

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
NOTICE OF PERMIT

In the matter of an
Application for Permit by:

DER File No. AC 05-191641
Brevard County

Mr. Walter T. Murphy
Director of Engineering Development
John F. Kennedy Space Center
National Aeronautics & Space Administration
Kennedy Space Center, Florida 32899

Enclosed is Permit Number AC 05-191641 to construct a TPS Mixing Room at the Kennedy Space Center in Brevard County, Florida, issued pursuant to Section(s) 403, Florida Statutes.

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

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

f- Barry D. Ashman
C. H. Fancy, P.E., Chief
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400
904-488-1344

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this NOTICE OF PERMIT and all copies were mailed before the close of business on 9-26-91 to the listed persons.

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED,
on this date, pursuant to
§120.52(11), Florida Statutes,
with the designated Department
Clerk, receipt of which is hereby
acknowledged.

Kay Toker
(Clerk)

9-26-91
(Date)

Copies furnished to:
C. Collins, Central Dist.
D. Buff, P.E.

Final Determination

National Aeronautics and Space Administration
Brevard County
Kennedy Space Center, Florida

TPS Mixing Room

Permit Number: AC 05-191641

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

September 25, 1991

Final Determination

The Technical Evaluation and Preliminary Determination for the permit to construct a TPS Mixing Room in the manufacturing building at the National Aeronautics and Space Administration's facility in Brevard County, Florida, was distributed on April 18, 1991. The Notice of Intent to Issue was published in Florida Today on August 13, 1991. Copies of the evaluation were available for public inspection at the Department's Tallahassee and Orlando offices.

No comments were submitted on the Department's Intent to Issue the permit. The final action of the Department will be to issue construction permit AC 05-191641 as proposed in the Technical Evaluation and Preliminary Determination.



Florida Department of Environmental Regulation

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

Lawton Chiles, Governor

Carol M. Browner, Secretary

PERMITTEE:
National Aeronautics &
Space Administration
Kennedy Space Center, FL
32899

Permit Number: AC 05-191641
Expiration Date: July 31, 1992
County: Brevard
Latitude/Longitude: 28°33'43"N
80°39'36"W
Project: Thermal Protection
System (TPS) Mixing Room

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

For the construction of a TPS Mixing Room in the manufacturing building, located at the intersection of Schwartz Road and Kennedy Parkway, KSC, in Brevard County, Florida.

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

Attachments are listed below:

1. Application received on January 22, 1991.

PERMITTEE:
Kennedy Space Center

Permit Number: AC 05-191641
Expiration Date: July 31, 1992

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.141, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

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

3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

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

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

PERMITTEE:
Kennedy Space Center

Permit Number: AC 05-191641
Expiration Date: July 31, 1992

GENERAL CONDITIONS:

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

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

- a. Have access to and copy any records that must be kept under the conditions of the permit;
- b. Inspect the facility, equipment, practices, or operations regulated or required under this permit; and
- c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

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

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

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

PERMITTEE:
Kennedy Space Center

Permit Number: AC 05-191641
Expiration Date: July 31, 1992

GENERAL CONDITIONS:

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

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

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

11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 17-4.120 and 17-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

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

13. The permittee shall comply with the following:

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

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

PERMITTEE:
Kennedy Space Center

Permit Number: AC 05-191641
Expiration Date: July 31, 1992

GENERAL CONDITIONS:

report, or application unless otherwise specified by Department rule.

c. Records of monitoring information shall include:

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

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

SPECIFIC CONDITIONS:

1. The construction and operation of this source shall be in accordance with the capacities and specifications stated in the application.

2. The TPS mixing room shall be allowed to operate for up to 8,760 hours per year.

3. Hydrocarbon emissions (VOC) shall not exceed the following calculated values, and total VOC emissions from the source shall not exceed 19.0 lbs/day (rolling 90-day average) and 3.46 tons/year. Compliance shall be demonstrated by applying the following raw material utilization rates and VOC content factors:

PERMITTEE:
Kennedy Space Center

Permit Number: AC 05-191641
Expiration Date: July 31, 1992

| Raw Material/ Chemical | Utilization Rate (lbs/day) | VOC (% by wt.) | VOC Emissions (lbs/day) |
|---------------------------|----------------------------------|-------------------|-------------------------------|
| BTA Mixing/Application: | | | |
| 1,1,1-Trichloroethane | 7.24 | 100 | 7.24 |
| BTA Molding: | | | |
| Plastilease 512B | 0.51 | 92 | 0.47 |
| Partall Paste #2 | 0.12 | 26 | 0.03 |
| Partall Film #10 | 0.73 | 15 | 0.11 |
| K5NA Mixing/Application: | | | |
| K5NA Hardener | 93.00 | 1 | 0.93 |
| K5NA Resin | 69.00 | 1 | 0.69 |
| MTA-2 Mixing/Application: | | | |
| LP-3 | 1.50 | 0.2 | 0.003 |
| Shell EPON Cure Agent Z | 0.60 | 1 | 0.006 |
| Tin Octoate | 0.10 | 1 | 0.001 |
| Perchloroethylene | 8.91 | 100 | 8.91 |
| MTA-2 Molding: | | | |
| Plastilease 512B | 0.51 | 92 | 0.47 |
| Partall Paste #2 | 0.12 | 26 | 0.03 |
| Partall Film #10 | 0.73 | 15 | 0.11 |
| TOTAL: | | 183.07 | 19.00 |

Other raw materials may be used if prior approval is obtained from the Bureau of Air Regulation and if the total VOC emissions do not exceed limits listed above.

4. Compliance with the VOC limits in Specific Condition No. 3 shall be determined by EPA Method 24, Determination of Volatile Matter Content, 40 CFR 60, Appendix A, adopted by reference in F.A.C. Rule 17-2.700. The manufacturer's stated VOC content shall be acceptable for the compliance evaluation if determined by EPA Method 24.

5. No objectionable odors shall be allowed from the TPS Mixing Room.

6. Visible emissions from the TPS Mixing Room shall not exceed 5% opacity. Compliance shall be determined in accordance with DER Method 9.

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

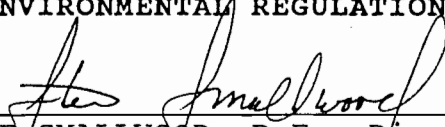
PERMITTEE:
Kennedy Space Center

Permit Number: AC 05-191641
Expiration Date: July 31, 1992

8. An application for an operation permit must be submitted to the Central District office at least 90 days prior to the expiration date of this construction permit or within 45 days after completion of compliance testing, whichever occurs first. To properly apply for an operation permit, the applicant shall submit the appropriate application form, fee, certification that construction was completed noting any deviations from the conditions in the construction permit, and compliance test reports as required by this permit (F.A.C. Rule 17-2.220).

Issued this 26th day
of September, 1991

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION



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



State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

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

Interoffice Memorandum

TO: Steve Smallwood

FROM: Clair Fancy *CF*

DATE: September 25, 1991

SUBJ: Approval of Construction Permit AC 05-191641
NASA-Kennedy Space Center

Attached for your approval and signature is a permit prepared by the Bureau of Air Regulation for the above mentioned agency to construct a TPS Mixing Room at the Kennedy Space Center in Brevard County, Florida.

No comments were received during the public notice period.

I recommend your approval and signature.

CF/JR/plm

Attachments

CHF
1

SC# 3:

why a 90 day rolling average -- why not daily or monthly?
"Department"

BAP or c Dist?

JS
9-23-91

STEVE: 9-23

1 THE REASON FOR THE 90-DAY AVERAGE IS THAT THE SPACE SHUTTLE FLIGHTS PER MONTH VARY CONSIDERABLY. EPA GUIDANCE ON THIS ALLOWS US TO USE 90-DAY AVERAGES FOR SPECIAL CASES.

What is day 90?

4/21/91

2 FOR SOME TIME NOW WE HAVE NOT INCLUDED THE REFERENCE TO DAY 90 IN THE COVER LETTER SINCE OGC DETERMINED THAT ISSUING THE INTENT SATISFIES THE 90-DAY CLOCK. OK CPL 9/24/91

OK

Thank you.

JS
9-26-91

CAPE PUBLICATIONS, INC.

The Times

Published Weekly on Wednesday

THE TRIBUNE

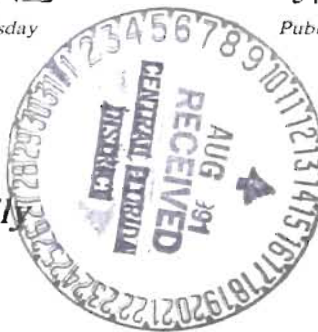
Published Weekly on Wednesday

STAR

Published



Published Daily



RECEIVED

AUG 23 1991

STATE OF FLORIDA
COUNTY OF BREVARD
Bureau of
Air Regulation

Before the undersigned authority personally appeared Cynthia Frith who on

oath says that he/she is Legal Advertising Clerk

of the FLORIDA TODAY, a newspaper published in Brevard County,

Florida; that the attached copy of advertising being a

Legal Notice

_____ in the matter of _____

TPS Mixing Room

_____ in the _____ Court

was published in the FLORIDA TODAY NEWSPAPER

in the issues of August 13, 1991

Affiant further says that the said FLORIDA TODAY NEWSPAPER

is a newspaper published in said Brevard County, Florida and that the said newspaper has

heretofore been continuously published in said Brevard County, Florida regularly as stated above,

and has been entered as second class mail matter at the post office in COCOA,

said Brevard County, Florida for a period of one year next preceeding the first publication of the

attached copy of advertisement; and affiant further says that he has neither paid nor promised any

person, firm or corporation any discount, rebate, commission or refund for the purpose of securing

this advertisement for publication in said newspaper.

Cynthia Frith

Sworn and subscribed to before me this

13 day of August A.D., 1991

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



State of Florida
Department of
Environmental Regulation
Notice of Intent to Issue
The Department of Environmental Regulation hereby gives notice of its intent to issue a permit to NASA-Kennedy Space Center to construct a Thermal Protection System (TPS) Mixing Room at the Kennedy Space Center, Schwarz Road and Kennedy Parkway in Brevard County, Florida. A determination of Best Available Control Technology (BACT) was not required. The Department is issuing this intent to issue for the reasons stated in the Technical Evaluation and Preliminary Determination.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within fourteen (14) days of publication of this notice. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

The petition shall contain the following information:

- (a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;
- (b) A statement of how and when each petitioner received notice of the Department's action or proposed action;
- (c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;
- (d) A statement of the material facts disputed by Petitioner, if any;
- (e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;
- (f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and
- (g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

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

The application is available for public inspection during business hours, 8:00 a.m. to 5:04 p.m., Monday through Friday, except legal holidays, at:
Department of Environmental Regulation
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Department of Environmental Regulation
Central District
3319 Maguire Blvd., Suite 13E
Orlando, Florida 32803-3767

Any person may send written comments on the proposed action to Mr. Barry Andrews at the Department's Tallahassee address. All comments mailed within 14 days of the publication of this notice will be considered in the Department's final determination.
T0107041-1T-9/13, 1991, Tuesday

Department of Environmental Regulation
Routing and Transmittal Slip

To: (Name, Office, Location)

1. John Reynolds
2. Bureau of Air Regulation
- 3.
- 4.

Remarks:

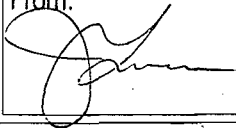
FYI
Needs PATS entry.

RECEIVED

AUG 23 1991

**Division of Air
Resources Management**

From:



Date

8/20/91

Phone:

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. Walter T. Murphy Director of Engineering Dev. John F. Kennedy Space Center National Aeronautics & Space Administration Kennedy Space Center, FL 32899 | 4. Article Number P 407 852 664 |
| Type of Service: <input type="checkbox"/> Registered <input type="checkbox"/> Insured <input checked="" type="checkbox"/> Certified <input type="checkbox"/> COB <input type="checkbox"/> Express Mail <input type="checkbox"/> Return Receipt for Merchandise | |
| Always obtain signature of addressee or agent and DATE DELIVERED. | |
| 5. Signature — Addressee X | 8. Addressee's Address (ONLY if requested and fee paid) DER-BAQM |
| 6. Signature — Agent X <i>[Signature]</i> | |
| 7. Date of Delivery APR 22 1991 | |

PS Form 3811, Apr. 1989

*U.S.G.P.O. 1989-238-815

DOMESTIC RETURN RECEIPT

P 407 852 664

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED
 NOT FOR INTERNATIONAL MAIL

(See Reverse)

| | | |
|--|---|----|
| U.S.G.P.O. 1989-234-555 PS Form 3800, June 1985 | Sent to Mr. Walter T. Murphy, NASA | |
| | Street and No. Kennedy Space Center | |
| | P.O., State and ZIP Code FL 32899 | |
| | 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: 4-18-91 Permit: AC 05-191641 | | |



Florida Department of Environmental Regulation

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

Lawton Chiles, Governor

Carol M. Browner, Secretary

April 18, 1991

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. Walter T. Murphy
Director of Engineering Development
John F. Kennedy Space Center
National Aeronautics & Space Admin.
Kennedy Space Center, FL 32899

Dear Mr. Murphy:

Attached is one copy of the Technical Evaluation and Preliminary Determination and proposed permit for NASA to construct a TPS Mixing Room at the Kennedy Space Center, Brevard County, Florida.

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

Sincerely,

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

CHF/JR/kt

Attachments

c: C. Collins, Central District
D. Buff, P.E.

BEFORE THE STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

In the Matter of
Application for Permit by:

National Aeronautics & Space
Administration
John F. Kennedy Space Center
Kennedy Space Center, FL 32899

DER File No. AC 05-191641

INTENT TO ISSUE

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

The applicant, NASA-Kennedy Space Center, applied on January 22, 1991, to the Department of Environmental Regulation for a permit to construct a Thermal Protection System (TPS) Mixing Room in the manufacturing building at the Kennedy Space Center, Brevard County.

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

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

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

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Petitions filed by the permit applicant and the parties listed below must be filed within 14 days of receipt of this intent. Petitions filed by other persons must be filed within 14 days of publication of the public notice or within 14 days of receipt of this intent, whichever first occurs. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

The Petition shall contain the following information;

- (a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;
- (b) A statement of how and when each petitioner received notice of the Department's action or proposed action;
- (c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;
- (d) A statement of the material facts disputed by Petitioner, if any;
- (e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;
- (f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and
- (g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the application(s) have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the

Office in General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

Barry D. Anders

for C. H. Fancy, P.E.

Chief

Bureau of Air Regulation

Copies furnished to:

C. Collins, Central District

D. Buff, P.E.

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this NOTICE OF INTENT TO ISSUE and all copies were mailed before the close of business on 4/18/91.

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

Keri Jober
Clerk

4/18/91
Date

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

The Department of Environmental Regulation hereby gives notice of its intent to issue a permit to NASA-Kennedy Space Center to construct a Thermal Protection System (TPS) Mixing Room at the Kennedy Space Center, Schwartz Road and Kennedy Parkway in Brevard County, Florida. A determination of Best Available Control Technology (BACT) was not required. The Department is issuing this Intent to Issue for the reasons stated in the Technical Evaluation and Preliminary Determination.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within fourteen (14) days of publication of this notice. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

The Petition shall contain the following information:

- (a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;
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- (c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;
- (d) A statement of the material facts disputed by Petitioner, if any;
- (e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;
- (f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and

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

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

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

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

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

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

Technical Evaluation
and
Preliminary Determination

National Aeronautics and Space Administration
Brevard County
Kennedy Space Center, Florida

TPS Mixing Room

Permit Number: AC 05-191641

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

April 18, 1991

I. Applicant Information

National Aeronautics and Space Administration
John F. Kennedy Space Center
Kennedy Space Center, Florida 32899

II. Source Information

A. Location

The proposed source will be located at the intersection of Schwartz Road and Kennedy Parkway, at the Kennedy Space Center, in Brevard County, Florida. The latitude and longitude are 28° 33' 43" North and 80° 39' 36" West, respectively.

B. Standard Industrial Classification Code (SIC)

Group No. 966, Space Research and Technology
Industry No. 9661, Space Research and Technology

C. Category

The Department received a complete application on January 22, 1991, for construction of a Thermal Protection System (TPS) mixing room. The proposed project will constitute a minor modification of a major emitting facility for volatile organic compounds.

This facility category is not in the list of the 28 Major Facility Categories, Table 500.1, Chapter 17-2, Florida Administrative Code.

III. Project Description/Emissions

The proposed project involves construction of a TPS mixing room within the TPS finish area of the Space Shuttle Solid Rocket Booster (SRB) Assembly and Refurbishment Facility. The room will be located within the manufacturing building at Kennedy Space Center. The purpose of the TPS closeout process is to apply insulation to small parts not insulated with the sprayable ablative but rather with Marshall Trowelable Ablative-2 (MTA-2) and K5NA. MTA-2 is hand troweled or molded (wet lay-up molding process) instead of sprayed onto the structures. Fresh mixed materials will be extruded to a mold followed by either pressing the part into the mold or by pressing the mold over the part. The mold is removed after curing and the part is deflashed by hand.

The process includes the MTA-2 mixing/application, MTA-2 molding, and K5NA application operations. These operations are conducted in the TPS finish area. The existing MTA-2 and K5NA mixers and associated closeout equipment will be relocated to the new enclosed TPS mixing room. Also, a BTA (booster trowelable ablative)

mixer will be located in the room. BTA is the next generation of trowelable ablative that will begin to replace the MTA-2 and K5NA and will completely replace these compounds by 1991.

Specific Condition No. 3 presents the maximum future usage rates of BTA, K5NA, and MTA-2. Also shown are the volatile organic compound (VOC) content and VOC emissions as a result of using these compounds. The total allowable VOC emissions will increase from 0.95 tons per year (TPY) to 3.46 TPY. Therefore, total permitted VOC emissions will increase by 2.5 TPY due to this project. Since the K5NA and MTA-2 eventually will be phased out, maximum VOC will be only 1.426 TPY when BTA is in full use. This will represent only a 0.472 TPY increase above the current permitted level.

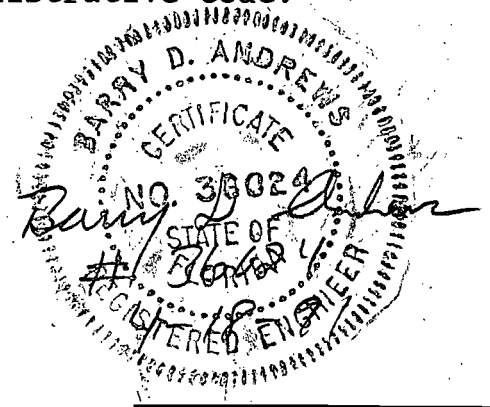
The new mix room will contain a fume exhaust hood for ventilation. The vent system will contain a cartridge filter for removal of particulate emissions. The particulate removal efficiency is estimated at 30 percent. Particulate emissions from the new mix room will be generated by the loading of the solids (ground cork, K5NA filler, and phenolic microballoons). It is estimated that 1 percent of these materials will become airborne as a result of the loading process. Particulate emissions are estimated at 0.032 TPY.

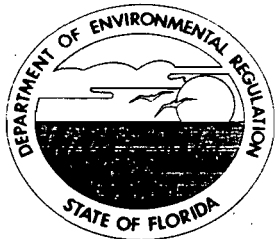
IV. Rule Applicability

The proposed project is subject to preconstruction review under the provisions of Chapter 403, Florida Statutes and Chapter 17-2, Florida Administrative Code (F.A.C.). The proposed source will be located in an area designated attainment for all criteria pollutants in accordance with F.A.C. Rule 17-2.140. The Kennedy Space Center is a major emitting facility for volatile organic compounds (VOC). This project is exempt from provisions of F.A.C. Rule 17-2.500, Prevention of Significant Deterioration. The proposed project shall be permitted under Rule 17-2.520, Sources Not Subject to Prevention of Significant Deterioration or Nonattainment Requirements. Applicable rules are F.A.C. Rule 17-2.610(2), General Particulate Emission Limiting Standards, and Rule 17-2.620(1) and (2), General Pollutant Emission Limiting Standards.

IV. Conclusion

Based on the information provided by Kennedy Space Center, the Department has reasonable assurance that the proposed project, as proposed herein, will not cause or contribute to a violation of an ambient air quality standard, PSD increment, or any other technical provisions of Chapter 17-2 of the Florida Administrative Code.





Florida Department of Environmental Regulation

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

Lawton Chiles, Governor

Carol M. Browner, Secretary

PERMITTEE:
National Aeronautics &
Space Administration
Kennedy Space Center, FL
32899

Permit Number: AC 05-191641
Expiration Date: July 31, 1992
County: Brevard
Latitude/Longitude: 28°33'43"N
80°39'36"W

Project: Thermal Protection
System (TPS) Mixing Room

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

For the construction of a TPS Mixing Room in the manufacturing building, located at the intersection of Schwartz Road and Kennedy Parkway, KSC, in Brevard County, Florida.

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

Attachments are listed below:

1. Application received on January 22, 1991.

PERMITTEE:
Kennedy Space Center

Permit Number: AC 05-191641
Expiration Date: July 31, 1992

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.141, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

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

3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

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

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

PERMITTEE:
Kennedy Space Center

Permit Number: AC 05-191641
Expiration Date: July 31, 1992

GENERAL CONDITIONS:

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

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

- a. Have access to and copy any records that must be kept under the conditions of the permit;
- b. Inspect the facility, equipment, practices, or operations regulated or required under this permit; and
- c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

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

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

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

PERMITTEE:
Kennedy Space Center

Permit Number: AC 05-191641
Expiration Date: July 31, 1992

GENERAL CONDITIONS:

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

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

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

11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 17-4.120 and 17-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

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

13. The permittee shall comply with the following:

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

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

PERMITTEE:
Kennedy Space Center

Permit Number: AC 05-191641
Expiration Date: July 31, 1992

GENERAL CONDITIONS:

report, or application unless otherwise specified by Department rule.

c. Records of monitoring information shall include:

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

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

SPECIFIC CONDITIONS:

1. The construction and operation of this source shall be in accordance with the capacities and specifications stated in the application.

2. The TPS mixing room shall be allowed to operate for up to 8,760 hours per year.

3. Hydrocarbon emissions (VOC) shall not exceed the following calculated values, and total VOC emissions from the source shall not exceed 19.0 lbs/day (rolling 90-day average) and 3.46 tons/year. Compliance shall be demonstrated by applying the following raw material utilization rates and VOC content factors:

PERMITTEE:
Kennedy Space Center

Permit Number: AC 05-191641
Expiration Date: July 31, 1992

| Raw Material/ Chemical | Utilization Rate (lbs/day) | VOC (% by wt.) | VOC Emissions (lbs/day) |
|---------------------------|----------------------------------|-------------------|-------------------------------|
| BTA Mixing/Application: | | | |
| 1,1,1-Trichloroethane | 7.24 | 100 | 7.24 |
| BTA Molding: | | | |
| Plastilease 512B | 0.51 | 92 | 0.47 |
| Partall Paste #2 | 0.12 | 26 | 0.03 |
| Partall Film #10 | 0.73 | 15 | 0.11 |
| K5NA Mixing/Application: | | | |
| K5NA Hardener | 93.00 | 1 | 0.93 |
| K5NA Resin | 69.00 | 1 | 0.69 |
| MTA-2 Mixing/Application: | | | |
| LP-3 | 1.50 | 0.2 | 0.003 |
| Shell EPON Cure Agent Z | 0.60 | 1 | 0.006 |
| Tin Octoate | 0.10 | 1 | 0.001 |
| Perchloroethylene | 8.91 | 100 | 8.91 |
| MTA-2 Molding: | | | |
| Plastilease 512B | 0.51 | 92 | 0.47 |
| Partall Paste #2 | 0.12 | 26 | 0.03 |
| Partall Film #10 | 0.73 | 15 | 0.11 |
| TOTAL: | | 183.07 | 19.00 |

Other raw materials may be used if prior approval is obtained from the Department and if the total VOC emissions do not exceed the limits listed above.

4. Compliance with the VOC limits in Specific Condition No. 3 shall be determined by EPA Method 24, Determination of Volatile Matter Content, 40 CFR 60, Appendix A, adopted by reference in F.A.C. Rule 17-2.700. The manufacturer's stated VOC content shall be acceptable for the compliance evaluation if determined by EPA Method 24.

5. No objectionable odors shall be allowed from the TPS Mixing Room.

6. Visible emissions from the TPS Mixing Room shall not exceed 5% opacity. Compliance shall be determined in accordance with DER Method 9.

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

PERMITTEE:
Kennedy Space Center

Permit Number: AC 05-191641
Expiration Date: July 31, 1992

8. An application for an operation permit must be submitted to the Central District office at least 90 days prior to the expiration date of this construction permit or within 45 days after completion of compliance testing, whichever occurs first. To properly apply for an operation permit, the applicant shall submit the appropriate application form, fee, certification that construction was completed noting any deviations from the conditions in the construction permit, and compliance test reports as required by this permit (F.A.C. Rule 17-2.220).

Issued this _____ day
of _____, 1991

**STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION**

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

John F. Kennedy Space Center
Kennedy Space Center, Florida 32899

Reply to Attn of

JAN 17 1991

DF-EMS

Florida Dept. of Environmental Regulation
Attn: Mr. Claire Fancy
Twin Towers Office Bldg.
2600 Blair Stone Road
Tallahassee, FL 32302

SUBJECT: Air Source Construction Permit Application for the TPS
Mixing Room at the Solid Rocket Booster Assembly and Refur-
bishment Facility, Kennedy Space Center

Enclosed is an air pollution permit application (4 copies) for the
construction of the TPS Mixing Room, located at the subject facility
and a \$200.00 check for permit application processing fees.

Please address any question regarding this application to Mr. Mario
Busacca at (407) 867-4049.

Walter T. Murphy
Walter T. Murphy

Director of Engineering Development

Enclosures

cc:
USBI-SF/C. Venuto

RECEIVED
DER - MAIL ROOM
1991 JAN 22 AM 9:57

001031



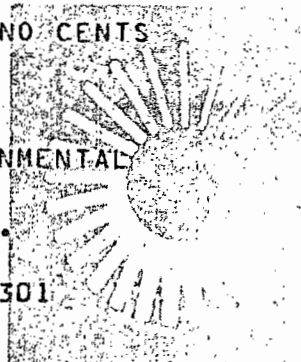
USBI
P.O. Box 21212
Kennedy Space Center, Florida 32815

CHECK NO.
081755

081755

TWO HUNDRED DOLLARS NO CENTS

PAY TO THE ORDER OF
FLORIDA DEPT. OF ENVIRONMENTAL
REGULATION
TWIN TOWERS OFFICE BLDG.
2600 BLAIR STONE ROAD
TALLAHASSEE, FL 32301



DATE 12-21-90 CHECK AMOUNT *****200.00

AUTHORIZED SIGNATURE

AUTHORIZED COUNTERSIGNATURE

HDD DEARBORN BANK, N.A.
811 WOODWARD, DETROIT, MICHIGAN 48226

USBI
OPERATION ACCOUNT

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

\$ 000 pd.
1-22-91
Rept. #151236



AC05-191641

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Solid Rocket Booster Assembly and Refurbishment Facility [X] New¹ [] Existing¹

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

COMPANY NAME: National Aeronautics and Space Administration 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) TPS Mixing Room

SOURCE LOCATION: Street Schwartz Road and Kennedy Parkway City Kennedy Space Center

UTM: East 17-533.3 km North 3159.3 km

Latitude 28 ° 33 ' 43 "N Longitude 80 ° 39 ' 36 "W

APPLICANT NAME AND TITLE: Walter T. Murphy, Director of Engineering Development

APPLICANT ADDRESS: John F. Kennedy Space Center, Kennedy Space Center, FL 32899

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of NASA

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

*Attach letter of authorization

Signed: Walter T. Murphy

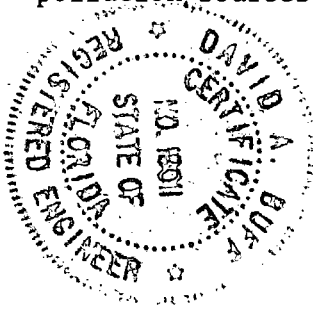
Walter T. Murphy, Director of Engineering Development
Name and Title (Please Type)

Date: JAN 17 1991 Telephone No. (407) 867-2565

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 judgement, that

¹See Florida Administration 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 David A. Buff

David A. Buff
Name (Please Type)

KBN Engineering and Applied Sciences, Inc.
Company Name (Please Type)

1034 NW 57th Street, Gainesville, Florida 32605
Mailing Address (Please Type)

Florida Registration No. 19011 Date: Dec. 20, 1990 Telephone No. (904) 331-9000

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.

Refer to Attachment A

B. Schedule of project covered in this application (Construction Permit Application Only)
Start of Construction upon permit issuance Completion of Construction 1 year after permit issuance

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.)

Ventilation system with filter: \$20,000

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

Process is currently permitted under Permit No. A005-165331

(TPS Process, Closeout) Issued 8/15/89

Expires 8/1/94

E. Requested permitted equipment operating time: hrs/day 24; days/wk 7; wks/yr 52;
If power plant, hrs/yr _____; if seasonal, describe: _____

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

1. Is this source in a non-attainment area for a particular pollutant? No
a. If yes, has "offset" been applied? _____
b. If yes, has "Lowest Achievable Emission Rate" been applied? _____
c. If yes, list non-attainment pollutants. _____

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

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

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

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

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

a. If yes, for what pollutants? _____

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

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

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

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

| Description | Contaminants | | Utilization Rate - lbs/hr | Relate to Flow Diagram |
|-------------|-----------------------|------|---------------------------|------------------------|
| | Type | % Wt | | |
| | Refer to Attachment A | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

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

1. Total Process Input Rate (lbs/hr): N/A

2. Product Weight (lbs/hr): N/A

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/hr | T/yr | |
| | Refer to Attachment A | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

¹See Section V, Item 2.

²Reference 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)

³Calculated from operating rate and applicable standard.

⁴Emission, 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) |
|---------------------------------------|--------------|------------|---|--|
| Cartridge Filter | Particulates | 30% | Submicron | Estimated |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

E. Fuels

| Type (Be Specific) | Consumption* | | Maximum Heat Input (MMBTU/hr) |
|--------------------|--------------|---------|----------------------------------|
| | avg/hr | max./hr | |
| Not Applicable | | | |
| | | | |
| | | | |
| | | | |

*Units: Natural Gas--MMCF/hr; Fuel Oils--gallons/hr; Coal, wood, refuse, others--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 N/A Maximum _____

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

Waste material will be drummed and disposed of off-site.

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

Stack Height: 42 ft. Stack Diameter: 2.0 x 2.0 ft.
 Gas Flow Rate: 4,400 ACFM 4,000 DSCFM Gas Exit Temperature: 90 °F.
 Water Vapor Content: 5 % Velocity: 18.3 FPS

SECTION IV: INCINERATOR INFORMATION
 Not Applicable

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

Description of Waste _____
 Total Weight Incinerated (lbs/hr) _____ Design Capacity (lbs/hr) _____
 Approximate Number of Hours of Operation per day _____ day/wk _____ wks/yr. _____
 Manufacturer _____
 Date Constructed _____ Model No. _____

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

Stack Height: _____ ft. Stack Diameter: _____ Stack Temp. _____
 Gas Flow Rate: _____ ACFM _____ DSCFM* Velocity: _____ FPS

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

Type of pollution control devices: 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 ½" 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 ½" 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 (Examples: Copy of relevant portion of USGS topographic map).
8. An 8 ½" 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

Not Applicable

- 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 Devices:

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:

¹Explain method of determining efficiency.

²Energy 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 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:

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:

¹Explain method of determining efficiency.

²Energy 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:

¹Applicant 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.

ATTACHMENT A

NASA currently operates the thermal protection system (TPS) closeout process under operating permit A005-165331. This process includes the MTA-2 mixing/application, MTA-2 molding, and K5NA application operations. These operations are conducted in the TPS finish area. NASA, and USBI, which operates the Assembly and Refurbishment Facility, are proposing to construct a new mix room within the TPS finish area. The existing MTA-2 and K5NA mixers and associated closeout equipment will be relocated to this new, enclosed room. In addition, a BTA (booster trowelable ablative) mixer also will be located in the room. BTA is the next generation of trowelable ablative that will begin to replace the MTA-2 and K5NA and will completely replace these compounds by 1991.

Presented in Table A-1 is the maximum future usage rates of BTA, K5NA, and MTA-2. Also shown are the volatile organic compound (VOC) content and VOC emissions as a result of the use of these compounds. As shown, the total maximum VOC emissions will be 3.461 tons per year (TPY). For comparison purposes, the current operating permit allows VOC emissions of 0.954 TPY. As a result, total permitted VOC emissions will increase by 2.507 TPY because of this proposed project. Since the K5NA and MTA-2 eventually will be phased out, maximum VOC will be only 1.426 TPY when BTA is in full use. This will represent only a 0.472 TPY increase above the current permitted level.

The new mix Room will contain a fume exhaust hood for ventilation. The vent system will contain a cartridge filter for removal of particulate emissions. The particulate removal efficiency is estimated at 30 percent. Particulate emissions from the new mix room will be generated by the loading of the solids (ground cork, K5NA filler, and phenolic microballoons). It is conservatively estimated that 1 percent of these materials will become airborne as a result of the loading process. Particulate emissions are calculated as follows:

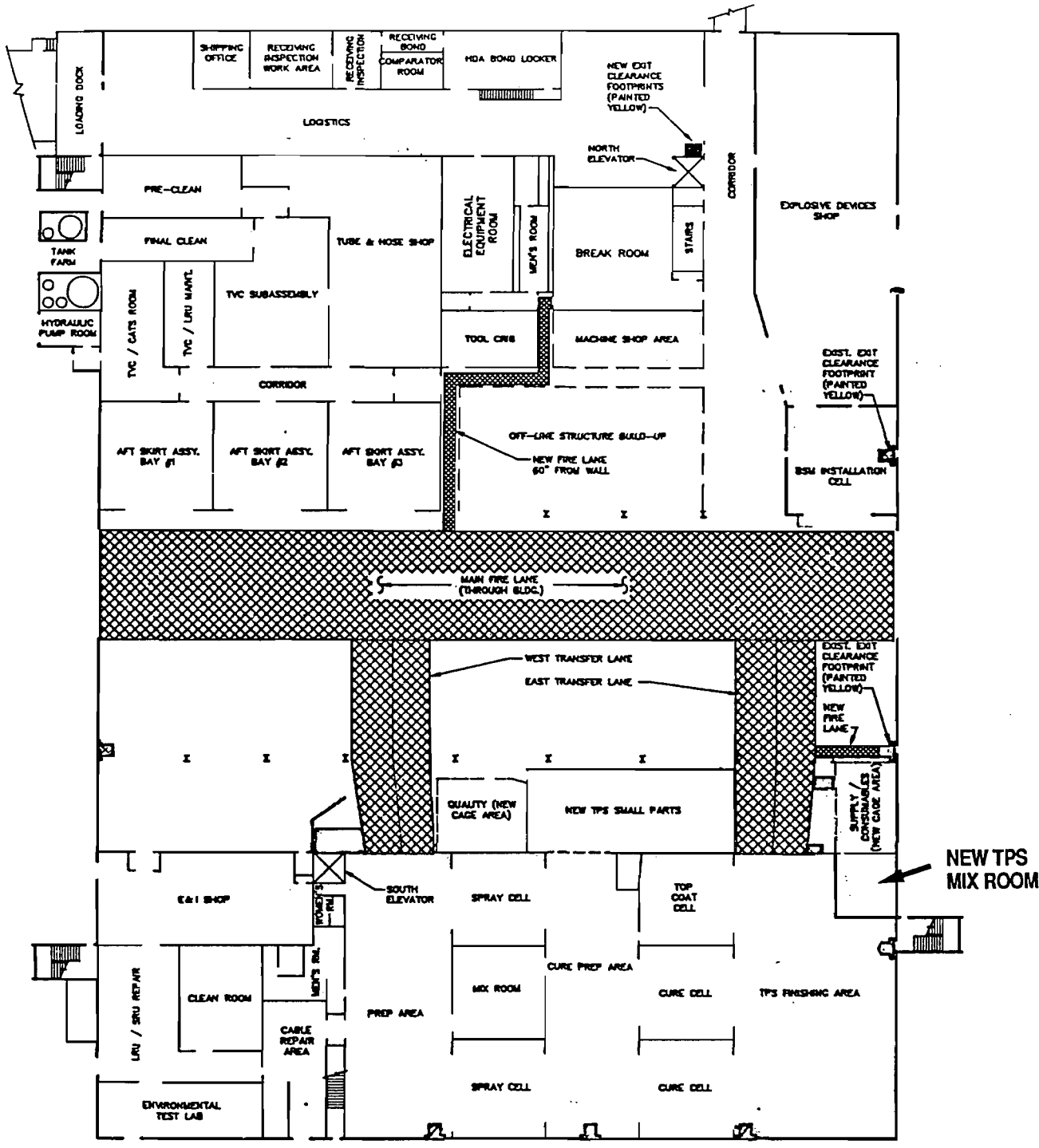
$$(0.155+4.239+0.240) \times 0.01 \times (1-0.30) = 0.032 \text{ TPY}$$

Table A-1. Material Usage and VOC Emission Rates for BTA, MTA-2 and K5NA, TPS Closeout
(New Mix Room)

| Raw Material/ Chemical | Density (lb/gal) | Utilization Rate ^a | | | VOC (% by wt.) | VOC Emissions (tons/yr) |
|---------------------------|---------------------|-------------------------------|----------------|---------------|-------------------|-------------------------------|
| | | gal/flight | lb/yr | tons/yr | | |
| BTA/MTA-2/K5NA (future) | | | | | | |
| BTA MIXING/APPLICATION: | | | | | | |
| EC-2216A | 8.40 | 163 | 32,861 | 16.430 | 0 | 0 |
| EC-2216B | 9.80 | 163 | 38,338 | 19.169 | 0 | 0 |
| Glass Ecospheres | 1.84 | 125 | 5,520 | 2.760 | 0 | 0 |
| Ground Cork | 0.43 | 30 | 310 | 0.155 | 0 | 0 |
| 1,1,1-Trichloroethane | 10.97 | 10 | 2,633 | 1.316 | 100 | 1.316 |
| BTA MOLDING: | | | | | | |
| Plastilease 512B | 7.70 | 1 | 185 | 0.092 | 92 | 0.085 |
| Partall Paste #2 | -- | -- | 40 | 0.020 | 26 | 0.005 |
| Partall Film #10 | 7.31 | 1.5 | 263 | 0.132 | 15 | 0.020 |
| K5NA MIXING/APPLICATION: | | | | | | |
| K5NA Hardener | 8.09 | 175 | 33,978 | 16.989 | 1 | 0.170 |
| K5NA Resin | 9.92 | 107 | 25,475 | 12.737 | 1 | 0.127 |
| K5NA Filler | 2.09 | 169 | 8,477 | 4.239 | 0 | 0 |
| MTA-2 MIXING/APPLICATION: | | | | | | |
| EPON Resin 828 | 9.76 | 2 | 468 | 0.234 | 0 | 0 |
| LP-3 | 10.76 | 2 | 516 | 0.258 | 0.2 | 0.0005 |
| Shell EPON Cure Agent Z | 9.51 | 1 | 228 | 0.114 | 1 | 0.0011 |
| Tin Octoate | 10.43 | 0.1 | 25 | 0.013 | 1 | 0.0001 |
| Phenolic Microballoons | -- | -- | 480 | 0.240 | 0 | 0 |
| Perchloroethylene | 13.55 | 10 | 3,252 | 1.626 | 100 | 1.626 |
| MTA-2 MOLDING: | | | | | | |
| Plastilease 512B | 7.70 | 1 | 185 | 0.092 | 92 | 0.085 |
| Partall Paste #2 | -- | -- | 40 | 0.020 | 26 | 0.005 |
| Partall Film #10 | 7.31 | 1.5 | 263 | 0.132 | 15 | 0.020 |
| TOTALS | | 962.1 | 153,537 | 76.768 | | 3.461 |

^aBased on 24 flights per year.

The location of the new mix room, exhaust vent, and arrangement of equipment within the mix room are shown in the attached figures.



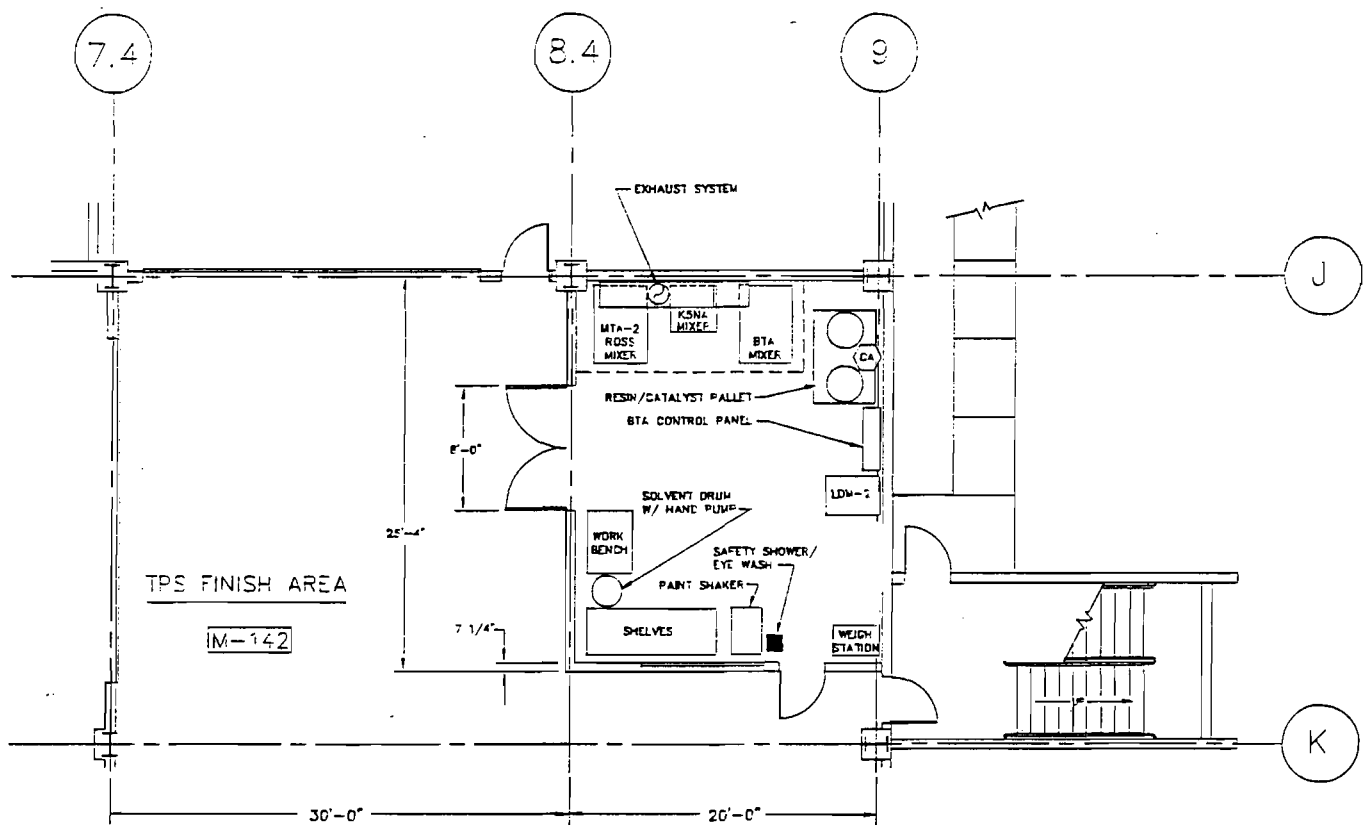
MANUFACTURING BUILDING – FIRST FLOOR PLAN

SCALE: 1/32"=1'-0"



LOCATION OF NEW TPS MIX ROOM





PLAN
 NEW MIX ROOM
 SCALE: 1/8" = 1'-0"



| | | | | | | |
|--|-------------------------|-----------------------|--------------------------------|---|----------------------------------|-----------|
| PROJECT SOLID ROCKET BOOSTER ASSEMBLY AND REFURBISHMENT FACILITY | DRAWN BY JORIS HINES | DATE 12-11-90 | UNITED TECHNOLOGIES USBI | FACILITIES ENGINEERING DRAWING NO. FAC-0252 | REPORT NO. FER-435 FWR-952 | |
| | CHECKED BY | DATE | | | | REVISIONS |
| SHEET TITLE PLAN NEW MIX ROOM | APPROVED BY | SCALE 1/8" = 1'-0" | SHEET 1 OF 1 | | | |

MATERIAL SAFETY DATA SHEETS

DATE OF PREP. **8/30/77**

Section I

MANUFACTURER'S NAME **RAM CHEMICALS, - Whittaker Corporation**

STREET ADDRESS **210 E. Alondra Blvd.** CITY, STATE AND ZIP CODE **Gardena, CA 90248**

EMERGENCY TELEPHONE NO. **(213) 321-0710**

PRODUCT CLASS **Plastics Mold Release Agent** MANUFACTURER'S CODE IDENTIFICATION **87-95**

TRADE NAME **Plastilease 512B**

Section II - HAZARDOUS INGREDIENTS

| INGREDIENT | PERCENT | TLV | | LEL | VAPOR PRESSURE |
|-------------------|---------|-----|-------------------|-----|----------------|
| | | PPM | mg/m ³ | | |
| Isopropyl alcohol | 40 | 400 | | 2 | |

Section III - PHYSICAL DATA

BOILING RANGE **180°F** VAPOR DENSITY HEAVIER, LIGHTER THAN AIR

EVAPORATION RATE FASTER SLOWER THAN ETHER PERCENT VOLATILE BY VOLUME **92** WEIGHT PER GALLON **7.7**

Section IV - FIRE AND EXPLOSION HAZARD DATA

HAZARD CATEGORY **Red Label, Flammable.** FLASH POINT **68°F (TCC)** LEL **2.0**

EXTINGUISHING MEDIA **Water, foam, CO₂, CCl₄ or dry chemical**

ADDITIONAL FIRE AND EXPLOSION HAZARDS

EXTINGUISHING PROCEDURES



CARPINTERIA, CA 93013
 CONYERS, GA 30207

STP 434

MATERIAL SAFETY DATA SHEET

Essentially Similar to OSHA-20 Form U.S. Dept. of Labor
 (805) 969-1214

EMERGENCY PHONE (800) 241-4724

BUSINESS PHONE (404) 483-7610

SECTION I. IDENTIFICATION OF PRODUCT

Product Name PARTALL PASTE #2

Chemical Family

Chemical Name and Synonyms

Formula

SECTION II. HAZARDOUS INGREDIENTS

| <u>Ingredient</u> | <u>%</u> | <u>TLV</u> | <u>Units</u> |
|--|----------|------------|--------------------------|
| GEORGIA — UNION OIL (AMSCO SOLVENT #140)* CALIF. — UNION OIL (AMSCO SOLVENT #6660)* *(PETROLEUM HYDROCARBON) | | 200 200 | |
| PETROLITE C-700 (MICROCRYSTALLINE WAX) | | | RECOGNIZED CARCINOGEN |

SECTION III. PHYSICAL DATA

| | | | |
|---|----------------------------|---|-------------------------------------|
| Boiling Point, °F | 0370-404 | Specific Gravity (H ₂ O = 1) | 0.788 |
| Vapor Pressure, 2 [REDACTED] (@115°F = 3.0mm Hg.) | | Percent Volatile (by volume) @100°F | 12.3 IN 8 HOURS 26.3 IN 24 HOURS |
| Vapor Density (Air = 1) | 1.4 | Evaporation Rate | |
| Solubility in Water | NO | | |
| Appearance and Odor | GREEN PASTE WAX SOLVENT | | |

SECTION IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point, F 161 (method used) T.O.C. Flammable Limits in Air, % LEL UEL

Extinguishing Media WATER FOG, CO₂, FOAM, DRY CHEMICAL

Special Fire Fighting Procedures THE USE OF SELF-CONTAINED BREATHING APPARATUS IS RECOMMENDED FOR FIRE FIGHTERS.

Unusual Fire and Explosion Hazards NONE



CARPINTERIA, CA 93013
 CONYERS, GA 30207

MATERIAL SAFETY DATA SHEET

Essentially Similar to OSHA-20 Form U.S. Dept. of Labor

EMERGENCY PHONE (800) 241-4724

BUSINESS PHONE (805) 969-1214
 (404) 483-7610

SECTION I. IDENTIFICATION OF PRODUCT

Product Name **PARTALL FILM #10**

Chemical Family

Chemical Name and Synonyms

Formula

SECTION II. HAZARDOUS INGREDIENTS

| <u>Ingredient</u> | <u>%</u> | <u>TLV</u> | <u>Units</u> |
|--|----------|------------|--------------|
| METHANOL | | 200 | |
| ETHYL ACETATE | | 400 | |
| ETHANOL | | 1000 | |
| METHYL ISOBUTYL KETONE | | 100 | |
| HYDROCARBON APPROVED BY THE GOVERNMENT FOR USE AS A DENTATURANT | | NE* | |
| N-BUTANOL | | 100 | |

* NOT ESTABLISHED

SECTION III. PHYSICAL DATA

| | |
|--|--|
| Boiling Point, °F 158-220 | Specific Gravity (H ₂ O = 1) 0.914 |
| Vapor Pressure, 26.67 mm/HG | Percent Volatile (by volume) 15% IN ONE WEEK |
| Vapor Density (Air = 1) 1.2 | Evaporation Rate (ETHER=1) 0.039 |
| Solubility in Water COMPLETE | |
| Appearance and Odor WATERY GREEN LIQUID ALCOHOLIC | |

SECTION IV. FIRE AND EXPLOSION HAZARD DATA

| | | |
|---|--------------------------------|-----|
| Flash Point, °F 70 (method used) C.O.C. | Flammable Limits in Air, % LEL | UEL |
| Extinguishing Media ALCOHOL TYPE FOAM CO₂ OR DRY CHEMICAL | | |

Special Fire Fighting Procedures

**THE USE OF SELF-CONTAINED BREATHING APPARATUS IS RECOMMENDED FOR
 FIRE FIGHTERS.**

Unusual Fire and Explosion Hazards

LOW FLASH POINT

| | | | | | | | | | | | | | | |
|---|--|---|----------|--------|---|----------|--------------|---|----------|------------|---|----------|--------------------------------|--|
| <p>TRA-CON, INC.</p>  <p>MEDFORD, MASS. 02155</p> | <p>U.S. DEPARTMENT OF LABOR Occupational Safety and Health Administration</p> <p>MATERIAL SAFETY DATA SHEET</p> <p>DATE April 3, 1987</p> | <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">H</td> <td style="text-align: center;">HEALTH</td> <td style="text-align: center; border: 1px solid black;">3</td> </tr> <tr> <td style="text-align: center;">F</td> <td style="text-align: center;">FLAMMABILITY</td> <td style="text-align: center; border: 1px solid black;">1</td> </tr> <tr> <td style="text-align: center;">R</td> <td style="text-align: center;">REACTIVITY</td> <td style="text-align: center; border: 1px solid black;">0</td> </tr> <tr> <td style="text-align: center;">P</td> <td style="text-align: center;">See Section VIII PROTECTION</td> <td></td> </tr> </table> | H | HEALTH | 3 | F | FLAMMABILITY | 1 | R | REACTIVITY | 0 | P | See Section VIII PROTECTION | |
| H | HEALTH | 3 | | | | | | | | | | | | |
| F | FLAMMABILITY | 1 | | | | | | | | | | | | |
| R | REACTIVITY | 0 | | | | | | | | | | | | |
| P | See Section VIII PROTECTION | | | | | | | | | | | | | |


| SECTION I | | | | | |
|--|------------|---------|---|-----------|-------|
| MANUFACTURER'S NAME TRA-CON, INC. | | | EMERGENCY TELEPHONE NO. TELEPHONE AREA CODE (617) 381-8550 | | |
| ADDRESS (Number, Street, City, State, and ZIP Code) 58 NORTH STREET, MEDFORD, MASS. 02155 | | | | | |
| CHEMICAL NAME AND SYNONYMS Epoxy Adhesive Corroactant | | | TRADE NAME AND SYNONYMS TRA-BOND K5NA PART "A" (HARDENER) | | |
| CHEMICAL FAMILY Polyamide Resin Mixture | | | FORMULA Proprietary Mixture (TSCA Status: OK) | | |
| HAZARD LABEL REQUIRED | CARCINOGEN | MUTAGEN | NEUROTOXIN | TERATOGEN | OTHER |
| D | NONE | NONE | NONE | NONE | NONE |


| SECTION II - HAZARDOUS INGREDIENTS | | |
|--|-----------|----------------|
| HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES | % | TLV (Units) |
| Reacted mixture of dimer acids, aliphatic amines and resins based on and including the following: | | |
| Triethylene tetramine or similar isomers and homologs=CAS #112-24-3 | up to 15 | * |
| Polyamide resin and/or similar isomers and homologs not listed on the Massachusetts Hazardous Substance List=CAS #68410231 | up to 100 | NONE |
| Polyalkylene glycol or similar homologs = CAS #000112-27-6 | up to 15 | * |
| Other ingredients (if any) per OSHA 1910.1200 (g)(2)(i)(c)(1) which may compose less than 1% of the composition, and/or which are non-hazardous or not listed on the Massachusetts Hazardous Substance List. | up to 10 | |
| * TLV values not established or not available at this time. | | |

| SECTION III - PHYSICAL DATA | | | |
|--|---------------------|--------------------------------|------|
| BOILING POINT (°F.) | Decomposes Vigra | SPECIFIC GRAVITY (15/15) | 0.97 |
| VAPOR PRESSURE (mm Hg.) | low | PERCENT VOLATILE BY VOLUME (%) | low |
| VAPOR DENSITY (AIR=1) | > 1 | EVAPORATION RATE (----- = 1) | low |
| SOLUBILITY IN WATER | low | | |
| APPEARANCE AND ODOR Light amber liquid, slight amine odor. | | | |

| SECTION IV - FIRE AND EXPLOSION HAZARD DATA | | | |
|---|--|------------------|-----|
| FLASH POINT (Method used) | > 350° F (PMCC) | FLAMMABLE LIMITS | |
| | | N/A | N/A |
| EXTINGUISHING MEDIA | Water spray, carbon dioxide, dry chemicals. | | |
| SPECIAL FIRE FIGHTING PROCEDURES | Avoid breathing smoke. | | |
| UNUSUAL FIRE AND EXPLOSION HAZARDS | Toxic gases may be liberated; | | |
| | Handle as a combustible material; store in a cool place. | | |

BEST AVAILABLE COPY

| | | | | | | | | | | | | | | |
|---|--|--|----------|--------|---|----------|--------------|---|----------|------------|---|----------|-----------------------------|--|
| <p>TRA-CON, INC.</p>  <p>MEDFORD, MASS. 02155</p> | <p>U.S. DEPARTMENT OF LABOR Occupational Safety and Health Administration</p> <p>MATERIAL SAFETY DATA SHEET</p> <p>DATE April 3, 1987</p> | <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:10px; text-align: center;">H</td> <td style="width:80px;">HEALTH</td> <td style="width:10px; text-align: center;">3</td> </tr> <tr> <td style="text-align: center;">F</td> <td>FLAMMABILITY</td> <td style="text-align: center;">2</td> </tr> <tr> <td style="text-align: center;">R</td> <td>REACTIVITY</td> <td style="text-align: center;">0</td> </tr> <tr> <td style="text-align: center;">P</td> <td>See Section VIII PROTECTION</td> <td></td> </tr> </table> | H | HEALTH | 3 | F | FLAMMABILITY | 2 | R | REACTIVITY | 0 | P | See Section VIII PROTECTION | |
| H | HEALTH | 3 | | | | | | | | | | | | |
| F | FLAMMABILITY | 2 | | | | | | | | | | | | |
| R | REACTIVITY | 0 | | | | | | | | | | | | |
| P | See Section VIII PROTECTION | | | | | | | | | | | | | |

| SECTION I | | | | | |
|--|--------------------|----------------|---|-------------------|---------------|
| MANUFACTURER'S NAME TRA-CON, INC. | | | EMERGENCY TELEPHONE NO. TELEPHONE AREA CODE (617) 391-5550 | | |
| ADDRESS (Number, Street, City, State, and ZIP Code) 55 NORTH STREET, MEDFORD, MASS. 02155 | | | | | |
| CHEMICAL NAME AND SYNONYMS Epoxy Adhesive Resin | | | TRADE NAME AND SYNONYMS TRA-BOND K5NA PART "B" (RESIN) | | |
| CHEMICAL FAMILY Bis-A Epichlorohydrin Epoxide Reaction Product | | | FORMULA Proprietary Mixture (TSCA Status: OK) | | |
| HAZARD LABEL REQUIRED?  | CARCINOGEN NONE | MUTAGEN YES | NEUROTOXIN NONE | TERATOGEN NONE | OTHER NONE |

| SECTION II - HAZARDOUS INGREDIENTS | | |
|--|-----------|-----------------------------|
| HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES | % | TLV (Units) |
| Epoxy resin mixture based on 4, 4' - isopropylidenediphenol | | |
| epichlorohydrin resin and/or similar isomers = CAS #25068-38-6 | up to 100 | * |
| Titanium dioxide = CAS #13463-67-7 | up to 5 | 10mg/m ³ as dust |
| Mono and/or poly functional aliphatic glycidyl ether(s) similar to butyl glycidyl ether (BGE) and/or similar isomers = CAS #2426-08-6 | | |
| WARNING: This glycidyl ether material may be MUTAGENIC. | up to 20 | 25ppm |
| Other ingredients (if any) per OSHA 1910.1200 (g)(2)(1)(c)(1) which may compose less than 1% of the composition, and/or which are non-hazardous or not listed on the Massachusetts Hazardous Substance List. | up to 10 | |
| * TLV values not established or not available at this time. | | |

| SECTION III - PHYSICAL DATA | | | |
|--|-------|---------------------------------------|-------|
| BOILING POINT (°F.) | > 350 | SPECIFIC GRAVITY (H ₂ O=1) | 1.17 |
| VAPOR PRESSURE (mm Hg.) @ 77° F | < 1 | PERCENT VOLATILE BY VOLUME (%) | < 0.2 |
| VAPOR DENSITY (AIR=1) | > 1 | EVAPORATION RATE (----- =1) | low |
| SOLUBILITY IN WATER | low | | |
| APPEARANCE AND ODOR White, medium viscosity liquid, slight sweet odor. | | | |

| SECTION IV - FIRE AND EXPLOSION HAZARD DATA | | | |
|--|---|------------------|------------|
| FLASH POINT (Method used) | 164° F (setaflash) | FLAMMABLE LIMITS | Lel Uel |
| | | N/A | N/A |
| EXTINGUISHING MEDIA | Water spray, carbon dioxide, dry chemicals. | | |
| SPECIAL FIRE FIGHTING PROCEDURES | Avoid breathing smoke. | | |
| Cool fire exposed containers with water. | | | |
| UNUSUAL FIRE AND EXPLOSION HAZARDS | Toxic gases may be liberated. | | |
| Handle as a combustible material; store in a cool place. | | | |

BEST AVAILABLE COPY

TRA-CON, INC.



MEDFORD, MASS. 02155

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEET

DATE April 3, 1987

| | |
|-------------------------------|---|
| H HEALTH | 1 |
| F FLAMMABILITY | 1 |
| R REACTIVITY | 1 |
| P See Section VIII PROTECTION | |

SECTION I

| | | | | | |
|--|--------------------|---|--|-------------------|---------------|
| MANUFACTURER'S NAME TRA-CON, INC. | | EMERGENCY TELEPHONE NO. TELEPHONE AREA CODE (617) 391-5550 | | | |
| ADDRESS (Number, Street, City, State, and ZIP Code) 55 NORTH STREET, MEDFORD, MASS. 02155 | | | | | |
| CHEMICAL NAME AND SYNONYMS Epoxy Adhesive Ablative Filler | | | TRADE NAME AND SYNONYMS TRA-BOND K5NA PART "C" (FILLER) | | |
| CHEMICAL FAMILY Inert Organic Granules | | | FORMULA Proprietary Product (TSCA Status: OK) | | |
| HAZARD LABEL REQUIRED? <input checked="" type="checkbox"/> | CARCINOGEN NONE | MUTAGEN NONE | NEUROTOXIN NONE | TERATOGEN NONE | OTHER NONE |

SECTION II - HAZARDOUS INGREDIENTS

| HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES | % | TLV (Units) |
|--|---|-------------|
| There are NO HAZARDOUS INGREDIENTS in this product per the requirements of OSHA 1910.1200 (g)(2)(1)(c)(1). | | * |
| * TLV values are not applicable, and do not exist. | | |

SECTION III - PHYSICAL DATA

| | | | |
|---|------|---------------------------------------|-----|
| BOILING POINT (°F.) | none | SPECIFIC GRAVITY (H ₂ O=1) | 0.2 |
| VAPOR PRESSURE (mm Hg.) | nil | PERCENT VOLATILE BY VOLUME (%) | nil |
| VAPOR DENSITY (AIR=1) | nil | EVAPORATION RATE (----- =1) | 0 |
| SOLUBILITY IN WATER | nil | | |
| APPEARANCE AND ODOR Light brown, free-flowing granules, odorless. | | | |

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

| | | | | |
|---|---|------------------|-------|-------|
| FLASH POINT (Method used) | Not Applicable | FLAMMABLE LIMITS | Lower | Upper |
| | | N/AV | N/A | N/A |
| EXTINGUISHING MEDIA | Water spray, foam, carbon dioxide, dry chemicals. | | | |
| SPECIAL FIRE FIGHTING PROCEDURES | Avoid breathing smoke. | | | |
| Product is combustible: Handle like wood sawdust. | | | | |
| UNUSUAL FIRE AND EXPLOSION HAZARDS | Handle like wood sawdust. | | | |

MORTON THIOKOL, INC.
Morton Chemical Division



Material Safety Data Sheet

Product Identification

| | | | |
|----------------------|---|-------------------------|---------------------|
| Product Name: | LP-3 | Chemical Name: | Polysulfide Polymer |
| Common Name: | LP-3 | CAS Number: | 68611-50-7 |
| Product Use: | Adhesive/Sealants/Flexibilizer for Epoxies and Leather Goods | Emergency Phone: | 815-338-1800 |
| | | Other Phone: | 601-475-2121 |

Hazardous Ingredients

| Chemical Name | Common Name | CAS No. | % | OSHA PEL | ACGIH TLV |
|--|-------------|---------|---|-------------|--------------|
| None by reference to the O.S.H.A. hazard communications standard (29 CFR 1910.1200). | | | | | |

Physical Data

| | | | |
|----------------------------------|-------------------------|--------------------------------------|----------------|
| Boiling Point (760 mm Hg) | > 350°F | Specific Gravity (Water = 1): | 1.27 |
| Vapor Pressure (mm Hg) | 24mm @ 25°C (for water) | % Non-volatile: | 96 minimum |
| Vapor Density (AIR=1) | < 1 | Evaporation Rate (Ether = 1) | < 1 |
| Solubility in Water | Insoluble | pH | 6.5-7.5 |
| Appearance: | Light amber liquid | Odor | Mercaptan type |

Fire and Explosion Hazard Data

| | | | | | | |
|--------------------|---------|-------------------------|-----|-----|-----|-----|
| Flash Point | > 200°F | Flammable Limits | Lel | N/A | Uel | N/A |
|--------------------|---------|-------------------------|-----|-----|-----|-----|

Method Used:

SETAFLASH

Extinguishing Media:

Water, CO₂, dry chemical

Special Fire Fighting Procedures:

Fire fighters should wear self-contained breathing apparatus.

Unusual Fire and Explosion Hazards:

None as far as known.

Hazardous Decomposition Products:

SO₂, CO₂, CO, low molecular hydrocarbons and possibly formaldehyde and H₂S.



MATERIAL SAFETY DATA SHEET

MSDS NUMBER ▶

4-9

PAGE 1

97367 (4-85)

| | | | | | |
|--|-----------|-----------------|--|--|--|
| 24 HOUR EMERGENCY ASSISTANCE | | | GENERAL MSDS ASSISTANCE | | |
| SHELL: 713-473-9461 CHEMTREC: 800-424-9300 | | | SHELL: 713-241-4819 | | |
| ACUTE HEALTH + 2 | FIRE 1 | REACTIVITY 0 | HAZARD RATING ▶ LEAST - 0 SLIGHT - 1 MODERATE - 2 HIGH - 3 EXTREME - 4 | | |
| *For acute and chronic health effects refer to the discussion in Section III | | | | | |



| SECTION I | NAME |
|-------------------|------------------------|
| PRODUCT ▶ | EPON CURING AGENT(R) Z |
| CHEMICAL NAME ▶ | -- |
| CHEMICAL FAMILY ▶ | AROMATIC DIAMINES |
| SHELL CODE ▶ | 43645 |

| SECTION II-A | | PRODUCT/INGREDIENT | |
|--------------|--|--------------------|---------|
| NO. | COMPOSITION | CAS NUMBER | PERCENT |
| P | EPON CURING AGENT Z | MIXTURE | 100 |
| 1 | 1,3-DIAMINOBENZENE | 108-45-2 | 29-31 |
| 2 | 4,4'-METHYLENEDIANILINE (MDA) | 101-77-9 | 20-23 |
| 3 | 4,4'-METHYLENEDIANILINE/PHENYL GLYCIDYL ETHER ADDUCT | 68391-25-3 | 17-18 |
| 4 | 1,3-DIAMINOBENZENE/PHENYL GLYCIDYL ETHER ADDUCT | 38353-82-1 | 31-33 |

| SECTION II-B | | ACUTE TOXICITY DATA | |
|--------------|------------------|---------------------|-----------------------|
| NO. | ACUTE ORAL LD50 | ACUTE DERMAL LD50 | ACUTE INHALATION LC50 |
| P | 735 MG/KG (RAT) | NOT AVAILABLE | NOT AVAILABLE |
| 1 | 650 MG/KG (RAT) | NOT AVAILABLE | NOT AVAILABLE |
| 2 | 0.264 G/KG (RAT) | NOT AVAILABLE | NOT AVAILABLE |
| 3 | NOT AVAILABLE | | |
| 4 | NOT AVAILABLE | | |

SECTION III HEALTH INFORMATION

THE HEALTH EFFECTS NOTED BELOW ARE CONSISTENT WITH REQUIREMENTS UNDER THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200).

EYE CONTACT

BASED ON PRESENCE OF COMPONENT 1, PRODUCT IS PRESUMED TO BE MODERATELY IRRITATING TO THE EYES.

SKIN CONTACT

BASED ON PRESENCE OF COMPONENT 1, PRODUCT IS PRESUMED TO CAUSE MODERATE IRRITATION TO THE SKIN. BASED ON PRESENCE OF COMPONENT 2, PRODUCT MAY CAUSE SKIN SENSITIZATION. PRODUCT MAY CAUSE SKIN STAINING.

INHALATION

IF HEATED, INHALATION OF VAPOR MAY CAUSE IRRITATION TO THE NOSE, THROAT AND RESPIRATORY TRACT. BASED ON PRESENCE OF COMPONENT 2, PRODUCT IS PRESUMED TO BE A LUNG SENSITIZER.

MATERIAL SAFETY DATA SHEET
COPYRIGHT GENERAL ELECTRIC CO. 1985PAGE: 1
STO

MANUFACTURED BY:

GENERAL ELECTRIC CO.
SILICONE PRODUCTS DIV.
WATERFORD, NY 12188EMERGENCY TELEPHONE: (24 HRS)
(518) 237-3330REVISED: 10/21/85
PREPARER: DA POLSINELLI

***** I PRODUCT IDENTIFICATION *****

PRODUCT IDENTIFICATION: STO
CHEMICAL NAME: STANNOUS OCTOATECHEMICAL FAMILY: ORGANO TIN COMPOUNDS
FORMULA: C16H30O4SN

***** II PRODUCT COMPONENTS *****

| PRODUCT COMPOSITION | APPROX. ACGIH | | OSHA | CAS REG | |
|---------------------|---------------|-----|------|---------|-----------|
| | % | TLV | PEL | UNITS | NO. |
| A. HAZARDOUS | | | | | |
| STANNOUS OCTOATE | > 80% | 0.1 | 0.1 | MG/M3 | 1912-83-0 |
| B. NON-HAZARDOUS | | | | | |

***** III PHYSICAL DATA *****

**PRODUCT INFORMATION

BOILING POINT : UNKN (F) UNKN (C) % VOLATILE BY VOLUME: UNKN
 VAPOR PRESSURE (20 C): UNKN MM HG EVAPORATION RATE : UNKN
 VAPOR DENSITY (AIR=1): UNKN (BUTYL ACETATE=1)
 FREEZING POINT : <-12 (F) <-25 (C) SPECIFIC GRAVITY : 1.25
 MELTING POINT : NA (F) NA (C) (WATER=1)
 PHYSICAL STATE : LIQUID DENSITY : 1258 KG/M3
 ODOR : SLIGHT ACIDITY/ALKALINITY : UNKN MEG/G
 COLOR : YELLOW PH : UNKN
 SOLUBILITY IN WATER (20 C): SLIGHT
 SOLUBILITY IN ORGANIC SOLVENT: YES IN TOLUENE
 (STATE SOLVENT)

***** IV FIRE AND EXPLOSION DATA *****

FLASH POINT: 288 (F) 142 (C) BY PMCC. IGNITION TEMP: UNKN (F) UNKN (C)
 FLAMMABLE LIMITS IN AIR (%): LOWER NA UPPER NA
 EXTINGUISHING MEDIA:
 ALL STANDARD FIREFIGHTING MEDIA
 SPECIAL FIREFIGHTING PROCEDURES:
 NONE KNOWN.

RECEIVED

JUL 31 1987 JL
USBI-BPC SAFETY

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

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

| | |
|---|---|
| 3. Article Addressed to: <i>Walter J. Murphy</i> <i>Director of Eng. Development</i> <i>John F. Kennedy Space Ctr.</i> <i>NASA</i> <i>Kennedy Space Center, FL</i> <i>32899</i> | 4. Article Number <i>P 832 538 964</i> Type of Service: <input type="checkbox"/> Registered <input type="checkbox"/> Insured <input checked="" type="checkbox"/> Certified. <input type="checkbox"/> COD <input type="checkbox"/> Express Mail |
| 5. Signature - Addressee <i>X</i> | 8. Addressee's Address (ONLY if requested and fee paid). |
| 6. Signature - Agent <i>X</i> <i>Jean Eppinger / DE</i> | |
| 7. Date of Delivery | |

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

PS Form 3811, Mar. 1987

★ U.S.G.P.O. 1987-178-268

DOMESTIC RETURN RECEIPT

P 832 538 964

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

UNITED STATES POSTAL SERVICE

| | |
|---|----------------|
| Sent to | |
| <i>Walter Murphy</i> | |
| Street & No. | |
| <i>NASA</i> | |
| P.O., State & ZIP Code | |
| <i>KSC, FL</i> | |
| Postage | \$ |
| Certified Fee | |
| Special Delivery Fee | |
| Restricted Delivery Fee | |
| Return Receipt Showing to Whom & Date Delivered | |
| Return Receipt Showing to Whom, Date, & Address of Delivery | |
| TOTAL Postage & Fees | \$ |
| Postmark or Date | <i>9-26-91</i> |

AC 05-191641

PS Form 3800, June 1990

Mail Response -- Action Slip

Date out: 1-22 Action Item No. 1-047 DATE DUE: 2-6-92

TO:

Mark Latch _____ Richard Harvey _____ Dan Thompson _____
 Mike Peyton _____ Steve Smallwood John Ruddell _____
 Mimi Drew _____ Gil Bergquist _____ Other _____

ACTION:

Handle Draft Resp. CMB _____ Draft for Gov. _____
 Respond, Your Signature _____ Other _____

(ITEMS for Secretary's Signature MUST be reviewed by Division and Secretary's Staff)

Draft Reviewed by (Div.) _____ Date _____
 Reviewed by (O. Sec.) _____ Date _____

RECEIVED

Return to ~~██████████~~ NO LATER THAN: 2-6-92 JAN 22 1992

Division of Air Resources Management

meter at a distance of 100 meters from the stack. This model run confirms that concentrations do not exceed the TLV of 0.1 mg/cu meter for workers who are located not closer than 250 meters. The no threat level of 0.13 ug/cubic meter for any general public area is not exceeded. The closest general public location is over 10,000 meters.

NOTE 1: See Attachment 1 for the hydrazine diffusion model input data and the Screen-1.1 computer model outputs.

b. Trichloroethylene (TCE) data: Maximum concentration of TCE is 6,594 ug/cu meter at 100 meters. This model run confirms that concentrations at the nearest general public location will be far less than the no threat level of 2,700 ug/cubic meters.

NOTE 2: See Attachment 2 for the TCE diffusion model input data and the Screen-1.1 computer model outputs.

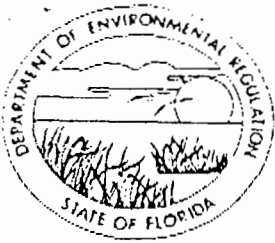
2. The following background information is provided:

a. The Atlas launch vehicle will be loaded with 135 lbs of hydrazine. A scrubber with an efficiency of 99.35 percent will be utilized during the fueling operation. The maximum quantity of hydrazine delivered to the scrubber is 1.3 pounds and air emissions from the scrubber is 0.032 lb/hr for a duration of 95 minutes or 0.0567 lbs.

RECEIVED

JAN 23 1992

Division of Air Resources Management
GUARDIANS OF THE HIGH FRONTIER



Florida Department of Environmental Regulation

Central District • 3319 Maguire Boulevard, Suite 232 • Orlando, Florida 32803-3767

Lawton Chiles, Governor

Carol M. Browner, Secretary

January 17, 1992

Mr. Lou Ullian
USAF 45 SPW/SE
Patrick Air Force Base, FL 32925

OCD-AP-92-015

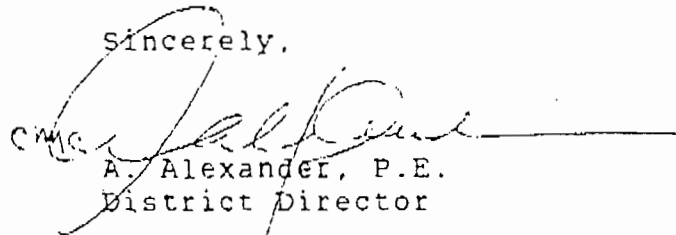
Dear Mr. Ullian:

We are in receipt of your January 15, 1992 request for a venting of the Atlas-Centaur gases at Launch Complex 36 on a one time basis.

Our review of your submission shows that the maximum ground level concentrations of hydrazine and trichloroethylene are well below the No Threat Levels at public locations.

We will grant this one time venting based on the promise to apply for a permit to do this on a routine basis.

Sincerely,


A. Alexander, P.E.
District Director

AA:azt



Florida Department of Environmental Regulation

Central District • 3319 Maguire Boulevard, Suite 232 • Orlando, Florida 32803-3767

Lawton Chiles, Governor

Carol M. Browner, Secretary

FAX TRANSMITTAL LETTER

TO:

NAME: Bruce Mitchell

AGENCY: B/Air Reg.

TELEPHONE NUMBER (FAX No.): (CODE 20) 922-6979

NUMBER OF PAGES (including cover sheet): 2

FROM:

NAME: Alan Zahm

AGENCY: DER-Central District, Air Permitting

(Transmitted on a Hitachi HIFAX)

Orlando FAX Telephone Number (407) 897-2966 - S/C: 342-2966

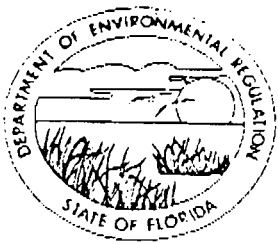
IF ANY OF THESE PAGES ARE NOT CLEARLY RECEIVED, PLEASE CALL IMMEDIATELY AT:

Phone Number: 407/894-7555 (S/C: 325-1011)

SENDER'S NAME: Theresa

COMMENTS: _____

NIASA letter
red via FAX
on 1/10/92.



Florida Department of Environmental Regulation

Central District • 3319 Maguire Boulevard, Suite 232 • Orlando, Florida 32803-3767

Lawton Chiles, Governor

Carol M. Browner, Secretary

January 17, 1992

Mr. Lou Ullian
USAF 45 SPW/SE
Patrick Air Force Base, FL 32925

OCD-AP-92-015

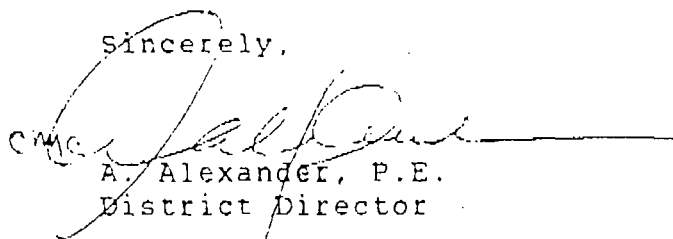
Dear Mr. Ullian:

We are in receipt of your January 15, 1992 request for a venting of the Atlas-Centaur gases at Launch Complex 36 on a one time basis.

Our review of your submission shows that the maximum ground level concentrations of hydrazine and trichloroethylene are well below the No Threat Levels at public locations.

We will grant this one time venting based on the promise to apply for a permit to do this on a routine basis.

Sincerely,


A. Alexander, P.E.
District Director

AA:azt

Louis Ullian →

Dygt Director of
the Safety of
the Range

Cape Kennedy -

- hydrazine
- trichloro ethane

407-494-5077

104110
300hr @ Mr. Ullian - told him that
a letter would be forthcoming today
from the Dist. office OKing the
renting. Pam

1-15-92
@ 3:50-155
A. Zahn will be sending
Mr. Ullian a letter - he will
also call him on the
issue. Pam

01/16/92 14:16 407 494 6535

ESMC/SEM

001

45 th SPACE WING/SE

DIRECTORATE OF SAFETY

PATRICK AFB FL 32925-5002

| | | | |
|---|------------------------------|--|---|
| ELECTRONIC FACSIMILE TRANSMITTAL | | CLASSIFICATION <input type="checkbox"/> UNCLASSIFIED <input type="checkbox"/> FOR OFFICIAL USE ONLY | NUMBER OF PAGES TRANSMITTED HEADER + 14 |
| TELEFAX NUMBER (only one is required) | | REQUIRED TRANSMISSION TIME <input type="checkbox"/> ROUTINE <input type="checkbox"/> PRIORITY | |
| DSN 854-6535 | COMMERCIAL (407) 494-6535 | REMARKS | |
| SUBJECT OF MATERIAL TRANSMITTED air facility Permits | | UPON RECEIPT NOTIFY OPR TELEPHONE | |
| TO (Name, organization/office symbol, telephone number) Bruce Mitchell | | | |
| FROM (Name, organization/office symbol, telephone number) Mrs. Ullian | | TO BE COMPLETED BY OPERATOR | |
| RELEASER'S SIGNATURE Mr. Ullian | DATE/TIME 16 Jan 92 | DATE TRANSMITTED | TIME TRANSMITTED INITIALS OF OPERATOR |

RELEASER IS RESPONSIBLE FOR CONFIRMING RECEIPT OF TRANSMISSION AT RECEIVING END



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 45TH SPACE WING (AFSPACECOM)
PATRICK AIR FORCE BASE, FLORIDA 32925

Mr Ullian

REPLY TO
ATTN OF SE

15 January 1992

SUBJECT: Air Facility Permits

TO: Mr Charles M. Collins
Air Program Administrator
Florida Department of Environmental Regulation

1. Based on our discussion today, we have prepared an emergency request using the same format we used for the SPIF in December 1991. It will allow us to continue preparations for the Atlas-Centaur launch on 24 January 1992.
2. We hope to be able to come over and discuss this with you tomorrow or by phone if you cannot meet with us. I will call you first thing in the morning. In addition to this request, we must ask your assistance in resolving a problem of our own making. We have a number of permits in preparation that will cover all our launch operations at the Cape. To complete the applications will probably take till the end of the month with delivery to you early February. We recognize the permitting process that you must accomplish takes some period of time. Your office estimated from 4-6 months. In the meantime, the DOD and other national agencies, along with commercial companies, will wish to continue launch operations from the Eastern Range. These operations will involve release of small quantities of pollutants (requiring permits) into the air. Most of these permits would be similar to those for which we are requesting emergency relief.
3. We will need your assistance in determining a proper, expeditious method for us to continue to operate the Eastern Range while you accomplish the permit process. This is of critical importance to the national space program and also to jobs in Florida. Attached is the emergency request and backup data.

Louis J. Ullian
LOUIS J. ULLIAN, GM-15
Deputy Director of Safety

1 Atch
Emergency Request and
Backup Data



DEPARTMENT OF THE AIR FORCE
45TH CIVIL ENGINEERING SQUADRON (AFSPACECOM)
PATRICK AIR FORCE BASE, FLORIDA 32925

REPLY TO
ATTN OF DE

15 Jan 92

SUBJECT One-Time Emergency Venting Request

To Florida Department of Environmental Regulations
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

ATTN: Ms Carol Browner

1. Reference our 15 Jan 92 telecon with Mr Chuck Collins and Mr Alan Zahn. As agreed, we are submitting a formal request for an emergency venting request for a hydrazine fueling operation and trichloroethylene (TCE) engine flush operation. Both of these operations are located at Launch Complex 36 on Cape Canaveral Air Force Station (CCAFS). We have run the Screen-1.1 Model provided by your office and the results show the following:

a. Hydrazine data: Maximum concentration of hydrazine is 1.375 ug/cu meter at a distance of 85 meters from the stack. This model run confirms that concentrations do not exceed the TLV of 0.1 mg/cu meter for workers who are located not closer than 250 meters. The no threat level of 0.13 ug/cubic meter for any general public area is not exceeded. The closest general public location is over 10,000 meters.

NOTE 1: See Attachment 1 for the hydrazine diffusion model input data and the Screen-1.1 computer model outputs.

b. Trichloroethylene (TCE) data: Maximum concentration of TCE is 6,594 ug/cu meter at 100 meters. This model run confirms that concentrations at the nearest general public location will be far less than the no threat level of 2,700 ug/cubic meters.

NOTE 2: See Attachment 2 for the TCE diffusion model input data and the Screen-1.1 computer model outputs.

2. The following background information is provided:

a. The Atlas launch vehicle will be loaded with 135 lbs of hydrazine. A scrubber with an efficiency of 99.35 percent will be utilized during the fueling operation. The maximum quantity of hydrazine delivered to the scrubber is 1.3 pounds and air emissions from the scrubber is 0.032 lb/hr for a duration of 95 minutes or 0.0567 lbs.


b. The TCE engine flushing operation is performed as a pre-launch safety operation to ensure that the Atlas booster engines are free of hydrocarbon residues prior to exposure to liquid oxygen. Emission control is accomplished through a plastic skirt and catch pans. Gaseous nitrogen is used to force approximately 1,600 lbs of TCE through the three Atlas booster engines. The catch pans, which are attached to thrust nozzles by plastic skirting, capture the TCE which flows into 55 gallon drums. Gaseous nitrogen is used to purge the engine and evaporate residual TCE. The flushing and purging takes about one hour releasing emissions of 38 lbs.

c. The Launch Complex 36 is located off Central Control Road on CCAFS (See Attachment 3, CCAFS map).

d. Operational controls will be enforced during the Atlas fueling operations. These controls will include no other venting from any source at CCAFS during this operation. The seaward restricted zone will be enforced to exclude unauthorized personnel.

3. The fueling and flushing operations are required prior to the scheduled Atlas launch on 24 January 1992. We have in your office an application for permit for the fueling operation on Complex 36 and are handcarrying the permit for the flushing operation on the same day we are sending this letter. We are in the process of completing all facility permits required for Cape Canaveral Air Force Station associated with launch operations. We plan to deliver them to you during the first week in February. At that time we would like to discuss methods to allow us to continue space launch from the Eastern Range while the permit process continues.

4. It is imperative that this request be acted on expeditiously because delaying the fueling operation beyond 16 January 1992 will result in a launch slip on a day-to-day basis. The flushing operation is scheduled for 21 January. We have already slipped fueling operation in order to request your concurrence of our emergency request and to ensure we provide you with all necessary information. The results show that none of these operations endanger the environment or present a threat to the general public. Our contacts for this subject is Mr Louis J. Ullian, Deputy Director of Safety, 407-494-5077 and Mr Clay Gordin, 45 CES/DEEV, 407/494-7288.


KEVIN P. HANSEN, LtCol, USAF
Range/Base Civil Engineer

3 Atch

1. Hyrazine Screen-1.1 Model
2. TCE Screen-1.1 Model
3. CCAFS Map

cc: FDER-Orlando (C. Collins)

BEST AVAILABLE COPY

SCREENDRAFT MODELING INPUT WORKSHEET

Source Cape Canaveral Air Force StationPollutant Hydrazine

| | <u>English Units</u> | | <u>Metric Units</u> |
|-----------------------------|-------------------------------------|---|---------------------------|
| 1) Emission Rates | <u>.0334</u> lb/hr * (0.126) | = | <u>.4210E-02</u> gram/sec |
| 2) Stack Height | <u>109.84</u> feet * (0.305) | = | <u>33.50</u> meters |
| 3) Stack Diameter | <u>.09</u> feet * (0.305) | = | <u>.03</u> meters |
| 4) Exit Velocity | <u>152.69</u> ft/sec * (0.305) | = | <u>46.57</u> meter/sec. |
| 5) Exit Temperature | 5/9 * (<u>26.8</u> F - 32) + 273.2 | = | <u>300.00</u> °K |
| 6) Building Height | <u>278.69</u> feet * (0.305) | = | <u>85</u> meters |
| 7) Min. Slóg Dimen | <u>65.57</u> feet * (0.305) | = | <u>20</u> meters |
| 8) Max. Slóg Dimen | <u>65.57</u> feet * (0.305) | = | <u>20</u> meters |
| 9) Distance to Access Point | <u>32286</u> feet * (0.305) | = | <u>10,000</u> meters |

SUMMARY OF SCREEN MODEL RESULT

MAXIMUM CONCENTRATION 1.357 $\times .7 = .9499$ $\mu\text{g}/\text{cu meter}$

DISTANCE TO MAXIMUM 100 meters

NO THREAT LEVEL = (NTL) = .13 $\mu\text{g}/\text{cu meter}$ (8hr)

Maximum Concentration exceeds ? YES X NO

If yes, by _____

Note: Maximum public exposure at 10,000 meters
is at least a order of magnitude less than

11-15-91
10:17:39

*** SCREEN-1.1 MODEL RUN ***
*** VERSION DATED 88300 ***

CX 36 HYDRAZINE SCRUBBER

SIMPLE TERRAIN INPUTS:

| | | |
|-------------------------|---|-----------|
| SOURCE TYPE | = | POINT |
| EMISSION RATE (G/S) | = | .4210E-02 |
| STACK HEIGHT (M) | = | 33.50 |
| STK INSIDE DIAM (M) | = | .03 |
| STK EXIT VELOCITY (M/S) | = | 46.57 |
| STK GAS EXIT TEMP (K) | = | 300.00 |
| AMBIENT AIR TEMP (K) | = | 300.00 |
| RECEPTOR HEIGHT (M) | = | 2.00 |
| TOPT (1=URB, 2=RUR) | = | 2 |
| BUILDING HEIGHT (M) | = | 85.00 |
| MIN HORIZ BLDG DIM (M) | = | 20.00 |
| MAX HORIZ BLDG DIM (M) | = | 20.00 |

BUOY. FLUX = .00 M**4/S**3; NOM. FLUX = .35 M**4/S**2.

*** FULL METEOROLOGY ***

BEST AVAILABLE COPY

*** SCREEN AUTOMATED DISTANCES ***

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

| DIST (M) | CONC (UG/M**3) | STAB | U10M (M/S) | USTK (M/S) | MIX HT (M) | PLUME HT (M) | SIGMA Y (M) | SIGMA Z (M) | DWASH |
|----------|----------------|------|------------|------------|------------|--------------|-------------|-------------|-------|
| 10. | .0000 | 0 | .0 | .0 | .0 | .0 | .0 | .0 | NA |
| 100. | 1.357 | 4 | 1.0 | 1.2 | 320.0 | 33.5 | 10.9 | 20.8 | SS |
| 200. | 1.100 | 4 | 1.0 | 1.2 | 320.0 | 33.5 | 17.6 | 27.5 | SS |
| 300. | .8005 | 4 | 1.0 | 1.2 | 320.0 | 33.5 | 25.3 | 34.3 | SS |
| 400. | .6277 | 4 | 1.0 | 1.2 | 320.0 | 33.5 | 32.0 | 36.2 | SS |
| 500. | .5149 | 4 | 1.0 | 1.2 | 320.0 | 33.5 | 38.7 | 38.2 | SS |
| 600. | .4350 | 4 | 1.0 | 1.2 | 320.0 | 33.5 | 45.2 | 40.0 | SS |
| 700. | .3753 | 4 | 1.0 | 1.2 | 320.0 | 33.5 | 51.7 | 41.8 | SS |
| 800. | .3289 | 4 | 1.0 | 1.2 | 320.0 | 33.5 | 58.0 | 43.6 | SS |
| 900. | .2918 | 4 | 1.0 | 1.2 | 320.0 | 33.5 | 64.3 | 45.3 | SS |
| 1000. | .2686 | 6 | 1.0 | 1.9 | 5000.0 | 33.5 | 46.2 | 36.2 | SS |
| 1100. | .2529 | 6 | 1.0 | 1.9 | 5000.0 | 33.5 | 49.2 | 36.5 | SS |
| 1200. | .2373 | 6 | 1.0 | 1.9 | 5000.0 | 33.5 | 52.1 | 36.8 | SS |
| 1300. | .2243 | 6 | 1.0 | 1.9 | 5000.0 | 33.5 | 55.1 | 37.0 | SS |
| 1400. | .2127 | 6 | 1.0 | 1.9 | 5000.0 | 33.5 | 58.0 | 37.3 | SS |
| 1500. | .2022 | 6 | 1.0 | 1.9 | 5000.0 | 33.5 | 60.9 | 37.6 | SS |
| 1600. | .1927 | 6 | 1.0 | 1.9 | 5000.0 | 33.5 | 63.8 | 37.9 | SS |
| 1700. | .1841 | 6 | 1.0 | 1.9 | 5000.0 | 33.5 | 66.7 | 38.2 | SS |
| 1800. | .1762 | 6 | 1.0 | 1.9 | 5000.0 | 33.5 | 69.6 | 38.5 | SS |
| 1900. | .1690 | 6 | 1.0 | 1.9 | 5000.0 | 33.5 | 72.4 | 38.7 | SS |
| 2000. | .1623 | 6 | 1.0 | 1.9 | 5000.0 | 33.5 | 75.3 | 39.0 | SS |
| 2100. | .1561 | 6 | 1.0 | 1.9 | 5000.0 | 33.5 | 78.1 | 39.3 | SS |
| 2200. | .1504 | 6 | 1.0 | 1.9 | 5000.0 | 33.5 | 80.9 | 39.6 | SS |
| 2300. | .1451 | 6 | 1.0 | 1.9 | 5000.0 | 33.5 | 83.7 | 39.8 | SS |
| 2400. | .1407 | 6 | 1.0 | 1.9 | 5000.0 | 33.5 | 86.5 | 39.5 | SS |
| 2500. | .1360 | 6 | 1.0 | 1.9 | 5000.0 | 33.5 | 89.3 | 39.8 | SS |
| 2600. | .1317 | 6 | 1.0 | 1.9 | 5000.0 | 33.5 | 92.1 | 40.1 | SS |
| 2700. | .1276 | 6 | 1.0 | 1.9 | 5000.0 | 33.5 | 94.8 | 40.3 | SS |
| 2800. | .1238 | 6 | 1.0 | 1.9 | 5000.0 | 33.5 | 97.6 | 40.5 | SS |
| 2900. | .1202 | 6 | 1.0 | 1.9 | 5000.0 | 33.5 | 100.3 | 40.8 | SS |
| 3000. | .1168 | 6 | 1.0 | 1.9 | 5000.0 | 33.5 | 103.1 | 41.0 | SS |
| 3500. | .1022 | 6 | 1.0 | 1.9 | 5000.0 | 33.5 | 116.6 | 42.1 | SS |
| 4000. | .9082E-01 | 6 | 1.0 | 1.9 | 5000.0 | 33.5 | 130.0 | 43.2 | SS |
| 4500. | .8163E-01 | 6 | 1.0 | 1.9 | 5000.0 | 33.5 | 143.2 | 44.3 | SS |
| 5000. | .7407E-01 | 6 | 1.0 | 1.9 | 5000.0 | 33.5 | 156.2 | 45.3 | SS |

XIMUM 1-HR CONCENTRATION AT OR BEYOND 10. M:
85. 1.375 4 1.0 1.2 320.0 33.5 10.0 19.9 SS

JASH= MEANS NO CALC MADE (CONC = 0.0)
JASH=NO MEANS NO BUILDING DOWNWASH USED
JASH=HS MEANS HUBER-SNYDER DOWNWASH USED
JASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
JASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

== CAVITY CALCULATION - 1 ***
CONC (UG/M**3) = 1.651
CRIT WS @10M (M/S) = 1.00
CRIT WS @ HS (M/S) = 1.27
DILUTION WS (M/S) = 1.00
CAVITY HT (M) = 185.16
CAVITY LENGTH (M) = 73.88
LONGWIND DIM (M) = 20.00

*** CAVITY CALCULATION - 2 ***
CONC (UG/M**3) = 1.651
CRIT WS @10M (M/S) = 1.00
CRIT WS @ HS (M/S) = 1.27
DILUTION WS (M/S) = 1.00
CAVITY HT (M) = 185.16
CAVITY LENGTH (M) = 73.88
ALONGWIND DIM (M) = 20.00

*** INVERSION BREAK-UP FUMIGATION CALC. ***

CONC (UG/M**3) = .0000

DIST TO MAX (M) = 100.00

DIST TO MAX IS < 2000. M. CONC SET = 0.0

PLUME HEIGHT IS BELOW TIBL HEIGHT
FOR DISTANCE TO SHORELINE OF 540.00 M.
NO SHORELINE FUMIGATION CALCULATION MADE.

SUMMARY OF SCREEN MODEL RESULTS

| CALCULATION PROCEDURE | MAX CONC (UG/M**3) | DIST TO MAX (M) | TERRAIN HT (M) |
|--------------------------|-----------------------|--------------------|---------------------------|
| SIMPLE TERRAIN | 1.375 | 85. | 0. |
| BUILDING CAVITY-1 | 1.651 | 74. | -- (DIST = CAVITY LENGTH) |
| BUILDING CAVITY-2 | 1.651 | 74. | -- (DIST = CAVITY LENGTH) |

REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS

Best Available Copy

SCREENDRAFT MODELING INPUT WORKSHEETSource Cape Canaveral Air Force StationPollutant Trichloroethylene

- | | <u>English Units</u> | <u>Metric Units</u> |
|---|-----------------------------|-------------------------|
| 1) Emission Rates | <u>38.032</u> lb/hr*(0.126) | = <u>4.792</u> gram/sec |
| 2) Stack Height | <u>32.786</u> feet *(0.305) | = <u>10.0</u> meters |
| 3) ^{Length of side} Stack Diameter | <u>9.836</u> feet *(0.305) | = <u>3.0</u> meters |
| 4) Exit Velocity | <u>N/A</u> ft/sec *(0.305) | = _____ meter/sec. |
| 5) Exit Temperature | 5/9*(_____ F-32)+273.2 | = <u>293</u> °K |
| 6) ^{Receptor} Building Height | <u>6.557</u> feet *(0.305) | = <u>2</u> meters |
| 7) Min. Bldg Dimen | <u>N/A</u> feet *(0.305) | = _____ meters |
| 8) Max. Bldg Dimen | <u>N/A</u> feet *(0.305) | = _____ meters |
| 9) Distance to Access Point | _____ feet *(0.305) | = <u>10,000</u> meters |

SUMMARY OF SCREEN MODEL RESULT

MAXIMUM CONCENTRATION 6594 \times 0.7 = 4616 $\mu\text{g}/\text{cu meter}$

DISTANCE TO MAXIMUM 100 meters

NO THREAT LEVEL = (NTL) = 2700 $\mu\text{g}/\text{cu meter}$ (8hr)

Maximum Concentration exceeds ? X YES _____ NO _____

If yes, by 1916

Note: Maximum public exposure at 10,000 meters is at least a order of magnitude less than

Model Run #1 - Worst Case Scenario

BEST AVAILABLE COPY

| DIST (M) | CONC (UG/M**3) | STAB | U10M (M/S) | USTK (M/S) | MIX HT (M) | PLUME HT (M) | SIGMA Y (M) | SIGMA Z (M) | DWASH |
|-------------|-------------------|------|---------------|---------------|---------------|-----------------|----------------|----------------|-------|
| 100. | 6594. | 3 | 1.0 | 1.0 | 320.0 | 10.0 | 13.0 | 7.4 | NO |
| 200. | 6013. | 5 | 1.0 | 1.0 | 5000.0 | 10.0 | 12.1 | 6.2 | NO |
| 300. | 5389. | 6 | 1.0 | 1.0 | 5000.0 | 10.0 | 11.7 | 5.6 | NO |
| 400. | 5135. | 6 | 1.0 | 1.0 | 5000.0 | 10.0 | 15.1 | 7.0 | NO |
| 500. | 4901. | 6 | 1.0 | 1.0 | 5000.0 | 10.0 | 18.4 | 8.4 | NO |
| 600. | 4263. | 6 | 1.0 | 1.0 | 5000.0 | 10.0 | 21.7 | 8.7 | NO |
| 700. | 3674. | 6 | 1.0 | 1.0 | 5000.0 | 10.0 | 24.9 | 10.9 | NO |
| 800. | 3186. | 6 | 1.0 | 1.0 | 5000.0 | 10.0 | 28.1 | 12.0 | NO |
| 900. | 2783. | 6 | 1.0 | 1.0 | 5000.0 | 10.0 | 31.2 | 13.0 | NO |
| 1000. | 2451. | 6 | 1.0 | 1.0 | 5000.0 | 10.0 | 34.3 | 14.0 | NO |
| 1100. | 2180. | 6 | 1.0 | 1.0 | 5000.0 | 10.0 | 37.4 | 14.8 | NO |
| 1200. | 1854. | 6 | 1.0 | 1.0 | 5000.0 | 10.0 | 40.5 | 15.7 | NO |
| 1300. | 1763. | 6 | 1.0 | 1.0 | 5000.0 | 10.0 | 43.5 | 16.5 | NO |
| 1400. | 1600. | 6 | 1.0 | 1.0 | 5000.0 | 10.0 | 46.5 | 17.3 | NO |
| 1500. | 1460. | 6 | 1.0 | 1.0 | 5000.0 | 10.0 | 49.5 | 18.0 | NO |
| 1600. | 1339. | 6 | 1.0 | 1.0 | 5000.0 | 10.0 | 52.4 | 18.8 | NO |
| 1700. | 1233. | 6 | 1.0 | 1.0 | 5000.0 | 10.0 | 55.4 | 19.5 | NO |
| 1800. | 1140. | 6 | 1.0 | 1.0 | 5000.0 | 10.0 | 58.3 | 20.2 | NO |
| 1900. | 1058. | 6 | 1.0 | 1.0 | 5000.0 | 10.0 | 61.2 | 20.9 | NO |
| 2000. | 985.5 | 6 | 1.0 | 1.0 | 5000.0 | 10.0 | 64.1 | 21.6 | NO |
| 2100. | 923.6 | 6 | 1.0 | 1.0 | 5000.0 | 10.0 | 67.0 | 22.2 | NO |
| 2200. | 868.0 | 6 | 1.0 | 1.0 | 5000.0 | 10.0 | 69.8 | 22.8 | NO |
| 2300. | 817.8 | 6 | 1.0 | 1.0 | 5000.0 | 10.0 | 72.7 | 23.3 | NO |
| 2400. | 772.3 | 6 | 1.0 | 1.0 | 5000.0 | 10.0 | 75.5 | 23.9 | NO |
| 2500. | 730.9 | 6 | 1.0 | 1.0 | 5000.0 | 10.0 | 78.4 | 24.4 | NO |
| 2600. | 693.1 | 6 | 1.0 | 1.0 | 5000.0 | 10.0 | 81.2 | 25.0 | NO |
| 2700. | 658.5 | 6 | 1.0 | 1.0 | 5000.0 | 10.0 | 84.0 | 25.5 | NO |
| 2800. | 626.7 | 6 | 1.0 | 1.0 | 5000.0 | 10.0 | 86.8 | 26.0 | NO |
| 2900. | 597.5 | 6 | 1.0 | 1.0 | 5000.0 | 10.0 | 89.6 | 26.5 | NO |
| 3000. | 570.4 | 6 | 1.0 | 1.0 | 5000.0 | 10.0 | 92.3 | 27.0 | NO |
| 3500. | 466.7 | 6 | 1.0 | 1.0 | 5000.0 | 10.0 | 106.0 | 29.0 | NO |
| 4000. | 391.8 | 6 | 1.0 | 1.0 | 5000.0 | 10.0 | 119.6 | 30.8 | NO |
| 4500. | 335.6 | 6 | 1.0 | 1.0 | 5000.0 | 10.0 | 132.9 | 32.6 | NO |
| 5000. | 292.1 | 6 | 1.0 | 1.0 | 5000.0 | 10.0 | 146.1 | 34.2 | NO |

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 100. M:

| | | | | | | | | | |
|------|-------|---|-----|-----|-------|------|------|-----|----|
| 100. | 6594. | 3 | 1.0 | 1.0 | 320.0 | 10.0 | 13.0 | 7.4 | NO |
|------|-------|---|-----|-----|-------|------|------|-----|----|

Model Run #1 - Worst Case Scenario

DWASH= MEANS NO CALC MADE (CONC = 0,0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SHYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

*** SUMMARY OF SCREEN MODEL RESULTS ***

| CALCULATION PROCEDURE | MAX CONC (UG/M**3) | DIST TO MAX (M) | TERRAIN HT (M) |
|--------------------------|-----------------------|--------------------|-------------------|
| ----- | ----- | ----- | ----- |
| SIMPLE TERRAIN | 6594. | 100. | 0. |

*** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS ***

01-16-95 11:22 8107 191 6533
ESMO:SEN

Model Run #2
Actual Conditions

01-13-92
16:40:38

*** SCREEN-1.1 MODEL RUN ***
*** VERSION DATED 88300 ***

CX 36 TRICHLOROETHYLENE ENGINE FLUSH - ACTUAL CONDITIONS

SIMPLE TERRAIN INPUTS:

SOURCE TYPE = AREA
EMISSION RATE (G/S) = 4.792
SOURCE HEIGHT (M) = 10.00
LENGTH OF SIDE (M) = 3.00
RECEPTOR HEIGHT (M) = 2.00
IOPT (1=URB, 2=RUR) = 2

BOUY. FLUX = .00 M**4/S**3; MOM. FLUX = .00 M**4/S**2.

*** STABILITY CLASS 3 ONLY ***
*** 10-METER WIND SPEED OF 4.0 M/S ONLY ***

*** SCREEN AUTOMATED DISTANCES ***

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

01-16-92-14:23
0107 191 6535
ESM SEM

Actual Conditions

| DIST (M) | CONC (UG/M*3) | STAB | U10M (M/S) | USTK (M/S) | MIX HT (M) | PLUME HT (M) | SIGMA Y (M) | SIGMA Z (M) | DWASH |
|-------------|------------------|------|---------------|---------------|---------------|-----------------|----------------|----------------|-------|
| 100. | 1648. | 3 | 4.0 | 4.0 | 1280.0 | 10.0 | 13.0 | 7.4 | NO |
| 200. | 870.9 | 3 | 4.0 | 4.0 | 1280.0 | 10.0 | 24.1 | 14.0 | NO |
| 300. | 476.7 | 3 | 4.0 | 4.0 | 1280.0 | 10.0 | 34.7 | 20.3 | NO |
| 400. | 297.0 | 3 | 4.0 | 4.0 | 1280.0 | 10.0 | 45.1 | 26.4 | NO |
| 500. | 202.8 | 3 | 4.0 | 4.0 | 1280.0 | 10.0 | 55.2 | 32.4 | NO |
| 600. | 147.5 | 3 | 4.0 | 4.0 | 1280.0 | 10.0 | 65.1 | 38.3 | NO |
| 700. | 112.3 | 3 | 4.0 | 4.0 | 1280.0 | 10.0 | 74.9 | 44.1 | NO |
| 800. | 88.59 | 3 | 4.0 | 4.0 | 1280.0 | 10.0 | 84.6 | 49.9 | NO |
| 900. | 71.78 | 3 | 4.0 | 4.0 | 1280.0 | 10.0 | 94.1 | 55.5 | NO |
| 1000. | 59.42 | 3 | 4.0 | 4.0 | 1280.0 | 10.0 | 103.5 | 61.1 | NO |
| 1100. | 50.06 | 3 | 4.0 | 4.0 | 1280.0 | 10.0 | 112.9 | 66.7 | NO |
| 1200. | 42.80 | 3 | 4.0 | 4.0 | 1280.0 | 10.0 | 122.1 | 72.2 | NO |
| 1300. | 37.05 | 3 | 4.0 | 4.0 | 1280.0 | 10.0 | 131.3 | 77.7 | NO |
| 1400. | 32.41 | 3 | 4.0 | 4.0 | 1280.0 | 10.0 | 140.4 | 83.2 | NO |
| 1500. | 28.61 | 3 | 4.0 | 4.0 | 1280.0 | 10.0 | 149.4 | 88.6 | NO |
| 1600. | 25.46 | 3 | 4.0 | 4.0 | 1280.0 | 10.0 | 158.4 | 94.0 | NO |
| 1700. | 22.82 | 3 | 4.0 | 4.0 | 1280.0 | 10.0 | 167.4 | 99.3 | NO |
| 1800. | 20.58 | 3 | 4.0 | 4.0 | 1280.0 | 10.0 | 176.2 | 104.7 | NO |
| 1900. | 18.66 | 3 | 4.0 | 4.0 | 1280.0 | 10.0 | 185.0 | 110.0 | NO |
| 2000. | 17.00 | 3 | 4.0 | 4.0 | 1280.0 | 10.0 | 193.8 | 115.3 | NO |
| 2100. | 15.57 | 3 | 4.0 | 4.0 | 1280.0 | 10.0 | 202.6 | 120.5 | NO |
| 2200. | 14.31 | 3 | 4.0 | 4.0 | 1280.0 | 10.0 | 211.2 | 125.8 | NO |
| 2300. | 13.20 | 3 | 4.0 | 4.0 | 1280.0 | 10.0 | 219.9 | 131.0 | NO |
| 2400. | 12.22 | 3 | 4.0 | 4.0 | 1280.0 | 10.0 | 228.5 | 136.2 | NO |
| 2500. | 11.35 | 3 | 4.0 | 4.0 | 1280.0 | 10.0 | 237.0 | 141.4 | NO |
| 2600. | 10.57 | 3 | 4.0 | 4.0 | 1280.0 | 10.0 | 245.6 | 146.5 | NO |
| 2700. | 9.874 | 3 | 4.0 | 4.0 | 1280.0 | 10.0 | 254.1 | 151.7 | NO |
| 2800. | 9.244 | 3 | 4.0 | 4.0 | 1280.0 | 10.0 | 262.5 | 156.8 | NO |
| 2900. | 8.675 | 3 | 4.0 | 4.0 | 1280.0 | 10.0 | 271.0 | 161.9 | NO |
| 3000. | 8.158 | 3 | 4.0 | 4.0 | 1280.0 | 10.0 | 279.4 | 167.0 | NO |

01-16-92

14:24

0107 194 6535

ESMCO-SEN

013

Model Run #2
Actual Conditions

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 100. M:
 100. 1648. 3 4.0 4.0 1280.0 10.0 13.0 7.4 NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
 DWASH=NO MEANS NO BUILDING DOWNWASH USED
 DWASH=HS MEANS HUBER-SHYDER DOWNWASH USED
 DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
 DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

 ** SUMMARY OF SCREEN MODEL RESULTS **

| CALCULATION PROCEDURE | MAX CONC (UG/M**3) | DIST TO MAX (M) | TERRAIN HT (M) |
|--------------------------|-----------------------|--------------------|-------------------|
| SIMPLE TERRAIN | 1648. | 100. | 0. |

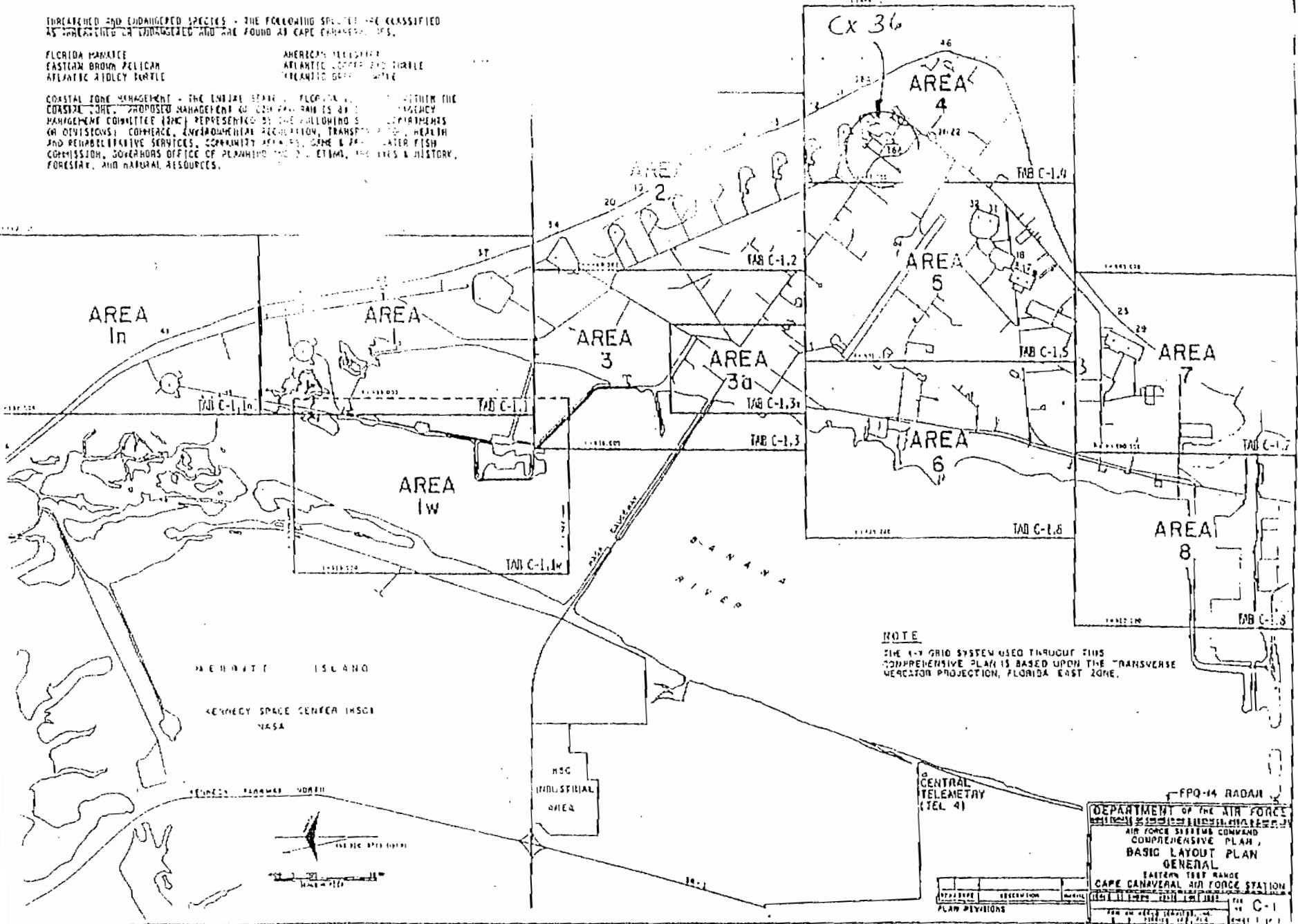
 ** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **

THREATENED AND ENDANGERED SPECIES - THE FOLLOWING SPECIES ARE CLASSIFIED AS THREATENED OR ENDANGERED AND ARE FOUND AT CAPE CANAVERAL AFS.

FLORIDA MANATEE
EASTERN BROWN PELICAN
ATLANTIC RIDLEY TURTLE

AMERICAN BOTTLENECK
ATLANTIC COOPER AND TURTLE
ATLANTIC SPANISH ANCHER

COASTAL ZONE MANAGEMENT - THE UNITED STATES OF AMERICA, WITHIN THE CONSTITUTION, THE PROPOSED MANAGEMENT OF THE CAPE CANAVERAL AIR FORCE STATION, THE MANAGEMENT COMMITTEE (MCM) REPRESENTED BY THE FOLLOWING AGENCIES OR DIVISIONS: COMMERCE, ENVIRONMENTAL PROTECTION, TRANSPORTATION, HEALTH AND RECREATION SERVICES, COMMUNITY AFFAIRS, GAME & FISH, WATER FISH COMMISSION, GOVERNORS OFFICE OF PLANNING AND ECONOMIC DEVELOPMENT, FORESTRY, AND NATURAL RESOURCES.



NOTE
THE 1-1 GRID SYSTEM USED THROUGHOUT THIS COMPREHENSIVE PLAN IS BASED UPON THE TRANSVERSE MERCATOR PROJECTION, FLORIDA EAST ZONE.

FPQ-14 RADAR

DEPARTMENT OF THE AIR FORCE
AIR FORCE SYSTEMS COMMAND
COMPREHENSIVE PLAN,
BASIC LAYOUT PLAN
GENERAL
EASTERN TEST RANGE
CAPE CANAVERAL AIR FORCE STATION
PLANS DIVISION

| | | |
|------|-------------|----|
| DATE | DESCRIPTION | BY |
| | | |

PLAN DIVISIONS

01 16 92, 14:25
0107 494 6535
ESMC-SEM