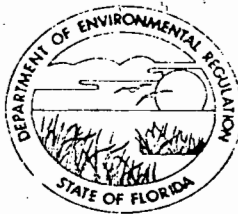


3301 GUN CLUB ROAD
P.O. BOX 3858
WEST PALM BEACH, FLORIDA 33402



P Bch 10

BOB GRAHAM
GOVERNOR

JACOB D. VARN
SECRETARY

WARREN G. STRAHM
SUBDISTRICT MANAGER

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

SOUTH FLORIDA SUBDISTRICT

December 30, 1980

Mr. W. S. Parker, Vice President
Counsel
Pratt and Whitney Aircraft Group
Government Products Division
Post Office Box 2691
West Palm Beach, FL 33402

AP - Palm Beach County
Pratt and Whitney Aircraft Group

Test Area

Dear Mr. Parker:

Enclosed is Permit Number AO 50-37862, dated Dec. 30, 1980,
to operate an air pollution source
issued pursuant to Section 403.087, Florida Statutes.

Should you object to this permit, including any and all of the conditions contained therein, you may file an appropriate petition for administrative hearing. This petition must be filed within fourteen (14) days of the receipt of this letter. Further, the petition must conform to the requirements of Section 28-5.201, Florida Administrative Code, (see reverse side of this letter). The petition must be filed with the Office of General Counsel, Department of Environmental Regulation, Twin Towers Office Building, 2600 Blair Stone Road, Tallahassee, Florida 32301.

If no petition is filed within the prescribed time, you will be deemed to have accepted this permit and waived your right to request an administrative hearing on this matter.

Acceptance of the permit constitutes notice and agreement that the Department will periodically review this permit for compliance, including site inspections where applicable, and may initiate enforcement action for violation of the conditions and requirements thereof.

cc: Tallahassee
Palm Beach County Health Department
Mr. J. Dail

Sincerely,

James C. Williams
Roy M. Duke, P.E.
Permitting Section Head

Enclosure

RMD:IG:mh

DER Form 17-1.122(66) 1/2

RECEIVED
DEC 31 1980

Division of Environmental
Sciences & Engineering
PALM BEACH COUNTY
HEALTH DEPT.

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

PART II
FORMAL PROCEEDINGS

28-5.201 Initiation of Formal Proceedings.

- (1) Initiation of formal proceedings shall be made by petition to the agency responsible for rendering final agency action. The term petition as used herein includes any application or other document which expresses a request for formal proceedings. Each petition should be printed, typewritten or otherwise duplicated in legible form on white paper of standard legal size. Unless printed, the impression shall be on one side of the paper only and lines shall be double-spaced and indented.
- (2) All petitions filed under these rules should contain:
 - (a) The name and address of each agency affected and each agency's file or identification number, if known;
 - (b) The name and address of the petitioner or petitioners, and an explanation of how his/her substantial interests will be affected by the agency determination;
 - (c) A statement of when and how petitioner received notice of the agency decision or intent to render a decision;
 - (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate;
 - (e) A concise statement of the ultimate facts alleged, as well as the rules and statutes which entitle the petitioner to relief;
 - (f) A demand for relief to which the petitioner deems himself entitled; and
 - (g) Other information which the petitioner contends is material.

A petition may be denied if the petitioner does not state adequately a material factual allegation, such as a substantial interest in the agency determination, or if the petition is untimely. (Section 28-5.201(3) (a), FAC)



STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

SOUTH FLORIDA SUBDISTRICT

APIS #50/50/0021/01

Class A; 1,3

PERMIT/CERTIFICATION
NO.

AO 50-37862

APPLICANT: Mr. W. S. Parker, Vice President/Counsel
Pratt and Whitney Aircraft Group
Government Products Division
Post Office Box 2691
West Palm Beach, FL

COUNTY: Palm Beach

PROJECT: Pratt & Whitney
Aircraft Group

Test Area

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Chapter 17-2, Florida Administrative Code. The above named applicant, hereinafter called Permittee, is hereby authorized to perform the work or operate the facility shown on the approved drawing(s), plans, documents, and specifications attached hereto and made a part hereof and specifically described as follows: To operate the air pollution sources in attached "Attachment A" of application and consisting of:

- 25 Air Compressors/Heaters
- 8 Small Boilers (less than 15 MMBTU/hr.)
- 3 Large Boilers (greater than 200 MMBTU/hr.)
- 1 Combustor Stand
- 4 Degreasers
- 14 Diesel Storage Tanks
- 13 Jet Propulsion (JP-4 to SP-7) Fuel Storage Tanks
- 6 Miscellaneous Types Fuel Storage Tanks
- 2 Gasoline Storage Tanks
- 1 Paint Spray Booth
- 1 Solvent Still

These are sited on attached Pratt and Whitney Drawing PE 12-130R "Test Facilities Area Layout."

The combined emissions of the above sources to the atmosphere total 338 lbs./hr. (1,481 tons/yr.) of particulates, 10.8 lbs./hr. (48.3 tons/yr.) of volatile organic compounds (VOC), 1,875 lbs./hr. (8,211 tons/yr.) of SO₂, 915 lbs./hr. (4,010 tons/yr.) of NO_x and 484 lbs./hr. (2,121 tons/yr.) of CO discharged at a generalized height of 20 feet above ground level.

The area has an annual throughput of 35,000,000 gallons of jet fuel, 12,000,000 gallons of #6 fuel oil and 174,000 gallons of Diesel Fuel.

PLEASE SEE PAGE 3 FOR FURTHER DESCRIPTION

PERMIT NO.: AO 50-37862 - Pratt and Whitney Aircraft Group
APPLICANT: Mr. W. S. Parker, Vice President/Counsel

GENERAL CONDITIONS:

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

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

3. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately notify and provide the department with the following information: (a) a description of and cause of non-compliance; and (b) the period of non-compliance, including exact 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. The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the department for penalties or revocation of this permit.

4. As provided in subsection 403.087(6), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

5. This permit is required to be posted in a conspicuous location at the work site or source during the entire period of construction or operation.

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

7. In the case of an operation permit, 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.

8. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, plant, or aquatic life or property and penalties therefore caused by the construction or operation of this permitted source, nor does it allow the permittee to cause pollution in contravention of Florida Statutes and department rules, except where specifically authorized by an order from the department granting a variance or exception from department rules or state statutes.

9. This permit is not transferable. Upon sale or legal transfer of the property or facility covered by this permit, the permittee shall notify the department within thirty (30) days. The new owner must apply for a permit transfer within thirty (30) days. The permittee shall be liable for any non-compliance of the permitted source until the transferee applies for and receives a transfer of permit.

10. The permittee, by acceptance of this permit, specifically agrees to allow access to permitted source at reasonable times by department personnel presenting credentials for the purposes of inspection and testing to determine compliance with this permit and department rules.

11. This permit does not indicate a waiver of or approval of any other department permit that may be required for other aspects of the total project.

12. This permit conveys no title to land or water, nor constitutes state recognition or acknowledgement of title, and does not constitute authority for the reclamation 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.

13. This permit also constitutes:

- Determination of Best Available Control Technology (BACT)
- Determination of Prevention of Significant Deterioration (PSD)
- Certification of Compliance with State Water Quality Standards (Section 401, PL 92-500)

PERMIT NO.: AO 50-37862 - Pratt and Whitney Aircraft Group
APPLICANT: W. S. Parker, Vice President/Counsel

In Accordance with: Specifications contained in application to Operate Air
Pollution Sources dated May 5, 1980 and letters dated September
9, 1980, November 11, 1980 and December 18, 1980 (none are
attached).

Located at: State Road #710, Palm Beach County, Florida

Serving: An aircraft engine research and development facility
(SIC #3724)

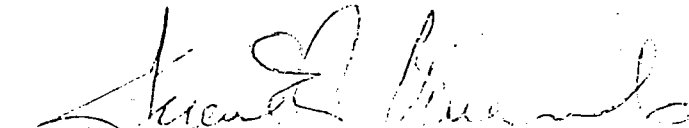
Subject to: General Conditions 1 through 12 and Specific Conditions
1 through 6.

NOTE: This permit supersedes and voids Permit #AO 50-30555 issued December 9, 1980
to same applicant

SPECIFIC CONDITIONS:

1. Boiler units rated at 200 MMBTU/hr. or more shall be tested for visible emissions at intervals of one year starting March 1981 in accordance with methods and techniques approved by the Department. Test reports shall be submitted to the Department of Environmental Regulation, South Florida Subdistrict Office no later than the fifteenth day of the following month.
2. Testing of emissions shall be accomplished at approximately the rates as stated in the permit. Failure to submit the input rates or operation at conditions which do not reflect actual operating conditions may invalidate the data.
3. On or before March 1 of each calendar year a completed DER Form 17-1.122 (44), Annual Operations Report Form for Air Emissions Sources, is to be submitted for this source to the Department of Environmental Regulation, South Florida Subdistrict Office.
4. Emissions from Degreaser DEG-2-CTJ shall not exceed 3 lbs./hr. or 15 lbs./day of volatile organic compounds.
5. Copies of all reports, tests or other submittals required by this permit shall be submitted to the Palm Beach County Health Department concurrently with the submissions of such information to the Department of Environmental Regulation, South Florida Subdistrict Office. Notifications required by this permit shall also be made to the Palm Beach County Health Department.
6. A separate operating permit for the engine test stands is not required at this time. The fuel usage of these test stands is a subject of this permit and is limited to 35,000,000 gal. of jet fuel per year and 750,000 therms of natural gas per year. Any increase above these numbers will required a permit modification.

LOCAL PROGRAM APPROVAL


 Name Frank J. Gargiulo, P.E., Director

Date: 12/23/80

Title Director of Environmental Sciences & Engineering

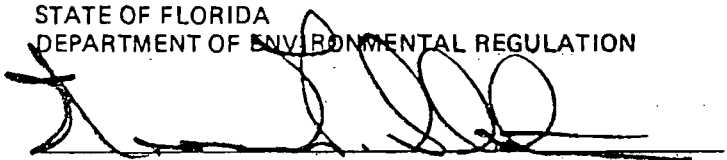
Expiration Date: December 30, 1985

Issued this 30th day of DECEMBER 1980

Pages Attached.

STATE OF FLORIDA
 DEPARTMENT OF ENVIRONMENTAL REGULATION

WCS:IG:mh
 H.


 Signature

Warren G. Strahm
 Subdistrict Manager

Check Sheet

Company Name: Pratt & Whitney Inc - United Technologies Inc
Permit Number: General
PSD Number: _____
Permit Engineer: _____

Application:

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

Cross References:

- AC 50-181702
- AD 50-037862
-

Intent:

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

Final

Determination:

- Final Determination
- Signed Permit
- BACT or LAER Determination
- Other

Post Permit Correspondence:

- Extensions/Amendments/Modifications
- Other



**UNITED
TECHNOLOGIES
PRATT & WHITNEY
AIRCRAFT**

P. O. Box 2691
West Palm Beach, Florida 33402
305/840-2000

February 21, 1985

Government Products Division

Mr. Thomas Tittle
Air Permitting
Department of Environmental Regulation
3301 Gun Club Road
Post Office Box 3858
West Palm Beach, Florida 33402-3858

Re: Air Operation Permit A050-37862

Dear Mr. Tittle:

Reference is made to our letter to you dated February 5, 1985 concerning the situation with regards to our degreaser DEG-2-CTJ which involved increased solvent usage resulting from ventilation changes.

We have performed an investigation and an evaluation of degreaser DEG-2-CTJ which is adjacent to a clean room that is used as part of our rocket support program. When this degreaser was permitted, it did not meet the open top degreaser Reasonably Available Control Technology (RACT) requirements in Chapter 17-2.650 (1) (f) 12.c. Consequently, the referenced permit was written with a volatile organic compound (VOC) emission limitation of 3 lbs/hr or 15 lbs/day for degreaser DEG-2-CTJ.

In October 1984, ventilation changes were made to the degreaser to decrease concentrations of solvent levels in the workplace's ambient air. These ventilation changes consisted of adding a second fan and a damper to the degreaser ventilation duct system. These changes caused larger volumes of air to be moved in and out of the workplace and around the degreaser when the degreaser was in operation.

Prior to November 1984 the usage of degreaser DEG-2-CTJ had been minimal. In November 1984 when the degreaser usage increased, larger volumes of degreaser solvent were required to be added to the degreaser to maintain the operating degreaser fluid levels. (The period of presumed increased emissions from degreaser DEG-2-CTJ was from early November 1984 to early February 1985). To minimize escape of solvent vapors, various ventilation modifications have now been implemented. The degreaser exhaust fan has been deactivated. A second damper has been installed in series with the damper installed in October 1984.

The top portion of the degreaser is totally encapsulated by a small enclosure with windows on either side. Opening either window actuates the second damper to allow any vapors from around the degreaser to flow into the exhaust duct (see attached drawing). The second damper automatically shuts except during periods when one of the windows in the enclosure is open. Flow measurements show that there is no air flow in the duct when the damper is shut. During degreaser operation the only time a window is open is when a part is in the degreaser.

DER
FEB 25 1985
BAQM

Mr. Thomas Tittle
Department of Environmental Regulation
February 21, 1985
Page No. 2

While at the time of permitting, the degreaser did not meet RACT, Pratt & Whitney feels that it does now comply with RACT because the degreaser is totally enclosed by a cover, which during degreaser operation is shut except when a part is in the degreaser. Consequently it is requested that the "3 lbs/hr or 15 lbs/day" limitation be removed from the operation permit. Please advise us of your determination as soon as possible.

Sincerely,

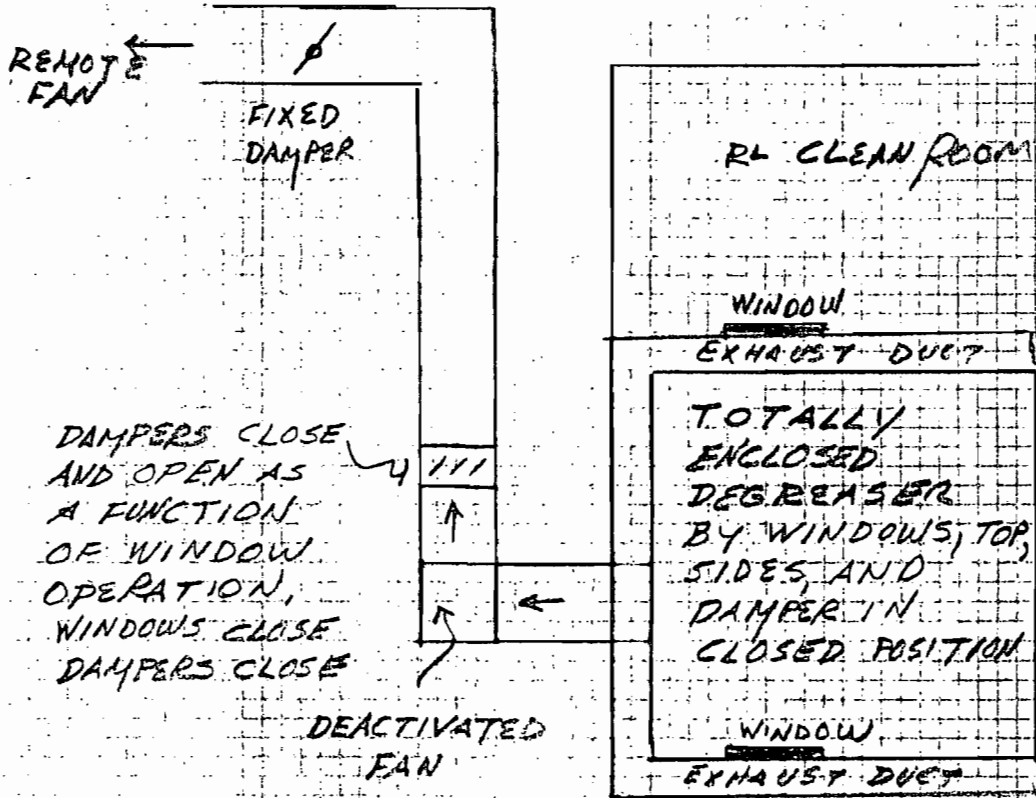


J. L. Seelinger, Manager
Utilities Operations/Environmental Affairs

JLS/fo/3079

cc: Clair Fancey - DER, Tallahassee
E. J. Sacco, PBCHD

RL-10 DEGREASER
TURBO JET BLDG



NOT TO SCALE

PLAN VIEW

DEPARTMENT OF ENVIRONMENTAL REGULATION

ROUTING AND TRANSMITTAL SLIP		ACTION NO	
		ACTION DUE DATE	
1. TO: (NAME, OFFICE, LOCATION)	<i>Clair</i>	INITIAL	
		DATE	
2.	<i>File: permit file</i>	INITIAL	
		DATE	
3.		INITIAL	
		DATE	
4.		INITIAL	
		DATE	

REMARKS:

*Re Pratt + Whitney
Palm Beach County
Operations -
Jim Dail @
(305) 840-2448
for info on their
facilities*

INFORMATION

REVIEW & RETURN
REVIEW & FILE
INITIAL & FORWARD
DISPOSITION
REVIEW & RESPOND
PREPARE RESPONSE
FOR MY SIGNATURE
FOR YOUR SIGNATURE
LET'S DISCUSS
SET UP MEETING
INVESTIGATE & REPT
INITIAL & FORWARD
DISTRIBUTE
CONCURRENCE
FOR PROCESSING
INITIAL & RETURN

FROM:

[Signature]

DATE

6/11/82

PHONE

Clair

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

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



BOB GRAHAM
GOVERNOR
VICTORIA J. TSCHINKEL
SECRETARY

June 11, 1982

Mr. W. Jimmy Dail
Plant Engineering
Pratt and Whitney
Aircraft Group
Government Products
Division
P. O. Box 2691
West Palm Beach, Florida 33402

Dear Mr. Dail:

Reference our phone conversation of this date. Ms. Martha Hall, FDER Office of the General Counsel, Air Attorney, has reviewed your current operating permit and associated information and has found no requirement for ambient monitoring to meet the permit or Chapter 17-2, F.A.C. requirements.

The package is being turned over to Mr. Clair Fancy of the Bureau of Air Quality's Central Air Permitting Section for review. Mr. Gene Sacco of the Palm Beach County Health Department has recommended that the permit be reaccomplished to require ambient air quality monitoring based on your facilities overall emissions.

Please feel free to contact Mr. Fancy of the Air Permitting Section at (904) 488-1344 if you have any questions on permit information. Also, continue to feel free to contact me at the above number if you have any questions on the quality assurance requirement for ambient air quality monitoring, especially in relation to PSD requirements.

Sincerely,

Richard J. Arbes
Environmental Specialist
Bureau of Air Quality Management

RJA:ht

cc: C. Fancy
D. Barker
G. Sacco

STATE OF FLORIDA



DEPARTMENT OF

Health & Rehabilitative Services

District Nine
P. O. Box 29

Bob Graham, Governor

Palm Beach County Health Dept.
West Palm Beach, Florida 33402

Please Address
Reply to:

May 24, 1982

Mr. Richard Arbes
Bureau of Air Quality Management
Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301

RE: PRATT & WHITNEY
AMBIENT AIR MONITORING

DER
MAY 28 1982
BAQM

Dear Mr. Arbes:

As you requested in our phone conversation of 5/14/82, I have collected the information in our files which relates to the Pratt & Whitney Air Monitoring program. Included are:

<u>DATE:</u>	<u>SUBJECT:</u>
5/28/75	Letter to Mr. Vernon Manz, Pratt & Whitney, from Peter Baljet, D.P.C., requiring ambient monitoring for SO ₂ , TSP, sulfates and metallic ions.
7/9/75	Letter to Mr. Tom Butler, Pratt & Whitney, from Terry Heath, P.B.C.H.D., requesting air monitoring network plan.
7/31/75	Letter to Frank Gargiulo, P.B.C.H.D., from Vernon Manz, Pratt & Whitney, describing proposed monitoring network.
8/8/75	Letter to Warren Strahm, D.E.R., from Gene Sacco, P.B.C.H.D., recommending approval of Pratt & Whitney plan.
9/10/75	Letter to Vernon Manz, Pratt & Whitney, from Peter Baljet (by Warren Strahm), D.E.R., recommending selection of an SO ₂ monitor with E.P.A. "equivalency".
10/3/75	Letter to Peter Baljet, D.E.R., from Vernon Manz, Pratt & Whitney, discussing proposed air monitoring plan and instrumentation.
9/27/76	Letter to Frank Gargiulo, P.B.C.H.D., from Tom Butler, Pratt & Whitney, showing program to date on establishing air monitoring network.

DATE: SUBJECT:

7/14/78 Notice to Correct: Failure to have air monitoring network in operation.

7/19/78 Letter to Mr. Bob Metcalfe, Pratt & Whitney, from Mike Martin, P.B.C.H.D., informing him of the Notice to Correct.

9/13/78 First ambient air data report.

9/29/78 Letter to Tom Butler, Pratt & Whitney, from Gene Sacco, enclosing "Quality Assurance Handbook for Air Pollution Measurement Systems".

6/5/79 Inspection report by Mike Martin indicating monitoring network in-operative at time of inspection.

6/7/79 Letter to Joseph Gies, Pratt & Whitney, from Mike Martin, P.B.C.H.D., reporting monitoring network not operating at time of inspection.

7/25/79 Letter to Mike Martin, P.B.C.H.D., from Tom Butler, Pratt & Whitney, explaining the problems of the air monitoring network.

10/30/79 Permit to operate for Pratt & Whitney Area C - Boiler #2, General Condition #6.

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

Accompanying Application to Operate/Construct Section VII - Prevention of Significant Deterioration:

SECTION VII - PREVENTION OF SIGNIFICANT DETERIORATION

A. Company Monitored Data

1. two no sites 1 TSP 1 () SO₂ _____ Wind spd/dir _____

Period of monitoring _____ / _____ / _____ to _____ / _____ / _____ Continuous

Other data recorded _____
month day year month day year

Attach all data or statistical summaries to this application.

(Form continued on Page Three --)

2. Instrumentation, Field and Laboratory

- a) Was instrumentation E.P.A. 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 *Not Applicable*

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) _____

DATE:

SUBJECT:

- 8/20/80 Letter to Gene Sacco, P.B.C.H.D., from Jimmy Dail, Pratt & Whitney, describing projected expanded air monitoring network -- addition of CO and NO_x.
- 9/4/80 Letter to Jimmy Dail, Pratt & Whitney, from Gene Sacco, P.B.C.H.D., recommending procedures for ambient network operation.
- 10/30/80 Permit -- including all boilers.
- 9/23/81 Letter to Gene Sacco, P.B.C.H.D., from R. H. Henson, Pratt & Whitney, concerning installation of 50 amp. 240 volt service to the P.B.C.H.D. air monitoring trailer.
- 11/13/81 Letter to Jimmy Dail, Pratt & Whitney, from Mike Martin, P.B.C.H.D., informing Pratt & Whitney of Departmental decision to submit data to SAROAD.
- 2/4/82 Letter to Mike Martin, P.B.C.H.D., from Jimmy Dail, Pratt & Whitney, forwarding a draft SAROAD Site Identification Form.
- 3/31/82 Letter to Jimmy Dail, Pratt & Whitney, from Shirley Field, P.B.C.H.D., describing Q.A. requirements for special purpose monitors.

Page Four
Bureau of Air Quality Management
May 24, 1982

It is our opinion that the May 28, 1975 letter from Peter Baljet, the July 9, 1975 letter from Terry Heath, and the September 10, 1975 letter from Peter Baljet would constitute "deemed reasonably necessary and ordered by the Department." However, such requirements are not included as a general or specific condition of the Pratt & Whitney Air Pollution Permit. Whether or not this constitutes revocation of the requirement is, of course, a Departmental decision.

If there is anything further we can do for you in this matter, please do not hesitate to call at any time.

Sincerely,

For the Division Director
Environmental Sciences and Engineering

Shirley Field

Shirley Field
Quality Assurance Coordinator



DEPARTMENT OF

Bob Graham, Governor

Health & Rehabilitative Services

District Nine
P. O. Box 29

Palm Beach County Health Dept.
West Palm Beach, Florida 33402

Please Address

Reply to: ESE-WPB

March 31, 1982

Mr. W. Jimmy Dail
Plant Engineering
Pratt & Whitney Aircraft Group
Government Products Division
P.O. Box 2691
West Palm Beach, FL 33402

Re: Ambient Air Monitoring - Existing Fossil Fuel Steam Generators (FFSG),
As Required By Florida Administrative Code Chapter 17-2

Dear Mr. Dail:

Your air monitoring network has been designated as special purpose monitors by the Department of Environmental Regulation. Monitors so designated are required to comply with certain sections of the Federal Register and the State of Florida Statewide Quality Assurance Plan.

The Thursday, May 10, 1979 Federal Register, 40 CFR 58, Sub part B, § 58.14 Special purpose monitors states: "Any ambient air quality monitoring station other than a SLAMS or PSD station from which the State intends to use the data as part of a control strategy demonstration or as support for a plan revision must meet the requirements for SLAMS described in § 58.22 (SLAMS methodology) and, after January 1, 1983, meet the requirements for SLAMS described in § 58.13 (Operating Schedule) and Appendices A (Quality Assurance Requirements for State and Local Air Monitoring Stations [SLAMS]) and E (Probe Siting Criteria for Ambient Air Quality Monitoring) to this part."

The Department of Environmental Regulation is requiring such compliance at the present time, or as soon as possible. A March, 1982 revision to the State of Florida's Statewide Quality Assurance Plan, Activity #17, states:

Special purpose monitoring (SPM) project data which is not reported, or which is reported under specific permit requirements, must meet or exceed DER quality assurance requirements if the data is to serve a public purpose, for example, related to permit or enforcement activities. Sections 2.1 and 2.2 of 40 CFR 58, Appendices A and B, cover requirements for use of written QA plans and standard operating procedures. For presently established agency SLAMS or PSD operations the applicable portion of the precision and accuracy data functions can be utilized to support the ambient data. This data is applied by DER to the precision and accuracy determination under pollution specific identification

Page 2
March 31, 1982
Mr. W. Jimmy Dail

criteria. Each project's requirements will be coordinated with DER to insure sufficient quality assurance activity to properly support the ambient data. SPM procedures related to control strategy and/or SIP revisions are specified in item (11).

Activity (11) states that:

Special purpose monitoring stations (SPM), from which the State and/or local agencies plan to use the data as part of a control strategy demonstration or in support of a plan revision must meet the same requirements as those of the SLAMS. Requirements are those listed in 40 CFR 58 including all of Subpart C.

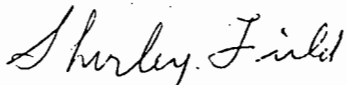
Attachment 15 (March, 1982) to the DER Quality Assurance Plan is in the form of a memo from David R. Barker concerning precision and accuracy requirements for Special Purpose Monitoring. For your convenience, we are enclosing a copy of this memo and of 40 CFR 58, May 10, 1979.

If your Quality Assurance Plan and Standard Operating Procedures have not as yet been submitted to the Bureau of Air Quality Management, Department of Environmental Regulation, Tallahassee, for approval, we would recommend that this be done as soon as possible.

If you have any questions concerning this matter, please do not hesitate to contact this office or Mr. R. J. Arbes, BAQM, DER, Tallahassee (904) 488-1344.

Yours very truly,

For the Division Director
Environmental Sciences and Engineering



Shirley Field
Quality Assurance Coordinator

FJG/LSF/sc

Enclosures

cc: DER/WPB
DER/BAQM
Mr. J. L. Seelinger, Pratt & Whitney

PRATT & WHITNEY AIRCRAFT GROUP

GOVERNMENT PRODUCTS DIVISION

P. O. Box 2691
West Palm Beach, Florida 33402

February 4, 1982

RECEIVED

FEB 11 1982

Division of Environmental Engineering
PALM BEACH COUNTY
HEALTH DEPT.

Mr. Michael J. Martin
Pollution Control Specialist
Palm Beach County Health Department
Post Office Box 29
West Palm Beach, Florida 33402

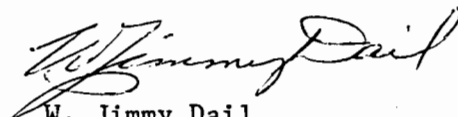
RE: Ambient Air Monitoring Site Identification Form

Dear Mr. Martin:

In accordance with our earlier telephone conversations and your request, attached for your review and comments is a draft "SAROAD Site Identification Form" for the United Technologies Corporation (UTC) main plant site here in Palm Beach County. It is our understanding that your Department requires this form to correctly establish UTC's particulate and sulfur dioxide ambient air monitoring data input for future submittal to the National Aerometric Data Bank. In the past, data has been submitted to you in simple tabular form. We anticipate utilizing the other particulate and sulfur dioxide SAROAD forms, you furnished earlier, for future recording and reporting of these parameters.

Please advise us of any additions or corrections you might wish to address in the attached form.

Very truly yours,



W. Jimmy Dail
Plant Engineering

WJD/ja
Attachment

cc: T. E. Butler, (w/attachment)
E. J. Sacco, PBCHD

Voided
JD Form
errors



STATE OF FLORIDA



DEPARTMENT OF

Health & Rehabilitative Services

District Nine
P. O. Box 29

Bob Graham, Governor

Palm Beach County Health Dept.
West Palm Beach, Florida 33402

Please Address

Reply to: ESE-WPB

November 13, 1981

Mr. W. Jimmy Dail
Plant Engineering
Pratt & Whitney Aircraft Group
Government Products Division
Post Office Box 2691
West Palm Beach, Florida 33402

RE: SO₂ Monitoring - Existing Fossil Fuel Steam Generators (FFSG)

Dear Mr. Dail:

This letter is written to update the Department of Environmental Regulation's requirements for the above referenced subject as initially stated in the Department's letter to you dated May 28, 1975.

As you know, Chapter 17-2.600(5)(b)3.C Florida Administrative Code (new format) requires existing fossil fuel steam generators to monitor for sulfur dioxide and the effects of their emissions. The Department has relaxed the monitoring requirements of May 28, 1975, by deleting the requirements to monitor for sulfates and metallic ions.

Although you have been collecting and submitting this data to our office for quiet some time, the Department now requires that the data (SO₂ and total suspended particulates) be placed on Federal "Storage and Retrieval of Aerometric Data" (SAROAD) forms. The data must be sent to our office for verification, we will then forward the data to the Bureau of Air Quality Management for subsequent input into the Federal SAROAD system.

In order to properly input your data into the SAROAD system, you need to complete and submit to this office a Site Identification form for each site in order to have an identification number assigned.

Information pertaining to the site I.D. form and SAROAD input form may be found in the enclosed SAROAD Instruction Manual. Collection data should be forwarded to this agency within 30 days after the end of each quarter.

Page 2

November 12, 1981

Mr. W. Jimmy Dail
Plant Engineering
Pratt & Whitney Aircraft Group

Should you have any questions concerning the above, please contact me at 837-3070.

Sincerely,

For the Division Director
Environmental Sciences & Engineering



Michael J. Martin
Environmental Specialist
Air Pollution Control Section

FJG/MJM/mlp

cc: DER/WPB
DER/BAQM
Mr. J.L. Seelinger, P.W.

Enclosure: SAROAD Instruction Manual
SAROAD Site I.D. form
SAROAD TSP Submittal form
SAROAD SO₂ Submittal form

R4

PRATT & WHITNEY AIRCRAFT GROUP

GOVERNMENT PRODUCTS DIVISION

P. O. Box 2691
 West Palm Beach, Florida 33402
 September 23, 1981

Mr. Eugene J. Sacco
 Administrator, Air Pollution Control
 Palm Beach County Health Department
 Post Office Box 29
 West Palm Beach, Florida 33402

RE: Electrical Power Receptacle At Palm Beach County Health Department Facilities to Serve Pratt & Whitney Aircraft (PWA) Ambient Air Monitoring Van During Equipment Calibration and Audits

Dear Mr. Sacco:

This letter is written in accordance with your earlier discussions with Jon Mathason and Jim Dail of Pratt & Whitney Aircraft (PWA). It is our understanding that your Department will coordinate the installation of a 50 ampere, 240 volt receptacle at the Palm Beach County Health Department air quality monitoring trailer near the West Palm Beach Water Treatment Plant at the northwest corner of First Street and Tamarind Avenue in West Palm Beach.

The receptacle will be utilized to supply power to the new PWA ambient air monitoring van during required quarterly air monitoring equipment calibrations and audits which will be monitored by Palm Beach County Health Department personnel.

It is also our understanding that your Department will engage the services of a private licensed electrician to perform the work. Prior to initiation of the work, the electrician should contact W. J. Dail (telephone number 840-2448) in order that PWA might issue a purchase order to the electrician so that subsequent payment for the work might be made directly to the electrician as you requested.

Should you require any further information, please contact W. J. Dail of this office.

Very truly yours,

R. H. Henson
 R. H. Henson, Manager
 Plant Engineering

RHH/ja



RECEIVED
 SEP 23 1981

Division of Environmental Engineering
 PALM BEACH COUNTY
 HEALTH DEPT.

PRATT & WHITNEY AIRCRAFT GROUP

GOVERNMENT PRODUCTS DIVISION

P. O. Box 2691
West Palm Beach, Florida 33402

December 3, 1980

Mr. Jim Williams, Engineer
Air Pollution Section
Department of Environmental Regulation
3301 Gun Club Road
Post Office Box 3858
West Palm Beach, Florida 33402



RE: Construction/Modification and Operation Air Permits Applications
for Manufacturing and Test Areas

Dear Mr. Williams:

This letter is submitted in accordance with conversations between Mr. Steve Smallwood and Mr. R.T. Bergin and between Mr. Roy M. Duke and the writer on December 1, 1980 and our conversation of December 2, 1980. In reference to fuel usage at our facility, this letter serves to amend our previously submitted fuel tank air operating permit application data to reflect our maximum annual utilization of fuel as opposed to our maximum capacity for fuel tank utilization. Based on recent projections, 35,000,000 gallons of fuel per year and 750,000 therms of natural gas per year represent our maximum foreseeable fuel utilization.

It is our understanding that this letter will serve to amend our applications to reflect the maximum projected annual consumption of fuel and that the operating permit for our fuel tanks, which is currently in the sign off cycle between your agency and the Palm Beach County Health Department, will be modified to include these changes. We also understand that our jet engine test stands will not be permitted as air pollution sources, and that should future fuel utilization increase, we will have the opportunity to have our fuel tank air operating permits modified accordingly.

Should you have any questions, please let us know.

Very truly yours,

A handwritten signature in cursive script that reads "W. Jimmy Dail".

W. Jimmy Dail
Plant Engineering

cc: R. Bergin E. Sacco
T. Butler J. Seelinger
R. Duke S. Smallwood
M. Martin
W. Parker

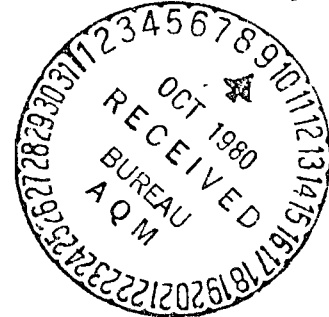


PRATT & WHITNEY AIRCRAFT GROUP

GOVERNMENT PRODUCTS DIVISION

P. O. Box 2691
West Palm Beach, Florida 33402

October 3, 1980



Mr. Steven Smallwood
Chief of Air Quality Management Section
Department of Environmental Regulation
2600 Blair Stone Road
Twin Towers Office Building
Tallahassee, Florida 32301

Dear Mr. Smallwood:

At our meeting on August 20, 1980 you requested that Pratt and Whitney Aircraft explain the derivation of its emission calculations in our June 20, 1980 comments to the Florida Department of Environmental Regulation concerning the question of an Air Pollution Control Permit for Pratt and Whitney's Palm Beach County Engine Test Facility. You further requested that we estimate the reasonable maximum percent utilization of our test stands and in a subsequent phone conversation requested that this utilization be expressed in gallons of fuel per year.

It is our understanding that after phone calls between members of our staff and yours, you are satisfied with the derivation of our emission calculations.

Based on the nature of our business being development versus production oriented, the maximum foreseen utilization of our facility is 15% which equates to 30,268,000 gallons of fuel per year and 643,000 therms of natural gas per year.

We will continue to send you engine emission reports on an annual basis or whatever basis you require.

As we discussed in the August 20, 1980 meeting, we would like to reiterate our position that our test stands, because of their extremely small effect on Palm Beach County emissions and attainment, be handled as an insignificant source of pollution and thus not require a permit. Should our business posture change such that we were to become a production facility with significantly increased emissions, which appears unlikely due to the significant capital outlay involved, we recognize we would have an obligation to reopen the permitting issue.



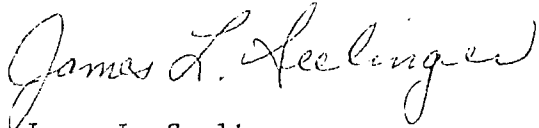
October 3, 1980

- 2 -

Mr. Steven Smallwood
Chief of Air Quality Management Section
Department of Environmental Regulation
2600 Blair Stone Road
Twin Towers Office Building
Tallahassee, Florida 32301

We hope you will pursue a formal arrangement which will alleviate the need for a permit. Before your determination is finalized, we would like to meet with you and review your decision.

Very truly yours,



James L. Seelinger
Manager Facilities Advanced Planning

ja

cc: R. T. Bergin
W. S. Parker

State of Florida
 DEPARTMENT OF ENVIRONMENTAL REGULATION
 INTEROFFICE MEMORANDUM

For Routing To District Offices And/Or To Other Than The Addressee	
To: _____	Loctn.: _____
To: _____	Loctn.: _____
To: _____	Loctn.: _____
From: _____	Date: _____

TO: Steve Smallwood
 FROM: John Svec *JS*
 DATE: September 18, 1980
 SUBJ: Comments on Pratt and Whitney's Report of August 29, 1980.

From a telephone conversation on September 9, 1980 with Jim Dail, the aircraft emission estimates were taken from "Air Pollutant Emission Factors for Military and Civil Aircraft" Oct. 78 EPA 450/3-78/117. The reason why the JT 3D-7 was not included in the average emission analysis was that only the engines that was tested in the facility were included. Assuming an equal mix of each engine type appears to be the easiest means of obtaining an emission estimate without trying to determine the annual testing hour for each aircraft engine type. Therefore, the Pratt and Whitney emission estimate should be more accurate than the estimate using annual fuel consumption and the AP-42 factor of 46 lb/1000 gallons of jet fuel.

From the Pratt and Whitney Report.

<u>Year</u>	<u>Total Fuel Usage (gal)</u>	<u>HC (TPY)</u>	<u>lb/1000 gal</u>
1978	15,245,252	101.4	13.3
1979	17,440,097	109.9	12.6
1980	17,253,927	110.8	12.8
1981	17,350,000	117.6	13.6

The RFP schedule has been adjusted to allow P&W 575 tons per year of VOC. Using the above emission rates, this would translate to 84,560,000 to 91,270,000 gallons per year of jet fuel (4.84 to 5.23 times the 1979 fuel usage rate).

JS:dav

VOC



STATE OF FLORIDA

DEPARTMENT OF

Health & Rehabilitative Services

District Nine
P. O. Box 29

Bob Graham, Governor

Palm Beach County Health Dept.
West Palm Beach, Florida 33402

Please Address

Reply to: ESE-WPB

September 4, 1980

Mr. W. Jimmy Dail
Plant Engineering
Pratt & Whitney Aircraft Group
P.O. Box 2691
West Palm Beach, FL 33402

Dear Mr. Dail:

Our staff has reviewed your proposed ambient air monitoring program.

We have been informed by EPA that the equipment you intend to purchase, the Beckman model 866 CO analyzer and the TECO model 14 NO_x analyzer have been designated as reference methods in accordance with 40 CFR Part 53. The Beckman model 866 CO analyzer designation # is RFCA-0876-012. The TECO model 14 NO_x analyzer designation # is RFNA-0179-035. Subject to any limitations (e.g., operating range) specified in the applicable designation, each method is acceptable for air quality surveillance systems under 40 CFR Part 58. Prospective users of the methods must operate them in strict accordance with the instruction manual and any modification of the method by its vendor or user may cause the designation to be inapplicable. Each analyzer sold as a reference method must carry a sticker identifying them as designated methods.

The EPA does not designate calibration equipment as either reference or equivalent. They do, however, require definite calibration procedures in order for them to term the collected data valid.

It appears that the location you have selected for the monitoring site conforms with the downwind direction of prevailing winds. Without the benefit of a diffusion model for subject pollutants we can assume that the site location will facilitate best exposure. It should be noted that the meteorological equipment should be set up in accordance with National Weather Services or EPA distance from obstruction criteria.

As we discussed at our meeting, it is imperative that you establish stringent quality assurance procedures for your ambient air monitoring program. Our agency will cooperate and conduct quarterly calibration audits of your monitors at a mutually agreeable time, at our facilities. In view of this requirement we suggest that your library, as a minimum, contain the following:

1. EPA - 600/9-76-005
Quality Assurance Handbook for Air Pollution Measurement Systems
Volume I - Principals
2. EPA - 600/4-77-027a May 1977
Revision No. 1, July 1, 1979
Quality Assurance Handbook for Air Pollution Measurement Systems
Volume II - Ambient Air Specific Methods
3. 40 CFR 50.1 Appendix F, July 1, 1979
Measurement Principle and Calibration Procedure for the
Measurement of Nitrogen Dioxide in the Atmosphere
(Gas Phase Chemiluminescence)
4. 40 CFR Parts 51, 52, 53, and 58 Part II Thursday, May 10, 1979
Environmental Protection Agency - Ambient Air Quality Monitoring,
Data Reporting and Surveillance Provisions
5. 40 CFR Part 50 - Measurement Principles and Calibration Procedures
for the Measurement of Nitrogen Dioxide in the Atmosphere FR-41,
Dec. 1976
6. Specific Guidance for a Quality Control Program for SLAMS & PSD
Automated Analyzers and Manual Methods - Juoy 1979
U. S. Environmental Protection Agency
Office of Research and Development
Environmental Monitoring and Support Laboratory
Research Triangle Park, N.C. 27711
7. EPA - 450/3-75-077 September 1975
Selecting Sites for Carbon Monoxide Monitoring
U. S. Environmental Protection Agency
Office of Air and Waste Management
Office of Air Quality Planning and Standards
Research Triangle Park, N.C. 27711
8. EPA - 600/4-75-003
Technical Assistance Document for the Chemiluminescence Measurement
of Nitrogen Dioxide - Elizabeth C. Ellis
U.S. Environmental Protection Agency
Research Triangle Park, N.C. 27711 October 1979

As you know your existing air monitoring system, which includes SO₂ and total suspended particulate (TSP) sampling equipment, is required by Chapter 17-2, FAC. The data from the SO₂ and TSP must continue to be forwarded to our office. The CO and NO_x data need not be submitted for our perusal if you choose. However, we would appreciate the opportunity to review the data on at least a quarterly basis when available.

Page 3
Mr. W. Jimmy Dail
September 4, 1980

Let us use this opportunity to commend the Pratt & Whitney Aircraft Group for the interest in the maintenance of good air quality.

Should you have any questions, please contact the undersigned.

Very truly yours,

For the Division Director
Environmental Sciences and Engineering



Eugene J. Sacco
Administrator
Air Pollution

FJG/EJS/sc

PRATT & WHITNEY AIRCRAFT GROUP

GOVERNMENT PRODUCTS DIVISION

P. O. Box 2691
West Palm Beach, Florida 33402

August 29, 1980

Mr. John Svec, Engineer
Florida Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32301

Re: Reponse to Emission Calculation Questions
Concerning Test Stand Permitting

Dear Mr. Svec:

In accordance with our agreement at the August 20, 1980 meeting at your office in Tallahassee and your telephone conversation with W. J. Dail of this office, we are submitting the attached supportive emission calculations. These calculations were provided by Environmental Science and Engineering, Inc., of Gainesville, Florida, our technical consultant for this work.

It is anticipated that these calculations will address your concerns, however, should you have any additional questions, please let us know.

Very truly yours,



James L. Seelinger
Plant Engineering

Copies to: R. Bergin
J. Dail
W. Parker
S. Smallwood

Attachment

c1



1979 CALCULATIONS - JET FUEL COMMERCIAL

- Use following jet types - JT8D-17, JT9D-7, JT9D-70
 - from EPA 78, Table 5-1, assume idle = idle, max power = $\sum(\text{takeoff} + \text{climbout})$
 partial power = approach
 - idle, max power, partial power given by P&W and correlated to EPA modes
- % time in mode - provided by P&W.
- Modal emission factor = $\sum(\text{HC emissions by mode}) \div 3$

	<u>IDLE</u>	<u>MAX</u>	<u>PARTIAL</u>
JT8D-17	10.10	.45	1.41
JT9D- 7	55.10	1.10	4.65
JT9D-70	<u>12.24</u>	<u>2.70</u>	<u>2.63</u>
	$74.44 \div 3 = 25.8$	$4.25 \div 3 = 1.4$	$8.69 \div 3 = 2.9$

- Total Emissions = $\sum[(\% \text{ time in mode}) \times (\text{Modal Emission Factor})]$

all answers in lbs/hr
total HC

$$\begin{aligned} .40 \times 25.8 &= 10.32 \\ .30 \times 1.4 &= 0.42 \\ .30 \times 2.9 &= \underline{0.87} \end{aligned}$$

11.6 lbs HC/1 hr test - value in last column Table 1, Page 30

- Yearly Emissions = (Total Emissions) x (# hours in operation)
 = (11.6 lbs HC/1 hr test) x 3,349 hrs/year
 = (38848.4 lbs HC) = 19.4 tons/year - agrees with Table 2,
 page 33

Military Aircraft - calculations the same except engines used are the F-100, TF-30, and J52. Modal emission rates from Table 5-2 EPA 1978.

BEST AVAILABLE COPY

TABLE 5-1 (CONTINUED)

Model-Series Mfg. Type ^a	Mode	Fuel Rate		CO		NO _x ^b		Total HC ^c		SO _x ^d		Solid Particulates	
		lb/hr	kg/hr	lb/hr	kg/hr	lb/hr	kg/hr	lb/hr	kg/hr	lb/hr	kg/hr	lb/hr	kg/hr
JT3D-7 P&W TF	Idle	1013	459.5	140.8	63.87	2.23	1.01	124.6	56.52	1.01	0.46	0.45 ^f	0.20
	Takeoff	9956	4516	8.96	4.06	126.4	57.34	4.98	2.26	9.96	4.52	8.25	3.7
	Climbout	8188	3714	15.56	7.06	78.6	35.65	3.28	1.49	8.19	3.71	8.5	3.9
	Approach	3084	1399	60.14	27.28	16.35	7.42	6.48	2.94	3.08	1.40	8.0	3.6
JT8D-17 P&W TF	Idle	1150	521.6	39.10	17.74	3.91	1.77	10.10	4.58	1.15	0.53	0.36 ^{f,g}	0.16
	Takeoff	9980	4527	6.99	3.17	202.6	91.90	5.50	0.227	9.98	4.53	3.7	1.7
	Climbout	7910	3588	7.91	3.59	123.4	55.97	2.40	0.101	7.91	3.59	2.6	1.2
	Approach	2810	1275	20.23	9.18	19.39	8.80	1.41	0.640	2.81	1.28	1.5	0.68
JT9D-7 P&W TF	Idle	1849	838.7	142.4	64.59	5.73	2.60	55.10	24.99	1.85	0.84	2.2 ^f	1.0
	Takeoff	16142	7322	3.23	1.47	474.6	215.3	50.81	0.367	16.14	7.32	3.75	1.7
	Climbout	13193	5984	6.60	2.99	282.3	128.0	21.32	0.599	13.19	5.98	4.0	1.0
	Approach	4648	2108	44.62	20.24	36.25	16.44	4.65	2.11	4.65	2.11	2.3	1.0
JT9D-70 P&W TF	Idle	1800	816.5	61.20	27.76	5.76	2.61	12.24	0.55	1.80	0.82		
	Takeoff	19380	8791	3.88	1.76	600.8	272.5	2.91	1.32	19.38	8.79		
	Climbout	15980	7248	4.79	2.17	386.7	175.4	2.40	1.09	15.98	7.25		
	Approach	5850	2654	7.61	3.45	47.39	21.50	2.63	1.19	5.85	2.65		

(assume JT9D data)

PRATT & WHITNEY AIRCRAFT GROUP

GOVERNMENT PRODUCTS DIVISION

P. O. Box 2691
West Palm Beach, Florida 33402

August 20, 1980

RECEIVED

AUG 25 1980
Division of Environmental Engineering
PALM BEACH COUNTY
HEALTH DEPT.

Mr. Eugene J. Sacco
Air Pollution Administrator
Palm Beach County Health Department
Post Office Box 29
West Palm Beach, Florida 33402

RE: Ambient Air Monitoring Program

Dear Mr. Sacco:

In accordance with our discussions in your office on August 19, 1980 concerning the above subject, we propose to modify our existing ambient air monitoring program. The existing system consists of particulate (TSP) and sulfur dioxide (SO₂) monitoring equipment which your office has acknowledged and from which your office receives monthly monitoring data.

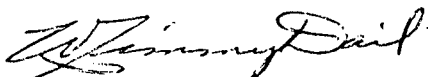
Attachment I provides our basic proposal for the purchase, installation and operation of carbon monoxide (CO) and nitrogen oxides (NO_x) monitoring systems which will be incorporated with our existing SO₂ equipment. Attachment II indicates the proposed approximate siting location for the new equipment. Attachment III provides wind rose data which was utilized in determining the proposed location of the equipment.

As discussed, we propose to transport our equipment by van to your West Palm Beach facilities for quarterly calibration audits. This would add credibility to our monitoring results.

After review of the attached proposal, please advise of your concurrence and/or further recommendations required for us to establish a satisfactory program.

Very truly yours,

PRATT & WHITNEY AIRCRAFT GROUP



W. Jimmy Dail
Plant Engineering

ja
Attachments

cc: Jon L. Mathason



ATTACHMENT I

PROPOSED

Mobile Ambient Air Monitoring Station

- o A self-propelled vehicle, housing equipment and support facilities.
- o Vehicle will be air conditioned and maintain 75^oF and 50% RH conditions.
- o Ambient Monitoring equipment will include the following:
 - o Beckman 866 CO analyzer
 - o TECO Model 14 NO_x analyzer
 - o TECO 101 calibrator
 - o AID 340A calibrator
 - o Weather station (wind velocity and direction only)
 - o Hewlett-Packard 85 data system
 - o Cabinets and Miscellaneous hardware
- o Quarterly calibration audits will be performed by Palm Beach County Health Department at West Palm Beach facilities.
- o Strict quality assurance program in accordance with EPA guidelines will be followed.

3301 GUN CLUB ROAD
P.O. BOX 3858
WEST PALM BEACH, FLORIDA 33402



BOB GRAHAM
GOVERNOR

JACOB D. VARN
SECRETARY

WARREN G. STRAHM
SUBDISTRICT MANAGER

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

SOUTH FLORIDA SUBDISTRICT

July 17, 1980

Palm Beach County
AP - Pratt & Whitney Aircraft

Mr. R. T. Bergin, Plant Engineer
Pratt & Whitney Aircraft Group
Government Products Division
Post Office Box 2691
West Palm Beach, Florida 33402

Dear Mr. Bergin:

Re: Permitting of Engine Test Stands

We have examined the comments document and your letter dated June 20, 1980, with the following results:

1. This office does not have the ability to evaluate the merits of the legal arguments presented in Part II of the comments document and, therefore, we have no comment on this section.
2. With regard to the technical evaluation, this office agrees that the VOC emissions from the test stands have been relatively minor and that those emissions would infrequently impact levels in urban areas. We also agree that these emissions will not significantly affect the goal of Palm Beach County becoming an attainment area for ozone.

As previously discussed with you, however, this office must follow the Department's policy and it is our understanding that engine test stands and the engines while being tested in the stands are not exempt as mobile sources. The determination as to whether that policy is supported by the Federal Clean Air Act and Chapter 403, Florida Statutes, must be done by the Department's legal staff.

Page 1 of 2

original typed on 100% recycled paper




Page 2

Mr. R. T. Bergin

July 17, 1980

Again, we would urge that you seek a Declaratory Statement in accordance with the provisions of Part VII, Chapter 17-1, Florida Administrative Code (copy enclosed). Since we do not disagree about the technical aspects of the permits, whether or not permits will be pursued depend entirely on legal interpretations of the law. By copy of this letter we are forwarding your comments document to our Office of General Counsel in Tallahassee.

Sincerely,



Warren G. Strahm
Subdistrict Manager

WGS:rds

Enclosure

cc: Terry Cole, DER Office of General Counsel, Tallahassee
Steve Smallwood, DER, Tallahassee
↗



STEVE
SMOLLWOOD



FLORIDA HOUSE OF REPRESENTATIVES
Tallahassee

Tom Lewis
Minority Floor Leader
Representative, 83rd District

Reply to:

- 721 U.S. Highway No. 1
North Palm Beach, Florida 33408
(305) 844-6524
- 325 The Capitol
Tallahassee, Florida 32304
(904) 488-4791

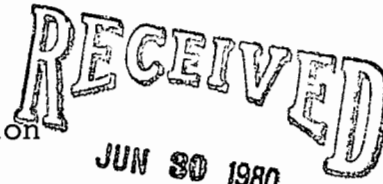
Committees:

Appropriations
Agriculture & General Legislation
Transportation
Subcommittee II,
Chairman
Rules & Calendar

June 25, 1980

Select Committee on Energy

Jacob D. Varn, Secretary
Department of Environmental Regulation
Twin Towers
2600 Blair Stone Road
Tallahassee, Florida 32301



Office of the Secretary

Thought you might like a personal copy, Jake...

of the "white paper" generated by Pratt & Whitney Government Products Division in reference to DER requiring an air pollution control permit for the company's engine testing facility in Palm Beach County.

If you recall, I have discussed this situation with you a couple of times and on one occasion in the company of Bill Dwyer, Vice President of Pratt & Whitney.

This document generates some interesting information and viewpoints.

Sincerely,

Tom Lewis

TL/mpm

PRATT & WHITNEY AIRCRAFT GROUP

GOVERNMENT PRODUCTS DIVISION

P. O. Box 2691
West Palm Beach, Florida 33402

June 20, 1980

Mr. Warren G. Strahm
Subdistrict Manager
Florida Department of Environ-
mental Regulation
Post Office Box 3858
West Palm Beach, Florida 33402



Dear Mr. Strahm:

Attached are the comments of Pratt & Whitney, Government Products Division, discussing the Department of Environmental Regulation's consideration of requiring an air pollution control permit for the company's engine test facility in Palm Beach County. We appreciate the opportunity to provide you with our views. The comments have been prepared with the assistance of legal counsel and environmental consultants, with the goal of providing your Department a comprehensive statement of our position.

We believe firmly that as a matter of federal and state law, it would be inappropriate to restrict the testing capability at the facility. Permitting the facility has the potential to inhibit our ability to test military and civilian jet engines for safety and performance and would have no discernible beneficial impact on ozone levels in Palm Beach County.

We recognize that your Department may wish to discuss our comments further, and we are prepared to meet with you at a convenient time for this purpose. We look forward to a mutually satisfactory resolution of this matter soon.

Very truly yours,


R. T. Bergin
Plant Engineer

RTB/bmt

cc: Mr. Whilden S. Parker, Esq.
Mr. Stephen Smallwood



**Comments to Florida
Department of Environmental Regulation
Concerning the Question of an Air Pollution
Control Permit for Pratt & Whitney's Palm
Beach County Engine Test Facility**



submitted by
Pratt & Whitney Aircraft Group

June 20, 1980

PRATT & WHITNEY AIRCRAFT GROUP

Government Products Division

P. O. Box 2691
West Palm Beach, Florida 33402



COMMENTS TO FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
CONCERNING THE QUESTION OF AN AIR POLLUTION
CONTROL PERMIT FOR PRATT & WHITNEY'S PALM
BEACH COUNTY ENGINE TEST FACILITY

TABLE OF CONTENTS

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PART I
EXECUTIVE SUMMARY

These comments are submitted by the Pratt & Whitney Aircraft Group, Government Products Division of United Technologies Corporation ("P&W") to assist the Florida Department of Environmental Regulation ("DER") in its consideration of whether to issue an air pollution control permit for the company's aircraft engine test facility located in Palm Beach County.

P&W has been assisted in the preparation of these legal and technical comments by the Washington, D.C. law firm of Wald, Harkrader & Ross and the engineering and environmental consultant firm of Environmental Science and Engineering, Inc., Gainesville, Florida.

The Palm Beach County Engine Test Facility

P&W owns and operates an aircraft engine development, manufacturing and testing facility which employs approximately 8,000 Florida residents. The facility is located on approximately 7,000 acres in Northwest Palm Beach County, a few miles south of the Martin County line. The site was originally selected because of its isolation from populated areas; 30,000 acres of game preserve surround the facility providing a natural buffer zone between the facility and residential communities. The Palm Beach County climate enables the use of outdoor engine test stands which, in turn, allows testing in a realistic mode for large turbine engines.

Testing is essential to engines developed and manufactured at the facility. The importance of testing relates primarily to the demonstration of safety, as well as performance and handling characteristics of the engines. The capability to test comprehensively is necessary for P&W to perform its contracts, the majority of which involve various branches of the Department of Defense. Moreover, the testing of aircraft engines is essential to the development of cleaner and more fuel-efficient engines, which in turn will result in reduced atmospheric pollutants wherever P&W's engines are utilized.

To ensure effective testing, a multitude of testing patterns and intervals is required. Testing jet engines and components requires that the engines or components be placed on test stands for varying periods of operating time ranging from a few hours to several hundred hours, depending upon the nature of the specific tests. In some cases tests may be run to determine the reliability and durability of engine components, or, in other cases, entire engines may be run for endurance or acceptance testing to observe how well the engines perform under specific conditions. Generally, testing is intermittent with test stands utilized in many cases to evaluate several different engine types in a relative short period of time. Engine and component testing must therefore be responsive to short lead times associated with P&W's various programs, including critical field support for engines employed by the

military. Depending upon the requirements for testing engines and components, a stand may be utilized to test as many as forty-eight engines or components in a single year.

At the outset it is important to understand that the ability of P&W to respond quickly and effectively to the requirements of the United States Government is critical to the company's continuing contractual obligations and vital to our national defense. The test operations for transient engines and components must be responsive to the particular needs of P&W's customers, including the Department of Defense, at any time. Constraints which limit the responsiveness of P&W to these demands could impair its ability to continue providing civilian aircraft manufacturers and the military with the best performing aircraft engines in the world.

Background

These comments are precipitated by the concern of the DER that Palm Beach County become an attainment area for ozone and by the relationship of P&W's testing operations to achieving that goal. Currently, Palm Beach County is a nonattainment area for ozone. Emissions of volatile organic compounds ("VOC"), a precursor of ozone, from P&W's engines and components are not included in the county's VOC emission inventory.^{*/} Towards

^{*/} For a description of the relationship between ozone and VOC emissions, see Part III, p. 27 infra.

the end of 1979, the Palm Beach County Health Department concluded that the jet engines temporarily placed on P&W's test stands were not stationary sources of air pollution subject to permit requirements but did question whether the test stands themselves should or could be permitted under the Florida Air and Water Pollution Control Act ("Florida Act"). Fla. Stat. Ann. §§ 403.011 et seq. In January of 1980, the DER apparently concluded that the individual test stands and transient engines would not be permitted but took under consideration whether P&W's entire facility or "general activity" should be permitted. The method of permitting under consideration by DER involves the use of an annual fuel cap limitation on the amount of fuel burned at the facility. Presumably, the cap would be a condition of an air pollution control permit issued pursuant to Section 403.087 of the Florida Act.

P&W has closely examined DER's proposal and has prepared this paper to assist DER in formulating its permitting policy with respect to P&W's testing operations.

Conclusions

In the remaining pages of these comments, the following major conclusions are substantiated in detail:

1. Section 233 of the federal Clean Air Act preempts state regulation of P&W's engine test facility;

2. P&W's engine test facility is not a "stationary installation" subject to the permit requirements of Section 403.087 of the Florida Act;

3. VOC emissions from engines temporarily mounted on test stands at P&W's facility are relatively minor compared to county-wide emissions and do not exceed 0.25 percent;

4. Based on available meteorological data, P&W's VOC emissions infrequently contribute to levels in urban areas; and

5. P&W's emissions will not affect the goal of Palm Beach County becoming an attainment area for ozone.

The balance of these comments is divided into two major parts which describe the legal and technical justifications, respectively, for the conclusions set forth above.

PART II

UNDER APPLICABLE FEDERAL AND STATE LAW
THE DEPARTMENT OF ENVIRONMENTAL REGULATION
DOES NOT HAVE THE AUTHORITY TO REQUIRE A PERMIT
FOR PRATT & WHITNEY'S ENGINE TEST FACILITY

Summary

Neither federal nor Florida law authorizes permitting of P&W's engine test facility. Under the Clean Air Act, states are preempted from regulating aircraft engines and aircraft engine test facilities such as P&W's Palm Beach County facility. Moreover, the Florida Act and its implementing regulations also preclude permitting of the engine test facility because the facility is not a stationary source of pollution.

A. Section 233 of the Federal Clean Air Act Preempts State Regulation of P&W's Engine Test Facility.

Congress intended that Section 233 of the Clean Air Act, 42 U.S.C. § 7573, would totally preempt all regulatory activity by the states in the area of aircraft emission standards. On its face, Section 233 explicitly prohibits states from adopting or enforcing "any standard" unless such standard is "identical" (emphasis supplied) to one issued pursuant to Section 231 of the Act, 42 U.S.C. § 7571. The legislative history of Section 233, its interrelationship with other parts of the Act, and the only judicial decision addressing the scope of Section 233 are all consistent with the concept that the regulation of aircraft emissions is exclusively left to the federal government.

Section 233 of the federal Clean Air Act provides that:

No state or political subdivision thereof may adopt or attempt to enforce any standard respecting emissions of any air pollutant from any aircraft or engine thereof unless such standard is identical to a standard applicable to such aircraft under this part.
[Emphasis supplied.]

Section 231 of the Act explicitly vests exclusive authority in the federal government (Environmental Protection Agency ("EPA")) to propose and issue final aircraft emission standards.*

Accordingly, Section 233 of the Act preempts state regulation of aircraft emissions.

To determine the existence of preemption necessarily involves an analysis of Congressional intent by looking not only at the pertinent statute, but its legislative history as well. Malone v. White Motor Corp., 435 U.S. 497 (1978); Rogers v. Ray Gardner Flying Service, Inc., 435 F.2d 1389 (5th Cir. 1970), cert. denied, 401 U.S. 1010 (1971). While such intent can be inferred, the Congressional intent to preempt state authority as shown by the legislative history of Section 233 is explicit. Congressman Staggers stated that "[w]ith regard to aircraft the Federal Government would preempt the field." House Consideration of the Report of the Conference Committee, 93d Cong., 2d Sess. (1970), reprinted in S. Comm. on Public Works, 1 Legislative History of the Clean Air Act Amendments of 1970, at 113 (1974) ("Legislative History"). Similarly, House Report No. 1146 declares that "[n]o State may require certification, inspection, or any other approval relating to the control of emissions from any aircraft or engines as a condition precedent to the initial sale, titling, or registration of aircraft or

*/ These standards currently are codified in 40 C.F.R. Part 87, as amended, 45 Fed. Reg. 1419, 1421 (1980).

engines." H.R. Rep. No. 1146, 91st Cong., 2d Sess. (1970), reprinted in 2 Legislative History at 904.

Moreover, Section 233 specifically separates "engine" from "aircraft" thereby showing a Congressional desire to preclude state regulation of engines whether attached to aircraft or otherwise. This interpretation is supported by Section 234 of the Act, 42 U.S.C. § 7574, which provides that terms employed in the aviation sections of the Clean Air Act should be defined in accordance with the Federal Aviation Act, 49 U.S.C. §§ 1301 et seq. Accordingly, Section 101(6) of the Federal Aviation Act, 49 U.S.C. § 1301(6) defines aircraft engine as "an engine used, or intended to be used, for propulsion of aircraft . . ." (emphasis supplied), clearly implying preemption from state regulations during testing of aircraft engines.

The underlying reason for preempting state authority through Section 233 is shown in Part B of Subchapter II of the Clean Air Act. 42 U.S.C. §§ 7571-7574. Part B was enacted to ensure that pollution control regulation would not jeopardize aviation safety.^{*/} The legislative history of Part B of Subchapter II of the Act underscores Congress's concern with aircraft

^{*/} It is well established that preemptive intent can be inferred in instances where a federal statute contemplates uniformity of standards, Campbell v. Hussey, 368 U.S. 297 (1961); Chemical Specialties Manufacturing Association v. Clark, 482 F.2d 325 (5th Cir. 1973); Lewis v. Campbell, 425 F.2d 77 (5th Cir. 1970), aff'd, 401 U.S. 985 (1971), or where uniformity seems vital to national interests, City of Purbank v. Lockheed Air Terminal, Inc., 411 U.S. 624 (1973).

safety and the need for total federal preemption in the field of aircraft emission standards. The Senate bill lumped all moving sources, including aircraft engines, in one section. See S. 4358, 91st Cong., 2d Sess. § 202 (1970), reprinted in 1 Legislative History at 575. The House Bill had an entirely separate section for aircraft engines. See H.R. 17255, 91st Cong., 2d Sess. § 231 (1970), reprinted in 2 Legislative History at 935-36. Ultimately, the Conference Committee adopted the House version which established a separate section "in order to assure appropriate consideration for aircraft safety." H.R. Rep. No. 1146, 91st Cong., 2d Sess. § 9 (1970), reprinted in 2 Legislative History at 904.^{*/}

The difference between the preemption provisions applicable to motor vehicles and their fuels and the aviation preemption section of the Clean Air Act also illustrates Congress's belief that aircraft safety considerations demand total federal preemption in the field of aircraft emission standards. Under Section 209(a) of the Clean Air Act, 42 U.S.C. § 7543(a), the state retains the power to control the emissions of used motor vehicles. See Allway Taxi, Inc. v. City of New York, 340 F. Supp. 1120, 1124 (S.D.N.Y.), aff'd, 468 F.2d 624 (2d Cir. 1972). In

^{*/} Historically, the courts have relied on arguments relating to safety to limit state and local regulation of jet aircraft. See City of Burbank v. Lockheed Air Terminal, Inc., 411 U.S. 624 (1973); Allegheny Airlines, Inc. v. Village of Cedarhurst, 238 F.2d 812 (2d Cir. 1956); American Airlines, Inc. v. Town of Hempstead, 272 F. Supp. 226 (E.D.N.Y. 1967), aff'd, 398 F.2d 369 (2d Cir. 1968), cert. denied, 393 U.S. 1017 (1969).

addition, Section 211(c)(4)(A) of the Clean Air Act, 42 U.S.C. § 7545(c)(4)(A), concerned with regulation of motor vehicle fuels and fuel additives, preempts state power only if the Administrator has prescribed fuel standards or has expressly found that no controls should be imposed. In contrast to these two sections regarding motor vehicles, Section 233 prohibits independent state regulation even where the federal government has not issued any regulations.

Aircraft engine testing for safety purposes is exclusively regulated by the Federal Aviation Administration ("FAA") or the Department of Defense, depending upon whether the engine is intended for civil or military use. See 49 U.S.C. §§ 1302, 1348. As described above in Subchapter II, Part B, of the Clean Air Act, Congress has explicitly recognized that the establishment of federal aircraft emission standards inextricably involves safety considerations. Under Part B, the regulation of emission standards is granted jointly to the EPA and the FAA, with the FAA implementing the standards through its aircraft certification program. In this way, the FAA can be vigilant that emission controls are compatible with aviation safety standards. See 42 U.S.C. § 7572. The EPA, moreover, has recognized air safety as the interest taking precedence over the regulation of emissions from aircraft engines. EPA's regulations provide that revisions will be made to existing emission regulations if the FAA determines that air safety is threatened. 40 C.F.R. § 87.6 (1979).

The only judicial decision to address the issue of the scope of Section 233 is California v. Department of the Navy, 431 F. Supp. 1271 (N.D. Cal. 1977), appeal pending, No. 79-4304 (9th Cir., filed May 30, 1979). In the Ninth Circuit appeal, it is the position of the United States Government that Section 233 preempts all state regulation of aircraft emission standards and, in turn, all aircraft engine test facilities of any kind. P&W submits that the government's position in the appeal is consistent with the Clean Air Act. Nevertheless, the decision of the California district court supports the views expressed by P&W in these comments.

The facts in California v. Department of the Navy, unlike P&W's situation, involved the state's efforts to regulate emissions from the Navy's enclosed engine test cells. In the district court, the Navy contended that the state was preempted from regulating emissions from open engine test stands, and thus must also lack control over emissions discharged from enclosed test cells. The court, however, rejected the Navy's argument by reasoning that emissions enter the outside air directly "from" the test cells, as opposed to entering the outside air directly from the engines themselves as is the case with P&W's test stands. Id. at 1282. The court carefully recognized that "this distinction [between open test stands and enclosed test cells] cannot be overlooked in the context of air pollution, where the focus of concern is pollutant entry into the ambient (outside) air rather

than its mere entry into the internal atmosphere of the test cell." Id. at 1282-83 (footnote omitted).^{*/}

Equally important is the court's expanded definition regarding the scope of Section 233's preemption. Initially, the court defined the scope of preemption as focusing "upon standards for aircraft engine emissions in a way which implies modification of the engine" Id. at 1283 (emphasis in original). Later, the court significantly expanded its interpretation of the federal preemption by holding that:

[T]he scope of federal aircraft pollution preemption is limited to preemption of state regulations which touch upon (directly or indirectly) the engines -- their design, manufacture, operation, etc.

Id. at 1287. Thus, the court concluded that the state is preempted from any regulatory activity that would interfere with or affect the testing of the engine itself.

EPA apparently agrees with the district court's view that the scope of preemption is broad enough to include not only

^{*/} Notwithstanding the distinction drawn by the court between open and enclosed test cells, we think the federal preemption clearly applies to either case and that the Navy's position will be adopted by the Court of Appeals.

the operation but also the testing of aircraft engines. In an opinion letter to the Department of the Navy, an Assistant Administrator for EPA stated that if state regulation "'necessarily constitute[s] regulation of the aircraft engine being tested,'" then federal preemption would prevail. Id. at 1287 (emphasis in original), quoting Letter from Roger Strelow (Dec. 31, 1975). However, the letter goes on to state that the EPA would prefer to "acquiesce" in the Navy's "treatment of test facilities as non-regulated sources, pending outcome of any litigation."^{*/} Thus, while the EPA took a safe position by not suggesting how the court should resolve the issue on the merits, it clearly stated no objection to the classification of engine test stands as non-regulated sources.

The analysis set forth above establishes that Congress granted exclusive regulatory control over aircraft emission standards to the federal government, premised upon its overriding concern "to assure appropriate consideration for aircraft safety." H.R. Rep. No. 1146, 91st Cong., 2d Sess. § 9 (1970), reprinted in 2 Legislative History at 904. Any state regulation, including the one now being considered by the DER, which limits or conditions the operation or testing of aircraft engines, inherently involves regulation of "emissions . . . from any aircraft or engine thereof" in contravention of Section 233 of the Clean Air Act.

^{*/} This portion of the EPA letter is quoted in the Reply Brief for the Federal Appellants at 9 (Nov. 26, 1979), California v. Department of the Navy, appeal pending, No. 79-4304 (9th Cir., filed May 30, 1979).

DER's proposed fuel cap limitation, the purpose of which is to control engine emissions into the ambient air, is inconsistent with Section 233 of the Clean Air Act. It is of no consequence that the proposed fuel cap might be greater than P&W's fuel needs. The power to set a fuel cap in the first instance necessarily involves the power to adjust the fuel cap; and this is precisely why Congress intended that Section 233 of the Clean Air Act preempt all forms of state regulation affecting aircraft engine emission standards. And what if the fuel cap were lowered? Conceivably P&W could be faced with the unacceptable option of either limiting the number of engines to be tested or reducing the frequency of testing. Either option would seriously detract from the fundamental purpose of testing -- to demonstrate the basic integrity and safety of the engine. This need is even more compelling in P&W's situation, because its contracts are primarily government-sponsored and support military readiness.^{*/} The regulatory action under consideration by the DER has the potential to impair P&W's ability to design, supply and test United States military engines, and thus is preempted by federal law.

^{*/} It is important to keep in mind that not even the FAA has jurisdiction over the design and operation of military aircraft and engines. See 49 U.S.C. § 1348. The FAA's authority extends only to "civil aircraft" which is defined as "any aircraft other than a public aircraft." 49 U.S.C. § 1301(17). In turn, "public aircraft" means "an aircraft used exclusively in the service of any government or of any political subdivision thereof" 49 U.S.C. § 1301(36). The regulation of military aircraft and engines is left to the Department of Defense.

B. P&W's Engine Test Facility Is Not a "Stationary Installation" Subject to the Permit Requirement of Section 403.087 of the Florida Act.

A careful analysis of the Florida statutory and regulatory scheme shows that DER is without authority to impose a state air pollution control permit on P&W's engine test facility. First, under the Florida Act only "stationary installations" which are themselves "a source of pollution" may be permitted. P&W's general activity in Palm Beach County does not meet these definitional requirements. Second, the engines tested at the facility, which are mobile sources, are outside the scope of state permitting authority. Yet the proposal now under DER consideration is tantamount to the issuance of permits for aircraft engines which under state, as well as federal, law are unquestionably mobile sources.

P&W's testing facility or general activity is not a "stationary installation" subject to the permit requirements of the Florida Act. Section 403.087 of the Florida Act provides that:

No stationary installation which will reasonably be expected to be a source of air or water pollution shall be operated, maintained, constructed, expanded, or modified without an appropriate and currently valid permit issued by the department, unless exempted by department rule. [Emphasis supplied.]

This statutory section is implemented by Chapter 17-4 of the Florida Rules on Permits of the DER. Section 17-4.02(3) of those rules defines "installation" as "any structure, equipment,

facility, or appurtenances thereto, operation or activity which may be a source of pollution."

P&W's testing facility is not a source of pollution separate from the engines themselves because the only "structure, equipment, facility, or appurtenances thereto" constituting identifiable sources of air emissions are the engines. Therefore the question that must be answered is whether the engines, the only sources of air emissions, are subject to DER's permitting authority. As shown below, DER does not have permitting authority over aircraft engines and hence lacks authority to regulate P&W's testing facility as a "general activity." Any other conclusion would allow the DER to do indirectly that which it cannot do directly -- apply a fuel use cap to each engine.

Since DER's permitting authority extends only to the permitting of "stationary sources," it is necessary to determine whether the engines mounted temporarily on P&W's test stands are stationary or mobile sources in order to determine whether DER has authority to permit P&W's test facility. Neither the Florida Act nor any of its implementing rules and regulations explicitly defines the terms "stationary source" or "mobile source." However, DER's own permitting regulations, Section 17-4.04(5) of Florida's Rules on Permits, exempt "[i]nternal combustion engines, boats, aircraft and vehicles used for transportation of passengers or freight" from the permit requirements of Section 403.087 of the Florida Act. In effect, DER's regulations

do define the term "mobile" through the Section 17-4.04(5) exemption. Because P&W's aircraft engines are clearly "[i]nternal combustion engines," the engines temporarily mounted on P&W's test stands are exempted from Florida's permit requirements.

This Florida exemption for mobile sources is consistent with the definition of mobile sources contained in Sections 231-234 of the federal Clean Air Act, 42 U.S.C. §§ 7571-7574. Even if the Florida exemption were inconsistent with the federal definition, it would still be necessary to look to the federal Clean Air Act to determine whether aircraft engines are considered mobile sources, because the establishment of aircraft engine emission standards is a responsibility that is exclusively federal. Thus, the Clean Air Act's characterization of aircraft engines, i.e., mobile or stationary, must control.

The applicable federal sections appear in Subchapter II of the Clean Air Act, entitled "Emission Standards for Moving Sources." (Emphasis supplied.) As discussed above, Section 234 of the Clean Air Act, "Definitions," provides that all terms used in Subchapter II have the same meaning as those terms used in the Federal Aviation Act. That Act provides that "'aircraft engine' means an engine used, or intended to be used, for propulsion of aircraft and includes all parts, appurtenances, and accessories thereof other than propellers." 49 U.S.C. § 1301(6) (emphasis supplied). Additionally, federal aircraft emission

standards provide that "'aircraft engine' means a propulsion engine which is installed in or which is manufactured for installation in an aircraft." 40 C.F.R. § 87.1(a)(4) (1979) (emphasis supplied). Thus, since the Clean Air Act explicitly classifies aircraft engines as mobile sources and does not differentiate between engines actually mounted on aircraft or intended for such use, it is clear that engines tested at P&W's facility are mobile sources.

It is important to consider here that other states which limit their permitting jurisdiction to stationary sources have exempted engine test stands from regulation upon a determination that these sources are not stationary.^{*/} For example, Section 19-508-2(b)(1) of Connecticut's Air Pollution Control Regulations requires that sources of air pollutants be registered, but it expressly exempts "mobile sources." A "mobile

^{*/} California, which has attempted to impose permitting requirements on test stands, has state statutory authority to regulate both stationary and mobile sources of emissions. Section 42300 of California's Air Pollution Laws requires a permit for "any article, machine, equipment, or other contrivance which may cause the issuance of air contaminants." Cal. Health & Safety Code § 42300. While Section 42310 exempts "[a]ny vehicle," the term vehicle as defined in Section 1900 of California's Motor Vehicle Emissions Regulations does not include aircraft engines. Thus, California's permitting jurisdiction, unlike Florida's, appears to extend to both stationary and mobile sources, with the exception of motor vehicles. It is important to remember that the applicability of these state regulations to enclosed engine test stands has been challenged by the federal government in the United States Court of Appeals for the Ninth Circuit.

source" is defined as "a source designed or constructed to move from one location to another or to be portable and includes . . . aircraft" Section 19-508-1(u). Thus, Connecticut apparently has looked to the federal Clean Air Act's definition of aircraft engine in concluding that engines at tested facilities are mobile sources and not subject to state permit requirements.

The State of Ohio also does not require the permitting of test engines. Section 3745-35-02 of Ohio's Regulations on Air Permits to Operate and Variances provides that any "air contaminant source" must have a permit to operate. The term "air contaminant source" means "any machine, device, apparatus, equipment, building, or other physical facility that emits or may emit any air pollutant." Section 3745-35-01(B)(1). This definition is limited to stationary sources by virtue of Sections 3745-21-07 to 3745-21-10 of Ohio's Air Pollutant Regulations, which expressly refer to the control of various emissions from stationary sources. Significantly, this definition is very similar in scope to the definition of "installation" in Section 17-4.02(3) of Florida's Rule on Permits.^{*/}

Finally, although a facial reading of Section 403.087 of Florida's Act mandates the permitting of "stationary in-

^{*/} "'Installation' is any structure, equipment, facility, or appurtenances thereto, operation or activity which may be a source of pollution." (Emphasis supplied.)

stallations" only, a question exists as to whether the DER could require the permitting of "indirect sources" of pollution and, if so, whether P&W's testing facility is an indirect source. As defined in South Terminal Corp. v. EPA, 504 F.2d 646, 668 n.24 (1st Cir. 1974), indirect sources are those which "themselves emit no pollutants, but instead only attract vehicles which emit pollution." This definition of an "indirect source" as one attracting moving sources comports with 40 C.F.R. § 52.22(b)(i) (1979):

The term "indirect source" means a facility, building, structure, or installation which attracts or may attract mobile source activity that results in emissions of a pollutant for which there is a national standard. Such indirect sources include, but are not limited to:

- (a) Highways and roads.
- (b) Parking facilities.
- (c) Retail, commercial and industrial facilities. [Emphasis supplied.]

It is clear, however, that both EPA and the federal courts would not classify engine test facilities as "indirect sources." EPA has interpreted its own regulations as limiting the concept of "indirect source" to facilities having associated parking areas. Specifically, Appendix A of 40 C.F.R. § 52.22(b) (1979) provides that "[t]he basic focus of the regulation is to review a new facility which will have an associated parking area" (Emphasis supplied.) The interpretive ruling continues by pointing out that the various examples of indirect sources enumerated in 40 C.F.R. § 52.22(b)(i) (1979) should be reviewed

in the context of whether "a new parking facility, or other new indirect source with an associated parking area" is being established. Similarly, the District Court in California v. Department of the Navy, 431 F. Supp. 1271 (N.D. Cal. 1977), appeal pending, No. 79-4304 (9th Cir, filed May 30, 1979), stated that engine test cells could not be classified as "indirect sources." The court reasoned that test cells were clearly distinguishable from parking lots "because test cells do not attract 'vehicles' or 'moving source' pollution but only house engines prior to their installation in aircraft." Id. at 1282 (emphasis in original). Clearly, this logic applies with equal force to P&W's test facility. Aircraft test facilities are in the business of testing engines. There is no randomness in the pollution sources that come into or leave the test site; they are totally without any element of attractability as implied in the definition of "indirect source" in 40 C.F.R. § 52.22(b)(i) (1979).

Thus, the engines associated with P&W's testing facility are exempted from the permitting requirements of the Florida Act. The only emissions sought to be regulated by DER are emissions from the aircraft engines themselves. The Florida Act only provides DER with jurisdiction over "stationary sources," and aircraft engines are clearly classified as "mobile sources" under the federal Clean Air Act. And, consistent with this federal classification, Section 17-4.04(5) of DER's own regulations exempts aircraft engines from permitting requirements.

In sum, DER lacks both statutory and regulatory authority to permit aircraft engines and cannot permit P&W's engine test stands since the only emissions come from aircraft engines temporarily mounted on the stands.

PART III

EVALUATION OF HYDROCARBON EMISSIONS
FOR PRATT & WHITNEY'S PALM BEACH
COUNTY ENGINE TEST FACILITY

Summary

This study was initiated to evaluate the impact of Volatile Organic Compounds (VOC's) emitted from the testing of aircraft engines at the Pratt and Whitney (P&W) Aircraft Group test facility. The test facility is located in Palm Beach County, which has been declared nonattainment for ozone (O_3).

An assessment of emissions from aircraft engines was undertaken to develop a methodology for determining the VOC emissions from P&W's test facilities. VOC's are considered precursors in the development of O_3 . The engine testing procedures were found to be crucial in determining the total amount of VOC's emitted from any given engine. Control technology for VOC emissions from aircraft engines is limited, although the development of cleaner and more fuel-efficient engines is an integral part of the work carried out at the P&W test facility.

A survey of meteorological parameters was performed to determine the direction in which winds would advect the VOC's emitted by P&W's test facilities. An analysis of historical O_3 data, as well as an investigation of other sources of VOC's in Palm Beach County, was also conducted. VOC and O_3 levels in Palm Beach County were projected for the future in order to gain a perspective into P&W's future contributions to pollution levels in the county.

Results indicated that the P&W test facility accounted for 0.25 percent of the countywide VOC emissions in 1979. Projections for the future show that this figure will remain approximately the same. The meteorological analysis indicated that any emissions from the test facility would tend to be advected away from the urban areas of the county, since a strong easterly component to the wind was found to predominate in the area.

O₃ violations in Palm Beach County have been decreasing markedly since 1976. If the recently promulgated EPA O₃ standard of 0.12 ppm is adopted by the State of Florida, Palm Beach County can be considered an attainment area for O₃.

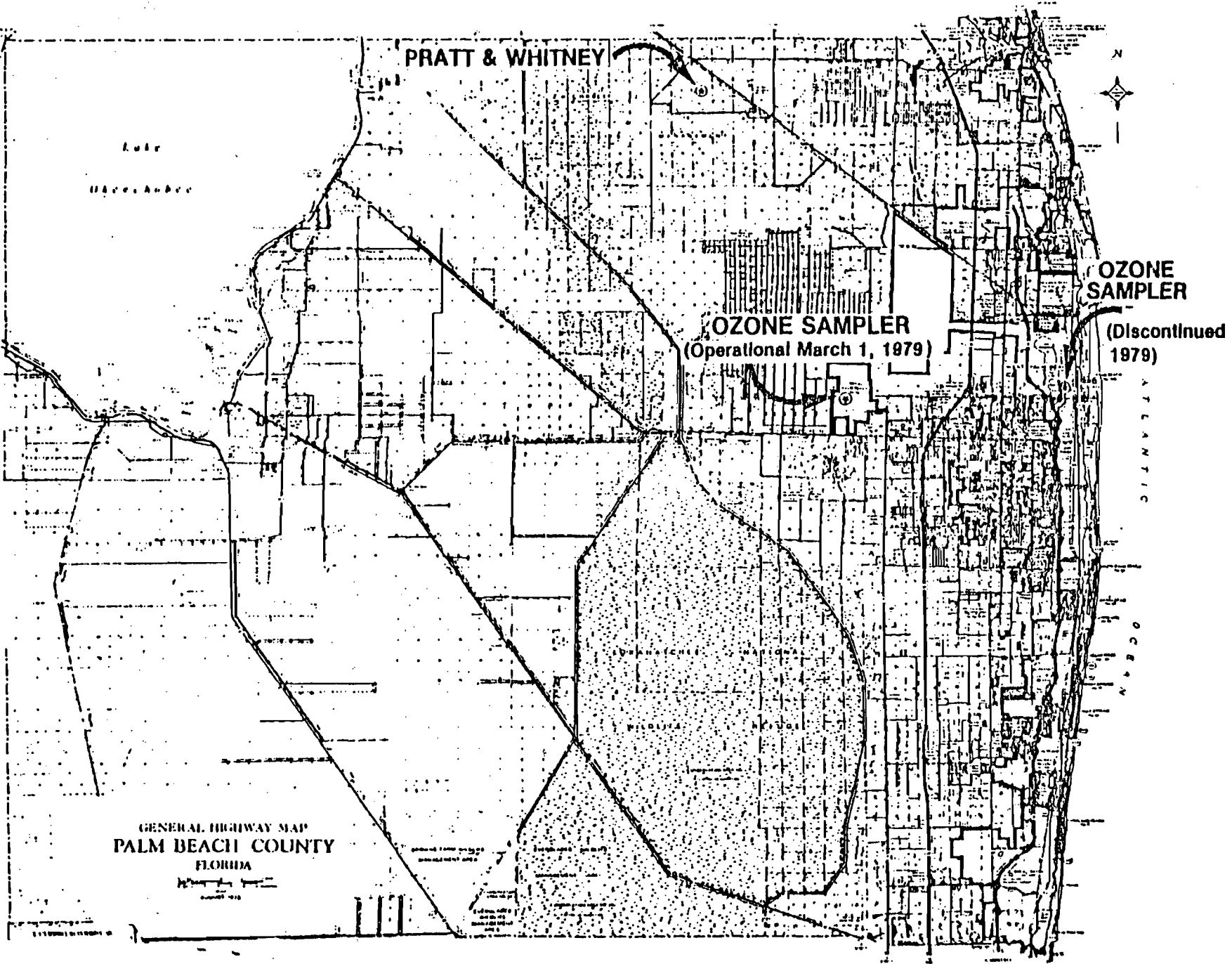
This report concludes, therefore, that VOC emissions from P&W will continue to be insignificant when compared to the county-wide VOC emissions. These insignificant VOC emissions will not jeopardize the county's goal of achieving and maintaining attainment status for O₃ by December 31, 1982.

A. Introduction

Pratt & Whitney Aircraft Group (P&W), located in Palm Beach County, Florida (see Figure 1), is a firm which specializes in the repair, maintenance, and testing of both new and used civilian and military aircraft engines. These aircraft engines are operated for various periods of time in open air test cells in order to determine the engine's operating capacity and characteristics.

This study was initiated to determine the impact of P&W's emissions upon Palm Beach County, which is designated as nonattainment for ozone (O_3). A search was conducted of all existing information concerning emissions of Volatile Organic Compounds (VOC's) from aircraft engines and available control techniques. VOC's are precursors in the development of atmospheric O_3 . A best estimate of VOC emissions from the P&W test facility was developed, based on hours of operations, types of engines tested, and modes of operation. In addition, a meteorological analysis of the probable impact of VOC emissions from P&W upon the Palm Beach County nonattainment area was undertaken. These analyses yielded an estimate of the probable contribution of P&W to O_3 levels in the urbanized area of Palm Beach County.

Figure 1 LOCATION OF PRATT & WHITNEY AND OF PALM BEACH COUNTY HEALTH DEPARTMENT OZONE SAMPLERS



B. Development of Aircraft Engine Emission Statistics

Composition of Aircraft Engine Emissions

Air pollutants normally emitted from aircraft engines include carbon monoxide (CO), oxides of nitrogen (NO_x), hydrocarbons (HC), oxides of sulfur (SO_x), and particulates. Important in the analysis of aircraft engine emissions is: (1) the distribution of these pollutants among the various types of engines, and (2) the mode of operation. Emissions also are dependent on fuel contaminants, additives, and physical characteristics, as well as on the type of fuel combusted (i.e., whether it is jet fuel or natural gas).

The Hydrocarbon Constituent

When assessing the impact of aircraft engine test procedures on the formation of O₃, it is necessary to know the composition of the "total hydrocarbon" (THC) fraction of aircraft emissions. Hydrocarbons, a broad group of organic compounds, are precursors for the formation of O₃. In this context, "hydrocarbon" is more properly referred to as the volatile organic constituent, since only the VOC fraction contributes to the development of O₃.

Volatile organic compounds, as defined in Chapter 17-2 of the Rules of the Florida DER, consist of ". . . any compound or mixture of compounds containing carbon and hydrogen, or carbon and hydrogen in combination with any other element . . ." However, methane, ethane, trichlorotrifluoroethane, methylene chloride, and 1,1,1-trichloroethane are not considered to be volatile organic compounds.

Aircraft Engine Testing Procedures

Aircraft engine testing takes place in outdoor test stands on the 7,000-acre test side in Palm Beach County. The climate of southern Florida is ideally suited for the use of outdoor test stands which allow testing in the environment in which these engines may in the future be operating. The test site also includes the altitude testing facility, the sea level test stands for large engine testing, and nearly 100 complementary test stands for small component and rig testing.

Testing aircraft engines and/or components involves placing the engine or components on test stands and operating them in various test patterns for various time intervals. Depending on the nature of the specific tests, operating time may range from a few hours to several hundred hours. Tests may be run to determine the reliability and durability of the engine or how the engine performs under a specified set of conditions. The testing usually is intermittent, often with the test stands being used to test several different engine types in a short period of time.

Control of Hydrocarbon Emissions

At the present time, limited technology exists for the control of emissions from this type of test facility. Since P&W employs open-air testing facilities, jet engine exhaust is released into the ambient environment where it is dispersed by the wind. The general control of hydrocarbon emissions is based upon several basic principles, including the optimization of combustion processes, restriction of evaporative losses, and the

substitution of typical fuels with fuels having different chemical or physical properties (HEW, 1970).

Emissions of VOC's from aircraft engines are a direct result of the combustion processes; thus, developing technologies will have to address the problems associated with the cleaner combustion of fuel. At their Palm Beach County test site, P&W is heavily involved in experimentation to reduce emissions from aircraft engines. During their test procedures, experiments are conducted to minimize emissions, improve combustion efficiency, and improve fuel economy. The development of cleaner and more fuel-efficient engines is an integral part of the work carried out at the P&W test facility. Improvements to aircraft engines due to this testing, which result in reduced atmospheric pollutants, will be reflected wherever P&W engines are utilized (i.e., Palm Beach International Airport).

Calculation of Emissions

Table 1 illustrates the hydrocarbon emission factors calculated for both commercial and military-type aircraft engines. Emissions were determined for engines utilizing jet fuel or natural gas. Information regarding modes of operation and percent of time in mode was supplied by P&W.

The mode of operation represents the different power settings an engine is subjected to during a test pattern, while the percent of time in mode represents the percentage of a test pattern in which that mode of operation is executed. The time values of a particular mode that are reported here are average

Table 1. Hydrocarbon Emission Factors for Commercial and Military Aircraft Engines

Type	Mode	Percent of Time in Mode*	Time in Mode per Hour of Testing (min)	Modal Emission Factor (lbs/hr)	Total Emissions (lbs HC/1-hr test)
<u>Engines Utilizing Jet Fuel</u>					
Commercial	Idle	40	24	25.8	
	Maximum Power	30	18	1.4	11.6
	Partial Power	30	18	2.9	
Military	Idle	40	24	18.0	
	Maximum Power	7	4.2	3.5	
	Interim 100% Power	23	13.8	20	15.1
	Partial Power	30	18	10.3	
<u>Engines Utilizing Natural Gas</u>					
Commercial	Idle	40	24	†	
	Maximum Power	30	18	†	†
	Partial Power	30	18	†	
Military	Idle	40	24	†	
	Maximum Power	7	4.2	†	
	Interim 100% Power	23	13.8	†	†
	Partial Power	30	18	†	

* Information supplied by Pratt & Whitney Aircraft Group.

† Information not available.

Source: Environmental Science and Engineering, Inc., 1980.

times, because the time in mode varies with different engine models. The time-in-mode column is the actual time the engine is operated in that mode, in minutes, assuming a test pattern lasted one hour. The modal emission factors, in pounds of hydrocarbons per hour, were taken from tables compiled by the U.S. Environmental Protection Agency (EPA), October 1978. Total emissions, in pounds of hydrocarbons per one-hour test, were calculated using the formula:

$$\frac{\text{Total HC emissions}}{\text{1-hour test}} = (\text{Modal emission factor}) \left(\frac{\text{Time In-mode}}{60 \text{ min/hr}} \right)$$

and then summing up the terms over all the modes. Modal emission factors and total emissions were not available for engines utilizing natural gas. Therefore, emission factors from Table 3.3.1-2 of AP-42 (U.S. EPA, August 1977) were used in the calculations for engines burning natural gas to determine the total hydrocarbon emissions.

Table 2 illustrates the estimated total hydrocarbons that were or will be emitted from the test facility, 1978 through 1981. For engines utilizing jet fuel, the yearly emission factor was calculated using the total emissions in a one-hour test, multiplied by the number of operating hours per year. Table 3 shows the number of hours of operation and the number of gallons of jet fuel or therms of natural gas that have been used or are projected to be used at P&W. For engines burning natural gas, total hydrocarbon emitted was based on AP-42 emission factors relating the number of pounds of hydrocarbons emitted per combustion of 1 million cubic feet of natural gas. Table 2 illustrates the rise in emitted total hydrocarbons that can be expected as well as the decrease in the use of natural gas for commercial engines. The calculations show that VOC emissions due to natural gas usage are relatively minor compared to emissions due to jet fuel usage.

There are possible variations of about 14 percent in the reporting basis of VOC's (EPA, 1978). These uncertainties are due, in part, to measuring as well as reporting methods. The total hydrocarbons that are estimated here due to aircraft engine emissions are probably high because the reported total hydrocarbon fraction includes VOC's as well as the previously mentioned nonreactive hydrocarbon compounds.

Table 2. Total Hydrocarbon Emissions Per Year from the Pratt & Whitney Test Site (Tons/Year)

	1978	1979	1980	1981
<u>Jet Fuel</u>				
Commercial	9.9	19.4	15.4	20.0
Military	<u>91.5</u>	<u>90.4</u>	<u>95.4</u>	<u>97.6</u>
Total	101.4	109.8	110.8	117.6
<u>Natural Gas*</u>				
Commercial	0.26	0.72	0.10	†
Military	<u>0.24</u>	<u>0.26</u>	<u>0.24</u>	<u>1.69</u>
Total	0.50	0.98	0.34	1.69

TOTAL EMISSIONS	101.9	110.8	111.2	119.3

* Emission factors used for calculations derived from AP-42.

† No natural gas use projected.

Source: Environmental Science and Engineering, Inc., 1980.

Table 3. Summary of Actual/Estimated Fuel Usage and Operating Hours for Jet Engines

Engine Type	First Quarter		Second Quarter		Third Quarter		Fourth Quarter		Total	
	Gallons	Hours	Gallons	Hours	Gallons	Hours	Gallons	Hours	Gallons	Hours
<u>Jet Fuel</u>										
<u>1978</u>										
Military	2,705,660	2,674	3,707,590	3,402	3,700,760	3,064	3,333,010	2,975	13,447,020	12,115
Commercial	335,873	300	276,722	247	410,124	371	775,513	786	1,798,232	1,704
<u>1979</u>										
Military	4,560,720	3,855	3,283,734	2,969	3,947,081	3,267	2,198,680	1,891	13,990,215	11,982
Commercial	1,138,625	1,085	1,398,288	1,284	458,439	488	454,530	492	3,449,882	3,349
<u>1980</u>										
Military	2,407,720	2,155	3,837,560	3,506	3,545,600	3,269	4,053,200	3,711	13,844,080	12,641
Commercial	957,634	1,061	543,413	600	454,400	501	454,400	501	2,409,847	2,663
<u>1981</u>										
Military	3,531,100	3,213	3,828,300	3,549	3,553,600	3,148	3,341,000	3,022	14,254,000	12,932
Commercial	618,000	687	762,000	847	828,000	920	888,000	987	3,096,000	3,441

Table 3. Summary of Actual/Estimated Fuel Usage and Operating Hours for Jet Engines (Continued, Page 2 of 2)

Engine Type	First Quarter		Second Quarter		Third Quarter		Fourth Quarter		Total	
	Therms	Hours	Therms	Hours	Therms	Hours	Therms	Hours	Therms	Hours
<u>Natural Gas</u>										
<u>1978</u>										
Military	28,158	28	28,158	28	28,158	28	28,158	28	112,632	112
Commercial	9,600	10	96,000	10	7,200	7	10,800	11	37,200	38
<u>1979</u>										
Military	31,500	32	31,500	32	31,500	32	31,500	32	126,000	128
Commercial	26,100	26	26,100	26	26,100	26	263,700	264	342,000	342
<u>1980</u>										
Military	28,158	28	28,158	28	28,158	28	28,158	28	112,632	112
Commercial	13,900	14	19,200	19	7,200	7	7,200	7	42,500	47
<u>1981</u>										
Military	28,158	28	104,558	105	645,558	646	28,158	28	806,432	807
Commercial	0	0	0	0	0	0	0	0	0	0

Source: Pratt & Whitney Aircraft Group, 1980.

C. Impact of Emissions

Meteorology

Palm Beach County is level topographically, ranging 10 to 20 feet above mean sea level. Most urban development is along the eastern coastal strip, whereas most western portions of the county are covered by agricultural lands or everglades. The county can be classified as semi-tropical, with a quasi-permanent anti-cyclone governing the weather. The winds in this area are extremely important in determining the movement and dispersion of pollutants. Wind direction governs the travel of pollutants, and wind speed determines the time it takes for pollutants to impact a receptor.

National Weather Service (NWS) observations taken at Palm Beach International Airport show the prevailing wind direction to be from one of the easterly components. Wind direction, measured in 1978 at the Palm Beach County O₃ monitor in West Palm Beach, shows that a high percentage of winds were from the east-northeast, east, and east-southeast directions. Wind data measured at the O₃ monitor in Royal Palm Beach show a pronounced wind frequency maximum from the southeast. Five years of wind data, measured at the P&W test site, show that the wind is predominantly from the northeast to east direction.

Wind roses for available wind data were constructed and placed on a Palm Beach County map, to illustrate the easterly tendency of the wind (see Figure 2). A wind rose

illustrates graphically the frequency, in percent, with which the wind blows from a given direction. The four wind roses illustrated in Figure 2 show overwhelmingly that the prevailing wind direction is from an easterly component. As a result, pollutants emitted in the urban area of the county normally would travel towards the outlying everglades. VOC's emitted at the Pratt & Whitney test facility would, for the majority of the time, travel away from the urban areas toward the sparsely populated agricultural areas.

A closer examination of the P&W wind rose shows that winds are directed toward the West Palm Beach O₃ monitor (from the northwest) only 12.7 percent of the time. Winds from the north-northwest direction, which would advect pollutants toward the Royal Palm Beach O₃ monitor, also occur only about 12 percent of the time. Since the northwesterly component to the wind occurs mostly during the winter season in this region, VOC's emitted at the P&W test site have a low probability of contributing to O₃ levels recorded during the peak O₃ season (from April to September). Figure 3 shows the mean wind direction recorded at the West Palm Beach and Royal Palm Beach O₃ monitors during the O₃ season. This wind rose illustrates the absence of wind from the northwest quadrant from April to September, 1978 and 1979, and the high frequency of wind from the Broward and Dade County urban areas to the south.

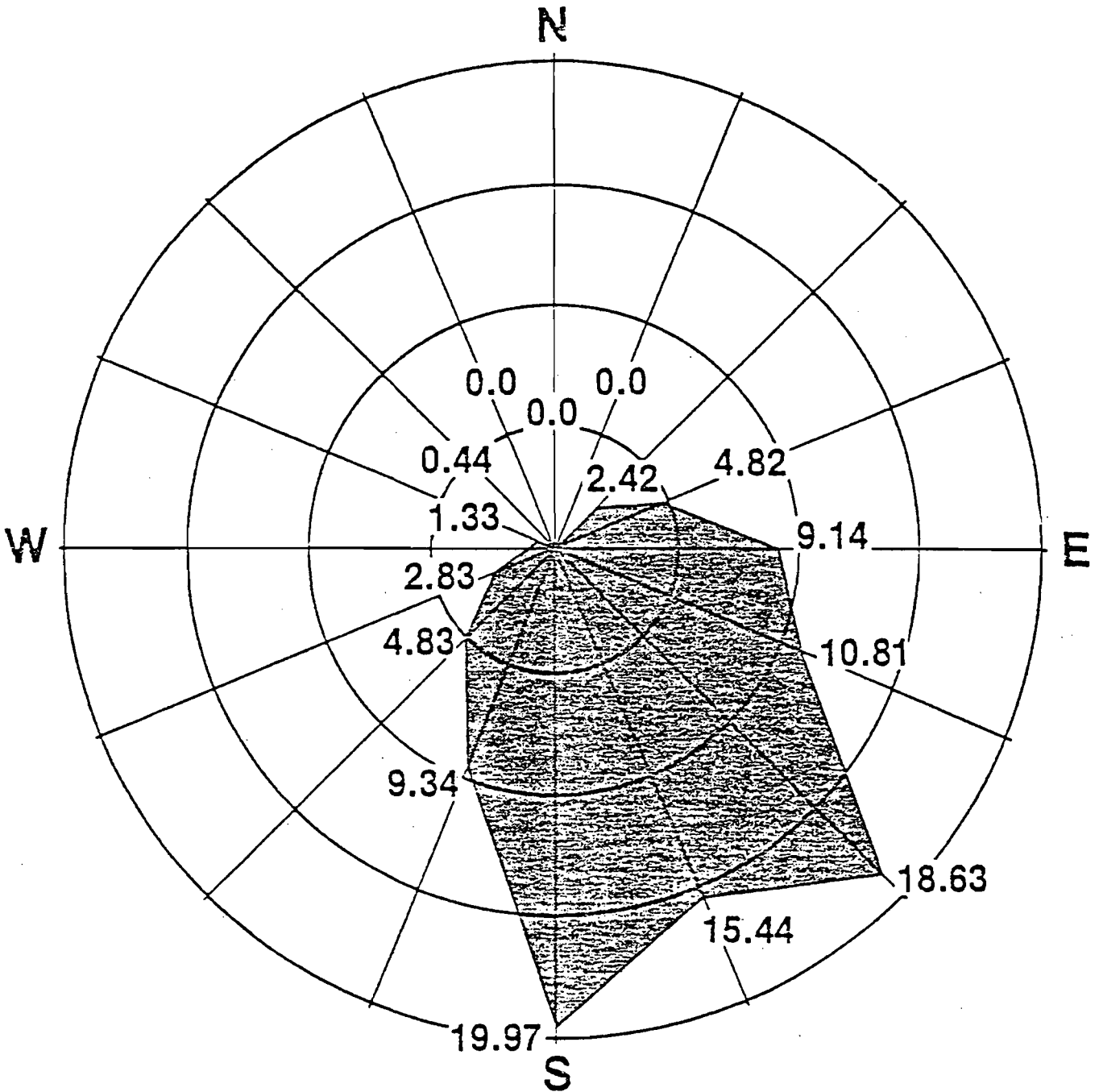


Figure 3. MEAN DIRECTION OF THE WIND DURING THE OZONE SEASON, APRIL-SEPTEMBER

AVERAGE OF WIND MEASUREMENTS TAKEN AT BOTH PALM BEACH COUNTY OZONE MONITORS

1978-1979

1"=5%

O₃ Concentrations in Palm Beach County

Ambient concentrations of O₃ have been monitored continuously in Palm Beach County since September 1973. Until 1979, the monitoring location for O₃ was in the city of West Palm Beach, at the Water Treatment Plant, First Street and Tamarind Avenue (see Figure 1). On March 1, 1979, the ozone monitor was relocated to Royal Palm Beach in order to comply with Federal siting criteria.

Historical data supplied by the Palm Beach County Health Department and the State of Florida show a decrease in the number of O₃ violations over the past several years. Until 1979, the Federal O₃ standard was .08 ppm (160 ug/m₃), not to be exceeded more than one hour per year. The Federal O₃ standard recently has been revised to .12 ppm (240 ug/m₃), not to be exceeded more than one day per year. Historical data based on the .08 ppm standard show that the standard was exceeded 95 times in 1976, 23 times in 1977, zero (0) times in 1978 (although only 37.81 percent of the data was recoverable in 1978), and exceeded only once at the new Royal Palm Beach monitoring location in 1979. Since January 1, 1977, the 0.12 ppm federal standard for O₃ has not been exceeded in Palm Beach County.

Due to the fact that over the past two years the O₃ standard has not been exceeded, a value of 0.06 ppm (120 ug/m₃) was decided upon as a reference point to calculate a frequency

distribution of high O₃ concentrations and wind direction (see Figure 4). Both of these parameters were measured at the Palm Beach County Health Department and Royal Palm Beach O₃ monitors. As shown in Figure 2, high concentrations of O₃ were associated with wind components from an easterly direction. The highest O₃ concentration measured was .082 ppm on October 8, 1979, associated with winds from the east. There were no O₃ concentrations (\geq .06 ppm) associated with due west winds. The critical northwesterly component (direction that P&W is upwind from the O₃ monitors) shows a maximum O₃ concentration associated with northwesterly winds roughly 2 to 7 percent of the time. These data illustrate a probable small contribution of P&W test site emissions to the Palm Beach County O₃ problem.

Palm Beach County VOC Emissions

In 1977, an emissions inventory conducted by Pacific Environmental Services for the State Implementation Plan (SIP) for Palm Beach County, reported that P&W was responsible for 250 tons of VOC emissions. Due to an underestimation of VOC's from fuel combustion in the original inventory, the Palm Beach County Health Department indicated that 1977 emissions of VOC's were actually 480 tons. The 1979 Palm Beach County Annual Report stated that 331.3 tons of HC's were emitted from the P&W test site. This figure represents the total HC emissions, including VOC's, non-methane HC, and unreactive HC.

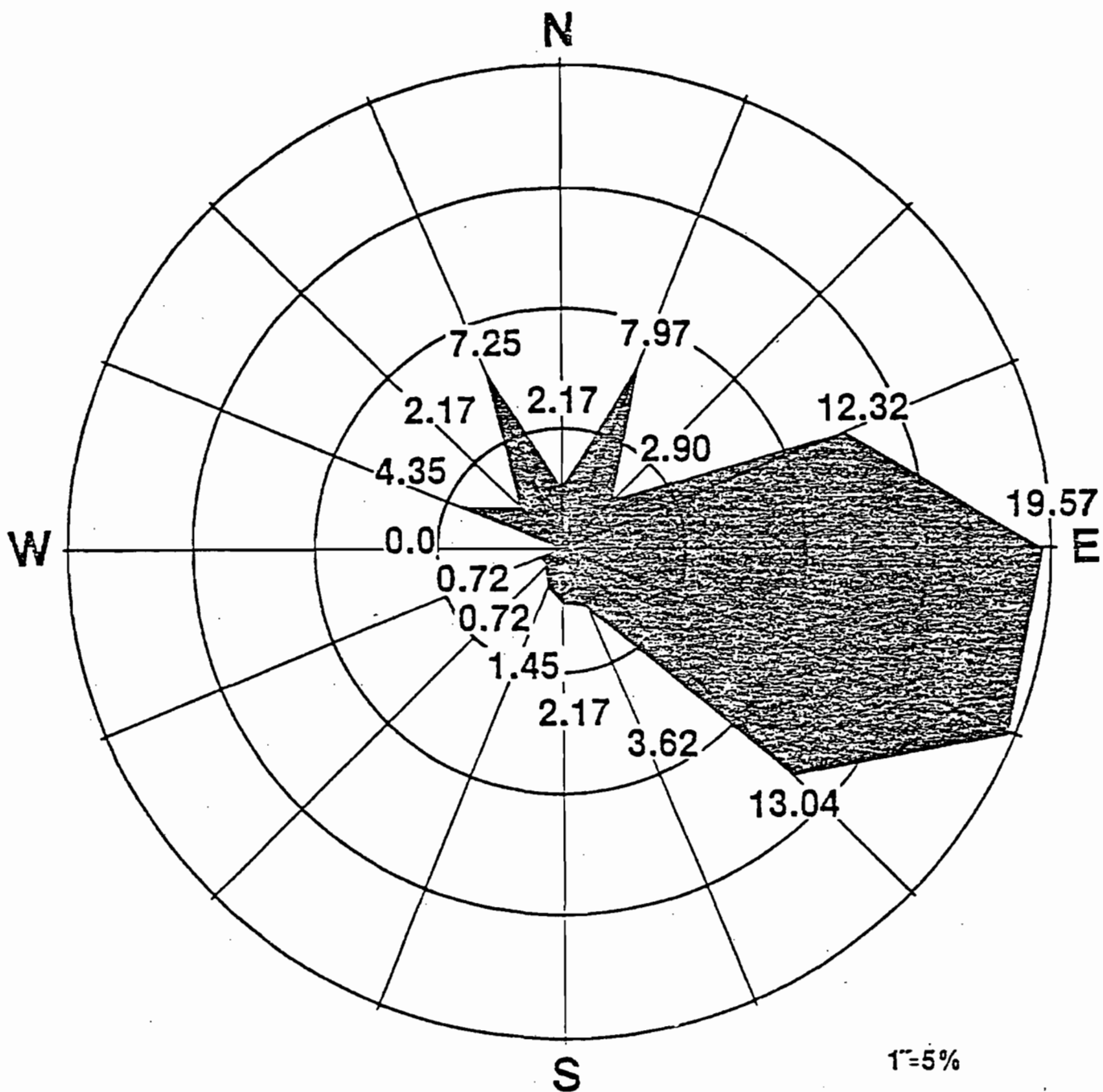


Figure 4. FREQUENCY DISTRIBUTION (IN PERCENT)
FOR WINDS ASSOCIATED WITH OZONE CONCENTRATION
GREATER THAN OR EQUAL TO .06ppm
(RECORDED AT BOTH PALM BEACH COUNTY OZONE MONITORS)
1978 WEST PALM BEACH, FLORIDA
1979 ROYAL PALM BEACH, FLORIDA

Figures presented in the SIP for Palm Beach County show that countywide emissions of VOC's in 1979 totaled 44,704 tons. Based on the updated emissions figures developed in the SIP, the contribution from the test facilities at P&W in 1979 was 110.8 tons, or 0.25 percent of the countywide total. Projections show that in 1981, Pratt & Whitney will emit 119.3 tons of VOC's from the test facility. Based upon 1981 projections in the Palm Beach County SIP, these test facility-emitted VOC's will account for 0.27 percent of the countywide VOC emissions.

Future Projections for Palm Beach County

A major effort for controlling and reducing the formation of O₃ has consisted of limiting the amount of VOC's (hydrocarbon compounds) that are emitted into the atmosphere. VOC's are emitted from a large number of diverse sources, including automobile exhaust, gasoline evaporation from handling and storage facilities, petrochemical plants, dry cleaning facilities, degreasing operations, paint shops, and solvent facilities. Natural sources of hydrocarbons include oil seepage, pine trees, and decaying foliage.

Major sources of VOC's in Palm Beach County are listed in Table 4. As illustrated in this table, mobile sources account for 31,447 tons per year, or 67 percent of the countywide total. Mobile sources include highway vehicles, off-highway vehicles, railroad lines, aircraft, and vessels. Highway

Table 4. 1977 Base Year Emissions Inventory Summary,
Class II VOC Emissions

Source	Tons/Year
Storage, Transportation, and Marketing of Petroleum Products	2,354*
Industrial Processes	43
Industrial Surface Coating	411
Non-Industrial Surface Coating	1,230
Other Solvent Uses	1,970
Other Miscellaneous Sources	9,427
Mobile Sources	<u>31,447</u>
Total Volatile Organic Compound Emissions	46,882

* Does not include information concerning fuel storage at airports.

Source: SIP for Palm Beach County, 1979.

vehicles account for 27,797 tons of VOC's per year, or 88 percent of the mobile source total, and 59 percent of the county-wide total in 1977 (SIP for Palm Beach County, 1979). Contributions from highway vehicles are expected to decrease to 13,621 tons by 1987, due to tighter vehicular emission controls, improved mass transit facilities, and the higher cost and resulting decreased consumption of gasoline.

Projections calculated for the SIP for Palm Beach County indicate that the maximum allowable level of VOC emissions for the county to obtain attainment status for O₃ is 41,700 tons per year. These projections would mean a reduction of 5,208 tons per year from the initial inventory year of 1977 until December 13, 1982, when the county should obtain attainment status for O₃. This 5,208-ton-per-year reduction is for both stationary and mobile sources.

Stationary sources will be required to apply control technology that is reasonably available in order to achieve the lowest emissions. Mobile sources will be required to reduce emissions through the implementation of locally selected Transportation Control Measures. With the implementation of these control measures, a reduction of 19 percent of the VOC emissions can be realized. This reduction is greater than the 11.1 percent required in the SIP and provides ample allowance for new sources. Countywide estimates indicate that by 1987, the actual emissions will be 30,070 tons per year, which is 11,630 tons less than the 41,700-ton cap needed for attainment. These emission rates indicate that by 1987, 11,630 tons of VOC's can be emitted from new sources without threatening the county's attainment status.

With the implementation of these reductions in emissions, Palm Beach County should reach attainment for O₃ by December 31, 1982. Presently, as indicated by historical O₃ monitoring data, O₃ levels are in compliance with the AAQS. These lowered O₃ concentrations probably are due to: (1) emissions standards already in effect for stationary sources, (2) decreasing vehicular VOC emissions, and (3) decreased usage of gasoline for motor vehicles.

P&W will continue to be a minor source of VOC's in Palm Beach County. As stated in the last section, P&W will contribute 119.3 tons, or 0.27 percent of the countywide VOC total by 1981. With the 11,630 tons to be allowed for new sources by 1987, projected increases in emissions from P&W will not impair the O₃ attainment progress or status of Palm Beach County.

D. Summary and Conclusions

VOC emissions from the P&W test site have been shown to be relatively minor compared to countywide emissions. Emissions calculated for the test facilities accounted for only 0.25 percent of the countywide total in 1979. Projections through 1981 show that contributions to the countywide VOC totals by the P&W test site will be approximately 0.27 percent.

Analysis of meteorological data from the Palm Beach County Health Department, the NWS at Palm Beach International Airport, and from P&W show that there is a low frequency of occurrence of winds that result in impacts from P&W emissions upon the urban areas. Northwesterly winds which would advect the VOC's from P&W towards the O₃ monitor were found to occur infrequently and usually only during the winter. During the peak O₃ season, April through September, there was no northwesterly component to the wind. The majority of O₃ violations were recorded with winds from an easterly direction.

The ambient concentration of O₃ since 1976 shows a marked decline in the number of times that the O₃ standard was exceeded as measured at the West Palm Beach O₃ monitor. With the change in 1979 of the O₃ standard from 0.08 ppm to 0.12 ppm, an analysis of the data shows that since January 1, 1977, the new standard has not been exceeded at either the West Palm Beach or Royal Palm Beach monitoring sites. However, even though the Federal standard has been changed, the State of Florida has not yet promulgated a change to the new standard, and Palm Beach

County has not been reclassified as attainment. If the 0.12 ppm standard is adopted by Florida, it could then be anticipated that the county would be declared as attainment for O₃ based upon the past three years (1977, 1978, 1979) of monitoring data which show that the 0.12 ppm level has not been exceeded.

In summary, it has been shown that: (1) emissions from test facilities at P&W account for a very minor amount of the countywide emissions (\approx .25 percent); (2) winds tend to direct the emissions away from the urban areas; and (3) Palm Beach County can be considered an attainment area for O₃ if the new standard is adopted by the State of Florida.

E. References

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- U.S. Environmental Protection Agency, Office of Air and Waste Management. 1979. Compilation of Air Pollutant Emission Factors. Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina (AP-42), 3rd ed.
- U.S. Environmental Protection Agency, Region IV. 1979. Air Programs Branch. Florida Oxidant SIP Assistance, Phase I, Volatile Organic Compound Emissions Inventory (EPA-904/9-79-029a).

DRAFT

TO: Jake Varn
Steve Fox
Bill Townsend
Mary Clark
Jim Estler

FROM: Steve Smallwood

DATE: February 25, 1980

SUBJECT: Pratt and Whitney, Palm Beach County
Permitting of Jet Engine Testing Activity

I talked with Mr. Robert T. Bergin, Plant Manager, Pratt and Whitney by phone on February 18, 1980 and again on February 22, 1980 about the company's concerns with the nature of the proposed permit conditions for their jet engine test stand operation.

The company has requested that permit conditions not restrict the utilization of individual test stands. A previous recommendation (see attached memo dated 1/16/80) included a 25 million gallon/year jet fuel usages limitation in lieu of permitting individual test stands. The company's test stand jet fuel usage for 1979 was approximately 20 million gallons.

Twenty-five million gallons/year is approximately equivalent to 575 tons/year emission of volatile organic compounds (VOC). Palm Beach County is a nonattainment area for ozone. VOC is the pollutant that is subject to control. In the Nonattainment SIP for this area, countywide VOC emissions are projected to be reduced from approximately 47,100 tons/year in 1977 to approximately 38,200 tons/year in 1982.

Of this 3700 tons/year ~~average~~^{average}, 1350 tons/year has been set aside, in 17-2, as an emissions allowance for future new VOC sources in the county. The remaining 2350 tons/year has been set aside to account for inherent errors in the emission estimates and methods used to project the emission reductions that will occur, and the ^{estimated} effect these reductions will have on ambient ozone levels.

By suggesting a 25 million gallon fuel cap for Pratt and Whitney we would be using ^{up} approximately 115 ton/year of the 2350 margin of ~~error~~^{error}.

Mr. Bergin told me that Pratt-Whitney feels that the 25 million gallons cap would possibly ^{sp} limit their future business.

If we were to agree to a cap of 50 million gallons/year (2½ times their 1979 usage) we would be allocating approximately 690 tons/year (or about 30%) of our margin for error to the Pratt and Whitney test stand operation. Considering the national defense nature of much of their business, I don't think that would be unreasonable.

Mr. Bergin said that this appeared to be a reasonable option and asked that the company be given a week or two to consider it. I expect an answer from him by March 11, 1980.

Mr. Bergin noted in our conversation that during his last discussion with Warren Strahm on this matter, ^{Bergin} ~~he~~ indicated

that the company wishes to pursue this question further with Tallahassee, and that no further action has been taken by our District Office as of our last phone conversation (2/22/80).

SS:jr

attachment

cc Warren Strahan

Draft
2-14-80

TO: Warren Strahm
Gene Sacco

THRU: Steve Fox

FROM: Steve Smallwood

SUBJ: Follow-up
Pratt & Whitney Jet Engine and Component Test Stands.

Since our early January 1980 discussions concerning appropriate permit conditions for the Pratt & Whitney facility in Palm Beach County, the company has had a further discussion with Secretary Varn.

As a result of that discussion Secretary Varn has concluded that for the immediate future there is a better alternative than that suggested in items 3 and 4 of the January 16, 1980 memo (see attachments).

As an alternative to limiting the facility at this time to a maximum fuel use cap as a permit condition, require quarterly fuel use reports and indicate as a permit condition that if the facility's fuel usage significantly increases above current levels in the future, the facility would at that future time be subject to a review of the appropriate operating permit(s) and at that time a total fuel use cap may be prescribed as a permit condition.

At the suggested cap (memo 1/16/80) of 25 million gallon of jet fuel for all jet engine test stands at the facility (approximately 20% above current usage) the test stand activity would discharge approximately 575 tons of VOC per year. In the original inventory for the Palm Beach ozone nonattainment area the test stand VOC emission was listed as 250 tons per year.

Page Two

The corrected value based on more recent information indicates that the actual 1977 VOC emission was approximately 480 tons/year.

The corrected 1977 total VOC emission for the county is 47,139 tons. Projected emission reductions are expected to result in a 1982 county total of 38,222 tons/year. A new source growth allowance of 1350 tons/year has been established by rule (17-2) for Palm Beach County. The projected attainment level (to just meet the federal ozone standard by 1983) is 41,900 tons/year VOC emission.

Therefore, we have a margin of error of 2,328 tons/year (or approximately 5%) currently built into the nonattainment plan for Palm Beach County, (among other things) based on Pratt & Whitney not using more than 25 million gallons per year of jet fuel for their test stands.

If Pratt & Whitney were to double their 1977 fuel use level by 1982, their VOC emission would increase by approximately 500 tons per year, but assuming all currently projected reduction occur, we would still have a margin for error of approximately 1800 tons per year.

Based on current information, the test stand operation at Pratt & Whitney currently represented approximately 1% of total manmade VOC emissions in Palm Beach County.


SS:caa

DEPARTMENT OF ENVIRONMENTAL REGULATION

INTEROFFICE MEMORANDUM

For Routing To District Offices And/Or To Other Than The Addressee	
To: _____	Loctn.: _____
To: _____	Loctn.: _____
To: _____	Loctn.: _____
From: _____	Date: _____

TO: Warren Strahm
Gene Sacco

FROM: Steve Smallwood 

DATE: January 16, 1980

SUBJ: Pratt & Whitney Jet Engine and Component Test Stands

The Bureau has received the information provided by Pratt & Whitney, and talked with representatives of the States of Ohio and Connecticut.

Based on the nonattainment status of Palm Beach County and the nature of Pratt & Whitney business we recommend that:

1. Individual test stands and relocatable jet engines not be specifically permitted.
2. No direct permit conditions be prescribed that would affect the scheduling or utilization of individual test stands or relocatable engines.
3. The general activity be permitted and limited only in terms of the maximum fuel used by this activity (we suggest a maximum fuel use cap of 25 million gallons jet fuel per year).
4. The company be required to report fuel utilization as they have been and that the company provide the Department or the Department's designated agency, the County, with prior notice of any projected future exceedance of the fuel use cap.

Please see the attached information for additional detail.

SS:caa

cc: R. T. Bergin
J. Estler
M. Clark

ATTACHMENTS

Reasonable Further Progress for Palm Beach County
Resulting From Pratt & Whitney Emission Estimate Changes

Volatile Organic Compound (VOC) emissions from Pratt and Whitney's engine and component test stands are currently not included in the VOC emission inventory for Palm Beach County. In the original inventory, Pacific Environmental Services reported 250 tons of VOC emissions for 1977 for Pratt & Whitney. However, the Palm Beach County Health Department indicated that 1977 VOC emissions for Pratt & Whitney were actually 480 tons. The reason for the difference was an underestimation of VOC from fuel combustion in the original inventory.

To correct this omission, the 230 ton difference for 1977 will be added to the fuel combustion total, making the 1977 fuel combustion emission estimate of 985 tons of VOC. The total VOC emissions for the 1977 base year are 47,139 tons. Using the 11.1% reduction of VOC to reach attainment, the adjusted VOC attainment level is 41,900 tons. Factoring in growth, the projected VOC emissions for 1982 are 38,222 tons of VOC. Therefore, Palm Beach County is projected to be 3678 tons of VOC emissions below the attainment projection. A new source growth allowance of 1350 tons of VOC emissions has been set aside for Palm Beach County, leaving a 2,328 ton of VOC margin of error.

To prevent unreported and uncontrolled VOC emission increases from the unpermitted engine and component test stands, the Bureau of Air Quality Management proposes that the total fuel usage for these source be limited and reported to the Department. For 1979,

Page Two (cont'd)

Pratt & Whitney projected 19,714,696 gallons of jet fuel was combusted at these test stands. Also the fuel usage for constant operation was estimated at 201,694,632 gallons of jet fuel for 1979. If fuel usage for the engine and component test stands is limited to approximately 25% above the 1979 usage i.e., 25 million gallons, VOC emissions from these test stands would be 575 tons. Since 230 tons of VOC emissions is contained in the revised VOC inventory for Palm Beach County for these stands, the fuel combustion emissions must be increased by 345 tons to reflect a limit of 25 million gallons of jet fuel usage for these stands. Since an additional margin of 2328 tons of VOC emissions is present in the 1982 VOC emission inventory before this reduction, the reasonable further progress toward the attainment of the ambient ozone standard would not be threatened by this proposed action. A margin of 1983 tons of VOC emissions would still remain in 1982 for Palm Beach County.

Palm Beach County Health Department

P.O. BOX 29, WEST PALM BEACH, FLORIDA 33402

C.L. BRUMBACK, M.D., M.P.H.
DIRECTOR

Please Address
Reply To: ESE-WPB



November 16, 1979

Mr. Robert T. Bergin
Plant Engineer
Pratt and Whitney Aircraft Group
P.O. Box 2691
West Palm Beach, FL 33402 305/840-2000

Dear Mr. Bergin:

Pursuant to our recent meeting concerning permits for existing jet engine test stands, I have discussed the subject with EPA, Atlanta and DER, Tallahassee.

The EPA stated that they do not have a rule that requires a permit for this type operation nor do they have a rule that would exempt it from permit procedures. Also in the absence of a State or local rule they suggest that the State and local program determine the feasibility of permitting jet engine test stands.

The DER in Tallahassee stated that additional information would be necessary prior to a determination.

Accordingly, please provide our agency with the following:


1. The number of unpermitted jet engine test stands in each area.
2. Maximum design rate and fuel usage (both natural gas and jet fuel) at that rate for each test stand.
3. Average operational rate and fuel usage (both natural gas and jet fuel) at that rate for each test stand.
4. Emissions from each test stand as described in AP-42, Compilation of Air Pollutant Emission Factors, Appendix C, dated November 1978 for both maximum design and average operational rates.
5. A discussion pertaining to the intermittent nature of the operation and its research and development function.

Page 2
November 16, 1979
Mr. Robert T. Bergin

Should you have any questions regarding this matter please contact the undersigned.

Very truly yours,

For the Division Director
Environmental Sciences and Engineering


Eugene J. Sacco
Air Pollution Administrator

FJG/EJS/sc

cc: Steve Smallwood - DER-Tallahassee
Warren Strahm - DER-WPB

DEPARTMENT OF ENVIRONMENTAL REGULATION

INTEROFFICE MEMORANDUM

For Routing To District Offices
And/Or To Other Than The Addressee

To: _____	Loctn.: _____
To: _____	Loctn.: _____
To: _____	Loctn.: _____
From: _____	Date: _____

TO: Steve Smallwood

FROM: Bill Thomas
John Svec

DATE: January 15, 1980

SUBJECT: Pratt and Whitney Test Stands

Although the test stands themselves are stationary, the actual sources or processes which result in emissions are the engines themselves, which may or may not be considered stationary. In the case of slave engines which functionally are part of the stands, it is reasonable to consider them stationary sources. It is our understanding that this has been done and they are presently permitted as stationary sources.

Discussions have been held with the state agencies in both Connecticut and Ohio. In neither case are test stands permitted. Ohio considers them to be mobile sources while Connecticut differentiates on the basis of intended end use of the engine. They have rules allowing permitting of slave engines as stationary sources but have not actually done so. Both states referred rather vaguely to an after the fact report on emissions. All facilities ie G.E. in Evendale, Ohio and Pratt and Whitney both in East Hartford, Conn. and West Palm Beach are in ozone nonattainment areas.

In normal operation of the facility the usage of an individual test stand will vary and scheduling might be on a fairly short reaction time while annual usage of the entire facility would be a function of many contracts. Barring a major increase in effort or major new development program the total annual usage should average to a fairly constant, or at least fairly predictable figure. To address individual test stands under these conditions would create an extremely heavy administrative load as well as possibly getting into classified information affecting national security. The other extreme of considering test engines as mobile sources does not seem desirable either since it could leave a blank or long delay in inventory figures.

Based on the premise that annual average should be predictable, it seems that accurate inventory figures for VOC could be best maintained by specifying a fairly loose fuel consumption figure for test engines in the overall facility with perhaps periodic report of totals against projections and special notification if any exceedance is projected. If that should occur it could then be treated as a permit modification and either offset or covered by new source allowance, if available.

Steve Smallwood
Page Two
January 15, 1980

Particulate should be investigated but should be less of a problem since PSD would apply rather than nonattainment.

BT:JS:jr

Palm Beach County Health Department

P.O. BOX 29, WEST PALM BEACH, FLORIDA 33402

C.L. BRUMBACK, M.D., M.P.H.
DIRECTOR

Please Address
Reply To: ESE-WPB

December 10, 1979



Mr. Steve Smallwood
Chief, Bureau of Air Quality Management
Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Fla. 32301

Dear Mr. Smallwood:

Attached you will find the information requested pertaining to fuel usage and emissions generated on jet engine test stands at the Pratt & Whitney plant in Palm Beach County.

The test stands shown in the attachment are not permitted sources. The matter to be determined is whether they should be permitted.

We do not consider the jet engine that is temporarily placed on the test stand for testing purposes a stationary source of air pollution. The engine may be on the test stand for an hour or less and returned to the plant for further modification and/or maintenance. In our opinion their research and development function, their temporary and intermittent operation preclude permit requirements.

Other test stands, not shown in the attachment, with jet engines permanently installed, commonly called "slave" engines used to produce compressed air are considered stationary source of air pollution and are permitted accordingly.


Actual emission data is available from each test stand, as shown in the attachment, and suitable for pollutant tracking purposes.

I am sure your meeting with the Pratt & Whitney representatives Monday, December 17 at 2:00 p.m. will be meaningful.

Should you have any questions please contact me.

Very truly yours,

For the Division Director
Environmental Sciences and Engineering


Eugene J. Sacco
Air Pollution Administrator

FJG/ES/jsb

cc: D.E.R. West Palm Beach

PRATT & WHITNEY AIRCRAFT GROUP

GOVERNMENT PRODUCTS DIVISION

P. O. Box 2691
West Palm Beach, Florida 33402

December 4, 1979

Mr. Eugene J. Sacco
Air Pollution Administrator
Palm Beach County Health Department
P. O. Box 29
West Palm Beach, Florida 33402

Re: Government Products Division Jet Engine/Component Test Stands

Dear Mr. Sacco:

In response to your letter of November 16, 1979 concerning the above subject, we have provided answers to your first four questions in the form of charts (Exhibit A) setting forth the emissions of engine and component testing related to the use of the test stands for each of the test stands and test areas. Each chart designates the test stands, the average and maximum annual fuel use in engine and component testing based on actual test stand use from January - October 1979 and the respective emissions from burning these amounts in engine and component testing.

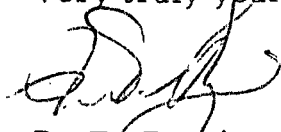
In response to question No. 5, a discussion of the intermittent nature of the testing operations and its engine and component research and development function is attached (Exhibit B).

As you have requested, we have also attached a plot plan entitled "Test Facilities Area Layout" (Exhibit C) which shows respective test stand locations.

Once you have had a chance to review this material, we would like to meet with you and DER representatives in Tallahassee to clarify any unanswered questions and provide justification for not permitting our engine and component test stands.

Should you have further questions, please advise accordingly.

Very truly yours,


R. T. Bergin
Plant Engineer

Attachments: Exhibit A
Exhibit B
Exhibit C

re



UNPERMITTED JET ENGINE/COMPONENT

TEST STANDS

(JET ENGINE/COMPONENT FUEL USAGE)

11-30-79

NO.	STAND NO.	% STAND UTILIZATION*	JET FUEL	NATURAL GAS	ACTUAL JET FUEL (GAL)/ NATURAL GAS (THERMS) USAGE (JAN-OCT 1979)	AVERAGE JET FUEL (GAL/YR)/ NATURAL GAS (THERMS/YR) USAGE	MAX. JET FUEL (GAL/YR)/ NATURAL GAS (THERMS/YR) USAGE*			
1	A-1	8.6	X		1,881,000	2,257,200	26,265,600			
2	A-2	9.9	X		1,084,000	1,300,800	13,132,800			
3	A-3	17.8	X		1,300,000	1,560,000	10,944,000			
4	A-4	4.5	X		410,000	492,000	10,944,000			
5	A-5	8.6	X		715,000	858,000	10,944,000			
6	A-6	11.1	X		1,109,000	1,330,800	10,944,000			
7	A-7	4.8	X		601,000	721,200	15,321,600			
8	A-7A	2.0	X		176,000	211,200	10,506,000			
9	A-7A			X	7,200	8,640	10.48x10 ⁶			
10	A-8	32.9	X		962,000	1,154,400	3,502,800			
11	A-9	5.4	X		543,000	651,600	13,132,800			
12	A-10	12.6	X		1,376,000	1,651,200	13,132,800			
13	A-11	3.3	X		293,000	351,600	10,506,000			
14	A-11			X	24,000	28,800	10.48x10 ⁶			
TOTALS					10,450,000	31,200	12,540,000	37,440	148,276,400	20.96x10 ⁶

* BASED UPON 24 HRS./DAY - 7 DAYS/WK

UNPERMITTED JET ENGINE/COMPONENT

TEST STANDS

(JET ENGINE/COMPONENT EMISSIONS)

11-30-79

NO.	STAND NO.	ACTUAL(AVERAGE) EMISSIONS*					MAXIMUM EMISSIONS*				
		PART TONS/YR	SO _x TONS/YR	NO _x TONS/YR	HYDROCAR TONS/YR	CO TONS/YR	PART TONS/YR	SO _x TONS/YR	NO _x TONS/YR	HYDROCAR TONS/YR	CO TONS/YR
1	A-1	13.3	14.7	16.5	52.0	36.9	155.0	170.7	191.7	604.1	429.4
2	A-2	7.7	8.5	9.5	29.9	21.3	77.5	85.4	95.9	302.1	214.7
3	A-3	9.2	10.1	11.4	35.9	25.5	64.6	71.1	79.9	251.7	178.9
4	A-4	2.9	3.2	3.6	11.3	8.0	64.6	71.1	79.9	251.7	178.9
5	A-5	5.1	5.6	6.2	19.7	14.0	64.6	71.1	79.9	251.7	178.9
6	A-6	7.9	8.7	9.7	30.6	21.8	64.6	71.1	79.9	251.7	178.9
7	A-7	4.3	4.7	5.3	16.6	11.8	90.4	99.6	111.9	352.4	250.5
8	A-7A	1.3	1.4	1.5	4.9	3.5	62.0	68.3	76.7	241.6	171.8
9	A-7A	0	0	1.3	.1	.5	0	3.1	1572.0	120.5	628.8
10	A-8	6.8	7.5	8.4	26.6	18.9	20.7	22.8	25.6	80.6	57.3
11	A-9	3.8	4.2	4.8	15.0	10.7	77.5	85.4	95.9	302.1	214.7
12	A-10	9.7	10.7	12.1	38.0	27.0	77.5	85.4	95.9	302.1	214.7
13	A-11	2.1	2.3	2.6	8.1	5.8	62.0	68.3	76.7	241.6	171.8
14	A-11	0	0	4.3	.3	1.7	0	3.1	1572.0	120.5	62.9
TOTALS		74.1	81.6	97.2	289.0	207.4	881.0	970.3	1,089.9	3,433.4	2,440.5

NOTE: MAXIMUM EMISSIONS TOTALS ARE BASED UPON 100% UTILIZATION OF JET FUEL, THEREFORE, NOS. 9 & 14 ARE NOT ADDITIVE.

* BASED UPON AP-42, COMPILATION OF AIR POLLUTANT EMISSION FACTORS, APPENDIX C DATED NOVEMBER 1978- PER TELEPHONE CONVERSATION WITH BOB MILKENS, PALM BEACH COUNTY HEALTH DEPARTMENT

AREA B

UNPERMITTED JET ENGINE/COMPONENT

TEST STANDS

(JET ENGINE/COMPONENT FUEL USAGE)

11-30-79

NO.	STAND	% STAND UTILIZATION*	JET FUEL	NATURAL GAS	ACTUAL JET FUEL (GAL)/ NATURAL GAS (THERMS) USAGE (JAN-OCT 1979)	AVERAGE JET FUEL (GAL/YR)/ NATURAL GAS (THERMS/YR) USAGE	MAX. JET FUEL (GAL/YR)/ NATURAL GAS (THERMS/YR) USAGE**	
1	B-2	15	X		1,300,000	1,560,000	10,440,000	
2	B-2	0.7		X	83,000	99,600	14.23 X 10 ⁶	
TOTALS					1,300,000	83,000	10,440,000	14.23 X 10 ⁶

* BASED UPON 24 HRS./DAY - 7 DAYS/WK

UNPERMITTED JET ENGINE/COMPONENT

TEST STANDS

(JET ENGINE/COMPONENT EMISSIONS)

11-30-79

NO.	STAND NO.	ACTUAL(AVERAGE) EMISSIONS*					MAXIMUM EMISSIONS*				
		PART TONS/YR	SO _x TONS/YR	NO _x TONS/YR	HYDROCAR TONS/YR	CO TONS/YR	PART TONS/YR	SO _x TONS/YR	NO _x TONS/YR	HYDROCAR TONS/YR	CO TONS/YR
1	B-2	9.2	10.1	11.4	35.9	25.5	61.6	67.9	76.2	240.1	170.7
2	B-2	0	.03	15.0	1.1	6.0	0	4.3	2134.5	163.6	853.8
	TOTALS	9.2	10.13	26.4	37.0	31.5	61.6	67.9	76.2	240.1	170.7

NOTE: MAXIMUM EMISSIONS TOTALS ARE BASED UPON 100% UTILIZATION OF JET FUEL , THEREFORE NO. 2 IS NOT ADDITIVE.
 BASED UPON AP-42, COMPILATION OF AIR
 POLLUTANT EMISSION FACTORS, APPENDIX C
 DATED NOVEMBER 1978- PER TELEPHONE CONVERSATION
 WITH BOB MILKENS, PALM BEACH COUNTY HEALTH DEPARTMENT

AREA C

UNPERMITTED JET ENGINE/COMPONENT

TEST STANDS

(JET ENGINE/COMPONENT FUEL USAGE)

11-30-79

NO.	STAND NO.	% STAND UTILIZATION*	JET FUEL	NATURAL GAS	ACTUAL JET FUEL (GAL)/ NATURAL GAS (THERMS) USAGE (JAN-OCT 1979)	AVERAGE JET FUEL (GAL/YR)/ NATURAL GAS (THERMS/YR) USAGE	MAX. JET FUEL (GAL/YR)/ NATURAL GAS (THERMS/YR) USAGE*			
1	C-2A	1.5	X		40,021	48,025	3,201,679			
2	C-4	.73	X		20,764	24,917	3,413,260			
3	C-5	18.4	X		2,171,419	2,605,703	14,161,428			
4	C-10	21.2	X		2,212,649	2,655,179	12,524,427			
5	C-21	1.4	X		197,940	237,528	7,662,193			
6	C-21	1.7		X	237,600	285,120	9,197,419			
7	C-2**	2.1	X		34,620	41,544	1,978,285			
TOTALS					4,677,413	237,600	5,612,896	285,120	42,941,272	9,197,419

* BASED UPON 24 HRS./DAY - 7 DAYS/WK

** COMPONENT TEST STAND

UNPERMITTED JET ENGINE/COMPONENT

TEST STANDS

(JET ENGINE/COMPONENT EMISSIONS)

11-30-79

NO.	STAND NO.	ACTUAL(AVERAGE) EMISSIONS*					MAXIMUM EMISSIONS*				
		PART TONS/YR	SO _x TONS/YR	NO _x TONS/YR	HYDROCAR TONS/YR	CO TONS/YR	PART TONS/YR	SO _x TONS/YR	NO _x TONS/YR	HYDROCAR TONS/YR	CO TONS/YR
1	C-2A	.3	.3	.4	1.1	.8	18.9	20.8	23.4	73.6	52.3
2	C-4	.1	.2	.2	.6	.4	20.1	22.2	24.9	78.5	55.8
3	C-5	15.4	16.9	19.0	59.9	42.6	83.6	92.0	103.4	325.7	231.5
4	C-10	15.7	17.3	19.4	61.1	43.4	73.9	81.4	91.4	288.1	204.8
5	C-21	1.4	1.5	1.7	5.7	3.9	45.2	49.8	55.9	176.2	125.3
6	C-21	0	.1	42.8	3.3	17.1	0	2.8	1,379.6	105.8	551.9
7	C-2**	.2	.3	.3	1.0	.7	11.7	12.9	14.4	45.5	32.3
TOTALS		33.1	36.6	83.8	132.7	108.9	253.4	279.1	313.4	987.6	702.0

NOTE: MAXIMUM EMISSIONS TOTALS ARE BASED UPON 100% UTILIZATION OF JET FUEL, THEREFORE NO. 6 IS NOT ADDITIVE.

* BASED UPON AP-42, COMPILATION OF AIR POLLUTANT EMISSION FACTORS, APPENDIX C DATED NOVEMBER 1978- PER TELEPHONE CONVERSATION WITH BOB MILKENS, PALM BEACH COUNTY HEALTH DEPARTMENT

** COMPONENT TEST STAND

AREA D

UNPERMITTED JET ENGINE/COMPONENT

TEST STANDS

(JET ENGINE/COMPONENT FUEL USAGE)

11-30-79

NO.	STAND NO.	% STAND UTILIZATION*	JET FUEL	NATURAL GAS	ACTUAL JET FUEL (GAL)/ NATURAL GAS (THERMS) USAGE (JAN-OCT 1979)	AVERAGE JET FUEL (GAL/YR)/ NATURAL GAS (THERMS/YR) USAGE	MAX. JET FUEL (GAL/YR)/ NATURAL GAS (THERMS/YR) USAGE*
1	D-32**	7.5	X		1,155	1,386	18,480
2	D-33**	2.24	X		345	414	18,480
TOTALS					1,500	1,800	36,960

* BASED UPON 24 HRS./DAY - 7 DAYS/WK.
 ** COMPONENT TEST STAND

AREA D

UNPERMITTED JET ENGINE/COMPONENT

TEST STANDS

(JET ENGINE/COMPONENT EMISSIONS)

11-30-79

NO.	STAND NO.	ACTUAL(AVERAGE) EMISSIONS*					MAXIMUM EMISSIONS*				
		PART TONS/YR	SO _x TONS/YR	NO _x TONS/YR	HYDROCAR TONS/YR	CO TONS/YR	PART TONS/YR	SO _x TONS/YR	NO _x TONS/YR	HYDROCAR TONS/YR	CO TONS/YR
1	D-32**	.1	.1	.1	.1	.1	.1	.1	.4	.3	
2	D-33**	.1	.1	.1	.1	.1	.1	.1	.4	.3	
TOTALS		.2	.2	.2	.2	.2	.2	.2	.8	.6	

NOTE: MAXIMUM EMISSIONS TOTALS ARE BASED UPON 100% UTILIZATION OF JET FUEL

* BASED UPON AP-42, COMPILATION OF AIR POLLUTANT EMISSION FACTORS, APPENDIX C DATED NOVEMBER 1978- PER TELEPHONE CONVERSATION WITH BOB MILKENS, PALM BEACH COUNTY HEALTH DEPARTMENT
 ** COMPONENT TEST STAND

EXHIBIT B

INTERMITTANT NATURE OF JET ENGINE/COMPONENT TESTING OPERATIONS AND ITS RESEARCH AND DEVELOPMENT FUNCTION

Pratt & Whitney Aircraft Group, Government Products Division of United Technologies Corporation, owns and operates an aircraft engine manufacturing and testing operation employing 8,000 people. We are located on approximately 7,000 acres in northwest Palm Beach County, a few miles south of the Martin County line. This site was chosen because it was isolated from populated areas and surrounded by a 30,000 acre game preserve which provides a buffer zone between us and residential communities. It gave us good climate, enabling us to build outdoor test stands which allow us to test in a realistic mode our large turbine engines which we have been developing here. Within the 7,000 acre plant site, the main office buildings and the manufacturing building, where most of our shops and laboratories are located, are at the eastern end of the site. Approximately four miles to the West are the several test areas and suitable offices and data recording facilities for the people located in this area. Included are the altitude test facility and the sea level test stands for large engine testing and nearly 100 complimentary test stands of various kinds for small component and rig testing.

Testing is essential to our final product. The basic importance of testing is always to demonstrate the safety of the system, that an airplane and a pilot are not endangered by the engine configuration that we are running, and the next most important aspect is that we show the performance and handling characteristics which we are obligated by contract to demonstrate. Our contracts are mostly Government sponsored and support military readiness as related to the United States national defense goals.

In order to effectively test, perform research and further develop engines, a multitude of varying testing patterns and intervals of testing is required. Testing jet engines and components requires that the engines and/or components be placed in test stands for varying periods of operating time ranging from a few hours to several hundred hours, depending upon the nature of the specific tests being performed. In some cases, tests may be run to determine the reliability and durability of engine parts; whereas, in other cases engines may be run for endurance or acceptance testing to observe how well the engine performs under a specified set of conditions. Testing is generally intermittent with test stands being utilized in many cases to test several different engine types in a relatively short period of time. Engine and component testing must therefore be responsive to short lead times associated with our various programs including critical field

support of Government military engines. Depending upon the requirements for testing engines and components, a test stand may be utilized to test as many as forty-eight (48) engines or components per year.

Since our beginning in Palm Beach County in 1958 our company has demonstrated its responsiveness to environmental regulations and has worked closely with the State and local regulatory agencies. This effort will continue. Our stationary sources of air pollution such as "slave" engines, heaters, boilers, etc. which provide test stand service requirements for our testing operations have active permits from the Florida Department of Environmental Regulation. Our transient test engines/components have never been required to be permitted.

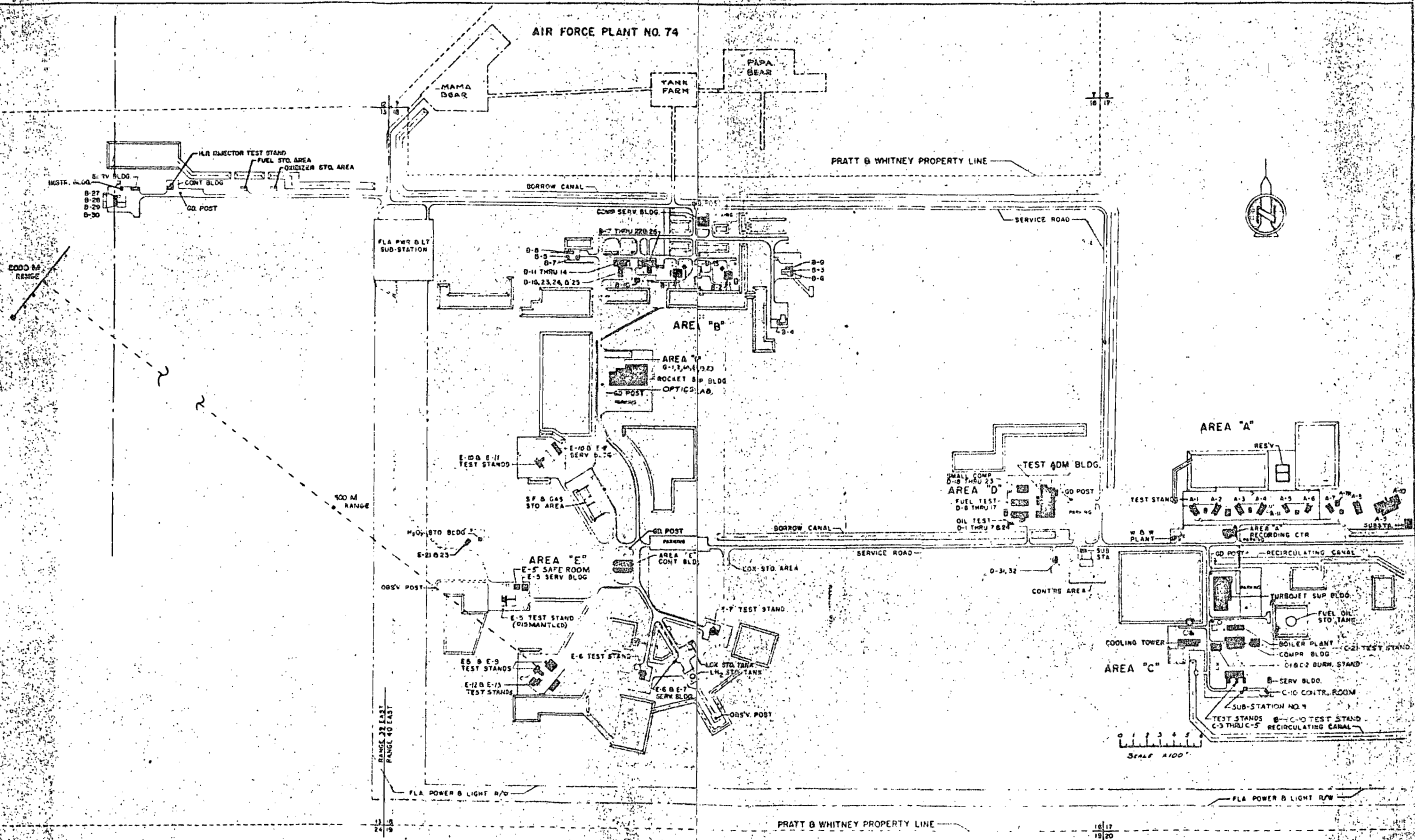
The ability of our Company to respond quickly and effectively to the requirements of the United States Government is crucial to our long term success and vital to the defense of the Country. The test operations of our transient engines and components must be responsive to the needs of the Department of Defense. Constraints which limit this responsiveness could impair our ability to provide our military forces with the best performing aircraft engines in the world.

AIR FORCE PLANT NO. 74

2000 M RANGE

100 M RANGE

RANGE 38 EAST
RANGE 40 EAST



D 21074 UPDATED A 13-9-64 GENERAL REMOVALS	PRATT & WHITNEY AIRCRAFT TEST FACILITIES AREA LAYOUT
7.4.1 1:24 1:30-4 FDR-1540 18 17 18 20	18 17 18 20

EXHIBIT C



STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

STATE OFFICE BUILDING HARTFORD, CONNECTICUT 06115



November 28, 1979

RECEIVED

DEC 3 1979

Division of Environmental Engineering
PALM BEACH COUNTY
HEALTH DEPT.

Mr. Gene Sacco
Palm Beach County Health Dept.
Air Pollution Section
901 Evernia St.
West Palm Beach, Florida 33401

Dear Mr. Sacco:

This letter is pursuant to our telephone conversation on November 14, 1979 wherein you requested the reasoning behind requiring registrations/permits for jet engine test cells such as those at Pratt and Whitney Aircraft in West Palm Beach, Florida. There are, as I am sure you are aware, quite a few jet engine test stands at the Pratt and Whitney Aircraft facilities in Connecticut. The registration/permitting of these sources has been addressed in the Connecticut "Administrative Regulations for the Abatement of Air Pollution" (hereafter "Regulations").

Registration/permits are required of stationary sources in accordance with Section 19-508-2 and 19-508-3, respectively, of the "Regulations." The issue of whether or not to require registration/permits for a test stand in which jet engines are operated, I have been told, has been resolved by the revised definitions of mobile source and stationary source as found in Section 19-508-1 of the "Regulations." As I understand the revised definition, no registration/permits are required of a test stand used for production aircraft engines since these engines are designed and constructed to move from one location to another during normal operation. A production test stand for stationary engines would be subject to the requirements of Section 19-508-2 and 19-508-3 of the "Regulations" if it is used to test engines which are neither designed nor constructed to move from one location to another during normal operation. A test stand for the development of an engine would apparently be subject to Sections 19-508-2 and 19-508-3 of the "Regulations" since the intent is for that engine to be operated only for development purposes in the test cell and not to move from one location to another during normal operation.

"Slave" engine

As I indicated in our conversation, the State of Ohio has specific regulations relating to jet engine testing facilities. A contact there is Victor Fisher at (614)466-6450. It is our understanding that in Ohio, permits have been required for jet engine testing facilities in the past. In the future the same standards will continue to apply to new sources whose allowable emissions of TSP are below 50 tons per year and to existing sources. In the future new sources with greater than 50 tons per year allowable emissions will be subject to EPA attainment or non-attainment area requirements which require an ambient impact analysis, BACT or LAER, etc.

Mr. Gene Sacco
Page 2
November 28, 1979

I have enclosed, for your reference, copies of the "Regulations" and a copy of the revisions. If there are any questions, I would suggest that you contact either Mr. Phil Florkoski, Air Compliance-Engineering Section, at (203)566-2690 or me at (203)566-8230.

Sincerely yours,



Alfred Conklin
Senior Air Pollution Control Engineer

AC/ml

Palm Beach County Health Department

P.O. BOX 29, WEST PALM BEACH, FLORIDA 33402

C.L. BRUMBACK, M.D., M.P.H.
DIRECTOR

Please Address
Reply To: ESE-WPB



November 16, 1979

Mr. Robert T. Bergin
Plant Engineer
Pratt and Whitney Aircraft Group
P.O. Box 2691
West Palm Beach, FL 33402

Dear Mr. Bergin:

Pursuant to our recent meeting concerning permits for existing jet engine test stands, I have discussed the subject with EPA, Atlanta and DER, Tallahassee.

The EPA stated that they do not have a rule that requires a permit for this type operation nor do they have a rule that would exempt it from permit procedures. Also in the absence of a State or local rule they suggest that the State and local program determine the feasibility of permitting jet engine test stands.

The DER in Tallahassee stated that additional information would be necessary prior to a determination.

Accordingly, please provide our agency with the following:

1. The number of unpermitted jet engine test stands in each area.
2. Maximum design rate and fuel usage (both natural gas and jet fuel) at that rate for each test stand.
3. Average operational rate and fuel usage (both natural gas and jet fuel) at that rate for each test stand.
4. Emissions from each test stand as described in AP-42, Compilation of Air Pollutant Emission Factors, Appendix C, dated November 1978 for both maximum design and average operational rates.
5. A discussion pertaining to the intermittent nature of the operation and its research and development function.

DEPARTMENT OF ENVIRONMENTAL REGULATION

ROUTING AND TRANSMITTAL SLIP		ACTION NO
		ACTION DUE DATE
1. TO: (NAME, OFFICE, LOCATION)	INITIAL	
<i>B. Thomas</i>	DATE	
2.	INITIAL	
	DATE	
3.	INITIAL	
	DATE	
4.	INITIAL	
	DATE	
REMARKS: <i>Review & Sec mc Dec 7</i>	INFORMATION	
	REVIEW & RETURN	
	REVIEW & FILE	
	INITIAL & FORWARD	
	DISPOSITION	
	REVIEW & RESPOND	
	PREPARE RESPONSE	
	FOR MY SIGNATURE	
	FOR YOUR SIGNATURE	
	LET'S DISCUSS	
	SET UP MEETING	
	INVESTIGATE & REPT	
	INITIAL & FORWARD	
	DISTRIBUTE	
	CONCURRENCE	
	FOR PROCESSING	
	INITIAL & RETURN	
FROM:	DATE	<i>11-27</i>
<i>Steve Smallwood</i>	PHONE	

Page 2
November 16, 1979
Mr. Robert T. Bergin

Should you have any questions regarding this matter please contact the undersigned.

Very truly yours,

For the Division Director
Environmental Sciences and Engineering



Eugene J. Sacco
Air Pollution Administrator

FJG/EJS/sc

cc: Steve Smallwood - DER-Tallahassee
Warren Strahm - DER-WPB

PRATT & WHITNEY AIRCRAFT GROUP

GOVERNMENT PRODUCTS DIVISION

P. O. Box 2691
West Palm Beach, Florida 33402

July 25, 1979

Mr. Michael J. Martin
Pollution Control Specialist
Palm Beach County Health Department
P.O. Box 29
West Palm Beach, Florida 33402

Re: Liquid Incinerator, Air Quality Monitoring Site, Area C, Boiler #2

Dear Mr. Martin:

In reply to your letter of June 7, 1979, the following information is submitted.

This unit was shut down as specified. An inspection indicated minor crumbling of the refractory with no breakthrough to the outer casing. I certify that the refractory is adequate to handle the normal operating temperature of 2000^oF. At the first indication of failure (the unit has been repainted with a high temperature aluminum paint) the refractory will be replaced.

The original paint was damaged when the refractory was replaced but only a small portion of the paint was damaged. Paint was not applied to damaged area. Continuous weathering resulted in a complete paint peeling and deterioration.

The 1" rubber hose was an extension of the compressed air line originally piped to the incinerator for use during cleanup, and maintenance. The line has been disconnected.

Flames emitting from the stack top was the result of an operator trying to maintain or exceed the rated capacity of the unit. A problem presently exists that even though the fuel is thoroughly mixed, there are times when low heat content water soluble oils enter without highly flammable liquids, there is no auxiliary fuel to sustain the fire.

This problem will be resolved by the introduction of the water soluble oils above the main burner section by use of spray nozzles and a second pump. The water will be vaporized immediately in the hot fire gases. The unit is on plant site.



Air Quality Monitoring Site

The existing L&N Chart recorder model 831-27-00-0104-6-A was taken out for repairs, as pendrive had hung up. The instrumentation group whose function it is to provide maintenance on this unit was well as the SO₂ analyzer, Thermo Electron Corporation Model C3 & components recommend that a Hewlett Packard Model 7101B recorder be purchased to replace this unit. We are presently out for quotes.

Sampling location for the SO₂ unit has been relocated to the roof near the TSP sampler.

Enclosed is a copy of the calibration procedure, 1C4004-500 TECO Series 43-SO₂ analyzer as requested.

No. 2 Boiler - Area C

Mr. A. E. Bischof, Manager, Technical Services, Mogul Corporation states that their products Mogul 29034/EG-5299F and Mogul 29013/EG 5279F do not affect either the viscosity or surface tension of the fuel oil.

Enclosed are copies for the products of the development series number 29000 and the standard product EG5200 numbers.

We are enclosing four (4) copies of request for Operating Permit for No. 2 boiler.

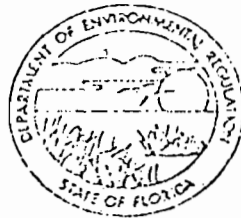
Enclosed are letters regarding the downrating of the unit to 250,000,000 BTU per hour or less.



T. E. Butler
Plant Engineering Operations

ph

3801 GUN CLUB ROAD
P.O. BOX 3553
WEST PALM BEACH, FLORIDA 33402



STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

SOUTH FLORIDA SUBDISTRICT

October 30, 1979

Mr. W. S. Parker
Assistant Secretary
United Technologies Corporation
Pratt & Whitney Aircraft Group
Post Office Box 2691
West Palm Beach, Florida, 33402

AP - Palm Beach County
Pratt & Whitney Aircraft
Area C - Boiler #2

Dear Mr. Parker:

Enclosed is Permit Number AO 50-22643, dated Oct 29, 1979,
to operate the subject pollution source, issued
pursuant to Section 403.087, Florida Statutes.

Should you object to this permit, including any and all of the conditions contained therein, you may file an appropriate petition for administrative hearing. This petition must be filed within fourteen (14) days of the receipt of this letter. Further, the petition must conform to the requirements of Section 28-5.15, Florida Administrative Code (copy enclosed). The petition must be filed with the Office of General Counsel, Department of Environmental Regulation, Twin Towers Office Building, 2600 Blair Stone Road, Tallahassee, Florida 32301.

If no petition is filed within the prescribed time, you will be deemed to have accepted this permit and waived your right to request an administrative hearing on this matter.

Acceptance of the permit constitutes notice and agreement that the Department will periodically review this permit for compliance, including site inspections where applicable, and may initiate enforcement action for violation of the conditions and requirements thereof.

Sincerely,

Roy M. Duke

Roy M. Duke, P.E.
Permitting Section Head

RMD:HJB:IG:mh

Enclosure

cc: Palm Beach County Health Department
Tallahassee

PERM Form 17-1.122(66)

RECEIVED
OCT 30 1979
Division of Environmental
Sciences & Engineering
PALM BEACH COUNTY
HEALTH DEPT.

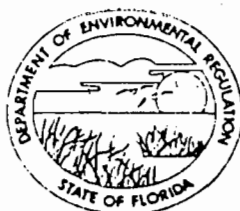
BOB GRAHAM
GOVERNOR

JACOB D. VARN
SECRETARY

WARREN G. STRAHM
SUBDISTRICT MANAGER

*See page
10 of permit -
P.S.D.*

*P.B.C.H.D.
NEDS
AP 10 D 220*



STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

SOUTH FLORIDA SUBDISTRICT APIS 50/50/0021/09
Class A 1,3

APPLICANT:

Mr. W. S. Parker, Assistant Secretary
United Technologies Corporation
Pratt & Whitney Aircraft Group
Post Office Box 2691
West Palm Beach, Florida, 33402

PERMIT/CERTIFICATION
NO. AO 50-22643

COUNTY: Palm Beach

PROJECT: Pratt & Whitney
Boiler #2, Area C

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Chapter 17-2, Florida Administrative Code. The above named applicant, hereinafter called Permittee, is hereby authorized to perform the work or operate the facility shown on the approved drawing(s), plans, documents, and specifications attached hereto and made a part hereof and specifically described as follows:

To operate an air pollution source consisting of: A Babcock and Wilcox Baltimore type boiler, burning 2.5% S No. 6 fuel oil with a maximum capacity of 206 MMBTU/hr. (downrating due to B & W sprayer plates 54-39-52-43-70) or natural gas. Normally operating 16 hrs./day, 5 days/wk., 52 wks./yr., discharging 38.5 lbs./hr. of particulates and 539.3 lbs./hr. of sulfur dioxide through a 7.5 ft. diameter stack 65.5 ft. above ground level.

In accordance with: Specifications contained in amended Application to Operate Air Pollution Sources received by this Department on October 18, 1979 and additional information in Pratt & Whitney letter of September 18, 1979 (not attached).

Located at: State Road #710 West Palm Beach, Palm Beach County, Florida

UTM Coordinates: Zone 17 562.0 KmE.:
2938.0 KmN.

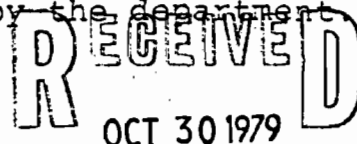
Serving: Research and Development on Aircraft Engines (SIC #3724).

Subject to General Conditions 1-12 and Specific Conditions 1-4.

GENERAL CONDITIONS:

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

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



3. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately notify and provide the department with the following information: (a) a description of and cause of non-compliance; and (b) the period of non-compliance, including exact 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. The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the department for penalties or revocation of this permit.

4. As provided in subsection 403.087(6), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

5. This permit is required to be posted in a conspicuous location at the work site or source during the entire period of construction or operation.

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

7. In the case of an operation permit, 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.

8. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, plant, or aquatic life or property and penalties therefore caused by the construction or operation of this permitted source, nor does it allow the permittee to cause pollution in contravention of Florida Statutes and department rules, except where specifically authorized by an order from the department granting a variance or exception from department rules or state statutes.

9. This permit is not transferable. Upon sale or legal transfer of the property or facility covered by this permit, the permittee shall notify the department within thirty (30) days. The new owner must apply for a permit transfer within thirty (30) days. The permittee shall be liable for any non-compliance of the permitted source until the transferee applies for and receives a transfer of permit.

10. The permittee, by acceptance of this permit, specifically agrees to allow access to permitted source at reasonable times by department personnel presenting credentials for the purposes of inspection and testing to determine compliance with this permit and department rules.

11. This permit does not indicate a waiver of or approval of any other department permit that may be required for other aspects of the total project.

12. This permit conveys no title to land or water, nor constitutes state recognition or acknowledgement of title, and does not constitute authority for the reclamation 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.

13. This permit also constitutes:

- () Determination of Best Available Control Technology (BACT)
- () Determination of Prevention of Significant Deterioration (PSD)
- () Certification of Compliance with State Water Quality Standards (Section 401, PL 92-500)

SPECIFIC CONDITIONS:


1. The operation of this plant shall be observed for visible emissions in accordance with the Code of Federal Regulations (CFR) number 40 CFR 60 Appendix A, Method 9, entitled "Visual Determination of Opacity of Emissions From Stationary Sources" at intervals of one year from September, 1979. Reports shall be submitted to the Department of Environmental Regulation, South Florida Subdistrict Office and to the Palm Beach County Health Department no later than the fifteenth (15th) day of the following month.
2. Testing of emissions shall be accomplished at approximately the rates as stated in the permit. Failure to submit the input rates or operation at conditions which do not reflect actual operating conditions may invalidate the data.
3. Submit to the Subdistrict Office and the Palm Beach County Health Department, for this source, each calendar year, on or before March 1, an emission report for the preceding calendar year containing the following information:
 - (A) Annual amount of materials and/or fuel utilized.
 - (B) Annual emissions (note calculation basis).
 - (C) Any changes in information contained in the permit application.
4. Notify, per Chapter 17-4.13 Florida Administrative Code, this Department and the Palm Beach County Health Department of any breakdown or destruction of equipment that results in discharge of stack effluents in amounts higher than permitted herein.

RECEIVED
OCT 30 1979
Division of Environmental
Sciences & Engineering
PALM BEACH COUNTY
HEALTH DEPT.

Appl. Name: Mr. W. S. Parker, Assistant Secretary
Project: Pratt & Whitney - Boiler #2, Area C
Page 4 of 4 of Permit No.: AO 50-22643

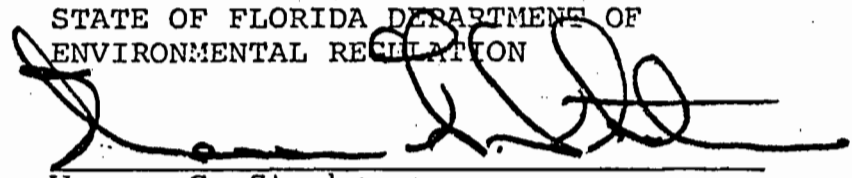
Local Program Approval:

Date: 10/12/79

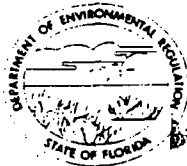

Palm Beach County Health Department
Environmental Sciences & Engineering

Expiration Date: 10/15/84

Issued this 29th day of OCTOBER
1979.

STATE OF FLORIDA DEPARTMENT OF
ENVIRONMENTAL REGULATION

Warren G. Strahm
Subdistrict Manager

FILE COPY



A0-50-22643-

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
APPLICATION TO OPERATE/CONSTRUCT
AIR POLLUTION SOURCES

SOURCE TYPE: Steam Generator - no 2 boiler New Existing¹
APPLICATION TYPE: Construction Operation Modification
COMPANY NAME: United Technologies Corporation COUNTY: Palm Beach
Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peeking Unit No. 2, Gas Fired) _____
SOURCE LOCATION: Street SR 710 City West Palm Beach, Fla.
UTM: East 17562 North 2938
Latitude 26 ° 53 '34.85" N Longitude 80 ° 21 '36.01" W
APPLICANT NAME AND TITLE: United Technologies Corporation - Pratt & Whitney Aircraft
APPLICANT ADDRESS: P.O. Box 2691, West Palm Beach, Fla.

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT UNITED TECHNOLOGIES CORPORATION
Pratt & Whitney Aircraft Group

I am the undersigned owner or authorized representative* of _____
I certify that the statements made in this application for a _____ 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: W. S. Parker
W. S. Parker, Assistant Secretary
Name and Title (Please Type)
Date: July 27, 1979 Telephone No. (305) 840-2419

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)
This is to certify that the engineering features of this pollution control project have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that 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.

RECEIVED

Signed: Thomas Butler
Thomas Butler
Name (Please Type)
Pratt & Whitney Aircraft

(Affix Seal) AUG - 6 1979
Division of Environmental Engineering
PALM BEACH COUNTY
HEALTH DEPT.
Florida Registration No. 10273 Date: 8/2/79 Telephone No. 840-2940
Company Name (Please Type)
P.O. Box 2691, West Palm Beach, Fla. 33402
Mailing Address (Please Type)

¹See Section 17-2.02(15) and (22), Florida Administrative Code, (F.A.C.)
DER FORM 17-1.122(16) Page 1 of 10

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.

Modification of existing air pollution operation permit A0-50-2550 dated August 30, 1976 to reflect a reduction in total input of 364,000,000 to 250,000,000 BTU/Hr. Boiler Manufacturer will provide burner sprayer plates part number 5X-39-52-43-70, that will provide this maximum of 250,000,000 BTU/Hr. input with a burner pressure of 78psig, 29.41 gpm.

B. Schedule of project covered in this application (Construction Permit Application Only) N/A

Start of Construction _____ Completion of Construction _____

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

N/A

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

A0-50-2550, 8/30/76 - 8/30/81 Unit was shut down to replace boiler tubes in Nov., 1977 and completed in April 1979. This permit was voided. The yearly visible emission test could not be checked during this period.

E. Is this application associated with or part of a Development of Regional Impact (DRI) pursuant to Chapter 380, Florida Statutes, and Chapter 22F-2, Florida Administrative Code? Yes No

F. Normal equipment operating time: hrs/day 16 ; days/wk 5 ; wks/yr 52 ; if power plant, hrs/yr _____ ; if seasonal, describe: _____

G. 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? | <u>Yes</u> |
| a. If yes, has "offset" been applied? | <u>N/A</u> |
| b. If yes, has "Lowest Achievable Emission Rate" been applied? | <u>N/A</u> |
| c. If yes, list non-attainment pollutants.
<u>ozone</u> | |
| 2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. | <u>No</u> |
| 3. Does the State "Prevention of Significant Deterioration" (PSD) requirements apply to this source? If yes, see Sections VI and VII. | <u>No</u> |
| 4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? | <u>No</u> |
| 5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? | <u>No</u> |

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: Not Applicable

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

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

- Total Process Input Rate (lbs/hr): _____
- Product Weight (lbs/hr): _____

C. Airborne Contaminants Emitted: Based on Use of 1374 gal/hr. - 125,000 lb/hr.

Name of Contaminant	Emission ¹		Allowed Emission ² Rate per Ch. 17-2, F.A.C.	Allowable ³ Emission lbs/hr	Potential Emission ⁴		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/hr	T/yr	
Particulate Mat	38.47	83	17-2.05(6) E 2	38.47	38.47	166.7	
SO ₂	539.3	1168	17-2.05(6) E 2	539.3	539.3	2337	
SO ₃	6.87	14.88	--	6.87	6.87	29.77	
Hydrocarbon	1.37	2.97	--	1.37	1.37	5.9	
CO	6.87	14.88	--	6.87	6.87	29.77	
NOX	82.44	178.6	17-2.05(6) E 2	82.44	82.44	357.2	

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

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles ⁵ Size Collected (in microns)	Basis for Efficiency (Sec. V, It ⁵)

¹See Section V, Item 2.

²Reference applicable emission standards and units (e.g., Section 17-2.05(6) Table II, E. (1), F.A.C. - 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)

⁵If Applicable

Thomas Butler
9/19/79

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
No. 6 Fuel	16.4	32.7	206.0
Natural Gas	0.150	0.364	
	MMCF/Hr.	MMCF/Hr.	364

*Units Natural Gas, MMCF/hr; Fuel Oils, barrels/hr; Coal, lbs/hr

$1374 \text{ gal/hr} \times 150,000 \text{ BTU/gal} = 206.1 \text{ mmbtu}$

Fuel Analysis: No. 6 Fuel

Percent Sulfur: 2.5 Percent Ash: 0.06

Density: 7.768 lb/gal. lbs/gal Typical Percent Nitrogen: _____

Heat Capacity: 18880 BTU/lb 146700 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.
None

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

Stack Height: 65 ft 6" ft. Stack Diameter: 7' 6" ft.
 Gas Flow Rate: 76000/91000 ACFM Gas Exit Temperature: OF OF.
 Water Vapor Content: 2.3% Based on % Velocity: 34.0 FPS
air in at 156 gram
1b da

SECTION IV: INCINERATOR INFORMATION

Type of Waste	Type O (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq & Gas By-prod.)	Type VI (Solid By-prod.)
Lbs/hr Incinerated							

Description of Waste _____

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

Approximate Number of Hours of Operation per day _____ days/week _____

Manufacturer _____

Date Constructed _____ Model No. _____

Thomas Butler
9/19/79

Not applicable

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

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

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

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

Type of pollution control device: Cyclone Wet Scrubber Afterburner Other (specify) _____

Brief description of operating characteristics of control devices: _____

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

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

- Total process input rate and product weight – show derivation.
- 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.
- Attach basis of potential discharge (e.g., emission factor, that is, AP42 test).
- 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, etc.).
- 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).
- An 8½" 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.
- An 8½" x 11" plot plan showing the location of the establishment, and points of airborne emissions, in relation to the surrounding area, residences and other permanent structures and roadways (Example: Copy of relevant portion of USGS topographic map).
- An 8½" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.

RECEIVED

AUG - 6 1979

Division of Environmental Engineering
PALM BEACH COUNTY,
HEALTH DEPT.

- 9. An application fee of \$20, unless exempted by Section 17-4.05(3), F.A.C. The check should be made payable to the Department of Environmental Regulation.
- 10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit.

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

- A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?
 Yes No

Contaminant	Rate or Concentration

- B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy) Yes No

Contaminant	Rate or Concentration

- C. What emission levels do you propose as best available control technology? **Not applicable**

Contaminant	Rate or Concentration

- D. Describe the existing control and treatment technology (if any). **None**

- | | |
|---------------------------|----------------------|
| 1. Control Device/System: | 4. Capital Costs: |
| 2. Operating Principles: | 6. Operating Costs: |
| 3. Efficiency: * | 8. Maintenance Cost: |
| 5. Useful Life: | |
| 7. Energy: | |
| 9. Emissions: | |

Contaminant	Rate or Concentration

*Explain method of determining D 3 above.

10. Stack Parameters

- | | | | |
|---------------|------|-----------------|-----|
| a. Height: | ft. | b. Diameter: | ft. |
| c. Flow Rate: | ACFM | d. Temperature: | °F |
| e. Velocity: | FPS | | |

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

1.

- a. Control Device:
- b. Operating Principles:

- c. Efficiency*:
- d. Capital Cost:
- e. Useful Life:
- f. Operating Cost:
- g. Energy*:
- 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*:
- d. Capital Cost:
- e. Useful Life:
- f. Operating Cost:
- g. Energy**:
- h. Maintenance Costs:
- 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:

*Explain method of determining efficiency.

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

3.

- a. Control Device:
- b. Operating Principles:

- c. Efficiency*:
- d. Capital Cost:
- e. Life:
- f. Operating Cost:
- g. Energy:
- h. Maintenance Cost:

*Explain method of determining efficiency above.

RECEIVED

AUG - 6 1979

Division of Environmental Engineering
PALM BEACH COUNTY
HEALTH DEPT.

- 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*:
 - d. Capital Cost:
 - e. Life:
 - f. Operating Cost:
 - g. Energy:
 - 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*:
- 3. Capital Cost:
- 4. Life:
- 5. Operating Cost:
- 6. Energy:
- 7. Maintenance Cost:
- 8. Manufacturer:
- 9. Other locations where employed on similar processes:
 - a.
 - (1) Company:
 - (2) Mailing Address:
 - (3) City:
 - (4) State:
 - (5) Environmental Manager:
 - (6) Telephone No.:

*Explain method of determining efficiency above.

- (7) Emissions*:

Contaminant	Rate or Concentration

- (8) Process Rate*:

b.

- (1) Company:
- (2) Mailing Address:
- (3) City:
- (4) State:

*Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions*:

Contaminant	Rate or Concentration
<hr/>	<hr/>
<hr/>	<hr/>

(8) Process Rate*:

10. Reason for selection and description of systems:

*Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

EJ

Palm Beach County Health Department

P.O. BOX 29, WEST PALM BEACH, FLORIDA 33402

C.L. BRUMBACK, M.D., M.P.H.
DIRECTOR

Please Address
Reply To: ESE-WPB

June 7, 1979

Mr. Joseph E. Gies, Manager
Advance Space Planning and Environmental Affairs
Pratt & Whitney Aircraft
P. O. Box 2691
Mail Drop A-63
West Palm Beach, FL 33402

Re: AP - Inspection
1. Manufacturing Area, Boiler #2
2. Liquid Incinerator
3. Air Quality Monitoring Site
4. Area C, Boiler #2

Dear Mr. Gies:

On June 5, 1979, representatives of this agency inspected the above referenced facilities to ascertain compliance with current air pollution rules and regulations.

Our inspection revealed the following:

1. MFG, Boiler #2 - boiler was operating on natural gas producing 12,000 lbs/hr of steam; zero per cent opacity.
2. Liquid Incinerator - flames were being emitted from unit and were visible approximately 10' above stack; the outside shell or metal skin of the incinerator was badly scorched indicating overheating and probable damage to the unit. The auxiliary fuel supply was on during flame observation and was shut "off" several minutes later. Operator indicated to Mr. Butler that auxiliary fuel valve was not operating properly and leakage at the valve was occurring. The addition of a 1" rubber hose to the unit from an area west of the site was observed since our last inspection. An explanation of this hose utilization is requested. Due to the above irregularities, this agency requests that the operation of this incinerator be discontinued. Proof that the refractory has not been damaged and that all systems are working properly is required.
3. Air Quality Monitoring Site - Total suspended particulate (TSP) sampler was not operating during our visit but appeared to be maintained properly for valid sampling. The strip chart for the sulfur

Page 2

June 7, 1979

Mr. Joseph E. Gies, Manager

dioxide analyzer was stuck in position on the date last serviced 6/4/79 at 0830 A.M. Proper operation is requested.

4. Area C, Boiler #2 - Visible emission evaluation was conducted by this agency to verify compliance. Boiler modification down-rating the unit below 250 million BTU/hr heat input allowed visible emission compliance at 125,000 lbs/hr of steam and 84 psi nozzle pressure. Compliance was achieved with the use of two fuel additives: (1) Mogul 29031 and (2) Mogul 29013. Completion of the enclosed application reflecting the modification and current operating limits is required as soon as possible. Do the fuel additives affect the viscosity or surface tension where at a given pressure the nozzles would have a greater flow? Please clarify. Revised air permit for this unit will reflect steam limitation and BTU/hr limitation when re-issued.

This agency appreciates the courtesy given our representatives by Mr. Tom Butler, Plant Engineering, during our inspection.

If you have any questions concerning the above, please contact this office.

Sincerely,

For the Division Director
Environmental Sciences & Engineering



Michael J. Martin
Pollution Control Specialist
Air Pollution Control

FJG/MJM/sw

Enclosures: D.E.R. Fm. 17-1.122(16)

cc: Mr. B. Metcalf
Mr. T. Butler

PALM BEACH COUNTY HEALTH DEPARTMENT
AIR SOURCE INSPECTION FORM

Date 6/5/79 Time 10:10 AM Type SO₂ TSP SITE
Facility PRATT & Whitney Insp. Marks Prutkin
Location SR #710
Company Rep. T. Butler

Stack Discharge Appearance _____

Fugitive Dust _____

Control Equipment Condition _____

General Plant Appearance _____

Comments SO₂ instrument was looked at 6/4/79 0830 AM
chart hasn't moved, stuck. Need procedure
used for sampling and analysis. SO₂
pickup line (cyclone, etc) filled with bugs
needs attention. TSP site OK no paper
for voltage or flow recorder.

ESE-WPB

September 29, 1978

Mr. Thomas E. Butler
Plant Engineering
Pratt & Whitney Aircraft
P.O. Box 2691
West Palm Beach, Florida 33402

Dear Mr. Butler:

We are in receipt of the ambient air monitoring data collected at Area E. The total suspended particulate (TSP) concentrations seem lower than normal.

It is only necessary to report the concentrations in micrograms per cubic meter (Ug/m^3) for each 24 hour sampling period. Attached are instructions for the measurement of TSP taken from the "Quality Assurance Handbook for Air Pollution Measurement Systems - ~~VRII~~, Vol. II (EPA-600/4-77-027a) May, 1977. Also attached is the 1978 master 6 day schedule for TSP sampling. Sampling must be conducted in accordance with both attachments.

Should you have any questions, please contact our office.

Very truly yours,

For the Division Director
Environmental Sciences & Engineering

BY: _____
Eugene J. Sacco
Administrator
Air Pollution Control Section

FJG/EJS/dep

PRATT & WHITNEY AIRCRAFT GROUP

GOVERNMENT PRODUCTS DIVISION

P. O. Box 2691
West Palm Beach, Florida 33402

*1st
data Report*

September 13, 1978

Palm Beach County Health Department
P.O. Box 29
West Palm Beach, Florida 33402

RECEIVED
SEP 19 1978

Division of Environmental Engineering
PALM BEACH COUNTY
HEALTH DEPT.

Attention: Mr. Michael Martin

Gentlemen:

Enclosed is data for suspended particulate (TSP) and sulfur dioxide, SO₂, for August, 1978. The following information is submitted for Pratt & Whitney Aircraft Group, Government Division's ambient air monitoring station located at Area E.

There was continuous monitoring of SO₂ and collection of suspended particulate samples each sixth day.

This is submitted as a requirement of Chapter 17-2.04 (6) (e) 2f.1.

If there are any questions, please contact me.

Yours truly,



Thomas E. Butler
Plant Engineering

ph

SUSPENDED PARTICULATE (TSP)

<u>DATE</u>	<u>WEIGHT</u> Milligrams cubic meter	<u>WEIGHT</u> Milligrams/day
July 28, 1978	Airflow NOT	75.4
Aug. 2, 1978	Properly	51.8
Aug. 10, 1978	Calibrated	132.7
Aug. 15, 1978	During this period	32.3
Aug. 22, 1978	0.0158 .16	36.8
Aug. 28, 1978	0.0128 .13	30.2
Sept. 3, 1978	0.0074 .7	18.2

SO₂

There were no indications of any SO₂ contamination during the month. Strip chart is available at the plant. Area C did not operate on Bunker C during this period, only using Natural Gas.

ESE-WPB

July 19, 1978

Mr. Bob Metcalfe
Supervisor, Plant Engineering
Pratt & Whitney Aircraft
P. O. Box 2691
West Palm Beach, Florida 33402

Re: Air Pollution Inspection - Area A, Area C, Area E, Liquid Incinerator,
Manufacturing Area and Air Quality Monitoring Station.

Dear Mr. Metcalfe:

On July 12, 1978, Mr. Milkins and I inspected the referenced facilities in regards to compliance with current air pollution regulations.

At the time of this inspection, all referenced facilities were in compliance with Chapter 17-2 Florida Administrative Code.

Inspection of your air quality monitoring stations, suspended particulate (TSP) and sulfur dioxide (SO₂), revealed that both stations were not operational. Chapter 17-2 FAC requires that owners of fossil fuel steam generators monitor the emissions and the effects of the emission on ambient concentrations of sulfur dioxide. This inspection indicated that Pratt & Whitney is not complying with this requirement. A Notice to Correct issued by this agency dated July 14, 1978, addressed this violation.

Our representatives were accompanied by Mr. Butler of your staff, who was very cooperative during our inspection.

If you have any questions concerning this inspection, please contact the undersigned.

Sincerely,

For the Division Director
Environmental Sciences & Engineering



Michael J. Martin
Air Pollution Control

FJG/MJM/edb

cc: A. Townsend
R. N. Anschutz, P&W

PRATT & WHITNEY AIRCRAFT GROUP

GOVERNMENT PRODUCTS DIVISION

P. O. Box 2691
West Palm Beach, Florida 33402

September 27, 1976

Palm Beach County Health Department
P. O. Box 29
West Palm Beach, Florida 33402

Attention: Mr. Frank J. Gargiulo, P. E.
Director, Division of Environmental
Sciences and Engineering

Dear Mr. Gargiulo:

The following information is submitted in reply to a request from Mr. Eugene Sacco regarding Ambient Air Monitoring.

The air monitoring station will be established as shown on Drawing # PL-560A (attached) and in operation on or about November 15, 1976.

The date is contingent on the actual delivery dates from the two vendors, Thermo Electron Corporation and General Metal Works, Inc. Purchasing will endeavor to improve on Vendor's promised delivery dates. Copies of the two purchase orders are enclosed, which are:

- (1) Complete System for monitoring SO₂.
- (2) HiVolume Sampling System.

Data will be forwarded from the two systems routinely as requested.

If there are any other questions, please contact the writer.

Sincerely,



T. E. Butler
Plant Engineering

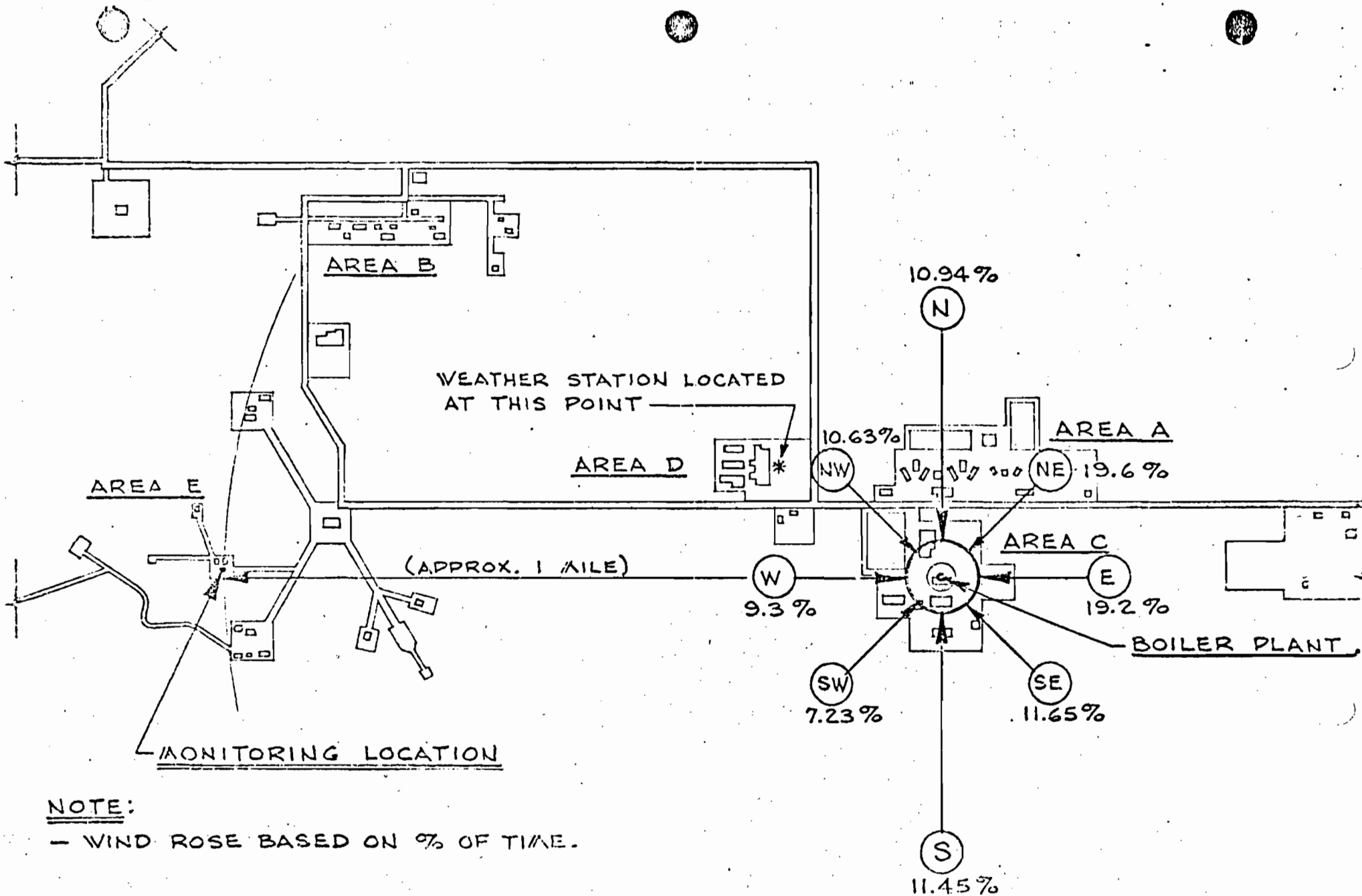
Enclosure:

Copy to: State of Florida Department of Environmental Regulation
Attention: Mr. D. Karsmarski
3301 Gun Club Road, P. O. Box 3858
West Palm Beach, Florida 33402



**UNITED
TECHNOLOGIES**

RECEIVED
SEP 29 1976
Division of Environmental Health
PALM BEACH COUNTY
HEALTH DEPT.



NOTE:

- WIND ROSE BASED ON % OF TIME.

PRATT & WHITNEY AIRCRAFT			WEST PALM BEACH, FLORIDA		
PLANT ENGINEERING DEPARTMENT			PROPOSED LOCATION OF AIR MONITORING STATION		
DRAWN BY F. STETSON	DATE 7-31-75	73	APPROVED	SCALE NONE	PL-560A

Purchase Order

PRATT & WHITNEY AIRCRAFT



HERE IS NO SUBSTITUTE FOR QUALITY

Florida Research and Development Center
Box 2691, West Palm Beach, Florida 33402

Buyer JIM VITERNA/MJMC

Page 1 of 2

PO No. 36590	Vendor No. & Coding S-29815-B3-M-A	Contract No.	W.O. or Appropriation or CCN No. (S) 809709/20396	Account No. (S) 2905
Number & Latest Change		PWAT TM Specifications		Florida Sales Tax Applies Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Material Specifications			Other Specifications	
			Date 9-2-76	

See In accordance with Attached

Renegotiation Applies Yes No

THERMO ELECTRON CORPORATION
85 1ST AVENUE
WALTHAM, MA 02154

S P C Applies		
1	7	13
2	8	14
3	9	15
4	10	16
5	11	17
6	12	18

NOV. 15
OR SOONER

Item	Quantity	T		PFX	Base		Dash-Suffix		C.L.		Description	Price
		T	F		Code	Spec	OD-Width	ID-Length	Thick-Wall			
1	1 LOT										VENDOR TO PROVIDE A COMPLETE SYSTEM FOR THE MONITORING OF AMBIENT SO ₂ AS FOLLOWS:	10,785.00/
											1. AMBIENT SO ₂ ANALYZER W/RACK MOUNT PULSED FLUORESCENT, MODEL 43 RACK-MOUNT	6650.00/EA 100.00/EA
											2. CALIBRATOR W/EXTERNAL PUMP, P/N AID 320B	1920.00/EA
											3. VALVE, EXTERNAL ACTUATION OF SPAN/ZERO, AND EXTERNAL TIMER MODIFIED TO MAKE ITEMS 1 & 2 ABOVE OPERABLE.	295.00/EA
											4. OXYGEN AIR SUPPLY & SCRUBBER UNIT	210.00/EA
											5. SO ₂ PERMEATION TUBE	45.00/EA
											6. STRIP CHART RECORDER- (4" WIDE) 0-1 VOLT, 1" PER HOUR CHART SPEED (L&N MODEL 831-27-00-0104-6-A)	815.00/EA

CS Requirements Apply	O/S 6	C-002218	Engine Type	Inspection Required	F.O.B. SP	Terms NET 30
Ship Via	Deliver To UNITED, FLA. FAC. 557 FAN ROOM #2 (F)		Material	Analyst Code ET P-0015	Departments 558/967	

Fig. BLDG.

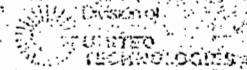
THERE IS NO SUBSTITUTE FOR QUALITY

Florida Research and Development Center
Box 2691, West Palm Beach, Florida 33402

Buyer JIM VITERNA/MJMC

Page 2 Of 2
PWA PROC 3383H REVISED 1-76

No.		Vendor No.				Vendor Name				Date	
5590		S-29815-B3-M-A				THERMO ELECTRON CORP.				9-2-76	
Item	Quantity	T	PFX		Base		Dash-Suffix		C.L.	Description	Price
		T	F	Code	Spec	OD-Width	ID-Length	Thick-Wall			
										NOTES:	
										1. VENDOR TO PROVIDE SERVICE ENGINEER FOR STARTUP AND OPERATIONAL INSTRUCTION TO OPERATOR, 1 DAY REQUIRED.	750.00/LT
										2. PROVIDE COMPLETE SET OF OPERATING & MAINTENANCE MANUALS.	N/C
										(FL#3198)	
										DO NOT OVERSHIP	



Purchase Order

THIS IS NO SUBSTITUTE FOR QUALITY

Florida Research and Development Center
Box 6691, West Palm Beach, Florida 33402

Page 1 of 1

B. CHAMNESS/ME

Vendor No. & Code 6573 S-93159-B6-M	Contract No.	WFO or Appropriation or COA No. (B) 309709720396	ACCOUNT NO. (B) 2905
Number & Latest Change	PVTAL Specifications		Florida Sales Tax Applies Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

Product Specifications	Other Specifications	Date 8/31/76
------------------------	----------------------	-----------------

Renegotiation Applies Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	S P C Applies																		
9/24/76 (4-5 WARD)	<table border="1"> <tr><td>1</td><td>7</td><td>13</td></tr> <tr><td>2</td><td>8</td><td>14</td></tr> <tr><td>3</td><td>9</td><td>15</td></tr> <tr><td>4</td><td>10</td><td>16</td></tr> <tr><td>5</td><td>11</td><td>17</td></tr> <tr><td>6</td><td>12</td><td>18</td></tr> </table>	1	7	13	2	8	14	3	9	15	4	10	16	5	11	17	6	12	18
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4	10	16																	
5	11	17																	
6	12	18																	

GENERAL METAL WORKS, INC.
8368 BRIDGETOWN RD
CLEVELAND, OH 45002

Quantity	Item	Price
1	MODEL GMWL-2000H HI VOLUME SAMPLING SYSTEM (FL #3194)	431.50/EA
1	MODEL GMW-25 CALIBRATION KIT INCLUDES-CALIBRATING ORIFICE ASSEMBLY-SERIES OF FIVE LOAD PLATES W/GASKETS MANOMETER, 1/4" TUBING ALUMINUM CARRYING CASE GMW-25 TOP LOADING ADAPTOR (FL #3195) P.O. # 720904 DO NOT SUBSTITUTE DO NOT OVERSHIP. *FOB, CLEVES, OHIO	133.50/EA

Order No.	6	C-002218	Order Date	8/24/76	Delivery Date	9/10/76	Lead Time	16 DAYS
Buyer	UNITED FL 32002		Buyer	ANDERSON		Telephone	558/967	
Address	FAC 557 FAC ROOM #2, MFG. BLDG ET P-0015							

Due 8-21-78

Palm Beach County Health Department

P.O. BOX 29, WEST PALM BEACH, FLORIDA 33402

C.L. BRUMBACK, M.D., M.P.H.
DIRECTOR

Please Address

Reply To: ESE-WPB

July 14, 1978

Mr. Richard H. Anschutz, Manager
Management Systems
Pratt & Whitney Aircraft Group
United Technologies Corporation
P. O. Box 2691
West Palm Beach, Florida 33402

CERTIFIED MAIL 734927
RETURN RECEIPT REQUESTED

NOTICE TO CORRECT
AP-47-78

7-18-78

Re: Ambient Air Monitoring

Dear Mr. Anschutz:

This letter constitutes formal Notice of Violation of Section 2 of Palm Beach County Ordinance 78-5, the Palm Beach County Environmental Control Act; Chapter 77-616, Special Acts, Laws of Florida; Chapter 403, Florida Statutes; Chapter 17-2 Florida Administrative Code, and Chapter 17-4, Florida Administrative Code. You are charged with a violation of the sections noted on the attached sheets(s).

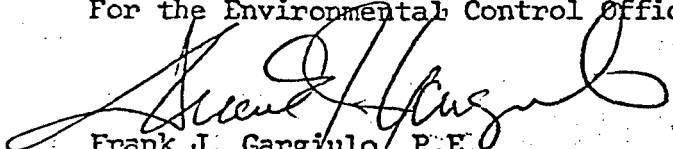
Failure to correct the stated violation within the specified (30) day period, will result in a notice of non-compliance being submitted to the Palm Beach County Environmental Control Hearing Board. Failure to complete all corrective actions within this time period will subject you to a civil penalty of up to five hundred dollars (\$500.00) per day, per violation. You are subject to fines for each day you create a public health threat, or conduct an activity which resulted in environmental damage, or conduct an activity without or in violation of a required permit.

You should direct your response and any questions concerning this Notice to Correct to Mr. Michael J. Martin at the above address, telephone (305) 837-3070.

Please refer to the above Notice to Correct number in your correspondence.

Sincerely,

For the Environmental Control Officer



Frank J. Gargiulo, P.E.
Director, Environmental Sciences & Engineering

ECO/FJG/

Enc.

cc: Environmental Control Officer
Department of Environmental Regulation ✓
Mr. Bob Metcalfe, P & W ✓

NOTICE TO CORRECT

#AP - 47-78

Portions of the Florida Statutes and Rules or Palm Beach County Environmental Control Act which you have violated or are now violating are identified below. A complete response to each violation is required.

ENVIRONMENTAL CONTROL - CHAPTER 403, FLORIDA STATUTES

Chapter 403.161(1)(a), It shall be a violation of this Chapter and it shall be prohibited to cause pollution except as otherwise provided in this Chapter, so as to harm or injure human health or welfare, animal, plant, or aquatic life or property.

AIR POLLUTION CHAPTER 17-2, FLORIDA ADMINISTRATIVE CODE

Chapter 17-2.04 (6)(e) 2 f, Owners of fossil fuel steam generators shall monitor their emissions and the effects of the emissions on ambient concentrations of sulfur dioxide, in a manner, frequency, and locations approved, and deemed reasonably necessary and ordered by the Department. The owners shall submit to the Department a written proposal for such monitoring program on or before July 1, 1975.

REMARKS

On July 12, 1978, Mr. Robert Milkins and Mr. Michael Martin inspected your ambient air monitoring stations to determine compliance with Chapter 17-2.04(6)(e) 2f, stated above. Our inspection revealed that both monitors were not operational. This is in direct violation of Florida Statutes and Department Rules. Monitoring sites were to be operational on or about November 1976.

You shall within thirty (30) days from receipt of this Notice, monitor the emissions and effects of the emissions from your fossil fuel steam generators on ambient concentrations of sulfur dioxide and total suspended particulates in a manner & frequency, as required by the Department.

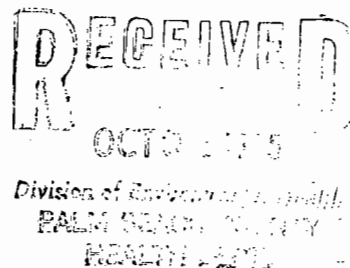
PRATT & WHITNEY AIRCRAFT

Florida Research and Development Center
 P. O. Box 2691
 West Palm Beach, Florida 33402



October 3, 1975

Mr. Peter P. Baljet, District Manager
 Department of Environmental Regulation
 Courthouse Square Building
 Suite 504
 200 East Sixth Street
 Fort Lauderdale, Florida 33301



Subject: SO₂ Monitoring Plan

Dear Mr. Baljet:

The following information is submitted in response to your letter dated September 10, regarding our proposed SO₂ Monitoring system.

Wind speed and direction are presently monitored and recorded by a Bendix Aerovane Windspeed and Direction Recording System. Attachment 1 (Operation of Experimental Test Weather Stations, Test Administration Building) describes the system. Copies of the "Test area hourly weather data" form will be supplied to you during the SO₂ monitoring program.

The location of the weather station in relationship to the Area C boiler is shown in attachment 2.

Fuel analysis for the fuel used in the "C" Area boiler has been requested from our fuel supplier. We will forward this along with the amount of fuel used during SO₂ monitoring. Examples of the fuel analysis are provided in attachment 3.

We propose to sample ambient particulate matter for a 24 hour period every sixth working day. Calibration and quality assurance procedures have not been written. The procedures will be prepared and submitted upon approval of the proposed equipment, and will be based on recommendation published on pages 8191 - 8193 of the Federal Register Vol. 36, No. 84 Friday April 30, 1971, and information received from the High Volume Air Sampler Manufacturer.

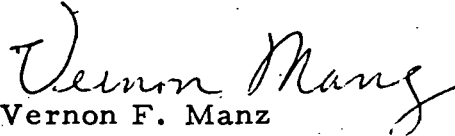
Department of Environmental Regulation

Our monitoring plan is based on using a Beckman 906A continuous monitoring station. This equipment was selected after discussions with the Palm Beach Health Department and is identical to that presently used in Palm Beach County. If this plan is inconsistent with your state wide program, we would consider revising it using West-Gaeke or some other equivalent monitoring equipment.

If there are any other questions concerning this matter, please contact the writer at extension 2321.

Very truly yours,

PRATT & WHITNEY AIRCRAFT
Division of United Technologies



Vernon F. Manz
Supervisor, Plant Engineering
Design and Facilities Services
Florida Research and Development Center

VFM:yps

cc: Mr. Eugene Sacco
Mr. Walter Starnes

SACCO EL

September 10, 1975

RECEIVED
SEP 12 1975

Division of Environmental Health
PALM BEACH COUNTY
HEALTH DEPT.

Mr. Vernon F. Manz
Pratt & Whitney Aircraft Corporation
P. O. Box 2691
West Palm Beach, Florida 33402

Re: SO₂ Sampling Network

Dear Mr. Manz:

With reference to your letter of July 31, 1975, please be advised that the following additional information is required prior to September 22, 1975:

1. Method for obtaining meteorological data (windspeed and direction).
2. Method for obtaining the fuel analysis and parameters to be measured (recommend a composite sample taken "as fired daily" and an analysis containing %-sulfur, %-ash, heating value, and additives used (vanadium content from supplier if obtainable).
3. Frequency of particulate sampling and calibration and quality assurance procedures.

You should be aware the Environmental Protection Agency has procedures for declaring "equivalency" for continuous monitors with the West-Gaeke bubbler method. Care should be taken in the selection of the Beckman Model 906A monitor with this equivalency (or lack of it) in mind.

If you have any questions concerning the above, you should contact Mr. David Karsmarski of this office, telephone (305) 524-8593.

Sincerely,

Original signed by
WALTER S. STARNES
Peter P. Baljet
District Manager

PPB:RAB:rs

cc: Mr. Eugene Sacco
Mr. Walter Starnes

Pratt & Whitney Aircraft

DIVISION OF UNITED AIRCRAFT CORPORATION

U
A

July 31, 1975



Frank J. Gargiulo, P. E., Director
Division of Environmental Sciences and Engineering
Palm Beach County Health Department
Central Environmental Sanitation Branch
2247 Palm Beach Lakes Blvd.,
West Palm Beach, Florida 33401

Subject: SO₂ Monitoring Plan required by Chapter 17 - 2.04 (6) (e) 2 f
of Florida Statutes

Dear Mr. Gargiulo:

The following plan is proposed to comply with the subject statute regarding monitoring of ambient SO₂ levels at Pratt & Whitney Aircraft, Florida Research and Development Center.

The stationary sources requiring monitoring are two identical fossil fuel steam generators located in Test Area C. The normal fuel usage in each boiler is 16,000 gal/day of No. 6 fuel oil with a maximum sulfur content of 2-1/2%. This results in SO₂ emissions of 2-1/2 to 3 tons per day for both boilers.

6.28 T/day

We propose to install one continuous SO₂ Monitoring Station (Beckman Model 906A) and one High Volume Particulate Sampler (Model GMWL-2000 with a GMW 6000 Primary Calibration System). The location of these instruments is proposed to be approximately one mile west of the source. See attached sketch.

The estimated cost of this equipment is \$7,000 and will require 16 - 18 weeks, after approval of this plan, to complete the installation.

If there are any questions concerning the above, please contact the writer.

Very truly yours,

PRATT & WHITNEY AIRCRAFT

VFM:cl
Attachment

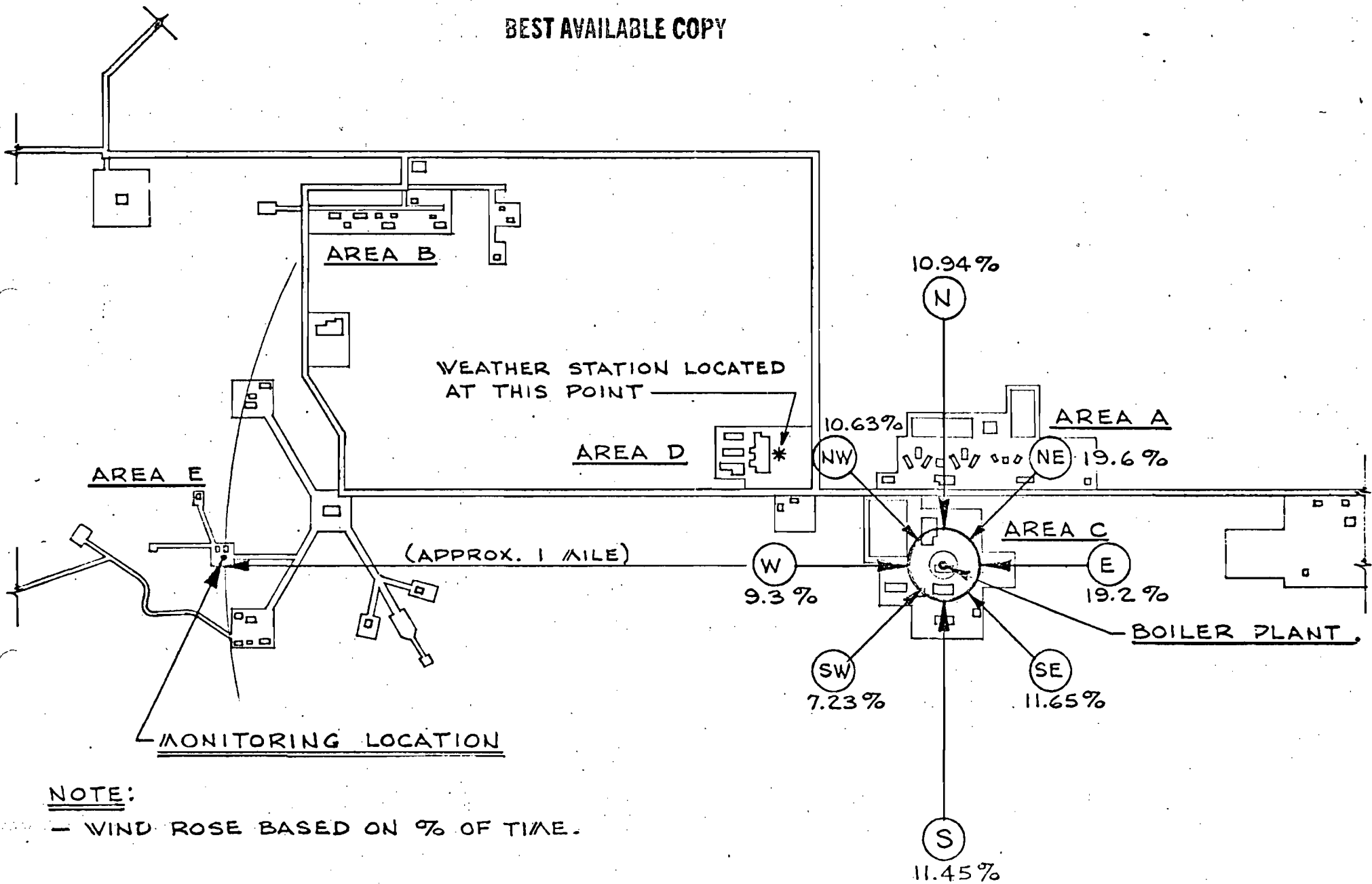
Vernon F. Manz

Vernon F. Manz
Plant Engineering
Florida Research and Development Center

cc: Regional Director, State of Florida
Department of Environmental Regulation
200 S. E. Sixth Street
Ft. Lauderdale,
Florida

FLORIDA RESEARCH AND DEVELOPMENT CENTER
P. O. BOX 2691 - WEST PALM BEACH, FLORIDA 33402
TELEPHONE (305) 844-7311 - TELEX 51-3423 - TWX 510-953-7480

BEST AVAILABLE COPY



NOTE:

- WIND ROSE BASED ON % OF TIME.

PRATT & WHITNEY AIRCRAFT

WEST PALM BEACH, FLORIDA

PLANT ENGINEERING DEPARTMENT

PROPOSED LOCATION OF
AIR MONITORING STATION

DRAWN BY
F. STETSON

DATE
7-31-75

APPROVED

SCALE
NONE

August 8, 1975

Mr. Warren G. Strahm, P.E.
Department of Environmental Regulations
200 S.E. 6th Street, Suite 500
Fort Lauderdale, Florida 33316

Attn: Mr. Robert Baker

Dear Mr. Strahm,

Reference the attached letter from Pratt & Whitney Aircraft regarding their air quality monitoring network pursuant to Chapter 17-2, paragraph 17-2.04(6)(e) 2 f.

You will notice an error in their letter which refers to 2 1/2 to 3 tons of SO₂ emissions per day from their two (2) fossil fuel steam generators. Our calculations show a SO₂ emission rate of 6.28 tons per day. Nevertheless, their facility falls in the 2-25 ton per day SO₂ category.

In accordance with the minimum number and type samplers recommended by the Department their proposal may not seem adequate. However, in view of their facility location, approximately twenty (20) miles west of the urban strip, coupled with prevailing easterly winds and the fact that their emission rate falls close to the lower limit of the 2-25 ton of SO₂ per day category our agency considers their proposal sufficient to satisfy the intent of paragraph 17-2.04(6)(e) 2 f.

Accordingly, we recommend the Department approve subject proposal in order to allow the Pratt & Whitney Aircraft facility to implement their plan at the earliest possible date.

In the event further information is necessary regarding this matter please contact the undersigned.

Very truly yours,

FOR: Frank J. Gargiulo, P.E.
Director
Division of Environmental Sciences
and Engineering

BY: _____
Eugene J. Sacco
Administrator
Air Pollution Control

FJG/EJS/pl

BEST AVAILABLE COPY

July 9, 1975

Mr. Thomas E. Butler, P.E.
Pratt and Whitney Aircraft
P.O. Box 2691
West Palm Beach, Florida 33402

Re: Operating Permits for Air Pollution Source
1, 2 Boilers - Manufacturing
1, 2 Boilers - Area C

Dear Mr. Butler:

This is to acknowledge receipt of applications for permit to operate the referenced facilities. Before approval can be recommended to the Department of Environmental Regulation (formally Department of Pollution Control) the following information and/or clarification is required.

1. Please seal and sign each page of the application with a metal type impression seal per 471 Florida Statutes.
2. Please submit an air monitoring network plan for the Pratt and Whitney facility. This plan should include but not be limited to location of samplers (both particulate and SO₂), frequency of sample and type of equipment employed.

Pratt and Whitney is currently operating the referenced facilities without a valid permit. We suggest the aforementioned information be supplied at all deliberate speed in order to avoid potential legal problems.

Very truly yours,

FOR: Frank J. Gargiulo, P.E.
Director
Division of Environmental Sciences
and Engineering

BY: Terry D. Heath
Terry D. Heath
Supervising Engineer
Plan Review and Permits

FJG/TDH/pl

CC: Robert Baker, P.E.
Enclosures:



STATE OF FLORIDA
DEPARTMENT OF POLLUTION CONTROL

2562 EXECUTIVE CENTER CIRCLE, EAST
MONTGOMERY BUILDING
TALLAHASSEE, FLORIDA 32301

PETER P. BALJET
EXECUTIVE DIRECTOR

May 28, 1975

W.D. FREDERICK, JR.
CHAIRMAN

RECEIVED
JUN - 9 1975

Division of Environmental Health
PALM BEACH COUNTY
HEALTH DEPT.

DER

MAY 28 1982

BAQM

Mr. Vern Manz
Pratt & Whitney Aircraft
Division of United Aircraft Corp.
P. O. Box 2691
West Palm Beach, Florida 33402

Dear Sir:

The sulfur dioxide rule for existing fossil fuel steam generators, Chapter 17-2.04(6)(e)2 was amended by the Florida Department of Pollution Control Board on May 20, 1975. A copy of the rule is attached for your convenience, Section 17-2.04(6)(e)2.f requires monitoring of sulfur dioxide emissions and the effects of emissions on ambient concentrations.

All affected sources must submit on or before July 1, 1975, a monitoring program for both the emissions and their effects. For the purposes of this requirement the Department will use the following definitions:

"Emission monitoring" means a continuous source sampler on each source or an alternative method for determining sulfur dioxide emissions which can be validated by source sampling.

The "effect of the emissions on ambient concentrations of sulfur dioxide" means an ambient air sampling system which determines concentrations of sulfur dioxide, sulfates, particulates and metallic ions.

Meteorological conditions are to be determined and reported as a requirement for an approvable monitoring program.

The written proposal required by subsection f shall be submitted to any affected local program and the appropriate regional office at the same

John R. Middlemas
BOARD MEMBER

Mark D. Hollis
BOARD MEMBER

Y. E. Hall
BOARD MEMBER

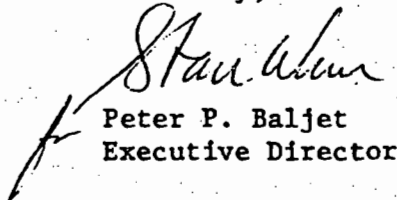
Susan Uhl Wilson
BOARD MEMBER

Page 2
May 28, 1975


time. Following review by both, the region will forward the proposal to the Division of Planning in Tallahassee for final approval to insure uniform application of the requirements.

Your attention to this matter will be appreciated.

Sincerely,


Peter P. Baljet
Executive Director

PPB/sjr

cc: Palm Beach County Health Department 
Mr. Bob Bergin

1.0 INTRODUCTION

1.1 PROJECT BACKGROUND

The 1977 Clean Air Act Amendments require state and local governments to develop revisions to the State Implementation Plan (SIP) for all areas where the National Ambient Air Quality Standards (NAAQS) have not been attained (nonattainment areas). The U.S. Environmental Protection Agency (EPA) has been mandated by Congress to enforce the attainment and maintenance of these NAAQS. In accordance with this mandate, the EPA has determined that the SIP for Florida is inadequate for oxidants.

There are nine counties in Florida that are currently exceeding the NAAQS for oxidants. Due to the formation process of oxidants, the development of abatement strategies for these areas requires a comprehensive base of information concerning the injection of volatile organic compounds (VOC) into the atmosphere.

Pacific Environmental Services, Inc. (PES) was contracted by EPA Region IV to assist the State of Florida in compiling and analyzing data needed for oxidant control strategies. PES' task was divided into three phases.

Phase I

- Prepare an extensive seasonalized VOC emissions inventory for seven of Florida's nine oxidant nonattainment areas for calendar year 1977
- Forecast the base year (1977) emissions to reflect calendar years 1982 and 1987

Phase II

- Assist in the preparation of Reasonably Available Control Technology (RACT) regulations for VOC point sources in all nine counties. Point sources are defined in this study as

having the potential to emit 100 tons or more of VOC per year.

- Determine RACT emission reduction estimates
- Analyze current air quality data
- Provide technical and editorial assistance in assembling the total Florida SIP package. This subtask involves all pollutant nonattainment areas.

Phase III

- Prepare an inspection/maintenance (I/M) program for seven of the nine oxidant nonattainment counties in Florida

Table 1-1 presents the study area by county and by phase involvement.

Table 1-1. FLORIDA STUDY AREA (VOC NONATTAINMENT AREAS)

County	AQCR	Metropolitan Area	Phase Involvement
Broward	050	Fort Lauderdale	I, II, III
Dade	050	Miami	I, II, III
Duval	049	Jacksonville	I, II, III
Escambia	005	Pensacola	I ^a , II
Hillsborough	052	Tampa Bay	II, III
Leon	049	Tallahassee	I ^a , II
Orange	048	Orlando	I, II, III
Palm Beach	050	West Palm Beach	I, II, III
Pinellas	052	Tampa Bay	II, III

^a County classified as rural nonattainment area; only point sources are considered in this phase

Phase I activities are discussed in the remainder of this report, whereas Phases II and III are discussed in subsequent documents (EPA 904/9-79-029b and EPA 904/9-79-029c, respectively).

1.2 EMISSIONS INVENTORY

An emissions inventory is a descriptive listing of air pollutants that provides the basis from which pollutant reduction strategies may be planned and evaluated. The present inventory considers VOC emissions from both point and area sources in four major categories: evaporative sources, fuel combustion, solid waste disposal, and mobile sources. A complete source list is presented in Table 1-2.

1.2.1 APPROACH AND RATIONALE

The PES project team initiated the VOC inventory by gathering the necessary background information according to techniques outlined in EPA guideline documents (References 1 through 10). Recognized VOC emitting sources were classified according to the "Summary Format for VOC" reported in Reference 1 and outlined in Table 1-2, and were then further qualified into area and point sources based on the criteria noted in Section 1.1.

For each specific VOC emitting activity, the chemical composition of the emissions was assessed to allow allocation into a two-level photochemical reactivity scheme. As with the total VOC (TVOC) emitted, the emissions in these classes were projected to 1982 and 1987, using accepted forecasting techniques, including those described in the EPA guideline document "Projecting County Emissions" (Reference 2). An attempt was also made to seasonalize VOC emissions activities to more closely relate the inventory to the oxidant season, which, for purposes of this study, was defined as April through September.

Table 1-2. SOURCES OF VOC EMISSIONS

I. EVAPORATIVE SOURCES
A. Processing, storage, transportation, and marketing of petroleum products
1. Refinery fugitives
2. Miscellaneous refinery sources
3. Oil and gas production fields
4. Natural gas and natural gasoline processing plants
5. Gasoline and crude oil storage
6. Ship and barge transfer of gasoline and crude oil
7. Bulk gasoline terminals
8. Gasoline bulk plants
9. Service station loading and unloading
B. Industrial processes, surface coatings, and solvent use
1. Processes
a. Organic chemical manufacture
b. Paint manufacture
c. Vegetable oil processing
d. Pharmaceutical manufacture
e. Plastic products manufacture
f. Rubber products manufacture
g. Textile polymers manufacture
2. Surface coatings
a. Large appliances
b. Magnet wire
c. Automobiles
d. Cans
e. Metal coils
f. Paper
g. Fabric
h. Metal furniture
i. Wood furniture
j. Flat wood products
k. Other metal products
l. Auto refinishing
3. Solvent use
a. Degreasing
b. Drycleaning
c. Graphic arts
d. Adhesives
C. Architectural surface coatings
D. Cutback asphalt
II. FUEL COMBUSTION
III. SOLID WASTE DISPOSAL
A. Incineration
B. Open burning
IV. MOBILE SOURCES
A. On-highway vehicles
B. Off-highway vehicles
C. Railroads
D. Aircraft
E. Vessels

Finally, because of the project's stringent time constraints, estimating techniques for point sources were employed in some cases. Although the associated errors are thought to be relatively minor, caution should be taken in using point source data. For example, many lithographic printing facilities utilized an oil-based ink known only by its trade name. The users were unaware of its solvent content and the supplier considered this information to be proprietary. Therefore, an average solvent content had to be developed and employed. Another example is the many operations that have significant fugitive VOC emissions, such as a beer company in the study area that has product spillage losses during bottling and packaging operations. No time was allocated for a thorough investigation of these activities, so engineering estimates were made. Estimates were also made for those sources that failed to submit complete data.

1.2.2 DATA SOURCES

Data needed for the emissions inventory were developed partly from published literature and partly from sources engaged in activities that might produce VOC emissions. In addition, a large portion of the information was obtained directly from local, state, and Federal agencies; those that were especially helpful included:

Local Government

Broward County Environmental Quality Control Board
Dade County Environmental Resources Management
Duval County Department of Health, Welfare, and Bio-
Environmental Services - Air Pollution Control
Palm Beach County Health Department

State of Florida

Department of Environmental Resources
Department of Transportation

Department of Commerce
Department of Revenue
University of Florida, Bureau of Economic and Business
Research
State Energy Office

Federal Government

Environmental Protection Agency, Region IV
Department of Commerce, Bureau of Census
Department of the Interior, Bureau of Mines
Department of Labor, Bureau of Labor Statistics

Information concerning specific point sources was gathered through the use of questionnaires submitted to plant managers during source visits. Addresses for these contacts were obtained from existing point source inventories, augmented with information from National Business Lists, Inc., the Directory of Florida Manufacturers (Reference 11), local telephone directories, and information provided by local agencies.

1.2.3 REPORT ORGANIZATION

Four sections comprise the remainder of this report. A brief description of their contents is as follows:

- Section 2.0 contains a description of the study area, along with a discussion of general background information such as population, employment, land use, and projections of these activities.
- Section 3.0 contains an analysis of the photochemical reactivity profiles applied to the various source categories.
- Section 4.0 includes a detailed discussion of the methodologies used for the base year and projection years for each source category examined, complete with VOC emissions estimates.
- Section 5.0 presents the results of the study and recommendations for further evaluation.

To simplify data manipulation and provide the reader with a lucid view of the assessment procedures, most of the data contained in this report have been rounded to three significant figures. In some cases, it may appear that the data contained in various tables and sections do not "add up," but this supposed inaccuracy is due to the rounding process and does not affect the overall precision of the study.

2.0 DATA BASE AND PRELIMINARY ANALYSIS

2.1 AREA DESCRIPTION

Seven counties are encompassed by this VOC inventory, and are referred to collectively as "the study area" throughout this phase of the work. Figure 2-1 shows the geographic location of each county in the study area.

The seven counties, together with Hillsborough and Pinellas (which are included in Phases II and III of this study), comprise the major metropolitan areas of Florida. Table 2-1 illustrates their distribution by Air Quality Control Region (AQCR) and Standard Metropolitan Statistical Area (SMSA).

Table 2-1. THE STUDY AREA

County	AQCR	SMSA
Broward	050	Ft. Lauderdale-Hollywood
Dade	050	Miami
Duval	049	Jacksonville ^a
Escambia	005	
Leon	049	
Orange	048	Orlando ^b
Palm Beach	050	West Palm Beach-Boca Raton

^a SMSA also includes Nassau, Baker, Clay, and St. Johns Counties

^b SMSA also includes Seminole and Osceola Counties

Leon and Escambia Counties are not referred to in the remainder of this section because their assessment did not warrant use of the belowmentioned data base items. However, Leon and Escambia

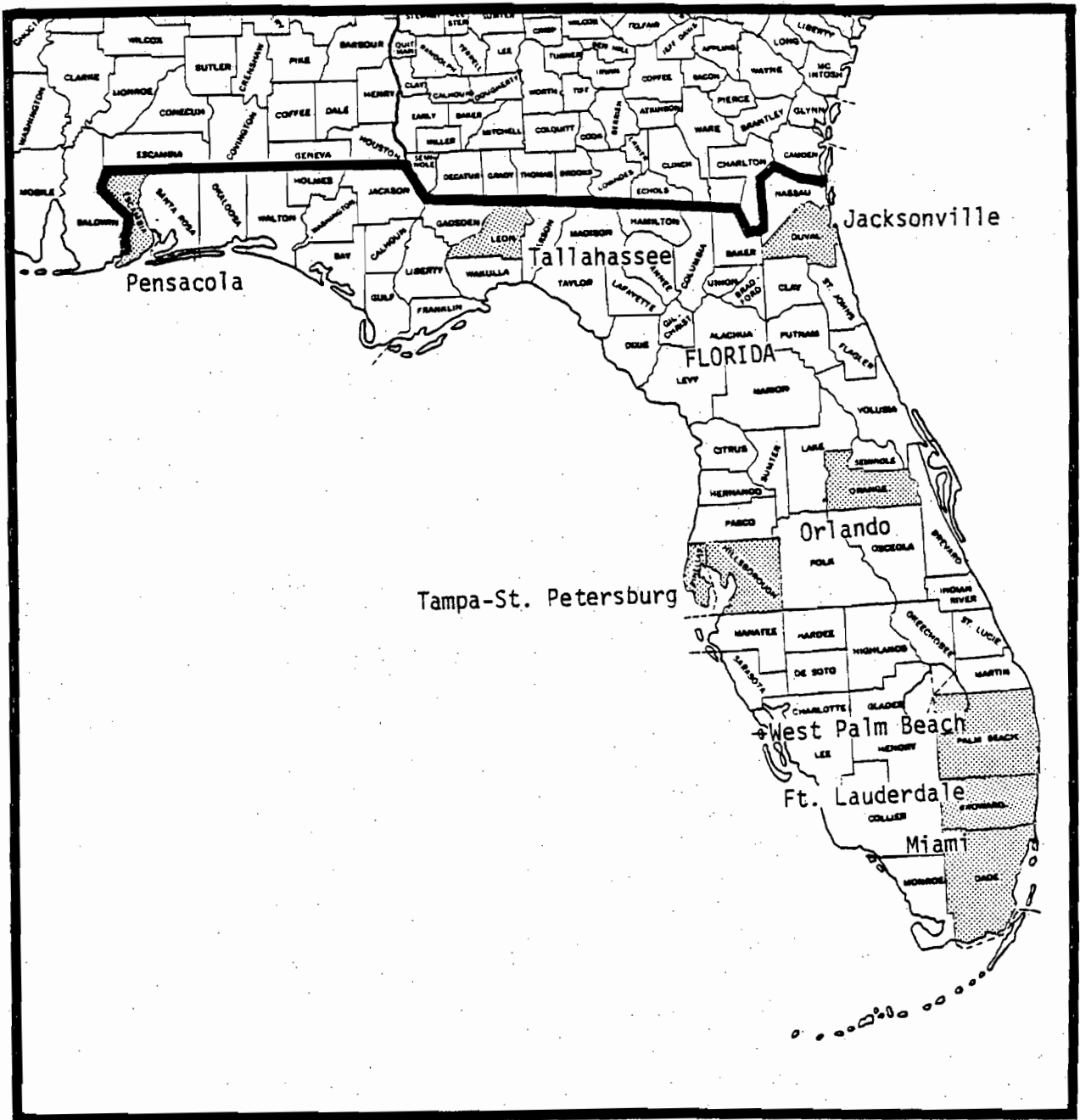


Figure 2-1. Geographic Location of Each County

were examined for point sources, which are discussed in Section 4.0.

2.2 POPULATION DATA

PES made an assertive effort to obtain county base year population estimates and projections directly from the appropriate local agencies. However, examination of the data received revealed that these estimates were inconsistent. During a telephone conference call between the project principals (Reference 1), it was therefore agreed that PES would use the population estimates called out in the 1977 Florida Statistical Abstract (Reference 2). These population figures are shown in Table 2-2.

In several instances, the 1977-1982 and 1977-1987 population growth factors reflected in Table 2-2 were used to project VOC emissions; Table 2-2 should therefore be referred to throughout Section 4.0.

2.3 EMPLOYMENT DATA

As with the population estimates, PES solicited county base year employment estimates and projections from participating local agencies, but for the most part, these estimates were obtained from the State of Florida's Department of Commerce (References 3-7). However, a difficulty arose in determining employment data for Duval and Orange Counties. As pointed out in Table 2-1, the Jacksonville and Orlando SMSAs, which contain Duval and Orange Counties, respectively, also contain other counties not included in this study. Consequently, in order to estimate county employment totals, it was necessary to assume that the ratio of county to SMSA population reflects the ratio of county to SMSA employment. This analytical technique can be expressed as:

Table 2-2. POPULATION DATA FIGURES^a

Year	Broward County	Dade County	Duval County	Orange County	Palm Beach County	Florida State
1970	620,100	1,267,800	528,900	344,300	349,000	6,791,400
1972	722,700	1,342,500	545,000	385,000	390,400	7,441,500
1973	769,400	1,373,600	558,800	408,400	428,000	7,845,100
1974	828,200	1,413,100	570,400	424,000	459,200	8,248,900
1975	876,300	1,438,000	578,300	424,600	477,800	8,485,200
1976	884,900	1,449,300	579,700	420,600	488,000	8,551,800
1977	<u>914,900</u>	<u>1,462,600</u>	<u>584,800</u>	<u>427,700</u>	<u>504,100</u>	<u>8,728,100</u>
1978	945,800	1,476,100	590,000	434,900	520,800	8,908,000
1980	1,026,000	1,525,500	608,900	460,400	565,200	9,432,000
1982	<u>1,097,000</u>	<u>1,556,000</u>	<u>620,200</u>	<u>481,200</u>	<u>604,600</u>	<u>9,859,700</u>
1985	1,212,900	1,602,800	637,500	514,200	668,800	10,538,000
1987	<u>1,265,700</u>	<u>1,672,500</u>	<u>691,800</u>	<u>536,500</u>	<u>697,900</u>	<u>10,996,500</u>
1990	1,349,200	1,782,900	782,100	571,900	744,000	11,722,000

^a Refer to Reference 2. The figures which are underlined are interpolations.

$$E_{ci} = RE_{(SMSA)i} \quad (1)$$

where

E_{ci} = total county employment in sector i ($i=1$, construction; $i=2$, industrial; $i=3$, manufacturing; $i=4$, commercial/institutional)

R = ratio of county to SMSA population

$E_{(SMSA)i}$ = total SMSA employment in sector i

Table 2-3 shows county construction and industrial employment figures, while Table 2-4 provides county totals for manufacturing and commercial/institutional employment.

2.4 LAND USE DATA

The data used to project county land use figures for 1982 and 1987 were obtained from local planning agencies (References 10-18), but in most cases, data were not supplied for the principal years of interest (1977, 1982, and 1987). Data for those years were therefore generated by means of exponential interpolation between two known and acceptable figures.

The projected increases in cropland harvested were used to arrive at the county agricultural equipment projections for 1982 and 1987 shown in Table 4-55. The following assumptions were made:

- Land use more accurately reflects the amount of agricultural equipment in use than do earnings, since agricultural employment tends to decrease as more acres fall under mechanized crop production.
- Increases in the use of agricultural equipment will be proportional to the projected increases in total acres of cropland harvested.

Table 2-3. CONSTRUCTION AND INDUSTRIAL EMPLOYMENT PROJECTIONS^a

County Year	Construction Employment (SIC 16)					Industrial Employment				
	Broward ^b	Dade ^c	Duval ^d	Orange ^e	Palm Beach ^f	Broward ^b	Dade ^c	Duval ^d	Orange ^e	Palm Beach ^f
1973	<u>6,430</u>	<u>4,950</u>	<u>4,480</u>	<u>4,150</u>	<u>2,220</u>					
1974	6,510	5,090	<u>4,660</u>	<u>4,140</u>	2,290	106,660	262,860	<u>83,590</u>	<u>69,750</u>	63,150
1977	6,770	5,530	<u>4,720</u>	<u>4,120</u>	2,500	116,840	285,900	<u>86,840</u>	<u>76,340</u>	70,600
1978	6,850	5,680	<u>4,730</u>	<u>4,110</u>	2,570	120,210	293,530	<u>87,890</u>	<u>78,640</u>	73,100
1982	<u>7,190</u>	<u>6,250</u>	<u>4,820</u>	<u>4,120</u>	<u>2,840</u>	<u>133,230</u>	<u>323,100</u>	<u>92,120</u>	<u>87,440</u>	<u>82,490</u>
1985	7,450	6,710	<u>4,890</u>	<u>4,130</u>	3,060	143,920	347,220	<u>95,420</u>	<u>94,680</u>	90,320
1987	<u>7,630</u>	<u>7,040</u>	<u>4,930</u>	<u>4,140</u>	<u>3,220</u>	<u>151,520</u>	<u>364,290</u>	<u>97,690</u>	<u>99,840</u>	<u>95,950</u>

^a The figures which are underlined are interpolations

^b Refer to Reference 3

^c Refer to Reference 4

^d Refer to Reference 5 and Equation 2-1

^e Refer to Reference 6 and Equation 2-1

^f Refer to Reference 7

Table 2-4. MANUFACTURING AND COMMERCIAL/INSTITUTIONAL EMPLOYMENT PROJECTIONS^a

County Year	Manufacturing Employment						Commercial and Institutional Employment ^j					
	Broward ^b	Dade ^c	Duval ^d	Orange ^e	Palm Beach ^f	Florida State	Broward ^b	Dade ^c	Duval ^d	Orange ^e	Palm Beach ^f	Florida State
1974	29,010	93,160	<u>26,250</u>	<u>21,430</u>	20,870	369,000 ^g	217,910	511,220	<u>175,360</u>	<u>133,730</u>	122,390	2,222,700 ^g
1975						327,700 ^g						
1977	32,630	104,080	<u>26,930</u>	<u>23,330</u>	22,930	355,900 ⁿ	243,290	561,430	<u>186,890</u>	<u>153,680</u>	140,310	2,279,900 ^h
1978	33,850	107,700	<u>27,140</u>	<u>23,980</u>	23,620	<u>381,860</u>	251,740	578,140	<u>190,730</u>	<u>160,200</u>	146,260	<u>2,455,240</u>
1980						439,600 ⁱ						2,347,400 ⁱ
1982	<u>38,430</u>	<u>121,610</u>	<u>27,990</u>	<u>26,090</u>	<u>26,190</u>	<u>506,070</u>	<u>284,030</u>	<u>642,330</u>	<u>204,990</u>	<u>182,320</u>	<u>168,790</u>	<u>3,302,202</u>
1985	42,260	133,210	<u>28,650</u>	<u>27,790</u>	28,300	<u>625,090</u>	310,930	695,110	<u>216,380</u>	<u>200,900</u>	187,940	<u>4,124,170</u>
1987	<u>45,030</u>	<u>141,550</u>	<u>29,100</u>	<u>28,980</u>	<u>29,800</u>	<u>719,600</u>	<u>330,270</u>	<u>732,680</u>	<u>224,320</u>	<u>214,320</u>	<u>201,900</u>	<u>4,782,900</u>

^a The figures which are underlined are interpolations

^b Refer to Reference 3

^c Refer to Reference 4

^d Refer to Reference 5 and Equation 2-1

^e Refer to Reference 6 and Equation 2-1

^f Refer to Reference 7

^g Refer to Reference 2

^h Refer to Reference 8

ⁱ Refer to Reference 9

^j Includes transportation, communication, other utilities, wholesale, retail, finance, insurance, real estate, services, and governmental employment

2.5 EMISSIONS SUBJECT TO INVENTORY

The volatile organic compounds (VOC) to be inventoried, although commonly referred to as hydrocarbons, are not all hydrocarbons in the strict chemical sense. When referred to as "total hydrocarbons" (THC), various hydrocarbon derivatives containing oxygen, chlorine, and other elements beside hydrogen and carbon are included. For purposes of this study, TVOC is equivalent to THC as defined above, with the following qualification.

A volatile organic compound is defined as "any compound of carbon that has a vapor pressure greater than 0.1 millimeters of mercury (≈ 0.002 psia) at standard conditions, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate" (Reference 19).

The majority of VOC that are released into the atmosphere ultimately engage in photochemical oxidant formation processes. Some VOC are more reactive than others and therefore have a quicker, more localized impact on air quality. For this reason, VOC can be described by their propensity to undergo photochemical reactions. There have been various reactivity schemes developed that attempt to quantify this phenomenon. These schemes vary from the relatively simple two-level system of methane/nonmethane to more complex multiple-level schemes (References 20 and 21). As specified in the task assignment for the project, PES employed the two-level scheme described in Reference 22. This scheme is discussed in Section 3.0.

REFERENCE FOR SECTION 2.0

1. Telephone conference call with Ron McHenry, Region VI, EPA, Marty Kahel, Steve Smallwood, Florida DER and Bill LaFroos, Bill Mustard, Florida DOT, July 14, 1978
2. Florida Statistical Abstract 1977, Bureau of Economic and Business Research College of Business Administration, University of Florida
3. Florida Employment Directions 1974-1985, Fort Lauderdale-Hollywood SMSA
4. Florida Employment Directions 1974-1985, Miami SMSA
5. Florida Employment Directions 1974-1985, Jacksonville SMSA
6. Florida Employment Directions 1974-1985, Orlando SMSA
7. Florida Employment Directions 1974-1985, West Palm Beach-Boca Raton SMSA
8. Economic Report of the Governor, 1977 Economic Forecast, January 1977, (Reubin Askew)
9. Florida Employment Directions 1970-1980, Florida Department of Commerce, Division of Employment Security, Research and Statistics, February 1976
10. Telephone communication with Louis E. Watson, Broward County Agricultural Extension Director, July 27, 1978
11. Existing and future land use figures for Broward and Palm Beach Counties, Environmental Protection Agency, July 24, 1978
12. Land Use Characteristics: 1960-1970, Metropolitan Dade County, Dade County Environmental Resources Management, July 5 and July 17, 1978
13. Telephone communication with Roge Mehta, Deputy Director of Jacksonville Area Planning Board, July 27, 1978
14. Telephone communication with Harold Hill, Planner, Orange County Planning Department, July 27, 1978
15. Orange County Land Use figures, Department of Environmental Regulations, July 31, 1978

16. Telephone communication with Gary Hines, Palm Beach County Area Planning Board, July 26, 1978
17. Telephone communication with Clayton Hutchinson, Orange County Agricultural Extension Office, July 26, 1978
18. Communication with William P. Stone, Broward County Agricultural Extension Service, July 31, 1978
19. Regulatory Guidance for Control of Volatile Organic Compound Emissions From 15 Categories of Stationary Sources, GCA/Technology Division, Bedford, MA. Prepared for the U.S. Environmental Protection Agency, Chicago, IL, under Contract No. 68-02-2887, Work Assignment No. 3, April 1978
20. Trijonis, J.C. and Arledge, K.W., "Utility of Reactivity Criteria in Organic Emission Control Strategies for Los Angeles," TRW Environmental Services, Redondo Beach, CA. Prepared for the U.S. Environmental Protection Agency, Research Triangle Park, NC, under Contract No. 68-02-1735, December 1975
21. Pittis, J.N., "Keys to Photochemical Smog Control," Environmental Science and Technology, Volume II, No. 5, May 1977
22. Workshop on Requirements for Nonattainment Area Plans, U.S. Environmental Protection Agency, March 1978

4.0 METHODOLOGY DEVELOPMENT AND VOC EMISSIONS ESTIMATES

4.1 INTRODUCTION

This section of the report provides detailed descriptions of the methodologies employed and the resulting VOC emissions estimates by source category inventoried. The presentation format adheres, in general, to that outlined in the "Summary Format for VOC" reported in Reference 1 and illustrated in Table 1-1.

Methodology development was based upon three primary sources of information, namely publications, governmental agencies, and information received directly from potential VOC emitting companies located in the study area. The latter source was relied on extensively in estimating VOC emissions from point sources and some of the larger area sources. Information extracted from publications and/or received from governmental agencies are addressed in detail in the appropriate source category, thereby requiring no further discussion at this point. However, since the acquisition and analysis of data received from potential VOC emitting sources represented a significant amount of effort, and since the results are mentioned throughout this report, the following provides an introductory discussion about the methodologies employed.

4.1.1 POINT SOURCE VISITS AND EVALUATION

As a starting point for this task, PES engineers prepared lists of potential VOC point sources by examining existing agency inventories (for the most part these inventories did not address VOC sources). Lists were augmented with information from National Business Lists, Inc., Directory of Florida Manufactures (Reference 2), local telephone directories, and from guidance provided by local air pollution control agencies. As an additional aid in preparing and prioritizing the lists, information reported in Reference 3 was used. This Reference identifies major Standard Indus-

trial Classifications (SICs) associated with major VOC emitting sources, along with emission estimates based on employee population (refer to Table 4-1).

Because of stringent time constraints, a maximum 2 week data gathering period was allowed for each county. For the relatively small counties this proved to be sufficient time, but for large counties, such as Dade and Duval, more time was required because of the large number of potential point sources. Obviously, there was not enough time for extensive data collection and engineering analysis of each facility. Therefore, in some instances, generalized assumptions were made to allow source assessments which inadequate data would otherwise have prohibited.

Results of point source evaluations are presented in the appropriate evaporative source/categories. Appendix A contains a copy of the questionnaire that was used as a guide during facility visits.

4.1.2 IDENTIFICATION AND EVALUATION OF EVAPORATIVE AREA SOURCES

The identification and evaluation of evaporative area sources are difficult tasks in an emissions inventory. One of two approaches can be employed to resolve these difficulties: (1) identify and survey all potential sources, or (2) employ a generalized estimating method. Because of resource availability, time requirements, and the difficulty of obtaining a respectable return rate from a mail out survey, a generalized estimating approach was employed to determine most evaporative area source emissions.

Many large evaporative area sources were identified and evaluated during potential point source visits, as discussed earlier. To determine emissions from the remaining area sources, information from Reference 3 was again employed (refer to Table 4-1). Research into the use of data from similar studies (References 4 and 5) did

Table 4-1. ESTIMATED RANGES OF EVAPORATIVE VOC EMISSIONS PER EMPLOYEE WITHIN SELECTED SIC CATEGORIES

General 2-Digit SIC Categories	Specific 4-Digit SIC Categories	Emission Range (ton/yr/employee)
20 Food	Alcoholic beverages (2085)	0.075
21 Tobacco	Not surveyed	-----
22 Textiles	Coatings (2295), Non-wovens (2297), Dyeing (2231)	.563 - .89
23 Apparel	Not surveyed	-----
24 Lumber & Wood	Finished product (2435), (2492)	.024 - .07
25 Furniture & fixtures	SIC: (2511), (2514), (2521) (2522), (2542)	.08 - .24
26 Paper	Bags, box (2643), (2651), (2653), Coated papers (2641)	1.0 - 1.25
27 Printing	Newspaper publishing (2711) Comm. printing (2751), (2754)	.08 - .5
28 Chemicals	Organic chemical mfg. (2821), (2823), (2861), Chemical coating (2851), Specialty chemicals (2842), Carbon black (2895)	.32 - .357
29 Petroleum	All companies	.11 - 2.12
30 Rubber, plastic	Footwear (3021), Plastics (3041), (3069)	.16 - .256
31 Leather	Mfg. shoes (3149), Bags (3161), Personal goods (3172), Leather refinishing (3111)	.13
32 Stone, clay, etc.	Glass products (3221)	.03 - .092
33 Primary metal	Treating (3398), Tubing (3357)	.10 - .267
34 Fabricated metal	Screws (3451-2), Metal stampings (3469), Plating (3471), Tool mfg. (3423), (3429)	.19 - .281
35 Machinery	Industrial machines	.03 - .048
36 Electrical machinery	Devices (3643), Semicond. (3674)	.04 - .07
37 Transportation equipment	Boats (3732), (3731), Truck bodies (3711), 13, 14, 15)	.11 - .855
38 Instruments	Optical frames (3832) Precision instruments (3825)	.04 - .199
39 Miscellaneous manufacturing	Jewelry (3914-15), Toys (3944), Writing instr. (3951, 53)	.07 - .259
5171 Bulk terminals	All surveyed as point sources	-----

not warrant their use. Therefore, employee populations of the SIC numbers presented in Table 4-1 were received from Reference 2 and Bureau of Census information (Reference 6) and applied to average emission factors for each employee. Evaporative point source data were deleted from this total, thereby resulting in potential VOC emissions attributed to evaporative area sources. VOC SIC numbers were then distinguished by source category, i.e., industrial surface coating, industrial processes, degreasing, graphic arts, adhesives, etc. Each of these categories is discussed in subsequent sections. Although this approach is highly speculative in nature, it provided a means of estimating emissions in lieu of more substantive information.

4.2 PETROLEUM INDUSTRY

The petroleum industry can be divided into three broad categories: (1) petroleum production (i.e., oil wells) and transportation, (2) petroleum refining, and (3) transportation and marketing of finished petroleum products. A diagram depicting the flow of gasoline, which is the major petroleum product of concern, for these marketing operations and potential VOC emissions points is illustrated in Figure 4-1. Data on the petroleum industry's operations were collected by various means and are reported in the remainder of this section.

4.2.1 PRODUCTION AND REFINING

There are three petroleum operations encompassed by this category: petroleum refineries, oil and gas production fields, and natural gas/gasoline processing plants. After a careful review of the information sources to be discussed, none of these operations were found to occur in the study area.

5. EMISSIONS INVENTORY AND GROWTH PROJECTIONS

An inventory of the emissions from all sources in Palm Beach County was performed for the base year 1977. This inventory was a cooperative effort between the following agencies:

- U.S. Environmental Protection Agency and its consultant, Pacific Environmental Services, Inc.;
- Florida Department of Environmental Regulation;
- Florida Department of Transportation;
- Palm Beach County Health Department; and,
- Numerous local public and private organizations.

The inventory was projected to 1982 and 1987. These years have been set by law as deadlines for attainment of the National Ambient Air Quality Standards. These projections were based on population, employment and land use.

A. Emissions Inventory

The inventory considers VOC emissions from both point sources and area sources. The sources can be categorized into four major areas: Evaporative Sources, Fuel Combustion, Solid Waste Disposal and Mobile Sources. Activities which emit pollutants were assigned to these categories and further divided into specific areas. Each activity had its VOC emission estimated for the 1977 base year. A total of the emissions by general areas for 1977 is shown in TABLE 5A-1.

TABLE 5A-1

1977 BASE YEAR EMISSIONS INVENTORY SUMMARY
CLASS II VOC EMISSIONS

<u>SOURCE</u>	<u>TONS/YEAR</u>
Storage, Transportation and Marketing of Petroleum Products	2,354 ¹
Industrial Processes	43
Industrial Surface Coating	411
Non-Industrial Surface Coating	1,230
Other Solvent Use	1,970
Other Miscellaneous Sources	9,427
Mobile Sources	<u>31,447</u>
TOTAL Volatile Organic Compound Emissions	46,882

¹Does not include information concerning fuel storage at airports.

Mobile sources account for approximately 67% of the emissions. The remaining 33% are from stationary sources (industry, petroleum, etc.).

Major concern about stationary sources centers around those known as Class A sources. An industry or point activity which emits 100 tons/year or more is a Class A source. The Class A sources in Palm Beach County are listed below:

Atlantic Sugar Association
Gulf and Western
Osceola Farms Co.
Sugarcane Growers Cooperative
Telisman Sugar
United States Sugar, Bryant Mill
Pratt & Whitney Aircraft

Mobile source emissions are composed of a number of elements, each having its own method of estimation. These elements are highway vehicles, off-highway vehicles, rail, aircraft and vessels. Each element was estimated for 1977 and projected to 1982 and 1987.

Highway vehicle emission estimates were prepared by the Florida Department of Transportation using a computer program to convert vehicle miles travelled to hydrocarbon emissions. The VMT was based on the Year 2000 Cost Feasible Transportation Plan for the West Palm Beach Urban Study Area and existing estimates. The

following vehicle mix was used to obtain the total emissions.

Light Duty Vehicles	80.3%
Light Duty Trucks	11.6%
Heavy Duty Trucks, Gas	4.5%
Heavy Duty Trucks, Diesel	3.1%
Motorcycles	0.5%

Off-highway vehicles account for motor driven equipment not used for transport on the open road. This category includes agricultural equipment, lawn and garden equipment, industrial equipment, heavy construction equipment and off-road motorcycles. Emission estimates were made for each class based on given emission rates.

Emissions from rail operations were provided by FDOT based on estimates of the locomotives' miles of travel. This figure was calculated as a percentage of total locomotive miles of travel system-wide. Total system fuel was also obtained in the same manner. Fuel consumption was pro-rated to each county based on total miles of track within the county.

Aircraft emissions were based on landing/takeoff cycles as indicated in the Florida Aviation System Plan. Figures published in the report were interpolated to provide counts for the specific years in question. For general aviation airports which had no aircraft mix, the national general aviation mix was assumed. For commercial operations, the vehicle mix for spring 1977 was obtained from the Airline Guide which lists all commercial flights.

Vessels were separated into ocean-going and recreational boating. Emission calculations for vessels are based on fuel consumption while sitting at dockside and consumption while underway. Average figures for operation of engines were applied to estimates of the number of vessels in an area. These estimates were provided by Pacific Environmental Services.

B. Growth Projections

Growth projections were developed for 1982 and 1987 from the base year 1977. A number of factors were considered in the preparation of these projections. Major factors used include population, employment and land use.

Population figures for the area were obtained from the Florida Statistical Abstract (1977) prepared by the University of Florida. These figures were used for projections of emissions from stationary sources and to a lesser extent, some mobile sources.

The source of information for highway emissions was estimates of vehicle miles travelled developed by the staff of the Area Planning Board. The staff, serving the Metropolitan Planning Organization (MPO), prepared the Year 2000 Transportation System Plan. An interpolation between 1977 and 2000 was made to determine vehicle miles travelled for 1982 and 1987. The Florida Department of Commerce supplied employment figures for the county which were used by Pacific Environmental Services. Some local agencies reviewed and provided comments and input to the estimation of the

base year and projected employment totals.

The land use data base information was obtained from local planning agencies by Pacific Environmental Services. This data base was interpolated and projected to 1982 and 1987. Land use information was used mainly by Pacific Environmental Services to project agricultural emissions for the area.

The above items were the main components used to obtain growth factors. The factors used for both stationary and mobile sources by years, follows:

<u>SOURCE</u>	<u>1982</u>	<u>1987</u>
Stationary	0.97	0.93
Highway	1.30	1.60

The stationary sources had different growth rates, depending on the types of activity. The figures shown are a composite. Total emissions for the remaining mobile sources were determined by the Environmental Protection Agency (EPA) consultants, Pacific Environmental Services. Growth factors used to project base year figures to the future are not readily discernable.

7. PROJECTED EMISSION REDUCTIONS

The new guidelines issued by EPA raise the ozone standard to 0.12 ppm. Each area is now allowed an average of one exceedance per year over a three-year period. If this average exceeds one, the area in question is no longer in compliance.

The magnitude of the required emission reduction is based on a design value. The standard specifies that the appropriate design value is the concentration with the expected number of exceedances equal to one. In other words, the design value is that emission value which will require a reduction such that the standard will not be exceeded more than an average of once per year over a three-year period.

The determination of a design value considers actual emission readings and the total number of days monitored. Data sets that are 75% complete for the peak pollution potential season are generally acceptable. The peak pollution season for this area generally runs from May through mid-October. After totaling the number of valid days of data and adding days which appeared to be below the standard, EPA and FDER determined that Palm Beach County had data for 82% of the three-year period encompassing 1975, 1976 and 1977. Using this data, a design value of 0.13 ppm or 130 ppb was deemed appropriate for this area by EPA and FDER.

The formula used to calculate the amount of reduction required takes into account transported ozone and background readings. As previously discussed, transported ozone is that blown in from adjacent areas.

Additivity accounts for the amount of ozone which reacts with other compounds in the air and is converted prior to arrival at the monitored area. Background ozone readings account for natural sources and those not included in the inventory prepared by Pacific Environmental Services, Inc. for EPA. The formula used to determine the reduction required is as follows:

$$\%R = \frac{C_D - A(T_1 - T_2) - S}{C_D - A(T_1 + B)} \quad \text{where}$$

- R = Reduction
- C_D = Design Value
- T₁ = Transport Before Controls
- T₂ = Transport After Controls
- S = Standard
- B = Background
- A = Additivity

Values for these variables were determined by the Florida Department of Environmental Regulation. Inserting these values into the equation yields:

$$\%R = \frac{130 - .5(40 - 40) - 120}{130 - .5(40 + 40)} = \frac{10}{90} = .111 \text{ or } 11.1\%$$

When the reduction required is applied to the total emissions determined by the inventory for this area, the level of allowable emissions is 41,700 tons per year. This means a reduction of 5,208 tons per year from the initial inventory must be accomplished. This reduction requirement must be met from both stationary and mobile sources.

A program of controls was developed to reduce VOC emissions from both stationary and mobile sources. A summary of VOC emissions for each year from the different sources is shown in TABLE 7-1. These figures reflect the application of the emission reduction measures for both stationary and mobile sources.

TABLE 7-2

Highway Vehicle Emissions Summary

Area: Palm Beach County

Source	Present Reduction		Additional percent Reduction	1977 FACH Reduction	Reasonable Further Progress Factors									
	Percentage	Tons/Year			1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
VMT Growth Factor					1.12	1.18	1.24	1.30	1.36	1.42	1.48	1.54	1.60	2.38
FHVCP Reduction Factor			65	18,068	.83	.75	.67	.60	.53	.47	.42	.38	.35	.28
VMT/FHVCP Composite Factor					.93	.89	.83	.78	.72	.67	.62	.59	.56	.67
Transportation Control Measures														
Improved public transit	0.5	77	1.5	231	.995	.995	.99	.985	.985	.98	.98	.98	.98	.98
Exclusive bus and carpool lanes			1.0	155	1.00	1.00	1.00	1.00	1.00	1.00	1.00	.995	.99	.99
Areawide carpool programs			1.5	232	1.00	.995	.99	.985	.985	.985	.985	.985	.985	.985
Private car restrictions														
Long-range transit improvements														
On-street parking controls														
Park and ride and fringe parking lots			0.5	77	1.00	1.00	.995	.995	.995	.995	.995	.995	.995	.995
Pedestrian malls														
Employer programs to encourage car and van pooling, mass transit, bicycling and walking			1.0	155	1.00	1.00	.99	.99	.99	.99	.99	.99	.99	.99
Bicycle lanes and storage facilities														
Staggered work hours														
Road pricing to discourage single occupancy auto trips														
Controls on extended vehicle idling														
Traffic flow improvements	0.5	77	2.5	385	.995	.995	.995	.99	.985	.985	.98	.975	.97	.97
Alternative fuels or engines and other fleet vehicle controls														
Other than light duty vehicle retrofit														
Extreme cold start emission reduction progs.														
Inspection /maintenance														
Total Highway Vehicle Reduction Factor	.99		.08		.92	.88	.80	.73	.68	.63	.58	.56	.49	.60
Highway Vehicle Emissions (Tons/Year)		154		1235	25573	24461	22238	20242	18902	17512	16122	15288	13621	16678
Vehicle Miles Traveled (Miles/Day)				27,501	30,791	32,435	34,090	35,725	37,370	39,015	40,659	42,304	43,949	45,594

7-4

Emission reduction estimates for stationary sources were determined from the application of the RACT rules. These rules require stationary sources to apply control technology that is reasonably available in order to achieve the lowest emission. These rules were prepared by the Florida Department of Environmental Regulation. Enforcement of these rules is the responsibility of the Palm Beach County Environmental Control Board.

Mobile sources emissions will be reduced through the implementation of locally selected Transportation Control Measures (TCMs) chosen from the list distributed by EPA. A total of six of the nineteen measures were selected as appropriate for this area at this time. Estimates of the reductions expected from these measures were made using the Control Technology Guides prepared and distributed by EPA. Estimates made for those measures, for which CTGs were not available were based on discussions with people familiar with air quality planning. VOC emissions from mobile highway sources with the application of Transportation Control Measures is shown in TABLE 7-2.

Based on estimates of emissions after controls are implemented, the West Palm Beach Urban Study Area will be able to reach attainment of the NAAQS for ozone by December 31, 1982. With attainment by this date possible, there is no need for implementation of an Inspection and Maintenance Program.

To assure that attainment is reached by the 1982 deadline, a schedule has been developed. The schedule contains annual levels of reduced emissions that should be met. Projected levels of actual emissions are lower than the levels contained in the schedule. The difference between the required levels and actual levels allow for the introduction of new sources of VOC emissions in the area. These new sources will be stationary and subject to the RACT rules. TABLE 7-3 contains the levels of emissions required to meet the standards, the projected actual emissions and the amount available for new sources.

TABLE 7-3

VOC EMISSIONS
(tons)

<u>Year</u>	<u>Scheduled Emissions</u>	<u>Actual Emissions</u>	<u>New Sources</u>
1979	44,824	44,704	120
1980	43,783	43,626	157
1981	42,741	41,451	1,290
1982	41,700	37,988	3,712
1983	41,700	34,108	7,592
1984	41,700	32,492	9,208
1985	41,700	31,126	10,574
1986	41,700	30,326	11,374
1987	41,700	30,070	11,630

Standard to be Achieved = 41,700

FIGURE 7-1 presents this information in graphic form. The difference between the two lines is the amount available for new sources.

With the implementation of the RACT rules for stationary sources and the Transportation Control Measures for mobile sources, a reduction of 19% of the VOC emissions can be achieved. This reduction is greater than the 11.1% required and provides ample allowances for new sources of emission in the area.

FIGURE 7-1

VOC EMISSIONS

