

P 408 530 360

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED—
NOT FOR INTERNATIONAL MAIL

(See Reverse)

Sent to Mr. Jerry P. Davis	
Street and No. Box 459	
P.O., State and ZIP Code Waltham, Mass. 02254	
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 10/3/83	

PS Form 3800, Feb. 1982

PS Form 3811, Jan. 1979

● SENDER: Complete items 1, 2, and 3.
Add your address in the "RETURN TO" space on reverse.

1. The following service is requested (check one.)
 Show to whom and date delivered.....
 Show to whom, date and address of delivery.....
 RESTRICTED DELIVERY
 Show to whom and date delivered.....
 RESTRICTED DELIVERY.
 Show to whom, date, and address of delivery.\$

(CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO:
Mr. Jerry P. Davis
Box 459
Waltham, Mass. 02254

3. ARTICLE DESCRIPTION:
 REGISTERED NO. CERTIFIED NO. INSURED NO.
 P408530360

(Always obtain signature of addressee or agent)

I have received the article described above.
SIGNATURE Addressee Authorized agent

4. DATE OF DELIVERY
Marc
 10/3/83

5. ADDRESS (Complete only if requested)

6. UNABLE TO DELIVER BECAUSE
 CLERK'S INITIALS
JH

BOSTON, MASS. POSTMARK
 OCT 27 1983
 WALTHAM BR.

PS Form 3811, Jan. 1979

☆GPO : 1979-300-459

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

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



BOB GRAHAM
GOVERNOR
VICTORIA J. TSCHINKEL
SECRETARY

September 29, 1983

CERTIFIED MAIL-RETURN RECEIPT REQUESTED


Mr. Jerry P. Davis
President and General Manager
Thermo Electron Corporation
Box 459
Waltham, Massachusetts 02254

Dear Mr. Davis:

Enclosed is Permit Number AC 13-68249, dated September 28, 1983, to Thermo Electron Corporation, issued pursuant to Section 403, Florida Statutes.

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

Sincerely,


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

CHF/bjm

Enclosure

cc: Mr. Stephen J. Remen, Thermo Electron Corporation
Mr. Jim Williams, DER Southeast District
Mr. Hugh Wong, Dade County Dept. of Environmental
Resources Management

Final Determination

Thermo Electron Corporation

Gas Turbine
Downtown Governmental Center
Miami, Dade County

Permit Number
AC 13-68249

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

September 28, 1983

Final Determination
Thermo Electron Corporation
AC 13-68249

Thermo Electron Corporation's construction permit application for the construction of a 239 MBtu/hr gas turbine at the Dade County Downtown Governmental Center in Miami has been reviewed by the Bureau of Air Quality Management. Public notice of the department's intent to issue was published in The Miami Herald on August 22, 1983. Copies of the preliminary determination were available for public inspection at Dade County Department of Environmental Resources Management in Miami, the FDER's Southeast District in West Palm Beach and the Bureau of Air Quality Management in Tallahassee.

There were no comments as a result of the public notice period.

The final action of the department will be to issue the permit as proposed.

STATE OF FLORIDA
COUNTY OF DADE:

Before the undersigned authority personally appeared

Eddie L. Sweet

who on oath says that he/she is

Office Manager

of The Miami Herald, a daily newspaper published at Miami in Dade County, Florida; that the attached copy of advertisement was published in said newspaper in the issues of

Aug. 21, 1983

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

E. L. Sweet

Sworn to and subscribed before me this.....22nd.....

day ofAug.....A.D. 19 83.....

My commission expires.....*Elyse Besta*.....

NOTICE OF PROPOSED AGENCY ACTION
The Department of Environmental Regulation gives notice of its intent to issue a permit to Thermo Electric Corporation for the installation of a cogeneration system at the Downtown Governmental Center in Miami, Dade County, Florida. A determination of Best Available Control Technology (BACT) was not required.
A person who is substantially affected by the Department's proposed permitting decision may request a hearing in accordance with Section 120.57, Florida Statutes, and Chapters 17-1 and 28-5, Florida Administrative Code. The request for hearing must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Twin Towers Office Building, Tallahassee, Florida 32301, within fourteen (14) days of publication of this notice. Failure to file a request for hearing within this time period shall constitute a waiver of any right such person may have to request a hearing under Section 120.57, Florida Statutes.
The application, technical evaluation and department intent are available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at the following locations:
DER Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, FL 32301
DER Southeast District
3301 Gun Club Road
West Palm Beach, Florida 33402
Dade County Dept of Environmental Resources Management
909 Southeast 1st Ave
Brickell Plaza
Miami, Florida 33131
Comments on this action shall be submitted in writing to Bill Thomas of Tallahassee office within thirty (30) days of this notice.
Aug. 21, 1983
Ad. No. 379-356R

DER
AUG 24 1983
BAQM

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

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



BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

PERMITTEE:
Thermo Electron Corp.
Box 459
Waltham, MA 02254

Permit Number: AC 13-68249
Expiration Date: December 31, 1986
County: Dade
Latitude/Longitude: 25° 46' 31"N/
80° 11' 49"W
Project: Gas Turbine

This permit is issued under the provisions of Chapter(s) 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 construction of 239 MBtu/hr gas turbine at the Dade County Downtown Government Center in Miami, Florida.

Construction shall be in accordance with the attached permit application and additional information except as otherwise noted on pages 5 and 6, Specific Conditions.

Attachments:

1. Application to construct Air Pollution Sources, DER Form 17-1.122(16), received on April 4, 1983.
2. DER's incompleteness letter to Applicant, dated May 3, 1983.
3. Applicant's response to DER, received on June 6, 1983.

PERMITTEE:
Thermo Electron Corp.
Box 459
Waltham, MA 002254

I. D. Number:
Permit Number: AC 13-68249
Expiration Date: December 31, 1986

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:
Thermo Electron Corp.
Box 459
Waltham, MA 02254
GENERAL CONDITIONS:

I. D. Number:
Permit Number: AC 13-68249
Expiration Date: December 31, 1986

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

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

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

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

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

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

PERMITTEE:
Thermo Electron Corp.
Box 459
Waltham, MA 02254

I. D. Number:
Permit Number: AC 13-68249
Expiration Date: December 31, 1986

GENERAL CONDITIONS:

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

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

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

11. This permit is transferable only upon department approval in accordance with Florida Administrative Code Rules 17-4.12 and 17-30.30, as applicable. The permittee shall be liable for any 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:

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

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

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

PERMITTEE:
Thermo Electron Corp
Box 459
Waltham, MA 02254
GENERAL CONDITIONS:

I. D. Number:
Permit Number: AC 13-68249
Expiration Date: December 31, 1986

- b. The permittee shall retain at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation), copies of all reports required by this permit, and records of all data used to complete the application for this permit. The time period of retention shall be at least three years from the date of the sample, measurement, report or application unless otherwise specified by department rule.
- c. Records of monitoring information shall include:
- the date, exact place, and time of sampling or measurements;
 - the person responsible for performing the sampling or measurements;
 - the date(s) analyses were performed;
 - the person responsible for performing the analyses;
 - the analytical techniques or methods used; and
 - the results of such analyses.

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

SPECIFIC CONDITIONS:

1. The operating time of the proposed gas turbine shall not exceed 8,000 hours per year.
2. In emergency, the gas turbine has provisions for burning No. 2 distillate oil. The maximum sulfur content of fuel oil shall be less than 0.8 percent.
3. The NO_x and SO₂ emission limits of the proposed gas turbine shall be subject to the standards of performance for new stationary sources (NSPS) subpart GG. Maximum NO_x emissions shall be limited to 0.0075% (75 ppm) at 15% oxygen on dry basis, and sulfur content of fuel shall be less than 0.8 percent.

PERMITTEE:
Thermo Electron Corp.
Box 459
Waltham, MA 02254

I. D. Number:
Permit Number: AC 13-68249
Expiration Date: December 31, 1986

SPECIFIC CONDITIONS:

4. Compliance with NOx emission limit in specific condition No. 3 is required to be demonstrated. The permittee shall conduct a performance test in accordance with NSPS subpart GG.

5. The visible emissions from the gas turbine shall not be greater than 20% opacity. DER Method 9(17-2.700(6)(a)9, FAC) shall be used for the performance test conducted by the permittee.

6. Reasonable precaution to prevent fugitive particulate emissions during construction, such as coating or spraying roads and the construction site, shall be taken by the permittee.

7. The permittee shall demonstrate compliance with the conditions of this construction permit and submit a complete application for an operating permit to the Southeast District prior to 90 days before the expiration date of this permit. The applicant may continue to operate in compliance with all terms of this construction permit until its expiration or until issuance of an operating permit.

Issued this 28 day of September 1983

**STATE OF FLORIDA DEPARTMENT OF
ENVIRONMENTAL REGULATION**



VICTORIA J. TSCHINKEL, Secretary


_____ pages attached.

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

INTEROFFICE MEMORANDUM

For Routing To District Offices And/Or To Other Than The Addressee		
To: _____	Loctn.: _____	
To: _____	Loctn.: _____	
To: _____	Loctn.: _____	
From: _____	Date: _____	
Reply Optional []	Reply Required []	Info. Only []
Date Due: _____	Date Due: _____	

TO: Victoria J. Tschinkel

FROM: Clair Fancy 

DATE: September 28, 1983

SUBJ: Approval of Attached Air Construction Permit

RECEIVED
SEP 28 1983

Office of the Secretary

Attached for your approval and signature is one Air Construction Permit for which the applicant is Thermo Electron Corporation. The construction proposed is a 239 MBtu/hr gas turbine at the Dade County Downtown Governmental Center in Miami.

Day 90, after which the permit would be issued by default, is October 1, 1983.

The Bureau recommends your approval and signature.

CF/pa

Attachment

Check Sheet

Company Name: Thermo Electron Corporation
Permit Number: AC 13-068249
PSD Number: _____
Permit Engineer: _____

Application:

- | | |
|--|--------------------------|
| <input checked="" type="checkbox"/> Initial Application | Cross References: |
| <input checked="" type="checkbox"/> Incompleteness Letters | <input type="checkbox"/> |
| <input checked="" 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

P 408 532 036

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED—
NOT FOR INTERNATIONAL MAIL

(See Reverse)

Sent to	
Mr. Stephen J. Remen, PE	
Street and No.	
P.O., State and ZIP Code	
Postage	\$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to whom and Date Delivered	
Return Receipt Showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	\$
Postmark or Date	
8/12/86	

PS Form 3811, July 1983 447-845

SENDER: Complete items 1, 2, 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 service(s) requested.

1. Show to whom, date and address of delivery.
2. Restricted Delivery.

3. Article Addressed to:
Mr. Stephen J. Remen, P.E.
Thermo Electron
P. O. Box 9047
Waltham, Mass. 02254-9047

4. Type of Service:	Article Number
<input type="checkbox"/> Registered <input type="checkbox"/> Insured <input checked="" type="checkbox"/> Certified <input type="checkbox"/> COD <input type="checkbox"/> Express Mail	P 408 532 036

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

5. Signature - Addressee
X *Stephen J. Remen*

6. Signature - Agent
X

7. Date of Delivery

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

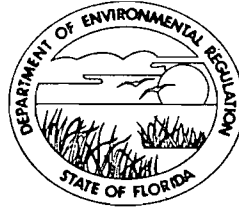
DOMESTIC RETURN RECEIPT



PS Form 3800, Feb. 1982

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

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



BOB GRAHAM
GOVERNOR
VICTORIA J. TSCHINKEL
SECRETARY

August 11, 1986

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Stephen J. Remen, P.E.
Project Director
Thermo Electron
Post Office Box 9047
Waltham, Massachusetts 02254-9047

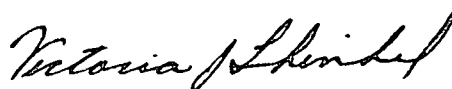
Dear Mr. Remen:

Re: Modification of Conditions - Permit No. AC 13-68249

The department is in receipt of your July 23, 1986, letter requesting the expiration date of the permit to construct a gas turbine be extended to allow additional time to obtain approval of the testing procedures, demonstrate compliance with the emission standards, and prepare and submit an application for a permit to operate. The request is acceptable and the expiration date is changed from December 31, 1986, to April 1, 1987.

A copy of this letter must be attached to the referenced construction permit and shall become a part of that permit.

Sincerely,


Victoria J. Tschinkel
Secretary

VJT/ks

cc: Isidore Goldman
Pat Wong

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION



Interoffice Memorandum

FOR ROUTING TO OTHER THAN THE ADDRESSEE

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

RECEIVED

AUG 11 1986

TO: Victoria J. Tschinkel
FROM: C. H. Fancy, Deputy Chief, BAQM
DATE: August 11, 1986
SUBJ: Modification of Conditions Thermo Electron

Office of the Secretary

The attached letter, drafted for your signature, will extend the expiration date of air construction permit No. AC 13-68249.

The bureau recommends your approval.

CHF/WH/s

attachment: letter

DER

AUG 12 1986

BAQM

PM
7-24-86
Boston, MA

Thermo Electron
Energy Systems

101 First Avenue
Post Office Box 9047
Waltham, MA 02254-9047

(617) 890-8700
Telex: 92-3411
Fax: (617) 890-6839

DER

JUL 28 1986

BAQM

July 23, 1986

Department of Environmental Regulation
Bureau of Air Quality
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301-8241

Attention: C.H. Fancy

Re: Extension of Emission Compliance Testing Date for
Construction Permit #AC13-68249

Dear Mr. Fancy:

Currently Permit Number AC13-68249 has an expiration date of December 31, 1986. We interpret the permit conditions to require the submission of the emission compliance testing methods and procedures for the gas turbine facility for your review and approval and satisfactory completion of the emission compliance testing 90 days prior to the permit expiration date or October 1, 1986.

In order to provide an adequate allowance of time to prepare and submit the testing procedures for your review, obtain the necessary approvals, satisfactorily demonstrate compliance with the emission standards and provide a small margin of time for any unforeseen delays, we would like to request that the October 1, 1986 deadline be extended to December 31, 1986 and the permit expiration date be correspondingly extended.

Should you require any further information regarding this request, please contact me.

Sincerely,



Stephen J. Remen P.E.
Project Director

SJR/jtg

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

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



BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

December 18, 1984

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Jerry P. Davis
President and General Manager
Thermo Electron Corporation
P. O. Box 459
Waltham, Massachusetts 02254

Dear Mr. Davis:

Re: Modification of Conditions - Permit No. AC 13-68249

The department is in receipt of your November 30, 1984, letter that requested the limit on the annual operation hours for the proposed Rolls-Royce SK-30-C1 gas turbine in the referenced permit to construct be increased. This request is acceptable provided the compliance test procedures are described in more detail. The specific conditions for the annual operation hours and compliance test procedures are changed as noted below.

Present Conditions

1. The operating hours of the proposed gas turbine shall not exceed 8,000 hours per year.
4. Compliance with NO_x emission limit in specific condition No. 3 is required to be demonstrated. The permittee shall conduct a performances test in accordance with NSPS Subpart GG.

Revised Conditions

1. The operating time of the proposed gas turbine shall not exceed 8,360 hours per year.
4. Compliance with the NO_x emission limit in specific condition No. 3 must be demonstrated at the maximum continuous electrical power output of the gas turbine (19,600 KW at 95°F to 22,000 KW at 59°F). The permittee shall conduct a performance test in accordance with 40 CFR 60.335, Test Methods and Procedures of Subpart GG - Standards of Performance for Stationary Gas Turbines prior to October 1, 1986.

Mr. Jerry P. Davis
Page Two
December 18, 1984

Attachments to be Incorporated

Mr. Jerry P. Davis letter dated November 30, 1984.

A copy of this letter must be attached to the reference construction permit and shall become a part of that permit.

Sincerely,



Victoria J. Tschinkel
Secretary

VJT/ks

cc: Tom Tittle, DER SE District
Pat Wong, Dade County Department of
Environmental Resource Management

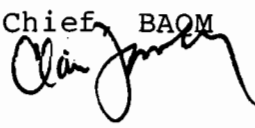
attachment: letter

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

INTEROFFICE MEMORANDUM

For Routing To District Offices And/Or To Other Than The Addressee		
To: _____	Loctn.: _____	
To: _____	Loctn.: _____	
To: _____	Loctn.: _____	
From: _____	Date: _____	
Reply Optional []	Reply Required []	Info. Only []
Date Due: _____	Date Due: _____	

TO: Victoria J. Tschinkel
FROM: C. H. Fancy, Deputy Chief, BAQM
DATE: December 17, 1984
SUBJ: Modifications of Conditions - Thermo Electron Gas Turbine



RECEIVED
DEC 18 1984

Office of the Secretary

The attached letter, drafted for your signature will extend the allowable annual operation hours and clarify the compliance test conditions for air construction permit No. AC 13-68249.

The bureau recommends your approval.

CHF/WH/s

attachment: letter

Permit #
AC 13-68249
Steve Remen
Thermo-Electron
617-890-8700
Exp 12/31/84
Ammonia test by 10/1
7/22/86 - Told send
letter request extension wa.

Energy Systems Division

101 First Avenue
P.O. Box 459
Waltham, Massachusetts 02254
(617) 890-8700

Telex: 92-3411
Cable: TEECORP

November 30, 1984

DER
DEC 06 1984
BAQM

Department of Environmental Regulation
Bureau of Air Quality
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301-8241

Attention: C.H. Fancy

Subject: DER Permit # AC 13-68249 Dated September 28, 1983

Dear Mr. Fancy:

Since the issuance of the subject permit to construct a gas turbine based cogeneration plant in Miami, the gas turbine manufacturer has implemented design modifications which improve the gas turbine efficiency and power output. The purpose of this letter is to inform you of the change in turbine performance due to these modifications, and to request that Specific Condition #1 of the permit which limits the annual plant operating hours to 8000 be revised to 8360.

These turbine modifications result in the maximum continuous electrical power output of the gas turbine increasing from the 18,000kw rating stated in the permit to 19,600 kw at an ambient temperature of 95°F and 22,000 kw at an ambient temperature of 59°F. The specific processes and operations applied for and shown on the approved permit drawings and exhibits remain unchanged.

Because the cogeneration plant supplies continuous loads in the Downtown Miami Government Center, the requested revision in the operating hours would allow the plant to operate, if it is available, beyond the currently permitted level of 8000 hrs. The plant will comply with all other conditions of the permit.

Mr. C.H. Fancy
Page 2

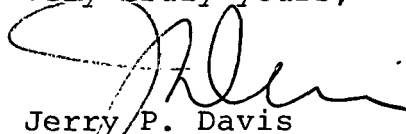
November 30, 1984

The net effect on annual pollutant emissions due to the change in turbine performance and the increase in operating hours from 8000 to 8360 is shown on Table #1 and is summarized below:

- o Nitrous Oxides (NO_x) emissions will increase from 232 to 239 tons per year.
- o All other pollutant emissions will either decrease or remain unchanged from the values stated in the permit.

Should you require further information regarding this matter, please contact me.

Very truly yours,



Jerry P. Davis
President and General Manager
Energy Systems Division

SJR:jtg

Attachments: Permit # AC 13-68249

TABLE NO. 1

COMPARISON OF ANNUAL EMISSION LEVELS

<u>Pollutant</u>	<u>Original Annual Emission Levels</u> (8000 hrs. of operation/yr)		<u>Revised Annual Emission Levels</u> (8360 hrs. of operation/yr)
	<u>Design Power Level (1)</u> (17,000 kw)	<u>Maximum Continuous Rating (1)</u> (18,000 kw)	<u>Maximum Continuous Rating (2)</u> (19,600 kw @ 95 F) (22,000 kw @ 59 F)
Oxides of Nitrogen (NO _x)	217 tpy	232 tpy	239 tpy
Carbon Monoxide (CO)	225 tpy	214 tpy	153 tpy
Unburned Hydrocarbons (HC)	38.5 tpy	34.4 tpy	23 tpy
Particulates (TSP)	1.2 tpy	1.2 tpy	1.2 tpy
Oxides of Sulfur (SO ₂)	Nil	Nil	Nil

Notes:

1. Annual Emission Levels as shown on the original permit application and attachments dated March, 1983, for the Rolls-Royce SK-30-C operating 8000 hrs per year
2. Annual Emission Levels for the Rolls-Royce SK-30-C1 operating 8360 hrs. per year

BINGHAM, DANA & GOULD

100 FEDERAL STREET
BOSTON, MASSACHUSETTS 02110

TELEPHONE: (617) 357-9300
TWX: 7103210169
CABLE ADDRESS: BLDGDHAM BSN

WASHINGTON OFFICE:

SUITE 400
1724 MASSACHUSETTS AVENUE, N.W.
WASHINGTON, D. C. 20036
TELEPHONE: (202) 822-9320

CAPE COD OFFICE:

146 MAIN STREET
HYANNIS, MASSACHUSETTS 02601
TELEPHONE: (617) 771-2161

EUROPEAN OFFICE:

5 CHEAPSIDE
LONDON EC2V 6AA
TELEPHONE: 01-236 2182
TELEX: 888179
CABLE ADDRESS: "BDGLDN G"

August 23, 1983

VIA PUROLATOR COURIER

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

DER
AUG 24 1983
BAQM

Re: Thermo Electron Corporation
Publication of Notice of
Proposed Agency Action

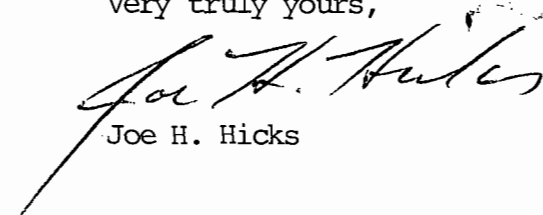
Dear Mr. Fancy:

On behalf of our client, Thermo Electron Corporation ("Thermo Electron"), I am submitting herewith, as proof of publication of a Notice of Proposed Agency Action in accordance with your letter of August 4, 1983, to Mr. Jerry P. Davis of Thermo Electron, an Affidavit of the Office Manager of The Miami Herald setting forth the text of said Notice as published in The Miami Herald on August 21, 1983.

If you have any questions regarding the aforesaid publication, please contact either William O. Flannery, Esquire, at Thermo Electron at 617/890-8700 or the undersigned at the telephone number set forth above.

Please confirm your receipt of the enclosed Affidavit by signing and returning to me the enclosed copy of this letter, in the envelope provided.

Very truly yours,


Joe H. Hicks

JHH:mft
Enclosure

cc: Mr. Jerry P. Davis
William O. Flannery, Esq.
Gordon B. Greer, Esq.

RECEIPT ACKNOWLEDGED

By: _____

Date: _____

STATE OF FLORIDA
COUNTY OF DADE:

Before the undersigned authority personally appeared

Eddie L. Sweet

who on oath says that he/she is

Office Manager

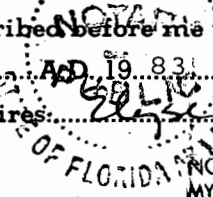
of The Miami Herald, a daily newspaper published at Miami in Dade County, Florida; that the attached copy of advertisement was published in said newspaper in the issues of

Aug. 21, 1983

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

Sworn to and subscribed before me this 22nd day of Aug 19 83 My commission expires

[Handwritten Signature]



NOTARY PUBLIC STATE OF FLORIDA
MY COMMISSION EXPIRES FEB 7 1987
BONDED THRU GENERAL INSURANCE UND

NOTICE OF PROPOSED AGENCY ACTION

The Department of Environmental Regulation gives notice of its intent to issue a permit to Thermo Electron Corporation for the installation of a cogeneration system at the Downtown Governmental Center in Miami, Dade County, Florida. A determination of Best Available Control Technology (BACT) was not required.

A person who is substantially affected by the Department's proposed permitting decision may request a hearing in accordance with Section 120.57, Florida Statutes, and Chapters 17-1 and 28-5, Florida Administrative Code. The request for hearing must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Twin Towers Office Building, Tallahassee, Florida 32301, within fourteen (14) days of publication of this notice. Failure to file a request for hearing within this time period shall constitute a waiver of any right such person may have to request a hearing under Section 120.57, Florida Statutes.

The application, technical evaluation and department intent are available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at the following locations:

DER Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, FL 32301

DER Southeast District
3301 Gun Club Road
West Palm Beach,
Florida 33402

Dade County Dept of Environmental Resources Management
909 Southeast 1st Ave
Brickell Plaza
Miami, Florida 33131

Comments on this action shall be submitted in writing to Bill Thomas of Tallahassee office within thirty (30) days of this notice.
Aug. 21, 1983
Ad. No. 379-356R

DER
AUG 24 1983
BAQMI

PS Form 3811, Jan. 1979
RETURN RECEIPT, REGISTERED, INSURED AND CERTIFIED MAIL

SENDER: Complete items 1, 2, and 3.
Add your address in the "RETURN TO" space on reverse.

1. The following service is requested (check one.)
 Show to whom and date delivered..... \$
 Show to whom, date and address of delivery..... \$
 RESTRICTED DELIVERY
 Show to whom and date delivered..... \$
 RESTRICTED DELIVERY.
 Show to whom, date, and address of delivery. \$

(CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO:
 Jerry P Davis, Pres.
 Thermo Election Corp
 Box 459
 Waltham, MA 02254

3. ARTICLE DESCRIPTION:
 REGISTERED NO. CERTIFIED NO. INSURED NO.
 P408 530 383

(Always obtain signature of addressee or agent)

I have received the article described above.
 SIGNATURE Addressee Authorized agent

DATE OF DELIVERY *RM Jensen*

POSTMARK

3. ADDRESS (Complete only if requested)

6. UNABLE TO DELIVER BECAUSE: CLERK'S INITIALS

☆GPO : 1979-300-459

P 408 530 383

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED—
NOT FOR INTERNATIONAL MAIL

(See Reverse)

Sent to <i>Jerry Davis, Thermo Election</i>	
Street and No. <i>Box 459</i>	
P.O., State and ZIP Code <i>Waltham, MA 02254</i>	
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	

PS Form 3800, Feb. 1982

Subj file

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

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



BOB GRAHAM
GOVERNOR
VICTORIA J. TSCHINKEL
SECRETARY

August 4, 1983

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. Jerry P Davis
President and General Manager
Thermo Electron Corporation
Box 459
Waltham, Massachusetts 02254

Dear Mr. Davis:

Attached is one copy of the Preliminary Determination and proposed permit for the installation of a cogeneration system at the Downtown Governmental Center in Miami, Dade County, Florida.

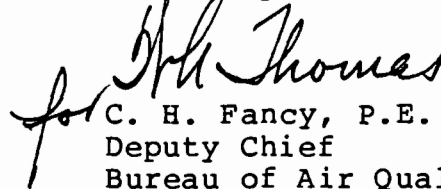
Before final action can be taken on your proposed permit, you are required by Florida Administrative Code Rule 17-1.62(3) to publish the attached Notice of Proposed Agency Action in the legal advertising section of a newspaper of general circulation in Dade County no later than fourteen days after receipt of this letter. The department must be provided with proof of publication within seven days of the date the notice is published. The permit cannot be revised until the public has an opportunity to comment on it. Failure to publish the notice may be grounds for denial of the permit.

The Preliminary Determination and proposed permit constitutes a proposed action of the department and is subject to administrative hearing under the provisions of Chapter 120, Florida Statutes, if requested within fourteen days from receipt of this letter. Any petition for hearing must comply with the requirements of Florida Administrative Code Rule 28-5.201 and be filed with the Office of General Counsel, Florida Department of Environmental Regulation, Twin Towers Office Building, 2600 Blair Stone Road, Tallahassee, Florida 32301. Failure to file a request for hearing within fourteen days shall constitute a waiver of your right to a hearing. Filing is deemed complete upon receipt by the Office of General Counsel.

Mr. Jerry P. Davis
August 4, 1983
Page Two

Please submit, in writing, any comments which you wish to have considered concerning the department's proposed action to Mr. Bill Thomas of the Bureau of Air Quality Management.

Sincerely,

for 

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

CF/pa

Attachments

cc: Mr. Stephen J. Remen, Thermo Electron Corporation
Mr. Jim Williams, DER Southeast District
Mr. Hugh Wong, Dept. of Environmental Resources Management

NOTICE OF PROPOSED AGENCY ACTION

The Department of Environmental Regulation gives notice of its intent to issue a permit to Thermo Electron Corporation for the installation of a cogeneration system at the Downtown Governmental Center in Miami, Dade County, Florida. A determination of Best Available Control Technology (BACT) was not required.

A person who is substantially affected by the Department's proposed permitting decision may request a hearing in accordance with Section 120.57, Florida Statutes, and Chapters 17-1 and 28-5, Florida Administrative Code. The request for hearing must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Twin Towers Office Building, Tallahassee, Florida 32301, within fourteen (14) days of publication of this notice. Failure to file a request for hearing within this time period shall constitute a waiver of any right such person may have to request a hearing under Section 120.57, Florida Statutes.

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DER Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, FL 32301

DER Southeast District
3301 Gun Club Road
West Palm Beach, Florida 33402

Dade County Department of Environmental Resources Management
909 Southeast 1st Avenue
Brickell Plaza
Miami, Florida 33131

Comments on this action shall be submitted in writing to Bill Thomas of Tallahassee office within thirty (30) days of this notice.

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

28-5.15 Requests for Formal and Informal Proceedings

- (1) Requests for proceedings shall be made by petition to the agency involved. Each petition shall be printed typewritten or otherwise duplicated in legible form on white paper of standard legal size. Unless printed, the impression shall be on one side of the paper only and lines shall be double spaced and indented.
- (2) All petitions filed under these rules should contain:
 - (a) The name and address of each agency affected and each agency's file or identification number, if known;
 - (b) The name and address of the petitioner or petitioners;
 - (c) All disputed issues of material fact. If there are none, the petition must so indicate;
 - (d) A concise statement of the ultimate facts alleged, and the rules, regulations and constitutional provisions which entitle the petitioner to relief;
 - (e) A statement summarizing any informal action taken to resolve the issues, and the results of that action;
 - (f) A demand for the relief to which the petitioner deems himself entitled; and
 - (g) Such other information which the petitioner contends is material.

Preliminary Determination
and
Technical Evaluation

Thermo Electron Corporation

Gas Turbine
Downtown Government Center
Miami, Dade County

Permit Number
AC 13-68249

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

July 11, 1983

Preliminary Determination
and
Technical Evaluation

Contents

<u>Section</u>	<u>Page</u>
I. Applicant and Source Location	<u>1</u>
II. Project Description	<u>1</u>
III. Air Emissions	<u>1&2</u>
IV. Rule Applicability	<u>2</u>
V. Conclusions	<u>2</u>

I. Applicant and Source Location

A. Applicant

Thermo Electron Corporation
Box 459
Waltham, MA 02254

B. Source Location

The proposed construction will occur at the Dade County Downtown Government Center in Miami, Florida.

The UTM coordinates are: 17-580.5 km East and 2850.9 km North.

II. Project Description

The project is for the installation of a cogeneration system at the Downtown Government Center site in Miami, Florida. The system includes a gas turbine, a heat recovery unit, a steam turbine, and absorption chillers.

The only source of air pollution emissions in the cogeneration system is the gas turbine. The gas turbine normally uses natural gas for firing, No. 2 fuel oil will be used in emergency condition only. Emergency conditions include starting the cogeneration system when isolated from the utility (black start) and operation of the system should the supply of natural gas be temporarily interrupted (equipment maintenance or modifications etc.).

The distillate oil would be pumped to the gas turbine from an underground storage tank. This tank is part of an emergency electric supply for the building complex which provides uninterruptable power for safety related services such as elevators, fire protection, light, etc. The source of power for this safety system is a diesel electric generator.

III. Air Emissions

The gas turbine normally uses natural gas for fuel. The design power level for the gas turbine is 17,000 kw. The maximum continuous rating (MCR) is 18,000 kw. Annual emissions (tons/yr) at both power levels are summarized below:

<u>Pollutant</u>	<u>Design Power Level</u>	<u>Maximum Continuous Rating</u>
Oxides of Nitrogen (NOx)	217	232
Carbon Monoxide (CO)	225	214
Hydrocarbons (HC)	38.5	34.4
Particulates (PM)	1.2	1.2
Sulfur Dioxide (SO ₂)	Nil	Nil

IV. Rule Applicability

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

The new gas turbine will be a major source in a new emitting facility located in an attainment area for all the pollutant except ozone. The facility is located within the Dade County ozone (VOC) nonattainment area. The maximum VOC emissions of the proposed gas turbine will be 38.5 tons per year which is less than 40 tons per year, the applicable significant emission rate for VOC emissions in Table 500-2 of Rule 17-2.500. Therefore, the proposed project is exempt from Rule on 17-2.510, New Source Review for Nonattainment Areas.

The facility would not belong to any of the facility categories listed in Table 500-1, Major Facility Categories, and the air emissions for any pollutant are less than 250 tons per year. Therefore, the project is not subject to the provisions of section 17-2.500, Prevention of Significant Deterioration (PSD) which requires an air quality impact analysis and the use of Best Available Control Technology (BACT).

The project is subject to the provisions of Section 17-2.660, Standards of Performance for New Stationary Sources (NSPS).

V. Conclusions

Based on an evaluation of the application, the Department believes that compliance with applicable state air regulations will be achieved provided certain specific conditions are met.

The general and specific conditions are listed in the attached draft State permit (AC 13-68249).

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

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



BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

PERMITTEE:
Thermo Electron Corp.
Box 459
Waltham, MA 02254

Permit Number: AC 13-68249
Expiration Date: December 31, 1986
County: Dade
Latitude/Longitude: 25° 46' 31"N/
80° 11' 49"W
Project: Gas Turbine

This permit is issued under the provisions of Chapter(s) 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 construction of 239 MBtu/hr gas turbine at the Dade County Downtown Government Center in Miami, Florida.

Construction shall be in accordance with the attached permit application and additional information except as otherwise noted on pages 5 and 6, Specific Conditions.

Attachments:

1. Application to construct Air Pollution Sources, DER Form 17-1.122(16), received on April 4, 1983.
2. DER's incompleteness letter to Applicant, dated May 3, 1983.
3. Applicant's response to DER, received on June 6, 1983.

PERMITTEE:
Thermo Electron Corp.
Box 459
Waltham, MA 002254

I. D. Number:
Permit Number: AC 13-68249
Expiration Date: December 31, 1986

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:
Thermo Electron Corp.
Box 459
Waltham, MA 02254
GENERAL CONDITIONS:

I. D. Number:
Permit Number: AC 13-68249
Expiration Date: December 31, 1986

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

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

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

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

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

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

PERMITTEE:
Thermo Electron Corp.
Box 459
Waltham, MA 02254

I. D. Number:
Permit Number: AC 13-68249
Expiration Date: December 31, 1986

GENERAL CONDITIONS:

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

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

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

11. This permit is transferable only upon department approval in accordance with Florida Administrative Code Rules 17-4.12 and 17-30.30, as applicable. The permittee shall be liable for any 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:

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

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

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

PERMITTEE:
Thermo Electron Corp
Box 459
Waltham, MA 02254
GENERAL CONDITIONS:

I. D. Number:
Permit Number: AC 13-68249
Expiration Date: December 31, 1986

- b. The permittee shall retain at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation), copies of all reports required by this permit, and records of all data used to complete the application for this permit. The time period of retention shall be at least three years from the date of the sample, measurement, report or application unless otherwise specified by department rule.
- c. Records of monitoring information shall include:
- the date, exact place, and time of sampling or measurements;
 - the person responsible for performing the sampling or measurements;
 - the date(s) analyses were performed;
 - the person responsible for performing the analyses;
 - the analytical techniques or methods used; and
 - the results of such analyses.

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

SPECIFIC CONDITIONS:

1. The operating time of the proposed gas turbine shall not exceed 8,000 hours per year.
2. In emergency, the gas turbine has provisions for burning No. 2 distillate oil. The maximum sulfur content of fuel oil shall be less than 0.8 percent.
3. The NO_x and SO₂ emission limits of the proposed gas turbine shall be subject to the standards of performance for new stationary sources (NSPS) subpart GG. Maximum NO_x emissions shall be limited to 0.0075% (75 ppm) at 15% oxygen on dry basis, and sulfur content of fuel shall be less than 0.8 percent.

PERMITTEE:
Thermo Electron Corp.
Box 459
Waltham, MA 02254

I. D. Number:
Permit Number: AC 13-68249
Expiration Date: December 31, 1986

SPECIFIC CONDITIONS:

4. Compliance with NOx emission limit in specific condition No. 3 is required to be demonstrated. The permittee shall conduct a performance test in accordance with NSPS subpart 60.335.

5. The visible emissions from the gas turbine shall not be greater than 20% opacity. DER Method 9(17-2.700(6)(a)9, FAC) shall be used for the performance test conducted by the permittee.

6. Reasonable precaution to prevent fugitive particulate emissions during construction, such as coating or spraying roads and the construction site, shall be taken by the permittee.

Issued this ____ day of _____, 1983

**STATE OF FLORIDA DEPARTMENT OF
ENVIRONMENTAL REGULATION**

VICTORIA J. TSCHINKEL, Secretary

____ pages attached.



Energy Systems Division

101 First Avenue
P.O. Box 459
Waltham, Massachusetts 02254
(617) 890-8700

Telex: 92-3411
Cable: TEECORP

May 17, 1983

DER
JUN 06 1983
BAQM

Mr. C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality Management
State of Florida
Department of Environmental Regulation
2600 Blair Stone Road
Twin Towers Office Building
Tallahassee, Florida 32301

SUBJECT: APPLICATION FOR A CONSTRUCTION PERMIT, DADE COUNTY
COGENERATION SYSTEM

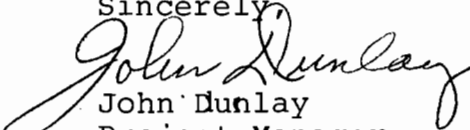
Dear Mr. Fancy:

Your letter of May 3, 1983 states that the application fee has increased from \$20 to \$1000 for a source having potential emissions of more than 100 tons per year of any single pollutant. The enclosed check for \$980 covers the difference between the original submittal and the present fee.

Your letter also requested further clarification of Thermo Electron's role in the Dade County Cogeneration Project. Thermo Electron has been working with Dade County for over two years defining technical requirements, evaluating economics, and exploring various financial arrangements for building and operating the system. As a result of these efforts, contract agreements will soon be completed. Under the planned arrangements, Thermo Electron will build the gas turbine cogeneration system described in the permit application and operate the system under lease from the financial group providing construction funds. Electricity and chilled water output from the system will be supplied to Dade County under a sales agreement.

As builder and operator of the cogeneration system, Thermo Electron is responsible for obtaining all permits required for the system. If further information is required in processing the application, please contact the undersigned.

Sincerely,


John Dunlay
Project Manager

JD:jm

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

No. 33677

RECEIPT FOR APPLICATION FEES AND MISCELLANEOUS REVENUE

Received from Thermo Electron Corp. Date MAY 17, 1983

Address P.O. Box 459 Waltham, Massachusetts Dollars \$ 980.00

Applicant Name & Address same as above 02254

Source of Revenue _____

Revenue Code 1101 Application Number AC 13-08247

By Patricia G. Jordan



ENERGY SYSTEMS DIVISION

101 First Avenue
Post Office Box 459
Waltham, Massachusetts 02254



Old Colony Bank
AND TRUST COMPANY OF BRISTOL COUNTY

AN AFFILIATE OF THE FIRST NATIONAL BANK OF BOSTON

53-142
113

	Date	Check No.	Net Amount
Pay	05/26/83	001197 00001197	*****980.00

NINE HUNDRED EIGHTY AND 00/100 DOLLARS

To the
order of

STATE OF FLORIDA, DEPARTMENT OF
ENVIRONMENTAL REGULATION
909 S E FIRST AVENUE
MIAMI FL

Michael J. Jones
Authorized Signature

Co-signature required over \$5000.00

33131



Best Available Copy

METROPOLITAN DADE COUNTY, FLORIDA

ENVIRONMENTAL RESOURCES MANAGEMENT

909 S.E. FIRST AVENUE
BRICKELL PLAZA BUILDING—RM. 402
MIAMI, FLORIDA 33131
(305) 579-2760



May 4, 1983

DER
MAY 13 1983
BAQM

Roy M. Duke, P.E.
Subdistrict Manager
Florida Department of Environmental Regulation
Post Office Box 3858
West Palm Beach, Florida 33402

REFERENCE: Application for Renewal of
Permit to Operate an Air
Pollution Source

APPLICANT: Thermo Electron Corporation

LOCATION: Metro Dade Downtown Government Center
POLLUTION SOURCE: Gas fired cogeneration plant
POLLUTION CONTROL DEVICE: None

Dear Mr. Duke:

The referenced application has been reviewed and found to be acceptable within the provisions of Chapters 17-2 and 17-4 of the Rules of the State of Florida Department of Environmental Regulation and Chapter 24, Dade County Pollution Control Ordinance.

The issuance of a permit should be subject to the standard provisos.

Very truly yours,

H. Patrick Wong
Air Engineer
Environmental Planning Division

HPW:toc

cc: John Farina

RECEIVED
MAY 9 1983

Dept. of Environmental Reg.
West Palm Beach

DEPARTMENT OF ENVIRONMENTAL REGULATION

ROUTING AND TRANSMITTAL SLIP

ACTION NO.

ACTION DUE DATE

1. TO: (NAME, OFFICE, LOCATION)

Clair Fancy Becht

INITIAL

DATE

2.

BAQM

INITIAL

DATE

3.

Tallahassee

INITIAL

DATE

4.

File/Thermos Electron

INITIAL

DATE

REMARKS:

DERM comments

*Downtown Gov't Center
Cogeneration Unit*

*Don't think you were
sent a copy*

INFORMATION

REVIEW & RETURN

REVIEW & FILE

INITIAL & FORWARD

DISPOSITION

REVIEW & RESPOND

PREPARE RESPONSE

FOR MY SIGNATURE

FOR YOUR SIGNATURE

LET'S DISCUSS

SET UP MEETING

INVESTIGATE & REPT

INITIAL & FORWARD

DISTRIBUTE

CONCURRENCE

FOR PROCESSING

INITIAL & RETURN

FROM:

J. Goldman

DATE

5/11/83

PHONE

No. 0157004

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED—
NOT FOR INTERNATIONAL MAIL

(See Reverse)

SENT TO			
Mr. John Dunlay			
STREET AND NO.			
P.O., STATE AND ZIP CODE			
POSTAGE	\$		
CONSULT POSTMASTER FOR FEES	CERTIFIED FEE	¢	
	SPECIAL DELIVERY	¢	
	RESTRICTED DELIVERY	¢	
	OPTIONAL SERVICES	RETURN RECEIPT SERVICE	¢
		SHOW TO WHOM AND DATE DELIVERED	¢
		SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY	¢
SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY		¢	
SHOW TO WHOM, DATE AND ADDRESS OF DELIVERY WITH RESTRICTED DELIVERY	¢		
TOTAL POSTAGE AND FEES	\$		
POSTMARK OR DATE			
5/3/83			

PS Form 3800, Apr. 1976

PS Form 3811, Jan. 1979

SENDER: Complete items 1, 2, and 3. Add your address in the "RETURN TO" space on reverse.

1. The following service is requested (check one.)

Show to whom and date delivered. ¢

Show to whom, date and address of delivery. ¢

RESTRICTED DELIVERY

Show to whom and date delivered. ¢

RESTRICTED DELIVERY.

Show to whom, date, and address of delivery. \$ _____

(CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO:

Mr. John Dunlay
Thermo Electron Corp.
P. O. Box 459
Waltham, Mass. 02254

3. ARTICLE DESCRIPTION:

REGISTERED NO.	CERTIFIED NO.	INSURED NO.
	0157004	

(Always obtain signature of addressee or agent)

I have received the article described above.

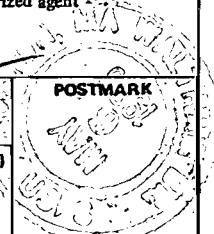
SIGNATURE Addressee Authorized agent

4. DATE OF DELIVERY: *R. J. Zeman*

5. ADDRESS (Complete only if requested)

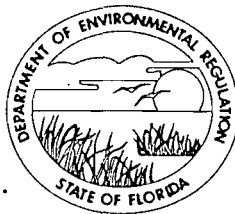
6. UNABLE TO DELIVER BECAUSE:

CLERK'S INITIALS



STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

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



BOB GRAHAM
GOVERNOR
VICTORIA J. TSCHINKEL
SECRETARY

May 3, 1983

Mr. John Dunlay
Project Manager
Energy Systems Division
Thermo Electron Corporation
101 First Avenue
P. O. Box 459
Waltham, Massachusetts 02254

Dear Mr. Dunlay:

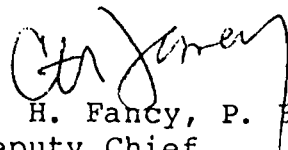
The Department has received your application for a permit to construct a gas turbine at the Dade County Downtown Government Center in Miami, Florida. From the initial review of your application, it was determined that additional application fee and information are needed before we can process the application.

The new State rule 17-4.05, Procedure to Obtain Permit; Application, requires \$1,000 application fee for a source having potential emissions of more than 100 tons per year of any single pollutant. Under the rule in effect prior to July 1982, the fee was \$20.

The applicant should be the owner or operator of the Cogeneration Plant (gas turbine). If the Thermo Electron Corporation is the operator having control of the Cogeneration Plant, please submit letter of authorization or other documentation.

As soon as the requested application fee and information are received, we will resume processing your application. If you have any questions, please call Bob King at (904) 488-1344.

Sincerely,


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

CHF/ks
cc: SE District Office
Dade County



RECEIVED
APR 4 1983

Energy Systems Division

101 First Avenue
P.O. Box 459
Waltham, Massachusetts 02254
(617) 890-8700

Dept. of Environmental Reg.
West Palm Beach

Telex: 92-3411
Cable: TEECORP

March 25, 1983

DER

APR 11 1983

BAQM

Florida Department of
Environmental Regulation
P.O. Box 3858
West Palm Beach, FL 33402

Attention: Mr. Tom Tittle

Dear Mr. Tittle:

Thermo Electron's application is enclosed for a permit to construct a gas turbine cogeneration system at the Dade County Downtown Government Center in Miami, Florida. The supporting document, "Air Pollutant Emissions from the Downtown Government Center Cogeneration Plant Dade County, Florida", presents a summary description of the cogeneration system together with detailed calculations of the expected emissions.

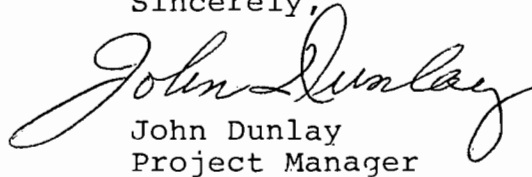
The calculations show that all emissions from the cogeneration system are less than 250 ton/yr. The system, therefore, is not subject to New Source Review for Prevention of Significant Deterioration. New Source Review for Non-attainment Areas is also not required since the system is not a source of volatile organic components. Accordingly, the applicable review requirements are those contained in Part V, 17-2.520, "Sources Not Subject to Prevention of Significant Deterioration or Nonattainment Requirements", of the Florida Administrative Code.

As indicated in the supporting document, the only source of air pollutants in the cogeneration system is the gas turbine. Section 17-2.660 of the Florida Administrative Code requires that emissions from the gas turbine comply with the Federal Standards of Performance for New Stationary Sources. Operational testing of the turbine will be performed after completion of the system installation to demonstrate compliance with these performance standards. Construction of the overall cogeneration system will comply with all applicable sections of The South Florida Building Code, 1979 Edition.

Florida Department of
Environmental Regulation
March 25, 1983
Page 2

We will appreciate your timely consideration of the enclosed application. Please contact the undersigned if further information is required.

Sincerely,



John Dunlay
Project Manager

JD:lah
Enclosure
cc: Department of Environmental
Resources Management
909 S.E. First Avenue
Miami, FL 33131
Attention: Mr. Hugh Wong

State of Florida



Department of State

I certify from the records of this office that THERMO ELECTRON CORPORATION, a Delaware corporation, is authorized to transact business within the State of Florida, qualified on December 15, 1981.

The charter number for this corporation is 851304.

I further certify that said corporation has filed all annual reports and paid all annual report filing fees due this office through December 31, 1982, and its status is active.

Given under my hand and the
Great Seal of the State of Florida,
at Tallahassee, the Capital, this the
14th day of March, 1983.



A handwritten signature in cursive script, appearing to read "George Firestone".

George Firestone
Secretary of State



Energy Systems Division

101 First Avenue
Post Office Box 459
Waltham, Massachusetts 02254

000418 ⁵⁻³⁹/₁₁₀

THE FIRST NATIONAL
BANK OF BOSTON
BOSTON, MASSACHUSETTS 02110

PETTY CASH CHECK

PAY TO THE ORDER OF State of Florida Department of Environmental Regulation 3/25 1983

Twenty and ⁰⁰/₁₀₀ \$ 20 ⁰⁰/₁₀₀
VOID IF DRAWN FOR MORE THAN \$100.00

Rorid Hughes
DRAWN BY

Michael J. Jones
AUTHORIZED SIGNATURE



STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

Nº 33665

RECEIPT FOR APPLICATION FEES AND MISCELLANEOUS REVENUE

Received from Thermo Electron Corporation Date April 11, 1983

Address P.O. Box 459, Waltham, Massachusetts 02254 Dollars \$ 20.00

Applicant Name & Address Same as above

Source of Revenue _____

Revenue Code 0101 Application Number AC 13-68249

By Patricia G. Adams

PAID
#20.00
APR 4 1983
#000418



ORDER

APR 11 1983

RECEIVED
APR 4 1983

Dept. of Environmental Reg.
West Palm Beach

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

Dept. of Environmental Reg.
West Palm Beach

SOURCE TYPE: Gas Turbine New¹ Existing¹

APPLICATION TYPE: Construction Operation Modification

101 First Avenue

COMPANY NAME: Thermo Electron Corporation

COUNTY: Waltham, MA

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peeking Unit No. 2, Gas Fired) Downtown Government Center Cogeneration Plant, Gas Fired

SOURCE LOCATION: Street Northwest 1st Street between Northwest City Miami, Florida

1st Court and Northwest 2nd Avenue

UTM: East _____ North _____

Latitude _____ ° _____ ' _____ "N

Longitude _____ ° _____ ' _____ "W

APPLICANT NAME AND TITLE: Jerry P. Davis, President and General Manager

APPLICANT ADDRESS: Energy Systems Division, Thermo Electron Corporation
Box 459, Waltham, MA 02254

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Energy Systems Division, Thermo Electron Corp.

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

*Attach letter of authorization

Signed: _____

Jerry P. Davis, President and General Manager
Name and Title (Please Type)

Date: March 1983 Telephone No. (617) 890-8700

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

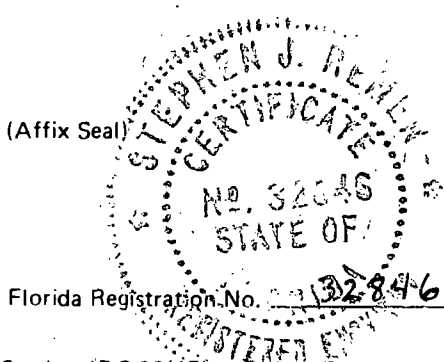
This is to certify that the engineering features of this pollution control project have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signed: _____

Stephen J. Remen
Name (Please Type)

Thermo Electron Corporation
Company Name (Please Type)
Box 459, Waltham, MA 02254
Mailing Address (Please Type)

Date: March 1983 Telephone No. (617) 890-8700



¹See Section 17-2.02(15) and (22), Florida Administrative Code, (F.A.C.)

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.

The gas turbine cogeneration system and associated emissions are described in the attached report, "Air Pollutant Emissions from the Downtown Government Center Cogeneration Plant, Dade County, Florida". The system will be in full compliance with air pollution regulations without the use of control equipment.

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

Start of Construction July 1983 Completion of Construction January 1986

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.)

Pollution control systems not required

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

None

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

F. Normal equipment operating time: hrs/day _____ ; days/wk _____ ; wks/yr _____ ; if power plant, hrs/yr 8000 ; if seasonal, describe: _____

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

1. Is this source in a non-attainment area for a particular pollutant?

Yes (but source does not emit pollutants)

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

not applicable

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

not applicable

c. If yes, list non-attainment pollutants.

ozone

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

No

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

No

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

Yes

5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source?

No

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

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

A. Raw Materials and Chemicals Used in your Process, if applicable: Not applicable

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

B. Process Rate, if applicable: (See Section V, Item 1) Not applicable

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

2. Product Weight (lbs/hr): _____

C. Airborne Contaminants Emitted:

Name of Contaminant	Emission ¹		Allowed Emission ² Rate per Ch. 17-2, F.A.C.	Allowable ³ Emission lbs/hr	Potential Emission ⁴		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/hr	T/yr	
NO _x	54.2	217	80 ppm (17-2.660)	74.0	NA		
CO	56.4	225	NA	NA	NA		
HC	9.62	38.5	NA	NA	NA		
TSP	0.3	1.2	NA	NA	NA		

D. Control Devices: (See Section V, Item 4) None

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

¹See Section V, Item 2.

²Reference applicable emission standards and units (e.g., Section 17-2.05(6) Table II, E. (1), F.A.C. – 0.1 pounds per million BTU heat input)

³Calculated from operating rate and applicable standard

⁴Emission, if source operated without control (See Section V, Item 3)

⁵If Applicable

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
Natural Gas	0.251 MMCF/hr	0.262 MMCF/hr	239

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

Fuel Analysis:

Percent Sulfur: Nil Percent Ash: Nil
 Density: .5819 SP.GR. lbs/gal Typical Percent Nitrogen: .5%
 Heat Capacity: 1013 BTU/lb BTU/gal
 Other Fuel Contaminants (which may cause air pollution): Nil

F. If applicable, indicate the percent of fuel used for space heating. Annual Average Not applicable Maximum

G. Indicate liquid or solid wastes generated and method of disposal.
None

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

Stack Height: 130 ft. Stack Diameter: 9 ft.
 Gas Flow Rate: 209,000 ACFM Gas Exit Temperature: 240 °F.
 Water Vapor Content: 5.4 % Velocity: 55 FPS

SECTION IV: INCINERATOR INFORMATION

Not applicable

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

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

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

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

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

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

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

Brief description of operating characteristics of control devices: _____

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

SECTION V: SUPPLEMENTAL REQUIREMENTS See Attached Report

Please provide the following supplements where required for this application.

1. Total process input rate and product weight – show derivation.
2. To a construction application, attach basis of emission estimate (e.g., design calculations, design drawings, pertinent manufacturer's test data, etc.) and attach proposed methods (e.g., FR Part 60 Methods 1, 2, 3, 4, 5) to show proof of compliance with applicable standards. To an operation application, attach test results or methods used to show proof of compliance. Information provided when applying for an operation permit from a construction permit shall be indicative of the time at which the test was made.
3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test).
4. With construction permit application, include design details for all air pollution control systems (e.g., for baghouse include cloth to air ratio; for scrubber include cross-section sketch, etc.).
5. With construction permit application, attach derivation of control device(s) efficiency. Include test or design data. Items 2, 3, and 5 should be consistent: actual emissions = potential (1-efficiency).
6. An 8½" x 11" flow diagram which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate where raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particles are evolved and where finished products are obtained.
7. An 8½" x 11" plot plan showing the location of the establishment, and points of airborne emissions, in relation to the surrounding area, residences and other permanent structures and roadways (Example: Copy of relevant portion of USGS topographic map).
8. An 8½" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.

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

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

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

Contaminant	Rate or Concentration
NO _x	75 ppm (15% O ₂ and dry)
SO ₂	Sulfur Content of fuel less than 0.8%

- 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? Same as A. above

Contaminant	Rate or Concentration

- D. Describe the existing control and treatment technology (if any). Not applicable

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

Contaminant	Rate or Concentration

*Explain method of determining D 3 above.

10. Stack Parameters

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

E. Describe the control and treatment technology available (As many types as applicable, use additional pages if necessary). None

1.

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

- c. Efficiency*:
- d. Capital Cost:
- e. Useful Life:
- f. Operating Cost:
- g. Energy*:
- h. Maintenance Cost:
- i. Availability of construction materials and process chemicals:

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

2.

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

- c. Efficiency*:
- d. Capital Cost:
- e. Useful Life:
- f. Operating Cost:
- g. Energy**:
- h. Maintenance Costs:
- i. Availability of construction materials and process chemicals:

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

*Explain method of determining efficiency.

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

3.

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

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

*Explain method of determining efficiency above.

- i. Availability of construction materials and process chemicals:
- j. Applicability to manufacturing processes:
- k. Ability to construct with control device, install in available space and operate within proposed levels:

4.

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

F. Describe the control technology selected: Not applicable

- 1. Control Device:
- 2. Efficiency*:
- 3. Capital Cost:
- 4. Life:
- 5. Operating Cost:
- 6. Energy:
- 7. Maintenance Cost:
- 8. Manufacturer:
- 9. Other locations where employed on similar processes:

a.

- (1) Company:
- (2) Mailing Address:
- (3) City:
- (4) State:
- (5) Environmental Manager:
- (6) Telephone No.:

*Explain method of determining efficiency above.

(7) Emissions*:

Contaminant	Rate or Concentration

(8) Process Rate*:

b.

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

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

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions*:

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

(8) Process Rate*:

10. Reason for selection and description of systems:

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

AIR POLLUTANT EMISSIONS

FROM THE
DOWNTOWN GOVERNMENT CENTER
COGENERATION PLANT
DADE COUNTY, FLORIDA

DER
APR 11 1983
BAQM

RECEIVED
APR 4 1983

Dept. of Environmental Reg.
West Palm Beach

Energy Systems Division

 **Thermo
Electron**
CORPORATION

1. SUMMARY

Dade County, Florida, and Thermo Electron Corporation are currently negotiating an agreement for the installation of a cogeneration system at the Downtown Government Center site in Miami, Florida. Thermo Electron, as contractor, is responsible for all work required to engineer, procure, erect, and operate the system.

Thermo Electron's contractor responsibility includes securing all permits and licenses required by federal, state, and local agencies for the construction, installation, initial operation of the facility. This document contains air pollution emission data for the cogeneration system, and refers to the requirements of Florida Department of Environmental Regulation Rule 17-2, Florida Administrative Code, Air Pollution, effective November 1, 1981. The system is not subject to New Source Review for Prevention of Significant Deterioration because all emissions are less than 250 ton/yr. New Source Review for Nonattainment Areas is also not required since the system is not a source of volatile organic components.

The cogeneration system includes a gas turbine, a heat recovery unit, a steam turbine, and absorption chillers. The gas turbine and the steam turbine produce electricity for use in the Downtown Government Center. Excess electricity is exported through an interconnection to the local utility, Florida Power & Light. The absorption chillers produce chilled water for air conditioning throughout the center.

The only source of air pollution emissions in the cogeneration system is the gas turbine. The gas turbine normally uses natural gas for fuel. Provisions for using liquid fuel (No. 2 Distillate) are included for emergency conditions only. The design power level for the gas turbine is 17,000 kW. The maximum continuous rating (MCR) is 18,000 kW. Annual emissions (tons/yr) at both power levels are summarized below:

<u>Pollutant</u>	<u>Design Power Level (17,000 kW)</u>	<u>Maximum Continuous Rating (18,000 kW)</u>
Oxides of Nitrogen (NO _x)	217	232
Carbon Monoxide (CO)	225	214
Unburned Hydrocarbons (HC)	38.5	34.4
Particulates (TSP)	1.2	1.2
Oxides of Sulfur (SO ₂)	Nil	Nil

2. SYSTEM DESCRIPTION

A cogeneration system producing electric power and chilled water is planned for the Dade County Government complex in Miami, Florida. The system will be installed in the Central Support Facility of the Downtown Government Center shown in Figure 1. An artist view of the cogeneration system installed in the support facility building is shown in Figure 2. Design, procurement, and installation of the cogeneration system will require approximately 30 months. Based on an expected start date of July 1983, the cogeneration system will begin commercial operation in January 1986.

The cogeneration system consists of the following major components:

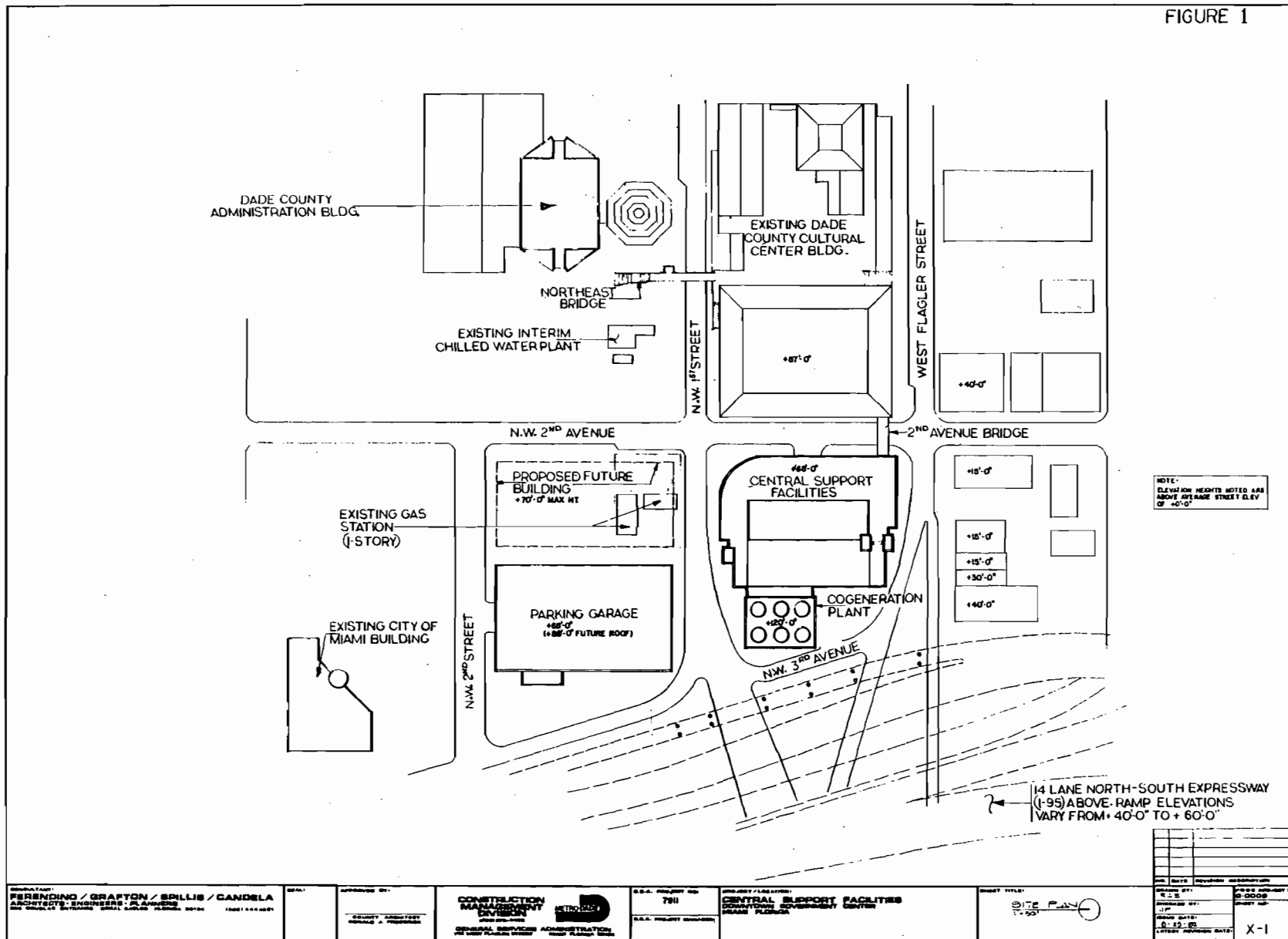
- o A gas turbine generator set with a maximum continuous rating (MCR) of 18,000 kW. The normal design power level for the gas turbine in the Dade County system application is 17,000 kW. The fuel for the gas turbine is natural gas. The natural gas is boosted from the gas main service pressure of 10 psig to the 250 psig pressure required by the gas turbine using electric motor driven reciprocating compressors.
- o An unfired dual pressure heat recovery unit with a rated steaming capacity of 88,000 lbs/hr at 625 psig, 810°F and 20,000 lbs/hr at 20 psig, saturated.
- o A dual pressure extraction condensing steam turbine generator set with a maximum continuous rating of 9,000 kW.
- o An absorption chiller plant with a capacity of 5,200 tons of refrigeration.

Under normal operating conditions, the cogeneration system is started and operated at the design steady state power level using natural gas for fuel. Electricity to power system auxiliaries (e.g. the gas booster compressors) is provided through the electrical interconnect joining the cogeneration system to the Florida Power & Light utility system.

For emergency operating conditions, the gas turbine has provisions for burning No. 2 distillate oil. Emergency conditions include starting the cogeneration system when

BEST AVAILABLE COPY

FIGURE 1



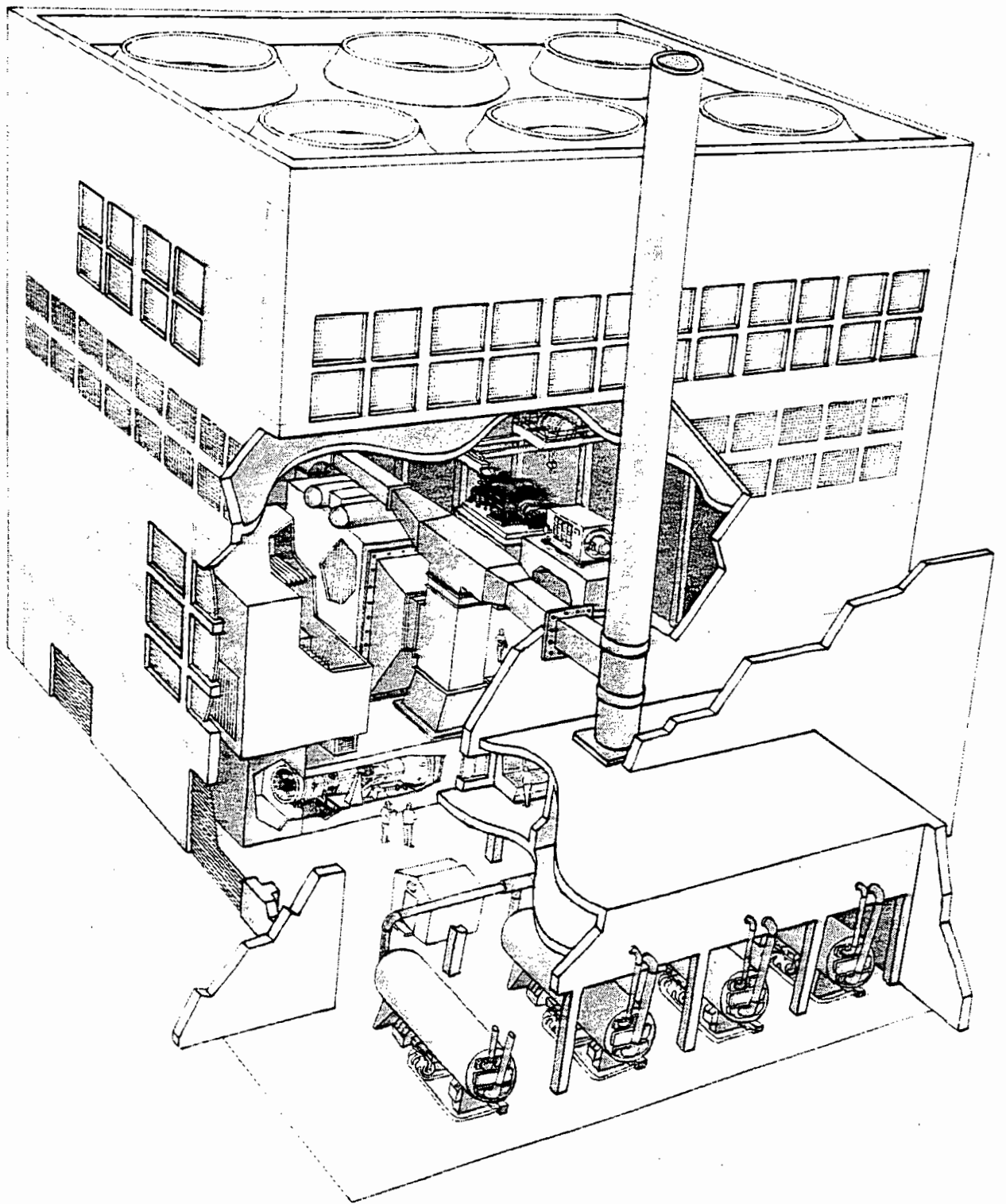


FIGURE 2

ARTIST VIEW OF COGENERATION
SYSTEM INSTALLATION

isolated from the utility (black start) and operation of the system should the supply of natural gas be temporarily interrupted (equipment maintenance or modifications etc.). Both of these emergency conditions would exist for only short periods of time.

The distillate oil would be pumped to the gas turbine from an underground storage tank. This tank is part of an emergency electric supply for the building complex which provides uninterruptable power for safety related services such as elevators, fire protection, light, etc. The source of power for this safety system is a diesel electric generator. The capacity of the storage tank is 10,000 gallons.

3. GAS TURBINE EMISSIONS

The gas turbine is a Rolls-Royce SK-30. The SK-30 is an open cycle, factory assembled equipment package employing the Rolls-Royce Olympus Gas Generator powering a Rolls-Royce three-stage industrial power turbine, which in turn directly drives a two pole cylindrical rotor generator. Performance data for the unit are shown in Table 1 for the Dade County site conditions. Data are included for the 17,000 kW normal design power level as well as at the 18,000 kW maximum continuous rating. Typical air intake temperatures are 95°F during summer operation and 59°F during winter operation.

Pollutant emissions from the SK-30 are primarily dependent on the air/fuel mass ratio. Average ratios are calculated based on a 7 month summer operating period and a 5 month winter period.

Power Level = 17,000 kW

$$\begin{aligned} \text{Exhaust Flow} &= \frac{7}{12} (88.0) + \frac{5}{12} (92.08) = 89.7 \text{ kg/sec} \\ &= 712,039 \text{ lbs/hr} \end{aligned}$$

$$\text{Efficiency} = \frac{7}{12} (25.0) + \frac{5}{12} (25.7) = 25.3 \%$$

$$\text{Heat Rate} = \frac{3412}{.253} = 13,486 \text{ Btu/kWh}$$

$$\text{Fuel Flow} = \frac{13,486 (17,000)}{21,500} = 10,660 \text{ lbs/hr}$$

$$\text{Air Flow} = 701,379 \text{ lbs/hr}$$

$$\text{Air/Fuel Mass Ratio} = \frac{701,379}{10,660} = 65.8$$

TABLE 1

SK-30 PERFORMANCE DATA
FOR DADE COUNTY SITE

Air Intake Temperature	59°F		80°F		95°F	
G.T. Power (MW)	17	18	17	18	17	18
G.T. Efficiency (%)	25.7	26.1	25.3	25.75	25.0	25.45
G.T. Exhaust Flow (kg/Sec)	92.08	93.8	89.81	91.25	88.0	89.5
G.T. Exhaust Temperature (°C)	496	504	527	533	549	552

Site Elevation - Sea Level

Intake Pressure Loss - 100 mm H₂O

Exhaust Pressure Loss - 305 mm H₂O

$$\text{Power Level} = 18,000 \text{ kW}$$

$$\begin{aligned} \text{Exhaust Flow} &= \frac{7}{12} (89.5) + \frac{5}{12} (93.8) = 91.3 \text{ kg/sec} \\ &= 724,739 \text{ lbs/hr} \end{aligned}$$

$$\text{Efficiency} = \frac{7}{12} (25.45) + \frac{5}{12} (26.1) = 25.7 \%$$

$$\text{Heat Rate} = \frac{3412}{.257} = 13,276 \text{ Btu/kWh}$$

$$\text{Fuel Flow} = \frac{13,276 (18,000)}{21,500} = 11,115 \text{ lbs/hr}$$

$$\text{Air Flow} = 713,624 \text{ lbs/hr}$$

$$\text{Air/Fuel Mass Ratio} = \frac{713,624}{11,115} = 64.2$$

Figure 3 presents experimental data for emissions of oxides of nitrogen (NO_x), carbon monoxide (CO), and unburned hydrocarbons (HC) from the SK-30 gas turbine burning natural gas. Air/fuel mass ratios of 65.8 and 64.2 are indicated to establish the expected emissions at the corresponding 17,000 kW design power level and the 18,000 kW maximum continuous rating. Increasing the operating power level of the gas turbine results in a decrease in air/fuel mass ratio. Increasing the power level increases the emission of NO_x but decreases the emissions of CO and HC. The emissions are summarized below:

Power Level (kW)	17,000	18,000
NO _x (ppm)	48.0	50.5
CO (ppm)	82.0	76.5
HC (ppm)	24.5	21.5

A typical analysis of the natural gas which will be used as fuel for the gas turbine is shown in Table 2.

FIGURE 3

SK-30 EMISSIONS

● Rolls Royce Experimental Data

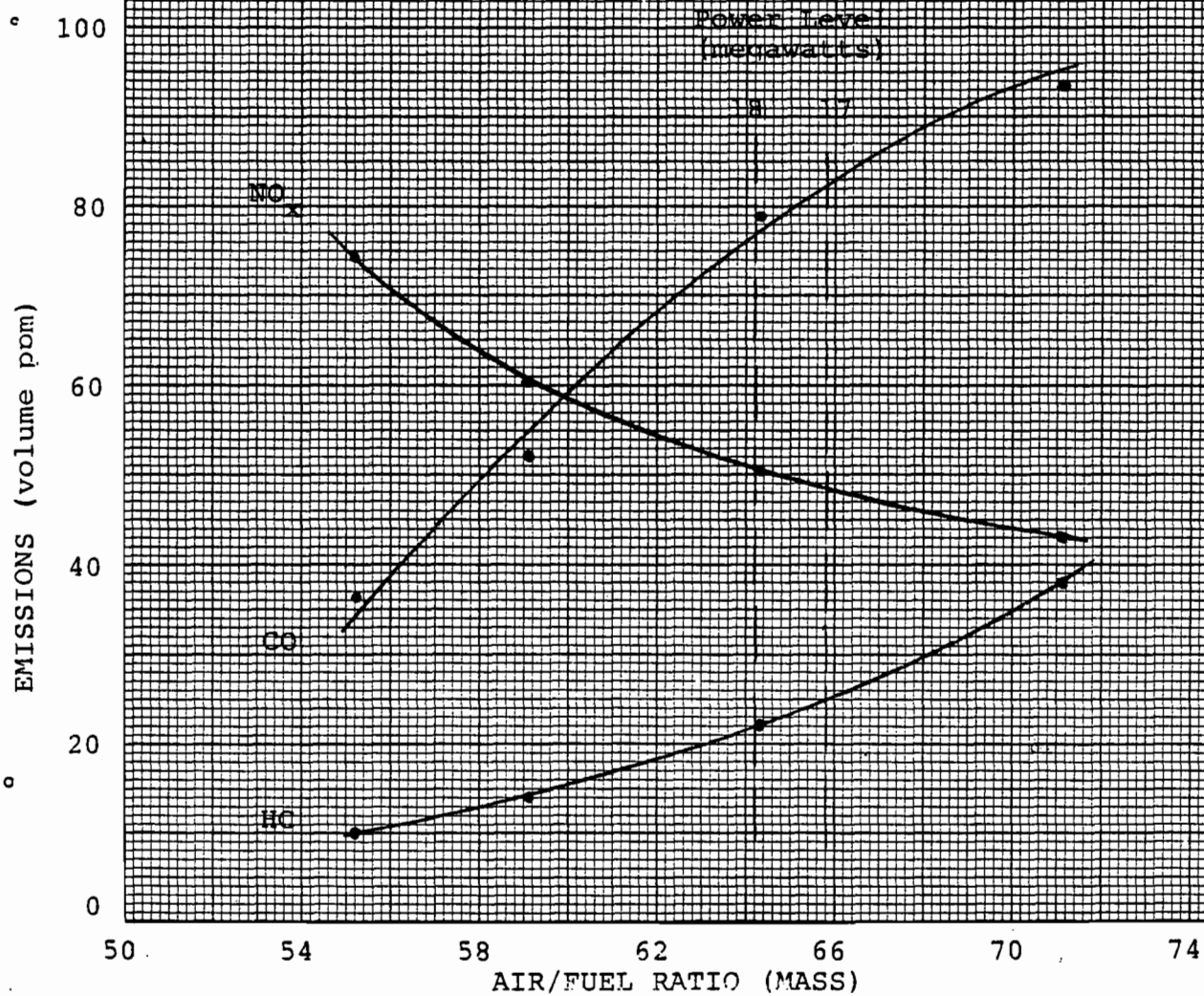


TABLE 2

FLORIDA GAS TRANSMISSION COMPANY
GAS ANALYSIS ID NO: 82 344

Station Name: Florida Hydrocarbon - Outlet Dist 7 Sta No: *****
Field Data: Taken by A. Kattawar Date Taken: 6-1-82
Press **** Temp *** SP Gray *****
BTU **** Water ***** H2S ****

Analysis Data: Analyst Michael P. Canpo Date Analyzed: 6-7-82

Component	Mole %	B.T.U.	GPM	SP.GR.
Oxygen	0.	0.	0.	0.
Nitrogen	0.501	0.	0.	0.0048
CO2	0.64	0.	0.	0.0097
Methane	95.211	946.8734	0.	0.5275
Ethane	3.322	57.8759	0.	0.0345
Propane	0.301	7.463	0.0828	0.0046
iButane	0.004	0.1282	0.0013	0.0001
nButane	0.001	0.0321	0.0003	0.
iPentane	0.	0.	0.	0.
nPentane	0.	0.	0.	0.
Hexane Plus	0.02	1.0365	0.0086	0.0007
Totals:	100.	1013.41	0.093	0.5819

BTU per Cubic Ft. at 14.73 PSIA
60°F Sat. & Corrected for Z Calc. 1016 Calorimeter *****
60°F Dry & Corrected for Z Calc. 1034 Calorimeter *****
60°F, ***** lb/MMCF and Corrected for Z Calc. *****
SP Grav (Air = 1.0000) Calc. 0.5819 Ranarex *****

Compressibility Factor Z = 0.9979

Super Compressibility Factor
Calc. at ***** SP GR **** PSIG *** °F

By Test With Burnett Apparatus*****
Calculated AGA-NX-19 No. Diluents*****
Calculated AGA-NX-19 Adjusted For Diluents*****

NOTES:

Physical Constants From AGA 3
GPM From NGPA OUB No. 2145-62
Hexane Plus Derived From Phillips Ref. Standard No. 19-C-1-78

REMARKS:

This analysis applies to the continuous sample taken from
5/3/82 to 6/1/82.

Annual pollutant emissions in ton/yr are calculated as follows:

$$\text{ton/yr} = \frac{\text{ppm (volume)}}{106} \cdot \frac{M}{M \text{ (exhaust)}} \cdot \frac{F \text{ (lb/hr)} T \text{ (hr/yr)}}{2000 \text{ (lb/ton)}}$$

- Where:
- ppm (volume) = volume parts per million of the emissions
 - M = Molecular weight of the emissions
 - M (exhaust) = Average molecular weight of exhaust products
 - F = Average total flow rate of exhaust products
 - T = 8000 hr/yr, annual system operating period considering scheduled and unscheduled shutdown for maintenance

For the design power level of 17,000 kW, this expression reduces to:

$$\text{ton/yr} = \text{ppm (volume)} \cdot \frac{M}{M \text{ (exhaust)}} \cdot 2.848$$

Similarly, for the 18,000 kW maximum continuous rating, the expression is:

$$\text{ton/yr} = \text{ppm (volume)} \cdot \frac{M}{M \text{ (exhaust)}} \cdot 2.899$$

Table 3 summarizes the expected annual air pollutant emissions from the cogeneration system both at the design power level and the maximum continuous rating. All emissions are significantly less than 250 ton/yr. Oxides of sulfur do not appear in the table due to the absence of sulfur compounds in the natural gas. Hydrocarbon emissions consist primarily of methane, unburned natural gas.

TABLE 3
ANNUAL AIR POLLUTANT EMISSIONS

<u>Pollutant</u>	<u>Design Power Level (17,000 kW)</u>		<u>Maximum Continuous Rating (18,000 kW)</u>	
	<u>ppm (volume)</u>	<u>ton/yr</u>	<u>ppm (volume)</u>	<u>ton/yr</u>
NO _x	48.0	217	50.5	232
CO	82.0	225	76.5	214
HC	24.5	38.5	21.5	34.4
TSP	-	1.2	-	1.2

4. NEW SOURCE REVIEW REQUIREMENTS

The Florida Department of Environmental Regulation, Rule 17-2, Florida Administrative Code, Air Pollution, effective November 1, 1981, lists the downtown Miami Dade County location of the cogeneration system as a nonattainment area for ozone and by implication, an attainment area for all other pollutants. For ozone nonattainment areas, the provisions of Section 17-2.510 apply to the emission of volatile organic compounds.

4.1 PREVENTION OF SIGNIFICANT DETERIORATION

The cogeneration system is not subject to the New Source Review requirements of Section 17-2.500 because of the exemption under Section 17-2.500 (2) (a). This exemption applies to new facilities which have emissions of less than 250 ton/yr of any pollutant regulated under the Act. Section 3 of this document shows that all pollutant emissions from the cogeneration system are significantly less than 250 ton/yr. The cogeneration system is not one of the facility categories listed in Table 500-1, Major Facility Categories and therefore Section 17-2.500 (2) (b) does not apply.

4.2 NONATTAINMENT AREAS

The cogeneration system is not subject to the New Source Review requirements of Section 17-2.510 because of the exemption under Section 17-2.510 (3) (a). This section states that compounds such as methane and ethane are exempt for purposes of determining emission rates of volatile organic compounds. The cogeneration system emits only small quantities of unburned natural gas which consists primarily of methane and to a lesser extent ethane. The cogeneration system, therefore, is not a source of volatile organic components.

5. STANDARDS OF PERFORMANCE
FOR NEW STATIONARY SOURCES: GAS TURBINES

Section 17-2.660 requires that the NO_x emissions from the gas turbine in the cogeneration system comply with Section 60.330 of Chapter II, Title 40 of the Code of Federal Regulations. The allowable NO_x emissions (percent by volume at 15 percent oxygen and on a dry basis) established by the standard are calculated as follows:

$$STR = 0.0075 \frac{14.4}{Y}$$

Where: STR = Standard (percent)

Y = Heat rate at rated load
(kilojoule/watt hour)

Table 4 compares the expected emissions of NO_x (adjusted for 15% oxygen and on a dry basis) with the allowable standard. The emissions at the design power level are 58.6 ppm and 60.6 ppm at the maximum continuous rating. Both conditions are significantly less than that allowed by the gas turbine performance standard. The cogeneration system, therefore, is not required to use water injection to comply with the performance standards. Accordingly, continuous monitoring of fuel consumption and the ratio of water to fuel being fired in the gas turbine (60.334) are not required. Testing to demonstrate compliance with the performance standard (60.335) will be completed after startup of the cogeneration system using the techniques described in Reference Method 20, Determination of Nitrogen Oxides, Sulfur Dioxide and Oxygen Emissions from Stationary Gas Turbines.

TABLE 4
NO_x EMISSION SUMMARY

	<u>Design Power Level (17,000 kW)</u>	<u>Maximum Continuous Rating (18,000 kW)</u>
<u>Expected Conditions</u>		
ppm NO _x (wet)	48.0	50.5
ppm NO _x (dry)	50.7	53.4
O ₂ volume percent (dry)	15.8	15.7
ppm NO _x adjusted 15% O ₂ (dry)	58.6	60.6
<u>Performance Standard</u>		
heat rate (kilojoule/watt hour)	13.49	13.28
ppm NO _x (allowable)	80.0	81.3