

# Florida Department of Environmental Regulation

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

Lawton Chiles, Governor

Carol M. Browner, Secretary

## STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION NOTICE OF PERMIT

Mr. J. K. Sillan  
Acting Manager-Plant Engineering  
United Technologies Corp./  
Pratt & Whitney  
P. O. Box 109600  
West Palm Beach, Florida 33410-9600

May 8, 1991

Enclosed is construction permit AC 50-190292 to construct a developmental gas turbine at your engine testing facility in West Palm Beach, Florida. This permit is issued pursuant to Section 403, Florida Statutes.

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

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT  
OF ENVIRONMENTAL REGULATION

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

Copy furnished to:

I. Goldman, SE District  
W. Dail, Pratt & Whitney  
E. Allen III, & Pratt Whitney  
G. Sacco, PBCHD

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this NOTICE OF PERMIT and all copies were mailed before the close of buisness on 5-9-91.

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

Kum J. Lee  
Clerk

5-9-91  
Date

Final Determination

United Technologies Corp.  
Pratt & Whitney  
Palm Beach County  
West Palm Beach, Florida

Developmental Gas Turbine Model GG-8  
Permit No. AC 50-190292

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

April 23, 1991

## Final Determination

The Technical Evaluation and Preliminary Determination for the permit to construct a developmental gas turbine at United Technologies-Pratt & Whitney in West Palm Beach, Palm Beach County, Florida, was distributed on March 5, 1991. The Notice of Intent to Issue was published in the Palm Beach Post on March 27, 1991. Copies of the evaluation were available for public inspection at the Department's Tallahassee and Southeast District offices, and Palm Beach County Health Department.

No comments were submitted on the Department's Intent to Issue the permit. The final action of the Department will be to issue construction permit AC 50-190292 as proposed in the Technical Evaluation and Preliminary Determination.



# Florida Department of Environmental Regulation

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

Lawton Chiles, Governor

Carol M. Browner, Secretary

**PERMITTEE:**

United Technologies Corp.,  
Pratt & Whitney  
P. O. Box 109600  
West Palm Beach, FL 33410-9610

Permit Number: AC 50-190292  
Expiration Date: Dec. 31, 1992  
County: Palm Beach  
Latitude/Longitude: 26°53'42"N  
80°21'36"W  
Project: Developmental Gas  
Turbine - Model GG-8

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

For the installation of a developmental gas turbine (Model GG-8). This project will be located in West Palm Beach, Palm Beach County, Florida. The UTM coordinates of this site are Zone 17, 562 km E and 2976 km N.

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

Attachments are listed below:

1. Application to Operate/Construct Air Pollution Sources, DER Form 17-1.202(1) received on December 13, 1990.

PERMITTEE:  
United Technologies Corp.

Permit No. AC 50-190292  
Expiration Date: Dec. 31, 1992

**GENERAL CONDITIONS:**

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

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

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

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

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

PERMITTEE:  
United Technologies Corp.

Permit No. AC 50-190292  
Expiration Date: Dec. 31, 1992

GENERAL CONDITIONS:

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

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

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

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

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

- a. a description of and cause of non-compliance; and
- b. the period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the 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.

PERMITTEE:  
United Technologies Corp.

Permit No. AC 50-190292  
Expiration Date: Dec. 31, 1992

**GENERAL CONDITIONS:**

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

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

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

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

13. This permit also constitutes compliance with New Source Performance Standards.

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

- a. Upon request, the permittee shall furnish all records and plans required under Department rules. The retention period for all records will be extended automatically, unless otherwise stipulated by the Department, during the course of any unresolved enforcement action.
- b. The permittee shall retain at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation), copies of all reports required by this permit, and records of all data used to complete the application for this permit. The time period of retention shall be at least three years from the date of the sample, measurement, report or application unless otherwise specified by Department rule.



**PERMITTEE:**  
United Technologies Corp.

**Permit No. AC 50-190292**  
**Expiration Date: Dec. 31, 1992**

**GENERAL CONDITIONS:**

c. Records of monitoring information shall include:

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

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

**SPECIFIC CONDITIONS:**

1. The construction and operation of the gas turbine Model GG-8 shall be in accordance with the capacities and specifications stated in the application.

2. The nitrogen oxides emission rate for the gas turbine Model GG-8 shall not exceed the following limits:

Natural Gas:	114 lb/hr, 1.23 ton/yr (413 lb/MMcf)
Jet A Fuel:	129 lb/hr, 5.75 ton/yr (67.8 lb/M gal)
No. 2 Fuel Oil:	123 lb/hr, 33.00 ton/yr (67.8 lb/M gal)

3. The sulfur dioxide emission rate for the gas turbine Model GG-8 shall be limited by the following:

Natural Gas:	150 ppm @ 15% O <sub>2</sub>
Jet A Fuel:	0.8% (wt) sulfur (max)
No. 2 Fuel Oil:	0.8% (wt) sulfur (max)

4. Visible emissions from the gas turbine Model GG-8 shall not exceed 20% opacity.

5. The fuel input to gas turbine (Model GG-8) shall be limited to the following:

Natural Gas:	277.1 MMBtu/hr and 5.96 MM cf/yr
Jet A Fuel:	251.6 MMBtu/hr and 0.17 MM gal/yr
No. 2 Fuel Oil:	255.2 MMBtu/hr and 0.97 MM gal/yr

PERMITTEE:  
United Technologies Corp.

Permit No. AC 50-190292  
Expiration Date: Dec. 31, 1992

**SPECIFIC CONDITIONS:**

The fuel flow to the turbine shall be metered and recorded.

6. The hours of operation of the turbine shall be limited to the following:

Natural Gas: 40 hours/year  
Jet A Fuel: 163 hours/year  
No. 2 Fuel Oil: 993 hours/year

7. Compliance shall be demonstrated in accordance with the following:

NOx: EPA Method 7E (No.2 Fuel Oil only)  
SO<sub>2</sub>: Sulfur Analysis as reg'd by 40 CFR 60 Subpart GG  
Opacity: EPA Method 9

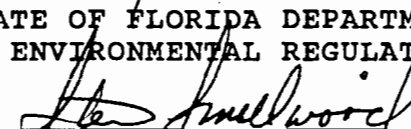
The Southeast District office shall be notified in writing 15 days or more prior to the compliance tests. Compliance tests shall be run at 90-100% of permitted capacity. Sampling facilities, source sampling, and reporting shall be in accordance with F.A.C. Rule 17-2.700 and 40 CFR 60, Appendix A. Compliance test results, in accordance with F.A.C. Rule 17-2.700, and 40 CFR 60, Appendix A shall be submitted to the Southeast District office within 45 days after completion of the tests.

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

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

Issued this 7<sup>th</sup> day  
of May, 1991

STATE OF FLORIDA DEPARTMENT  
OF ENVIRONMENTAL REGULATION

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

Check Sheet

Company Name: United Technologies Corp. - Pratt & Whitney  
Permit Number: AC50-190292  
PSD Number: \_\_\_\_\_  
Permit Engineer: \_\_\_\_\_

**Application:**

- |  |                          |
|--|--------------------------|
| <input type="checkbox"/> Initial Application         | Cross References:        |
| <input type="checkbox"/> Incompleteness Letters      | <input type="checkbox"/> |
| <input type="checkbox"/> Responses                   | <input type="checkbox"/> |
| <input type="checkbox"/> Waiver of Department Action | <input type="checkbox"/> |
| <input type="checkbox"/> Department Response         |                          |
| <input type="checkbox"/> Other                       |                          |

**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

BEST AVAILABLE COPY

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

Article Addressed to:  
 J. K. Sillan  
 Testing Dept. Plant Eng.  
 United Tech. Corp. / Pratt & Whitney  
 P.O. Box 109600  
 West Palm Beach, FL 33410-9600

4. Article Number  
 P 407 852 687

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

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature - Addressee  
 X

6. Signature - Agent  
 X

7. Date of Delivery  
 MAY 14 1991

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

PS Form 3811 1989 U.S.G.P.O. 1989-238-815 DOMESTIC RETURN RECEIPT

PS Form 3800, June 1985

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

Postage	\$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	\$
Postmark or Date	5-9-91 RTE 50-190292

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

P 407 852 687



P.O. Box 109600  
West Palm Beach, FL 33410-9600  
(407) 796-2000

Government Engine Business

CERTIFIED MAIL

April 1, 1991

RECEIVED

APR 2 1991

DER-BAQM

Mr. Claire Fancy  
Deputy Chief  
Bureau of Air Quality Managment  
Department of Environmental Regulation  
2600 Blair Stone Road  
Tallahassee, Fl. 32399-2400

Re: Gas Generator - Permit No. AC 50-190292

Dear Mr. Fancy:

Attached is the "Proof of Publication" from The Palm Beach Post for the above referenced permit which was published in the legal section of The Post on Wednesday, March 27, 1991.

Your assistance in issuing the permit is appreciated. Should you have any questions please contact Lisa Edwards at (407) 796-5655.

Yours truly,

W. J. Dail, Manager  
Utilities Operations/Environmental Affairs

pc(0113a)

- cc: E. Allen
- S. Bullock
- L. Edwards
- I. Goldman - DER, WPB ✓
- J. Pruszynski
- J. Stormer - PBCHD ✓
- File - Air Pollution Correspondence
- John Reynolds 4-3-91 Rjm

# POST OFFICE TO ADDRESSEE EXPRESS MAIL NEXT DAY SERVICE



**NB**

For Postal Use

<b>ORIGIN</b>		Date In:	Postage
Post Office ZIP Code:	Time In: <input type="checkbox"/> A.M. <input type="checkbox"/> P.M.		\$
Initials of Receiving Clerk:	Weight: ____ lbs. ____ oz.	<b>FEES</b>	Return Receipt \$
<b>ACCEPTANCE</b>			C.O.D. \$
<input type="checkbox"/> Next Day Delivery	or	<input type="checkbox"/> Second Day Delivery	
<input type="checkbox"/> By 12 Noon	or	<input type="checkbox"/> By 3:00 P.M.	
<input type="checkbox"/> Express Mail Military Service		<input type="checkbox"/> International Express Mail	Total Postage & Fees \$
		Country Code _____	

Express Mail Corporate Account No.:	Federal Agency Account No.:
---	--------------------------------

For Customer Use

**FROM:**

W. J. Dail

West Palm Beach *Maatt*

<b>DESTINATION</b>	Date of Delivery:	Time of Delivery: <input type="checkbox"/> A.M. <input type="checkbox"/> P.M.
Signature of Addressee or Agent		
<b>X</b>		
<b>DELIVERY WAS ATTEMPTED</b>	Date:	Time: <input type="checkbox"/> A.M. <input type="checkbox"/> P.M.
Signature of Delivery Employee		2.
1.		
<small>I wish delivery to be made without obtaining the signature of the addressee or the addressee's agent (if in the judgment of the delivery employee, the article can be left in a secure location) and I authorize the delivery employee to sign that the shipment was delivered and understand that the signature of the delivery employee will constitute valid proof of delivery.</small>		
Waiver of Signature and Indemnity (Domestic Only) SIGNED: _____		

**ADDRESSEE'S COPY**

Telephone Number: \_\_\_\_\_

**TO: DER-BAQM**

**RECEIVED**

**SEP 2 1991**

# RECEIVED THE PALM BEACH POST

APR 2 1991 Published Daily and Sunday  
West Palm Beach, Palm Beach County, Florida

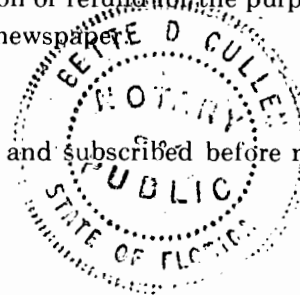
## PROOF OF PUBLICATION

DER - BAQM  
STATE OF FLORIDA  
COUNTY OF PALM BEACH

Before the undersigned authority personally appeared Chris Bull  
who on oath says that she/he is Class. Sales Mgr. of The Palm Beach Post,  
a daily and Sunday newspaper published at West Palm Beach in Palm Beach County,  
Florida; that the attached copy of advertising, being a \_\_\_\_\_

Notice  
in the matter of intent to issue  
in the \_\_\_\_\_ Court, was published in said newspaper in  
the issues of March 27, 1991

Affiant further says that the said The Post is a newspaper published at West Palm Beach, in said Palm Beach County, Florida, and that the said newspaper has heretofore been continuously published in said Palm Beach County, Florida, daily and Sunday and has been entered as second class mail matter at the post office in West Palm Beach, in said Palm Beach County, Florida, for a period of one year next preceding the first publication of the attached copy of advertisement; and affiant further says that she/he has neither paid nor promised any person, firm or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper.



*Chris Bull*

Sworn to and subscribed before me this 27 day of March A.D. 19 91

*Bette D. Cullen*  
NOTARY PUBLIC STATE OF FLORIDA  
MY COMMISSION EXP. DEC. 14, 1994  
BONDED THRU GENERAL INS. UND.

NO. 344643  
State of Florida  
Department of  
Environmental Regulation  
Notice of Intent to Issue  
The Department of Environmental Regulation hereby gives notice of its intent to issue a permit to United Technologies Corp., Pratt & Whitney, Post Office Box 109600, West Palm Beach, Florida, 33410-9600, to install a developmental gas turbine designated Model GG-8 at their facility in West Palm Beach, Florida. A determination of Best Available Control Technology (BACT) was not required. The Department is issuing this intent to issue for the reasons stated in the Technical Evaluation and Preliminary Determination. A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within fourteen (14) days of publication of this notice. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, Florida Statutes. The Petition shall contain the following information:  
(a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed  
(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;  
(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;  
(d) A statement of the material facts disputed by Petitioner, if any;  
(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;  
(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and

(g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.  
If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this Notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C. The application is available for public inspection during business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at: Department of Environmental Regulation  
Bureau of Air Regulation  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400  
Department of Environmental Regulation  
Southeast Florida District  
1900 S. Congress Avenue,  
Suite A  
West Palm Beach, Florida 33406  
Palm Beach County Health Dept.  
Division of Environmental Science and Engineering  
901 E. Evernia Street  
West Palm Beach, Florida 33402  
Any person may send written comments on the proposed action to Mr. Barry Andrews at the Department's Tallahassee address. All comments mailed within 14 days of the publication of this notice will be considered in the Department's final determination.  
PUB: Palm Beach Post  
March 27, 1991



PM  
3-21-91  
West Palm Beach

File Copy

P.O. Box 109600  
West Palm Beach, FL 33410-9600  
(407) 796-2000

Government Engine Business

March 20, 1991

RECEIVED  
MAR 25 1991  
DER-BAQM

Palm Beach Post & Times  
Legal Advertising Department  
2751 South Dixie Highway  
West Palm Beach, Florida 33405

Attn: Legal Advertising

Gentlemen:

Please publish the attached notice one time only in the Legal Advertisement Section of the Palm Beach Post on Wednesday, March 27, 1991.

It is requested that you prepare an affidavit of publication for submission to the Florida Department of Environmental Regulation (DER). Please notify Lisa Edwards of our office (796-5655) when it is ready for pickup.

Please forward the bill to the following address:

W. J. Dail  
Pratt & Whitney  
P.O. Box 109600 - Mail Stop 717-03  
West Palm Beach, Fl. 33410-9600

Sincerely,

W. J. Dail, Manager  
Utilities Operations/Environmental Affairs

pc(1kh\0066a)

Attachment

cc: S. Benyon - DER-WBP  
L. Edwards  
C. Fancy - DER - Tallahassee  
J. Pruszynski  
File - Air Pollution Correspondence



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

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- (c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;
- (d) A statement of the material facts disputed by Petitioner, if any;
- (e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;
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Department's final action may be different from the position taken by it in this Notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

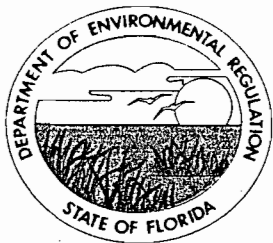
The application is available for public inspection during business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

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

Department of Environmental Regulation  
Southeast Florida District  
1900 S. Congress Avenue, Suite A  
West Palm Beach, Florida 33406

Palm Beach County Health Dept.  
Division of Environmental Science  
and Engineering  
901 E. Evernia Street  
West Palm Beach, Florida 33402

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# Florida Department of Environmental Regulation

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

Lawton Chiles, Governor

Carol M. Browner, Secretary

March 6, 1991

Mr. Brian Beals  
Air Enforcement Branch  
U.S. EPA - Region IV  
345 Courtland Street, N.E.  
Atlanta, Georgia 30365

Dear Mr. Beals:

Attached is a construction permit the Department is proposing to issue for United Technologies-Pratt & Whitney to build a developmental gas turbine at their engine testing facility in West Palm Beach, Florida. At the applicant's request, the Department reduced the allowable operating hours so that PSD emission levels would not occur. Therefore, this is a "synthetic minor" source. Also, the permit is proposed with an exemption from NOx limits as provided in 40 CFR Part 60, Section 60.332(h).

We would appreciate any comments you may have.

Sincerely,

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

CHF/JR/plm

Attachment

c: I. Goldman, SED  
G. Sacco, PBCHD

P 407 853 177

RECEIPT FOR CERTIFIED MAIL

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

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

PS Form 3800, June 1985

Sent to Mr. J. K. Sillan, United	
Street and No. Technologies	
P.O. Box 109600	
P.O. State and ZIP Code West Palm Beach, FL 33410-9600	
Postage	\$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	\$
Postmark or Date Mailed: 3-6-91 Permit: AC 50-190292	

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

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

3. Article Addressed to:  Mr. J. K. Sillan Acting Manager-Plant Engineering United Technologies Corp. Pratt & Whitney P. O. Box 109600 West Palm Beach, FL 33410-9600	4. Article Number  P 407 853 177  Type of Service: <input type="checkbox"/> Registered <input type="checkbox"/> Insured <input checked="" type="checkbox"/> Certified <input type="checkbox"/> COD <input type="checkbox"/> Express Mail <input type="checkbox"/> Return Receipt for Merchandise
5. Signature - Addressee  X	Always obtain signature of addressee or agent and DATE DELIVERED.
6. Signature - Agent  X <i>T. Mills</i>	8. Addressee's Address (ONLY if requested and fee paid)
7. Date of Delivery  <i>3-8</i>	

PS Form 3811, Apr. 1989

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

DOMESTIC RETURN RECEIPT



# Florida Department of Environmental Regulation

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

Lawton Chiles, Governor

Carol M. Browner, Secretary

March 5, 1991

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. J. K. Sillan  
Acting Manager-Plant Engineering  
United Technologies Corp./  
Pratt & Whitney  
P. O. Box 109600  
West Palm Beach, Florida 33410-9600

Dear Mr. Sillan:

Attached is one copy of the Technical Evaluation and Preliminary Determination and proposed permit for installation of the GG-8 gas turbine at your West Palm Beach facility.

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

Sincerely,

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

CHF/JR/kt

Attachments

cc: I. Goldman, SE District  
W. Dail, Pratt & Whitney  
E. Allen III, & Pratt Whitney  
G. Sacco, PBCHD

BEFORE THE STATE OF FLORIDA  
DEPARTMENT OF ENVIRONMENTAL REGULATION

In the Matter of  
Application for Permit by:

United Technologies Corporation/  
Pratt & Whitney  
P. O. Box 109600  
West Palm Beach, Florida 33410-9600

---

DER File No. AC 50-190292

INTENT TO ISSUE

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

The applicant, United Technologies Corp., Pratt & Whitney, applied on December 13, 1990, to the Department of Environmental Regulation for a permit to install a developmental gas turbine designated Model GG-8 at their facility in West Palm Beach, Palm Beach County, Florida.

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

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

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

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

The Petition shall contain the following information:

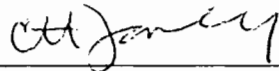
- (a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;
- (b) A statement of how and when each petitioner received notice of the Department's action or proposed action;
- (c)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

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

specified above and be filed (received) within 14 days of publication of this notice in the Office in General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT  
OF ENVIRONMENTAL REGULATION



---

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

Copies furnished to:

I. Goldman, SE District  
W. Dail, Pratt & Whitney  
E. Allen III, & Pratt Whitney  
G. Sacco, PBCHD



CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this NOTICE OF INTENT TO ISSUE and all copies were mailed before the close of business on 3-6-91.

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

Patricia Manning  
Clerk

3-6-91  
Date

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

The Department of Environmental Regulation hereby gives notice of its intent to issue a permit to United Technologies Corp., Pratt & Whitney, Post Office Box 109600, West Palm Beach, Florida, 33410-9600, to install a developmental gas turbine designated Model GG-8 at their facility in West Palm Beach, Florida. A determination of Best Available Control Technology (BACT) was not required. The Department is issuing this Intent to Issue for the reasons stated in the Technical Evaluation and Preliminary Determination.

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

The Petition shall contain the following information:

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

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the

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

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

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

Department of Environmental Regulation  
Southeast Florida District  
1900 S. Congress Avenue, Suite A  
West Palm Beach, Florida 33406

Palm Beach County Health Dept.  
Division of Environmental Science  
and Engineering  
901 E. Evernia Street  
West Palm Beach, Florida 33402

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

Technical Evaluation  
and  
Preliminary Determination

United Technologies Corp.  
Pratt & Whitney  
Palm Beach County  
West Palm Beach, Florida

Developmental Gas Turbine Model GG-8  
Permit No. AC 50-190292

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

March 5, 1991

## I. Application Information

### A. Applicant

United Technologies Corp.  
Pratt & Whitney  
P. O. Box 109600  
West Palm Beach, Florida 33410-9600

### B. Request

The Department received a complete application on December 13, 1990, for a permit to install a developmental gas turbine designated Model GG-8 at the applicant's site near West Palm Beach, Florida.

### C. Location/Classification

The applicant's aircraft engine testing facility (SIC Code 3724) is located off State Road 710 approximately 20 miles northwest of West Palm Beach. Latitude and longitude are 26°53'42"N and 80°21'36"W, respectively. The UTM coordinates of the site are: Zone 17, 562 km E and 2976 km N.

## II. Project Description/Emissions

The applicant proposes to install a developmental gas turbine (Model GG-8) to provide shaft power for various systems used at the aircraft engine testing facility. The turbine will have a maximum heat input of 277.1 MM Btu/hr and will fire natural gas, Jet A fuel, and No. 2 fuel oil. Location of the turbine will be the A-7 test stand. The turbine will incorporate advanced burner design with water injection to control nitrogen oxide emissions. Actual emissions from the project are tabulated below:

Pollutant	Natural Gas	Jet A	No. 2 Fuel Oil	Total Emissions (TPY)
PM	.04	0.42	2.72	3.18
SO <sub>2</sub>	--	3.56	22.90	26.46
NOx	1.23	5.75	33.00	39.98
VOC	0.13	0.05	3.03	3.21
CO	0.34	1.31	8.38	10.03

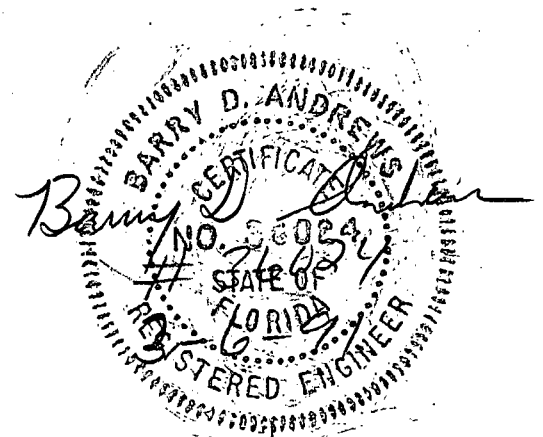
## III. Rule Applicability

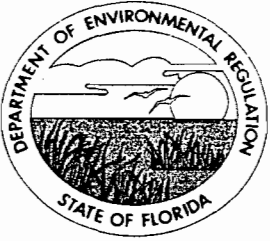
The construction permit application is subject to review under Chapter 403, Florida Statutes, and Florida Administrative Code (F.A.C.) Rules 17-2 and 17-4. The proposed project is located in an area classified as nonattainment for ozone and attainment for other designated pollutants. Since the emissions are below

significant levels, the project is not subject to the new source review requirements of Chapter 17-2. Applicable rules for sulfur dioxide emissions are the federal new source performance standards, 40 CFR 60, Sections 60.333 through 60.335 and F.A.C. Rule 17-2.660, Table 660-1, Section 60.333, and 17-2.700, Table 700-1. The project is exempt from the NOx new source performance standards since the turbine is developmental (see 40 CFR 60, Subpart GG, Section 60.332(h)). NOx limits will be based on emission factors from AP-42.

#### IV. Conclusion

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





# Florida Department of Environmental Regulation

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

Lawton Chiles, Governor

Carol M. Browner, Secretary

**PERMITTEE:**  
United Technologies Corp.,  
Pratt & Whitney  
P. O. Box 109600  
West Palm Beach, FL 33410-9610

Permit Number: AC 50-190292  
Expiration Date: Dec. 31, 1992  
County: Palm Beach  
Latitude/Longitude: 26°53'42"N  
80°21'36"W  
Project: Developmental Gas  
Turbine - Model GG-8

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

For the installation of a developmental gas turbine (Model GG-8). This project will be located in West Palm Beach, Palm Beach County, Florida. The UTM coordinates of this site are Zone 17, 562 km E and 2976 km N.

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

Attachments are listed below:

1. Application to Operate/Construct Air Pollution Sources, DER Form 17-1.202(1) received on December 13, 1990.

PERMITTEE:  
United Technologies Corp.

Permit No. AC 50-190292  
Expiration Date: Dec. 31, 1992

**GENERAL CONDITIONS:**

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

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

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

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

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



PERMITTEE:  
United Technologies Corp.

Permit No. AC 50-190292  
Expiration Date: Dec. 31, 1992

GENERAL CONDITIONS:

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

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

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

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

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

- a. a description of and cause of non-compliance; and
- b. the period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the 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.

PERMITTEE:  
United Technologies Corp.

Permit No. AC 50-190292  
Expiration Date: Dec. 31, 1992

**GENERAL CONDITIONS:**

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

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

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

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

13. This permit also constitutes compliance with New Source Performance Standards.

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

- a. Upon request, the permittee shall furnish all records and plans required under Department rules. The retention period for all records will be extended automatically, unless otherwise stipulated by the Department, during the course of any unresolved enforcement action.
- b. The permittee shall retain at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation), copies of all reports required by this permit, and records of all data used to complete the application for this permit. The time period of retention shall be at least three years from the date of the sample, measurement, report or application unless otherwise specified by Department rule.

PERMITTEE:  
United Technologies Corp.

Permit No: AC 50-190292  
Expiration Date: Dec. 31, 1992

**GENERAL CONDITIONS:**

c. Records of monitoring information shall include:

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

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

**SPECIFIC CONDITIONS:**

1. The construction and operation of the gas turbine Model GG-8 shall be in accordance with the capacities and specifications stated in the application.

2. The nitrogen oxides emission rate for the gas turbine Model GG-8 shall not exceed the following limits:

Natural Gas:	114 lb/hr, 1.23 ton/yr (413 lb/MMcf)
Jet A Fuel:	129 lb/hr, 5.75 ton/yr (67.8 lb/M gal)
No. 2 Fuel Oil:	123 lb/hr, 33.00 ton/yr (67.8 lb/M gal)

3. The sulfur dioxide emission rate for the gas turbine Model GG-8 shall be limited by the following:

Natural Gas:	150 ppm @ 15% O <sub>2</sub>
Jet A Fuel:	0.8% (wt) sulfur (max)
No. 2 Fuel Oil:	0.8% (wt) sulfur (max)

4. Visible emissions from the gas turbine Model GG-8 shall not exceed 20% opacity.

5. The fuel input to gas turbine (Model GG-8) shall be limited to the following:

Natural Gas:	277.1 MMBtu/hr and 5.96 MM cf/yr
Jet A Fuel:	251.6 MMBtu/hr and 0.17 MM gal/yr
No. 2 Fuel Oil:	255.2 MMBtu/hr and 0.97 MM gal/yr

PERMITTEE:  
United Technologies Corp.

Permit No. AC 50-190292  
Expiration Date: Dec. 31, 1992

**SPECIFIC CONDITIONS:**

The fuel flow to the turbine shall be metered and recorded.

6. The hours of operation of the turbine shall be limited to the following:

Natural Gas: 40 hours/year  
Jet A Fuel: 163 hours/year  
No. 2 Fuel Oil: 993 hours/year

7. Compliance shall be demonstrated in accordance with the following:

NOx: EPA Method 7E (No.2 Fuel Oil only)  
SO<sub>2</sub>: Sulfur Analysis as reg'd by 40 CFR 60 Subpart GG  
Opacity: EPA Method 9

Compliance tests shall be run at 90-100% of permitted capacity. Sampling facilities, source sampling, and reporting shall be in accordance with F.A.C. Rule 17-2.700 and 40 CFR 60, Appendix A. Compliance test results, in accordance with F.A.C. Rule 17-2.700, and 40 CFR 60, Appendix A shall be submitted to the Southeast District office within 45 days after completion of the tests.

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

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

Issued this \_\_\_\_\_ day  
of \_\_\_\_\_, 1991

STATE OF FLORIDA DEPARTMENT  
OF ENVIRONMENTAL REGULATION

\_\_\_\_\_  
STEVE SMALLWOOD, P.E., Director  
Division of Air Resources Mgmt.



P.O. Box 109600  
West Palm Beach, FL 33410-9600  
(407) 796-2000

RECEIVED

Government Engine Business

DEC 12 1990

December 7, 1990

DER-BAQM

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

RECEIVED  
DER-MAIL ROOM  
1990 DEC 13 AM 9:40

Mr. Clair H. Fancy  
Florida Department of Environmental Regulation  
Bureau of Air Quality Management  
2600 Blair Stone Road  
Tallahassee, Florida 32301-8241

Re: Air Pollution Construction Permit - Gas Generator

Dear Mr. Fancy:

Enclosed are four (4) copies of DER Form 17-1.202(1) "Application to Operate/Construct Air Pollution Sources" for the above referenced air source. We have also included the required check (No. 471104) for \$2,500 made payable to the Florida Department of Environmental Regulation.

Your efforts to issue this permit will be greatly appreciated. Should you have any questions, please contact Lisa Edwards at (407) 796-5655.

Sincerely,

W. J. Dail, Manager  
Utilities Operations/Environmental Affairs

pc(0042a)

Attachment

- cc: E. Allen - w/o attachment
- S. Brattebo - w/o attachment
- L. Edwards - w/attachment
- I. Goldman - DER w/attachment
- File - Air Pollution Correspondence - w/attachment

*J. Reynolds*  
*J. [unclear], PBAHD*  
*A. Brooks*

001031

PRATT & WHITNEY  
400 Main Street  
Mail Stop 182-01  
East Hartford  
Connecticut 06108  
U.S.A.

DATE OF CHECK  
12-03-96

VOUCHER NO.  
242611

THE CITIZENS AND SOUTHERN NATIONAL BANK  
ATLANTA, DEKALB COUNTY, GEORGIA  
VOID AFTER 90 DAYS

CHECK AMOUNT  
\$ \*\*\*\*\*2,500.00  
OPERATING ACCOUNT

\*\*\*\*\*2,500.00

PAY TO THE ORDER OF  
FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION  
2600 BLAIR STONE RD  
TALLAHASSEE FL 32399-2400

*[Signature]*  
AUTHORIZED SIGNATURE  
*Charles W. Hargis*  
AUTHORIZED COUNTERSIGNATURE

IN FULL SETTLEMENT OF ITEMS LISTED ON REMITTANCE ADVICE

Florida Department of Environmental Regulation  
Bureau of Air Quality Management  
2600 Blair Stone Road  
Tallahassee, Florida 32301-8241

RECEIVED  
MAIL ROOM  
13 MAR 1996

Re: Air Pollution Construction Permit - Gas Generator

Dear Mr. Fancy:

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Sincerely,

*[Signature]*  
W. J. Dail, Manager  
Utilities Operations/Environmental Affairs

pc(0042a)

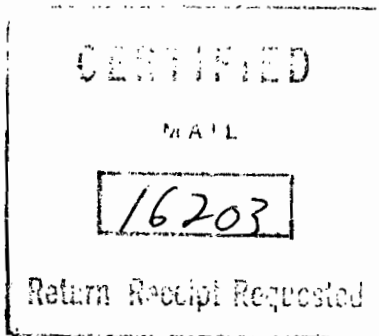
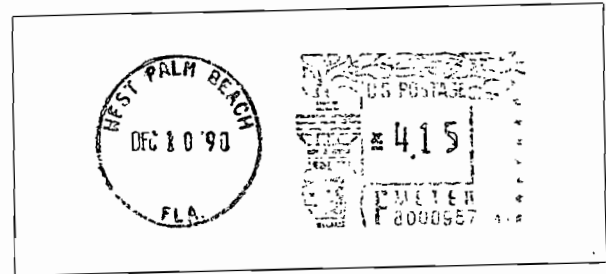
Attachment

- cc: E. Allen - w/o attachment
- S. Brattebo - w/o attachment
- L. Edwards - w/attachment
- I. Goldman - DER w/attachment
- File - Air Pollution Correspondence - w/attachment



**UNITED  
TECHNOLOGIES  
PRATT & WHITNEY**

P.O. Box 109600  
West Palm Beach, Florida 33410-9600



~~Mr. Clair H. Fancy~~  
Fl. Dept. of Environmental Regulation  
Bureau of Air Quality Management  
2600 Blair Stone Road  
Tallahassee, Florida 32301-8241  
*Patti Adams  
Air Regulations*

\$2500 pd.  
12-12-90  
Rept. # 151220

STATE OF FLORIDA  
DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING  
2800 BLAIR STONE ROAD  
TALLAHASSEE, FLORIDA 32301



BOB GRAHAM  
GOVERNOR  
VICTORIA J. TSCHINKEL  
SECRETARY

AC 50-190292

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Gas Generator - Multiple Fuels  New<sup>1</sup> [ ] Existing<sup>1</sup>  
APPLICATION TYPE:  Construction [ ] Operation [ ] Modification  
UNITED TECHNOLOGIES CORPORATION  
COMPANY NAME: Pratt & Whitney COUNTY: Palm Beach

Identify the specific emission point source(s) addressed in this application (i.e. Line  
Kiln No. 4 with Venturi Scrubber; Peaking Unit No. 2, Gas Fired) GG-8 @ A-7 Stand

SOURCE LOCATION: Street State Road 710 City West Palm Beach  
UTM: East .562 KM North 2976 KM  
Latitude 26° 53' 42" N Longitude 80° 21' 36" W

APPLICANT NAME AND TITLE: UNITED TECHNOLOGIES CORPORATION, Pratt & Whitney  
APPLICANT ADDRESS: P.O. Box 109600, West Palm Beach, FL 33410-9600

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

UNITED TECHNOLOGIES CORPORATION

I am the undersigned owner or authorized representative of Pratt & Whitney  
Construction

I certify that the statements made in this application for a Air Pollution  
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.

J.K.Sillan, Acting Manager - Plant Engineering

\*Attach letter of authorization  
UNITED TECHNOLOGIES CORPORATION  
Pratt & Whitney  
Government Engine Business

Signed: John K. Sillan  
Name and Title (Please Type)

Date: 12-3-90 Telephone No. (407) 796-5333


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

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



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

Signed  11/26/90  
 Edgar L. Allen, III  
 Name: (Please Type)  
 UNITED TECHNOLOGIES CORP. Pratt & Whitney, GEB  
 Company Name: (Please Type)  
 P.O. Box 109600, West Palm Beach, FL 33410-9600  
 M/S 724-10 Mailing Address: (Please Type)  
 Florida Registration No. 20723 Date: 11-26-90 Telephone No. (407) 796-1208

**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.

See Appendix A

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

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

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.  
Test Area Air Pollution Operating Permit #A050-111754 - Existing air pollution permitted sources in test area are covered under this permit.

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

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

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

2. Does best available control technology (BACT) apply to this source?  
If yes, see Section VI. \*\*

3. Does the State "Prevention of Significant Deterioration" (PSD)  
requirement apply to this source? If yes, see Sections VI and VII. \*\*

4. Do "Standards of Performance for New Stationary Sources" (NSPS)  
apply to this source? \*\*

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

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

a. If yes, for what pollutants? \_\_\_\_\_

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

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

\*This is a conservative estimate based on continuous running. Actual operating  
time will be less. See Appendix C Table I

\*\*Based upon previous telephone conversations with John Reynolds of D.E.R.,  
Tallahassee, B.A.C.T., P.S.D. & N.S.P.S. will not apply to this source.

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

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

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

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

1. Total Process Input Rate (lbs/hr): \_\_\_\_\_

2. Product Weight (lbs/hr): \_\_\_\_\_

C. Airborne Contaminants Emitted: (Information in this table must be submitted for each emission point, use additional sheets as necessary)

Name of Contaminant	Emission <sup>1</sup>		Allowed Emission Rate per Rule 17-2	Allowable <sup>3</sup> Emission lbs/hr	Potential <sup>4</sup> Emission		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/yr	T/yr	
See Appendix B							

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

<sup>2</sup>Reference applicable emission standards and units (e.g. Rule 17-2.600(5)(b)2. Table II, E. (1) - 0.1 pounds per million BTU heat input)

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

<sup>4</sup>Emission, if source operated without control (See Section V, Item 3).

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

N/A

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles Size Collected (in microns) (If applicable)	Basis for Efficiency (Section V Item 5)

E. Fuels See Appendix C

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

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

Fuel Analysis:

Percent Sulfur: \_\_\_\_\_ Percent Ash: \_\_\_\_\_

Density: \_\_\_\_\_ lbs/gal Typical Percent Nitrogen: \_\_\_\_\_

Heat Capacity: \_\_\_\_\_ BTU/lb \_\_\_\_\_ BTU/gal

Other Fuel Contaminants (which may cause air pollution): \_\_\_\_\_

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

Annual Average \_\_\_\_\_ Maximum \_\_\_\_\_

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

N/A



Brief description of operating characteristics of control devices: \_\_\_\_\_

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

NOTE: Items 2, 3, 4, 6, 7, 8, and 10 in Section V must be included where applicable.

#### SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

1. Total process input rate and product weight -- show derivation [Rule 17-2.100(127)] N/A
2. To a construction application, attach basis of emission estimate (e.g., design calculations, design drawings, pertinent manufacturer's test data, etc.) and attach proposed methods (e.g., FR Part 60 Methods 1, 2, 3, 4, 5) to show proof of compliance with applicable standards. To an operation application, attach test results or methods used to show proof of compliance. Information provided when applying for an operation permit from a construction permit shall be indicative of the time at which the test was made.  
Attached Calculations based on Table 3.1-2, AP-42 & Table E-1, Appendix E, AP-42
3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test).  
See items #2
4. With construction permit application, include design details for all air pollution control systems (e.g., for baghouse include cloth to air ratio; for scrubber include cross-section sketch, design pressure drop, etc.) N/A
5. With construction permit application, attach derivation of control device(s) efficiency. Include test or design data. Items 2, 3 and 5 should be consistent: actual emissions = potential (1-efficiency) N/A N/A
6. An 8 1/2" x 11" flow diagram which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate where raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particles are evolved and where finished products are obtained. See Appendix D - Sheet 1
7. An 8 1/2" x 11" plot plan showing the location of the establishment, and points of airborne emissions, in relation to the surrounding area, residences and other permanent structures and roadways (Example: Copy of relevant portion of USGS topographic map).  
See Appendix D - Sheet 2 Site Location Map
8. An 8 1/2" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.  
See Appendix D - Sheet 3 - Area Plan

9. The appropriate application fee in accordance with Rule 17-4.05. The check should be made payable to the Department of Environmental Regulation.
10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit.

**SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY** N/A

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?

Yes  No

Contaminant	Rate or Concentration

B. Has EPA declared the best available control technology for this class of sources (if yes, attach copy)

Yes  No

Contaminant	Rate or Concentration

C. What emission levels do you propose as best available control technology?

Contaminant	Rate or Concentration

D. Describe the existing control and treatment technology (if any).

- |                           |                          |
|---------------------------|--------------------------|
| 1. Control Device/System: | 2. Operating Principles: |
| 3. Efficiency:*           | 4. Capital Costs:        |

\*Explain method of determining

5. Useful Life:

6. Operating Costs:

7. Energy:

8. Maintenance Cost:

9. Emissions:

Contaminant

Rate or Concentration

Contaminant	Rate or Concentration

10. Stack Parameters

a. Height:

ft.

b. Diameter:

ft.

c. Flow Rate:

ACFM

d. Temperature:

°F.

e. Velocity:

FPS

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

1.

a. Control Device:

b. Operating Principles:

c. Efficiency:<sup>1</sup>

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

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

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

2.

a. Control Device:

b. Operating Principles:

c. Efficiency:<sup>1</sup>

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

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

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

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

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



- j. Applicability to manufacturing processes:
- k. Ability to construct with control device, install in available space, and operate within proposed levels:

3.

- a. Control Device:
- b. Operating Principles:
- c. Efficiency:<sup>1</sup>
- d. Capital Cost:
- e. Useful Life:
- f. Operating Cost:
- g. Energy:<sup>2</sup>
- h. Maintenance Cost:
- i. Availability of construction materials and process chemicals:
- j. Applicability to manufacturing processes:
- k. Ability to construct with control device, install in available space, and operate within proposed levels:

4.

- a. Control Device:
- b. Operating Principles:
- c. Efficiency:<sup>1</sup>
- d. Capital Costs:
- e. Useful Life:
- f. Operating Cost:
- g. Energy:<sup>2</sup>
- h. Maintenance Cost:
- i. Availability of construction materials and process chemicals:
- j. Applicability to manufacturing processes:
- k. Ability to construct with control device, install in available space, and operate within proposed levels:

F. Describe the control technology selected:

- 1. Control Device:
- 2. Efficiency:<sup>1</sup>
- 3. Capital Cost:
- 4. Useful Life:
- 5. Operating Cost:
- 6. Energy:<sup>2</sup>
- 7. Maintenance Cost:
- 8. Manufacturer:
- 9. Other locations where employed on similar processes:
  - a. (1) Company:
  - (2) Mailing Address:
  - (3) City:
  - (4) State:

Explain method of determining efficiency.  
Energy to be reported in units of electrical power - KWH design rate.

(5) Environmental Manager:

(6) Telephone No.:

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

Contaminant	Rate or Concentration

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

b. (1) Company:

(2) Mailing Address:

(3) City:

(4) State:

(5) Environmental Manager:

(6) Telephone No.:

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

Contaminant	Rate or Concentration

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

10. Reason for selection and description of systems:

<sup>1</sup>Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

SECTION VII - PREVENTION OF SIGNIFICANT DETERIORATION N/A

A. Company Monitored Data

1. \_\_\_\_\_ no. sites \_\_\_\_\_ TSP \_\_\_\_\_ ( ) SO<sub>2</sub>+ \_\_\_\_\_ Wind spd/dir

Period of Monitoring \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ to \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
month day year month day year

Other data recorded \_\_\_\_\_

Attach all data or statistical summaries to this application.

Specify bubbler (B) or continuous (C).

2. Instrumentation, Field and Laboratory

- a. Was instrumentation EPA referenced or its equivalent?  Yes  No
- b. Was instrumentation calibrated in accordance with Department procedures?  
 Yes  No  Unknown

B. Meteorological Data Used for Air Quality Modeling

1. \_\_\_\_\_ Year(s) of data from \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ to \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
month day year month day year
2. Surface data obtained from (location) \_\_\_\_\_
3. Upper air (mixing height) data obtained from (location) \_\_\_\_\_
4. Stability wind rose (STAR) data obtained from (location) \_\_\_\_\_

C. Computer Models Used

1. \_\_\_\_\_ Modified? If yes, attach description.
2. \_\_\_\_\_ Modified? If yes, attach description.
3. \_\_\_\_\_ Modified? If yes, attach description.
4. \_\_\_\_\_ Modified? If yes, attach description.

Attach copies of all final model runs showing input data, receptor locations, and principle output tables.

D. Applicants Maximum Allowable Emission Data

Pollutant	Emission Rate
TSP	_____ grams/sec
SO <sup>2</sup>	_____ grams/sec

E. Emission Data Used in Modeling

Attach list of emission sources. Emission data required is source name, description of point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time.

F. Attach all other information supportive to the PSD review.

G. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources.

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

AIR EMISSIONS CONSTRUCTION PERMIT APPLICATION - GG-8  
APPENDIX A

PROJECT DESCRIPTION

Pratt & Whitney is developing a gas turbine (Brayton Cycle), designated Model GG-8, to be used to generate hot pressurized gas. This hot gas will then be the motive energy for a turbine that will provide shaft power to electrical generators, pumps or for marine propulsion.

One GG-8 at a time is to be installed in A-7 test stand at P&W's West Palm Beach facility for development testing. The power turbine is not part of this program.

The GG-8's will be tested using three fuels: Natural gas, Jet A and No. 2 fuel oil. The test program, throughout its life will use more than one GG-8 engine.

A major objective of the GG-8 development program is to minimize air pollution emissions. Advanced burner design incorporating water injection will act to minimize nitrogen oxide emissions. At the same time, the optimized burner design will achieve high combustion efficiency, thereby minimizing carbon monoxide and, with liquid fuel operation, condensed particulate emissions.



AIR EMISSIONS CONSTRUCTION PERMIT APPLICATION - GG-8

APPENDIX B

EMISSION ESTIMATE CALCULATIONS

Data Sources are AP-42, P&W Tests, and Proposed Test Program as Appropriate  
Test Program Shown in Appendix C Table I

1.0 Natural Gas

Particulate Matter (PM): 14 lb/MMcf

$$(14 \text{ lb/MMcf})(0.277 \text{ MMcf/hr}) = 3.88 \text{ lb/hr (Max. Usage)}$$

$$(14 \text{ lb/MMcf})(0.149 \text{ MMcf/hr})(40 \text{ hr/yr})(\text{ton}/2000 \text{ lb}) = 0.0417 \text{ ton/yr (Average Usage)}$$

$$(3.88 \text{ lb/hr})(\text{lb}/22,727 \text{ Btu})(\text{hr}/12,190 \text{ lb})(10^6/\text{MM}) = 0.0140 \text{ lb/MMBtu (Max. Usage)}$$

Sulfur Oxides (SO<sub>x</sub>) as SO<sub>2</sub>: 940(s) lb/MMcf

$$(940)(0.001 \text{ lb/MMcf})(0.277 \text{ MMcf/hr}) = 0.260 \text{ lb/hr (Max. Usage)}$$

$$(940)(0.001 \text{ lb/MMcf})(0.149 \text{ MMcf/hr})(40 \text{ hr/yr}) (\text{ton}/2,000 \text{ lb}) = 0.00280 \text{ ton/yr (Average Usage)}$$

$$(0.260 \text{ lb/hr})(\text{lb}/22,272 \text{ Btu})(\text{hr}/12,190 \text{ lb})(10^6/\text{MM}) = 9.38 \times 10^{-4} \text{ lb/MMBtu (Max. Usage)}$$

Nitrogen Oxides (NO<sub>x</sub>) as NO<sub>2</sub>: 413 lb/MMcf

$$(413 \text{ lb/MMcf})(0.277 \text{ MMcf/hr}) = 114.4 \text{ lb/hr (Max. Usage)}$$

$$(413 \text{ lb/MMcf})(0.149 \text{ MMcf/hr})(40 \text{ hr/yr})(\text{ton}/2000 \text{ lb}) = 1.23 \text{ ton/yr (Average Usage)}$$

$$(114 \text{ lb/hr})(\text{lb}/22,727 \text{ Btu})(\text{hr}/12,190 \text{ lb})(10^6/\text{MM}) = .413 \text{ lb/MMBtu (Max. Usage)}$$



AIR EMISSIONS CONSTRUCTION PERMIT APPLICATION - GG-8

Volatile Organic Compounds (VOC): 42.0 lb/MMcf

$$(42.0 \text{ lb/MMcf})(0.277 \text{ MMcf/hr}) = 11.6 \text{ lb/hr (Max. Usage)}$$

$$(42.0 \text{ lb/MMcf})(0.149 \text{ MMcf/hr})(40 \text{ hr/yr})(\text{ton}/2000 \text{ lb}) = 0.125 \text{ ton/yr (Average Usage)}$$

$$(11.6 \text{ lb/hr})(\text{lb}/21,700 \text{ Btu})(\text{hr}/12,190 \text{ lb})(10^6/\text{MM}) = 0.0419 \text{ lb/MMBtu (Max. Usage)}$$

Carbon Monoxide (CO): 115 lb/MMcf

$$(115 \text{ lb/MMcf})(0.277 \text{ MMcf/hr}) = 31.9 \text{ lb/hr (Max. Usage)}$$

$$(115 \text{ lb/MMcf})(0.149 \text{ MMcf/hr})(40 \text{ hr/yr})(\text{ton}/2000 \text{ lb}) = 0.343 \text{ ton/yr (Average Usage)}$$

$$(31.9 \text{ lb/hr})(\text{lb}/22,727 \text{ Btu})(\text{hr}/12,190 \text{ lb})(10^6/\text{MM}) = 0.115 \text{ lb/MMBtu (Max. Usage)}$$

Lead (Pb): 0 lb/Mmcf

0 lb/hr; 0 ton/yr; 0 lb/MMBtu

2.0 Jet A Fuel

Particulate Matter (PM): 5.0 lb/Mgal

$$(5.0 \text{ lb/Mgal})(1.91 \text{ Mgal/hr}) = 9.55 \text{ lb/hr (Max. Usage)}$$

$$(5.0 \text{ lb/Mgal})(1.04 \text{ Mgal/hr})(163 \text{ hr/yr})(\text{ton}/2000 \text{ lb}) = 0.424 \text{ ton/yr (Average Usage)}$$

$$(9.55 \text{ lb/hr})(\text{lb}/19,504 \text{ Btu})(\text{hr}/12,900 \text{ lb})(10^6/\text{MM}) = 3.80 \times 10^{-2} \text{ lb/MMBtu (Max. Usage)}$$



AIR EMISSIONS CONSTRUCTION PERMIT APPLICATION - GG-8

Sulfur Oxides (SO<sub>x</sub>) as SO<sub>2</sub>: 140(s) lb/gal

$$(140 \times 0.3 \text{ lb/Mgal})(1.91 \text{ Mgal/hr}) = 80.2 \text{ lb/hr (Max. Usage)}$$

$$(140 \times 0.3 \text{ lb/Mgal})(1.04 \text{ Mgal/hr})(163 \text{ hr/yr})(\text{ton}/2000 \text{ lb}) = 3.56 \text{ ton/yr (Average Usage)}$$

$$(80.2 \text{ lb/hr})(\text{lb}/19,504 \text{ Btu})(\text{hr}/12,900 \text{ lb})(10^6/\text{MM}) = 0.319 \text{ lb/MMBtu (Max. Usage)}$$

Nitrogen Oxides (NO<sub>x</sub>) as NO<sub>2</sub>: 67.8 lb/Mgal

$$(67.8 \text{ lb/Mgal})(1.91 \text{ Mgal/hr}) = 129 \text{ lb/hr (Max. Usage)}$$

$$(67.8 \text{ lb/Mgal})(1.04 \text{ Mgal/hr})(163 \text{ hr/yr})(\text{ton}/2000 \text{ lb}) = 5.75 \text{ ton/yr (Average Usage)}$$

$$(130 \text{ lb/hr})(\text{lb}/19,502 \text{ Btu})(\text{hr}/12,900 \text{ lb})(10^6/\text{MM}) = 0.517 \text{ lb/MMBtu (Max. Usage)}$$

Volatile Organic Compounds (VOC): 5.57 lb/Mgal

$$(5.57 \text{ lb/Mgal})(1.91 \text{ Mgal/hr}) = 10.6 \text{ lb/hr (Max. Usage)}$$

$$(5.57 \text{ lb/Mgal})(1.04 \text{ Mgal/hr})(163 \text{ hr/yr})(\text{ton}/2000 \text{ lb}) = 0.0472 \text{ ton/yr (Average Usage)}$$

$$(10.6 \text{ lb/hr})(\text{lb}/19,504 \text{ Btu})(\text{hr}/12,900 \text{ lb})(10^6/\text{MM}) = 0.0421 \text{ lb/MMBtu (Max. Usage)}$$

Carbon Monoxide (CO): 15.4 lb/Mgal

$$(15.4 \text{ lb/Mgal})(1.91 \text{ Mgal/hr}) = 29.4 \text{ lb/hr (Max. Usage)}$$

$$(15.4 \text{ lb/Mgal})(1.04 \text{ Mgal/hr})(163 \text{ hr/yr})(\text{ton}/2000 \text{ lb}) = 1.31 \text{ ton/yr (Average Usage)}$$

$$(29.4 \text{ lb/hr})(\text{lb}/19,504 \text{ Btu})(\text{hr}/12,900 \text{ lb})(10^6/\text{MM}) = 0.117 \text{ lb/MMBtu (Max. Usage)}$$



AIR EMISSIONS CONSTRUCTION PERMIT APPLICATION - GG-8

Lead (Pb):  $4.2 \times 10^{-4}$  lb/Mgal

$$(4.2 \times 10^{-4} \text{ lb/Mgal})(1.91 \text{ Mgal/hr}) = 8.02 \times 10^{-4} \text{ lb/hr (Max. Usage)}$$

$$(4.2 \times 10^{-4} \text{ lb/Mgal})(1.04 \text{ Mgal/hr})(163 \text{ hr/yr})(\text{ton}/2000 \text{ lb}) = 3.56 \times 10^{-5} \text{ ton/yr (Average Usage)}$$

$$(8.02 \times 10^{-4} \text{ lb/hr})(\text{lb}/19,504 \text{ Btu})(\text{hr}/12,900 \text{ lb})(10^6/\text{MM}) = 3.19 \times 10^{-6} \text{ lb/MMBtu (Max. Usage)}$$

3.0 No. 2 Fuel Oil

Particulate Matter (PM): 5.0 lb/Mgal

$$(5.0 \text{ lb/Mgal})(1.82 \text{ Mgal/hr}) = 9.10 \text{ lb/hr (Max. Usage)}$$

$$(5.0 \text{ lb/Mgal})(0.98 \text{ Mgal/hr})(1110 \text{ hr/yr})(\text{ton}/200 \text{ lb}) = 2.72 \text{ ton/yr (Average Usage)}$$

$$(9.10 \text{ lb/hr})(\text{lb}/19,887 \text{ Btu})(\text{hr}/12,900 \text{ lb})(10^6/\text{MM}) = 3.55 \times 10^{-2} \text{ lb/MMBtu (Max. Usage)}$$

Sulfur Oxides (SO<sub>x</sub>) as SO<sub>2</sub>: 140(s) lb/Mgal

$$(140 \text{ lb/Mgal})(1.82 \text{ Mgal/hr}) = 76.4 \text{ lb/hr (Max. Usage)}$$

$$(140 \text{ lb/Mgal})(0.984 \text{ Mgal/hr})(1110 \text{ hr/yr})(\text{ton}/2000 \text{ lb}) = 22.9 \text{ ton/yr (Average Usage)}$$

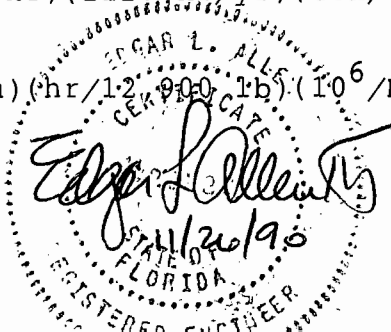
$$(76.4 \text{ lb/hr})(\text{lb}/19,887 \text{ Btu})(\text{hr}/12,900 \text{ lb})(10^6/\text{MM}) = 0.287 \text{ lb/MMBtu (Max. Usage)}$$

Nitrogen Oxides (NO<sub>x</sub>) as NO<sub>2</sub>: 67.8 lb/Mgal

$$(67.8 \text{ lb/Mgal})(1.82 \text{ Mgal/hr}) = 123 \text{ lb/hr (Max. Usage)}$$

$$(67.8 \text{ lb/Mgal})(0.98 \text{ Mgal/hr})(1110 \text{ hr/yr})(\text{ton}/2000 \text{ lb}) = 36.9 \text{ ton/yr (Average Usage)}$$

$$(123 \text{ lb/hr})(\text{lb}/19,887 \text{ Btu})(\text{hr}/12,900 \text{ lb})(10^6/\text{MM}) = 0.479 \text{ lb/MMBtu (Max. Usage)}$$





AIR EMISSIONS CONSTRUCTION PERMIT APPLICATION - GG-8

Volatile Organic Compounds (VOC): 5.57 lb/Mgal

$$(5.57 \text{ lb/Mgal})(1.82 \text{ Mgal/hr}) = 10.1 \text{ lb/hr (Max. Usage)}$$

$$(5.57 \text{ lb/Mgal})(0.98 \text{ Mgal/hr})(1110 \text{ hr/yr})(\text{ton}/2000 \text{ lb}) = 3.03 \text{ ton/yr (Average Usage)}$$

$$(10.1 \text{ lb/hr})(\text{lb}/19,887)(\text{hr}/12,900 \text{ lb})(10^6/\text{MM}) = 0.0394 \text{ lb/MMBtu (Max. Usage)}$$

Carbon Monoxide (CO): 15.4 lb/Mgal

$$(15.4 \text{ lb/Mgal})(1.87 \text{ Mgal/hr}) = 28.0 \text{ lb/hr (Max. Usage)}$$

$$(15.4 \text{ lb/Mgal})(0.98 \text{ Mgal/hr})(1110 \text{ hr/yr})(\text{ton}/2000 \text{ lb}) = 8.38 \text{ ton/yr (Average Usage)}$$

$$(28.0 \text{ lb/hr})(\text{lb}/19,887 \text{ Btu})(\text{hr}/12,900 \text{ lb})(10^6/\text{MM}) = 0.109 \text{ lb/MMBtu (Max. Usage)}$$

Lead (Pb):  $4.2 \times 10^{-4}$  lb/Mgal

$$(4.2 \times 10^{-4} \text{ lb/Mgal})(1.82 \text{ Mgal/hr}) = 7.64 \times 10^{-4} \text{ lb/hr (Max. Usage)}$$

$$(4.2 \times 10^{-4} \text{ lb/Mgal})(.098 \times \text{Mgal/hr})(1110 \text{ hr/yr})(\text{ton}/2000 \text{ lb}) = 2.28 \times 10^{-4} \text{ ton/yr (Average Usage)}$$

$$(7.64 \times 10^{-4} \text{ lb/hr})(\text{lb}/19,887 \text{ Btu})(\text{hr}/12,900 \text{ lb})(10^6/\text{MM}) = 2.98 \times 10^{-6} \text{ lb/MMBtu (Max. Usage)}$$



AIR EMISSIONS CONSTRUCTION PERMIT APPLICATION - GG-8

APPENDIX B

Emission Factor Calculation Summary

Fuel: Natural Gas

Estimated Usage: 277,045 cf/hr (Max. Usage)

	<u>Emission Factor</u>	<u>Max</u> (lb/hr)	<u>Actual</u> (ton/yr)	<u>Potential</u> (ton/yr)
PM	14 lb/MMcf	3.88	0.0417	16.95
SOx	0.94 lb/MMcf	0.260	0.00280	1.14
NOx	413 lb/MMcf	114	1.23	499.7
VOC	42 lb/MMcf	11.6	0.125	50.67
CO	115 lb/MMcf	31.9	0.343	139.3
Lead	0 lb/MMcf	0	0	0

Fuel: Jet A

Estimated Usage: 1,914 gal/hr ( Max. Usage)

	<u>Emission Factor</u>			
PM	5.00 lb/Mgal	9.55	0.424	41.71
SOx(0.3% S)	42.0 lb/Mgal	80.2	3.56	350.3
NOx	67.8 lb/Mgal	129	5.75	563.5
VOC	5.57 lb/Mgal	10.6	0.0472	46.3
CO	15.5 lb/Mgal	29.4	1.31	128.4
Lead	4.20E-04 lb/Mgal	8.04E-04	3.56E-05	3.50E-03

Fuel: No. 2 Fuel Oil

Estimated Usage: 1,820 gal/hr (Max. Usage)

	<u>Emission Factor</u>			
PM	5.00 lb/Mgal	9.10	2.72	39.75
SOx (0.3% S)	42.0 lb/Mgal	76.4	22.9	333.7
NOx	67.8 lb/Mgal	123	36.9	537.3
VOC	5.57 lb/Mgal	10.1	3.03	44.12
CO	15.4 lb/Mgal	28.0	8.38	122.3
Lead	4.20E-04 lb/Mgal	7.64E-04	2.28E-04	3.34E-03



AIR EMISSIONS CONSTRUCTION PERMIT APPLICATION - GG-8  
APPENDIX C - TABLE I

GG-8 Test Program Material and Operating Data

<u>TECHNICAL DATA</u>	<u>NATURAL GAS</u>	<u>JET A FUEL</u>	<u>No. 2 FUEL OIL</u>
Fuel Higher Heating Value			
BTU/cf	1000	NA	NA
BTU/lb	22,727	19,504	19,887
BTU/gal	NA	131,457	141,000
Fuel Lower Heating Value			
BTU/cf	955	NA	NA
BTU/lb	21,700	18,530	18,275
BTU/gal	NA	124,892	129,570
Density			
lb/cf	0.044	NA	NA
lb/gal	NA	6.74	7.09
Sulfur Content			
% by weight	0.001	0.3(ASTM)	0.5(ASTM)
Maximum Usage/Average Usage			
lb/hr	12,190/6555	12,900/6975	12,900/6975
MMcf/hr	0.277/0.149	NA	NA
Mgal/hr	NA	1.91/1.04	1.82/0.98
Maximum Heat Input			
MMBTU/hr	277.1	251.6	255.2
Exhaust Gas Temperature			
Degrees F	1000	1000	1000
Exhaust Mass Flow Rates			
Max. lb/sec	191	191	191
Avg. lb/sec	115	145	150
Operating Time			
Max. hr/yr		163	1110



AIR EMISSIONS CONSTRUCTION PERMIT APPLICATION - GG-8  
APPENDIX C - TABLE II

Flowrate Calculation Summary

Fuel: Natural Gas  
 Average Exhaust Mass Flowrate: 115 lb/sec  
 Estimated Exhaust Exit Temperature: 1000°F  
 Standard Volumetric Flowrate = (115 lb/sec)(scf/0.075 lb)(60 sec/min)  
 = 92,000 scfm  
 Actual Volumetric Flowrate = (92,000 scfm)(460°R + 1000°F)/(530°R)  
 = 253,434 acfm

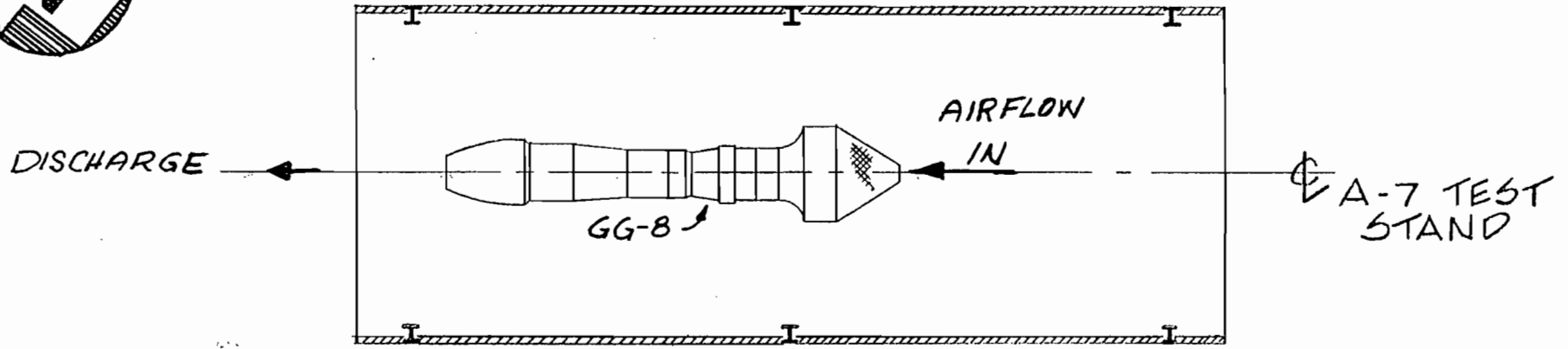
Fuel: Jet A  
 Average Exhaust Mass Flowrate: 145 lb/sec  
 Estimated Exhaust Exit Temperature: 1000°F  
 Standard Volumetric Flowrate = (145 lb/sec)(scf/0.075 lb)(60 sec/min)  
 = 116,000 scfm  
 Actual Volumetric Flowrate = (116,000 scfm)(460°R + 1000°F)/(530°R)  
 = 319,547 acfm

Fuel: No. 2 Fuel Oil  
 Average Exhaust Mass Flowrate: 150 lb/sec  
 Estimated Exhaust Exit Temperature: 1000°F  
 Standard Volumetric Flowrate = (150 lb/sec)(scf/0.075 lb)(60 sec/min)  
 = 120,000 scfm  
 Actual Volumetric Flowrate = (120,000 scfm)(460°R + 1000°F)/(530°R)  
 = 330,566 acfm

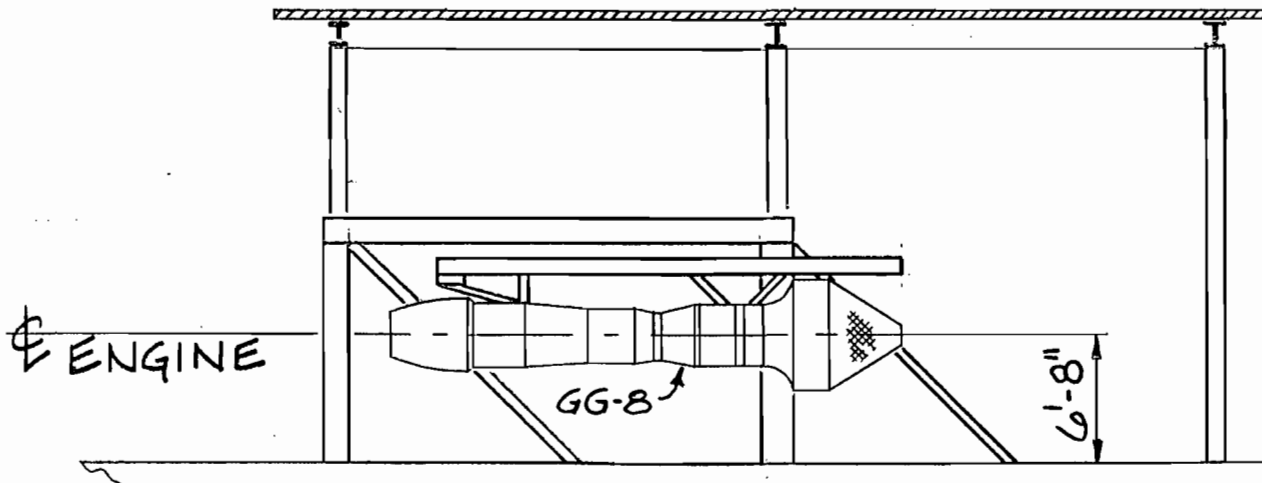
Fuel: Overall (Weighted Average)  
 Average Exhaust Mass Flowrate: 148 lb/sec  
 Estimated Exhaust Exit Temperature: 1000°F  
 Standard Volumetric Flowrate = (148 lb/sec)(scf/0.075 lb)(60 sec/min)  
 = 118,400 scfm  
 Actual Volumetric Flowrate = (118,400 scfm)(460°R + 1000°F)/(530°R)  
 = 326,158 acfm

Fuel: Maximum  
 Maximum Exhaust Mass Flowrate: 191 lb/sec  
 Estimated Exhaust Exit Temperature: 1000°F  
 Standard Volumetric Flowrate = (191 lb/sec)(scf/0.075 lb)(60 sec/min)  
 = 152,800 scfm  
 Actual Volumetric Flowrate = (152,800 scfm)(460°R + 1000°F)/(530°R)  
 = 420,921 acfm





PLAN VIEW

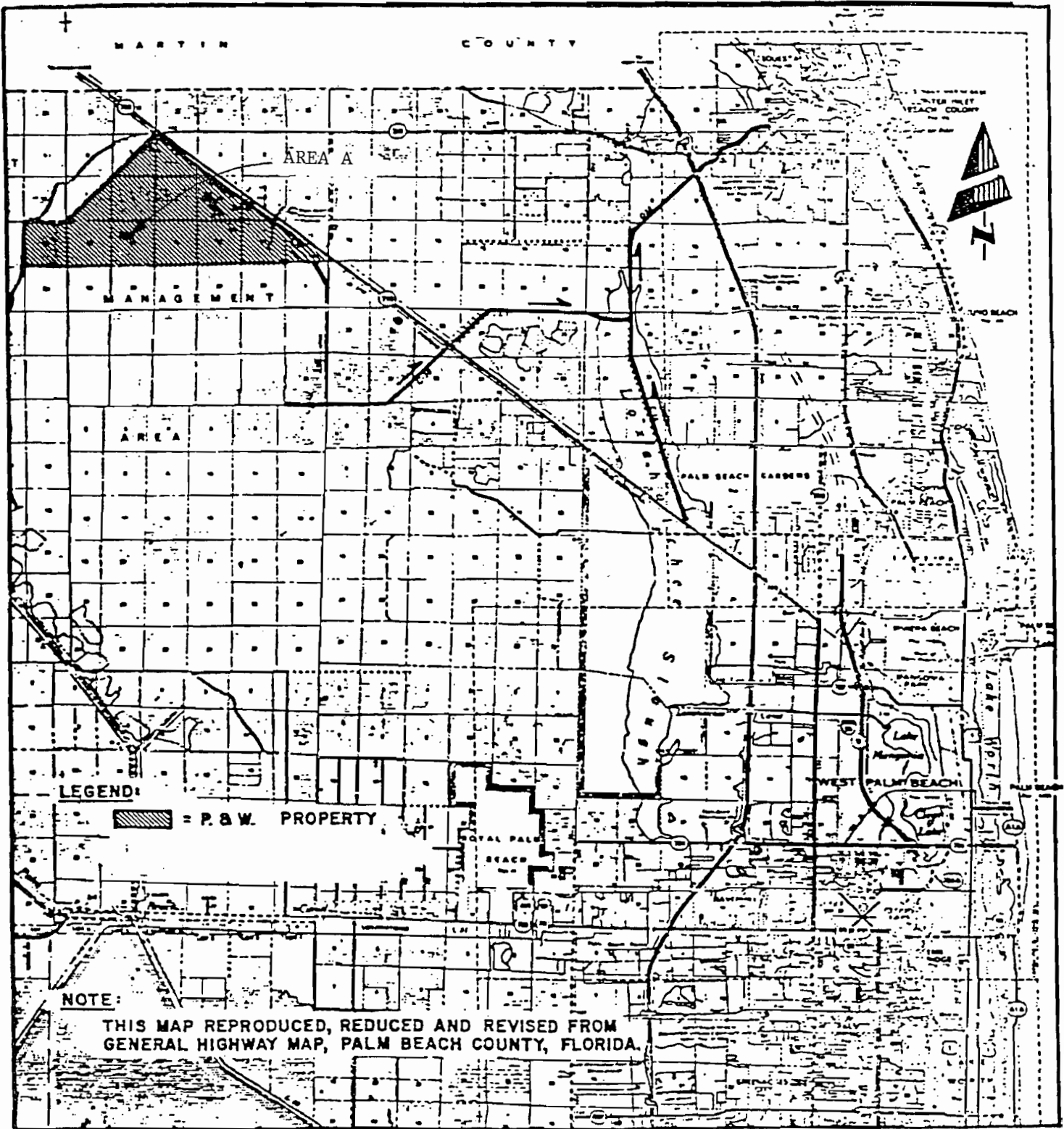


ELEVATION

AIR EMISSIONS CONSTRUCTION PERMIT APPLICATION - GG-8



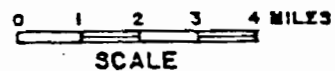
APPENDIX D - SHEET 1

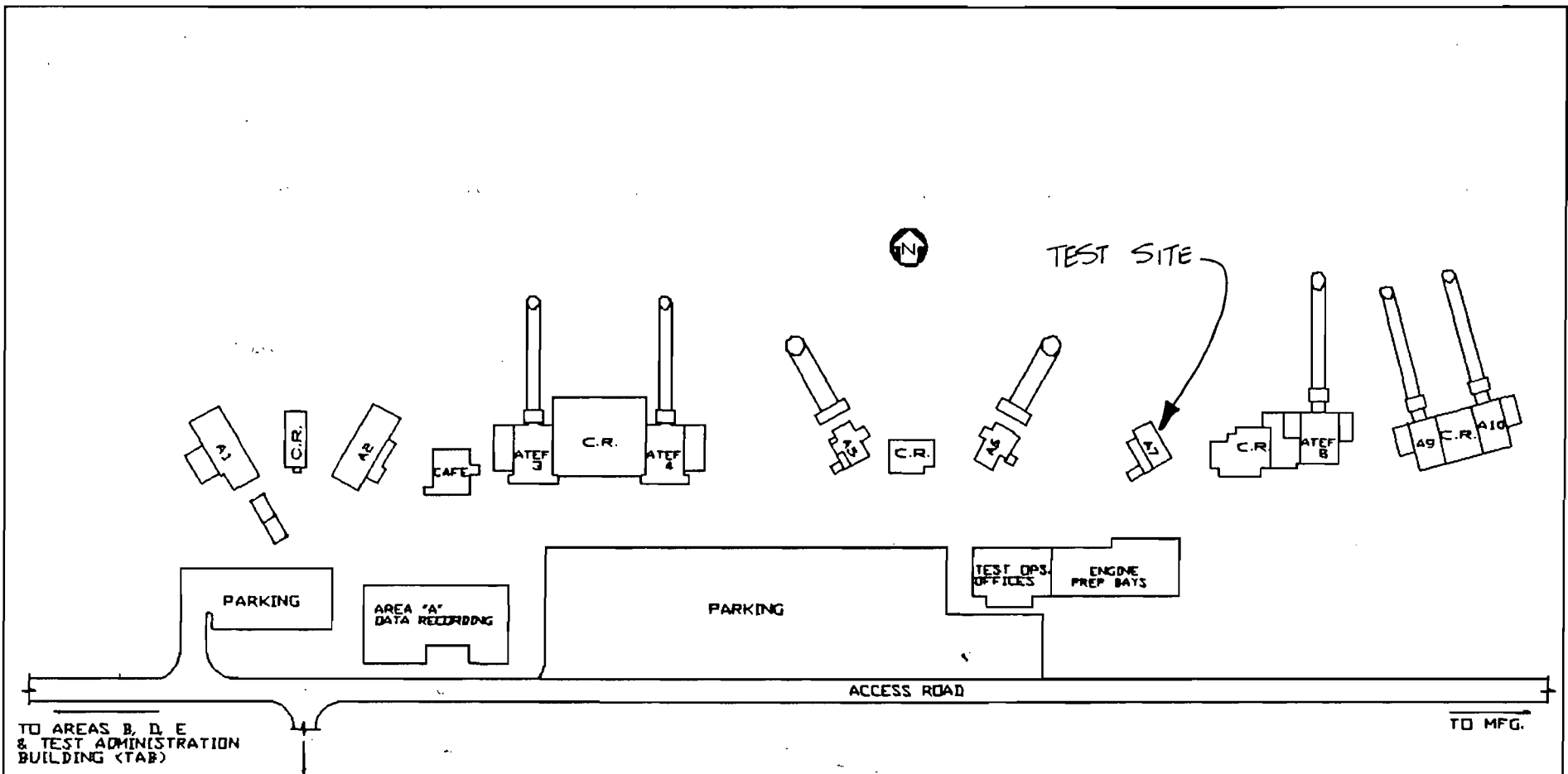


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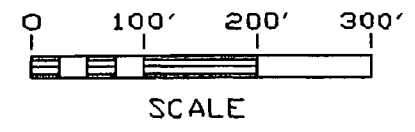
SITE LOCATION MAP  
PRATT & WHITNEY PROPERTY  
PALM BEACH COUNTY, FLORIDA





AEROPROPULSION TEST & EVALUATION FACILITY

TEST AREA "A"  
 EDGAR D. ALLEN  
 CERTIFIED  
 28728  
 11/26/90  
 STATE OF  
 FLORIDA  
 REGISTERED ENGINEER



APPENDIX D - SHEET 3