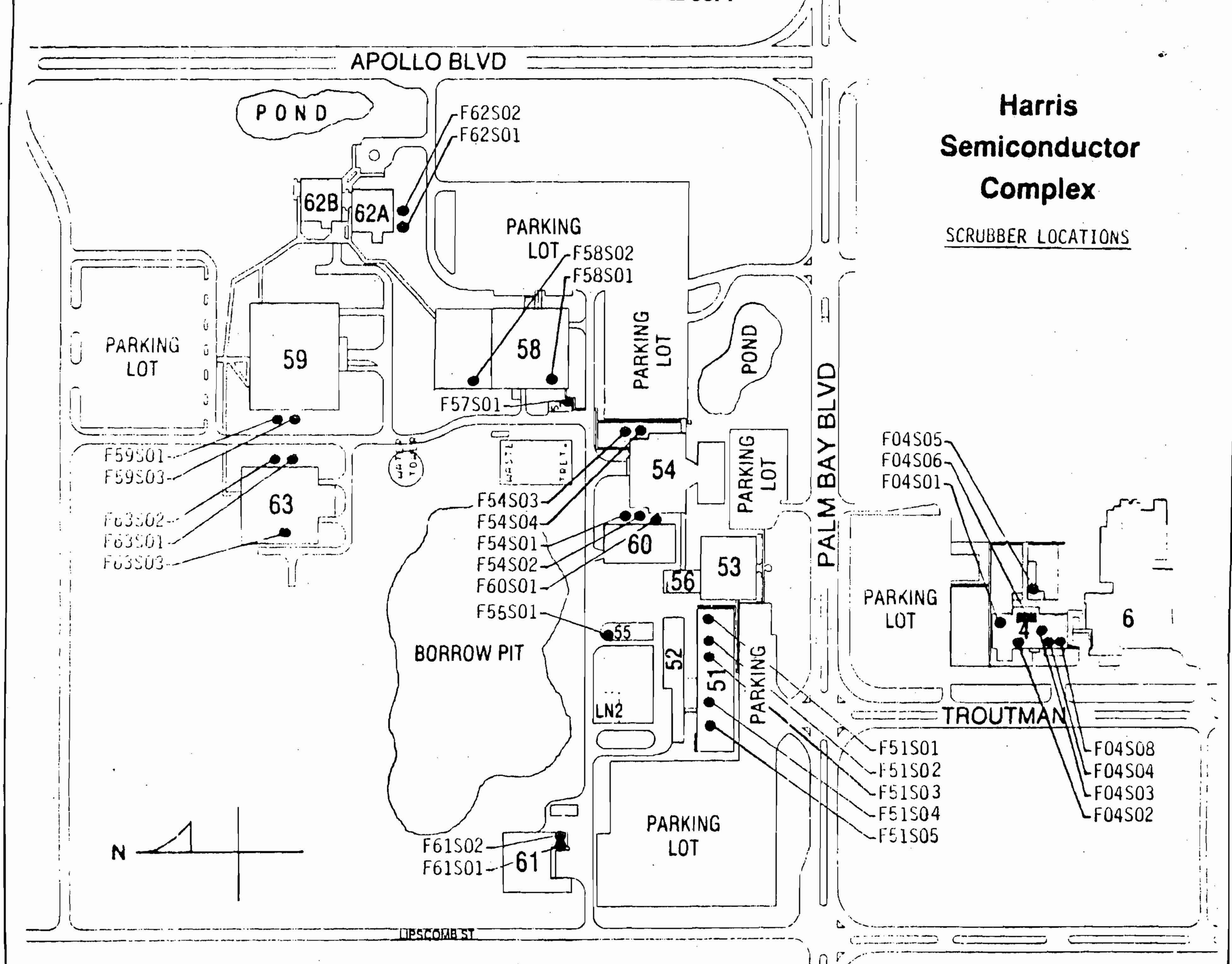
MAPS

HARRIS SEMICONDUCTOR
SCRUBBER LOCATIONS
BUILDING 59



LEGEND

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


Harris
Semiconductor
Complex
SCRUBBER LOCATIONS
APOLLO BLVD
PALM BAY BLVD
TROUTMAN
LIPSCOMB ST
POND
POND
PARKING LOT
PARKING LOT
PARKING LOT
PARKING LOT
PARKING LOT
PARKING LOT
PARKING
BORROW PIT
LN2
62B
62A
59
58
54
60
53
56
55
52
51
63
61
4
6
N
F62S02
F62S01
F58S02
F58S01
F57S01
F59S01
F59S03
F63S02
F63S01
F63S03
F54S03
F54S04
F54S01
F54S02
F60S01
F55S01
F61S02
F61S01
F04S05
F04S06
F04S01
F51S01
F51S02
F51S03
F51S04
F51S05
F04S08
F04S04
F04S03
F04S02

PM
05-18-88
Melbourne, FL

File Copy

HARRIS

May 13, 1988

Mr. C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality Management
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tattahassee, Florida 32399-2400

Copied: Bruce Mitchell
Tom Sawicki
Betsy P. Hinman
CHF/BT
5.20.88

Subject: Completeness Review of AC 05-147321
Building 54 - Permit Consolidation

Dear Mr. Fancy:

This letter is written, on behalf of Harris Semiconductor ("Semiconductor"), in reply to your letter of April 20, 1988. Your letter requested additional information on six (6) items. In addition, you requested information on all assumptions, calculations and reference material.

Item 1. As was indicated on page five (5) of the permit application, an effluent scrubber media (water) is discharged to the on-site waste water treatment plant. The effluent from the waste water discharge plant is disposed of on-site in two industrial deep wells operated in accordance with permit number UC05-126519. The method of operation of the air pollution control equipment is constant. None of the volatile organic compounds ("VOCs") removed by the air pollution control equipment are reclaimed or recycled. The VOCs which are removed by the scrubbers are primarily the water soluble compounds such as acetone and various alcohols. This has been established by several months of analytical data which were collected at the waste water treatment plant between the months of May and December of last year. The monitoring data identified low levels of water soluble VOCs at non-hazardous concentrations. The aerators in the waste water treatment plant are not capable of stripping these compounds, at the concentrations observed, from the water. A comparison of the monitoring data of the influent to the treatment plant with the influent to the deep well injection system has confirmed this. This information was discussed during the February 17, 1988 meeting held in Orlando. Attachment A contains a summary of the analytical data collected at the waste water treatment plant. The several months of monitoring conducted at the various scrubbers and the waste water treatment plant is sufficient to confirm that the water soluble VOCs removed by the scrubbers are not being released to the atmosphere.

RECEIVED
MAY 20 1988
DER - BAQM

MELBOURNE FL
MAY 18'88
U.S. POSTAGE
0.65

FIRST CLASS MAIL

HARRIS

J. R. Kolanek, MS58-055

Mr. C. H. Fancy, P.E.
Deputy Chief, Bureau of Air Quality
Florida Department of Enviro. Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

HARRIS CORPORATION, SEMICONDUCTOR SECTOR, P.O. Box 883, Melbourne, Florida 32901

M80

It should be noted that confinement in a deep subterranean formation does not constitute release to the atmosphere.

Item 2. Data from the scrubbers monitored during 1988 indicated VOC removal efficiencies between 10% and 20%. The actual removal efficiencies varied depending on the compounds present in the air stream being scrubbed. The typical removal efficiency observed was 13%. Based on this information, 13% was used to forecast the VOC removal efficiency of the scrubbers during non-production hours.

It is not correct to characterize the potential VOC emissions from the facility as being uncontrolled. The procedures employed in handling, storing, using and disposing of production materials and wastes containing organic solvents are designed to minimize any release to the atmosphere. While in storage, when not being used, containers and tanks storing solvents are properly sealed or covered. The facility's waste solvent bulk storage systems are fitted with carbon cannisters to capture VOC emissions. The scrubber systems installed throughout the facility were designed to capture VOC and other emissions. It should be noted that the majority of VOC emissions from the facility emanate from Buildings 54 and 51. These installations were first constructed and permitted in the 1970's. At that time, water scrubbers were an accepted means of controlling VOC emissions. VOC emissions are controlled at the facility. Recent monitoring activities and other sources of information have established that the efficiency of the scrubber systems which are one of the control mechanisms at the facility is not as great as originally projected.

Item 3. At the present time, the material balance report is approximately 70% complete. We have experienced several delays as a result of a change in the record keeping procedures used to store the data on chemical usage rates by the various manufacturing areas. Previous reports used to collect this information could not be used to compile the report due to a change in the computer data base system used by our recveiving department. Ultimately, these changes in record keeping procedures should lead to more accurate reporting in the future. The report will be sent to your attention under separate cover as soon as possible. Our goal is to have the report to you by the end of the month. It should be received no later than mid-June.

Item 4. We assume that by the terms "precursor" and "non-precursor" organic compounds you are referring to VOCs as defined by the Department's regulations. Building 54 has approximately 282 different pieces of process equipment tied in to the exhaust systems. Of these approximately 72 utilize VOCs. There are nineteen (19) work stations where solvents are used in open surface areas. These are not large open top degreasers. The open surface areas are much smaller than one (1) square meter. Relatively small quantities of solvents are in use at any given time. Normal procedures require that any open containers of solvents are emptied at the end of each production shift. Four (4) of the work stations are heated. Due to the nature of the equipment and the processes involved in manufacturing integrated circuits, the number of heated and unheated solvent sources can vary according to the product being manufactured at any given time. The type of degreasing and other activities in which solvents are used at Semiconductor is not typical of what you would find in an ordinary manufacturing operation; as a consequence, it is difficult to describe these processes. To obtain a better understanding of how solvents are used at Semiconductor, we recommend that Department personnel visit the facility.

The information concerning freeboard is not currently available and would take an extensive amount of time to obtain. Our prior experience indicates that this information would not be very useful. In the past, Semiconductor calculated facility VOC emission rates with formulas incorporating such factors as surface area, evaporation rates at various temperature ranges, etc. This approach has proved not to be very accurate. We believe that our current method of monitoring is the most accurate means of determining the actual VOC emissions from the facility.

Item 5. Our recent monitoring activities were designed to obtain as accurate an accounting of total VOC emissions as reasonably possible. The monitoring was conducted over a typical eight hour shift in order to obtain a snapshot of a normal production shift for any emission point in question. With this information, an annual emission rate in tons per year was calculated using a normal production schedule. In order to account for all potential VOC emissions, monitoring was conducted during a scheduled non-production shift. The observed emissions were very low, but over a one (1) year period could account for some of the facility's emissions. Based on existing data, we cannot with certainty identify the specific sources of VOC emissions during non-production shifts. However, available information indicates three (3) possible sources of VOC emissions: 1) off-gassing of containers (one gallon bottles) stored in chemical storage cabinets; 2) process equipment which may have been going through an automatic cleaning or process cycle; and 3) potential unreported equipment maintenance functions which may have utilized cleaning with solvents. We believe that these emissions occur on a regular basis and therefore have included them in the permit application.

Item 6. Attachment B contains our current internal schedule for Semiconductor's initial evaluation of the feasibility of a cogeneration plant. At our meeting on February 17, 1988, we indicated Semiconductor was committed to investigating and where practical implementing commercially reasonable measures to reduce VOC emissions. This commitment was made notwithstanding the fact that the facility's VOC emissions fall far below any applicable threshold under the "Prevention of Significant Deterioration" regulations and the fact that the most significant sources of VOC emissions were first constructed and operated many years ago.

There are several alternatives which could lead to reductions in VOC emissions and prove to be practical, taking into account economic and other considerations. The gradual substitution over a number of years of current manufacturing processes with less solvent intensive manufacturing processes is a potential means of reducing VOC emissions. This would have to be a very gradual process since investment in current manufacturing equipment and techniques runs into the tens of millions of dollars.

As we discussed at our meeting in February, another possible means of reducing VOC emissions which may prove to be practical is a congeneration plant which incinerates the VOC emissions while creating electricity for the facility. Adequate evaluation of the feasibility of a congeneration plant is a complicated process. Installing such a system and making the necessary modifications to the facility would cost many millions of dollars. In addition, it is likely that annual operating expenses would be several million dollars. Aside from the economic feasibility of such a project, there are environmental and other regulatory concerns that could potentially affect third parties, including the local community. All these factors need to be adequately evaluated before a commitment can be made to proceed with such a project. The review and approval process necessary to justify and authorize an investment of this magnitude will require a significant amount of time to complete. The schedule for our initial pass at a feasibility study is included for your information as a courtesy. Before a final decision is made on whether to proceed, additional studies may be necessary.

We trust the enclosed information answers all of the items raised in your letter of April 20, 1988. If you should have any questions about the enclosed information, please feel free to contact me at (407)724-7467.

Sincerely,
HARRIS SEMICONDUCTOR

James R. Kolanek

James R. Kolanek, Manager
Environmental Services

E/4020/88

cc: A. T. Sawicki, Orlando DER
Bruce Mitchell, Tallahassee DER

HARRIS SEMICONDUCTOR

WWTP ANALYTICAL SUMMARY

ATTACHMENT A

HARRIS SEMICONDUCTOR - WWTP AERATOR STUDY:26-Apr-88

	CHLOROFORM		BROMODICHLORO-METHANE		DIBROMOCHLORO-METHANE		12 DICHLORO-BENZENE		14 DICHLORO-BENZENE		ETHYL BENZENE		TETRACHLROETHENE		TRICHLORO-ETHANE		XYLENE		METHANOL		ACETONE		IPA		VINYL CHLORIDE	
DATE	INFL.	EFFL.	INFL.	EFFL.	INFL.	EFFL.	INFL.	EFFL.	INFL.	EFFL.	INFL.	EFFL.	INFL.	EFFL.	INFL.	EFFL.	INFL.	EFFL.	INFL.	EFFL.	INFL.	EFFL.	INFL.	EFFL.	INFL.	EFFL.
13-Feb-87		41		7.8		0		0		0		0		0		0.		0				1000				0
30-Apr-87	4.1	5.2	0	8.9	2.9	7.8	0	0	5	0	0	0	0	0	1.6	0	1.4	3.7	2600	3500	5400	1700	3500	2000	0	0
01-May-87	5.3	0	0	0	5.7	10	241	177	0	0	7	0	46	7.8	1.9	0	8.3	31	3300	8100	13300	24600	1800	1300	0	0
13-Aug-87	3	3	0	2	0	2	0	0	0	0	0	0	0	0	2	0	9	0	<1000	<1000	<250	840	<250	<250	0	0
20-Aug-87	11	2	8	2	11	2	0	0	0	0	0	0	0	0	0	0	0	0	<1000	<1000	<250	<250	<250	<250	0	0
27-Aug-87	5	4	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	<1000	<1000	290	450	<250	<250	0	0
03-Sep-87	3	2	0	2	0	4	0	0	0	0	0	0	0	0	0	0	0	0	<1000	<1000	2400	2000	1200	<250	0	0
10-Sep-87	4	3	2	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8800	<1000	5000	4400	4400	4400	0	0
17-Sep-87	5	4	3	6	0	9	0	0	0	0	0	0	0	0	0	0	0	0	<1000	22400	2200	2700	4100	2100	0	0
24-Sep-87																										
01-Oct-87	6	4	2	10	0	9	0	0	0	0	0	0	0	0	0	0	0	0	<1000	<1000	2100	<250	<250	<250	0	0
08-Oct-87	10.3	5.1	2.1	10.6	0	8.9	0	0	0	0	0	0	0	0	0	0	0	0	<1000	<1000	2400	1800	2700	<250	0	0
15-Oct-87	2.2	5	1.3	9.3	0	13.2	0	0	0	0	0	0	0	0	0	0	0	0	2500	<1000	2400	3300	3700	1300	0	0
22-Oct-87	6	2	3	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	5200	<1000	6100	3200	56800	1200	0	0
29-Oct-87																										
05-Nov-87	6	2	2	2	0	2	0	0	0	0	0	0	0	0	6	0	0	0	<1000	<1000	1200	1200	<250	<250	0	0
12-Nov-87	10	7	3	9	1	8	0	0	0	0	0	0	0	0	2	0	0	0	5200	1200	3300	3700	3000	2000	0	0
19-Nov-87	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	<1000	<1000	<250	2500	2800	<250	0	0
26-Nov-87	16	7	9	13	4	11	0	0	0	0	0	0	0	0	0	3	0	0	<1000	2200	1600	2400	11300	5700	0	0
03-Dec-87	8	7	4	9	2	4	0	0	0	0	0	0	0	0	36	8	0	0	<1000	2000	<250	1400	5800	3100	0	0
10-Dec-87																										
17-Dec-87																										
24-Dec-87																										
31-Dec-87																										
07-Jan-88																										
14-Jan-88																										
21-Jan-88																										
AVERAGE	5.4	6.2	1.8	5.2	1.6	5.4	20.1	13.6	0.4	0.0	0.6	0.0	3.8	0.6	0.5	0.0	1.6	2.7	1866.7	2833.3	3465.8	3537.7	6516.7	1025.0	0.0	0.0

all data reported in parts per billion (ppb)

HARRIS SEMICONDUCTOR

COGENERATION PROJECT SCHEDULE

ATTACHMENT B

HARRIS SEMICONDUCTOR

COGENERATION PLANT

MILESTONE PROJECT SCHEDULE

FEASIBILITY STUDY COMPLETE	MAY 20, 1988
AIR EMISSIONS PERMIT SUBMITTAL	OCTOBER 1988
START PLANT CONSTRUCTION	MARCH 1989
CONSTRUCTION COMPLETLION	JANUARY 1990
COMMERCIAL OPERATION	MARCH 1990

NOTE: ALL PROJECTED DATES AFTER THE FEASIBILITY STUDY ARE ASSUMING THAT THE STUDY INDICATES A COGENERATION PLANT IS FEASIBLE AND ADDITIONAL STUDIES ARE NOT NECESSARY.

P 274 010 494

RECEIPT FOR CERTIFIED MAIL

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

★ U.S.G.P.O. 1985-480-794

Sent to James R. Kolanek, Mgr. Harris Semiconductor	
Street and No. P.O. Box 883	
P.O., State and ZIP Code Melbourne, FL 32901	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date Mailed: 04/20/88 Permit: AC 05-147321	

PS Form 3800, June 1985

● **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. XXX Show to whom delivered, date, and addressee's address. †(Extra charge)†
2. ☐ Restricted Delivery †(Extra charge)†

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

4. Article Number
P 274 010 494

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

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature — Addressee
X

6. Signature — Agent Harris Semiconductor
X Willie J. Sayer

7. Date of Delivery

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

MELBOURNE, FL APR 22 1988

PS Form **3811**, Mar. 1987 ★ U.S.G.P.O. 1987-178-268 **DOMESTIC RETURN RECEIPT**

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

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

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

April 20, 1988

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

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

Dear Mr. Kolanek:

Re: Completeness Review of AC 05-147321
Building 54 - Permit Consolidation

The Department received the above referenced application package and your letter dated March 2, 1988, on March 3, 1988. The appropriate fee was received on March 24, 1988. Based on a review of the application package, the package is deemed incomplete and the following information, including all assumptions, calculations and reference material, will have to be submitted to the DER's Bureau of Air Quality Management office so that the status can, again, be ascertained:

1. For the 13% nonproduction VOC reduction due to scrubber efficiency (see Attachment B of the submittal), what is the final disposition of the scrubber effluent? Of the VOC removed, is any of the VOC being reclaimed or recycled? In order to take credit for removal of VOC, it must be proven that the VOC is not released into the atmosphere and it can be quantified (distilling, relcaiming, recycling, etc.) through record keeping.

2. Based on No. 1, is it to be assumed that 87% of the VOC production and nonproduction emissions are being released into the atmosphere without control? If not, please explain.

3. Provide the facility's material balance report, which was to have been completed by this time.

4. Describe and provide how many heated and unheated reservoirs, sinks, or containers containing precursor and nonprecursor organic compounds are there in Building 54? How many of them have adequate covers to prevent release of organic compounds during non-use? What is the freeboard ratio of each?

5. Please explain how emissions of VOC are being released during nonproduction hours?

6. What is the current status of the cogeneration project, which was discussed during the February 17, 1988 meeting?

If there are any questions, please call Bruce Mitchell at (904)488-1344 or write to me at the above address.

Sincerely,

C. H. Fancy

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

CHF/BM/s

cc: T. Sawicki, CFD
L. Hutker, P.E., Harris Semiconductor
B. Pittman, Esq.

HARRIS

2283

FS-JRK-150-88

March 23, 1988

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

Subject: Harris Semiconductor
B-54 Consolidated Air Permit

Dear Mr. Fancy:

Enclosed please find check number 623607 in the amount of $750.00. This check is the application fee to cover the subject air permit modification submitted with my letter of March 2, 1988.

If you should have any questions, please feel free to contact me at (305) 724-7467.

Sincerely,

James R. Kolanek

J. R. Kolanek, Manager
Environmental Services

/pgc

RECEIVED
DER - MAIL ROOM
1988 MAR 24 AM 10:27

1031

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

INTEROFFICE MEMORANDUM

For Routing To District Offices And/Or To Other Than The Addressee		
To:	Loctn.:	
To:	Loctn.:	
To:	Loctn.:	
From:	Date:	
Reply Optional [ ]	Reply Required [ ]	Info. Only [ ]
Date Due:	Date Due:	

TO: BRUCE MITCHELL

THROUGH: A. ALEXANDER
C.M. COLLINS
A.T. SAWICKI

FROM: JOHN TURNER

DATE: MARCH 17, 1988

SUBJECT: HARRIS SEMICONDUCTOR - BUILDING 54 PERMIT CONSOLIDATION

We have reviewed a copy of the referenced application sent to BAQM, Central Air Permitting Staff from Harris Semiconductor that requests consolidating permits A005-65408 and A005-115804 at building 54. We have the following comments:

a. Permit A005-65408 is in need of renewal as it expires 5/2/88.

b. The most recent permit renewals for these permits appear to indicate total VOC emission rates of approximately 4.7 tons/year (copies enclosed), which is significantly less than the requested VOC emission rate of 94.34 tons/year of attachment B.

c. The application dated March 2, 1988, attachment B, indicates a 13% VOC reduction due to scrubber efficiency but does not address whether these VOC's are emitted elsewhere downstream of the scrubbers. We believe most of these VOC's are emitted from the aeration pond used to neutralize industrial wastewater.

d. The application does not address the VOC capture efficiency and VOC emission rate of the uncaptured VOC's.

e. When the VOC material balance is received, it may show VOC emissions are significantly different than the tested and projected emissions of attachment B.

Enclosure

Copied: Bruce Mitchell
CHF/BT
3.21.88 mr

DEPARTMENT OF ENVIRONMENTAL REGULATION

ROUTING AND TRANSMITTAL SLIP

ACTION NO

ACTION DUE DATE

1. TO: (NAME, OFFICE, LOCATION)	
Bruce Mitchell, Eng. IV	Initial / Date
2. PGM - BAQM -	Initial / Date
3. CAPS - Room 310 D Twin Towers	Initial / Date
4. Tall	Initial / Date

REMARKS:

3 21 88

~~CHF~~
~~[illegible]~~ FYI

RECEIVED

MAR 21 1988

DER - BAQM

INFORMATION

- Review & Return
- Review & File
- Initial & Forward

DISPOSITION

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

FROM: John Turner

DATE 3/18/88

PHONE

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

ST. JOHNS RIVER DISTRICT
3319 MAGUIRE BOULEVARD
SUITE 232
ORLANDO, FLORIDA 32803

BOB GRAHAM
GOVERNOR
VICTORIA J. TSCHINKEL
SECRETARY
ALEX SENKEVICH
DISTRICT MANAGER

PAID
100
FEB 02 1983
SAINT JOHNS
RIVER DISTRICT

APPLICATION FOR RENEWAL OF PERMIT TO OPERATE AIR POLLUTION SOURCE(S)

If major alterations have occurred, the applicant should complete the Standard Air Permit Application Form.

Source Type: Fume Hood Exhaust Scrubber Renewal of DER Permit No. A005-6882

Company Name: Harris Semiconductor County: Brevard

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

Building 54 - W - System 1

Source Location: Street: Palm Bay Road City: Palm Bay

UTM: East 17-538700 North 17-31000900

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

1. Attach a check made payable to the Department of Environmental Regulation in accordance with operation permit fee schedule set forth in Florida Administrative Code Rule 17-4.05.

2. Have there been any alterations to the plant since last permitted? [ ] Yes [X] No If minor alterations have occurred, describe on a separate sheet and attach.

3. Attach the last compliance test report required per permit conditions if not submitted previously.

4. Have previous permit conditions been adhered to? [X] Yes [ ] No If no, explain on a separate sheet and attach.

5. Has there been any malfunction of the pollution control equipment during tenure of current permit? [ ] Yes [X] No If yes, and not previously reported, give brief details and what action was taken on a separate sheet and attach.

6. Has the pollution control equipment been maintained to preserve the collection efficiency last permitted by the Department? [X] Yes [ ] No

7. Has the annual operating report for the last calendar year been submitted? [X] Yes [ ] No If no, please attach.

8. Please provide the following information if applicable:

A. Raw Materials and Chemical Used in Your Process:

Description	Contaminant		Utilization	
	Type	%Wt	Rate	lbs/hr
Silicon Wafers				
See Attachment A			See Attachment A	

B. Product Weight (lbs/hr): ______

C. Fuels N/A

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	Avg/hr*	Max/hr**	

D. Normal Equipment Operating Time: hrs/day 24; days/wk 5; wks/yr 52;

hrs/yr (power plants only) ____; if seasonal, describe ______

The undersigned owner or authorized representative*** of Harris Semiconductor is fully aware that the statements made in this application for a renewal of a permit to operate an air pollution source are true, correct and complete to the best of his knowledge and belief. Further, the undersigned agrees to maintain and operate the pollution source and pollution control facilities in such a manner as to comply with the provisions of Chapter 403, Florida Statutes, and all the rules and regulations of the Department. He also understands that a permit, if granted by the Department, will be non-transferable and he will promptly notify the Department upon sale or legal transfer of the permitted facility.

A. King

Signature, Owner or Authorized Representative
(Notarization is mandatory)

A. King, Vice President (for P. R. Bumgarner)
Typed Name and Title

P. O. Box 883
Address

Melbourne FL 32901
City State Zip

1/31/83
Date

(305) 724-7225
Telephone No.

*During actual time of operation.
**Units: Natural Gas-MMCF/hr; Fuel Oils-barrels/hr; Coal-lbs/hr.
***Attach letter of authorization if not previously submitted

ATTACHMENT A

HARRIS SEMICONDUCTOR

Exhaust System, Building 54

RAW MATERIAL	UTILIZATION RATE LB/HR.	DISCHARGE POUND/ HOUR	DISCHARGE TON/YEAR
Hydrofluoric Acid	3.0	0.045	0.140
Sulphuric Acid	19.0	0.286	0.892
Hydrogen Peroxide	1.7	0.026	0.081
Hydrochloric Acid	0.8	0.012	0.004
Nitric Acid	0.5	0.007	0.022
Trichloro-ethylene	2.1	0.0415	0.1294
Xylene	2.8	0.0554	0.1730
Isopropyl Alcohol	0.5	0.0106	0.0329
Methyl Alcohol	2.2	0.0436	0.1359
	32.6		

Total = 1.6102 TPY

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

ST. JOHNS RIVER DISTRICT

3319 MAGUIRE BOULEVARD
SUITE 232
ORLANDO, FLORIDA 32803

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

ALEX SENKEVICH
DISTRICT MANAGER

RECEIVED FEB 1985 ST. JOHNS River District

APPLICATION FOR RENEWAL OF PERMIT TO OPERATE AIR POLLUTION SOURCE(S)

If major alterations have occurred, the applicant should complete the Standard Air Permit Application Form.

Source Type: Stationary Renewal of DER Permit No. AO 05-38488

Company Name: Harris Semiconductor County: Brevard

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

Building 54- East Module Dual Scrubbers

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.

---

1. Attach a check made payable to the Department of Environmental Regulation in accordance with operation permit fee schedule set forth in Florida Administrative Code Rule 17-4.05.

2. Have there been any alterations to the plant since last permitted? [ ] Yes [XX] No
If minor alterations have occurred, describe on a separate sheet and attach.

3. Attach the last compliance test report required per permit conditions if not submitted previously.

4. Have previous permit conditions been adhered to? [XX] Yes [ ] No If no, explain on a separate sheet and attach.

5. Has there been any malfunction of the pollution control equipment during tenure of current permit? [ ] Yes [XX] No If yes, and not previously reported, give brief details and what action was taken on a separate sheet and attach.

6. Has the pollution control equipment been maintained to preserve the collection efficiency last permitted by the Department? [XX] Yes [ ] No

7. Has the annual operating report for the last calendar year been submitted? [ ] Yes [XX] No If no, please attach. See Attachments

8. Please provide the following information if applicable:

A. Raw Materials and Chemical Used in Your Process:

Description	Contaminant Type	%Wt	Utilization Rate	lbs/hr
See Attachment A				

B. Product Weight (lbs/hr): N/A

C. Fuels

Type (Be Specific)	Consumption* Avg/hr*	Max/hr**	Maximum Heat Input (MMBTU/hr)
N/A			

D. Normal Equipment Operating Time: hrs/day 24 ; days/wk 5 ; wks/yr 52 ;

hrs/yr (power plants only) – ; if seasonal, describe ______

The undersigned owner or authorized representative*** of Harris Semiconductor is fully aware that the statements made in this application for a renewal of a permit to operate an air pollution source are true, correct and complete to the best of his knowledge and belief. Further, the undersigned agrees to maintain and operate the pollution source and pollution control facilities in such a manner as to comply with the provisions of Chapter 403, Florida Statutes, and all the rules and regulations of the Department. He also understands that a permit, if granted by the Department, will be non-transferable and he will promptly notify the Department upon sale or legal transfer of the permitted facility.

*During actual time of operation.
**Units: Natural Gas-MMCF/hr; Fuel Oils-barrels/hr; Coal-lbs/hr.
***Attach letter of authorization if not previously submitted

James R. Kolanek

Signature, Owner or Authorized Representative
(Notarization is mandatory)

James R. Kolanek Mgr., Environmental Services
Typed Name and Title

P.O. Box 883 M/S 58-55
Address

Melbourne Florida 32901
City State Zip

2/6/86
Date

(305) 724-7467
Telephone No.

ATTACHMENT A
HARRIS SEMICONDUCTOR
AO 05-38488
Building 54

Description	Contaminant Type	Wt. (lbs/gal)	Utilization Rate (lbs/hr)
Xylene	VOC	7.03	0.222
Mythyl alcohol	Solvent	6.60	0.174
1,1,1, Trichloroethane	VOC	11.25	0.166
Isopropyl Alcohol	Solvent	6.60	0.424
Hydrofluoric Acid	Acid	9.76	0.180
Sulfuric Acid	Acid	15.36	1.144
Hydrochloric Acid	Acid	9.93	0.048
Nitric Acid	Acid	8.85	0.028

0.986 lb/hr. @ 100% VOC

0.986 lb/hr (24)(5)(52) = $\frac{6153}{2000}$ = $\boxed{\text{3.08 t/yr VOC @ 6240 h/yr}}$

Purolator courier® Pkg. 1 Of
683933792

File copy

HARRIS

FS-JRK-139-88

March 2, 1988

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

Reference: HARRIS SEMICONDUCTOR
B-54 Consolidated Air Permit

Dear Mr. Fancy:

On February 17, 1988, representatives from Harris and the Florida DER met in Orlando to discuss the status of air permits at Harris Semiconductor's facility in Palm Bay. At that meeting it was agreed that Harris would submit modified air permits. The purpose of the permit modifications was as follows:

1. Consolidate permits on a by building basis to reduce the existing number of permits.

2. To accurately quantify the current air emissions.

Enclosed is the modified permit application for Semiconductor's Building 54.

If you should have any questions about the enclosed information, please feel free to contact me at (305) 724-7467.

Sincerely,

James R. Kolanek

J. R. Kolanek, Manager
Environmental Services

/pgc

cc: A. T. Sawicki
L. R. Hutker
D. R. Erdley
R. R. Sands

RECEIVED
MAR 3 1988
DER - BAQM

BEST AVAILABLE COPY

Purolator courier®

Purolator Account No. to be billed: 53-96-27736

Date: 2-2-88

Service - Check One - See reverse side for detail

- ◯ PuroLetter Overnight Letter
- ✓ PuroPak Overnight Pack 6
- ◯ Priority National Overnight Service Nationwide
- ✓ Priority Regional Overnight Service
- ◯ Standard 2-day Service

Optional Service

- ◯ Saturday Delvy. Extra Charge
- ◯ Hold for Pick-up

Payment

- ◯ Sender Prepaid
- ◯ Third Party
- ◯ Collect
- ◯ Cash/Check

From Sender's Name: J. D. Kulaner

Sender's Area Code/Phone Number: (305) 724-7576

Company Name: HARRIS SEMICONDUCTOR

Street Address: BLDG PALM BAY ROAD

City: PALM BAY | State: FL | Zip Code - Required: 32905

Sender's Signature: [signature]

P.O. or Reference Number:

To Recipient's Name: A. H. Fancy

Recipient's Area Code/Phone Number: (904) 4884916

Dept./Suite:

Company Name: Florida DER

Street Address (P.O. Box numbers not deliverable): 2600 Blair Stone Rd

City: Tallahassee | State: Fl | Zip Code - Required: 3230(?)1

Third Party Billing Name/ Address

M/S 58-55

2-2710

Tariff	Rate Item	SM	Origin Airport	Destination Airport
			MLB	

Advance	Valuation	Code / Amount	Code / Amount	Total Charge

Special Charge	☐ DB	Route	Courier Guard Initial	S.S. - Last 4 digits

Weight	L	W	H

PUROLATOR USE ONLY

BL-3 Rev. 4-86

STATE OF FLORIDA Subcode 02 Receipt # 117534
$750.00
AC 05-147321

DEPARTMENT OF ENVIRONMENTAL REGULATION

RECEIVED

MAR 3 1988

DER-BAQM

$ rec'd: 03.24.88

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

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

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

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

COMPANY NAME: HARRIS SEMICONDUCTOR **COUNTY:** Brevard

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peaking Unit No. 2, Gas Fired) B-54 Manufacturing Fab

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: J. R. Kolanek, Manager Environmental Services

APPLICANT ADDRESS: P.O. Box 883, Melbourne, Florida 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 permitted establishment.

*Attach letter of authorization

Signed: James R. Kolanek

J. R. Kolanek, Manager, Environmental Services
Name and Title (Please Type)

Date: 3-2-88 Telephone No. (305) 724-7467

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

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

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

DER Form 17-1.202(1)
Effective October 31, 1982

RECEIVED

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.

DER BAQM

Signed Lawrence R. Hutker

Lawrence R. Hutker
Name (Please Type)

HARRIS SEMICONDUCTOR
Company Name (Please Type)

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

Florida Registration No. 35972 Date: 3-2-88 Telephone No. (305) 729-4655

SECTION II: GENERAL PROJECT INFORMATION

A. 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 and consolidation of existing air permits.

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

Start of Construction N/A Completion of Construction N/A

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

N/A

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

AO 05-65408 issued 5/3/83 expires 5/2/88

AO 05-115804 issued 5/20/86 expires 5/22/91

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 (BACT) apply to this source? If yes, see Section VI. No

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

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

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

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

   a. If yes, for what pollutants? ____

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

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

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

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

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

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

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

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

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

Name of Contaminant	Emission[1]		Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission lbs/hr	Potential[4] Emission		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/yr	T/yr	
SEE ATTACHMENT B							

[1]See Section V, Item 2.

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

[3]Calculated from operating rate and applicable standard.

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

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

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles Size Collected (in microns) (If applicable)	Basis for Efficiency (Section V Item 5)
SEE ATTACHMENT D				

E. Fuels not applicable

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 deep well under UIC-Permit #UC05-126519.

SEE ATTACHEMENT 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 O (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Patholog-ical)	Type V (Liq.& Gas By-prod.)	Type VI (Solid By-prod.)
Actual lb/hr Inciner-ated							
Uncon-trolled (lbs/hr)							

Description of Waste ____________

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

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

Manufacturer ____________

Date Constructed ____________ Model No. ____________

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

Stack Height: ________ ft. Stack Diamter: ____________ Stack Temp. ____________

Gas Flow Rate: ____________ ACFM ____________ DSCFM* Velocity: ____________ FPS

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

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

[ ] Other (specify) ____________

Brief description of operating characteristics of control devices: ______________________

____

____

____

____

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

____

____

____

____

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

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

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

2. To a construction application, attach basis of emission estimate (e.g., design calculations, design drawings, pertinent manufacturer's test data, etc.) and attach proposed methods (e.g., FR Part 60 Methods 1, 2, 3, 4, 5) to show proof of compliance with applicable standards. To an operation application, attach test results or methods used to show proof of compliance. Information provided when applying for an operation permit from a construction permit shall be indicative of the time at which the test was made.

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

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

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

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

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

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

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

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

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?

[ ] Yes [X] No

Contaminant	Rate or Concentration

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

[ ] Yes [X] No

Contaminant	Rate or Concentration

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

Contaminant	Rate or Concentration

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

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

*Explain method of determining

5. Useful Life:

6. Operating Costs:

7. Energy:

8. Maintenance Cost:

9. Emissions:

Contaminant	Rate or Concentration

10. Stack Parameters

a. Height: ft.

b. Diameter: ft.

c. Flow Rate: ACFM

d. Temperature: °F.

e. Velocity: FPS

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

1.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy[2]

h. Maintenance Cost:

i. Availaoility of construction materials and process chemicals:

j. Applicability to manufacturing processes:

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

2.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

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

j. Applicability to manufacturing processaes:

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

3.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

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

4.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Costs:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

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

F. Describe the control technology selected:

1. Control Device:

2. Efficiency:[1]

3. Capital Cost:

4. Useful Life:

5. Operating Cost:

6. Energy:[2]

7. Maintenance Cost:

8. Manufacturer:

9. Other locations where employed on similar processes:

a. (1) Company:

(2) Mailing Address:

(3) City:

(4) State:

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

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

b. (1) Company:

(2) Mailing Address:

(3) City: (4) State:

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

10. Reason for selection and description of systems:

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

SECTION VII - PREVENTION OF SIGNIFICANT DETERIORATION not applicable

A. Company Monitored Data

1. ____________no. sites ____________ TSP ____________( ) SO^2* ____________ Wind spd/dir

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

Other data recorded ______________________________

Attach all data or statistical summaries to this application.

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

2. Instrumentation, Field and Laboratory

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

b. Was instrumentation calibrated in accordance with Department procedures?

[ ] Yes [ ] No [ ] Unknown

B. Meteorological Data Used for Air Quality Modeling

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

2. Surface data obtained from (location)________________________

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

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

C. Computer Models Used

1. ________________________ Modified? If yes, attach description.

2. ________________________ Modified? If yes, attach description.

3. ________________________ Modified? If yes, attach description.

4. ________________________ Modified? If yes, attach description.

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

D. Applicants Maximum Allowable Emission Data

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

E. Emission Data Used in Modeling

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

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

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

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

HARRIS SEMICONDUCTOR

B-54 Air Permit

Consolidation

ATTACHMENT A

Process Description

Attachment A

Building 54 is a wafer fabrication facility. The second floor of the two-story building houses two clean room modules. Both fabrication areas employ a series of manufacturing procedures referred to as layering, patterning, doping and heating processes. 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 rooms, wafer surfaces first undergo acid and/or solvent cleaning, followed by thermal oxidation in furnaces to form a layer of silicon dioxide on the wafer surface.

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

Next, the wafers 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." 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.

Wet stations that house vats containing a variety of acid and caustic compounds are located throughout the clean rooms. Storage cabinets safely hold virgin chemicals until they are ready for use. The first floor of the building contains exhausted gas cabinets that supply process gases to the 'fab' operations.

The exhaust system for the building is divided into two sections. The west half exhaust is fed into a common duct that is divided into two wet scrubber systems, F54S01 and F54S02, at ground level. The east portion of the building exhaust is ducted a common line that divides into two wet scrubbers (F54S03 and F54S04) on the east side of building (see attachment E.) Also on the east side of building 54 is a non-scrubbed exhaust fan F54E17 that handles air flow from several alligners, furnace source cabinets, and gas cabinets.

HARRIS SEMICONDUCTOR

B-54 Air Permit

Consolidation

ATTACHMENT B

Air Emissions

Attachment B

Monitoring work was performed on the building 54 scrubber systems in August and November of 1987. Tests conducted included EPA methods 25A (flame ionization detector) and TO-1 (Tenax adsorption and GC/MS analysis.) The results of this testing is included in this application.

FID test results revealed that total accumulative monitored VOC emissions for the building were 82.58 tons/year expressed as propane. This figure includes off-shift emissions and is based on a 8760 day a year production schedule for the east fab and a 4160 day a year production schedule for the west. The following assumptions were made regarding monitoring work on this building:

- Emission values for F54S02 & F54S04 are assumed to be equal to F54S01 & F54S03, respectively. This is because each pair handle exhaust from a common duct.
- VOC values refer to all organic emissions including organic solvents.
- Nonproduction emissions are assumed to be 18.3% of production emissions, as was found to be the case when scrubber F54S01 was monitored on a day of no production in the fabrication area.
- Nonproduction emissions are based on a 13% scrubber removal efficiency.
- All data is corrected for 2 ppm background concentration of VOC's that is present in the ambient air.
- The F.I.D. accumulative emission figure is based on the maximum concentration observed during the monitoring timeframe.

Total projected VOC emissions for building 54 is 94.34 tons/year. This number is representative of maximum VOC emissions, and is derived from the following proportion:

$$\frac{82.58 \text{ tpy}}{131.29 \text{ tpy}} = \frac{94.34 \text{ tpy}}{150.00 \text{ tpy}}$$

where:
- 82.58 tpy is the maximum building emissions determined by EPA Method 25-A monitoring.
- 131.29 tpy is the maximum Semiconductor site emissions determined by EPA Method 25-A monitoring.
- 150.00 tpy is the established site emission limit for VOC's.

EPA METHOD 25-A (F.I.D. ANALYSIS) BUILDING 54
EMISSIONS DURING PRODUCTION HOURS

TEST DATE	F54S01 (TON/YR)	F54S02 (TON/YR)	F54S03 (TON/YR)	F54S04 (TON/YR)
08/20/87	5.36	5.36	---	---
08/21/87	---	---	25.4	25.4
11/14/87	---	---	30.22	30.22
11/22/87	---	---	32.59	32.59
11/23/87	7.24	7.24	---	---

NOTE: ABOVE BASED ON ACTUAL OPERATING HOURS.

TOTAL VOC EMISSIONS FROM BUILDING 54
AS DETECTED BY EPA METHOD 25-A

SCRUB#	PRODUCTN SCHEDULE	NONPRODUCTN SCHEDULE	PRODUCTN EMISSIONS (TON/YR)	NONPRODUCTN EMISSIONS (TON/YR)	TOTAL MONITORED VOC EMISSNS* (TON/YR)
F54S01	4160	4600	7.24	1.47	8.70
F54S02	4160	4600	7.24	1.47	8.70
F54S03	8760	0	32.59	0	32.59
F54S04	8760	0	32.59	0	32.59

* BASED ON MAXIMUM CONCENTRATIONS OBSERVED.

TOTAL PROJECTED VOC EMISSIONS FOR BLDG. 54 - 94.34 TONS/YEAR

EPA METHOD TO-1: GC/MS ANALYSIS

AUGUST RESULTS-

	SCRUBBER #			
	F54S01	F54S02	F54S03	F54S04
ACETONE (LB/HR)	1.23	1.23	3.18	3.18
TRICHLOROETHANE (LB/HR)	---	---	0.33	0.33
METHYLENE CHLORIDE (LB/HR)	trace	trace	---	---
TETRACHLOROMETHYLENE (LB/HR)	---)	---	0.17	0.17
FREON-113 (LB/HR)	0.02	0.02	0.07	0.07
CHLOROFORM (LB/HR)	trace	trace	---	---
BENZENE (LB/HR)	trace	trace	trace	trace
TRICHLOROETHYLENE (LB/HR)	trace	trace	trace	trace
TOLUENE (LB/HR)	trace	trace	trace	trace
METHYL ISOBUTYL KETONE (LB/HR)	---	---	---	---
ETHYL BENZENE (LB/HR)	---	---	---	---
XYLENES (LB/HR)	---	---	---	---

NOVEMBER RESULTS-

	F54S01	F54S02	F54S03	F54S04
ACETONE (LB/HR)	---	---	2.10	2.10
XYLENES (LB/HR)	---	---	0.66	0.66
ETHYL BENZENE (LB/HR)	---	---	0.15	0.15
1,2-DICHLOROBENZENE (LB/HR)	---	---	0.85	0.85
1,1-DICHLOROETHENE (LB/HR)	---	---	0.07	0.07
TETRACHLOROETHENE (LB/HR)	---	---	2.02	2.02
1,1,1-TRICHLOROETHANE	---	---	6.10	6.10

HARRIS SEMICONDUCTOR

B-54 Air Permit

Consolidation

ATTACHMENT C

Raw Materials and Chemicals

PROCESS CHEMICALS

1. ACETIC ACID
2. AMMONIUM FLUORIDE
3. AMMONIA
4. AMMONIUM HYDROXIDE
5. ETHYLENE GLYCOL
6. GLYCERINE
7. HYDROFLUORIC ACID
8. HYDROCHLORIC ACID
9. HYDROGEN PEROXIDE
10. NITRIC ACID
11. PHOSPHORIC ACID
12. POTASSIUM HYDROXIDE
13. SODIUM HYDROXIDE
14. SULFURIC ACID
15. CHROMIC ACID
16. TETRAMETHYL AMMONIUM HYDROXIDE
17. ETHYLENE DIAMINE TETRACETIC ACID (EDTA)
18. DODECYLBENZENE SULFONIC ACID
19. ALKYL ARYL SULFONIC ACID
20. CERIC SULFATE
21. SODIUM HYPOPHOSPHITE
22. PHOSPHATE
23. ALUMINA SILICA

PROCESS GASES

1. ARGON
2. ARSINE
3. BORON TRIBROMIDE
4. BORON TRICHLORIDE
5. BORON TRIFLUORIDE
6. CARBON DIOXIDE
7. CHLORINE
8. DIBORANE
9. DICHLOROSILANE
10. HELIUM
11. HYDROGEN CHLORIDE
12. HYDROGEN
13. NITROGEN
14. NITROGEN TRIFLUORIDE
15. NITROUS OXIDE
16. OXYGEN
17. PHOSPHINE
18. PHOSPHOROUS OXYCHLORIDE
19. PHOSPHOROUS TRIBROMIDE
20. SILANE
21. SULFUR HEXAFLUORIDE
22. TUNGSTEN HEXAFLUORIDE
23. DE 100
24. PDE 100

PROCESS CHEMICALS

SOLVENTS

1. 1,1,1 TRICHLOROETHANE
2. ACETONE
3. BUTYL CELLOSOLVE
4. CELLOSOLVE ACETATE
5. CARBON TETRACHLORIDE
6. FREON 116
7. FREON 14
8. FREON 23
9. FREON TF
10. HEXAMETHYLDISILIZANE
11. ISOPROPYL ALCOHOL
12. METHANOL
13. N-BUTYL ACETATE
14. XYLENE
15. ETHYL BENZENE
16. 2-ETHOXYETHYL ACETATE
17. 1,2,4 TRICHLOROBENZENE
18. AROMATIC PHENOL
19. CRESOL
20. OIL
21. ISOPARAFFINIC HYDROCARBONS
22. OXTYLPHENOL POLYETHOXYLATE
23. PROPYLENE GLYCOL MONOETHYL ETHER ACETATE
24. 1,1,1 TRIMETHYL-N-TRIMETHYL ETHER
25. PHILTEC SAFETY STAIN

HARRIS SEMICONDUCTOR

B-54 Air Permit

Consolidation

ATTACHMENT D

Control Equipment

SCRUBBER INFORMATION

HARRIS ID # : F54S01
MANUFACTURER : HARRISON MODEL NUMBER : HF-200
SERIAL NUMBER: N/A MATERIAL : POLYPRO
DESCRIPTION : HORIZONTAL CROSS-FLOW, PLASTIC SADDLE PACKING, LIQUID DISTRIBUTION THROUGH MAIN HEADER, NO SPRAY NOZZLES

DESIGN DATA
VOLUME FLOW RATE (CFM): 20,000 PRESSURE DROP (IN):
RECIRCULATION RATE (GPM): 95 MAKE UP RATE (GPM): 9.0

ACTUAL DATA
VOLUME FLOW RATE (CFM): PRESSURE DROP (IN): N/E DATE: 06/03/87
RECIRCULATION RATE (GPM): NR MAKE UP RATE (GPM): 5 DATE: "

RECIRCULATION PUMP INFORMATION

MANUFACTURER : A. O. SMITH MODEL NUMBER : P48K2EB7B2
SERIAL NUMBER: N/A HP : 1 RPM : 3450
BRKR LOCATION: NEXT TO UNIT FED FROM MCC : P

FAN INFORMATION

HARRIS ID # : F54E01
MANUFACTURER : HARTZELL MODEL NUMBER: 41-40-FP3
SERIAL NUMBER: N/A MATERIAL : FIBERGLASS
DESCRIPTION : CENTRIFUGAL BLOWER, BACKWARD INCLINED BLADES

DESIGN DATA
VOLUME FLOW RATE (CFM): 20,000 STATIC PRESS (IN): 3.3

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

FAN MOTOR INFORMATION

MANUFACTURER : MODEL NUMBER :
SERIAL NUMBER: HP : 30 RPM : 1725
BRKR LOCATION: NEXT TO UNIT FED FROM MCC : U

SCRUBBER INFORMATION

HARRIS ID # : F54S02
MANUFACTURER : HARRISON MODEL NUMBER : HF-200
SERIAL NUMBER: N/A MATERIAL : POLYPRO
DESCRIPTION : HORIZONTAL CROSS-FLOW, PLASTIC SADDLE PACKING, LIQUID DISTRIBUTION THROUGH MAIN HEADER, NO SPRAY NOZZLES

DESIGN DATA
VOLUME FLOW RATE (CFM): 20,000 PRESSURE DROP (IN):
RECIRCULATION RATE (GPM): 95 MAKE UP RATE (GPM): 9.0

ACTUAL DATA
VOLUME FLOW RATE (CFM): PRESSURE DROP (IN): N/E DATE: 06/03/87
RECIRCULATION RATE (GPM): 30 MAKE UP RATE (GPM): 5.0 DATE: "

RECIRCULATION PUMP INFORMATION

MANUFACTURER : FRANKLIN ELECTRIC MODEL NUMBER : 1303012101
SERIAL NUMBER: N/A HP : 1/2 RPM : 3450
BRKR LOCATION: NEXT TO UNIT FED FROM MCC : P

FAN INFORMATION

HARRIS ID # : F54E02
MANUFACTURER : HARTZELL MODEL NUMBER: 41-40-FP3
SERIAL NUMBER: N/A MATERIAL : FIBERGLASS
DESCRIPTION : CENTRIFUGAL BLOWER, BACKWARD CURVED BLADES

DESIGN DATA
VOLUME FLOW RATE (CFM): 20,000 STATIC PRESS (IN): 3.3

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

FAN MOTOR INFORMATION

MANUFACTURER : MODEL NUMBER :
SERIAL NUMBER: HP : 30 RPM : 1725
BRKR LOCATION: NEXT TO UNIT FED FROM MCC : U

:

SCRUBBER INFORMATION

HARRIS ID # : F54S03
MANUFACTURER : HARRISON   MODEL NUMBER : HF-230
SERIAL NUMBER: N/A   MATERIAL : POLYPRO
DESCRIPTION : HORIZONTAL CROSS-FLOW, PLASTIC SADDLE PACKING, LIQUID DISTRIBUTION THROUGH MAIN HEADER, NO SPRAY NOZZLES

DESIGN DATA
VOLUME FLOW RATE (CFM): 23,000   PRESSURE DROP (IN):
RECIRCULATION RATE (GPM): 112   MAKE UP RATE (GPM): 11

ACTUAL DATA
VOLUME FLOW RATE (CFM):   PRESSURE DROP (IN): N/E DATE: 06/03/87
RECIRCULATION RATE (GPM): 30   MAKE UP RATE (GPM): 10 DATE: "

RECIRCULATION PUMP INFORMATION

MANUFACTURER : GENERAL ELECT.   MODEL NUMBER : 5KFG2666
SERIAL NUMBER: HP : 1/3 RPM : 1725
BRKR LOCATION: NEXT TO UNIT   FED FROM MCC : S,T

FAN INFORMATION

HARRIS ID # : F54E12
MANUFACTURER : HARTZELL   MODEL NUMBER: 41-40-GS3
SERIAL NUMBER: N/A   MATERIAL : FIBERGLASS
DESCRIPTION : CENTRIFUGAL BLOWER, BACKWARD CURVED BLADES

DESIGN DATA
VOLUME FLOW RATE (CFM): 26,500   STATIC PRESS (IN): 5.6

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

FAN MOTOR INFORMATION

MANUFACTURER :   MODEL NUMBER :
SERIAL NUMBER: HP : 40 RPM : 1287
BRKR LOCATION: NEXT TO UNIT   FED FROM MCC : S,U

SCRUBBER INFORMATION

HARRIS ID # : F54S04
MANUFACTURER : HARRISON — MODEL NUMBER : HF-230
SERIAL NUMBER: N/A — MATERIAL : POLYPRO
DESCRIPTION : HORIZONTAL CROSS-FLOW, PLASTIC SADDLE PACKING, LIQUID DISTRIBUTION THROUGH MAIN HEADER, NO SPRAY NOZZLES

DESIGN DATA
VOLUME FLOW RATE (CFM): 23,000 — PRESSURE DROP (IN):
RECIRCULATION RATE (GPM): 112 — MAKE UP RATE (GPM): 11

ACTUAL DATA
VOLUME FLOW RATE (CFM): — PRESSURE DROP (IN): N/E DATE: 06/03/87
RECIRCULATION RATE (GPM): 70 — MAKE UP RATE (GPM): 10 DATE: "

RECIRCULATION PUMP INFORMATION

MANUFACTURER : GENERAL ELECT. — MODEL NUMBER : 5K42FG2666
SERIAL NUMBER: N/A — HP : 1/3 RPM : 1725
BRKR LOCATION: NEXT TO UNIT — FED FROM MCC : S,T

FAN INFORMATION

HARRIS ID # : F54E13
MANUFACTURER : HARTZELL — MODEL NUMBER: 41-40-GS3
SERIAL NUMBER: N/A — MATERIAL : FIBERGLASS
DESCRIPTION : CENTRIFUGAL BLOWER, BACKWARD CURVED BLADES

DESIGN DATA
VOLUME FLOW RATE (CFM): 26,500 — STATIC PRESS (IN): 5.6

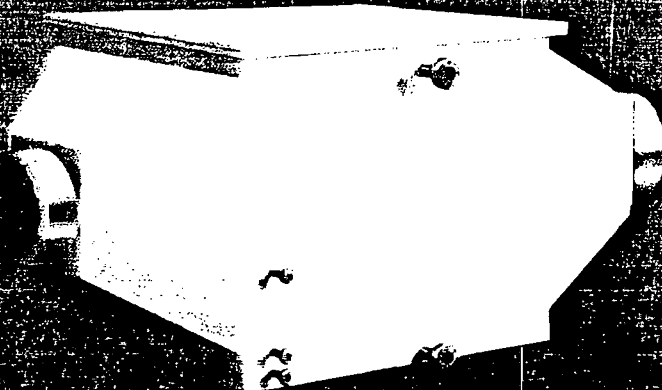
ACTUAL DATA — SPEED (RPM): — DATE:
VOLUME FLOW RATE (CFM): — STATIC PRESS (IN): — DATE:

FAN MOTOR INFORMATION

MANUFACTURER : — MODEL NUMBER :
SERIAL NUMBER: — HP : 40 RPM : 1287
BRKR LOCATION: NEXT TO UNIT — FED FROM MCC : S,U

Attachment :

Plastic Packed Scrubbers



THE HARRISON SYSTEM

Harrison is a prime designer and producer of complete plastic exhaust systems, custom engineered scrubbing systems, as well as duct and fittings, tanks, and hoods. As a result of this capability and experience, design and manufacture of standard, pre-engineered fume scrubbers is a natural extension.

MATERIALS

Self-supporting or fiberglass armored PVC and Polypropylene, fiberglass armored Kynar, and solid fiberglass construction offers a wide range of resistance to acids, alkalis, solvents, and other corrosives at operating temperatures to approximately 250°F. Harrison systems do not use any metal in contact with the process stream.

PRE-ENGINEERING

Pre-engineered design reduces cost by eliminating the necessity to re-invent each item ordered. It results in more reliable service thru improved workmanship achieved by repetitive production control, and speeds quotations and approval drawings because costs and designs are immediately available. In addition to significant savings in approval and order time, Harrison reduces delivery time by stocking scrubber components including packing, support grids, distributor plates, nozzles, duct reducers, and sheet stock.

SCRUBBER CONFIGURATION

Most fume removal applications can be served by the two scrubber designs shown in this catalog. Vertical Counter Current style directs liquid down vertically, and unwanted fumes upward in the opposite direction. Horizontal Cross Flow unit directs liquid down vertically, but unwanted fumes are driven horizontally at 90° to the liquid. In both designs, liquid and fumes are inter-mixed in the packed bed section of the scrubber where fumes are removed by chemical reaction or water solubility. Scrubber shape does not affect performance. Horizontal design presents a low profile and is suitable where head room is limited. Verticals require more head room, but use only minimum floor space.

SCRUBBER DESIGN AND OPERATION

Highest scrubber efficiency (volumetric % of contaminate removed) is obtained by having the proper amount of contact surface area (packing) wetted by sufficient liquid (recirculated liquid rate) for an optimum residence time (packing depth) to allow unwanted fumes to take a treacherous path thru the wetted packing to permit their maximum removal from the carrier air stream by chemical reaction or water solubility. Air stream resistance encountered in the packing (static pressure loss) is a function of air velocity, cross-sectional packing area, and packing depth. Harrison scrubbers utilize proven packing depth to achieve efficiencies approaching 99+%, when operated within recommendations.

LIQUID DISTRIBUTION AND MIST ELIMINATION

Simple liquid distribution is achieved thru a main header pipe feeding perforated laterals, without use of troublesome spray nozzles. Nozzles are subject to plugging, and produce a difficult-to-remove atomized mist carryover. In the Harrison design, any large droplets of liquid caught in the upward moving air stream are easily and efficiently removed by a short bed of dry packing located above the liquid distributor.

STATIC PRESSURE LOSS

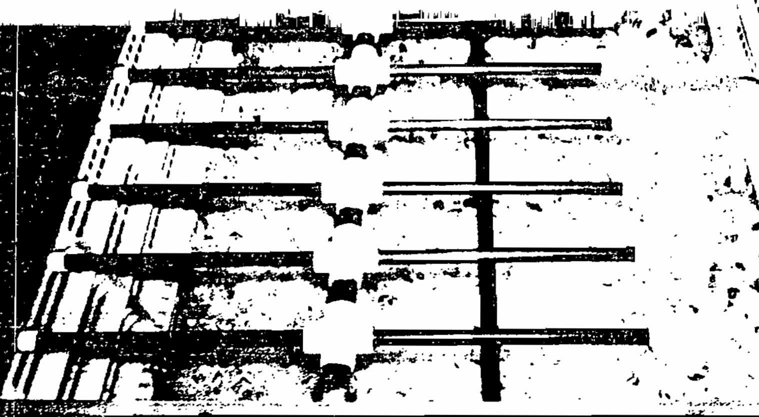
Use of high-surface-area, low-pressure-drop plastic saddles in a balanced design result in low static pressure loss of only 0.4 inches H_2O (w.g.) per foot of packed depth in Vertical Counter Current scrubbers, and 0.33 in Horizontal Cross Flow units. At the same time, sufficient irrigation rates constantly keep saddles clear of potential sludge buildup. Thereby, continuous, non-clogging operation at a proper rate of intermixing turbulence between liquid and fumes is achieved for 99+% efficiency.

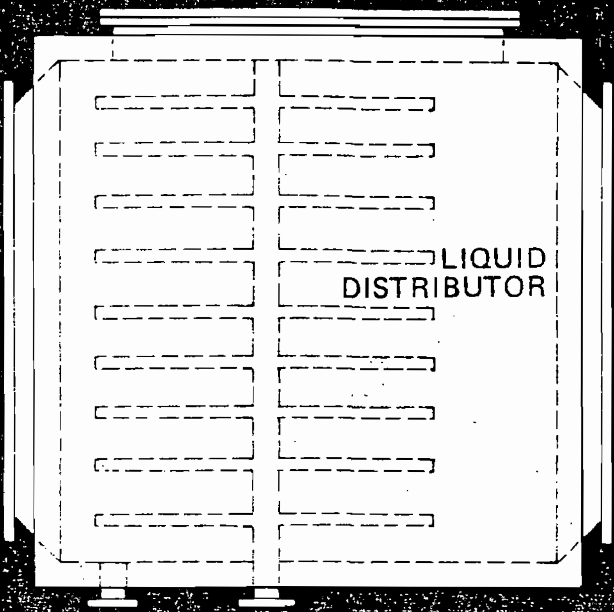
LIQUID SUMP OPERATION

Harrison scrubbers employ an integral liquid recirculating sump which reduces amount of liquid consumption required by 90 to 95% in most applications. Therefore, considerably less effluent must be handled and treated. The sump reservoir is contained within the scrubber itself. Harrison recommends optimum rate of effluent removal. When effluent is acidic only, additional liquid conservation can be obtained with either scrubber design with the simple optional recovery system shown with the vertical scrubber drawing on page 4. If central treating facilities exist, no sump, recirculation, or independent recovery is needed. In this case, treated liquid would be directed over the packing in a single pass, then treated, then returned to the scrubber, etc. In both instances where effluent is treated, liquid consumption would be reduced to only that amount lost by evaporation.

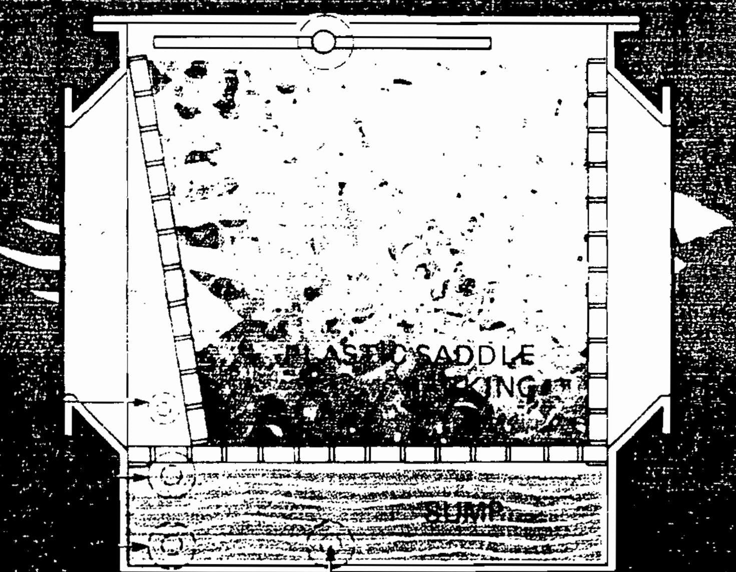
Harrison

Box 184 Aurora Ohio 44202/216-562-9545

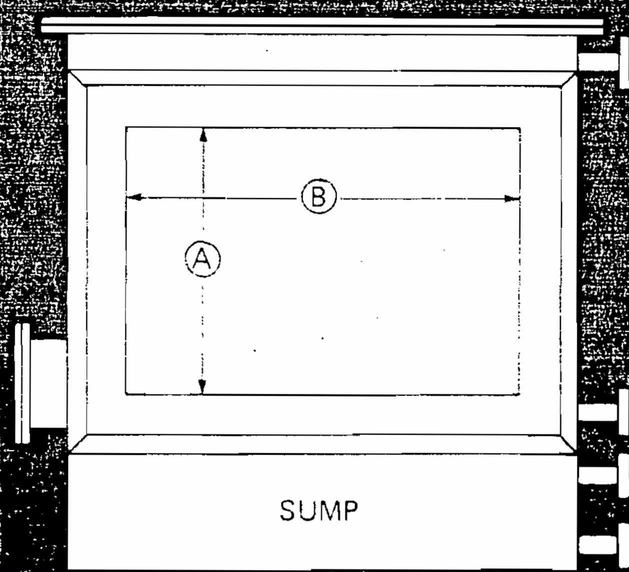




TOP VIEW



SIDE VIEW (CUT-A-WAY)



INLET SIDE VIEW

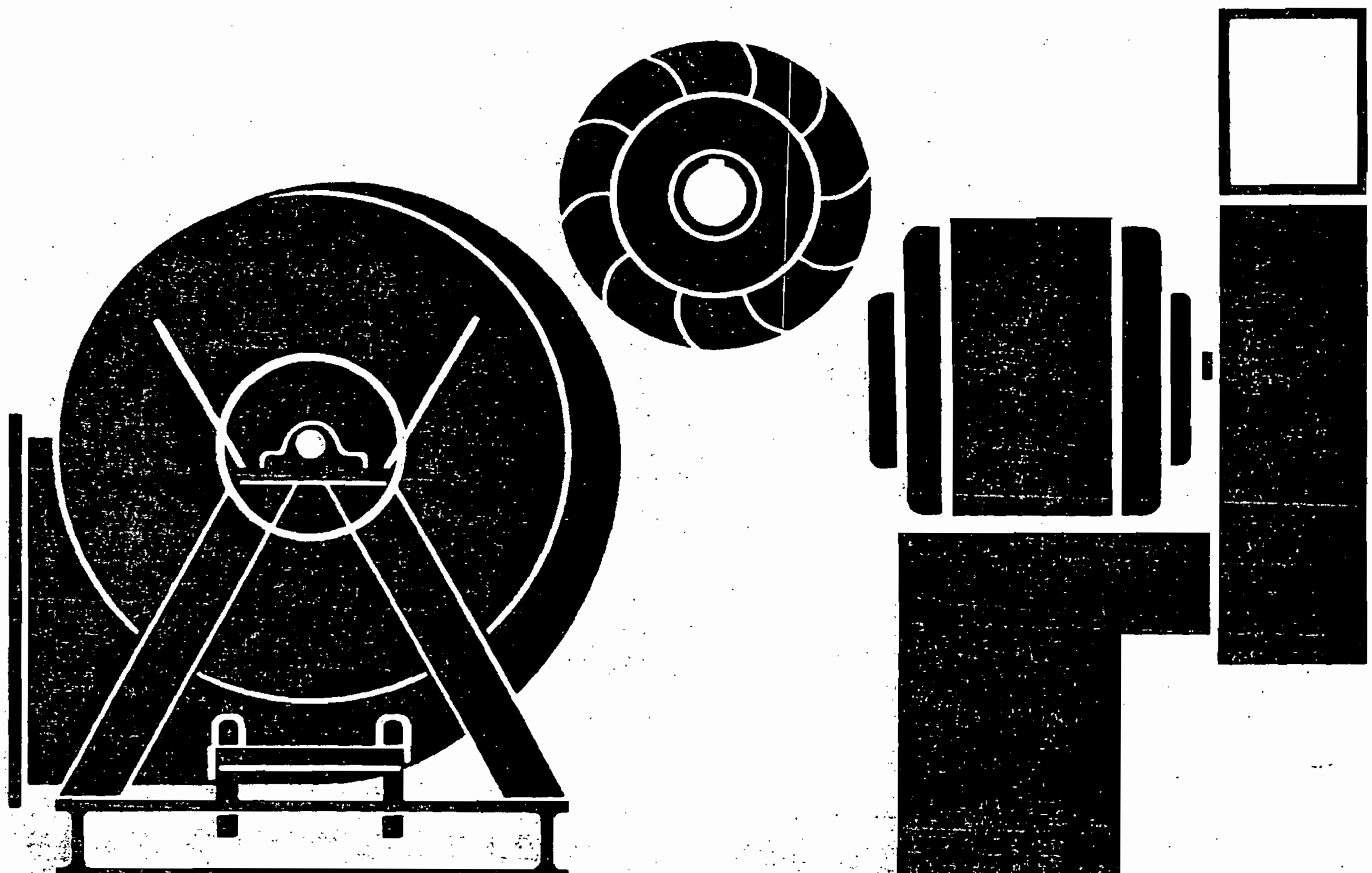
HORIZONTAL CROSS-FLOW

Model	CFM	Inlet & Outlet A x B In.	Length L Ft.	Width W In.	C In.	D In.	E In.	F In.	G In.	Sump Capacity Gal.	Rec. Liquid GPM	Overall Height In.	Ship* Wt. Lbs.	Operating Wt. Lbs.
HF-8	800	11x11	6	17	¾	1	1	1¼	1	58	17	35	182	646
HF-12	1,200	14x14	6	20	¾	1	1	1¼	1	69	21	38	224	781
HF-17	1,700	18x18	6	24	¾	1	1	1½	1¼	82	24	42	275	926
HF-21	2,100	21x21	6	27	¾	1	1	1½	1¼	92	28	45	316	1028
HF-25	2,500	24x24	6	30	¾	1½	1½	1½	1¼	102	32	48	357	1166
HF-31	3,100	27x27	6	33	¾	1½	1½	1½	1¼	113	35	51	419	1313
HF-37	3,700	30x30	6	36	¾	1½	1½	1½	1¼	125	39	54	481	1445
HF-45	4,500	33x33	6	39	¾	1½	1½	1½	1¼	134	42	57	563	1669
HF-50	5,000	36x36	6	42	¾	1½	1½	1½	1¼	144	45	5.0 ft.	615	1733
HF-67	6,700	36x36	6	48	1	2	2	1½	1¼	165	51	5.5	690	1980
HF-85	8,500	42x42	6	54	1	2	2	2	1½	186	56	6.0	824	2276
HF-105	10,500	48x48	6	60	1	2	2	2	1½	206	60	6.5	1035	2639
HF-126	12,600	54x54	6	66	1	2	2	2	1½	228	68	7.0	1242	2990
HF-150	15,000	60x60	6	72	1	2	2	2½	2	247	74	7.5	1545	3460
HF-176	17,600	66x66	6	78	1	2	2	2½	2	268	80	8.0	1751	3803
HF-190	19,000	66x72	6	84	1	2	2	2½	2	300	86	8.0	1957	4161
HF-220	22,000	66x84	6	96	1	2	2	2½	2	330	98	8.0	2266	4770
HF-245	24,500	66x96	6	108	1½	2	2	3	3	371	112	8.0	2624	5328
HF-273	27,300	66x108	6	120	1½	2	2	3	3	412	123	8.0	2835	5960
HF-300	30,000	66x120	6	132	1½	2	2	3	3	454	136	8.0	3190	6684
HF-327	32,700	66x132	6	144	1½	2	2	3	3	495	147	8.0	3490	7398

iberglass Centrifugal Blowers

BEST AVAILABLE COPY

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



HARTZELL®

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

Construction Features

A variety of corrosion problems plague industry today. Fans and blowers made of coated steel or metals such as stainless and monel can handle some problem areas. However, reinforced fiberglass and resin construction will meet even the most challenging demands.

Fiberglass centrifugal blowers can be used in most applications where corrosive elements exist in fume and vapor form at temperatures less than 200° F. The resistance to corrosive elements is a major advantage, but the physical properties of fiberglass equipment offer these additional advantages.

- Fiberglass equipment weighs 25% less than comparable equipment made of carbon steel.
- Fiberglass has an extremely high strength-to-weight ratio. stronger than steel on a per-pound basis.
- Dimensional stability of fiberglass is excellent. Fiberglass air moving equipment will not become brittle at low temperatures and at 0° F. the laminated fiberglass will be stronger than at room temperature.
- Fiberglass equipment offers a distinct advantage in price over stainless and monel (as much as ⅓ in original cost) and offers longer service life and requires less maintenance.

Hartzell fiberglass equipment is identical, except for part thickness, in design, overall specs and performance to our standard lines. The following are standard Hartzell fiberglass construction features:

- Special corrosive resistant polyester resin having a Class I flame spread rate of 25 or less.
- All structural parts in the airstream are fiberglass and resin. All taped joints inside the shell or body are three layers of two ounce material. All internal surfaces are protected with a 10 mil thickness of chemical resistant, flame retardant gel coat and all external surfaces have a heavy coating of resin applied before assembly.
- Internal hardware is 300 series stainless steel. Shafts are type 304; bolts and screws are type 316. Monel shafting and hardware are available as an extra-cost option for applications such as hydrochloric, hydrofluoric, or sulfuric acids, which attack stainless.

Where metal is subject to attack by the corrosive elements being handled, all metal parts can be resin-coated after assembly.

- A fiberglass and neoprene shaft seal is placed where the shaft leaves the housing along with a neoprene shaft slinger between the seal and wheel on belt drive units. (Seal is not gas tight.)
- All fiberglass radial and backward curved wheels are of multi-piece construction bonded together with resin and fiberglass material.

  Maximum temperature limitation is 200° F. on all centrifugal blowers.
- All internal mounting hardware is encapsulated with a layer of fiberglass and resin.

This bulletin lists Hartzell's complete line of fiberglass centrifugal blowers and accessories. More than 70 Hartzell offices can provide specific performance and installation data to meet your requirements. Call your nearest Hartzell representative for competent technical help.

amca CERTIFIED RATINGS AIR PERFORMANCE

AIR MOVEMENT AND CONTROL ASSOCIATION, INC.

Air Movement and Control Association Seal

Hartzell Propeller Fan Company certifies that the centrifugal blowers shown herein are licensed to bear the AMCA Seal. The ratings shown are based on tests made in accordance with AMCA Standard 210 and comply with the requirements of the AMCA Certified Ratings Program.

Selection Guide

How To Use Capacity Tables

(1) Select size, RPM and BHP for a given air delivery and pressure of a centrifugal blower from rating tables, pages 10 through 21. Performance ratings are based on standard air conditions, sea level 70°F. and 29.92 inches barometric pressure giving an air density of .075 lbs. per cubic foot. The specific gravity of air equals 1.00 at these conditions.

(2) If non-standard temperature or altitude is involved, correct to standard air density (see Table 1).

(3) For speeds above ratings consult factory.

HARTZELL MODEL CODE 41-33GO3

Blower Series No.
Wheel Diameter, Inches
Wheel Type
Horsepower Code
Motor RPM/Phase

3 Phase	1 Phase
3 = 1750	C = 1750

How to use Hartzell Model Code

EXAMPLE:

Assume the required performance to be 16,276 CFM at 3" SP standard air. Reading across the 33" Rating Table, page 13, we find a blower RPM of 1306 and brake horsepower of 14.5. Motor horsepower required is 15; therefore, horsepower code is "O". Type specification would be "GO3". The complete blower specification would read: Series 41-33-GO3.

Horsepower Code

Horsepower	¼	⅓	½	¾	1	1½	2	3	5	7½	10	15	20	25	30	40	50	60	75	100
Code Letter	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W

Altitude – Temperature Correction

Temperatures above or below 70° at sea level (O ft.) are read vertically between the double lines, giving the proper correction factors. Altitudes above sea level at a constant 70°F. temperature are read horizontally between the double lines giving those factors. Any other factors are obtained by reading down to the desired temperature, then across to the desired altitude.

Example:

Assume the required performance to be 12,520 CFM at 6.15" SP, 175° F. and 2000 feet altitude.

1. Table 1 gives a factor of 1.30.
2. 6.15" SP × 1.30 = 8.0" SP for 70° F. at sea level.
3. A backward curved centrifugal blower, size 33", selected from the rating tables for the new condition shows 12,520 CFM at 8.0" SP, 1537 RPM and 23.9 BHP.
4. Correct the horsepower and static pressure in Item 3 to non-standard performance by dividing by the factor:
   8.0" SP ÷ 1.30 = 6.15 SP
   23.9 BHP ÷ 1.30 = 18.38 BHP
5. Final performance of this size 33" backward curved centrifugal blower at assumed conditions:
   12,520 CFM at 6.15" SP, 1537 RPM, 18.38 BHP, 175°F. and 2000 Ft.

Table 1 – Combined Altitude - Temperature Correction Factors

°F. TEMP. \ ALT. FT.	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000	12000
−50	0.77	0.80	0.83	0.86	0.89	0.92	0.96	1.00	1.04	1.08	1.12	1.16	1.21
−25	0.82	0.85	0.89	0.92	0.95	0.98	1.03	1.07	1.11	1.15	1.20	1.24	1.29
0	0.87	0.90	0.94	0.97	1.01	1.04	1.09	1.13	1.17	1.22	1.27	1.31	1.37
25	0.91	0.95	0.98	1.02	1.06	1.09	1.14	1.18	1.23	1.27	1.33	1.37	1.43
50	0.96	1.00	1.04	1.08	1.11	1.15	1.20	1.25	1.30	1.34	1.40	1.45	1.51
70	1.00	1.04	1.08	1.12	1.16	1.20	1.25	1.30	1.35	1.40	1.46	1.51	1.57
100	1.06	1.10	1.14	1.19	1.23	1.27	1.33	1.38	1.43	1.48	1.55	1.60	1.66
125	1.10	1.14	1.19	1.23	1.28	1.32	1.38	1.43	1.49	1.54	1.61	1.66	1.73
150	1.15	1.20	1.24	1.29	1.33	1.38	1.44	1.50	1.55	1.61	1.68	1.74	1.81
175	1.20	1.25	1.30	1.34	1.39	1.44	1.50	1.56	1.62	1.68	1.75	1.81	1.88
200	1.25	1.30	1.35	1.40	1.45	1.50	1.56	1.63	1.69	1.75	1.83	1.89	1.96
250	1.34	1.39	1.45	1.50	1.55	1.61	1.68	1.74	1.81	1.88	1.96	2.02	2.10
300	1.43	1.49	1.54	1.60	1.66	1.72	1.79	1.86	1.93	2.00	2.09	2.16	2.25
350	1.53	1.59	1.65	1.71	1.77	1.84	1.91	1.99	2.07	2.14	2.23	2.31	2.40
400	1.62	1.69	1.75	1.82	1.89	1.96	2.04	2.12	2.20	2.27	2.35	2.45	2.55
450	1.72	1.79	1.86	1.93	2.00	2.08	2.16	2.24	2.33	2.41	2.50	2.60	2.70
500	1.81	1.88	1.96	2.03	2.11	2.19	2.28	2.36	2.46	2.54	2.62	2.74	2.85
550	1.91	1.98	2.06	2.14	2.22	2.30	2.40	2.49	2.58	2.68	2.77	2.89	3.00
600	2.00	2.08	2.16	2.24	2.33	2.42	2.50	2.61	2.71	2.80	2.90	3.03	3.14

NOTE: Above table has inverted values. Actual density is the *reciprocal* of the above values.

Abrasive/Erosive Atmospheres

HartKoate is an abrasive/erosive resistant coating developed by Hartzell for application in environments where abrasive/erosive conditions may exist. HartKoate helps prevent premature deterioration of equipment in environments where uncoated fans may fail.

Impact resistant HartKoate is applied to a 50-60 mil thickness suitable for temperatures to 200°F.

HartKoate is particularly appropriate for use when water mist and/or abrasive particles exist in the air stream.

Contact your Hartzell representative for further details concerning the application of HartKoate coating to fiberglass fans in corrosive atmospheres.

Installation Weights-Bearing/Shaft Sizes

Series 41

Size	Type	Net Wt. (lbs.)	Shaft/Bearing Sizes
15"	GH3	526	1 7/16"
	GI3	526	1 7/16"
	GJ3	529	1 7/16"
	GK3	529	1 7/16"
	GL3	549	1 7/16"
	GM3	554	1 7/16"
22"	GH3	772	1 11/16"
	GI3	772	1 11/16"
	GJ3	776	1 11/16"
	GK3	776	1 11/16"
	GL3	806	1 11/16"
	GM3	813	1 11/16"
	GN3	854	1 11/16"
	GO3	865	1 11/16"
	GP3	926	1 11/16"
27"	GI3	954	1 15/16"
	GJ3	959	1 15/16"
	GK3	959	1 15/16"
	GL3	996	1 15/16"
	GM3	1004	1 15/16"
	GN3	1054	1 15/16"
	GO3	1069	1 15/16"
	GP3	1144	1 15/16"
	GQ3	1164	1 15/16"
	GR3	1190	1 15/16"
33"	GI3	1355	2 3/16"
	GJ3	1355	2 3/16"
	GK3	1382	2 3/16"
	GL3	1397	2 3/16"
	GM3	1454	2 3/16"
	GN3	1482	2 3/16"
	GO3	1514	2 3/16"
	GP3	1544	2 3/16"
	GQ3	1594	2 3/16"
	GR3	1644	2 3/16"
40"	GI3	1885	2 7/16"
	GJ3	1885	2 7/16"
	GK3	1912	2 7/16"
	GL3	1932	2 7/16"
	GM3	1972	2 7/16"
	GN3	1987	2 7/16"
	GO3	2047	2 7/16"
	GP3	2077	2 7/16"
	GQ3	2127	2 7/16"
	GR3	2177	2 7/16"
	GS3	2277	2 7/16"
	GT3	2327	2 7/16"
49"	GL3	2415	2 15/16"
	GM3	2465	2 15/16"
	GN3	2483	2 15/16"
	GO3	2558	2 15/16"
	GP3	2596	2 15/16"
	GQ3	2658	2 15/16"
	GR3	2721	2 15/16"
	GS3	2846	2 15/16"
	GT3	2908	2 15/16"
	GU3	2958	2 15/16"
	GV3	3063	2 15/16"
	GW3	3123	2 15/16"

Series 43

Size	Type	Net Wt. (lbs.)	Shaft/Bearing Sizes
16"	FH3	302	1 3/16"
	FI3	302	1 3/16"
	FJ3	302	1 3/16"
	FK3	338	1 3/16"
	FL3	358	1 3/16"
	FM3	361	1 3/16"
	FN3	380	1 3/16"
	FO3	431	1 3/16"
	FP3	460	1 3/16"
19"	FI3	372	1 7/16"
	FJ3	372	1 7/16"
	FK3	399	1 7/16"
	FL3	444	1 7/16"
	FM3	447	1 7/16"
	FN3	466	1 7/16"
	FO3	517	1 7/16"
	FP3	547	1 7/16"
	FQ3	587	1 7/16"
	FR3	667	1 7/16"
23"	FJ3	404	1 11/16"
	FK3	431	1 11/16"
	FL3	451	1 11/16"
	FM3	496	1 11/16"
	FN3	516	1 11/16"
	FO3	535	1 11/16"
	FP3	565	1 11/16"
	FQ3	605	1 11/16"
	FR3	695	1 11/16"
	FS3	735	1 11/16"
26"	FK3	489	1 11/16"
	FL3	509	1 11/16"
	FM3	555	1 11/16"
	FN3	574	1 11/16"
	FO3	625	1 11/16"
	FP3	655	1 11/16"
	FQ3	715	1 11/16"
	FR3	805	1 11/16"
	FS3	845	1 11/16"
	FT3	940	1 11/16"
30"	FL3	626	1 15/16"
	FM3	629	1 15/16"
	FN3	649	1 15/16"
	FO3	709	1 15/16"
	FP3	739	1 15/16"
	FQ3	779	1 15/16"
	FR3	869	1 15/16"
	FS3	909	1 15/16"
	FT3	1004	1 15/16"
	*FU3	529	1 15/16"
33"	FL3	692	1 15/16"
	FM3	695	1 15/16"
	FN3	705	1 15/16"
	FO3	775	1 15/16"
	FP3	805	1 15/16"
	FQ3	855	1 15/16"
	FR3	945	1 15/16"
	FS3	985	1 15/16"
	FT3	1075	1 15/16"
	*FU3	600	1 15/16"
	*FV3	600	1 15/16"
	*FW3	600	1 15/16"

Series 42

Size	Type	Net Wt. (lbs.)	Shaft/Bearing Sizes
10"	FC3	63	
12"	FF3	78	
14"	FG3	96	

***Net installation weights are for Arrangement 1. (Less motor & drive.)**

Metric Conversion Table

FROM	TO	MULTIPLY BY
Inches (in.)	Millimeter (mm)	25.400
Feet (ft.)	Meter (m)	0.3048
Velocity (ft./min.)	Meter/Second (m/s)	0.00508
Volume Flow (cfm)	Cubic Meter/Second (m^3/s)	0.00047195
Pressure (in. w.g.)	Pascal (N/m^2)	248.36
Density (lb./$ft.^3$)	Kilogram /Cubic Meter (Kg/m^3)	16.018
Power (hp)	Watt (w)	745.70
Square Foot ($ft.^2$)	Square Meter (m^2)	0.09290
Square Inch ($in.^2$)	Square Meter (m^2)	0.0006451

Abrasive/Erosive Atmospheres

HartKoate is an abrasive/erosive resistant coating developed by Hartzell for application in environments where abrasive/erosive conditions may exist. HartKoate helps prevent premature deterioration of equipment in environments where uncoated fans may fail.

Impact-resistant HartKoate is applied to a 50-60 mil thickness suitable for temperatures to 200°F.

HartKoate is particularly appropriate for use when water mist and/or abrasive particles exist in the air stream.

Contact your Hartzell representative for further details concerning the application of HartKoate coating to fiberglass fans in corrosive atmospheres.

Installation Weights-Bearing/Shaft Sizes

Series 41

Size	Type	Net Wt. (lbs.)	Shaft/Bearing Sizes
15″	GH3	526	1 7/16″
	GI3	526	1 7/16″
	GJ3	529	1 7/16″
	GK3	529	1 7/16″
	GL3	549	1 7/16″
	GM3	554	1 7/16″
22″	GH3	772	1 11/16″
	GI3	772	1 11/16″
	GJ3	776	1 11/16″
	GK3	776	1 11/16″
	GL3	806	1 11/16″
	GM3	813	1 11/16″
	GN3	854	1 11/16″
	GO3	865	1 11/16″
	GP3	926	1 11/16″
27″	GI3	954	1 15/16″
	GJ3	959	1 15/16″
	GK3	959	1 15/16″
	GL3	996	1 15/16″
	GM3	1004	1 15/16″
	GN3	1054	1 15/16″
	GO3	1069	1 15/16″
	GP3	1144	1 15/16″
	GQ3	1164	1 15/16″
	GR3	1190	1 15/16″
33″	GI3	1355	2 3/16″
	GJ3	1355	2 3/16″
	GK3	1382	2 3/16″
	GL3	1397	2 3/16″
	GM3	1454	2 3/16″
	GN3	1482	2 3/16″
	GO3	1514	2 3/16″
	GP3	1544	2 3/16″
	GQ3	1594	2 3/16″
	GR3	1644	2 3/16″
40″	GI3	1885	2 7/16″
	GJ3	1885	2 7/16″
	GK3	1912	2 7/16″
	GL3	1932	2 7/16″
	GM3	1972	2 7/16″
	GN3	1987	2 7/16″
	GO3	2047	2 7/16″
	GP3	2077	2 7/16″
	GQ3	2127	2 7/16″
	GR3	2177	2 7/16″
	GS3	2277	2 7/16″
	GT3	2327	2 7/16″
49″	GL3	2415	2 15/16″
	GM3	2465	2 15/16″
	GN3	2483	2 15/16″
	GO3	2558	2 15/16″
	GP3	2596	2 15/16″
	GQ3	2658	2 15/16″
	GR3	2721	2 15/16″
	GS3	2846	2 15/16″
	GT3	2908	2 15/16″
	GU3	2958	2 15/16″
	GV3	3063	2 15/16″
	GW3	3123	2 15/16″
19″	FI3	372	1 7/16″
	FJ3	372	1 7/16″
	FK3	399	1 7/16″
	FL3	444	1 7/16″
	FM3	447	1 7/16″
	FN3	466	1 7/16″
	FO3	517	1 7/16″
	FP3	547	1 7/16″
	FQ3	587	1 7/16″
	FR3	667	1 7/16″
23″	FJ3	404	1 11/16″
	FK3	431	1 11/16″
	FL3	451	1 11/16″
	FM3	496	1 11/16″
	FN3	516	1 11/16″
	FO3	535	1 11/16″
	FP3	565	1 11/16″
	FQ3	605	1 11/16″
	FR3	695	1 11/16″
	FS3	735	1 11/16″
26″	FK3	489	1 11/16″
	FL3	509	1 11/16″
	FM3	555	1 11/16″
	FN3	574	1 11/16″
	FO3	625	1 11/16″
	FP3	655	1 11/16″
	FQ3	715	1 11/16″
	FR3	805	1 11/16″
	FS3	845	1 11/16″
	FT3	940	1 11/16″
30″	FL3	626	1 15/16″
	FM3	629	1 15/16″
	FN3	649	1 15/16″
	FO3	709	1 15/16″
	FP3	739	1 15/16″
	FQ3	779	1 15/16″
	FR3	869	1 15/16″
	FS3	909	1 15/16″
	FT3	1004	1 15/16″
	*FU3	529	1 15/16″
33″	FL3	692	1 15/16″
	FM3	695	1 15/16″
	FN3	705	1 15/16″
	FO3	775	1 15/16″
	FP3	805	1 15/16″
	FQ3	855	1 15/16″
	FR3	945	1 15/16″
	FS3	985	1 15/16″
	FT3	1075	1 15/16″
	*FU3	600	1 15/16″
	*FV3	600	1 15/16″
	*FW3	600	1 15/16″

Series 43

Size	Type	Net Wt. (lbs.)	Shaft/Bearing Sizes
16″	FH3	302	1 3/16″
	FI3	302	1 3/16″
	FJ3	302	1 3/16″
	FK3	338	1 3/16″
	FL3	358	1 3/16″
	FM3	361	1 3/16″
	FN3	380	1 3/16″
	FO3	431	1 3/16″
	FP3	460	1 3/16″

Series 42

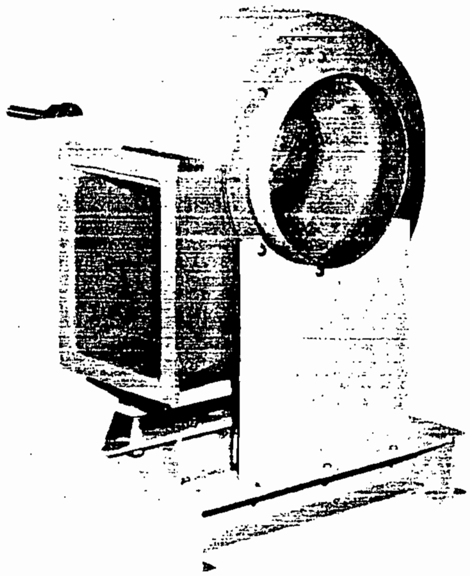
Size	Type	Net Wt. (lbs.)	Shaft/Bearing Sizes
10″	FC3	63	
12″	FF3	78	
14″	FG3	96	

***Net installation weights are for Arrangement 1. (Less motor & drive.)**

Metric Conversion Table

FROM	TO	MULTIPLY BY
Inches (in.)	Millimeter (mm)	25.400
Feet (ft.)	Meter (m)	0.3048
Velocity (ft./min.)	Meter/Second (m/s)	0.00508
Volume Flow (cfm)	Cubic Meter/Second (m^3/s)	0.00047195
Pressure (in. w.g.)	Pascal (N/m^2)	248.36
Density ($lb./ft.^3$)	Kilogram /Cubic Meter (Kg/m^3)	16.018
Power (hp)	Watt (w)	745.70
Square Foot ($ft.^2$)	Square Meter (m^2)	0.09290
Square Inch ($in.^2$)	Square Meter (m^2)	0.0006451

Backward Curved Blower (Belt Drive)



Arrangement #10 Shown.

Series 41

Blowers available in SWSI only

The belt drive airfoil backward curved centrifugal blower offers non-overloading efficiency and economy in corrosive atmospheres at static pressures up to 12". The wheel and housing are constructed with a special corrosive resistant polyester resin having a Class I flame spread rate of 25 or less. No metal parts are exposed in the airstream. All internal hardware is 300 series stainless steel encapsulated with fiberglass.

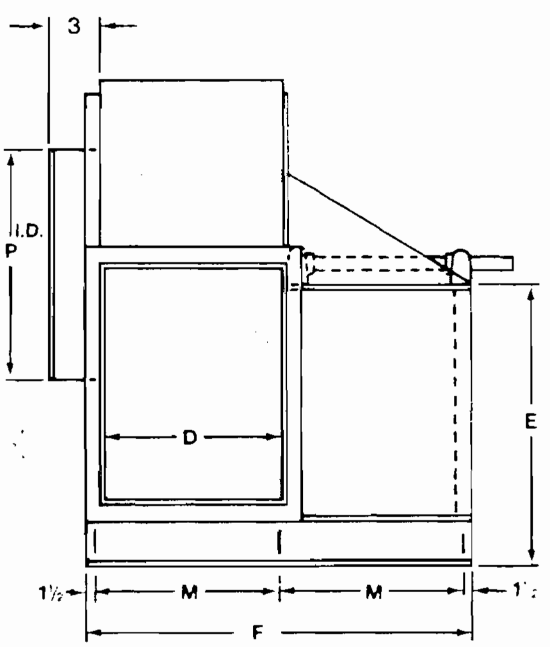
Features

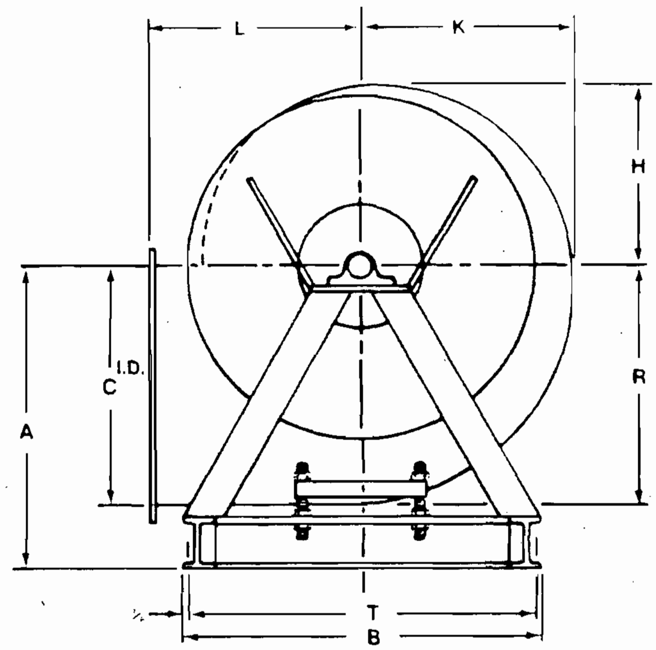
- **Sizes** — 15", 22", 27", 33", 40", 49" wheel diameters.
- **Arrangements** — available in Arrangements #1, #9 or #10.
- **Rotation — clockwise** and **counter clockwise rotation. Rotatable in field.**
- **Discharges** — available discharges shown on page 9.
- **Packaged unit** — motor and drive mounted by factory.
- **Easy installation and maintenance** — motor, drive and bearings are readily accessible for ease in wiring, installation, adjustment and lubrication.
- **Wheel** — a true airfoil type of multi-piece, solid fiberglass construction bonded together with resin and fiberglass material. Airfoil backwardly inclined blades offer greater versatility for industrial applications. Wheel has non-overloading horsepower characteristics in that brake horsepower levels off at a point that prevents motor overload if system changes occur. Wheel Type G.
- **Motors** — open end drip proof are standard. Totally enclosed fan cooled and other special motors are available upon request.
- **Variable pitch drives** are standard on all units up to 10 HP.
- **Flanged outlets are standard.** Inlet flanges are optional. Drilling of flanges is optional. (Position of drilled holes must be specified by customer.)
- **All units are test run** and **electronically balanced** before shipment.
- **Heavy Duty Design** suitable for service up to and including Class III.
- **Bearings** — heavy duty, self-aligning, double row spherical roller type pillow block bearings are standard and are furnished with extended lubrication lines. Bearings have floating labyrinth seals. (See page 7 for Bearing/Shaft sizes.)
- **Shafts** are 304 stainless steel as standard. Monel available at extra cost.
- **Bases** — heavy gauge hot rolled steel, epoxy coated.
- **Maximum Temperature:** 200° F.
- **Maximum tip speed:** 16,000 FPM
- **Accessories** — See pages 22 and 23.

Principal Dimensions

Size	Wheel Dia.	A	B	C	D	E	F	H	K	L	M	P	R	T	Max. Motor Frame Size ODP	Max. Motor Frame Size TEFC
15	15⅝	32¼	33½	16⅛	11 11/16	30¼	41	12 11/16	14 9/16	16 [illegible]	19	16	16 [illegible]	31¾	326T	286T
22	22 [illegible]	32½	33½	23¾	17⅛	30¼	46	18 [illegible]	21 [illegible]	21⅝	21½	23	23 15/16	31¾	326T	286T
27	27¾	38¼	43	29	21	35⅞	51	22¾	26⅛	24	24	28	29½	41½	326T	286T
33	33 13/16	43½	50	35 [illegible]	25 11/16	40⅝	56	27 11/16	31 13/16	29 [illegible]	26 [illegible]	34 [illegible]	35 15/16	48¼	326T	286T
40	41½	51¼	59	43 [illegible]	31⅝	48⅝	62	33 13/16	38 13/16	35⅞	29½	41⅞	43⅞	57¼	326T	286T
49	50 [illegible]	61⅝	73	52⅝	38⅛	58	92	41	47⅛	40	44 [illegible]	50 [illegible]	53¼	71½	447T	447T

NOTES: ON 15 AND 22 SIZES WITH 254T FR. AND LARGER MOTORS, BASE DIMENSIONS MUST BE CERTIFIED BY THE FACTORY. DIMENSIONS AND SPECIFICATIONS ARE SUBJECT TO CHANGE. CERTIFIED PRINTS ARE AVAILABLE.



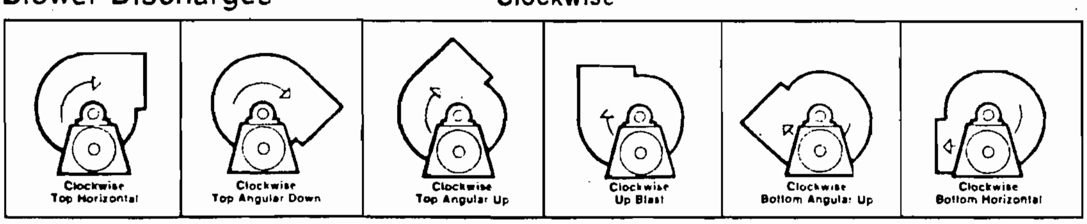


Material Specifications — Inches

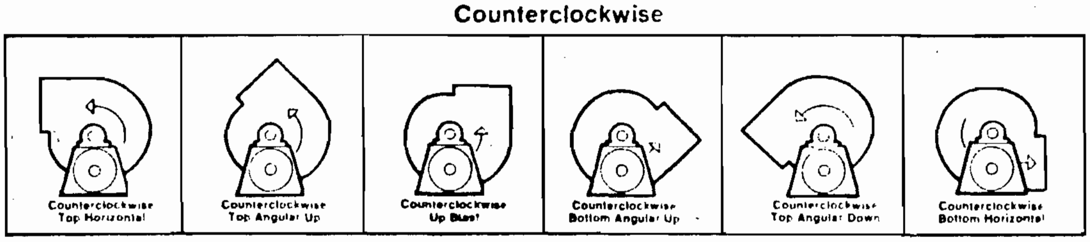
Size	HOUSING (Thickness) Scroll	HOUSING Inlet Cone	HOUSING Flanges Inlet	HOUSING Flanges Outlet	(H.R.S.) FAN STAND Back Plate	(H.R.S.) FAN STAND H-Beam	(H.R.S.) FAN STAND Channel	WHEEL (Thickness) Blade	WHEEL Back Plate	WHEEL Outer Panel
15	5/16	5/16	3/16	5/16	½	6 × 4	4	¼	½	½
22	5/16	7/16	¼	5/16	½	6 × 4	4	¼	⅝	⅝
27	½	½	5/16	½	½	6 × 4	4	5/16	¾	¾
33	½	⅝	⅜	½	½	6 × 4	4	⅜	⅞	⅞
40	9/16	¾	7/16	9/16	½	6 × 4	4	7/16	1	1
49	⅝	15/16	9/16	⅝	½	6 × 4	4	1	1⅜	1⅜

Blower Discharges

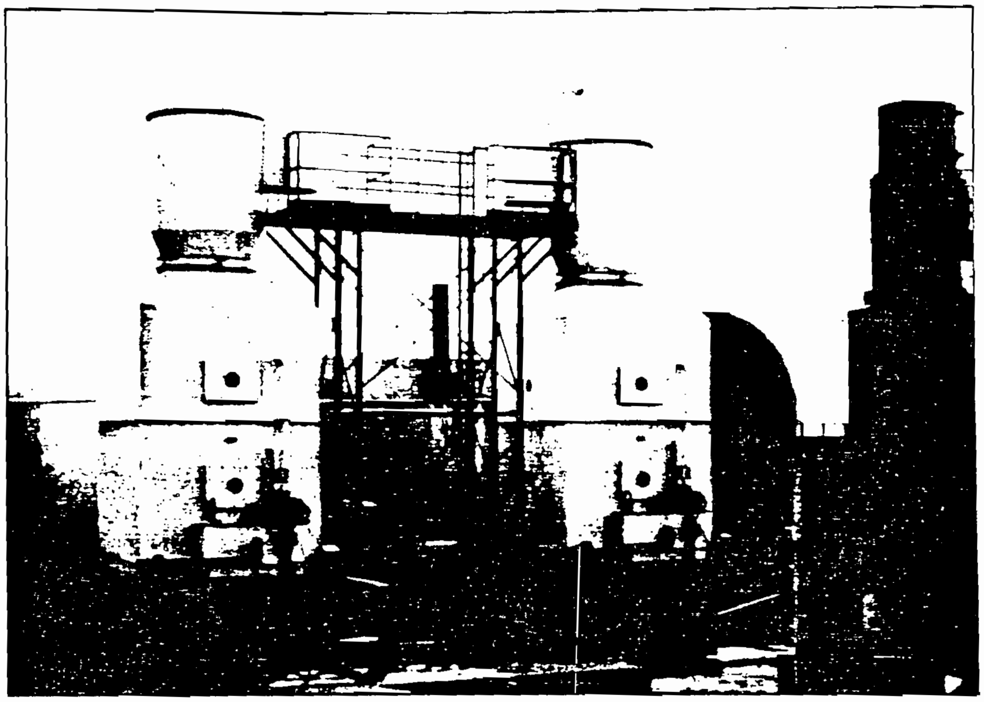
Clockwise



Counterclockwise



FIBERGLASS REINFORCED PLASTIC



INDUSTRIAL VENTILATION EQUIPMENT

BEVERLY PACIFIC CORPORATION

Industrial Systems Division

YING FABRICATOR . .
. . . an "important function"

There are many factors involved in order to determine whether a company is a "qualified FRP fabricator". The main factors a person with purchasing responsibilities needs to recognize are the specific factors with which Beverly Pacific Corporation has had years of experience.

These factors deal with the handling and managing of the construction process itself — a few, of which, are as follows:

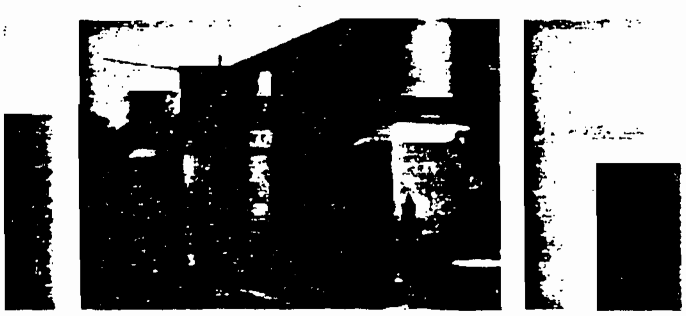
1. *A "qualified fabricator" should be able to exhibit expertise in the basic principles of building corrosion-resistant laminates.*

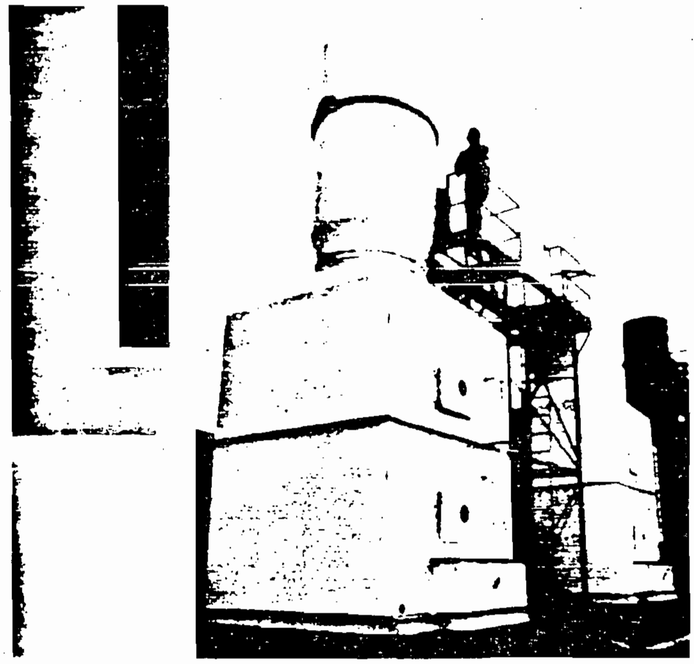
2. *A "qualified fabricator" should have personnel familiar with resin compounding and curing, including variables such as catalysts, promoters, resin, reinforcement, time, temperature, humidity, rate of exotherm, mass of structure, etc.*

3. *A "qualified fabricator" should be able to demonstrate that shop personnel have necessary understanding and ability to produce good quality laminates consistently.*

4. *A "qualified fabricator" should apply proven procedures to assure adequate quality control of raw material and finished products.*

5. *A "qualified fabricator" should be able to use and produce engineering specifications, drawings and equipment designs and fabricate in accordance therewith.*





BEVERLY PACIFIC CORPORATION . .
. . . a "qualified fabricator"

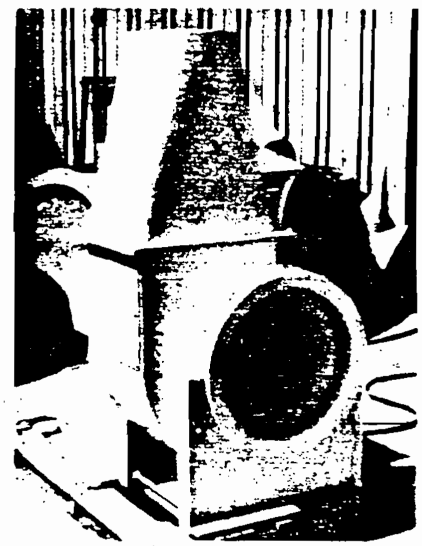
Beverly Pacific Corporation has served industry for over a quarter century. Our products, service, component equipment and complete engineered systems are located throughout the nation and around the world.

We have a "HIGHLY QUALIFIED TEAM" of engineers, production supervisors and experienced plant personnel, equipped with the latest production equipment, tools and proven methods of fabrication. This combination offers economical, dependable and efficient "ANSWERS" to your exhaust ventilation and corrosion control "PROBLEMS", and we want to serve you

RROSION CONTROL...
...a "necessity"

The "chemical resistance" of a Fiberglass Reinforced Plastic (FRP) product depends on the resin system and the method and type of reinforcement used in the construction. Polyester resin systems provide the best overall chemical resistance to the widest possible range of chemical environments. Superior performance of the resin is then assured by combining it with fiberglass and/or synthetic surfacing materials designed to accomplish both the "chemical resistance" and the "structural" requirements of the product.

POLYESTER RESIN SYSTEMS...
...the "answer"



The continuing combined technical efforts of manufacturers such as Beverly Pacific and the producers of polyester resin have resulted in three (3) general CHEMICAL-RESISTANT polyester resin system groups: Isophthalic, Bisphenol and Vinyl Ester polyesters. Each of these polyester resin systems are available in FIRE-RETARDANT grades.

PRODUCTION CAPABILITIES..
...the "dependable"

Beverly Pacific specializes in "CORROSION CONTROL THRU ENGINEERING", utilizing the unexcelled characteristics of Fiberglass Reinforced Plastic (FRP) materials in the design, fabrication and installion of industrial exhaust systems, component equipment and services requiring a high degree of corrosion resistance and exhaust emission contaminate removal.

The fabrication of standard or custom designed hoods, ducts, fittings, exhaust fans, fume scrubbers and washers, and exhaust stacks is one of the many services we offer to the metal plating, anodizing, chem-milling, petro-chemical and chemical processing industries.

1.0 SCOPE OF SPECIFICATIONS

1.1 This specification describes the materials of construction, procedures and physical properties that Beverly Pacific employs in the fabrication of Fiberglass Reinforced Plastic (FRP) equipment, utilizing hand lay-up and spray-up methods of construction, in compliance with the N.B.S. Voluntary Product Standard PS 15-69 for "Custom Contact-Molded Reinforced Polyester Chemical Resistant Process Equipment" issued by the U.S. Department of Commerce.

1.2 This standard is not intended to cover the selection of the exact resin of fiberglass reinforcement combination for any specific application. The specific resin selection is to be accomplished with the aid of the resin manufacturers' corrosion charts and/or recommendations made by their technical service departments.

2.0 GENERAL LAMINATE CONSTRUCTION

2.1 The FRP laminate shall consist of an inner surface, an interior layer, a structural layer and an exterior surface layer.

2.2 The compositions specified for the inner surface and the interior layer are intended to achieve optimum chemical resistance. This portion of the laminate is referred to as the "corrosion barrier".

2.3 The use of a premium grade chemical resistant resin throughout the laminate, or the use of a premium grade resin for the "corrosion barrier" in combination with an isophthalic resin for the structural layer, shall be agreed upon with the purchaser. This agreement shall be as specified on the request for quotation, our proposal, your acknowledgement and/or the drawings submitted for approval.

2.4 *The laminate surface shall have a Barcol hardness of at least 90 percent of the resin manufacturers' minimum specification.*

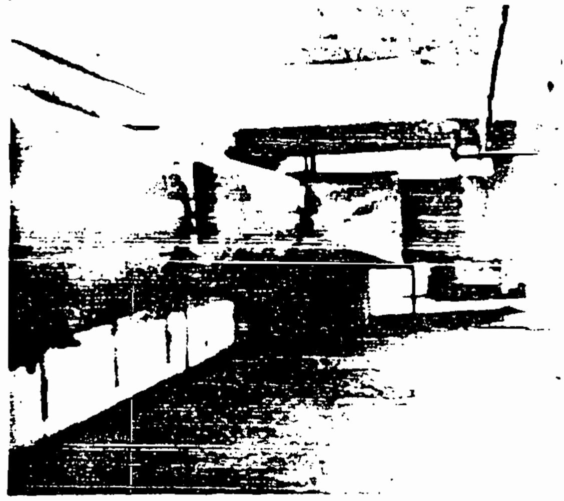
3.0 *HAND LAY-UP AND SPRAY-UP LAMINATE CONSTRUCTION*

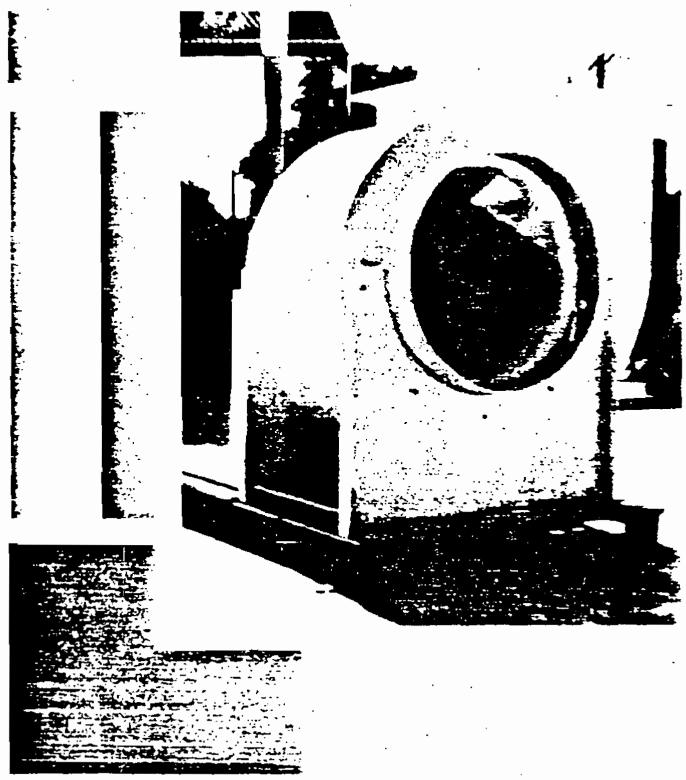
3.1 *INNER SURFACE: The inner surface resin shall be between 0.010 and 0.020 inches thick and be reinforced with glass or synthetic surfacing veil, depending on the chemical environment. This surface shall be free of cracks and crazing, having an average of not more than two (2) pits per square foot, providing these pits are less than 1/8" in diameter and not more than 1/32" deep. All pits must be covered with sufficient resin to prevent exposure of inner surface reinforcement.*

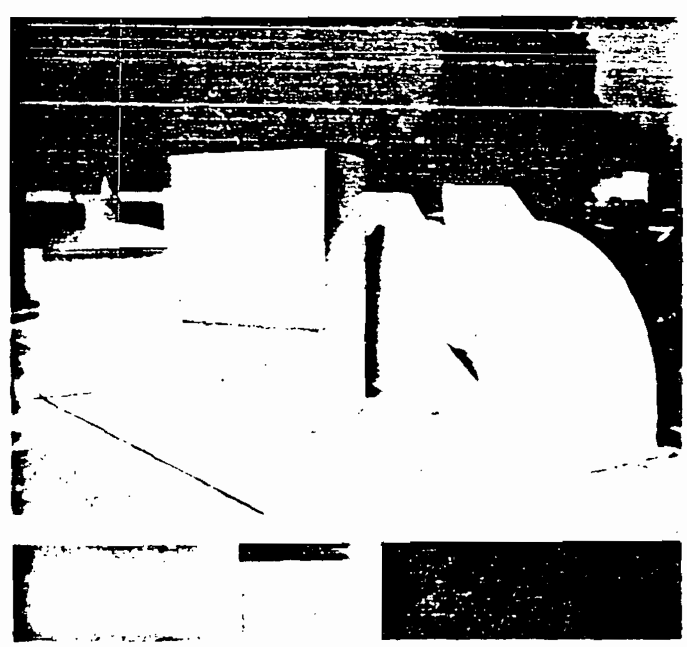
3.2 *INTERIOR LAYER: A minimum of 0.100 inch of laminate next to the inner surface shall be reinforced with not less than twenty (20) percent nor more than thirty (30) percent by weight of noncontinuous glass (chopped strand) fibers, having fiber lengths of 0.5 to 2.0 inches.*

3.3 *STRUCTURAL LAYER: The structural layer of the laminate shall provide the additional strength necessary to meet the tensile and flexural requirements. Where separate layers such as mat or woven roving are used, all layers shall be lapped a minimum of one (1) inch. Laps shall be staggered as much as possible and if woven roving is used, alternate layers of chopped strand glass shall be used.*

3.4 *EXTERIOR LAYER: The exterior surface shall be relatively smooth with no exposed fibers or sharp projections. Hand-work finish is acceptable; however, a sufficient amount of resin shall be present to prevent fiber exposure. The final laminate shall be coated with a resin containing a paraffin surfacing agent to achieve a fully cured exterior surface.*







4.0 MATERIALS OF CONSTRUCTION

4.1 RESIN: The resin used shall be of commercial grade and shall have had previous service history acceptable for the specific environment. Environment includes the nature of the chemical, the concentration and the service temperature.

4.2 FILLERS AND PIGMENTS: The resins used shall not contain fillers or pigments except when required as follows:

a. Up to 5% thixotropic agent which will not interfere with visual inspection may be added for viscosity control.

b. Antimony compounds or other fire-retardant agents may be added to improve fire resistance at the request of the purchaser.

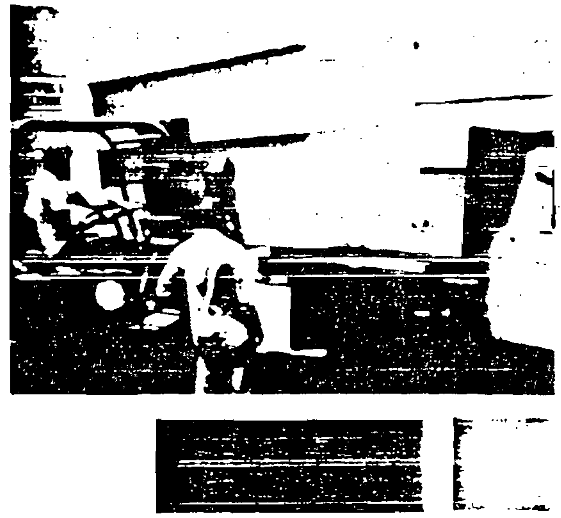
c. Ultraviolet absorbers and/or pigments shall be added to final resin coating on the exterior surface to improve weather resistance.

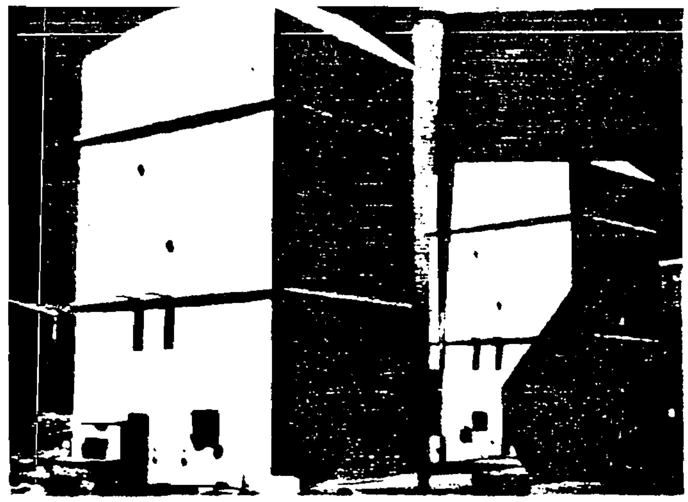
d. To insure a tack-free, fully cured, corrosion-resistant surface, up to 0.6 percent of paraffin wax, by weight, must be added to the final resin coat.

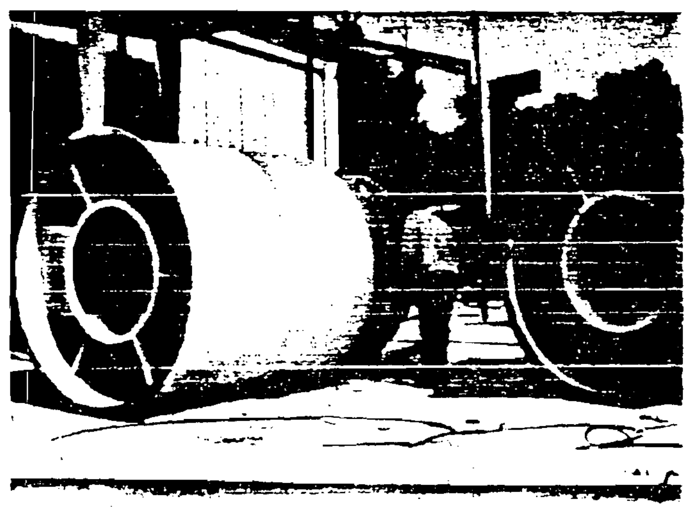
4.3 SURFACE REINFORCEMENT: The glass fiber reinforcement used on surfaces exposed to chemical environment shall be Type "C" monofilament surfacing veil, having a thickness of 10 to 20 mils, a silane finish and a styrene soluble binder.

4.4 OPTIONAL SURFACE REINFORCEMENT: Where the chemical environment would attach glass fibers, synthetic surfacing materials such as acrylic, polyester, asbestos or other organic fiber may be used, as agreed upon by Beverly Pacific and the purchaser.

4.5 CHOPPED STRAND MAT REINFORCEMENT: Chopped strand glass mat used for reinforcement shall be Type "E" glass, 1½ oz. per square foot, having a silane finish and a soluble binder.



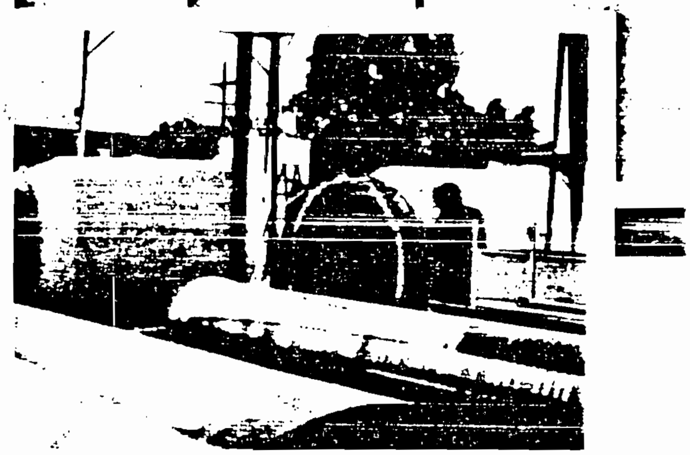


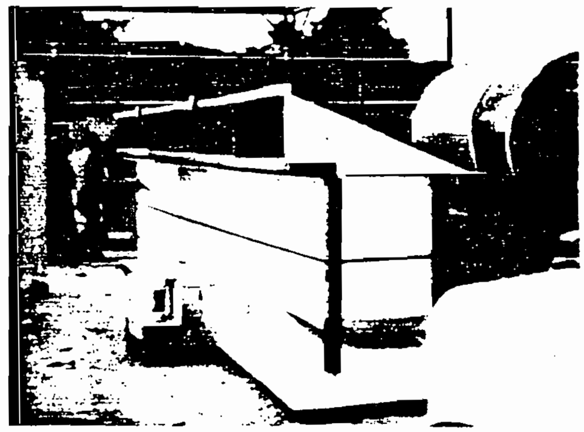


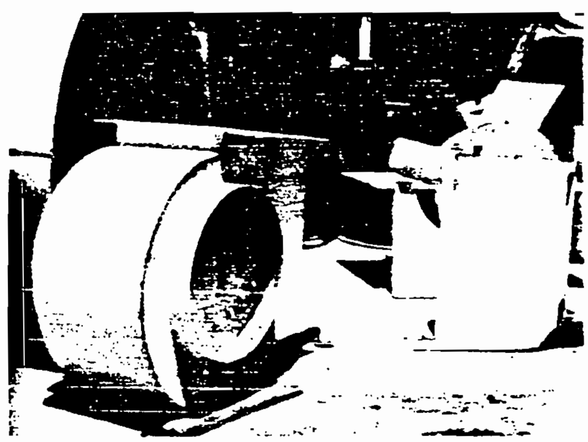
WOVEN ROVING REINFORCEMENT: Woven roving used for additional structural reinforcement shall be 60 end, Type "E" glass, having a silane finish.

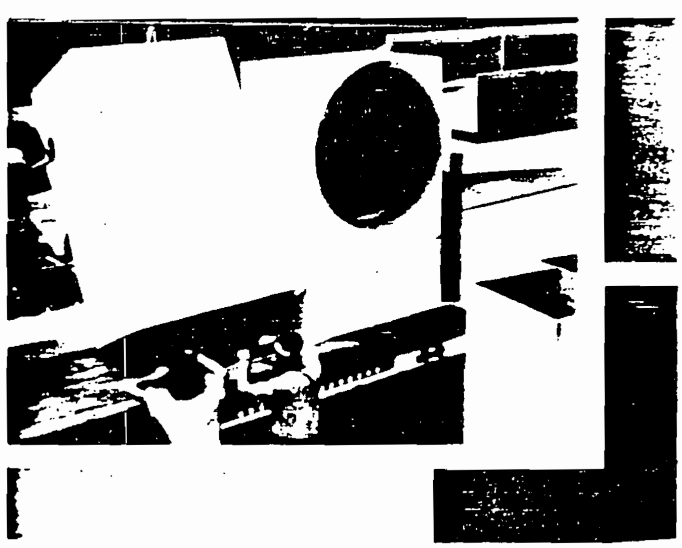
4.7 *GUN ROVING REINFORCEMENT: Continuous gun roving used in chopper gun spray-up shall be 60 end, Type "E" glass having a silane or chrome-silane finish.*

NOTE *As stated in Paragraph 1.1 of these specifications, Beverly Pacific's standard methods of construction comply with PS15-69; however, as evidence of our industry leadership, up-graded modifications of this quality standard have been utilized by Beverly Pacific for years. At the time of this printing, it is our understanding that such up-graded modifications are to be standardized by proposed ASTM Product Standards for the corrosion-resistant equipment manufacturing industry.*









CENTRIFUGAL CAPACITY RATING TABLES

CB-22

WHEEL 22¼" DIA
INLET 24½" DIA

CLASS	MAX RPM
I	1335
II	2040

Volume of air	¼" S.P.		½" S.P.		1" S.P.		1½" S.P.		2" S.P.		2½" S.P.		3" S.P.		3½" S.P.		4" S.P.		4½" S.P.		5" S.P.		5½" S.P.		6" S.P.	
2264	439	.15	538	0.26																						
2547	465	.19	557	0.30	732	0.61																				
2830	500	.22	581	0.35	738	0.66																				
3113	532	.27	611	0.41	753	0.72	899	1.12																		
3396	565	.32	642	0.47	776	0.79	902	1.19																		
3679	598	.38	672	0.54	796	0.87	914	1.27																		
3962	632	.44	703	0.62	818	0.97	935	1.37																		
4245	666	.52	735	0.71	849	1.08	956	1.48																		
4528	702	.60	768	0.80	879	1.20	977	1.61	1077	2.09	1163	2.63														
4811	738	.69	800	0.90	908	1.34	999	1.76	1098	2.23	1184	2.78	1273	3.37	1373	4.00										
5094	775	.79	833	1.02	938	1.48	1028	1.92	1117	2.40	1206	2.94	1284	3.54	1375	4.18										
5377	811	.90	867	1.15	970	1.63	1058	2.09	1139	2.68	1228	3.12	1304	3.72	1386	4.37	1470	5.06								
5660	848	1.03	901	1.28	1001	1.79	1088	2.29	1164	2.78	1247	3.32	1329	3.92	1401	4.57	1473	5.27	1559	6.01						
5943	885	1.17	936	1.43	1034	1.96	1118	2.49	1194	3.00	1268	3.55	1349	4.14	1421	4.80	1489	5.50	1561	6.23	1644	7.01				
6226	923	1.32	970	1.59	1066	2.14	1148	2.70	1292	3.24	1292	3.80	1368	4.39	1443	5.04	1508	5.75	1572	6.49	1646	7.27	1724	8.08		
6509	960	1.48	1006	1.76	1039	2.34	1180	2.83	1253	3.50	1321	4.06	1389	4.67	1463	5.31	1531	6.01	1593	6.76	1653	7.55	1728	8.36	1800	9.21
6792	999	1.64	1042	1.94	1130	2.55	1211	3.16	1283	3.77	1351	4.35	1414	4.96	1483	5.61	1553	6.30	1613	7.06	1676	7.84	1733	8.67	1803	9.52
7075	1037	1.82	1079	2.14	1163	2.77	1243	3.41	1314	4.05	1381	4.65	1441	5.28	1504	5.93	1571	6.62	1637	7.37	1697	8.17	1753	8.98	1807	9.86
7358	1075	2.02	1116	2.35	1197	3.01	1275	3.67	1344	4.34	1410	4.98	1471	5.61	1528	6.28	1593	6.98	1657	7.71	1718	8.50	1774	9.34	1829	10.2
7641	1114	2.23	1152	2.59	1231	3.27	1308	3.95	1376	4.64	1440	5.32	1501	5.97	1557	6.65	1618	7.36	1677	8.09	1739	8.87	1797	9.71	1850	10.6
7924	1152	2.47	1189	2.82	1266	3.55	1340	4.24	1408	4.96	1470	5.67	1531	6.36	1587	7.04	1639	7.76	1699	8.50	1758	9.27	1818	10.1	1873	11.0
8207	1191	2.74	1226	3.11	1300	3.83	1372	4.55	1439	5.30	1501	6.04	1559	6.76	1616	7.45	1669	8.18	1722	8.94	1779	9.72	1837	10.6	1894	11.4
8490	1229	3.03	1263	3.40	1334	4.14	1404	4.88	1472	5.65	1533	6.41	1590	7.17	1646	7.90	1698	8.63	1747	9.40	1801	10.2	1857	11.0	1913	11.8
9056	1307	3.64	1338	4.01	1405	4.78	1472	5.59	1537	6.40	1596	7.22	1652	8.04	1705	8.84	1758	9.61	1808	10.4	1853	11.2	1904	12.0	1954	13.9
9622	1385	4.33	1415	4.66	1477	5.51	1540	6.39	1601	7.23	1661	8.09	1716	8.87	1766	9.64	1816	10.7	1866	11.6	1913	12.3	1958	13.2	2000	14.1
10188	1463	5.11	1492	5.34	1550	6.31	1611	7.21	1667	8.14	1726	9.05	1779	9.98	1830	10.9	1879	11.8	1925	12.7	1972	13.5	2016	14.4		

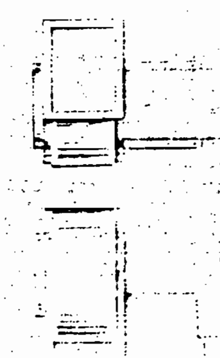
CB-24

WHEEL 24½" DIA
INLET 26" DIA

CLASS	MAX. RPM
I	1225
II	1835

Volume of air	¼" S.P.		½" S.P.		1" S.P.		1½" S.P.		2" S.P.		2½" S.P.		3" S.P.		3½" S.P.		4" S.P.		4½" S.P.		5" S.P.		5½" S.P.		6" S.P.	
2768	399	.18	489	0.32																						
3114	426	.22	506	0.36	665	0.73																				
3460	454	.27	528	0.42	686	0.80																				
3806	484	.32	556	0.49	684	0.87	816	1.36																		
4152	513	.39	583	0.57	705	0.95	819	1.44																		
4498	544	.46	610	0.66	723	1.06	830	1.54																		
4844	574	.54	639	0.75	743	1.16	849	1.66																		
5190	606	.63	668	0.86	771	1.31	868	1.80																		
5536	638	.72	698	0.97	798	1.46	887	1.95	979	2.53	1067	3.19														
5882	670	.83	727	1.10	825	1.62	908	2.13	987	2.71	1076	3.37	1156	4.09	1247	4.85										
6228	704	.96	757	1.23	852	1.79	934	2.33	1015	2.90	1096	3.56	1167	4.29	1249	5.07										
6574	737	1.10	788	1.39	881	1.97	962	2.54	1035	3.13	1116	3.78	1195	4.51	1259	5.30	1335	6.13								
6920	771	1.24	819	1.55	909	2.16	989	2.77	1058	3.37	1133	4.02	1207	4.76	1272	5.54	1337	6.39	1418	7.29						
7266	804	1.42	850	1.73	939	2.38	1015	3.02	1085	3.64	1152	4.30	1225	5.02	1291	5.82	1353	6.66	1417	7.56	1493	8.49				
7612	838	1.60	881	1.93	969	2.59	1043	3.28	1112	3.93	1174	4.60	1243	5.32	1310	6.11	1370	6.97	1428	7.86	1494	8.81	1566	9.79		
7958	873	1.79	914	2.13	998	2.83	1072	3.55	1139	4.24	1200	4.92	1262	5.66	1329	6.43	1391	7.29	1447	8.20	1502	9.15	1567	10.1	1635	11.1
8304	907	1.99	947	2.35	1027	3.09	1100	3.83	1165	4.56	1227	5.27	1284	6.01	1347	6.80	1411	7.64	1465	8.55	1522	9.50	1574	10.5	1638	11.6
8650	942	1.20	980	2.59	1057	3.36	1129	4.13	1193	4.90	1254	5.64	1309	6.40	1366	7.19	1427	8.02	1487	8.93	1541	9.90	1592	10.8	1641	11.8
8996	977	2.44	1014	2.85	1088	3.65	1158	4.45	1221	5.26	1281	6.04	1336	6.80	1387	7.61	1447	8.46	1505	9.34	1560	10.3	1611	11.3	1661	12.3
9342	1012	2.71	1047	3.13	1119	3.97	1188	4.78	1250	5.63	1308	6.45	1363	7.24	1414	8.06	1467	8.92	1523	9.80	1580	10.7	1632	11.7	1680	12.8
9688	1047	3.00	1080	3.42	1150	4.30	1218	5.14	1279	6.01	1336	6.87	1391	7.71	1441	8.53	1489	9.40	1543	10.3	1597	11.2	1651	12.2	1701	13.3
10034	1082	3.32	1114	3.76	1181	4.65	1246	5.52	1307	6.42	1363	7.32	1416	8.19	1468	9.03	1518	9.92	1564	10.8	1618	11.7	1669	12.7	1720	13.6
10380	1117	3.67	1148	4.12	1212	5.02	1275	5.91	1337	6.85	1392	7.77	1444	8.69	1495	9.57	1542	10.4	1586	11.4	1636	12.3	1686	13.3	1738	14.3
11072	1187	4.41	1216	4.86	1276	5.80	1337	6.77	1396	7.76	1449	8.75	1501	9.74	1549	10.7	1597	11.6	1642	12.5	1683	13.5	1730	14.6	1776	15.6
11764	1257	5.25	1285	5.65	1341	6.67	1399	7.74	1454	8.76	1509	9.81	1557	10.8	1604	11.9	1650	12.9	1695	13.9	1737	14.9	1778	15.9	1817	17.0
12456	1326	6.19	1355	6.47	1406	7.64	1463	8.73																		

CB-27



WHEEL 27" DIA
INLET 29¼" DIA

CLASS	MAX RPM
I	1315
II	1685

Volume of air	¼" S.P.		½" S.P.		1" S.P.		1½" S.P.		2" S.P.		2½" S.P.		3" S.P.		3½" S.P.		4" S.P.		4½" S.P.		5" S.P.		5½" S.P.		6" S.P.	
3376	362	.22	443	0.39																						
3798	386	.27	459	0.44	602	0.89																				
4220	411	.33	478	0.51	604	0.97																				
4642	438	.39	503	0.58	620	1.06	741	1.65																		
5064	466	.47	528	0.69	639	1.16	743	1.75																		
5486	493	.56	553	0.80	656	1.29	753	1.88																		
5908	521	.65	579	0.91	674	1.43	770	2.02																		
6330	549	.76	606	1.04	699	1.59	788	2.19																		
6752	579	.88	633	1.16	724	1.77	805	2.38	887	3.08	958	3.88														
7174	608	1.01	659	1.33	747	1.97	823	2.59	904	3.29	976	4.01	1048	4.80	1130	5.69										
7596	638	1.16	686	1.50	773	2.19	847	2.83	920	3.53	993	4.33	1058	5.21	1132	6.16										
8018	666	1.33	714	1.69	799	2.40	872	3.09	939	3.81	1011	4.60	1074	5.49	1142	6.44	1210	7.46								
8440	699	1.51	742	1.89	827	2.63	897	3.37	959	4.10	1027	4.89	1094	5.79	1154	6.74	1212	7.77	1284	8.85						
8862	729	1.72	771	2.11	851	2.89	921	3.67	983	4.43	1044	5.23	1111	6.10	1170	7.08	1226	8.10	1285	9.19	1354	10.3				
9284	760	1.94	799	2.34	876	3.15	946	3.96	1008	4.78	1064	5.60	1127	6.47	1188	7.43	1242	8.47	1298	9.56	1365	10.7	1420	11.6		
9705	791	2.18	829	2.59	905	3.44	972	4.31	1032	5.15	1088	5.99	1144	6.88	1206	7.82	1261	8.86	1212	9.96	1362	11.1	1421	12.3	1483	13.6
10128	822	2.42	859	2.86	931	3.75	998	4.65	1057	5.56	1113	6.41	1164	7.31	1221	8.28	1279	9.29	1329	10.4	1380	11.6	1427	12.7	1485	14.0
10550	854	2.68	889	3.15	958	4.08	1024	5.03	1082	5.86	1137	6.86	1187	7.78	1239	8.74	1294	9.75	1348	10.8	1398	12.0	1444	13.2	1489	14.6
10972	886	2.97	918	3.47	986	4.44	1051	5.41	1107	6.39	1161	7.34	1212	8.27	1257	9.28	1312	10.2	1365	11.4	1416	12.6	1462	13.7	1507	15.0
11394	917	3.29	949	3.81	1014	4.82	1078	5.82	1133	6.84	1186	7.84	1236	8.80	1283	9.80	1330	10.9	1381	11.9	1433	13.0	1480	14.3	1524	15.6
11816	949	3.65	979	4.16	1042	5.27	1104	6.26	1159	7.31	1211	8.35	1261	9.37	1307	10.3	1350	11.4	1399	12.6	1449	13.6	1498	14.9	1543	16.1
12238	981	4.04	1010	4.88	1071	5.66	1130	6.71	1185	7.81	1236	8.89	1284	9.96	1331	10.9	1374	12.0	1418	13.1	1466	14.3	1514	15.5	1560	16.9
12660	1012	4.46	1040	5.01	1128	6.10	1157	7.19	1212	8.33	1262	9.45	1309	10.5	1356	11.6	1399	12.7	1438	13.6	1484	15.0	1530	16.2	1576	17.4
13504	1076	5.36	1102	6.91	1157	7.06	1213	8.24	1266	9.43	1314	10.8	1361	11.6	1404	12.0	1448	14.1	1489	15.2	1527	16.5	1569	17.7	1610	18.0
14348	1140	6.28	1165	6.97	1216	8.11	1269	9.42	1319	10.6	1368	11.9	1412	13.2	1455	14.6	1496	15.7	1537	16.9	1576	18.2	1613	19.4	1648	20.7
15193	1205	7.63	1229	7.87	1277	9.39	1327	10.6	1373	12.0	1422	13.3	1466	14.7	1507	16.0	1547	17.4	1585	18.7	1626	20.0	1661	21.2		

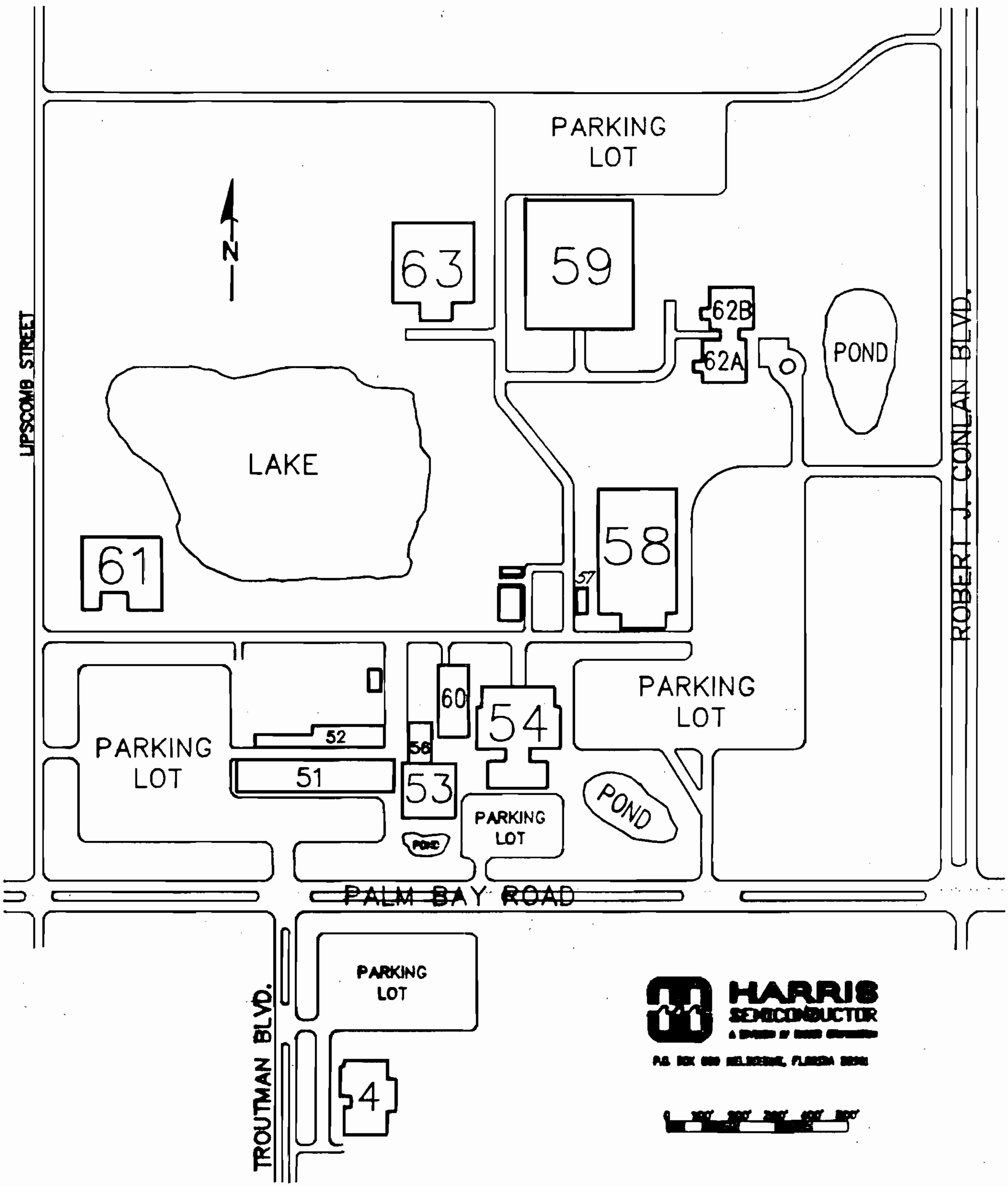
HARRIS SEMICONDUCTOR

B-54 Air Permit

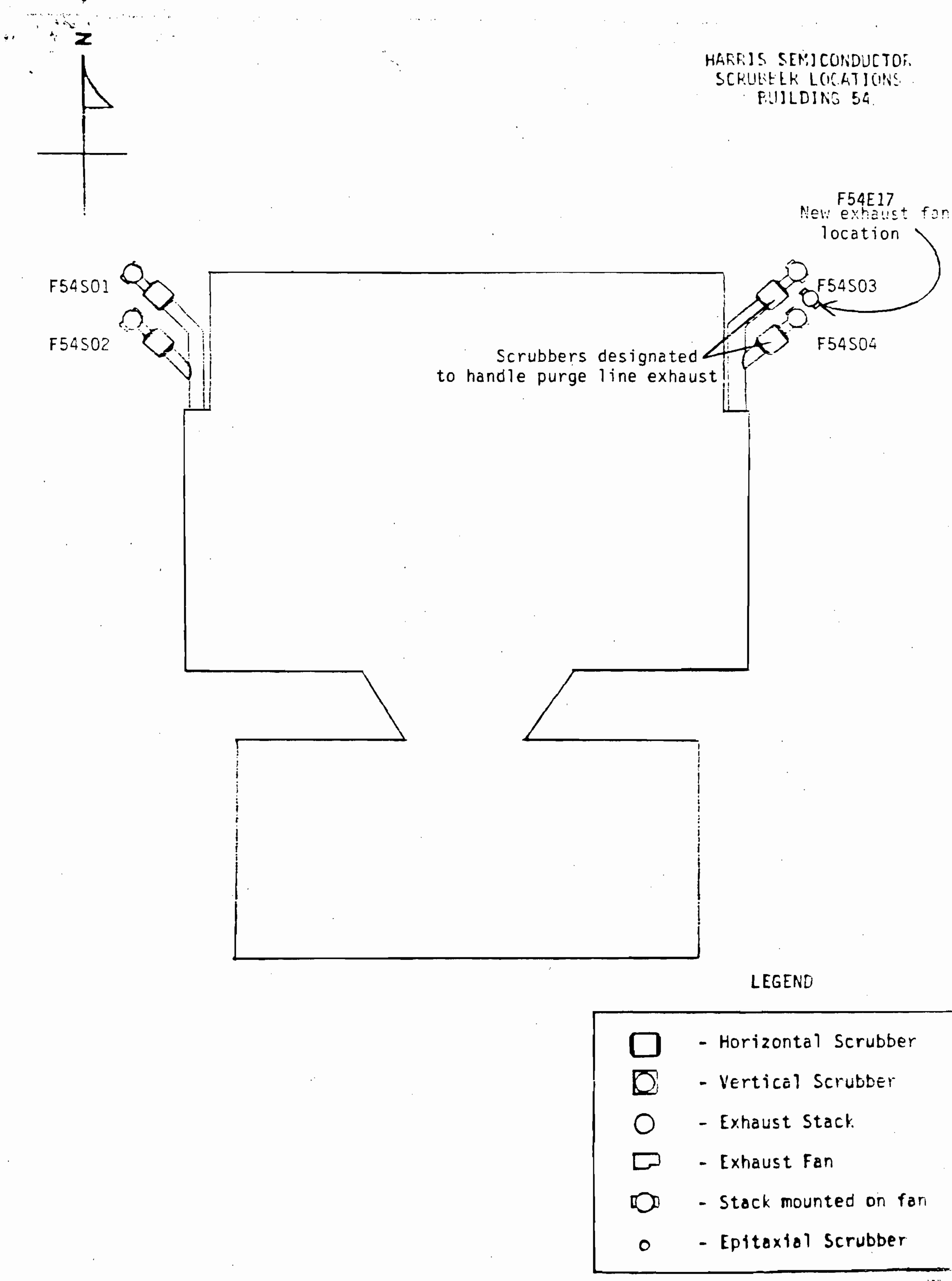
Consolidation

ATTACHMENT E

Maps



HARRIS
SEMICONDUCTOR



HARRIS SEMICONDUCTOR
SCRUBBER LOCATIONS
BUILDING 54
N
F54E17
New exhaust fan
location
F54S01
F54S02
F54S03
F54S04
Scrubbers designated
to handle purge line exhaust
LEGEND
- Horizontal Scrubber
- Vertical Scrubber
- Exhaust Stack
- Exhaust Fan
- Stack mounted on fan
- Epitaxial Scrubber