

Is your RETURN ADDRESS completed on the reverse side?

SENDER:

- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

- 1. Addressee's Address
- 2. Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
*Mr. Greg Demuth, Director
 Orlando Utilities Commis.
 P O Box 3193
 Orlando, FL 32802*

4a. Article Number
2 392 979 009

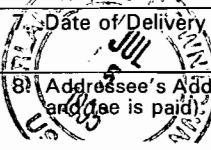
- 4b. Service Type
- Registered Insured
 - Certified COD
 - Express Mail Return Receipt for Merchandise

7. Date of Delivery

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

5. Signature (Addressee)

6. Signature (Agent)



Thank you for using Return Receipt Service.

*AC 05-274263
 Issued 8-24-95*

2 392 979 009



Receipt for Certified Mail

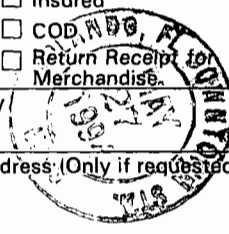
No Insurance Coverage Provided
 Do not use for International Mail
 (See Reverse)

PS Form 3800, March 1993

Sent to	<i>Greg Demuth</i>
Street and No.	<i>Orlando Utilities Comm</i>
PO, State and ZIP Code	<i>Orlando, FL</i>
Postage	\$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	<i>C4D 6-28-95</i>
	<i>AE48-193720</i>

s your RETURN ADDRESS completed on the reverse side?

<p>SENDER:</p> <ul style="list-style-type: none"> • Complete items 1 and/or 2 for additional services. • Complete items 3, and 4a & b. • Print your name and address on the reverse of this form so that we can return this card to you. • Attach this form to the front of the mailpiece or on the back if space does not permit. • Write "Return Receipt Requested" on the mailpiece below the article number. • The Return Receipt will show to whom the article was delivered and the date delivered. 		<p>RECEIVED</p> <p>MAY 31 1994</p> <p>Bureau of</p>		<p>1. also wish to receive the following services (for an extra fee):</p> <p>1. <input type="checkbox"/> Addressee's Address</p> <p>2. <input type="checkbox"/> Restricted Delivery</p> <p>Consult postmaster for fee.</p>	
<p>3. Article Addressed to:</p> <p>Mr. G. A. DeMuth Environmental Division Orlando Utilities Commission P. O. Box 3193 Orlando, Florida 32802</p>		<p>4a. Article Number</p> <p>P 872 562 702</p>		<p>4b. Service Type</p> <p><input type="checkbox"/> Registered <input type="checkbox"/> Insured</p> <p><input checked="" type="checkbox"/> Certified <input type="checkbox"/> COD, <input type="checkbox"/> Return Receipt for Merchandise</p> <p><input type="checkbox"/> Express Mail</p>	
<p>5. Signature (Addressee)</p>		<p>7. Date of Delivery</p>		<p>8. Addressee's Address (Only if requested and fee is paid)</p>	
<p>6. Signature (Agent)</p> <p><i>Donald A. Henderson</i></p>					



Thank you for using Return Receipt Service.

PS Form 3811, December 1991 U.S. GPO: 1992-323-402 **DOMESTIC RETURN RECEIPT**

P 872 562 702


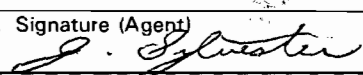


Receipt for Certified Mail
No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to		Mr. G. A. DeMuth
Street and No.		P. O. Box 3193
P.O. State and ZIP Code		Orlando, Florida 32802
Postage		\$
Certified Fee		
Special Delivery Fee		
Restricted Delivery Fee		
Return Receipt Showing to Whom & Date Delivered		
Return Receipt Showing to Whom, Date, and Addressee's Address		
TOTAL Postage & Fees		\$
Postmark or Date		Mailed: 5/24/94 AC 05-193720; PSD-FL-173

PS Form 3800, JUNE 1991

Is your RETURN ADDRESS completed on the reverse side?

SENDER: <ul style="list-style-type: none"> • Complete items 1 and/or 2 for additional services. • Complete items 3, and 4a & b. • Print your name and address on the reverse of this form so that we can return this card to you. • Attach this form to the front of the mailpiece, or on the back if space does not permit. • Write "Return Receipt Requested" on the mailpiece below the article number. • The Return Receipt will show to whom the article was delivered and the date delivered. 		I also wish to receive the following services (for an extra fee): <ol style="list-style-type: none"> <input type="checkbox"/> Addressee's Address <input type="checkbox"/> Restricted Delivery Consult postmaster for fee.	
3. Article Addressed to: Mr. Robert F. Hicks St. Environmental Engineer Orlando Utilities Commission P. O. Box 3193 Orlando, FL 32802		4a. Article Number P 872 562 599	
		4b. Service Type <input type="checkbox"/> Registered <input type="checkbox"/> Insured <input checked="" type="checkbox"/> Certified <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Express Mail	
		7. Date of Delivery 	
5. Signature (Addressee)		8. Addressee's Address (Only if requested and fee is paid)	
6. Signature (Agent) 			

Thank you for using Return Receipt Service.

PS Form 3811, December 1991 *U.S. GPO: 1992-323-402 **DOMESTIC RETURN RECEIPT**

P 872 562 599



Receipt for Certified Mail

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

PS Form 3800, JUNE 1991

Sent to	
Mr. Robert F. Hicks, OUC	
Street and No.	
P. O. Box 3193	
P.O., State and ZIP Code	
Orlando, FL 32802	
Postage	\$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	
Mailed: 2-10-94	
Permit: AC 05-193720	

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:
Mrs. DeMuth, Director
520 S. Orange Ave
Orlando, FL 32802

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	<i>P062 921 947</i>

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

5. Signature - Addressee
X

6. Signature - Agent
X P. Sylvester

7. Date of Delivery

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

DOMESTIC RETURN RECEIPT

P 062 921 947



Receipt for Certified Mail

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

Sent to	<i>Mrs. DeMuth</i>
Street and No.	<i>Orlando Utilities Center</i>
City, State and ZIP Code	<i>Orlando, FL</i>
Postage	\$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	<i>AC05-19320</i> <i>PSD-FL-173</i> <i>1-6-93</i>

PS Form 3800, June 1991



RECEIVED
DER - MAIL ROOM
1992 DEC 28 AM 11: 17

ORLANDO UTILITIES COMMISSION

500 SOUTH ORANGE AVENUE • P. O. BOX 3193 • ORLANDO, FLORIDA 32802 • 407/423-9100

VIA FEDERAL EXPRESS

December 24, 1992

Ms. Patty Adams
Bureau of Air Regulation
Florida Department of
Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Re: Permit No. AC05-193720, PSD-FL-173
Combustion Turbines C & D
Request for Extension of Permit dated November 24, 1992

Dear Ms. Adams:

Enclosed is a check for \$50 as required for the permit extension requested on November 24, 1992. I appreciate the Department's co-operation in processing our request.

If you need additional information, please call me at 407/423-9133.

Very truly yours,

Robert F. Hicks
Sr. Environmental Engineer

RFH:rc
Enclosure

001031



Orlando Utilities Commission

ORLANDO, FLORIDA

"Where Electricity Powers Progress"

63-215
631

No. 90979

PAY TO THE
ORDER OF:

FIFTY DOLLARS & .00/100

FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION
BUREAU OF AIR REGULATION
2600 BLAIR STONE ROAD
TALLAHASSEE, FL 32399-2400

NOT VALID
AFTER 180 DAYS

DATE

DEC. 24 '92

50.00

SUN BANK, N.A.
MAIN OFFICE:
ORLANDO, FLORIDA 32801

John L. Dean
Froy W. Todd
AUTHORIZED SIGNATURE

		QUESTIONS? CALL 800-238-5355 TOLL FREE.		AIRBILL PACKAGE TRACKING NUMBER 2184509095	
2060M 2184509095		RECIPIENT'S COPY			
From (Your Name) Please Print Robert P. Hicks		Your Phone Number (Very Important) 407-423-9100		To (Recipient's Name) Please Print MS. PATTY ADAMS	
Company ORLANDO UTILITIES COMMISSION		Department/Floor No. 		Recipient's Phone Number (Very Important) 904 488-1344	
Street Address 500 S ORANGE AVE		Company FLA. DEPT. OF ENVIRONMENTAL REGULATION		Department/Floor No. BUREAU OF AIR REGULATION	
City ORLANDO		State FL		Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes.) 2600 BLAIR STONE ROAD	
ZIP Required 32801		City TALLAHASSEE		State FL	
ZIP Required 32399-2400		YOUR INTERNAL BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice.)			
PAYMENT 1 <input checked="" type="checkbox"/> Bill Sender 2 <input type="checkbox"/> Bill Recipient's FedEx Acct. No. 3 <input type="checkbox"/> Bill 3rd Party FedEx Acct. No. 4 <input type="checkbox"/> Bill Credit Card		IF HOLD FOR PICK-UP, Print FEDEX Address Here Street Address City State ZIP Required			
5 <input type="checkbox"/> Cash/Check		Emp. No. Date Federal Express Use <input type="checkbox"/> Cash Received Base Charges <input type="checkbox"/> Return Shipment Declared Value Charge <input type="checkbox"/> Third Party <input type="checkbox"/> Chg. To Del. <input type="checkbox"/> Chg. To Hold Street Address City State Zip Received By: X Date/Time Received FedEx Employee Number Release Signature: _____ FedEx Emp. No. Date/Time			
SERVICES (Check only one box)		DELIVERY AND SPECIAL HANDLING (Check services required)		PACKAGES WEIGHT IN POUNDS ONLY YOUR DECLARED VALUE	
11 <input type="checkbox"/> YOUR PACKAGING 16 <input checked="" type="checkbox"/> FEDEX LETTER * 12 <input type="checkbox"/> FEDEX PAK * 13 <input type="checkbox"/> FEDEX BOX * 14 <input type="checkbox"/> FEDEX TUBE * 30 <input type="checkbox"/> ECONOMY * 70 <input type="checkbox"/> OVERNIGHT FREIGHT **		51 <input type="checkbox"/> YOUR PACKAGING 56 <input type="checkbox"/> FEDEX LETTER * 52 <input type="checkbox"/> FEDEX PAK * 53 <input type="checkbox"/> FEDEX BOX * 54 <input type="checkbox"/> FEDEX TUBE * 46 <input type="checkbox"/> GOVT LETTER 41 <input type="checkbox"/> GOVT PACKAGE 80 <input type="checkbox"/> TWO-DAY FREIGHT **		1 <input type="checkbox"/> HOLD FOR PICK-UP (Fill in Box #) 2 <input checked="" type="checkbox"/> DELIVER WEEKDAY 3 <input type="checkbox"/> DELIVER SATURDAY (Extra charge) (Not available to all locations) 4 <input type="checkbox"/> DANGEROUS GOODS (Extra charge) 5 <input type="checkbox"/> 6 <input type="checkbox"/> DRY ICE _____ Lbs. 7 <input type="checkbox"/> OTHER SPECIAL SERVICE _____ 8 <input type="checkbox"/> 9 <input type="checkbox"/> SATURDAY PICK-UP (Extra charge) 10 <input type="checkbox"/> 11 <input type="checkbox"/> DESCRIPTION _____ 12 <input type="checkbox"/> HOLIDAY DELIVERY (if offered) (Extra charge)	
Freight Service (for Extra Large or any package over 150 lbs) (Confirmed reservation required) † Delivery commitments may be later in some areas.		DIM SHIPMENT (Chargeable Weight) _____ lbs. L x W x H = Received At 1 <input type="checkbox"/> Regular Stop 3 <input type="checkbox"/> Drop Box 4 <input type="checkbox"/> B.S.C. 2 <input checked="" type="checkbox"/> On-Call Stop 5 <input type="checkbox"/> Station		REVISION DATE 6/91 PART #137204 FXEM 2/92 FORMAT #099 099 © 1990-91 FEDEX PRINTED IN U.S.A.	

Mr. C. H. Fancy
November 24, 1992
Page 3

The two combustion turbines are expected to be ready for compliance testing the week of December 7, 1992. Because of the expiration date of the current construction permit, December 31, 1992, additional time is required to process and submit the compliance test results for the two combustion turbines.

This request for an extension of the construction permit application date is made pursuant to Specific Condition Number 24 of the Permit, and F.A.C. Rule 17-4.090. Because of the circumstances and timeliness of the related events, OUC was unable to provide the request for this extension of time prior to 60 days before the expiration of the permit.

OUC hereby makes a formal request for a six month extension of the construction permit, which would extend the permit until June 30, 1993. Because compliance testing activities are scheduled in the very near term, we will appreciate your early response to our request.

Very truly yours,



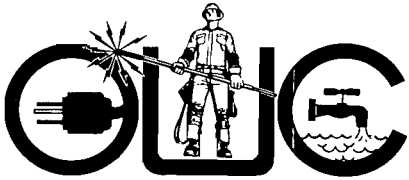
G. A. DeMuth
Director
Environmental Division

GAD:rc

xc: W. H. Herrington
G. M. Standridge
F. F. Haddad
K. P. Ksionek
V. F. Gallucci
H. E. Smith
A. Alexander, FDER Central District
(Certified Mail No. P744-600-667 -
Return Receipt Requested)
P. Lewis

Bob Hicks
(407)
423-9133
O.U.C

Janeth 12-23-92
Arlston,
this got buried
on my desk. Clair
got a call from OUC
asking about it today.
We told them to send
\$50 but we would go
ahead & do this quickly
you did this permit -
Patry



RECEIVED

OCT 5 1992

ORLANDO UTILITIES COMMISSION

500 SOUTH ORANGE AVENUE • P. O. BOX 3193 • ORLANDO, FLORIDA 32802
Division of Air Resources Management

Certified Mail No. P 609-606-898
Return Receipt Requested

September 30, 1992

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

Re: AC 05-193720

Dear Mr. Fancy:

Pursuant to 40 CFR Part 60, Chapter 17-2, and PSD FL-173, the Orlando Utilities Commission (OUC) is hereby providing notification of the actual date of initial startup for Combustion Turbine D on September 15, 1992.

This Combustion Turbine is located at OUC's Indian River Plant, approximately 10 km. south of Titusville, FL (521.5 km. east and 3151.65 km. north).

By copy of this correspondence, I am also providing Notice to DER Central District office.

If you have any questions regarding this transmittal, please contact me at 407/423-9133.

Sincerely,

Robert F. Hicks
Senior Environmental Engineer

RFH:rc

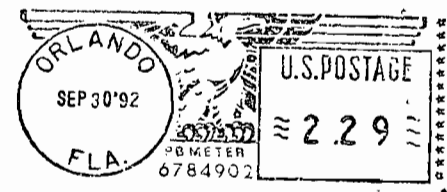
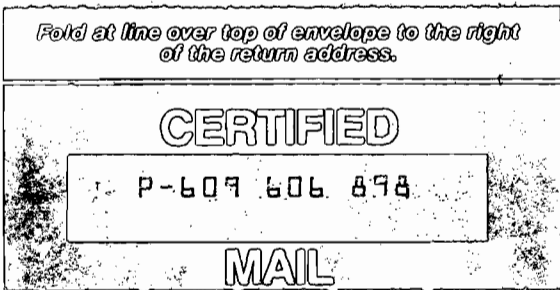
xc: W. H. Herrington
G. A. DeMuth
V. F. Gallucci
T. Turba
Alex Alexander - DER Central District office





ORLANDO UTILITIES
COMMISSION

P. O. BOX 3193
ORLANDO, FLORIDA 32802



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



SENDER:

- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece next to the article number.

I also wish to receive the following services (for an extra fee):

1. Addressee's Address
2. Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Mr. J. S. Crall
Orlando Utilities Commission
P. O. Box 3193
Orlando, FL 32802

4a. Article Number

P 832 538 740

4b. Service Type

- | | |
|---|---|
| <input type="checkbox"/> Registered | <input type="checkbox"/> Insured |
| <input checked="" type="checkbox"/> Certified | <input type="checkbox"/> COD |
| <input type="checkbox"/> Express Mail | <input type="checkbox"/> Return Receipt for Merchandise |

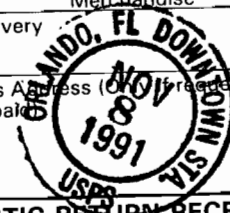
7. Date of Delivery

5. Signature (Addressee)

6. Signature (Agent)

J. S. Crall

8. Addressee's Address (if different from above) and fee is paid



PS Form 3811, October 1990 ☆ U.S. GPO: 1990-273-881

DOMESTIC RETURN RECEIPT

P 832 538 740



Certified Mail Receipt

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

Sent to	
Mr. J. S. Crall, OUC	
Street & No.	
P. O. Box 3193	
P.O., State & ZIP Code	
Orlando, FL 32802	
Postage	\$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Address of Delivery	
TOTAL Postage & Fees	\$
Postmark or Date	
Mailed: 11-5-91	
Permit: AC 05-193720	
PSD-FL-173	

PS Form 3800, June 1990



RECEIVED

ORLANDO UTILITIES COMMISSION

500 SOUTH ORANGE AVENUE • P. O. BOX 3193 • ORLANDO, FLORIDA 32802

SEP 30 1991
Division of Air
Resources Management

September 27, 1991

Mr. C. H. Fancy, P. E.
Chief, Bureau of Air Regulation
Florida Department of
Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Re: Four-Unit Combustion Turbine Facility at Indian River Plant
AC 05-193720 and PSD-FL-173 Units C and D.

Dear Mr. Fancy:

Attached is a copy of the proof of publication from the Florida Today newspaper for Combustion Turbines C and D at OUC's Indian River Plant in Brevard County.

Sincerely,

J. S. Crall
Director
Environmental Division

JSC:rc
Attachment

cc: Mr. Preston Lewis - DER



FEDERAL EXPRESS

QUESTIONS? CALL 800-238-5355 TOLL FREE

AIRBILL PACKAGE TRACKING NUMBER

6901712145

3M

6901712145

RECIPIENT'S COPY

Date: 9/27/91

From (Your Name) Please Print: **J. S. Crall**
 Your Phone Number (Very Important): (407) 423-9100
 Company: **NDD UTILITIES COMMISSION**
 Street Address: **S ORANGE AVE**
 City: **INDO** State: **FL** ZIP Required: **32901**

To (Recipient's Name) Please Print: **Mr. C.H. Fancy, P. E.**
 Recipient's Phone Number (Very Important): **904 488-4807**
 Company: **Chief, Bureau of Air Regulation**
 Street Address: **Florida Dept. of Environmental Regulation**
2600 Blair Stone Road
 City: **Tallahassee** State: **FL** ZIP Required: **32399-2400**

YOUR INTERNAL BILLING REFERENCE INFORMATION (First 24 characters will appear on invoice): **5121565**

IF HOLD FOR PICK-UP, Print FEDEX Address Here
 Street Address: _____
 City: _____ State: _____ ZIP Required: _____

PAYMENT 1 Bill Sender 2 Bill Recipient's FedEx Acct No. 3 Bill 3rd Party FedEx Acct No. 4 Bill Credit Card.
 5 Cash

SERVICES (Check only one box)		DELIVERY AND SPECIAL HANDLING				PACKAGES		WEIGHT in Pounds (lbs)	YOUR DECLARED VALUE	OVER SIZE	Emp. No.	Date	Federal Express Use Base Charges
Priority Overnight Service (Delivery by next business morning) 11 <input type="checkbox"/> YOUR PACKAGING 16 <input type="checkbox"/> FEDEX LETTER 12 <input type="checkbox"/> FEDEX PAK 13 <input type="checkbox"/> FEDEX BOX 14 <input type="checkbox"/> FEDEX TUBE Economy Service (formerly Standard Air) (Delivery by second business day) 30 <input type="checkbox"/> ECONOMY SERVICE Standard Overnight Service (Delivery by next business afternoon) 51 <input type="checkbox"/> 56 <input type="checkbox"/> FEDEX LETTER 52 <input type="checkbox"/> FEDEX PAK 53 <input type="checkbox"/> FEDEX BOX 54 <input checked="" type="checkbox"/> FEDEX TUBE Heavyweight Service (for Extra Large or any package over 150 lbs) 70 <input type="checkbox"/> HEAVYWEIGHT 80 <input type="checkbox"/> DEFERRED HEAVYWEIGHT *Declared Value Limit \$100. **Call for delivery schedule.	1 <input type="checkbox"/> HOLD FOR PICK-UP (Fill in Box #) 2 <input checked="" type="checkbox"/> DELIVER WEEKDAY 3 <input type="checkbox"/> DELIVER SATURDAY (Extra charge) (Not available to all locations) 4 <input type="checkbox"/> DANGEROUS GOODS (Extra charge) (CSS not available for Dangerous Goods Shipments) 5 <input type="checkbox"/> CONSTANT SURVEILLANCE SVC. (CSS) (Extra charge) (Release Signature Not Applicable) 6 <input type="checkbox"/> DRY ICE (lbs) 7 <input type="checkbox"/> OTHER SPECIAL SERVICE 8 <input type="checkbox"/> 9 <input type="checkbox"/> SATURDAY PICK-UP (Extra charge) 10 <input type="checkbox"/> 11 <input type="checkbox"/> DESCRIPTION 12 <input type="checkbox"/> HOLIDAY DELIVERY (if offered) (Extra charge)	Total Total Total	Total Total Total	Total Total Total	DIM SHIPMENT (Heavyweight Services Only) <input type="checkbox"/> Received At: 1 <input type="checkbox"/> Regular Stop 2 <input type="checkbox"/> On-Call Stop 3 <input checked="" type="checkbox"/> Drop Box 4 <input type="checkbox"/> B.S.C. 5 <input type="checkbox"/> Station	<input type="checkbox"/> Cash Received <input type="checkbox"/> Return Shipment <input type="checkbox"/> Third Party <input type="checkbox"/> Chg. To Del. <input type="checkbox"/> Chg. To Hold	Street Address City State Zip Received By: Date/Time Received FedEx Employee Number	Other 1 Other 2 Total Charges	REVISION DATE 11/89 PART #119501 FXEM 2/90 FORMAT #014 014 © 1989 F.E.C. PRINTED IN U.S.A.				

RECEIVED

The Times

Published Weekly on Wednesday

THE TRIBUNE

Published Weekly on Wednesday

SEP 26 1991 STAR-ADVOCATE

Division of Air Resources Management



Published Daily

TO-108242-1T-9/24,1991,Tues

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

The Department of Environmental Regulation hereby gives notice of its intent to amend two of the existing PSD construction permits (AC-05-146750 and AC-05-146751) to permit Orlando Utilities Commission, 500 South Orange Avenue, Orlando, Orange County, Florida 32802, to construct and operate two 129 MW simple cycle gas turbine generators at its Indian River Plant in Brevard County. A determination of Best Available Control Technology (BACT) was required. The maximum predicted increases in ambient concentrations for carbon monoxide (CO), nitrogen oxides (NOx) and particulate matter (both TSP and PM10) for all averaging times are less than significant in the Class II area surrounding the plant, thus no increment consumption was calculated. The highest, second-highest 3-hour and 24-hour, and maximum annual average impacts for SO2 are 22.7, 6.5, and 0.4 ug/m3, respectively. The 3-hour and annual average values are below their respective significant levels of 25 and 1.0 ug/m3. The 24-hour SO2 significant impact area was modeled to be 600 meters. Eighteen percent (16.2 ug/m3) of the total 24-hour SO2 PSD Class II increment (91 ug/m3) was consumed within the significant impact area. The Department is issuing this intent to issue for the reasons stated in the Technical Evaluation and Preliminary Determination.

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

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

- (f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and
(g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

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

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

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

Department of Environmental Regulation Central District 3319 Maguire Boulevard Suite 232 Orlando, FL 32803-3767

Any person may send written comments on the proposed action to Mr. Barry Andrews at the Department's Tallahassee address. All comments received within 30 days of the publication of this notice will be considered in the Department's final determination. Further, a public hearing can be requested by any person. Such requests must be submitted within 30 days of this notice.

STATE OF FLORIDA COUNTY OF BREVARD

Before the undersigned authority personally appeared Sandra N. Thomas who on

oath says that he/she is Legal Advertising Clerk

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

Florida; that the attached copy of advertising being a

Notice of Intent

in the matter of

Department of Environmental Regulation / permit #'s (AC-05-146750

and Ac-05-146751)

in the Court

was published in the FLORIDA TODAY NEWSPAPER

in the issues of September 24, 1991

Affiant further says that the said FLORIDA TODAY NEWSPAPER

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

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

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

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

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

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

this advertisement for publication in said newspaper.

Signature of Sandra N. Thomas

Sworn and subscribed to before me this

24 day of SEPTEMBER, 19 91

Signature of Notary Public

State of Florida at Large

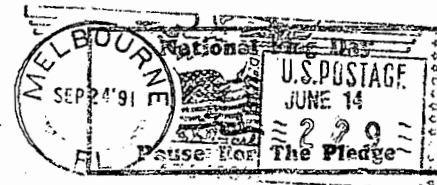
My Commission Expires March 29, 1992

cc: P. Lewis, C. Holladay, C. Collins, Calist, G. Harper, EPA

FLORIDA TODAY/USA TODAY

P.O. Box 363000
Melbourne, Florida 32936-3000

62



Patty

~~Preston Lewis~~

Florida Department of Environmental Regulation
2600 Blair Stone Rd
Tallahassee, FL 32399-2400

Fold at line over top of envelope to the right
of the return address

CERTIFIED

P 527 807 057

MAIL



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

RECEIVED


SENDER:

- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece next to the article number.

I also wish to receive the following services (for an extra fee):

1. Addressee's Address
2. Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to: Mr. J. S. Crall Orlando Utilities Commission 500 South Orange Avenue P. O. Box 3193 Orlando, FL 32802	4a. Article Number P 832 538 678 4b. Service Type <input type="checkbox"/> Registered <input type="checkbox"/> Insured <input checked="" type="checkbox"/> Certified <input type="checkbox"/> COD <input type="checkbox"/> Express Mail <input type="checkbox"/> Return Receipt for Merchandise 7. Date of Delivery
5. Signature (Addressee)	8. Addressee's Address (Only if requested and fee is paid)
6. Signature (Agent) <i>J. Sytner</i>	

PS Form 3811, October 1990

*U.S. GPO: 1990-273-861

DOMESTIC RETURN RECEIPT

P 832 538 678



Certified Mail Receipt

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

Sent to	
Mr. J. S. Crall, OUC	
Street & No.	
P. O. Box 3193	
P.O., State & ZIP Code	
Orlando, FL 32802	
Postage	\$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Address of Delivery	
TOTAL Postage & Fees	\$
Postmark or Date	
Mailed: 9-20-91	
Permit: AC05-193720	
PSD-FL-173	

PS Form 3800, June 1990



ORLANDO UTILITIES COMMISSION

500 SOUTH ORANGE AVENUE • P. O. BOX 3193 • ORLANDO, FLORIDA 32802 • 407/423-9100

June 17, 1991

Mr. C. H. Fancy, P. E.
Chief Bureau of Air Regulation
Florida Department of
Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Re: Indian River Plant Combustion Turbine facility
AC 05-193720 and PSD FL-173.

Dear Mr. Fancy:

I appreciate your and Preston Lewis' willingness to work with OUC on the timeliness of this permit.

Attached please find the additional information you requested as supplied by:

1. Black & Veatch
2. OUC's System Planning Division
3. OUC's System Operations Division

Please call me when you receive this transmittal and let me know, at your earliest convenience, when you can deem the application complete.

Sincerely,

J. S. Crall
Director
Environmental Division

JSC:rc
Attachment

cc: B. Andrews - DER, Tallahassee
P. Lewis - DER, Tallahassee
S. Day - B&V

C. Holladay, M. Linn
C. Collins, C. Dist
J. Harper, EPA

Administration Fax: (407) 236-9616

Purchasing Fax: (407) 423-9199

RECEIVED
JUN 18 1991
Division of Air
Resources Management



QUESTIONS? CALL 800-238-5355 TOLL FREE

AIRBILL
PACKAGE
TRACKING NUMBER

6901712963


6901712963

RECIPIENT'S COPY

From (Your Name) Please Print Jim Crall		Your Phone Number (Very Important) (407) 423-9100	To (Recipient's Name) Please Print Mr. C. H. Fancy, P. E.	Recipient's Phone Number (Very Important) 904 488-13		
Company ORLANDO UTILITIES COMMISSION		Department/Floor No.	Company Chief Bureau of Air Regulation	Department/Floor No.		
Street Address S ORANGE AVE		Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes) 6000 Blair Stone Road				
City ORLANDO	State FL	ZIP Required 32801	City Tallahassee	State FL		
YOUR INTERNAL BILLING REFERENCE INFORMATION (First 24 characters will appear on invoice) 5121565			IF HOLD FOR PICK-UP: Print FEDEX Address Here Street Address City State ZIP Required			
PAYMENT 1 <input checked="" type="checkbox"/> Bill Sender 2 <input type="checkbox"/> Bill Recipient's FedEx Acct. No. 3 <input type="checkbox"/> Bill 3rd Party FedEx Acct. No. 4 <input type="checkbox"/> Bill Credit Card 5 <input type="checkbox"/> Cash						
SERVICES (Check only one box) Priority Overnight Service (Delivery by next business morning) Standard Overnight Service (Delivery by next business afternoon) 11 <input type="checkbox"/> YOUR PACKAGING 51 <input type="checkbox"/> 16 <input type="checkbox"/> FEDEX LETTER 56 <input type="checkbox"/> FEDEX LETTER 12 <input type="checkbox"/> FEDEX PAK 52 <input type="checkbox"/> FEDEX PAK 13 <input type="checkbox"/> FEDEX BOX 53 <input type="checkbox"/> FEDEX BOX 14 <input type="checkbox"/> FEDEX TUBE 54 <input type="checkbox"/> FEDEX TUBE Economy Service (formerly Standard Air) (Delivery by second business day) Heavyweight Service (for Extra Large or any package over 150 lbs) 70 <input type="checkbox"/> HEAVYWEIGHT 30 <input type="checkbox"/> ECONOMY SERVICE 80 <input type="checkbox"/> DEFERRED HEAVYWEIGHT † Delivery commitment may be later in some areas. *Declared Value Limit \$100. **Call for delivery schedule.		DELIVERY AND SPECIAL HANDLING 1 <input type="checkbox"/> HOLD FOR PICK-UP (if in Box H) 2 <input type="checkbox"/> DELIVER WEEKDAY 3 <input type="checkbox"/> DELIVER SATURDAY (Extra charge) (not available to all locations) 4 <input type="checkbox"/> DANGEROUS GOODS (Extra charge) (CSS not available for Dangerous Goods Shipments) 5 <input type="checkbox"/> CONSTANT SURVEILLANCE SVC. (CSS) (Extra charge) (Release Signature Not Applicable) 6 <input type="checkbox"/> DRY ICE 7 <input type="checkbox"/> OTHER SPECIAL SERVICE 8 <input type="checkbox"/> 9 <input type="checkbox"/> SATURDAY PICK-UP (Extra charge) 10 <input type="checkbox"/> 11 <input type="checkbox"/> RESCRIPTUM 12 <input type="checkbox"/> HOLIDAY DELIVERY (if offered) (Extra charge)		PACKAGES WEIGHT in Pounds Only YOUR DECLARED VALUE LOVER SIZE Total Total Total DIM SHIPMENT (Heavyweight Services Only) <input type="checkbox"/> lbs. Received At 1 <input type="checkbox"/> Regular Stop 3 <input type="checkbox"/> Drop Box 2 <input type="checkbox"/> On-Call Stop 4 <input type="checkbox"/> B.S.C. 5 <input type="checkbox"/> Station	Emp. No. Date <input type="checkbox"/> Cash Received <input type="checkbox"/> Return Shipment <input type="checkbox"/> Third Party <input type="checkbox"/> Chg. To Del. <input type="checkbox"/> Chg. To Hold. Street Address City State Zip Received By: X Date/Time Received FedEx Employee Number Signature: <i>[Signature]</i> Date/Time: <i>7/1/91</i>	Federal Express Use Base Charges Declared Value Charge Other 1 Other 2 Total Charges REVISION DATE 11/89 PART #119501 FXEM 2/90 FORMAT #014 014 © 1989 F.E.C. PRINTED IN U.S.A.

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

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

3. Article Addressed to: Mr. J. S. Crall Orlando Utilities Comm. 500 S. Orange Ave P.O. Box 3193 Orlando, FL 32802	4. Article Number P 832 539 785
	Type of Service: <input type="checkbox"/> Registered <input type="checkbox"/> Insured <input checked="" type="checkbox"/> Certified <input type="checkbox"/> COD <input type="checkbox"/> Express Mail <input type="checkbox"/> Return Receipt for Merchandise
5. Signature - Addressee X	Always obtain signature of addressee or agent and DATE DELIVERED.
6. Signature - Agent X <i>Novella Settle</i>	8. Addressee's Address (ONLY if requested and fee paid) 
7. Date of Delivery	

PS Form 3811, Apr. 1989

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

DOMESTIC RETURN RECEIPT

P 832 539 785



Certified Mail Receipt

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

Sent to	J. S. Crall
Street & No.	OUC
P.O., State & ZIP Code	PO Box 3193
Postage	Orlando, FL \$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Address of Delivery	
TOTAL Postage & Fees	\$
Postmark or Date	6-7-91 AC 05-193720 PSD-FL-173

PS Form 3800, June 1990



ORLANDO UTILITIES COMMISSION

500 SOUTH ORANGE AVENUE • P. O. BOX 3193 • ORLANDO, FLORIDA 32802 • 407/423-9100

May 9, 1991

RECEIVED

MAY 10 1991

Bureau of
Air Regulation

Mr. C. H. Fancy, Chief
Bureau of Air Regulation
Florida Department of
Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Re: Combustion Turbine Facility
Indian River Plant
AC 05-193720 - PSD-FL-173

Dear Mr. Fancy:

Enclosed are OUC's responses to your letter of April 5, 1991 requesting additional information on our March 7 submittal, regarding the subject facility. These responses also incorporate FDER's requests made during the April 23, 1991 meeting with Barry Andrews, in Tallahassee, and include the supporting dispersion modeling documentation.

I trust that this information will render our application complete and request that FDER resume the processing within adequate time to meet an October 1, 1991 commence construction date.

If you have questions concerning the responses, please call me at 407/423-9141 or Mr. Steve Day (Black & Veatch) at 913/339-2880.

Very truly yours,

J. S. Crall
Director
Environmental Division

JSC:rc
Enclosure

cc: W. H. Herrington
F. F. Haddad
K. P. Ksionek
T. D. Slepow
S. M. Day (B&V)
B. Andrews (DER - Tall.)

P. Lewis
M. Finn
C. Collins, C. Dist.
J. Harper, EPA



QUESTIONS? CALL 800-238-5355 TOLL FREE

AIRBILL
PACKAGE
TRACKING NUMBER

6901712871

68M

6901712871

RECIPIENT'S COPY

Date 5/9/91

From (Your Name) Please Print J. S. Crall Your Phone Number (Very Important) (407) 423-9100 To (Recipient's Name) Please Print Mr. C. H. Fancy, Chief Recipient's Phone Number (Very Important) (904) 488-1344

Company LANDO UTILITIES COMMISSION Department/Floor No. Bureau of Air Regulation Fla. Dept. of Environmental Regulation

Street Address O S ORANGE AVE Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes.) 2600 Blair Stone Road

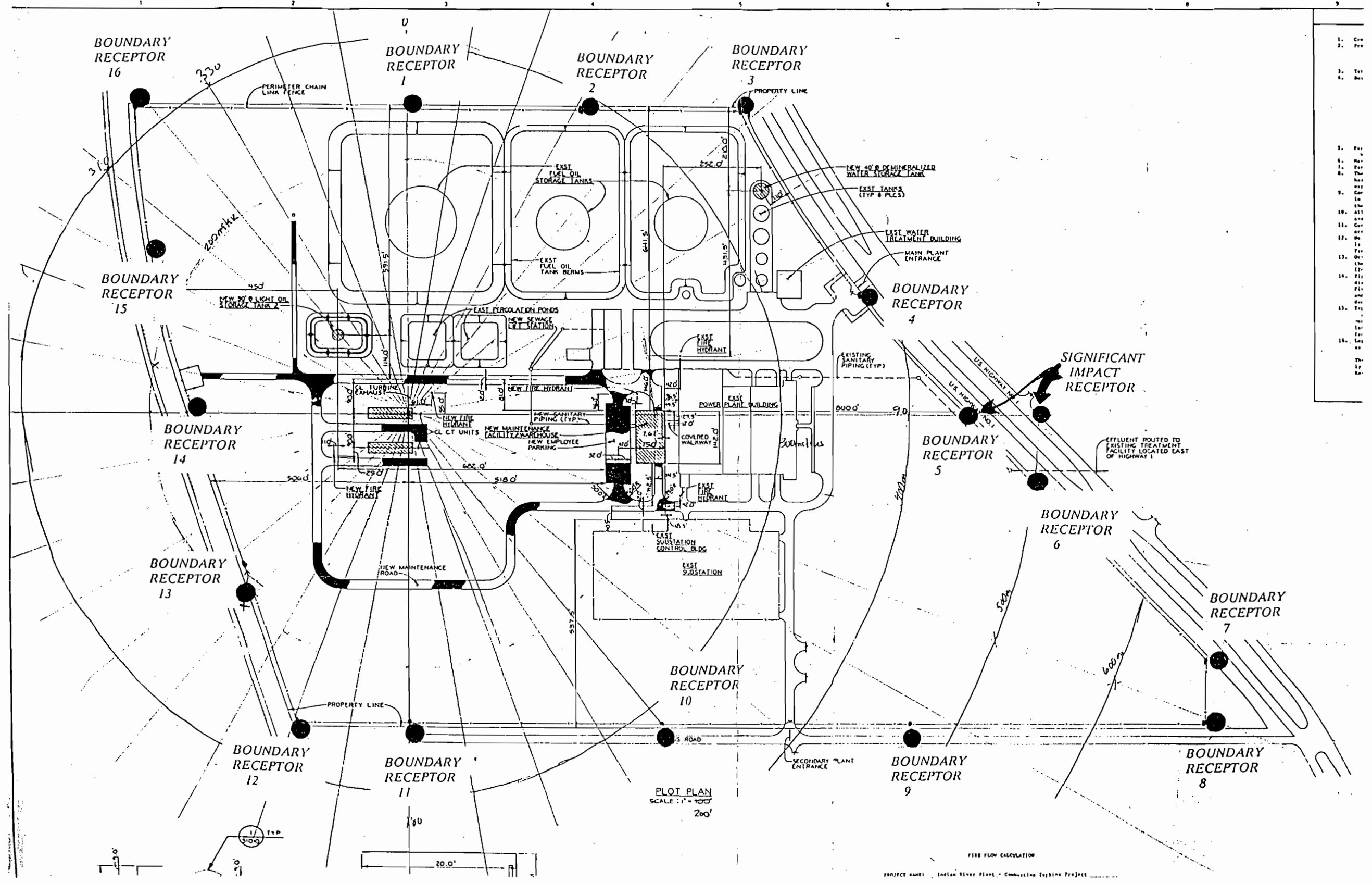
City LANDO FL State ZIP Required 3 2 8 0 1 City Tallahassee State FL ZIP Required 32399-2400

YOUR INTERNAL BILLING REFERENCE INFORMATION (First 24 characters will appear on invoice.) 512156E IF HOLD FOR PICK-UP, Print FEDEX Address Here

PAYMENT: 1 Bill Sender 2 Bill Recipient's FedEx Acct. No. 3 Bill 3rd Party FedEx Acct. No. 4 Bill Credit Card 5 Cash

SERVICES (Check only one box) DELIVERY AND SPECIAL HANDLING Emp. No. Date Federal Express Use Base Charges Declared Value Charge Other 1 Other 2 Total Charges REVISION DATE 11/89 PART #119501-FXEM 2/90 FORMAT #014 014 19/16

FIGURE 1



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16.	Tr
17.	Ma
18.	Pa

PLOT PLAN
SCALE 1" = 260'
200'

PIPE FLOW CALCULATION

PROJECT NAME: Indian River Plant - Commissioning Project

1" = 260'

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

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

3. Article Addressed to:
 Mr. J. S. Crall
 OUC
 500 So. Orange Ave.
 P.O. Box 3193
 Orlando, FL 32802

4. Article Number
 P 407 852 646

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

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature — Addressee
 X

6. Signature — Agent
 X

7. Date of Delivery

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

Form 3811, Apr. 1989 *U.S.G.P.O. 1989-238-815 DOMESTIC RETURN RECEIPT

P 407 852 646
RECEIPT FOR CERTIFIED MAIL
 NO INSURANCE COVERAGE PROVIDED
 NOT FOR INTERNATIONAL MAIL
 (See Reverse)

PS Form 3800, June 1985 *U.S.G.P.O. 1985-234-555

Return to J. S. Crall	
OUC	
Street and No. 500 South Orange Ave.	
P.O. Box 3193 State and ZIP Code Orlando, FL 32802	
Postage	S
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	S
Postmark or Date mailed: 4/5/91 AC 05-193720 PSD-FL-173	

Company Name:
Permit Number:
PSD Number:
Permit Engineer:

Check Sheet
Orlando Utilities Commission
AC 05-193720
PSDFI-173

Cross References:

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Application:

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

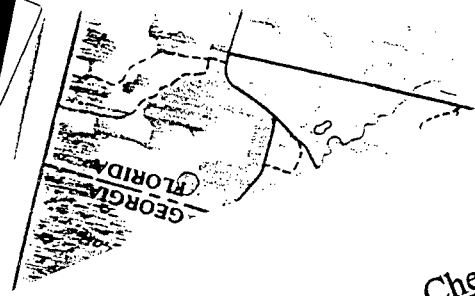
Final

Determination:

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

Post Permit Correspondence:

- Extensions/Amendments/Modifications
- Other



In the folder labeled as follows there are documents, listed below, which were not reproduced in this electronic file. That folder can be found in one of the file drawers labeled Supplementary Documents Drawer. Folders in that drawer are arranged alphabetically, then by permit number.

Folder Name: Orlando Utilities Commission

Permit(s) Numbered:

AC	05	-	193720
PSD	FL	-	173

Period during
which document
was received:

Detailed Description

Period during which document was received:		Detailed Description
APPLICATION 7 MAR 1991	1.	18"×24" DRAWING: SITE ARRANGEMENT (DRAWING NUMBER 14137-CSTU-S1001)

Just the fax

Date: Nov 3, 1995 Time Sent: _____ Total Number of Pages: 2

Send to: Name Mr. Clair Nancy - Bureau of Air Regulation

Company Fla. Dept. of Env. Protection

Fax Number (904) 922-6979

From: Name Greg DeMeth Tel. Number (407) 423-9141

Comments: _____

If there are any problems with receiving this fax, please call (407) 423-9100, ext. 2057.

Orlando Utilities Commission
P.O. Box 3193
Orlando, FL 32802



Phone Number: (407) 423-9100

Fax Number: (407) 236-9616

file

Marty
I told him O/C
M#2 is to take the
data on #1.



ORLANDO UTILITIES COMMISSION

500 SOUTH ORANGE AVENUE • P. O. BOX 3193 • ORLANDO, FLORIDA 32802 • 407/423-9100
Certified Mail No. 2-215-203-276
Return receipt requested

November 3, 1995

Mr. Clair Fancy, Chief
Bureau of Air Regulation
Florida Department of
Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399

Re: Combustion Turbines C and D Construction Permit No. AC05-193720

Dear Mr. Fancy:

This letter is to request a clarification or modification, if necessary, of construction permit No. AC05-193720 for Combustion Turbines C and D located at Orlando Utilities Commission's (OUC) Indian River Plant.

file

In view of the Department's latest guidance memorandum concerning ISO correction applicability to combustion turbines, we are requesting approval from the Department to clarify that this requirement only applies when compared with the NSPS standard of 75 ppm, and therefore, is not applicable to PSD compliance testing.

OK

In addition, the construction permit specifies that EPA Method 3 is to be used for determination of O₂. In view of the lengthy timeframe required to use this method while testing the combustion turbines, we are requesting that we be allowed the use of Method 3A for compliance demonstration as required by Method 20

Very truly yours,

Gregory A. DeMuth, Director
Environmental Division

GAD:rc

- cc: F. F. Haddad
- G. M. Standridge
- V. F. Gallucci
- R. F. Hicks
- J. M. Kraus
- Vivian Garfein - FDEP, Central District
- C. M. Collins - FDEP, Central District

i:\wpfiles\depcorr\cdmeth3a



Green Card Missing
4-12-96

R File



Department of Environmental Protection

Lawton Chiles
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Virginia B. Wetherell
Secretary

August 24, 1995

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. G. A. DeMuth, Director
Environmental Division
Orlando Utilities Commission
Post Office Box 3193
Orlando, Florida 32802

Re: Orlando Utilities Commission Brevard County
AC 05-193720, PSD-FL-173B, Combustion Turbines C & D

Dear Mr. DeMuth:

The Department received your letter dated June 13, 1995 requesting inclusion of the Westinghouse temperature/heat input curves in the above mentioned permit. For oil firing, the Westinghouse curve shows a maximum heat rate (1312 MMBtu/hr) which is 2.5 percent below the maximum allowable heat rate in the above referenced permit (1346 MMBtu/hr). This amendment requires that compliance tests be conducted at 95 to 100 percent of the Westinghouse curve heat rate values and thereby achieving greater than 90 percent of the maximum heat rate specified in the permit when ambient temperatures are low. The Department is willing to amend and clarify this construction permit (as amended May 10, 1994) with your proposed wording as long as there is not an increase of emissions. The construction permit is hereby amended as follows:

Specific Condition No. 14:

From:

Test results will be the average of three valid one-hour runs. The Central District office will be notified at least 30 days in advance of the compliance test. The source shall operate between 90 percent and 100 percent of permitted capacity during the compliance test. Compliance test results shall be submitted to the Central District office no later than 45 days after completion.

Mr. G. A. DeMuth
August 24, 1995
Page Two

To:

Testing of emissions shall be conducted with the source operating at capacity (maximum heat input rate for the inlet air temperature of the combustion turbine during the test). Capacity is defined as 95-100 percent of the manufacturer's rated heat input achievable for the average ambient (or conditioned inlet) air temperature during the test. If it is impracticable to test at capacity, then the combustion turbine may be tested at less than capacity. In such case, the entire heat input vs. inlet temperature curve (reference Westinghouse, April 12, 1995) will be adjusted down by the increment equal to the difference between the design heat input value and 105 percent of the value reached during the test. Data, curves, and calculations necessary to demonstrate the heat input rate correction at both design and test conditions shall be submitted to the Department with the compliance test report. Test results will be the average of three valid one-hour runs. The Central District office shall be notified at least 30 days in advance of the compliance test. Compliance test results shall be submitted to the Central District office no later than 45 days after completion of the test.

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

The Petition shall contain the following information:

- (a) The name, address and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;
- (b) A statement of how and when each petitioner received notice of the Department's action or proposed action;

Mr. G. A. DeMuth
August 24, 1995
Page Three

- (c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;
- (d) A statement of the material facts disputed by Petitioner, if any;
- (e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;
- (f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and,
- (g) A statement of the relief sought by petitioner, stating precisely the action the petitioner wants the Department to take with respect to the Department's action or proposed action.

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

This amendment, the June 13, 1995 Orlando Utilities Commission letter, and the April 11, 1995 Westinghouse letter regarding the heat input curve, shall be attached to and become a part of permit AC05-193720, PSD-FL-173B.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION



Howard L. Rhodes, Director
Division of Air Resources
Management

Mr. G. A. DeMuth
August 24, 1995
Page Four

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that all copies of this INTENT TO ISSUE PERMIT AMENDMENT were mailed by certified mail before the close of business on 8-24-95 to the listed persons.

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

Kerri Jober 8-24-95
Clerk Date

Copies furnished to:

J. Harper, EPA
C. Collins, CD



Department of Environmental Protection

Lawton Chiles
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Virginia B. Wetherell
Secretary

June 27, 1995

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. Gregory A. DeMuth, Director
Environmental Division
Orlando Utilities Commission
P. O. Box 3193
Orlando, Florida 32802

RE: Combustion Turbines C & D
AC48-193720

Dear Mr. DeMuth:

The Bureau of Air Regulation received your June 13 request to amend the above referenced permit. Before we can begin processing your request, we will need a \$250 processing fee pursuant to Rule 62-4.050(4)(q)5., F.A.C. If you have any questions, please call Patty Adams at (904)488-1344.

Sincerely,

Patricia G. Adams
Jane H. Fancy, P.E.
Chief
Bureau of Air Regulation

CHF/pa

cc: Martin Costello

SENDER:

- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested", on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

- Addressee's Address
- Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
 Mr. Ches DeMuth, Director
 Orlando Utilities Commis.
 P.O. Box 9193
 Orlando, FL 32802

4a. Article Number
 2 392 979 009

4b. Service Type

<input type="checkbox"/> Registered	<input type="checkbox"/> Insured
<input checked="" type="checkbox"/> Certified	<input type="checkbox"/> COD
<input type="checkbox"/> Express Mail	<input type="checkbox"/> Return Receipt for Merchandise

5. Signature (Addressee)
[Signature]

6. Signature (Agent)

RELAY MAIL
 JUL 1 1993
 FLORIDA
 USPS

PS Form 3811, December 1991 U.S. GPO: 1993-352-714 **DOMESTIC RETURN RECEIPT**

is your RETURN ADDRESS completed on the reverse side? Thank you for using Return Receipt Service

AC 05-27 2263
 Issued 8-24-95

2 392 979 009

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

PS Form 3800, March 1993

Sent to	<i>Ches DeMuth</i>
Street and No.	<i>Orlando Utilities Commis</i>
P.O., State and ZIP Code	<i>Orlando, FL</i>
Postage	\$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	<i>C4D 6-28-95</i>
	<i>AC48-193720</i>



6/21 ~~at~~
pls handle
Clair

ORLANDO UTILITIES COMMISSION

500 SOUTH ORANGE AVENUE • P. O. BOX 3193 • ORLANDO, FLORIDA 32802 • 407/423-9100

Certified Mail No. Z-083-094-150
Return Receipt Requested

RECEIVED
JUN 19 1995

June 13, 1995

Bureau of
Air Regulation

Mr. Clair Fancy, Chief
Bureau of Air Regulations
Florida Department of
Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Re: Combustion Turbines C & D
Permit No. AC05-193720

Dear Mr. Fancy:

This letter is to request an amendment to the issued construction permit No. AC05-193720 for combustion turbines C and 'D located at the Orlando Utilities Commission (OUC) Indian River Plant in Brevard County.

As discussed with you and your staff, it is our understanding that this amendment will allow temperature versus heat input curves to be made a part of the construction permit. This amendment would in turn allow the Department to issue a proviso in the operation permit, which is currently being negotiated, that would reflect acceptance by the Department of compliance tests at the ambient temperature conditions during the noticed tests allowing OUC to operate the units in compliance at all ambient temperature conditions encountered during the following year:

Enclosed are copies of these curves provided by Westinghouse's engineers. We appreciate the Department's understanding and cooperation in resolving this technical issue which will allow us to operate the units in compliance on the coldest day of the year and at the same time assuring the Department the units will meet permit requirements.

Very truly yours,

Gregory A. DeMuth, Director
Environmental Division

GAD:rc

k:\wpifiles\depcorr\ctsc&d





RECEIVED
APR 12 1995

Westinghouse
Electric Corporation

Power Generation
Business Unit

Power Generation
Projects Division

The Quadrangle
4400 Alafaya Trail
Orlando Florida 32826-2399

CM/OPTMS/95-027

April 11, 1995

Mr. Bob Hicks
Environmental Division
Orlando Utilities Commission
500 South Orange Avenue
P. O. Box 3193
Orlando, Florida 32802

FAX: (407) 236-9616

Re: **Heat Input Curve for OUC Indian River, Units C and D, Base Load Operation**

Dear Mr. Hicks:

Per your request to Mr. Joseph Macak, attached is the base load heat input (million Btu/hr, LHV) curve vs. ambient temperature applicable to OUC Indian River Units C and D, while operating on natural gas and distillate oil fuels. The curve reflects expected heat input with 60% relative humidity and is not to be construed as a commercial offering. Be advised that these values will vary slightly based on changes in meteorology and fuel quality. The plot points for typical fuel are as follows:

Ambient Temperature	Base Load Heat Input (million Btu/hr, LHV)	
	Natural Gas	Distillate Oil
0	1354	1312
20	1354	1312
30	1349	1279
59	1251	1185
90	1148	1087
104	1097	1040

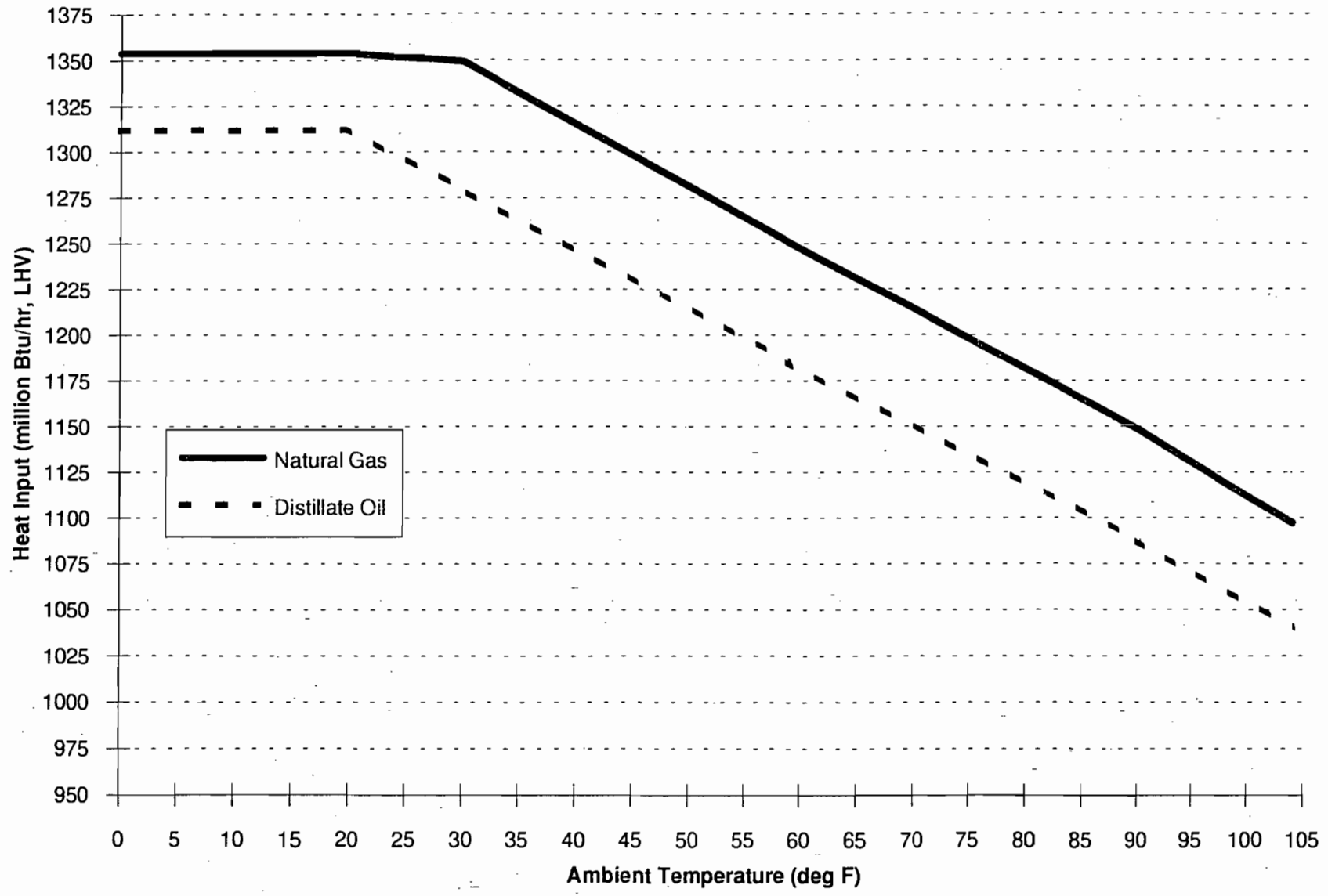
Should you have any further questions, please contact Ms. Lisa Beeson at (407) 281-5519.

Sincerely,

Thomas B. Czaplinski
Manager, Operating Plant Technical and Materials Support

JJM:TBC
att.

OUC Indian River Units C and D
Base Load Heat Input (million Btu/hr, LHV) vs. Ambient Temperature



PSD-173A



Florida Department of Environmental Protection

Lawton Chiles
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Virginia B. Wetherell
Secretary

May 10, 1994

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. G. A. DeMuth, Director
Environmental Division
Orlando Utilities Commission
P. O. Box 3193
Orlando, Florida 32802

RE: Orlando Utilities Commission Brevard County
AC05-193720

The Department received your letter dated April 1, 1994, requesting amendments to the above mentioned permit. It should be noted that the majority of these proposed changes will take place in the operating permit itself. After a review of this permit file, the Bureau of Air Regulation is willing to amend and clarify this construction permit with your proposed wording as long as there is not an increase of emissions. The Department has the following responses to your request:

Specific Condition No. 1

FROM:

The maximum allowable emissions from this facility shall not exceed the emissions rates listed in the attached Table I.

TO:

The maximum allowable emissions from this facility shall not exceed the emissions rates listed in the attached Table I, dated May 4, 1994.

Specific Condition No. 2

FROM:

Unless the Department has determined other concentrations are required to protect public health and safety, predicted acceptable ambient air concentrations (AAC) of the following pollutants shall not be exceeded:

Mr. G. A. DeMuth
May 10, 1994
Page Two

Specific Condition No. 2 (Cont'd)

<u>Pollutant</u>	<u>Acceptable Ambient Concentrations ug/m³</u>		
	<u>8-hr</u>	<u>24-hr</u>	<u>Annual</u>
Beryllium	0.02	0.005	0.0004
Lead	1.5	0.36	0.09
Inorganic Mercury Compounds all forms of Vapor, as Hg	NA	NA	0.3

TO: [Note: This condition will be deleted.]

Specific Condition No. 3

FROM:

Visible emissions shall not exceed 20 percent opacity at anytime nor exceed 10% during full load.

TO:

Visible emissions shall **never** exceed 20 percent opacity and shall **not** exceed 10% during full load **except as provided in Rule 17-210.700.**

Specific Condition No. 7

FROM:

Any change in the method of operation, equipment or operating hours shall be submitted to the DER's Bureau of Air Regulation and Central District offices.

TO:

Any **request to any** change in the method of operation, equipment or operating hours **which would result in an increase in emissions shall be submitted** to the DEP's Bureau of Air Regulation and Central District offices **for prior approval.**

Mr. G. A. DeMuth
May 10, 1994
Page Three

Specific Condition No. 8

FROM:

Any other operating parameters established during compliance testing and/or inspection that will ensure the proper operation of this facility shall be included in the operating permit.

TO:

Any other operating parameters established during compliance testing and/or inspection that will ensure the proper operation of this facility shall be included in the operating permit.

[Note: This condition will not be changed in the construction permit. The District shall include in the operating permit the parameters (i.e. fuel flow rates, water to fuel ratio and heat input, etc.) needed to comply with this condition.]

Specific Condition No. 10

FROM:

An initial compliance test shall be performed using both fuels. Annual NO_x compliance tests shall be performed with the fuel used for more than 400 hours in the proceeding 12 month period.

TO:

An initial compliance test shall be performed using both fuels. Annual NO_x compliance tests shall be performed with **each** fuel used for more than 400 hours **per unit** in the proceeding 12 month period.

Specific Condition No. 11

FROM:

Compliance with the SO₂ emission limit can also be determined by calculations based on fuel analysis using ASTM D2880-71 for the sulfur content of liquid fuels.

TO:

Compliance with the SO₂ emission limit **can** be determined by calculations based on fuel analysis using ASTM Method ASTM D2880-71 for the sulfur content of liquid fuels.

Mr. G. A. DeMuth
May 10, 1994
Page Four

Specific Condition No. 14

FROM:

Test results will be the average of 3 valid runs. The Central District office will be notified at least 30 days in advance of the compliance test. The source shall operate between 90 percent and 100 percent of permitted capacity during the compliance test. Compliance test results shall be submitted to the Central District office no later than 45 days after completion.

TO:

Test results will be the average of **three** valid **one-hour** runs. The Central District office will be notified at least 30 days in advance of the compliance test. The source shall operate between 90 percent and 100 percent of permitted capacity during the compliance test. Compliance test results shall be submitted to the Central District office no later than 45 days after completion.

[**Note:** This condition will not be changed. The 30 days advance notice is specified in 40 CFR 60.8(d). The District office will incorporate the Division Director's memo regarding compliance for combustion turbines in the operating permit, as soon as it becomes available. The **15 days notice** requirement will apply to subsequent annual tests.]

Specific Condition No. 15

FROM:

Water injection shall be utilized for NO_x control. The water to fuel ratio at which compliance is achieved shall be incorporated into the permit and shall be continuously monitored.

TO:

Water injection shall be utilized for NO_x control. The water to fuel ratio at which **annual** compliance is achieved shall be incorporated into the permit and shall be continuously monitored. **The system shall meet the requirements of 40 CFR Part 60, Subpart GG.**

Mr. G. A. DeMuth
May 10, 1994
Page Five

Specific Condition No. 16

FROM:

To determine compliance with the capacity factor limitations each CT's fuel consumption shall be continuously measured and recorded. The permittee shall maintain daily records of this fuel usage. All records shall be maintained for a minimum of three years after the date of each record and shall be made available to representatives of the Department upon request.

TO:

To determine compliance with the capacity factor limitations each CT's fuel consumption shall be continuously measured and recorded. The permittee shall maintain daily records of this fuel usage. All records shall be maintained for a minimum of two years after the date of each record and shall be made available to authorized representatives of the Department upon request.

Specific Condition No. 17

FROM:

Sulfur, nitrogen content and lower heating value of the fuel being fired in the gas turbine shall also be recorded per fuel oil shipment. These records shall also be kept by the company for at least three years and made available for regulatory agency's inspection.

TO:

Sulfur, nitrogen content and lower heating value of the fuel being fired in the gas turbine shall also be recorded per fuel oil shipment **as required in 40 CFR 60 Subpart GG**. These records shall also be kept by the company for at least two years and shall be made available for inspection by **authorized representatives of the Department**.

Specific Condition No. 18

FROM:

Compliance with the acceptable ambient concentrations for Be, Lead, and Hg emisissions shall be demonstrated based on calculations certified by a Professional Engineer registered in Florida, using

Mr. G. A. DeMuth
May 10, 1994
Page Six

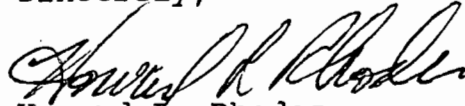
Specific Condition No. 18 (Cont'd)

actual operating conditions. Determination of the ambient concentrations for chemical compounds shall be determined by Department approved dispersion modeling. This compliance determination shall be made available upon request.

TO:

[Note: This condition will be deleted. The compliance determination has been submitted to the Department.]

Sincerely,



Howard L. Rhodes
Director
Division of Air Resources
Management

HLR/TH/bjb

Attachment to be Incorporated: Mr. Greg Demuth's letter of 4/1/94.

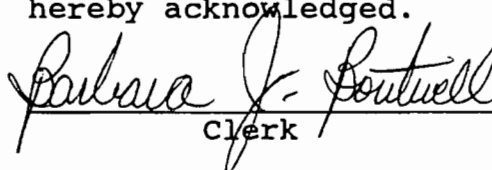
cc: Chuck Collins, CD
Bob Hicks, OUC

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this AMENDMENT and all copies were mailed by certified mail before the close of business on 5/24/94 to the listed persons.

Clerk Stamp

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


Clerk

5/24/94
Date

RECEIVED

MAY 31 1994

Bureau of
Air Regulation

SENDER:

- Complete items 1 and/or 2 for additional services.
- Complete items 3 and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mail piece or on the back if space does not permit.
- Write "Return Receipt Requested" on the mail piece below the article number.
- The Return Receipt will show to whom the package was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. Addressee's Address

2. Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to: Mr. G. A. DeMuth
Environmental Division
Orlando Utilities Commission
P. O. Box 3193
Orlando, Florida 32802

4a. Article Number: P 872 562 702

4b. Service Type:

Registered Insured

Certified COB AND

Express Mail Return Receipt for Merchandise

7. Date of Delivery: MAY 24 1994

5. Signature (Addressee)

6. Signature (Agent): *Donald A. ...*

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

PS Form 3811 December 1991 U.S. GPO: 1992-323-402 **DOMESTIC RETURN RECEIPT**

s your RETURN ADDRESS completed on the reverse side

Thank you for using Return Receipt Service

P 872 562 702



Receipt for Certified Mail

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

PS Form 3800, JUNE 1991

Sent to Mr. G. A. DeMuth	
Street and No. P. O. Box 3193	
P.O., State and ZIP Code Orlando, Florida 32802	
Postage	\$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date Mailed: 5/24/94 AC 05-193720; PSD-FL-173	

FROM:

TABLE 1
ALLOWABLE EMISSION LIMITS
Simple Cycle Combustion Turbine

Pollutant	Standards		Gas Turbine		Basis
	Gas Firing/20 F	No. 2 Fuel Oil Firing/20 F	Tons Per Year*		
			Gas	Oil	
NO _x	25 ppm at 15% oxygen on a dry basis	42 ppmv at 15 percent oxygen on a dry basis	591.5	506	BACT
SO ₂	Natural gas as fuel	0.3 percent S by weight	2.1	953	BACT
PM/PM ₁₀	0.003 lb/MMBtu	0.08 lb/MMBtu	19.5	237	Performance Data
VOC	-	-	37	112	" "
CO	-	-	313	159	" "
Mercury (Hg)	-	3.0 x 10 ⁻⁶ lbs/MMBtu	-	0.01	Est. by Appl.
Lead (Pb)	-	2.8 x 10 ⁻⁵ lbs/MMBtu	-	0.08	" "
Beryllium (be)	-	2.5 x 10 ⁻⁶ lbs/MMBtu	-	0.01	" "
Sulfuric Acid Mist	Natural gas as fuel	Low sulfur content oil	0.07	28.5	" "

* Emissions rates for both 129 MW turbines are based on a 50 percent capacity factor with a maximum of 25 percent attributed to oil firing.

TO:

TABLE 1
ALLOWABLE EMISSION LIMITS
Simple Cycle Combustion Turbine

Pollutant	Standards		Gas Turbine Tons Per Year*		Basis
	Gas Firing/20 F	No. 2 Fuel Oil Firing/20 F	Gas	Oil	
NO _x	25 ppm at 15% oxygen on a dry basis	42 ppmv at 15 percent oxygen on a dry basis	591.5	506	BACT
SO ₂	Natural gas as fuel	0.3 percent S by weight	2.1	953	BACT
PM/PM ₁₀	0.003 lb/MMBtu	0.08 lb/MMBtu	19.5	237	Performance Data
VOC	-	-	37	112	" "
CO	-	-	313	159	" "
Sulfuric Acid Mist	Natural gas as fuel	Low sulfur content oil	0.07	28.5	" "


* Emissions rates for both 129 MW turbines are based on a 50 percent capacity factor with a maximum of 25 percent attributed to oil firing.

Since the pollutants Mercury (Hg), Lead (Pb), Beryllium (Be) are an inherent constituent in distillate fuel oil, they will be regulated by specifying that only No. 2 fuel oil be fired at this facility in addition to natural gas.

Revised 5/4/94

Memorandum

Florida Department of
Environmental Protection

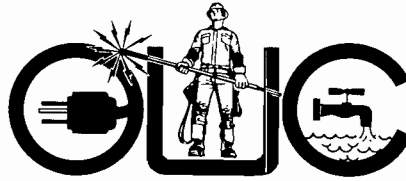
TO: Howard Rhodes
FROM: Clair Fancy 
DATE: May 9, 1994
SUBJECT: Orlando Utilities Commission (OUC)
AC 05-193720; PSD-FL-173A

Orlando Utilities Commission requested that the referenced permit be amended to clarify some of the wording of the specific conditions. The amendment will not allow an increase in permitted annual emissions of any pollutant.

The Bureau recommends your approval.

CHF/TH/bjb

Attachment



ORLANDO UTILITIES COMMISSION

500 SOUTH ORANGE AVENUE • P. O. BOX 3193 • ORLANDO, FLORIDA 32802 • 407/423-9100

Certified Mail No. P 838 073 081
Return Receipt Requested

RECEIVED

MAY 5 1994

May 3, 1994

Bureau of
Air Regulation

Ms. Teresa M. Heron
Division of Air Resources Management
Permitting and Standards Section
Florida Department of
Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Re: Orlando Utilities Commission Brevard County
AC 05-193720

Dear Ms. Heron:

We are in receipt of your draft letter faxed May 2, 1994 addressing proposed changes to the above referenced construction permit.

The following specific conditions are acceptable as changed:

Numbers 1, 2, 3, 7, 8, 10, 11, 15, 16 and 18

We offer the following comments and request these changes be incorporated for the remainder of the conditions:

Specific Condition No. 9 -

Compliance Determination

9. Compliance with the NO_x, SO₂ (oil), PM/PM₁₀, CO, and visible emission standards shall be determined by the following reference methods as described in 40 CFR 60, appendix A (July 1, 1993) and adopted by reference in F.A.C. Rule 17-2.700.

~~Method 1. Sample and Velocity Traverses *~~

~~Method 2. Volumetric Flow Rate *~~

- Method 3. Gas Analysis



Ms. Teresa M. Heron
May 3, 1994
Page 2

- Method 5. Method 5, * 5B, 5F or 17 (I, ~~A~~ for oil only)
- Method 9. Determination of the opacity of the Emissions from
- Method 10. Determination of the Carbon Monoxide Emission from stationary sources
- Method 20. Determination of Nitrogen Oxides, Sulfur Dioxide, and Diluent Emissions from Stationary Gas Turbines. (see approved alternate testing procedure).

*** Use approved Alternate Method attached to determine volumetric flow.**

Specific Condition No. 14 -

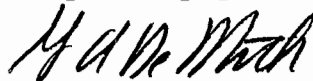
14. This condition will not be changed. The 30 days advance notice is specified in 40 CFR 60.8(d). The District office will incorporate the Division Director's memo regarding compliance for combustion turbines in the operating permit, as soon as it becomes available **including a 15 day notice for annual tests.**

Specific Condition No. 17 -

17. Sulfur, nitrogen content and lower heating value of the fuel being fired in the gas turbine shall also be recorded per fuel oil shipment as required in 40 CFR 60 Subpart GG. These records shall also be kept the by company for at least ~~three~~ **two** years and made available for regulatory agency's inspection by authorized representatives of the Department.

Again, thank you for your efforts in assisting us to resolve these items. It is our hope that the timely issuance of an acceptable construction permit will allow sufficient time for the Department to issue an operation permit and therefore obviate the need to go to hearing.

Very truly yours,



G. A. DeMuth, Director
Environmental Division

GAD:rc

xc: F. F. Haddad
V. F. Gallucci
R. F. Hicks
W. J. House
W. B. Taylor

depngenrl\g050394



0003475

ORLANDO UTILITIES COMMISSION

500 SOUTH ORANGE AVENUE • P. O. BOX 3193 • ORLANDO, FLORIDA 32802 • 407/423-9100

Certified Mail No. P838-073-065
Return Receipt Requested

April 1, 1994

Mr. Clair H. Fancy, Bureau Chief
Bureau of Air Regulation
Florida Department of
Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400

RECEIVED
PER-MAIL ROOM
151 APR -4 PM 2:18

Re: Permit AC05-193720
OUC Brevard County

Dear Mr. Fancy:

Enclosed please find a check in the amount of \$250 for processing an amendment to the above referenced permit.

After discussions with Mr. Preston Lewis and Ms. Theresa Heron of your staff, we are submitting the enclosed Specific Conditions which we believe should be contained in the operating permit for these combustion turbines. Because of the Department's position that the construction permit must be modified before these Conditions can be placed in our operating permit, we are requesting the construction permit be amended as necessary.

If you have any questions, please call either myself at 407/423-9141 or Bob Hicks at 407/423-9133.

Very truly yours,
G. A. DeMuth
G. A. DeMuth, Director
Environmental Division

GAD:rc
Enclosures

xc: R. F. Hicks

J. Neysse
C. Calleno, C. Deal
depgerl\h0401942
G. Harper, EPA

Administration Fax: (407) 236-9616



Purchasing Fax: (407) 423-9199

PERMITTEE:

Permit Number: A005-229084
Expiration Date: August 30, 1998

Orlando Utilities Commission
Attention: William H. Herrington,
Vice President, Electric Business Unit

SPECIFIC CONDITIONS

EMISSION LIMITS

1. The maximum allowable emissions from the facility shall not exceed the emission rates listed in the following table.

ALLOWABLE EMISSION LIMITS
Simple Cycle Combustion Turbine

Pollutant	Standards	
	Gas Firino/20 F	No. 2 Fuel oil Firing/20 F
No _x	25 ppmv at 15 percent oxygen on a dry basis	42 ppmv at 15 percent oxygen on a dry basis
S02	Natural Gas as fuel	0.3 percent S by weight
PM/PM10	0.003 lb/MMBtu	0.08 lb/MMBtu
Voc	5 ppmvd	15 ppmvd
co	25 ppmvd	25 ppmvd
Mercury (Hg)		3.0 x 10⁻⁶ lbs/MMBtu
Lead (Pb)		2.8 x 10⁻⁵ lbs/MMBtu
Beryllium (Be)		2.5 x 10⁻⁶ lbs/MMBtu
Sulfuric Acid Mist	Natural gas as fuel	Low sulfur content oil <u>0.3 percent S by weight</u>

Pollutant	Gas Turbine Tons Per Year*		Basis
	Gas	Oil	
No _x	591.5	506	BACT
So ₂	2.1	953	BACT
PM/PM10	19.5	237	Performance Data
Voc	37	112	
CO	313	159	
Mercury (Hg)		0.01	Est. by Appl.
Lead (Pb)		0.08	
Beryllium (Be)		0.01	
Sulfuric Acid Mist	0.07	28.5	

*Total emissions from the two 129 MW turbines are based on a 50 percent capacity factor with a maximum of 25 percent attributed to oil firing.

PERMITTEE:
Orlando Utilities Commission

Permit Number: A 0 0 5 - 2 2 9 0 8 4
Expiration Date: August 30, 1998

Attention: William H. Herrington,
Vice President, Electric Business Unit

SECIFIC CONDITIONS
(Continued)

~~2. Unless the Department has determined other concentrations are required to protect public health and safety, predicted acceptable ambient air concentrations (AAC) of the following pollutants shall not be exceeded:~~

<u>Pollutant</u>	<u>Acceptable Ambient Concentrations (ug/m³)</u>		
	<u>8 hr</u>	<u>24 hr</u>	<u>Annual</u>
Beryllium	0.02	0.005	0.004
Lead	1.5	0.36	0.09
Inorganic Mercury Compounds			
all forms of Vapor, as Hg	NA	NA	0.3

~~2.3.~~ Visible emissions shall not exceed 20 percent opacity at anytime except as provided in Chapt 17-200.700, nor exceed 10% during full load.

OPERATING CONDITIONS

~~3.4.~~ Each source is allowed to operate at full load for a maximum of 4,380 hours per year.

~~4.5.~~ Each source is allowed to use natural gas as the primary fuel and No. 2 distillate oil as the secondary fuel (limited as shown in Specific Condition 65 below).

~~5.6.~~ The permitted materials and utilization rates for each simple cycle gas turbine shall not exceed the values as follows:

- Maximum No. 2 fuel oil consumption shall not exceed either of the following limitations: 10,282 gals/hr; 22,517,580 gals/yr.
- Maximum annual firing using No. 2 fuel oil shall not exceed 2,190 hours per year.
- Maximum sulfur (s) content in the oil shall not exceed 0.30 percent by weight.
- Maximum heat input shall not exceed 1,354 MMBtu/hr (gas) or 1,346 MMBtu/hr (oil).
- Maximum annual firing on any fuel combination shall not exceed 4,380 hours per year.

~~6.7.~~ Any request to change the method of operation, equipment or operating hours which would result in an increase of emissions shall be submitted to the Department's Bureau of Air Regulation and Central District offices for prior approval.

Attention: William H. Herrington,
Vice President, Electric Business Unit

SPECIFIC CONDITIONS
(Continued)

- ~~8. Any other operating parameters established during compliance testing and/or inspection that will ensure the proper operation of this facility are considered part of this operating permit.~~

COMPLIANCE DETERMINATION

~~7.9.~~ Compliance with the NO_x, SO₂ (oil), CO, and visible emission standards shall be determined by the following reference methods as described in 40 CFR 60, Appendix A (July 1, 1990) and adopted by reference in Rule 17-297, F.A.C.

- a) Method 1 - Sample and Velocity Traverses
- b) Method 2 - Volumetric Flow Rate
- c) Method 3 - Gas Analysis
- d) Method 9 - Determination of the opacity of the Emissions
- e) Method 10 - Determination of the Carbon Monoxide emissions from Stationary Sources
- f) Method 20 - Determination of Nitrogen Oxides, Sulfur Dioxide, and Diluent emissions from Stationary Gas Turbines. (SEE APPROVED ALTERNATE TESTING PROCEDURE ATTACHED)

~~10.~~ ^{8.} Annual NO_x compliance tests shall be performed with each the fuels used for more than 400 hours per unit in the preceeding 12 month period.

~~11.~~ ^{9.} Compliance with the SO₂ emission limit can ~~also~~ be determined by calculations based on fuel analysis using ASTM D2880-71 for the sulfur content of liquid fuels.

~~12.~~ ^{10.} Compliance with the total volatile organic compound emission limits will be assumed, provided the CO allowable emission rate is achieved; specific VOC compliance testing is not required.

~~13.~~ ^{11.} During performance tests, to determine compliance with the No_x standard, measured No_x emission at 15 percent oxygen will be adjusted to ISO ambient atmospheric conditions by the following correction factor:

$$NO_x = (NO_{x \text{ obs}})(P_{\text{ref}}/P_{\text{obs}})^{(0.5)} (e^{(H_{\text{obs}}-0.00633)}) (288^{\circ}K/T_{\text{amb}})^{1.53}$$

Where:

No_x = Emissions of NO_x at 15 percent oxygen and ISO standard ambient conditions.

No_x obs = Measured No_x emission at 15 percent oxygen, ppmv.

P_{ref} = Reference combustor inlet absolute pressure at 101.3 kilopascals (1 atmosphere) ambient pressure.

Attention: William H. Herrington,
Vice President, Electric Business Unit

SPECIFIC CONDITIONS
(continued)

- P_{obs} = Measured combustor inlet absolute pressure at test ambient pressure.
 H_{obs} = Specific humidity of ambient air at test.
 e = Transcendental constant (2.718).
 T_{amb} = Temperature of ambient air at test.

~~14. The Air Resources Compliance Section of this office shall be notified in writing at least thirty (30) days in advance of the compliance tests.~~
~~12. The owner or operator shall notify the Department in writing at least 15 days prior to the date on which each formal compliance test is to begin of the date, time, and place of each such test and the test contact person who will be responsible for coordinating and having such test conducted for the owner. The Department may waive the 15 day notice requirement on a case-by-case basis. {17-297.340(1)(i)}~~

~~13.~~
~~15.~~ A copy of the compliance test results shall be submitted to the Department's Central District Office within 45 days after the last test run is complete. The test report should provide the actual heat input rate and at least all of the information listed in Rule 17-297.570(3), F.A.C. ~~A copy of the continuous opacity monitor strip chart recorded during each compliance test should be submitted with the test reports. Each test report should also include a fuel oil analysis as required in 40 CFR 60.334(b) from a representative sample of the fuel oil burned during the test and a calculation of the sulfur dioxide emission rate in pounds per MMBTU heat input and pounds per hour. Failure to submit any of the above information may invalidate a test [Rules 17-297.570 and 17 4.070(3), F.A.C.].~~

~~14.~~
~~16.~~ Testing of emissions should be conducted with the source operating at "base load" ~~** 90% of rated capacity.~~ The source shall be allowed to operate at any load up to 129 MW so long as the actual water injection rate is at or above the minimum water injection rate established during the initial compliance testing, ~~90% of rated capacity; however subsequent source operation is limited to 110% of the tested load until a new test is conducted and approved by the Department in writing. Once the unit is so limited, operation at higher capacities is allowed for a cumulative total of no more than 15 successive calendar days for purposes of additional compliance testing to regain permitted capacity, with prior notification to the Department (Rule 17 4.070(3), F.A.C.,~~

**"Base Load" is the maximum load the combustion turbine is capable of reaching at the ambient conditions present during the test.

~~17. In order to provide the Department with reasonable assurance that this source can comply with both the particulate and Nox standards simultaneously, the steady state particulate tests and the nitrogen oxides tests should be conducted simultaneously.~~

15.

~~18.~~ The stack sampling facility must comply with Rule 17-297.345, F.A.C., regarding minimum requirements that include but are not limited to: location of sampling ports, work platform area, caged ladder, access and electrical power except as allowed by the attached APPROVED ALTERNATE TESTING PROCEDURE.

16.

~~19.~~ Compliance tests should be conducted on an annual basis on or within 60 days prior to ~~December 10.~~August 30.

Attention: William H. Herrington,
Vice President, Electric Business Unit

SPECIFIC CONDITIONS

(Continued)

17.

~~20.~~

A continuous monitoring system shall be utilized to monitor and record the water and fuel consumption on each unit, as well as the ratio of water to fuel being fired in each unit. Water injection shall be utilized for NOx control. ~~The water to fuel ratios at which compliance was achieved, shall be incorporated into this permit and shall be continuously monitored. The one hour average minimum water to fuel weight ratios demonstrated during compliance testing must be maintained until subsequent tests indicate compliance at a different ratio.~~ The system shall meet the requirements of 40 CFR Part 60, Subpart GG.

The permittee shall provide the Central District office with the model number of the continuous monitoring system within 30 days of the date of issue of this operating permit.

~~The following one hour average minimum water to fuel weight ratios must be maintained until subsequent tests indicate compliance at a different ratio:~~

Combustion Turbine C
Natural Gas

30%	0.82	0.68
50%	0.74	0.70
76%	0.97	0.88
100%	1.18	0.92

Combustion Turbine D

<u>Load</u>	<u>Natural Gas</u>	<u>Oil</u>
30%	0.67	0.67
50%	0.70	0.67
75%	0.93	0.94
100%	1.16	1.03

18.

~~21.~~

To determine compliance with the capacity factor limitations each CT,s fuel consumption shall be continuously measured and recorded. The permittee shall maintain daily records of this fuel usage. All records shall be maintained for a minimum of two ~~three~~ years after the date of each record and shall be made available to authorized representatives of the Department upon request.

19.

~~22.~~

Sulfur, nitrogen content and lower heating value of the fuel being fired in the gas turbine shall also be recorded per fuel oil shipment as required in 40CFR 60, Subpart GG. These records shall be kept by the company for at least two ~~three~~ years and made available for regulatory agency's inspection by authorized representatives of the Department.

20.

~~23.~~

Compliance with the acceptable ambient concentrations for Be, Lead, and Hg emissions were successfully demonstrated to the Department during initial compliance tests based on calculations certified by a Professional Engineer registered in Florida, using actual operating conditions. ~~Determination of the ambient concentrations for chemical compounds shall be determined by Department approved dispersion modelling. This compliance determination shall be made available upon request.~~

PERMITTEE:
Orlando Utilities Commission

Permit Number: A 0 0 5 - 2 2 9 0 8 4
Expiration Date: August 30, 1998

Attention: William H. Herrington,
Vice President, Electric Business Unit

SPECIFIC CONDITIONS:
(continued)

21.

~~24.~~ Excess emissions resulting from start-up or shut-down are permitted provided that best operational practices to minimize emissions are adhered to, and the duration of excess emissions is minimized. Excess emissions resulting from malfunction are permitted provided that best operational practices to minimize emissions are adhered to, and the duration of excess emissions is minimized, but in no case exceeds two hours in any 24-hour period unless specifically authorized by the Department for longer duration. Excess emissions which are caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure which may reasonably be prevented during startup, shutdown, or malfunction are prohibited [Rule 17-210.700, F.A.C.].

In the event the permittee is temporarily unable to comply with any of the conditions of the permit, the permittee shall immediately notify the Department's Central District Office. Notification shall be conducted in accordance with General condition (8) of this permit. In case of excess emissions resulting from malfunctions, a full written report on the malfunctions shall be submitted in a quarterly report, if requested by the Department [Rules 17-210.700(6) and 17-4.130, F.A.C.].

The permittee shall submit, to the Department, a written report of emissions in ~~the~~ excess of the emission limiting standard as set forth in Rule 17-~~296.405(1)(a)~~ 296.800(2)(a), F.A.C. for each calendar quarter. The nature and cause of the excess emissions shall be explained. This report does not relieve the permittee of the legal liability for violations. All recorded data shall be maintained on file for a period of at least 2 years. The information supplied in this report shall be consistent with the reporting requirements of 40 CFR ~~60.7 51 Appendix P~~. The report shall be submitted within 30 days following the end of the calendar quarter (Rules 17-297.500(2) and 17-4.070(3), F.A.C.).

RULE REQUIREMENTS

22.

~~25.~~ This source shall comply with all applicable provisions of Chapter 403, Florida Statutes, and Chapter 17-4, Florida Administrative Code.

23.

~~26.~~ This source shall comply with all requirements of 40 CFR 60, Subpart GG and Rule 17-296.800, F.A.c., Standards of Performances for Stationary Gas Turbines.

24.

~~27.~~ This source shall comply with Rule 17-297, F.A.C., Stationary Point Source Emission Test Procedures.

PERMITTEE:
Orlando Utilities Commission

Permit Number: AoOS-229084
Expiration Date: August 30, 1998

Attention: William H. Herrington,
Vice President, Electric Business Unit

SPECIFIC CONDITIONS:
(Continued)

~~25.~~

~~28.~~ Pursuant to F.A.C. Rule 17-210.300(2), Air operating Permits, the permittee is required to submit annual reports on the actual operating rates and emissions from this facility. These reports shall include, but are not limited to the following: sulfur, nitrogen content and lower heating value of the fuel being fired, fuel usage, hours of operation, air emission limits, etc. Annual reports shall be sent to the Department's Central District Office. Each calendar year on or before March 1, submit for each source, an Annual Operations Report DER Form 17-210.900(4), for the preceding calendar year.

~~26.~~

~~29.~~ The source shall not discharge air pollutants which cause or contribute to an objectionable odor [Rule 17-296.320(2), F.A.C.].

~~27.~~

~~30.~~ Issuance of this permit does not relieve the permittee from complying with applicable emission limiting standards or other applicable requirements of Rule 17-296 or 17-297, or any other applicable requirements under federal, state, or local law. Future regulations may impact this facility. The permittee shall comply with any applicable future regulations when they become effective (Rule 17-210.300, F.A.C.).

~~28.~~

~~31.~~ The application to renew this operating permit shall be submitted to the Central District Office at least sixty days prior to the expiration date of this permit (Rule 17-4.050(2) and [Rule 17-4.090(1), F.A.C.].

ISSUED 9/21 / 93

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

A. Alexander, P.E.
District Director
3319 Maguire Boulevard
Suite 232
Orlando, Florida 32803

DEC 21 1992

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

In the matter of:)	Permit No.	AC 05-193720
)		
Orlando Utilities)		ASP-92-0-01
Commission)		
)		
Petitioner.)		
_____)		

ORDER ON REQUEST
FOR
ALTERNATE TEST PROCEDURES AND REQUIREMENTS

Pursuant to Rule 17-297.620, F.A.C., Orlando Utilities Commission petitioned for approval to use a source sampling array consisting of 50 points in lieu of the 49 points required by EPA Method 20 for the measurement of nitrogen oxide emissions from Petitioner's simple cycle combustion turbine Units C and D at the Orlando Utilities Commission Indian River Power Plant, permit number AC 05-193720, located in Brevard County.

Having considered Petitioner's written request and all supporting documentation, the following Findings of Fact, Conclusions of Law, and Order are entered:

FINDINGS OF FACT

1. On July 1, 1992, Petitioner specifically requested approval to use source sampling array consisting of 50 points, arranged in a 5X10 matrix, in lieu of the 49 points, arranged in a 7X7 matrix, required by EPA Method 20 for the measurement of nitrogen oxide emissions from Petitioner's simple cycle combustion turbine Units C and D at the Indian River Power Plant, permit number AC 05-193720. [Exhibit 1]

2. As justification for the waiver of the EPA Method 20 requirement for 49 test points (arranged in a 7X7 matrix), Petitioner stated, "Because of the proximity of residences to the OUC Indian River Power Plant, the combustion turbines were designed with noise reduction baffles. The baffles provide only five air passages through the stack (see Figure 1 attached). The test port locations are directly in the flow paths between the baffles. . . . Test ports associated with a seven port arrangement would not be directly within the flow paths between the baffles." [Exhibit 1]

3. On August 3, 1992, the Region IV Office of the EPA stated, "Based on our review of the OUC, submittal, we have determined that

while the proposed alternative sampling grid will be adequate for making NO_x concentration measurements, the proposed sampling site is likely to cause a high bias in gas flow results. However, if the company is aware of the potential high bias at the proposed sampling location and is willing to accept the effect of this bias on their test results, we would not object to the approval of their request to use a 5X10 sampling grid." [Exhibit 2]

4. On September 21, 1992, the Orlando Utilities Commission responded to the EPA concerns about the effect of the sampling point location on emission test results. The Orlando Utilities Commission stated, "Because of this probable bias in exhaust gas flow rate measurement, OUC requests approval of an alternate exhaust gas flow determination method utilizing F-factors identified in EPA Method 19 and the fuel flow rates available in the combustion turbine control system." [Exhibit 3]

CONCLUSIONS OF LAW

1. The Department has jurisdiction to consider Petitioner's request pursuant to Section 403.061, Florida Statutes, and Rule 17-297.620, F.A.C.

2. Pursuant to 17-297.340(2), F.A.C., the Department retains the right to require compliance testing in accordance with all provisions of EPA Method 20 if, after investigation, it is believed that such testing is necessary to determine whether an applicable emission standard or condition of permit number AC 05-193720 is being violated.

3. Petitioner has demonstrated that the proposed alternate compliance verification method would be adequate to verify the compliance of the unit with the emission limiting standard for nitrogen oxides.

ORDER

Having considered Petitioner's written request and supporting documentation, it is hereby ordered that:

1. The relief requested by Petitioner is granted;

2. Petitioner shall be allowed to calculate gas flow rates using fuel consumption data and F-factors from EPA Method 19 provided the fuel consumption measurements are as accurate EPA Method 2 measurements of gas flow rates (i.e., ±5%).

2. Petitioner shall conduct emission tests using the procedures specified in Chapter 297, F.A.C.; and,

is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this Order. Persons whose substantial interests will be affected by any decision of the Department with regard to the applicant have the right to petition to become a party to the proceeding. The petition must conform with the requirements specified above and be filed (received) within 21 days of receipt of this notice in the Office of General Counsel at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.


4. This Order constitutes final agency action unless a petition is filed in accordance with the above paragraphs or unless a request for extension of time in which to file a petition is filed within the time specified for filing a petition and conforms to Rule 17-103.070, F.A.C. Upon timely filing of a petition or a request for an extension of time, this Order will not be effective until further Order of the Department.

RIGHT TO APPEAL

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

DONE AND ORDERED this 16th day of December, 1992 in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION



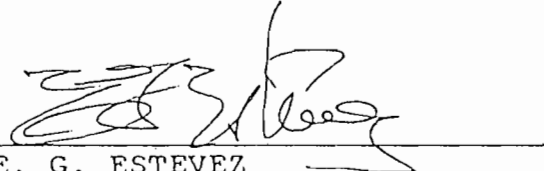
CAROL M. BROWNER
Secretary

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

(904) 488-4805

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true copy of the foregoing Order has been mailed, postage prepaid, to Gregory A. DeMuth, Director, Environmental Division, Orlando Utilities Commission, P. O. Box 3193, Orlando, Florida 32802, this 17th day of December, 1992.



E. G. ESTEVEZ
Assistant General Counsel

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Telephone (904) 488-9730



ORLANDO UTILITIES COMMISSION

500 SOUTH ORANGE AVENUE • P. O. BOX 3193 • ORLANDO, FLORIDA 32802 • 407/423-9100

Certified Mail No.P 971 587 769
Return Receipt Requested

RECEIVED

JUL 06 1992

July 1, 1992

Division of Air
Resources Management

Messrs. Mike Harley and
Jim Pennington
Florida Department of
Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Re: Alternate Stack Test Procedure

Dear Sirs:

Orlando Utilities Commission (OUC) is currently authorized by Permit Number AC 05-193720 to construct and operate two 129 MW simply cycle combustion turbines (Units C & D) to be located at the OUC Indian River Power Plant, south of the John F. Kennedy Space Center near the city of Titusville, Brevard County, Florida. As mandated by Specific Condition Number 9, OUC must perform emissions compliance testing following reference methods described in 40 CFR 60, Appendix A.

Nitrogen Oxides (NO_x) emissions testing from combustion turbines is to be performed in accordance with USEPA reference Method 20. For the rectangular stack dimensions of Units C & D, Method 20 requires a minimum of 49 sample points in a 7x7 arrangement. However, the Westinghouse stack design includes only five sample ports which could utilize a 5x10 sampling array to meet the minimum of 49 sampling points. Given that NO_x concentrations will be homogeneous in the stack and that the^x five test port locations are directly in the flow paths between the baffles, OUC requests approval of an alternate sampling procedure, under FAC 17-2.700(3), to allow utilization of a 5x10 sampling arrangement.

Exhibit 1



Messrs. Mike Harley and
Jim Pennington
July 1, 1992
page 2

Accordingly, OUC provides the following information requested under FAC 17-2.700(3)(b):

1. Specific source and permit number, if any, for which the exception is requested.

Orlando Utilities Commission
Two 129 simple cycle gas turbines (Units C & D)
Permit Number AC 05-193720

2. The Specific provision of Section 17-2.700 from which an exception is sought.

Exception requested from FAC 17-2.700(6)(b)(20), USEPA Method 20, Determination of Nitrogen Oxides, Sulfur Dioxide and Oxygen Emissions from Stationary Gas Turbines.

3. The basis for the exception, including but not limited to any hardship which would result from compliance with the provisions of Section 17-2.700.

Because of the proximity of residences to the OUC Indian River Power Plant, the combustion turbines were designed with noise reduction baffles. The baffles provide only five air passages through the stack (see Figure 1 attached). The test port locations are directly in the flow paths between the baffles.

Westinghouse's flow analysis of the stack demonstrated that the five test ports are ideally suited for all emissions testing. Test ports associated with a seven port arrangement would not be directly within the flow paths between the baffles.

4. The alternate procedure for which approval is sought and a demonstration that such alternate procedure is adequate to demonstrate compliance with the permit.

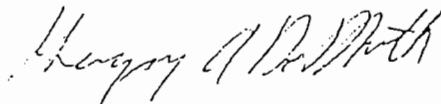
The Westinghouse five port arrangement will allow for 50 sample points for NO_x emissions testing (compared to 49 as specified in Method 20). Given that NO_x concentrations will be homogeneous in the stack, that the five test port

Messrs. Mike Harley and
Jim Pennington
July 1, 1992
page 3

locations are directly in the flow paths between the baffles, and that the USEPA and DER are authorized in their regulations to allow alternate sampling locations to be used, OUC requests DER to approve the use of the five port arrangement (and the 5x10 array) for NO_x emissions testing for Units C & D at the Indian River Facility.

If you have any questions concerning this request for approval of an alternate sampling procedure, please contact me at 407/423-9141.

Very truly yours,

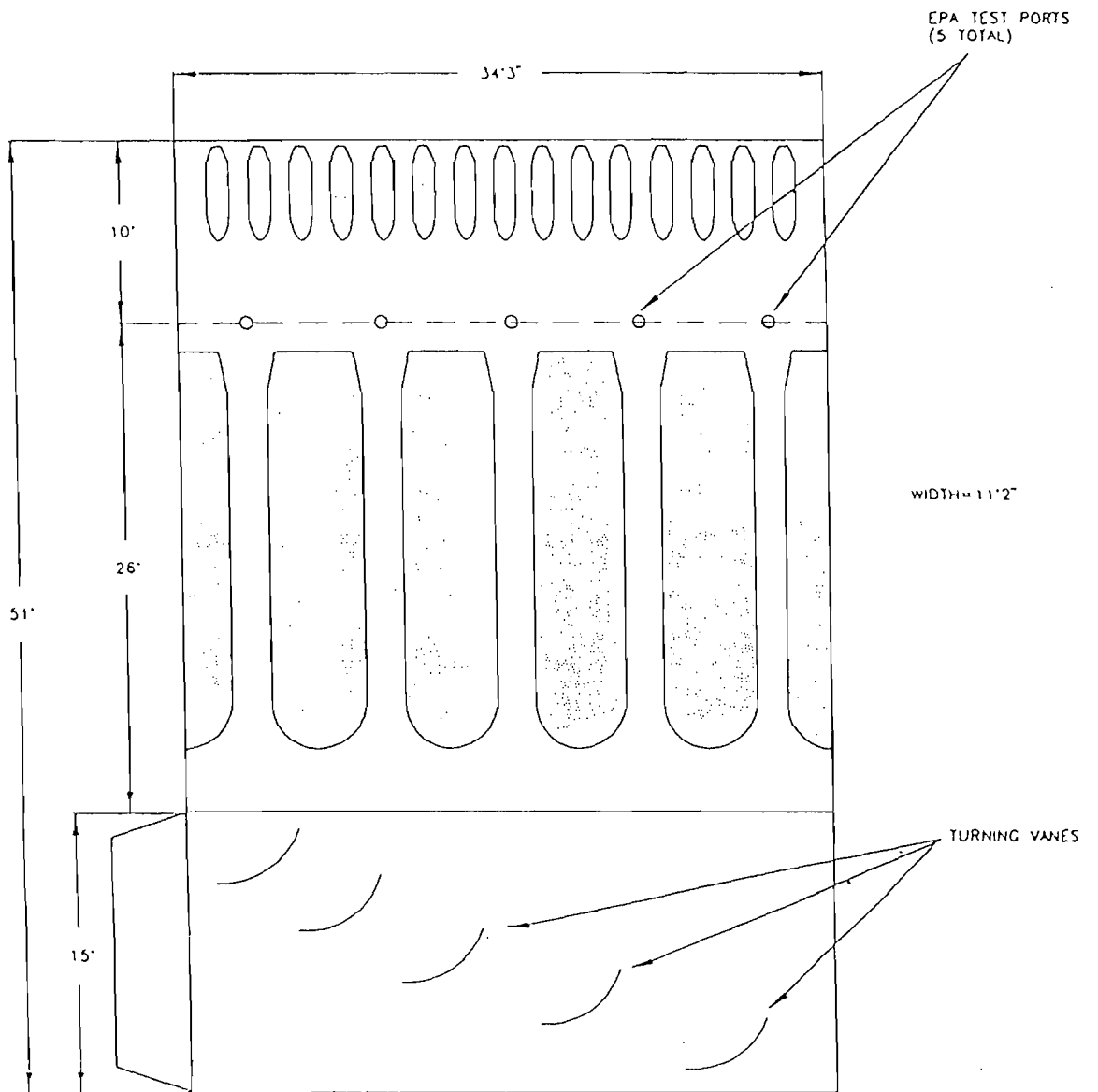


Gregory A. DeMuth
Director
Environmental Division

GAD:rc
Attachments

cc: F. F. Haddad
K. P. Ksionek
T. D. Slepow
R. F. Hicks
S. M. Day

OUC INDIAN RIVER STACK



400 hours.

4. During each federal fiscal year (October 1 — September 30), unless otherwise specified by rule, order, or permit, the owner of each source shall have a formal compliance test conducted for visible emissions, if there is an applicable standard; and for each pollutant for which the source is major, if there is an applicable emission standard for that pollutant; and for each NESHAPS pollutant, if there is an applicable emission standard.

5. An annual compliance test for particulate matter emissions shall not be required for any fuel burning source that, in a federal fiscal year, does not burn liquid and/or solid fuel, other than during startup, for a total of more than 400 hours.

6. For fossil fuel steam generators on a semi-annual particulate emission compliance testing schedule, a compliance test shall not be required for any six-month period in which liquid and/or solid fuel is not burned for more than 200 hours other than during startup.

7. For sources electing to conduct particulate emission compliance testing quarterly pursuant to Rule 17-2.600(5)(b)1., F.A.C., a compliance test shall not be required for any quarter in which liquid and/or solid fuel is not burned for more than 100 hours other than during startup.

8. Any combustion turbine that does not operate for more than 400 hours per year shall conduct a visible emissions compliance test once per each five-year period coinciding with the term of its air operating permit.

9. The owner or operator shall notify the Department at least 15 days prior to the date on which each formal compliance test is to begin of the date, time, and place of each such test, and the test contact person who will be responsible for coordinating and having such test conducted for the owner. The Department may waive the 15 day notice requirement on a case by case basis.

(b) Special Compliance Tests.

When the Department, after investigation, has good reason (such as complaints, increased visible emissions or questionable maintenance of control equipment) to believe that any applicable emission standard contained in this chapter or in a permit issued pursuant to this chapter is being violated, it may require the owner or operator of the source to conduct compliance tests which identify the nature and quantity of pollutant emissions from the source and to provide a report on the results of said tests to the Department.

(c) Waiver of Compliance Test Requirement.

1. If the owner or operator of a source that is subject to a compliance test requirement demonstrates to the Department, pursuant to the procedure established in Section 17-2.700(3), that the compliance of the source with an applicable weight emission limiting standard can be adequately determined by means other than the designated test procedure, such as specifying a surrogate standard of no visible emissions for particulate sources equipped with a bag house, or specifying a fuel analysis for sulfur dioxide

emissions, the Department may waive the compliance test requirements for such sources and order that the alternate means of determining compliance be used.

2. Such waiver may be issued for an indefinite period of time or for a specific time period provided, however, that the Department may require a conventional compliance test for such sources pursuant to Section 17-2.700(2)(b) above.

(3) Exceptions and Approval of Alternate Procedures and Requirements.

(a) The owner or operator of any source subject to the provisions of this section may request in writing a determination by the Secretary or his designee that any requirement of Section 17-2.700 relating to source emissions test procedures, methodology, equipment, or test facilities shall not apply to such source, and shall request approval of alternate procedures or requirements.

(b) The request shall set forth the following information, at a minimum:

1. Specific source and permit number, if any, for which exception is requested.

2. The specific provision(s) of Section 17-2.700 from which an exception is sought.

3. The basis for the exception, including but not limited to any hardship which would result from compliance with the provisions of Section 17-2.700.

4. The alternate procedure(s) or requirement(s) for which approval is sought and a demonstration that such alternate procedure(s) or requirement(s) shall be adequate to demonstrate compliance with applicable emission limiting standards contained in Chapter 17-2 or any permit issued pursuant to that Chapter.

(c) The Secretary or his designee shall specify by order each alternate procedure or requirement approved for an individual source in accordance with this section or shall issue an order denying the request for such approval. The Department's order shall be final agency action, reviewable in accordance with Section 120.57, Florida Statutes.

(d) The Secretary or the District Manager of the District in which a minor particulate source equipped with a baghouse is located may waive the compliance test requirements for such source specified in Rule 17-2.700, Table 1, and specify an alternative standard of 5% opacity. The waiver of compliance test requirements for particulate sources equipped with a baghouse and the substitution of the visible emissions standard shall be specified in the permit issued to the source.

If the Department has reason to believe that the particulate weight emission standard applicable to a source is not being met, it shall require that compliance be demonstrated by the applicable test method specified in Rule 17-2.700, Table 1.

(4) Stack Sampling Facilities Provided by the Owner of an Air Pollution Point Source.

This section describes the minimum requirements for stack sampling facilities that are necessary to sample point sources. Sampling facilities include sampling ports, work platforms, access and electrical power. Sources must provide



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

4APT-AEB

AUG - 3 1992

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AUG 06 1992

Division of Air
Resources Management

Mr. James K. Pennington, P.E., Administrator
Compliance and Enforcement Section
Bureau of Air Regulation
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

RE: Alternative Stack Testing Procedure Proposed for the Indian
River Power Plant, Titusville, Florida

Dear Mr. Pennington:

As requested by Mike Harley of your staff, we have reviewed the referenced proposal from the Orlando Utilities Commission (OUC). In their proposal OUC is seeking approval to use a 5 X 10 grid rather than a 7 X 7 grid for EPA Method 20 sampling on two combustion turbines. Based upon our review of the OUC submittal, we have determined that while the proposed alternative sampling grid will be adequate for making NO_x concentration measurements, the proposed sampling site is likely to cause a high bias in gas flow rate results. However, if the company is aware of the potential high bias at the proposed sampling location and is willing to accept the effect of this bias on their test results, we would not object to approval of their request to use a 5 X 10 sampling grid for testing conducted on the turbine.

The company is seeking approval to use an alternative sampling grid because a 5 X 10 grid would place the sampling points in the flow paths between the noise reduction baffles in the turbine exhaust stack. If a 7 X 7 grid is used, the traverse points would not be located in the flow channels between the noise reduction baffles. Since NO_x concentrations should be essentially uniform throughout the stack, the average NO_x concentration measured in the exhaust stack should be the same regardless of whether a 7 X 7 or a 5 X 10 sampling grid is used.

While NO_x concentrations measured in the stack should be independent of the sampling grid utilized, the traverse point arrangement proposed by OUC is likely to cause a high bias in measured gas flow rates because the baffles in the exhaust stack will cause flue gas from the turbine to accelerate as it passes between the baffles. Since the sampling arrangement proposed by OUC would place the traverse points directly between the baffles, it is likely that the measured gas velocity will exceed the average gas velocity for the entire stack cross-sectional area.

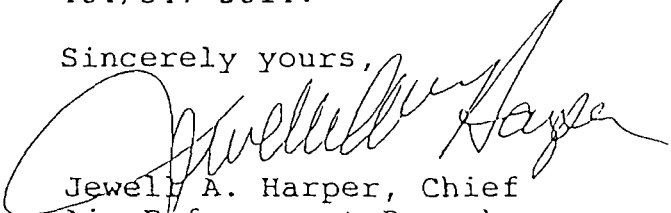
Exhibit 2

Depending upon the proportion of the exhaust stack obstructed by the noise reduction baffles, the traverse point arrangement proposed by OUC could result in a substantial high bias in measured gas flow rates. This high bias in gas flow rates would also cause a proportionally high bias in measured mass emission rates if OUC is subject to a NO_x mass emission limit. However, if the company is fully aware of the potential high bias at the proposed alternative sampling site and is willing to accept the risk associated with the use of the alternative sampling grid, we would have no objections to approval of their proposal.

One option that the company does have with respect to testing their turbines is to install a stack extension that has sampling points located such that they meet at least the minimally acceptable EPA Method 1 criteria for distance from flow disturbances. A stack extension that would allow for installation of adequate sampling points would have to extend at least 42.1 feet above the noise reduction baffles in the turbine exhaust stack. The basis for this conclusion is that the baffles themselves constitute a flow disturbance and the equivalent diameter of the rectangular exhaust duct at OUC is 18.84 feet. Since the minimally acceptable location for traverse points is 2 duct diameter downstream and 1/2 duct diameter upstream of flow disturbances, a total extension of 2.5 duct diameters or 42.1 feet (18.84 feet X 2.5) would have to be added at the facility in order for the sampling site to meet EPA Method 1 criteria.

If you have any questions about the determination provided in this letter, please contact Mr. David McNeal of my staff at 404/347-5014.

Sincerely yours,



Jewell A. Harper, Chief
Air Enforcement Branch
Air, Pesticides and Toxics
Management Division

cc: Mr. Michael Harley
Bureau of Air Regulation
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Best Available Copy



RECEIVED

SEP 22 1992

Division of Air
Resources Management

ORLANDO UTILITIES COMMISSION

500 SOUTH ORANGE AVENUE • P. O. BOX 3193 • ORLANDO, FLORIDA 32802 • 407/423-9100

Certified Mail No. P 071-587-818
Return Receipt Requested

September 21, 1992

Messrs. Mike Harley and
Jim Pennington
Compliance and Enforcement Section
Florida Department of
Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Re: Alternate Stack Test Procedure

Dear Messrs. Harley and Pennington:

Orlando Utilities Commission (OUC) is currently authorized by Permit No. AC 05-193720 to construct and operate two 129 MW simple cycle combustion turbines (Units C & D) to be located at the OUC Indian River Power Plant, south of the John F. Kennedy Space Center near the city of Titusville, Brevard County, Florida. As mandated by Specific Condition No. 9, OUC must perform emissions compliance testing following reference methods described in 40 CFR 60, Appendix A.

To allow calculations of the mass flow rate of NO_x and CO emissions, exhaust gas volumetric flow rate is to be measured in accordance with USEPA Reference Method 1 and Method 2. However, as indicated in USEPA letter to Mr. Pennington, dated August 3, 1992, the internal arrangement of the combustion turbine exhaust stacks requires a traverse point arrangement which is likely to cause a high bias in measured gas flow rates.

Because of this probable bias in exhaust gas flow rate measurement, OUC requests approval of an alternate exhaust gas flow determination method utilizing F-factors identified in USEPA Method 19 and the fuel flow rates available in the combustion turbine control system.

Exhibit 3

Messrs. Mike Harley and
Jim Pennington
September 21, 1992
Page 2

Accordingly, OUC provides the following information requested under FAC 17-2.700 (3)(b):

1. Specific source and permit number, if any, for which the exception is requested.

Orlando Utilities Commission
Two 129 simple cycle gas turbines (Units C & D)
Permit No. AC 05-193720

2. The specific provision of Section 17-2.700 from which an exception is sought.

Exception requested from FAC 17-2.700(6)(b)(1).
USEPA Method 1, Sample and Velocity Traverses for Stationary Sources and FAC 17-2.700 (6)(b)(2), USEPA Method 2, Determination of Stack Gas Velocity and Volumetric Flow Rate (Type 5 Pitot Tube).

3. The basis for the exception, including but not limited to any hardship which would result from compliance with the provisions of Section 17-2.700.

Because of the proximity of residences to the OUC Indian River Power Plant, the combustion turbines were designed with noise reduction baffles. The baffles provide only five air passages through the stack (see Figure 1 attached). The test port locations are directly in the flow paths between the baffles.

However, because the flow measurement traverse points will be located directly between the baffles, it is likely that the measured gas velocity will exceed the actual average gas velocity for the entire stack cross sectional area.

4. The alternative procedure for which approval is sought and a demonstration that such alternate procedure is adequate to demonstrate compliance with the permit.

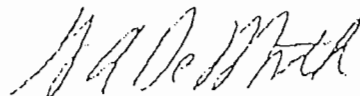
Exhaust gas flow rate will be measured utilizing F-factors identified in USEPA Method 19 and the fuel flow rates available in the combustion turbine control system. The lower heating value of the fuel will be available from a certified fuel analysis. Fuel oil

Messrs. Mike Harley and
Jim Pennington
September 21, 1992
Page 3

flow measurement will be performed utilizing a calibrated turbine-type flow meter. The fuel oil flow meter calibration report is attached for reference. Fuel gas flow measurement will be performed utilizing a precision orifice plate, stamped with the bore diameter, calculated in accordance with American Gas Association standards.

If you have any questions concerning this request for approval of an alternate sampling procedure, please call me at 407/423-9141 or Steve M. Day at 913/339-2880.

Very truly yours,



G. A. DeMuth
Director
Environmental Division

GAD:rc
Attachments

xc: W. H. Herrington
G. M. Standridge
F. F. Haddad
K. P. Ksionek
V. P. Gallucci
H. E. Smith (B&V)
S. M. Day (B&V)

OUC INDIAN RIVER STACK

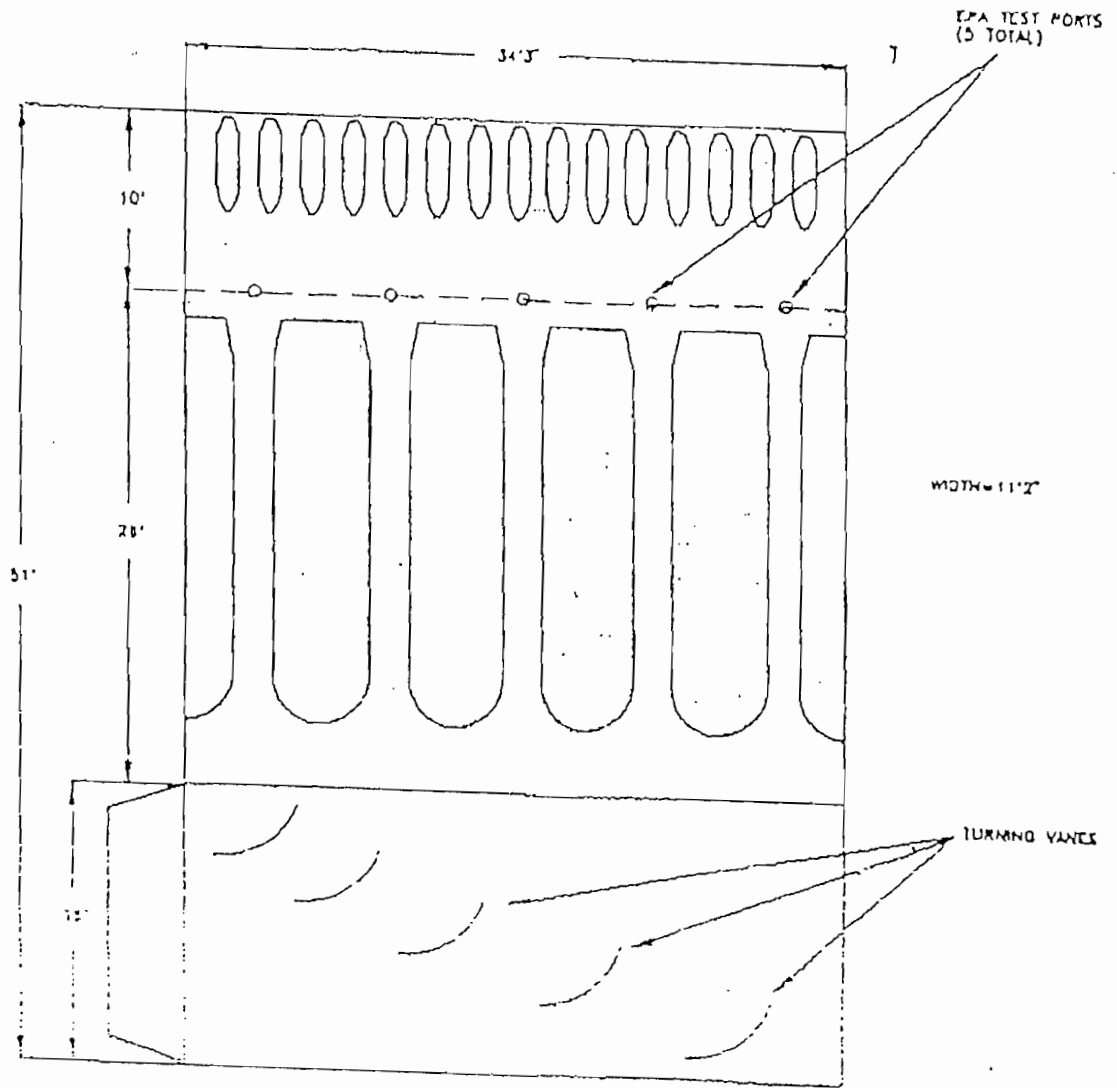



Figure 1

 Washington Electric Corporation Power Development Division	
Project No.	0000000
Date	13 JUL 81
Scale	1" = 10'
Drawn By	E.J. MURPHY



Technologies, Inc.

Serial No. 202828
 Model No. 3-81AF5C1
 Pickup Coil P/N A20105K
 Customer Solared
 Sales Order No. 914-80615
 Process Fluid _____
 Temperature: 80 ° Min. _____ Max.
 Pressure: _____ Min. _____ Max.
 Tag Information _____

FLOW CALIBRATION REPORT

This Turbine Meter Has Been Tested And Calibrated.

Test Fluid: Water
 Linear Flow Range: 50 To 500
 (U.S. Gallons / Minute)
 Mean¹: 7031.5
 Linearity²: 1.003
 K Factor (mean)³: 46.877

Frequency output at full scale or any other flowrate may be calculated by the following formula:

$$\text{Frequency (Hz)} = \frac{\text{K Factor (mean)} \times \text{Flowrate}}{\text{Pulses/U.S. Gal.} \times \text{U.S. Gal./Min.}}$$

Operator: XO 13 Date: 11-22-91
 Inspector: XO 5 Date: NOV 26 '91

Voltage Output⁴ At Minimum Flow 3.50 mV p/p.

RUN NO.	WEIGHT (Lbs.)	TIME (Min.)	SENSOR READING (Pulses)	VOLUME (U.S. Gals.)	FREQUENCY f (cps)	FLOWRATE Q (gpm)	CAL FACTOR K (Pulses out)
1		2646	7009	150	441.48	566.89	46.727
2		3075	7013		380.10	487.80	46.753
3		3512	7019		333.10	427.11	46.795
4		4007	7020		291.99	374.34	46.800
5		4659	7022		251.20	321.96	46.813
6		5056	7026		207.04	265.21	46.840
7		7012	7031		166.96	213.72	46.873
8		9356	7040		125.40	160.32	46.933
9		1.4124	7054		83.238	106.20	47.027
10		2.6598	7047		43.665	55.766	46.980

- Notes: (Record 1, 2, & 3 on designated lines above).
1. Mean - Add the largest sensor reading (pulses) to the smallest sensor reading and divide by two.
 2. Linearity - Divide the Mean by the smallest sensor reading. The result must be between 1.000 and 1.005. (If it is not, see 12000CJ, paragraph 2.3).
 3. K Factor - Divide the Mean by the calibration Volume. For K Factors equal to or greater than 10,000, round off to the nearest whole number. For K Factors less than 10,000, round off to five significant numbers (e.g. XXX.X, XXX.XX, XX.XXX). The K Factor must fall within the limits specified in test procedure 12000CJ for the meter under test.
 4. See test procedure 12000CJ for required minimum.

The following conversion factors may be used to express the flowrate or K Factor (Sensitivity) in other units:

Multiply Flowrate in U.S. Gal./Min. Multiply K Factor (Sensitivity) in Pulses/U.S. Gal.

- x 1.420 = Barrels (42 gal.)/hr.
- x 0.8327 = Imperial Gal./Min.
- x 3.785 = Liters/Min.
- x 0.2271 = Cubic Meters/Hr.
- x 42.00 = Pulses/Barrel (42 Gal.)
- x 1.201 = Pulses/Imperial Gal.
- x 0.2642 = Pulses/Liter
- x 264.2 = Pulses/Cubic Meter



Technologies, Inc.

28020 Avenue Stanford
 Valencia, CA. 91355.
 Telephone: (805) 257-42
 FAX: (805) 257-2499

BEST AVAILABLE COPY



Technologies, Inc.

Serial No. 205422

Model No. 3-81AF5C1

Pickup Coil P/N A20105K

Customer Solaris

Sales Order No. 91V-80615

Process Fluid

Temperature: 85°F Min. Max.

Pressure: Min. Max.

Tag Information

LOW CALIBRATION REPORT

This Turbine Meter Has Been Tested And Calibrated.

Test Fluid: Water

Linear Flow Range: 50 To 500

(U.S. Gallons / Minute)

Mean: 7213.5

Linearity: 1.002

K Factor (mean): 48.090

Frequency output at full scale or any other flowrate may be calculated by the following formula:

$$\text{Frequency (Hz)} = \frac{\text{K Factor (mean)} \times \text{Flowrate}}{60 \text{ Sec./Min.}}$$

(Pulses/U.S.Gal.) × (U.S.Gal./Min.)

Operator: Date: 11/22/91

Inspector: Date: NOV 26 '91

Voltage Output⁴ At Minimum Flow 400 mV p/p.

RECORDED DATA				PERFORMANCE PARAMETERS				ADDITIONAL DATA			
RUN NO.	WEIGHT (Lbs.)	TIME (Min.)	SENSOR READING (Pulses)	VOLUME (U.S. Gals.)	FREQUENCY f (cp.s)	FLOW RATE Q (g.p.m.)	CAL FACTOR K (Pulses/Gal.)				
		.2664	7217	150	451.51	563.06	48.113				
2		.3161	7222		380.79	474.53	48.147				
3		.3583	7222		335.94	418.64	48.147				
4		.4122	7227		292.21	363.90	48.180				
5		.4821	7227		249.85	311.14	48.180				
6		.5763	7223		208.89	260.28	48.153				
7		.7134	7219		168.65	210.26	48.127				
8		.9604	7214		125.19	156.18	48.093				
9		1.4207	7211		84.592	105.58	48.073				
10		2.8788	7200		47.6845	52.105	48.000				

Notes: (Record 1, 2, & 3 on designated lines above).

- Mean - Add the largest sensor reading (pulses) to the smallest sensor reading and divide by two.
- Linearity - Divide the Mean by the smallest sensor reading. The result must be between 1.000 and 1.005. (If it is not, see 12000CJ, paragraph 2.3).
- K Factor - Divide the Mean by the calibration volume. For K Factors equal to or greater than 10,000, round off to the nearest whole number. For K Factors less than 10,000, round off to five significant numbers (e.g. XXXXX, XXXXX, XX000). The K Factor must fall within the limits specified in test procedure 12000CJ for the meter under test.
- See test procedure 12000CJ for required minimum.

The following conversion factors may be used to express the flowrate or K Factor (Sensitivity) in other units:

- | | |
|-------------------------------------|---|
| Multiply Flowrate in U.S. Gal./Min. | Multiply K Factor (Sensitivity) in Pulses/U.S. Gal. |
| × 1.429 = Barrels (42 gal.)/Hr. | × 42.00 = Pulses/Barrel (42 Gal.) |
| × 0.8327 = Imperial Gal./Min. | × 1.201 = Pulses/Imperial Gal. |
| × 3.785 = Liter/Min. | × 0.2642 = Pulses/Liter |
| × 0.2271 = Cubic Meters/Hr. | × 264.2 = Pulses/Cubic Meter |



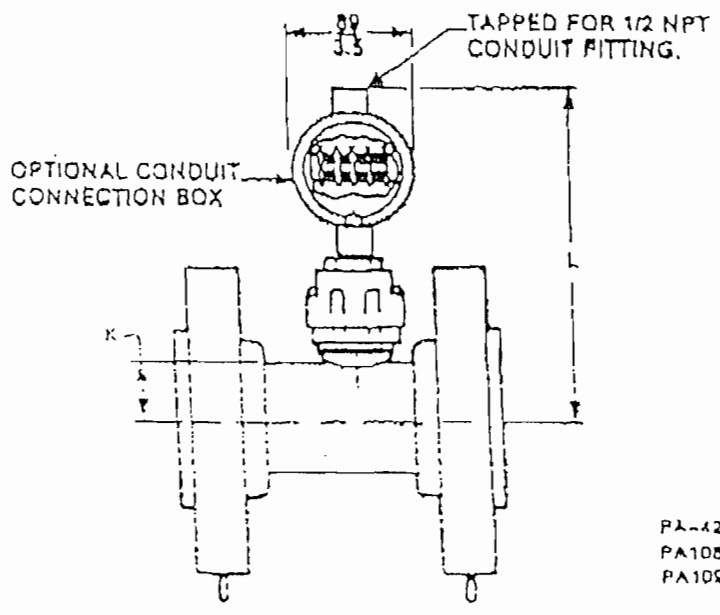
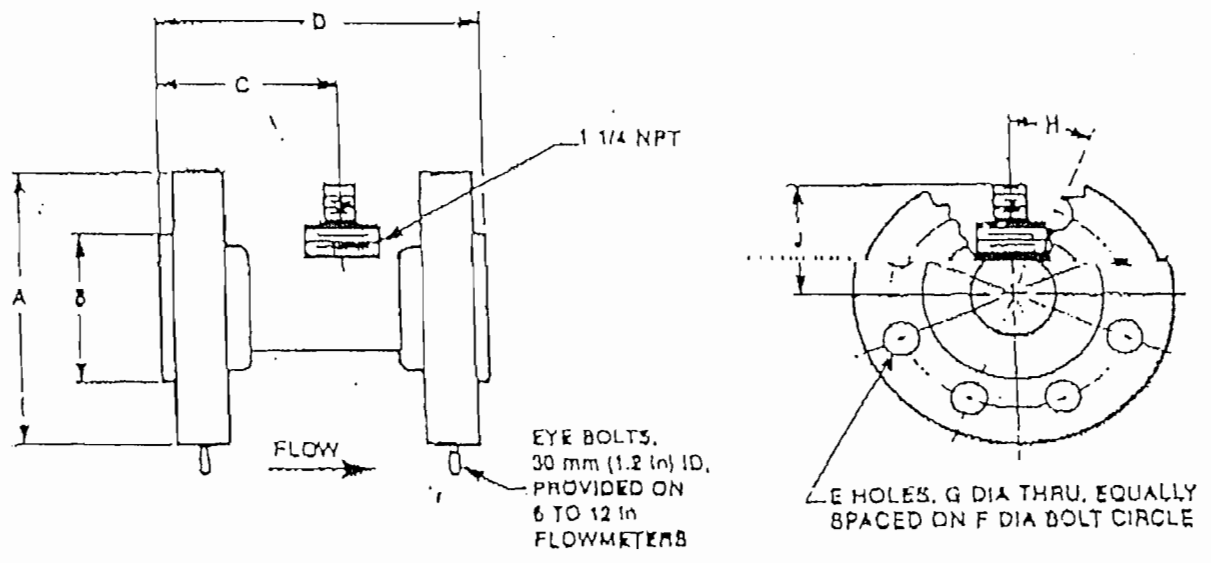
Technologies, Inc.

28020 Avenue Stanford
Valencia, CA. 91355.
Telephone: (805) 257-42
FAX: (805) 257-2499

Dimensional Print

DP
019-117
NOVEMBER 1989
SHEET 1 of

81AF TURBINE FLOWMETER WITH FLANGED END CONNECTIONS



AMPLIFIER AND PREAMPLIFIER DIMENSIONAL PRINT REFERENCES

- | | |
|-----------------------------------|------------|
| PA-420 Analog Amplifier | DP 019-216 |
| PA108 Flange-Mounted Preamplifier | DP 019-215 |
| PA109 Field-Mounted Preamplifier | DP 019-215 |

NOTE: SEE SHEET 2 FOR DIMENSIONS.

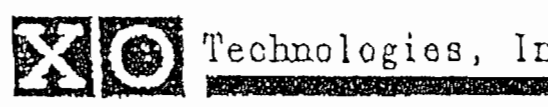
(Not for construction unless certified.)

CUSTOMER _____ I.R. Solares Florida Corp.

CUSTOMER ORDER 115971 NO ORDER 91V-80615

ITEM-TAG FT15440/FT25440

CERTIFIED BY _____ DATE 12/3/91



BIAP Turbine Flowmeters

SIZE CODE	ANSI FLANGE RATING CLASS	APPROXIMATE MASS kg	A	B	C	D	K	F	Q	H	J	K	L
1/2-2	150	2.3	88.9					80.33			89.3		
1/2-1		5.0	3.50	33.1				2.375			2.73	180	234
1/2	300	7.4	83.3	1.38				66.68	15.88		70.7	7.1	9.2
		7.3	3.75					2.825	0.825		2.77		
1/4	150	2.3	98.6		20.6	102.0		88.85			75.7	7.2	9.3
	300	5.9	7.95	11.0				0.233	14.03				
		7.3	4.87					3.250	0.750				
1	150	2.7	108.0					76.58	15.88				
		6.0	4.25	50.8				3.125	0.625	45°	73.9	18.3	238
	300	3.8	122.7	2.00				88.80	19.05		2.02	7.2	9.3
		6.0	4.87					3.500	0.750				
1 1/2	150	4.5	127.0					90.43	15.88				
		10.0	5.00	72.9	26.2	152.4		1.875	0.625		81.5	18.8	236
	300	8.4	163.6	2.87	3.00	6.00		114.30	22.23		3.21	7.4	9.3
		14.0	6.12					4.500	0.875				
2	150	6.8	152.4					120.87					
		13.0	6.00	92.0	90.9	185.1		4.750			87.6	20.3	257
	300	9.1	165.1	3.82	3.38	6.50		127.00	19.05		3.45	8.0	10.1
		20.0	6.50					5.000	0.750	22 1/2°			
3	150	13.8	190.3					132.40					
		30.0	7.60	127.0	167.4	254.0		6.000		45°	105.4	20.6	267
	300	17.2	209.6	5.00	6.39	10.00		168.28	22.23		4.15	8.2	10.3
		38.0	8.23					6.425	0.875				
4	150	20.4	228.8					190.30	19.05				
		45.0	9.00	157.2	214.1	304.8		7.500	0.750	22 1/2°	116.1	22.1	274
	300	29.3	257.0	6.19	6.43	12.00		200.03	22.23		4.37	8.7	10.8
		65.0	10.00					7.875	0.875				
5	150	36.3	276.2					241.30					
		70.0	11.00	215.8	283.1	355.6		9.500			140.7	24.9	302
	300	34.4	317.3	8.50	10.38	14.00		269.88	22.23		5.34	9.3	11.9
		120.0	12.50					10.875	0.875	15°			
6	150	63.8	342.9					298.45					
		133.0	13.50	289.8	338.3	437.2		11.750		22 1/2°	162.8	27.4	328
	300	68.5	381.0	10.82	11.32	18.00		330.20			6.45	10.8	12.9
		192.0	15.00					13.000	25.40				
10	150	113.4	406.4					381.95	1.000				
		230.9	18.00	322.8	408.2	638.0		14.250		15°	188.7	30.2	356
	300	147.4	444.5	12.75	20.01	28.00		387.35	28.38		7.43	11.9	14.0
		328.0	17.40					15.250	1.125	11 1/2°			
12	150	131.4	482.6					431.80	25.40				
		260.11	19.00	381.0	613.2	762.0		17.000	1.000	15°	210.1	32.8	38.1
	300	228.6	520.7	15.00	24.14	30.00		450.65	31.75		8.35	12.9	15.0
		506.5	23.50					17.750	1.250	11 1/2°			

*ALSO AVAILABLE AS -A- HIGH PULSE OUTPUT

Orlando Utilities Commission

ORLANDO, FLORIDA

"Where Electricity Powers Progress"

63-215
631

0003475
No. 112882

PAY TO THE
ORDER OF:

FLORIDA DEPARTMENT OF
ENVIRONMENTAL REGULATION
2600 BLAIR STONE RD

NOT VALID
AFTER 180 DAYS

DATE

03/31/94

\$250.00

TALLAHASSEE FL

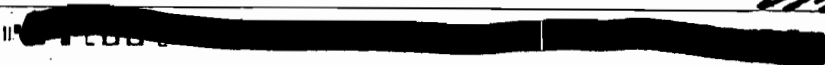
32399-2400

EXACTLY TWO HUNDRED FIFTY AND NO/100*****

SUN BANK, N.A.
MAIN OFFICE:
ORLANDO, FLORIDA 32801

03458
97674

Troy W Todd
AUTHORIZED SIGNATURE



ORLANDO UTILITIES COMMISSION P.O. BOX 3193 ORLANDO, FLORIDA 32802

No. 112882

INVOICE DATE	VENDOR INVOICE NUMBER	VOUCHER NUMBER	AMOUNT
32894	PERMIT MODIF FEE IRF COMBUSTION TURBINE C&D CONSTRUCTION PERMIT MODIFICATION FEE	9403299327	\$250.00
DISB #	VENDOR NO.	CHECK DATE	TOTAL
97674	03458	03/31/94	\$250.00



Lawton Chiles
Governor

Florida Department of Environmental Protection

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Virginia B. Wetherell
Secretary

February 10, 1994

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. Robert F. Hicks
Sr. Environmental Engineer
Orlando Utilities Commission
P. O. Box 3193
Orlando, Florida 32802

Dear Mr. Hicks:

RE: Permit No. A005-229084
OUC, Brevard County

The Bureau of Air Regulation received your February 3, 1994, request for the above referenced project. The changes requested in your letter will necessitate an amendment to your construction permit (AC05-193720, PSD-FL-173). On October 30, 1991, Rule 17-4.050(4)(o), F.A.C., was changed to require a \$250 processing fee for a permit amendment; therefore, we will not be able to take action on your request until the fee is received. If you have any questions, please call Syed Arif or Patty Adams at (904) 488-1344.

Sincerely,

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

CHF/pa

cc: Syed Arif

is your RETURN ADDRESS completed on the reverse side?

SENDER:

- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. Addressee's Address

2. Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Mr. Robert F. Hicks
St. Environmental Engineer
Orlando Utilities Commission
P. O. Box 3193
Orlando, FL 32802

4a. Article Number
P 872 562 599

4b. Service Type
 Registered Insured
 Certified
 Express Mail

7. Date of Delivery
FEB 14 1994
ORLANDO, FL
U.S. MAIL

5. Signature (Addressee)

6. Signature (Agent)

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

PS Form 3811, December 1991 U.S. GPO: 1992-323-402 **DOMESTIC RETURN RECEIPT**

Thank you for using Return Receipt Service.

P 872 562 599



Receipt for Certified Mail

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

PS Form 3800, JUNE 1991

Sent to	Mr. Robert F. Hicks, OUC
Street and No.	P. O. Box 3193
P.O., State and ZIP Code	Orlando, FL 32802
Postage	\$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	Mailed: 2-10-94 Permit: AC 05-193720

Original to Patey
Copy for Seward and Prater



ORLANDO UTILITIES COMMISSION

500 SOUTH ORANGE AVENUE • P. O. BOX 3193 • ORLANDO, FLORIDA 32802 • 407/423-9100

Syed
Please review
this request. I did
the construction permit
prepare for a pre-request
telephone call to
Demuth Thursday 3/10

Via Airborne Express
Airbill No. 4186728766

Preston
2/6/94

RECEIVED

February 3, 1994

FEB 04 1994

Bureau of
Air Regulation

Mr. Preston Lewis
Air Regulation Section
Florida Department of
Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Indian River 1991

Re: DEP Permit No. A0-05-229084

Dear Mr. Lewis:

In response to the above referenced permit, I have re-written the specific conditions section to better correlate these conditions with the rules of the Department.

Greg DeMuth and I would like to discuss these changes with you early next week.

Sincerely,

Robert F. Hicks
Sr. Environmental Engineer

RFH:rc
h020394
Attachment

xc: G. A. DeMuth



PERMITTEE:

Permit Number: A005-229084
 Expiration Date: August 30, 1998

Orlando Utilities Commission
 Attention: William H. Herrington,
 Vice President, Electric Business Unit

SPECIFIC CONDITIONS

EMISSION LIMITS

1. The maximum allowable emissions from the facility shall not exceed the emission rates listed in the following table.

ALLOWABLE EMISSION LIMITS
 Simple Cycle Combustion Turbine

Pollutant	Standards	
	Gas Firing/20 F	No. 2 Fuel oil Firing/20 F
No _x	25 ppmv at 15 percent oxygen on a dry basis	42 ppmv at 15 percent oxygen on a dry basis
S02	Natural Gas as fuel	0.3 percent S by weight
PM/PM10	0.003 lb/MMBtu	0.08 lb/MMBtu
Voc	5 ppmvd	15 ppmvd
co	25 ppmvd	25 ppmvd
Mercury (Hg)		3.0 x 10⁻⁶ lbs/MMBtu
Lead (Pb)		2.8 x 10⁻⁵ lbs/MMBtu
Beryllium (be)		2.5 x 10⁻⁶ lbs/MMBtu
Sulfuric Acid Mist	Natural gas as fuel	Low sulfur content oil 0.3 percent S by weight

Pollutant	Gas Turbine Tons Per Year*		Basis
	Gas	Oil	
No _x	591.5	506	BACT
So ₂	2.1	953	BACT
PM/PM10	19.5	237	Performance Data
Voc	37	112	
CO	313	159	
Mercury (Hg)		0.01	Est. by Appl.
Head (Pb)		0.08	
Beryllium (be)		0.01	
Sulfuric Acid Mist	0.07	28.5	

*Total emissions from the two 129 MW turbines are based on a 50 percent capacity factor with a maximum of 25 percent attributed to oil firing.

PERMITTEE:
Orlando Utilities Commission

Permit Number: A 0 0 5 - 2 2 9 0 8 4
Expiration Date: August 30, 1998

Attention: William H. Herrington,
Vice President, Electric Business Unit

SECIFIC CONDITIONS
(Continued)

~~2. Unless the Department has determined other concentrations are required to protect public health and safety, predicted acceptable ambient air concentrations (AAC) of the following pollutants shall not be exceeded:~~

<u>Pollutant</u>	<u>Acceptable Ambient Concentrations (ug/m³)</u>		
	<u>8 hr</u>	<u>24 hr</u>	<u>Annual</u>
Beryllium	0.02	0.005	0.004
Lead	1.5	0.36	0.09
Inorganic Mercury Compounds all forms of Vapor, as Hg	NA	NA	0.3

~~2.3.~~ Visible emissions shall not exceed 20 percent opacity at anytime except as provided in Chapt 17-200.700, nor exceed 10% during full load.

OPERATING CONDITIONS

~~3.4.~~ Each source is allowed to operate at full load for a maximum of 4,380 hours per year.

~~4.5.~~ Each source is allowed to use natural gas as the primary fuel and No. 2 distillate oil as the secondary fuel (limited as shown in Specific Condition 6 below).

~~5.6.~~ The permitted materials and utilization rates for each simple cycle gas turbine shall not exceed the values as follows:

- Maximum No. 2 fuel oil consumption shall not exceed either of the following limitations: 10,282 gals/hr; 22,517,580 gals/yr.
- Maximum annual firing using No. 2 fuel oil shall not exceed 2,190 hours per year.
- Maximum sulfur (s) content in the oil shall not exceed 0.30 percent by weight.
- Maximum heat input shall not exceed 1,354 MMBtu/hr (gas) or 1,346 MMBtu/hr (oil).
- Maximum annual firing on any fuel combination shall not exceed 4,380 hours per year.

~~6.7.~~ Any request to change the method of operation, equipment or operating hours which would result in an increase of emissions shall be submitted to the Department's Bureau of Air Regulation and Central District offices for prior approval.

Attention: William H. Herrington,
Vice President, Electric Business Unit

SPECIFIC CONDITIONS
(Continued)

- ~~8.~~ Any other operating parameters established during compliance testing and/or inspection that will ensure the proper operation of this facility are considered part of this operating permit.

COMPLIANCE DETERMINATION

~~7.9.~~ Compliance with the NO_x, SO₂ (oil), CO, and visible emission standards shall be determined by the following reference methods as described in 40 CFR 60, Appendix A (July 1, 1990) and adopted by reference in Rule 17-297, F.A.C.

- a) Method 1 - Sample and Velocity Traverses
- b) Method 2 - Volumetric Flow Rate
- c) Method 3 - Gas Analysis
- d) Method 9 - Determination of the opacity of the Emissions
- e) Method 10 - Determination of the Carbon Monoxide emissions from Stationary Sources
- f) Method 20 - Determination of Nitrogen Oxides, Sulfur Dioxide, and Diluent emissions from Stationary Gas Turbines. (SEE APPROVED ALTERNATE TESTING PROCEDURE ATTACHED)

~~10.~~ ^{8.} Annual NO_x compliance tests shall be performed with each the fuels used for more than 400 hours per unit in the preceeding 12 month period.

~~11.~~ ^{9.} Compliance with the SO₂ emission limit can ~~also~~ be determined by calculations based on fuel analysis using ASTM D2880-71 for the sulfur content of liquid fuels.

~~12.~~ ^{10.} Compliance with the total volatile organic compound emission limits will be assumed, provided the CO allowable emission rate is achieved; specific VOC compliance testing is not required.

~~13.~~ ^{11.} During performance tests, to determine compliance with the No_x standard, measured No_x emission at 15 percent oxygen will be adjusted to ISO ambient atmospheric conditions by the following correction factor:

$$NO_x = (NO_{x\text{ obs}})(P_{\text{ref}}/P_{\text{obs}})^{(0.5)} (e^{(H_{\text{obs}}-0.00633)}) (288^{\circ}\text{K}/T_{\text{amb}})^{1.53}$$

Where:

No_x = Emissions of NO_x at 15 percent oxygen and ISO standard ambient conditions.

No_x obs = Measured No_x emission at 15 percent oxygen, ppmv.

P_{ref} = Reference combustor inlet absolute pressure at 101.3 kilopascals (1 atmosphere) ambient pressure.

Attention: William H. Herrington,
Vice President, Electric Business Unit

SPECIFIC CONDITIONS
(continued)

- P_{obs} = Measured combustor inlet absolute pressure at test ambient pressure.
 H_{obs} = Specific humidity of ambient air at test.
 e = Transcendental constant (2.718).
 T_{AMB} = Temperature of ambient air at test.

~~14. The Air Resources Compliance Section of this office shall be notified in writing at least thirty (30) days in advance of the compliance tests.~~

~~12. The owner or operator shall notify the Department in writing at least 15 days prior to the date on which each formal compliance test is to begin of the date, time, and place of each such test, and the test contact person who will be responsible for coordinating and having such test conducted for the owner. The Department may waive the 15 day notice requirement on a case-by-case basis. {17-297.340(1)(i)}~~

~~13.~~

~~15. A copy of the compliance test results shall be submitted to the Department's Central District Office within 45 days after the last test run is complete. The test report should provide the actual heat input rate and at least all of the information listed in Rule 17-297.570(3), F.A.C. A copy of the continuous opacity monitor strip chart recorded during each compliance test should be submitted with the test reports. Each test report should also include a fuel oil analysis as required in 40 CFR 60.334(b) from a representative sample of the fuel oil burned during the test and a calculation of the sulfur dioxide emission rate in pounds per MMBTU heat input and pounds per hour. Failure to submit any of the above information may invalidate a test [Rules 17-297.570 and 17 4.070(3), F.A.C.].~~

~~14.~~

~~16. Testing of emissions should be conducted with the source operating at "base load"**. ~~90-100%~~ of rated capacity. The source shall be allowed to operate at any load up to 129 MW so long as the actual water injection rate is above the minimum water injection rate established during the initial compliance testing. ~~90%~~ of rated capacity; however subsequent source operation is limited to 110% of the tested load until a new test is conducted and approved by the Department in writing. Once the unit is so limited, operation at higher capacities is allowed for a cumulative total of no more than 15 successive calendar days for purposes of additional compliance testing to regain permitted capacity, with prior notification to the Department (Rule 17 4.070(3), F.A.C.,~~

**"Base Load" is the maximum load the combustion turbine is capable of reaching at the ambient conditions present during the test.

~~17. In order to provide the Department with reasonable assurance that this source can comply with both the particulate and Nox standards simultaneously, the steady state particulate tests and the nitrogen oxides tests should be conducted simultaneously.~~

15.

~~18.~~ The stack sampling facility must comply with Rule 17-297.345, F.A.C., regarding minimum requirements that include but are not limited to: location of sampling ports, work platform area, caged ladder, access and electrical power. (SEE APPROVED ALTERNATE TESTING PROCEDURE ATTACHED FOR ACCEPTABLE PORT LOCATIONS)

16.

~~19.~~ Compliance tests should be conducted on an annual basis on or within 60 days prior to ~~December 10.~~ August 30.

Attention: William H. Herrington,
Vice President, Electric Business Unit

SPECIFIC CONDITIONS
(Continued)

~~17.~~

~~20.~~ A continuous monitoring system shall be utilized to monitor and record the water and fuel consumption on each unit, as well as the ratio of water to fuel being fired in each unit. Water injection shall be utilized for NOx control. The water to fuel ratios at which compliance was achieved, shall be incorporated into this permit and shall be continuously monitored. The one hour average minimum water to fuel weight ratios must be maintained until subsequent tests indicate compliance at a different ratio. The system shall meet the requirements of 40 CFR Part 60, Subpart GG.

The permittee shall provide the Central District office with the model number of the continuous monitoring system within 30 days of the date of issue of this operating permit.

~~The following one hour average minimum water to fuel weight ratios must be maintained until subsequent tests indicate compliance at a different ratio:~~

Combustion Turbine C

Natural Gas

30%	0.82	0.68
50%	0.74	0.70
76%	0.97	0.88
100%	1.18	0.92

Combustion Turbine D

<u>Load</u>	<u>Natural Gas</u>	<u>Oil</u>
30%	0.67	0.67
50%	0.70	0.67
75%	0.93	0.94
100%	1.16	1.03

~~18.~~

~~21.~~ To determine compliance with the capacity factor limitations each CT,s fuel consumption shall be continuously measured and recorded. The permittee shall maintain daily records of this fuel usage. All records shall be maintained for a minimum of two ~~three~~ years after the date of each record and shall be made available to authorized representatives of the Department upon request.

~~19.~~

~~22.~~ Sulfur, nitrogen content and lower heating value of the fuel being fired in the gas turbine shall also be recorded per fuel oil shipment as required in 40CFR 60, Subpart GG. These records shall be kept by the company for at least two ~~three~~ years and made available for regulatory agency's inspection by authorized representatives of the Department.

~~20.~~

~~23.~~ Compliance with the acceptable ambient concentrations for Be, Lead, and Hg emissions were successfully demonstrated to the Department. ~~during initial compliance tests based on calculations certified by a Professional Engineer registered in Florida, using actual operating conditions. Determination of the ambient concentrations for chemical compounds shall be determined by Department approved dispersion modelling. This compliance determination shall be made available upon request.~~

PERMITTEE:
Orlando Utilities Commission

Permit Number: A 0 0 5 - 2 2 9 0 8 4
Expiration Date: August 30, 1998

Attention: William H. Herrington,
Vice President, Electric Business Unit

SPECIFIC CONDITIONS:
(continued)

21.

~~24.~~ Excess emissions resulting from start-up or shut-down are permitted provided that best operational practices to minimize emissions are adhered to, and the duration of excess emissions is minimized. Excess emissions resulting from malfunction are permitted provided that best operational practices to minimize emissions are adhered to, and the duration of excess emissions is minimized, but in no case exceeds two hours in any 24-hour period unless specifically authorized by the Department for longer duration. Excess emissions which are caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure which may reasonably be prevented during startup, shutdown, or malfunction are prohibited [Rule 17-210.700, F.A.C.].

In the event the permittee is temporarily unable to comply with any of the conditions of the permit, the permittee shall immediately notify the Department's Central District Office. Notification shall be conducted in accordance with General condition (8) of this permit. In case of excess emissions resulting from malfunctions, a full written report on the malfunctions shall be submitted in a quarterly report, if requested by the Department [Rules 17-210.700(6) and 17-4.130, F.A.C.].

The permittee shall submit, to the Department, a written report of emissions in ~~the~~ excess of the emission limiting standard as set forth in Rule 17-~~296.405(1)(a)~~ 296.800(2)(a), F.A.C. for each calendar quarter. The nature and cause of the excess emissions shall be explained. This report does not relieve the permittee of the legal liability for violations. All recorded data shall be maintained on file for a period of at least 2 years. The information supplied in this report shall be consistent with the reporting requirements of 40 CFR 60.7 51 Appendix P. The report shall be submitted within 30 days following the end of the calendar quarter (Rules 17-297.500(2) and 17-4.070(3), F.A.C.).

RULE REQUIREMENTS

22.

~~25.~~ This source shall comply with all applicable provisions of Chapter 403, Florida Statutes, and Chapter 17-4, Florida Administrative Code.

23.

~~26.~~ This source shall comply with all requirements of 40 CFR 60, Subpart GG and Rule 17-296.800, F.A.C., Standards of Performances for Stationary Gas Turbines.

24.

~~27.~~ This source shall comply with Rule 17-297, F.A.C., Stationary Point Source Emission Test Procedures.

PERMITTEE:
Orlando Utilities Commission

Permit Number: AoOS-229084
Expiration Date: August 30, 1998

Attention: William H. Herrington,
Vice President, Electric Business Unit

SPECIFIC CONDITIONS:
(Continued)

~~25.~~

~~28.~~ Pursuant to F.A.C. Rule 17-210.300(2), Air operating Permits, the permittee is required to submit annual reports on the actual operating rates and emissions from this facility. These reports shall include, but are not limited to the following: sulfur, nitrogen content and lower heating value of the fuel being fired, fuel usage, hours of operation, air emission limits, etc. Annual reports shall be sent to the Department's Central District Office. Each calendar year on or before March 1, submit for each source, an Annual Operations Report DER Form 17-210.900(4), for the preceding calendar year.

~~26.~~

~~29.~~ The source shall not discharge air pollutants which cause or contribute to an objectionable odor [Rule 17-296.320(2), F.A.C.].

~~27.~~

~~30.~~ Issuance of this permit does not relieve the permittee from complying with applicable emission limiting standards or other applicable requirements of Rule 17-296 or 17-297, or any other applicable requirements under federal, state, or local law. Future regulations may impact this facility. The permittee shall comply with any applicable future regulations when they become effective (Rule 17-210.300, F.A.C.).

~~28.~~

~~31.~~ The application to renew this operating permit shall be submitted to the Central District Office at least sixty days prior to the expiration date of this permit (Rule 17-4.050(2) and [Rule 17-4.090(1), F.A.C.].

ISSUED 9/21 / 93

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

A. Alexander, P.E.
District Director
3319 Maguire Boulevard
Suite 232
Orlando, Florida 32803



Florida Department of Environmental Regulation

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

Lawton Chiles, Governor

Carol M. Browner, Secretary

January 4, 1993

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. G. A. DeMuth, Director, Environmental Division
500 South Orange Avenue
P. O. Box 3193
Orlando, Florida 32802

Dear Mr. DeMuth:

The Department received your request for an extension of the construction permit referenced below. The permit is amended as shown.

Permit No. AC05-193720, PSD-FL-173

Current Expiration Date: December 31, 1992

New Expiration Date: June 30, 1993

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

The Petition shall contain the following information:

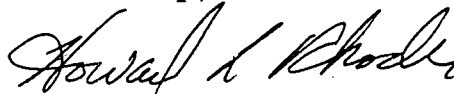
- (a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;

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

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

This letter must be attached to the construction permit, No. AC05-193720, PSD-FL-173, and shall become a part of the permit.

Sincerely,



Howard L. Rhodes
Director
Division of Air Resources
Management

HLR/JH/w

cc: Alan Zahm, FDER Central District
Jewell Harper, EPA
S. M. Day, P.E., B&V

PS Form 3871, July 1983 447-946

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:
Bus DeMuth, Director
500 S. Orange Ave
Orlando, FL 32802

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	<i>P062 921 947</i>

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

5. Signature - Addressee
X

6. Signature - Agent
X *P. Sylvester*

7. Date of Delivery

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

DOMESTIC RETURN RECEIPT

P 062 921 947



Receipt for Certified Mail

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

Sent to	<i>Bus DeMuth</i>	
Sent to	<i>Orlando Utilities Comm</i>	
Date and ZIP Code	<i>Orlando, FL</i>	
Postage	\$	
Certified Fee		
Special Delivery Fee		
Restricted Delivery Fee		
Return Receipt Showing to Whom & Date Delivered		
Return Receipt Showing to Whom, Date, and Addressee's Address		
TOTAL Postage & Fees	\$	
Postmark or Date	<i>AC05-19320</i> <i>PSD-FL-173</i> <i>1-6-93</i>	

PS Form 3800, June 1991



State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

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

Interoffice Memorandum

TO: Howard Rhodes

FROM: Clair Fancy *CF*

DATE: January 4, 1993

SUBJ: Permit Extension - Orlando Utilities Commission,
Indian River Plant
Permit No. AC05-193720, PSD-FL-173

Attached for your approval and signature is a permit extension prepared by the Bureau of Air Regulation. This facility consists of two 129 MW simple cycle gas turbines. During compliance testing, the turbines were found to have excessive vibration. It was discovered by the manufacturer that the turbine shafts and the couplings between the turbines and the generators had been improperly machined. To date, modifications have been made to one of the turbines. The permittee requested a 6 month extension in order to test this first turbine before modifications are made to the second turbine. Since the modifications are strictly mechanical in nature, the combustion process will not be affected. Thus, emissions will not be adversely impacted.

I recommend that this extension be approved.

HR/CF/jh

Attachments

*OK
EPL
JB
HAS SEEN 1/4/93
AND IT'S CHANGES
ARE INCLUDED
GPL*



RECEIVED
DER - MAIL ROOM
1992 DEC 28 AM 11:17

ORLANDO UTILITIES COMMISSION

500 SOUTH ORANGE AVENUE • P. O. BOX 3193 • ORLANDO, FLORIDA 32802 • 407/423-9100

VIA FEDERAL EXPRESS

December 24, 1992

Ms. Patty Adams
Bureau of Air Regulation
Florida Department of
Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Re: Permit No. AC05-193720, PSD-FL-173
Combustion Turbines C & D
Request for Extension of Permit dated November 24, 1992

Dear Ms. Adams:

Enclosed is a check for \$50 as required for the permit extension requested on November 24, 1992. I appreciate the Department's co-operation in processing our request.

If you need additional information, please call me at 407/423-9133.

Very truly yours,

Robert F. Hicks
Sr. Environmental Engineer

RFH:rc
Enclosure

001031



Orlando Utilities Commission

ORLANDO, FLORIDA

"Where Electricity Powers Progress"

63-215
631

FIFTY DOLLARS & .00/100

No. 90979

PAY TO THE
ORDER OF:

FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION
BUREAU OF AIR REGULATION
2600 BLAIR STONE ROAD
TALLAHASSEE, FL 32399-2400

NOT VALID
AFTER 180 DAYS

DATE

DEC. 24 '92

50.00

SUN BANK, N.A.
MAIN OFFICE:
ORLANDO, FLORIDA 32801

*John L. Dean
Troy W. Todd*
AUTHORIZED SIGNATURE

FEDERAL EXPRESS QUESTIONS? CALL 800-238-5355 TOLL FREE. **AIRBILL PACKAGE TRACKING NUMBER** 2184509095

20608 2184509095 **RECIPIENT'S COPY**

From (Your Name) Please Print Robert P. Hicks		Your Phone Number (Very Important) (407) 423-9100		To (Recipient's Name) Please Print MS. PATTY ADAMS		Recipient's Phone Number (Very Important) (904) 488-1344	
Company ORLANDO UTILITIES COMMISSION		Department/Floor No.		Company FLA. DEPT. OF ENVIRONMENTAL REGULATION		Department/Floor No.	
Street Address 500 S DRANGE AVE				Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes.) 2600 BLAIR STONE ROAD			
City ORLANDO		State FL		City TALLAHASSEE		State FL	
ZIP Required 32801		ZIP Required 32399-2400		YOUR INTERNAL BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice.)			
PAYMENT 1 <input checked="" type="checkbox"/> Bill Sender 2 <input type="checkbox"/> Bill Recipient's FedEx Acct. No. 3 <input type="checkbox"/> Bill 3rd Party FedEx Acct. No. 4 <input type="checkbox"/> Bill Credit Card				IF HOLD FOR PICK-UP, Print FEDEX Address Here			
5 <input type="checkbox"/> Cash / <input type="checkbox"/> Check				City State ZIP Required			

3 SERVICES (Check only one box) Priority Overnight (Delivery by next business morning!) 11 <input type="checkbox"/> YOUR PACKAGING 16 <input checked="" type="checkbox"/> FEDEX LETTER 12 <input type="checkbox"/> FEDEX PAK * 13 <input type="checkbox"/> FEDEX BOX 14 <input type="checkbox"/> FEDEX TUBE Economy Two-Day (Delivery by second business day!) 30 <input type="checkbox"/> ECONOMY Government Overnight (Delivery by next business afternoon!) 51 <input type="checkbox"/> YOUR PACKAGING 56 <input type="checkbox"/> FEDEX LETTER 52 <input type="checkbox"/> FEDEX PAK * 53 <input type="checkbox"/> FEDEX BOX 54 <input type="checkbox"/> FEDEX TUBE Economy Two-Day (Delivery by second business day!) 30 <input type="checkbox"/> ECONOMY Government Overnight (Delivery by next business afternoon!) 46 <input type="checkbox"/> GOVT LETTER 41 <input type="checkbox"/> GOVT PACKAGE Freight Service (For Extra Large of any package over 150 lbs.) 70 <input type="checkbox"/> OVERNIGHT FREIGHT ** 80 <input type="checkbox"/> TWO-DAY FREIGHT ** <small>*Declared Value Limit \$100 **Call for delivery schedule.</small>		5 DELIVERY AND SPECIAL HANDLING (Check services required) 1 <input type="checkbox"/> HOLD FOR PICK-UP (Fill in Box H) 2 <input checked="" type="checkbox"/> DELIVER WEEKDAY 3 <input type="checkbox"/> DELIVER SATURDAY (Extra charge) (Not available to all locations) 4 <input type="checkbox"/> DANGEROUS GOODS (Extra charge) 5 <input type="checkbox"/> 6 <input type="checkbox"/> DRY ICE Lbs. 7 <input type="checkbox"/> OTHER SPECIAL SERVICE 8 <input type="checkbox"/> 9 <input type="checkbox"/> SATURDAY PICK-UP (Extra charge) 10 <input type="checkbox"/> 11 <input type="checkbox"/> 12 <input type="checkbox"/> HOLIDAY DELIVERY (if ordered) (Extra charge)		6 PACKAGES WEIGHT In Pounds Day Total Total Total DIM SHIPMENT (Chargeable Weight) <input type="checkbox"/> lbs. Received At <input type="checkbox"/> Regular Stop <input type="checkbox"/> Drop Box <input type="checkbox"/> BSC <input checked="" type="checkbox"/> On-Call Stop <input type="checkbox"/> Station		Emp. No. Date <input type="checkbox"/> Cash Received <input type="checkbox"/> Return Shipment <input type="checkbox"/> Third Party <input type="checkbox"/> Chg To Del. <input type="checkbox"/> Chg. To Hold Street Address City State Zip Received By: X Date/Time Received FedEx Employee Number Release Signature: FedEx Emp. No. Date/Time		Federal Express Use Base Charges Declared Value Charge Other 1 Other 2 Total Charges REVISION DATE 6/91 PART #13/204 FXEM 2/92 FORMAT #099 099 <small>© 1990-91 FEDEX PRINTED IN U.S.A.</small>	
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STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

In the matter of:)	Permit No.	AC 05-193720
)		
Orlando Utilities)		ASP-92-0-01
Commission)		
)		
Petitioner.)		
_____)		

ORDER ON REQUEST
FOR
ALTERNATE TEST PROCEDURES AND REQUIREMENTS

Pursuant to Rule 17-297.620, F.A.C., Orlando Utilities Commission petitioned for approval to use a source sampling array consisting of 50 points in lieu of the 49 points required by EPA Method 20 for the measurement of nitrogen oxide emissions from Petitioner's simple cycle combustion turbine Units C and D at the Orlando Utilities Commission Indian River Power Plant, permit number AC 05-193720, located in Brevard County.

Having considered Petitioner's written request and all supporting documentation, the following Findings of Fact, Conclusions of Law, and Order are entered:

FINDINGS OF FACT

1. On July 1, 1992, Petitioner specifically requested approval to use source sampling array consisting of 50 points, arranged in a 5X10 matrix, in lieu of the 49 points, arranged in a 7X7 matrix, required by EPA Method 20 for the measurement of nitrogen oxide emissions from Petitioner's simple cycle combustion turbine Units C and D at the Indian River Power Plant, permit number AC 05-193720. [Exhibit 1]

2. As justification for the waiver of the EPA Method 20 requirement for 49 test points (arranged in a 7X7 matrix), Petitioner stated, "Because of the proximity of residences to the OUC Indian River Power Plant, the combustion turbines were designed with noise reduction baffles. The baffles provide only five air passages through the stack (see Figure 1 attached). The test port locations are directly in the flow paths between the baffles. . . . Test ports associated with a seven port arrangement would not be directly within the flow paths between the baffles." [Exhibit 1]

3. On August 3, 1992, the Region IV Office of the EPA stated, "Based on our review of the OUC submittal, we have determined that

while the proposed alternative sampling grid will be adequate for making NO_x concentration measurements, the proposed sampling site is likely to cause a high bias in gas flow results. However, if the company is aware of the potential high bias at the proposed sampling location and is willing to accept the effect of this bias on their test results, we would not object to the approval of their request to use a 5X10 sampling grid." [Exhibit 2]

4. On September 21, 1992, the Orlando Utilities Commission responded to the EPA concerns about the effect of the sampling point location on emission test results. The Orlando Utilities Commission stated, "Because of this probable bias in exhaust gas flow rate measurement, OUC requests approval of an alternate exhaust gas flow determination method utilizing F-factors identified in EPA Method 19 and the fuel flow rates available in the combustion turbine control system." [Exhibit 3]

CONCLUSIONS OF LAW

1. The Department has jurisdiction to consider Petitioner's request pursuant to Section 403.061, Florida Statutes, and Rule 17-297.620, F.A.C.

2. Pursuant to 17-297.340(2), F.A.C., the Department retains the right to require compliance testing in accordance with all provisions of EPA Method 20 if, after investigation, it is believed that such testing is necessary to determine whether an applicable emission standard or condition of permit number AC 05-193720 is being violated.

3. Petitioner has demonstrated that the proposed alternate compliance verification method would be adequate to verify the compliance of the unit with the emission limiting standard for nitrogen oxides.

ORDER

Having considered Petitioner's written request and supporting documentation, it is hereby ordered that:

1. The relief requested by Petitioner is granted;
2. Petitioner shall be allowed to calculate gas flow rates using fuel consumption data and F-factors from EPA Method 19 provided the fuel consumption measurements are as accurate EPA Method 2 measurements of gas flow rates (i.e., ±5%).
2. Petitioner shall conduct emission tests using the procedures specified in Chapter 297, F.A.C.; and,

3. Petitioner shall conduct the required emission tests for nitrogen oxides, sulfur dioxide, carbon monoxide and visible emissions within 60 days of completion of construction and during the corresponding quarter of each federal fiscal year (October 1 - September 30), thereafter; and

4. Petitioner shall submit the compliance test to the District Director for the Central District office within 45 days of completion of the test.

PETITION FOR ADMINISTRATIVE REVIEW

1. A person whose substantial interests are affected by the Department's decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within 21 days of receipt of this Order. The petitioner shall mail a copy of the petition to the applicant at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, F.S.

2. The petition shall contain the following information:

(a) The name, address, and telephone number of each petitioner, the applicant's name and address, and the Department File Number;

(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;

(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;

(d) A statement of the material facts disputed by each petitioner, if any;

(e) A statement of facts which each petitioner contends warrant reversal or modification of the Department's action or proposed action;

(f) A statement of which rules or statutes each petitioner contends require reversal or modification of the Department's action or proposed action; and

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

3. If a petition is filed, the administrative hearing process

is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this Order. Persons whose substantial interests will be affected by any decision of the Department with regard to the applicant have the right to petition to become a party to the proceeding. The petition must conform with the requirements specified above and be filed (received) within 21 days of receipt of this notice in the Office of General Counsel at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

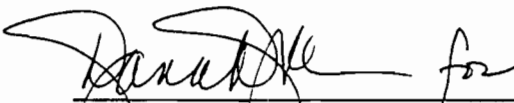
4. This Order constitutes final agency action unless a petition is filed in accordance with the above paragraphs or unless a request for extension of time in which to file a petition is filed within the time specified for filing a petition and conforms to Rule 17-103.070, F.A.C. Upon timely filing of a petition or a request for an extension of time, this Order will not be effective until further Order of the Department.

RIGHT TO APPEAL

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

DONE AND ORDERED this 16th day of December, 1992 in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

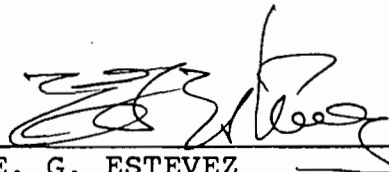
 for

CAROL M. BROWNER
Secretary
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

(904) 488-4805

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true copy of the foregoing Order has been mailed, postage prepaid, to Gregory A. DeMuth, Director, Environmental Division, Orlando Utilities Commission, P. O. Box 3193, Orlando, Florida 32802, this 17th day of December, 1992.



E. G. ESTEVEZ
Assistant General Counsel

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Telephone (904) 488-9730


P 256 395 388

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

Sent to	GREGORY A. DEMUTH ORLANDO UTIL. COMM	
Street and No.	ORLANDO FL 32802	
P.O., State and ZIP Code	P.O.B. 3193	
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, June 1985

USPS 989-234-555 (2-17-92)

BY 



ORLANDO UTILITIES COMMISSION

500 SOUTH ORANGE AVENUE • P. O. BOX 3193 • ORLANDO, FLORIDA 32802 • 407/423-9100

Certified Mail No.P 971 587 769
Return Receipt Requested

RECEIVED

JUL 06 1992

July 1, 1992

Division of Air
Resources Management

Messrs. Mike Harley and
Jim Pennington
Florida Department of
Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Re: Alternate Stack Test Procedure

Dear Sirs:

Orlando Utilities Commission (OUC) is currently authorized by Permit Number AC 05-193720 to construct and operate two 129 MW simply cycle combustion turbines (Units C & D) to be located at the OUC Indian River Power Plant, south of the John F. Kennedy Space Center near the city of Titusville, Brevard County, Florida. As mandated by Specific Condition Number 9, OUC must perform emissions compliance testing following reference methods described in 40 CFR 60, Appendix A.

Nitrogen Oxides (NO_x) emissions testing from combustion turbines is to be performed in accordance with USEPA reference Method 20. For the rectangular stack dimensions of Units C & D, Method 20 requires a minimum of 49 sample points in a 7x7 arrangement. However, the Westinghouse stack design includes only five sample ports which could utilize a 5x10 sampling array to meet the minimum of 49 sampling points. Given that NO_x concentrations will be homogeneous in the stack and that the^x five test port locations are directly in the flow paths between the baffles, OUC requests approval of an alternate sampling procedure, under FAC 17-2.700(3), to allow utilization of a 5x10 sampling arrangement.

Exhibit 1



Messrs. Mike Harley and
Jim Pennington
July 1, 1992
page 2

Accordingly, OUC provides the following information requested under FAC 17-2.700(3)(b):

1. Specific source and permit number, if any, for which the exception is requested.

Orlando Utilities Commission
Two 129 simple cycle gas turbines (Units C & D)
Permit Number AC 05-193720

2. The Specific provision of Section 17-2.700 from which an exception is sought.

Exception requested from FAC 17-2.700(6)(b)(20), USEPA Method 20, Determination of Nitrogen Oxides, Sulfur Dioxide and Oxygen Emissions from Stationary Gas Turbines.

3. The basis for the exception, including but not limited to any hardship which would result from compliance with the provisions of Section 17-2.700.

Because of the proximity of residences to the OUC Indian River Power Plant, the combustion turbines were designed with noise reduction baffles. The baffles provide only five air passages through the stack (see Figure 1 attached). The test port locations are directly in the flow paths between the baffles.

Westinghouse's flow analysis of the stack demonstrated that the five test ports are ideally suited for all emissions testing. Test ports associated with a seven port arrangement would not be directly within the flow paths between the baffles.

4. The alternate procedure for which approval is sought and a demonstration that such alternate procedure is adequate to demonstrate compliance with the permit.

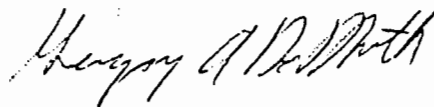
The Westinghouse five port arrangement will allow for 50 sample points for NO_x emissions testing (compared to 49 as specified in Method 20^x). Given that NO_x concentrations will be homogeneous in the stack, that the five test port

Messrs. Mike Harley and
Jim Pennington
July 1, 1992
page 3

locations are directly in the flow paths between the baffles, and that the USEPA and DER are authorized in their regulations to allow alternate sampling locations to be used, OUC requests DER to approve the use of the five port arrangement (and the 5x10 array) for NO_x emissions testing for Units C & D at the Indian River Facility.

If you have any questions concerning this request for approval of an alternate sampling procedure, please contact me at 407/423-9141.

Very truly yours,

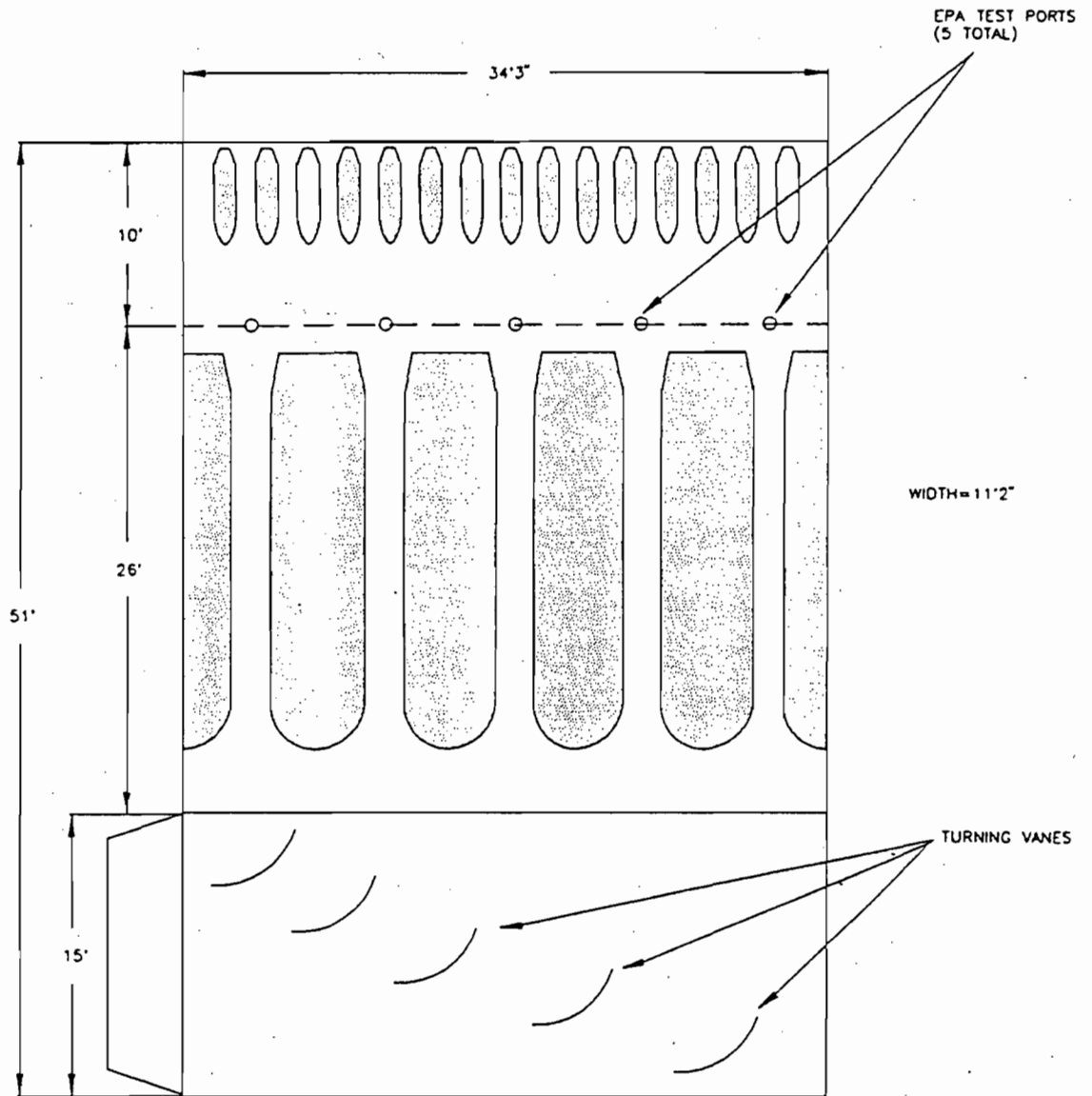


Gregory A. DeMuth
Director
Environmental Division

GAD:rc
Attachments

cc: F. F. Haddad
K. P. Ksionek
T. D. Slepow
R. F. Hicks
S. M. Day

OUC INDIAN RIVER STACK



400 hours.

4. During each federal fiscal year (October 1 — September 30), unless otherwise specified by rule, order, or permit, the owner of each source shall have a formal compliance test conducted for visible emissions, if there is an applicable standard; and for each pollutant for which the source is major, if there is an applicable emission standard for that pollutant; and for each NESHAPS pollutant, if there is an applicable emission standard.

5. An annual compliance test for particulate matter emissions shall not be required for any fuel burning source that, in a federal fiscal year, does not burn liquid and/or solid fuel, other than during startup, for a total of more than 400 hours.

6. For fossil fuel steam generators on a semi-annual particulate emission compliance testing schedule, a compliance test shall not be required for any six-month period in which liquid and/or solid fuel is not burned for more than 200 hours other than during startup.

7. For sources electing to conduct particulate emission compliance testing quarterly pursuant to Rule 17-2.600(5)(b)1., F.A.C., a compliance test shall not be required for any quarter in which liquid and/or solid fuel is not burned for more than 100 hours other than during startup.

8. Any combustion turbine that does not operate for more than 400 hours per year shall conduct a visible emissions compliance test once per each five-year period coinciding with the term of its air operating permit.

9. The owner or operator shall notify the Department at least 15 days prior to the date on which each formal compliance test is to begin of the date, time, and place of each such test, and the test contact person who will be responsible for coordinating and having such test conducted for the owner. The Department may waive the 15 day notice requirement on a case by case basis.

(b) Special Compliance Tests.

When the Department, after investigation, has good reason (such as complaints, increased visible emissions or questionable maintenance of control equipment) to believe that any applicable emission standard contained in this chapter or in a permit issued pursuant to this chapter is being violated, it may require the owner or operator of the source to conduct compliance tests which identify the nature and quantity of pollutant emissions from the source and to provide a report on the results of said tests to the Department.

(c) Waiver of Compliance Test Requirement.

1. If the owner or operator of a source that is subject to a compliance test requirement demonstrates to the Department, pursuant to the procedure established in Section 17-2.700(3), that the compliance of the source with an applicable weight emission limiting standard can be adequately determined by means other than the designated test procedure, such as specifying a surrogate standard of no visible emissions for particulate sources equipped with a bag house, or specifying a fuel analysis for sulfur dioxide

emissions, the Department may waive the compliance test requirements for such sources and order that the alternate means of determining compliance be used.

2. Such waiver may be issued for an indefinite period of time or for a specific time period provided, however, that the Department may require a conventional compliance test for such sources pursuant to Section 17-2.700(2)(b) above.

(3) Exceptions and Approval of Alternate Procedures and Requirements.

(a) The owner or operator of any source subject to the provisions of this section may request in writing a determination by the Secretary or his designee that any requirement of Section 17-2.700 relating to source emissions test procedures, methodology, equipment, or test facilities shall not apply to such source, and shall request approval of alternate procedures or requirements.

(b) The request shall set forth the following information, at a minimum:

1. Specific source and permit number, if any, for which exception is requested.

2. The specific provision(s) of Section 17-2.700 from which an exception is sought.

3. The basis for the exception, including but not limited to any hardship which would result from compliance with the provisions of Section 17-2.700.

4. The alternate procedure(s) or requirement(s) for which approval is sought and a demonstration that such alternate procedure(s) or requirement(s) shall be adequate to demonstrate compliance with applicable emission limiting standards contained in Chapter 17-2 or any permit issued pursuant to that Chapter.

(c) The Secretary or his designee shall specify by order each alternate procedure or requirement approved for an individual source in accordance with this section or shall issue an order denying the request for such approval. The Department's order shall be final agency action, reviewable in accordance with Section 120.57, Florida Statutes.

(d) The Secretary or the District Manager of the District in which a minor particulate source equipped with a baghouse is located may waive the compliance test requirements for such source specified in Rule 17-2.700, Table 1, and specify an alternative standard of 5% opacity. The waiver of compliance test requirements for particulate sources equipped with a baghouse and the substitution of the visible emissions standard shall be specified in the permit issued to the source.

If the Department has reason to believe that the particulate weight emission standard applicable to a source is not being met, it shall require that compliance be demonstrated by the applicable test method specified in Rule 17-2.700, Table 1.

(4) Stack Sampling Facilities Provided by the Owner of an Air Pollution Point Source.

This section describes the minimum requirements for stack sampling facilities that are necessary to sample point sources. Sampling facilities include sampling ports, work platforms, access and electrical power. Sources must provide



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

4APT-AEB

AUG - 3 1992

RECEIVED

AUG 06 1992

Division of Air
Resources Management

Mr. James K. Pennington, P.E., Administrator
Compliance and Enforcement Section
Bureau of Air Regulation
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

RE: Alternative Stack Testing Procedure Proposed for the Indian
River Power Plant, Titusville, Florida

Dear Mr. Pennington:

As requested by Mike Harley of your staff, we have reviewed the referenced proposal from the Orlando Utilities Commission (OUC). In their proposal OUC is seeking approval to use a 5 X 10 grid rather than a 7 X 7 grid for EPA Method 20 sampling on two combustion turbines. Based upon our review of the OUC submittal, we have determined that while the proposed alternative sampling grid will be adequate for making NO_x concentration measurements, the proposed sampling site is likely to cause a high bias in gas flow rate results. However, if the company is aware of the potential high bias at the proposed sampling location and is willing to accept the effect of this bias on their test results, we would not object to approval of their request to use a 5 X 10 sampling grid for testing conducted on the turbine.

The company is seeking approval to use an alternative sampling grid because a 5 X 10 grid would place the sampling points in the flow paths between the noise reduction baffles in the turbine exhaust stack. If a 7 X 7 grid is used, the traverse points would not be located in the flow channels between the noise reduction baffles. Since NO_x concentrations should be essentially uniform throughout the stack, the average NO_x concentration measured in the exhaust stack should be the same regardless of whether a 7 X 7 or a 5 X 10 sampling grid is used.

While NO_x concentrations measured in the stack should be independent of the sampling grid utilized, the traverse point arrangement proposed by OUC is likely to cause a high bias in measured gas flow rates because the baffles in the exhaust stack will cause flue gas from the turbine to accelerate as it passes between the baffles. Since the sampling arrangement proposed by OUC would place the traverse points directly between the baffles, it is likely that the measured gas velocity will exceed the average gas velocity for the entire stack cross-sectional area.

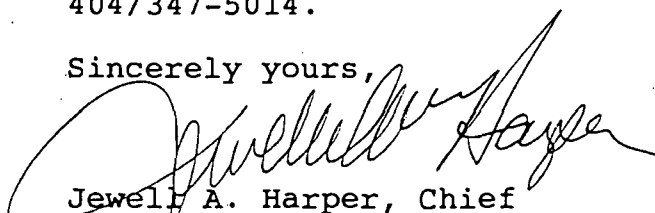
Exhibit 2

Depending upon the proportion of the exhaust stack obstructed by the noise reduction baffles, the traverse point arrangement proposed by OUC could result in a substantial high bias in measured gas flow rates. This high bias in gas flow rates would also cause a proportionally high bias in measured mass emission rates if OUC is subject to a NO_x mass emission limit. However, if the company is fully aware of the potential high bias at the proposed alternative sampling site and is willing to accept the risk associated with the use of the alternative sampling grid, we would have no objections to approval of their proposal.

One option that the company does have with respect to testing their turbines is to install a stack extension that has sampling points located such that they meet at least the minimally acceptable EPA Method 1 criteria for distance from flow disturbances. A stack extension that would allow for installation of adequate sampling points would have to extend at least 42.1 feet above the noise reduction baffles in the turbine exhaust stack. The basis for this conclusion is that the baffles themselves constitute a flow disturbance and the equivalent diameter of the rectangular exhaust duct at OUC is 18.84 feet. Since the minimally acceptable location for traverse points is 2 duct diameter downstream and 1/2 duct diameter upstream of flow disturbances, a total extension of 2.5 duct diameters or 42.1 feet (18.84 feet X 2.5) would have to be added at the facility in order for the sampling site to meet EPA Method 1 criteria.

If you have any questions about the determination provided in this letter, please contact Mr. David McNeal of my staff at 404/347-5014.

Sincerely yours,



Jewell A. Harper, Chief
Air Enforcement Branch
Air, Pesticides and Toxics
Management Division

cc: Mr. Michael Harley
Bureau of Air Regulation
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400



RECEIVED

SEP 22 1992

Division of Air
Resources Management

ORLANDO UTILITIES COMMISSION

500 SOUTH ORANGE AVENUE • P. O. BOX 3193 • ORLANDO, FLORIDA 32802 • 407/423-9100

Certified Mail No. P 071-587-818
Return Receipt Requested

September 21, 1992

Messrs. Mike Harley and
Jim Pennington
Compliance and Enforcement Section
Florida Department of
Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Re: Alternate Stack Test Procedure

Dear Messrs. Harley and Pennington:

Orlando Utilities Commission (OUC) is currently authorized by Permit No. AC 05-193720 to construct and operate two 129 MW simple cycle combustion turbines (Units C & D) to be located at the OUC Indian River Power Plant, south of the John F. Kennedy Space Center near the city of Titusville, Brevard County, Florida. As mandated by Specific Condition No. 9, OUC must perform emissions compliance testing following reference methods described in 40 CFR 60, Appendix A.

To allow calculations of the mass flow rate of NO_x and CO emissions, exhaust gas volumetric flow rate is to be measured in accordance with USEPA Reference Method 1 and Method 2. However, as indicated in USEPA letter to Mr. Pennington, dated August 3, 1992, the internal arrangement of the combustion turbine exhaust stacks requires a traverse point arrangement which is likely to cause a high bias in measured gas flow rates.

Because of this probable bias in exhaust gas flow rate measurement, OUC requests approval of an alternate exhaust gas flow determination method utilizing F-factors identified in USEPA Method 19 and the fuel flow rates available in the combustion turbine control system.

Exhibit 3

Messrs. Mike Harley and
Jim Pennington
September 21, 1992
Page 2

Accordingly, OUC provides the following information requested under FAC 17-2.700 (3)(b):

1. Specific source and permit number, if any, for which the exception is requested.

Orlando Utilities Commission
Two 129 simple cycle gas turbines (Units C & D)
Permit No. AC 05-193720

2. The specific provision of Section 17-2.700 from which an exception is sought.

Exception requested from FAC 17-2.700(6)(b)(1).
USEPA Method 1, Sample and Velocity Traverses for Stationary Sources and FAC 17-2.700 (6)(b)(2), USEPA Method 2, Determination of Stack Gas Velocity and Volumetric Flow Rate (Type 5 Pitot Tube).

3. The basis for the exception, including but not limited to any hardship which would result from compliance with the provisions of Section 17-2.700.

Because of the proximity of residences to the OUC Indian River Power Plant, the combustion turbines were designed with noise reduction baffles. The baffles provide only five air passages through the stack (see Figure 1 attached). The test port locations are directly in the flow paths between the baffles.

However, because the flow measurement traverse points will be located directly between the baffles, it is likely that the measured gas velocity will exceed the actual average gas velocity for the entire stack cross sectional area.

4. The alternative procedure for which approval is sought and a demonstration that such alternate procedure is adequate to demonstrate compliance with the permit.


Exhaust gas flow rate will be measured utilizing F-factors identified in USEPA Method 19 and the fuel flow rates available in the combustion turbine control system. The lower heating value of the fuel will be available from a certified fuel analysis. Fuel oil

Messrs. Mike Harley and
Jim Pennington
September 21, 1992
Page 3

flow measurement will be performed utilizing a calibrated turbine-type flow meter. The fuel oil flow meter calibration report is attached for reference. Fuel gas flow measurement will be performed utilizing a precision orifice plate, stamped with the bore diameter, calculated in accordance with American Gas Association standards.

If you have any questions concerning this request for approval of an alternate sampling procedure, please call me at 407/423-9141 or Steve M. Day at 913/339-2880.

Very truly yours,



G. A. DeMuth
Director
Environmental Division

GAD:rc
Attachments

xc: W. H. Herrington
G. M. Standridge
F. F. Haddad
K. P. Ksionek
V. P. Gallucci
H. E. Smith (B&V)
S. M. Day (B&V)

OUC INDIAN RIVER STACK

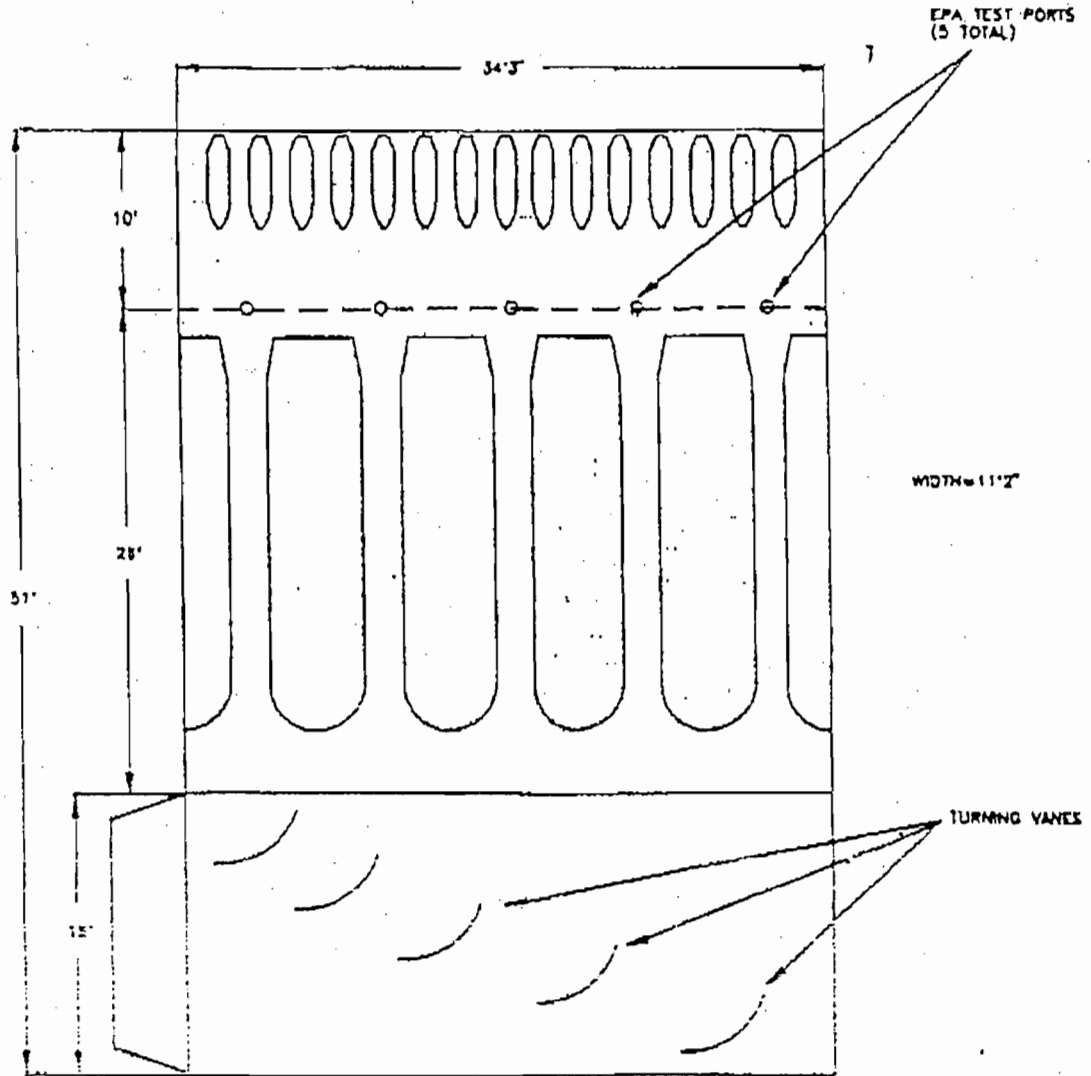



Figure 1

 Wellhead Electric Corporation Power Generation Division	
Date: 13 JAN 91 Drawn by: C.J. BUZARD	Date: 13 JAN 91 Checked by:
Scale: 1" = 10"	Date:



CERTIFICATION OF COMPLIANCE

TO: Solares Florida Corp.
Tampa, FL

DATE: 12/3/91

Ref: P/O No. 115971

S/O NO. 91V-80615

IT IS HEREBY CERTIFIED THAT the articles supplied on referenced order comply with the requirements of XO Technologies, Inc. standard inspection and quality assurance procedures; and are free from defects in material and workmanship; and are in agreement with specifications as shown in XO's standard specification sheets; and have been prepared for shipment in accordance with commercial standards for packing and shipping.

MODEL NUMBER(S)

(2) 3-81AF5C1

202828, 205422

(2) PA109-FD Pre-Amp

(2) A2020EX Connection Box

By:

W. M. ...
Authorized Representative



BEST AVAILABLE COPY
Technologies, Inc.

Serial No. 202828

Model No. 3-81AF5C1

Pickup Coil P/N A20105K

Customer Sealed

Sales Order No. 91V-80615

Process Fluid _____

Temperature: 80 ° Min. _____ Max.

Pressure: _____ Min. _____ Max.

Tag Information _____

FLOW CALIBRATION REPORT

This Turbine Meter Has Been Tested And Calibrated.

Test Fluid: Water

Linear Flow Range: 50 To 560
(U.S. Gallons / Minute)

Mean¹: 7031.5

Linearity²: 1.003

K Factor (mean)³: 46.877

Frequency output at full scale or any other flowrate may be calculated by the following formula:

$$\text{Frequency (Hz)} = \frac{\text{K Factor (mean)} \times \text{Flowrate}}{60 \text{ Sec/Min.}}$$

(Pulses/U.S. Gal.) (U.S. Gal./Min.)

Operator:  Date: 11-22-91

Inspector:  Date: NOV 26 '91

Voltage Output⁴ At Minimum Flow 350 mV p/p

RUN NO.	WEIGHT (Lbs.)	TIME (Min.)	SENSOR READING (Pulses)	VOLUME (U.S. Gals.)	FREQUENCY f (p.p.m.)	FLOW RATE Q (G.P.M.)	CAL. FACTOR K (Pulses/Out)
1		2646	7009	150	441.48	566.89	46.727
2		3075	7013		380.10	487.80	46.753
3		3512	7019		333.10	427.11	46.793
4		4007	7020		291.99	374.34	46.800
5		4659	7022		251.20	321.96	46.813
6		5656	7026		207.04	265.21	46.840
7		7012	7031		166.96	213.72	46.873
8		9356	7040		125.40	160.32	46.933
9		1.4124	7054		83.238	106.20	47.027
10		2.6898	7647		43.665	55.766	46.980

Notes: (Record 1, 2, & 3 on designated lines above).

1. Mean - Add the largest sensor reading (pulses) to the smallest sensor reading and divide by two.
2. Linearity - Divide the Mean by the smallest sensor reading. The result must be between 1.000 and 1.005. (If it is not, see 12000CJ, paragraph 2.3).
3. K Factor - Divide the Mean by the calibration Volume. For K Factors equal to or greater than 10,000, round off to the nearest whole number. For K Factors less than 10,000, round off to five significant numbers (e.g. XXXXX, XXXXX, XXXXX). The K Factor must fall within the limits specified in test procedure 12000CJ for the meter under test.
4. See test procedure 12000CJ for required minimum.

The following conversion factors may be used to express the flowrate or K Factor (Sensitivity) in other units:

Multiply Flowrate by U.S. Gal./Min.	Multiply K Factor (Sensitivity) in Pulses/U.S. Gal.
x 1.422 = Barrels (42 gal.)/Hr.	x 42.00 = Pulses/Barrel (42 Gal.)
x 0.6327 = Imperial Gal./Min.	x 1.201 = Pulses/Imperial Gal.
x 3.785 = Liters/Min.	x 0.2642 = Pulses/Liter
x 0.2271 = Cubic Meters/Hr.	x 264.2 = Pulses/Cubic Meter



Technologies, Inc.

28020 Avenue Stanford
Valencia, CA. 91355
Telephone: (805) 257-420
FAX: (805) 257-2498



Technologies, Inc.

Serial No. 205422

Model No. 3-81AF5C1

Pickup Coil P/N A2010SK

Customer Solaris

Sales Order No. 91V-80615

Process Fluid _____

Temperature: 85°F Min. _____ Max.

Pressure: _____ Min. _____ Max.

Tag Information _____

LOW CALIBRATION REPORT

This Turbine Meter Has Been Tested And Calibrated.

Test Fluid: Water

Linear Flow Range: 50 To 560

Mean¹: 7213.5
(U.S. Gallons / Minute)

Linearity²: 1.002

K Factor (mean)³: 48.090

Frequency output at full scale or any other flowrate may be calculated by the following formula:

$$\text{Frequency (Hz)} = \frac{\text{K Factor (mean)} \times \text{Flowrate}}{60 \text{ Sec./Min.}}$$

(Pulses/U.S. Gal.) × (U.S. Gal./Min.)

Operator:  Date: 11/22/91

Inspector:  Date: NOV 26 '91

Voltage Output⁴ At Minimum Flow 400 mV p/p.

RECORDED DATA				PERFORMANCE PARAMETERS				ADDITIONAL DATA			
RUN NO.	WEIGHT (Lbs.)	TIME (Min.)	SENSOR READING (Pulses)	VOLUME (U.S. Gals.)	FREQUENCY f (C.P.S.)	FLOW RATE Q (G.P.M.)	CAL FACTOR K (Pulses/Gal.)				
		.2664	7217	150	451.51	563.06	48.113				
2		.3161	7222		380.79	474.53	48.144				
3		.3583	7222		335.94	418.64	48.147				
4		.4122	7227		292.21	363.90	48.180				
5		.4821	7227		249.85	311.14	48.180				
6		.5763	7223		208.89	260.28	48.153				
7		.7134	7219		168.65	210.26	48.127				
8		.9604	7214		105.19	156.18	48.093				
9		1.4207	7211		84.592	105.58	48.073				
10		2.8788	7200		41.684	52.105	48.000				

Notes: (Record 1, 2, & 3 on designated lines above).

1. Mean - Add the largest sensor reading (pulses) to the smallest sensor reading and divide by two.
2. Linearity - Divide the Mean by the smallest sensor reading. The result must be between 1.000 and 1.005. (If it is not, see 12000CJ, paragraph 2.3).
3. K Factor - Divide the Mean by the calibration Volume. For K Factors equal to or greater than 10,000, round off to the nearest whole number. For K Factors less than 10,000, round off to five significant numbers (e.g. XXXXX.XXXXX, XX.XXXX). The K Factor must fall within the limits specified in test procedure 12000CJ for the meter under test.
4. See test procedure 12000CJ for required minimum.

The following conversion factors may be used to express the flowrate or K Factor (Sensitivity) in other units:

- | | |
|-------------------------------------|---|
| Multiply Flowrate in U.S. Gal./Min. | Multiply K Factor (Sensitivity) in Pulses/U.S. Gal. |
| × 1.429 = Barrels (42 gal.)/Hr. | × 42.00 = Pulses/Barrel (42 Gal.) |
| × 0.8327 = Imperial Gal./Min. | × 1.201 = Pulses/Imperial Gal. |
| × 3.785 = Liters/Min. | × 0.2642 = Pulses/Liter |
| × 0.2271 = Cubic Meters/Hr. | × 264.2 = Pulses/Cubic Meter |



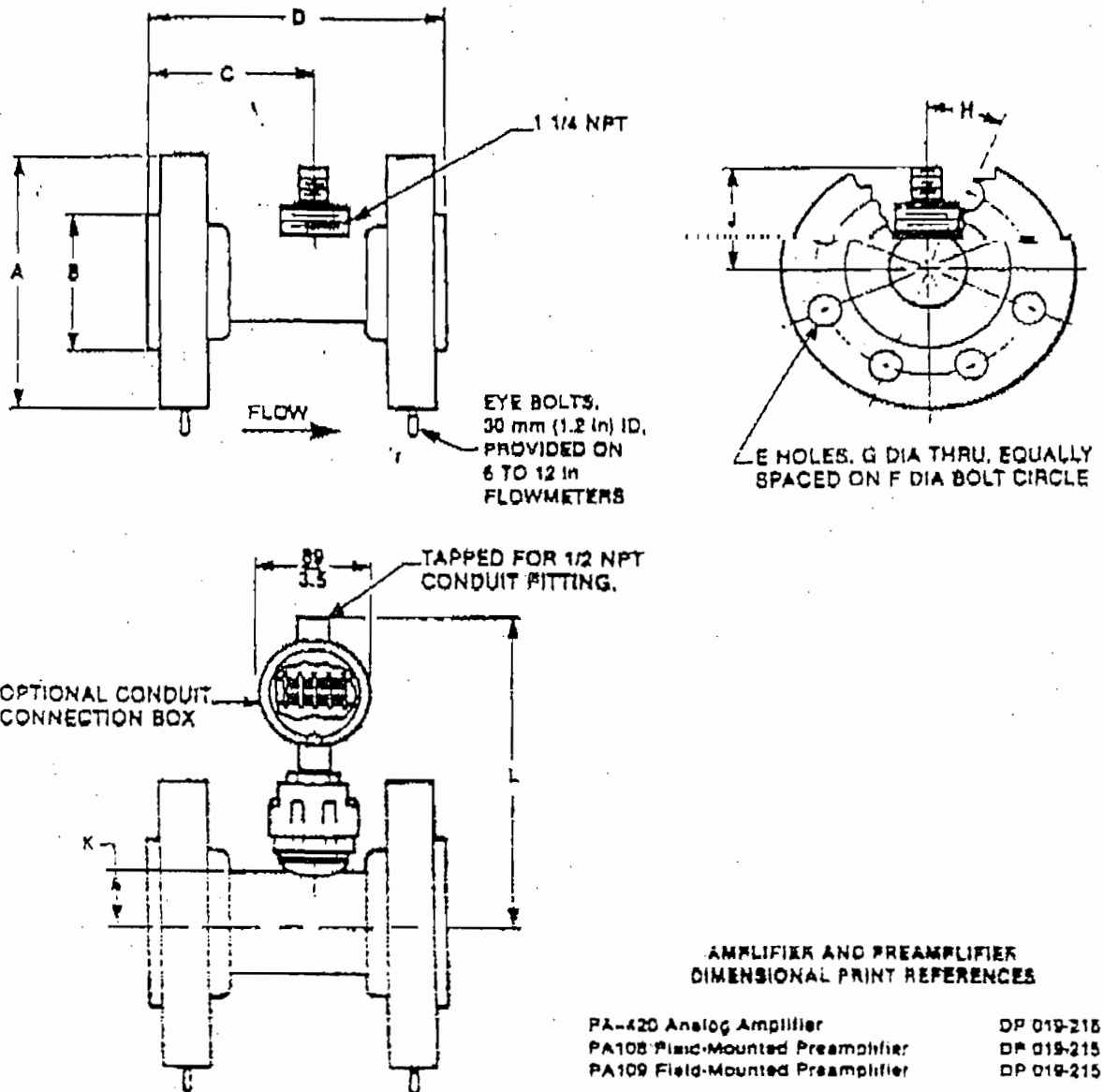
Technologies, Inc.

28020 Avenue Stanford
Valencia, CA. 91355.
Telephone: (805) 257-4200
FAX: (805) 257-2499

Dimensional Print

DP
019-117
NOVEMBER 1989
SHEET 1 of 1

81AF TURBINE FLOWMETER WITH FLANGED END CONNECTIONS



NOTE: SEE SHEET 2 FOR DIMENSIONS.

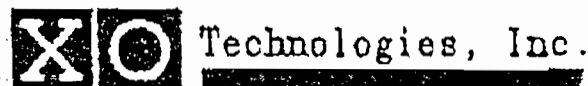
(Not for construction unless certified.)

AMPLIFIER AND PREAMPLIFIER DIMENSIONAL PRINT REFERENCES

- | | |
|----------------------------------|------------|
| PA-420 Analog Amplifier | DP 019-215 |
| PA108 Field-Mounted Preamplifier | DP 019-215 |
| PA109 Field-Mounted Preamplifier | DP 019-215 |

CUSTOMER _____ I.R. Solares Florida Corp.
 CUSTOMER ORDER 115971 XC ORDER 91V-80615
 ITEM-TAG FT15440/FT25440

CERTIFIED BY _____ DATE 12/3/91



81AF Turbine Flowmeters

SIZE CODE	ANSI FLANGE RATING CLASS	APPROXIMATE MASS kg	A	B	C	D	K	F	G	H	J	K	L
1/2-2	150	2.3	68.9					60.33			69.3		
	300	5.0	3.50	35.1				2.378			2.73	180	234
1/2	300	3.4	85.3	1.38				66.64	15.88		70.7	7.1	6.2
		7.5	3.75					2.625	0.625		2.77		
3/4	300	2.3	98.6		2.56	40.0		68.85			76.7	7.2	7.7
		5.8	7.75	16.0				2.755	19.05		3.25		
1	300	7.5	4.82					3.750	0.750				
		2.7	108.0					79.58	15.88		73.9	18.3	236
1	300	6.0	4.25	50.8				3.125	0.625	45°	2.09	7.2	9.3
		9.8	123.7	2.00				88.90	19.05				
1 1/2	300	8.0	4.87					3.500	0.750				
		4.5	127.0					98.43	15.88		81.5	18.8	236
1 1/2	300	10.0	5.00	72.9	76.2	152.4		5.875	0.625		3.21	7.4	9.3
		8.4	155.5	2.87				114.30	22.22				
2	300	14.0	8.12					4.900	0.875				
		6.8	152.4					120.65	4.750		87.6	20.3	25.7
2	300	15.0	8.00	82.0	90.9	185.1		4.750			3.45	8.0	10.1
		9.1	185.1	3.82				127.00	19.05				
3	300	20.0	8.50					6.000	0.750	22 1/2°			
		13.8	190.5					152.40	6.000		105.4	20.8	26.2
3	300	30.0	7.50	127.0	187.4	254.0		6.000		45°	4.15	8.2	10.3
		17.2	209.6	3.00				188.28	22.22				
4	300	38.0	8.25					8.625	0.875				
		20.4	228.6					190.50	19.05		116.1	22.1	27.1
4	300	45.0	9.00	157.2	214.1	304.8		7.500	0.750	22 1/2°	4.57	8.7	10.8
		29.5	251.0	6.19				200.00	22.22				
5	300	65.0	10.00					7.875	0.875				
		36.3	279.4					241.30	9.500		140.7	24.9	30.2
5	300	80.0	11.00	215.9	283.1	355.6		9.500		15°	5.34	9.8	11.9
		54.4	217.5	8.50				269.88	22.22				
6	300	120.0	12.50					12.500	0.875				
		65.8	322.9					298.45	11.750		163.8	27.4	32.8
6	300	135.0	13.50	269.8	338.3	457.2		11.750		22 1/2°	6.45	10.8	12.9
		88.5	381.0	10.82				320.20	13.000				
8	300	185.0	15.00					15.000	23.40				
		113.4	408.4					381.95	1.000	15°	186.7	30.2	35.6
10	300	230.0	18.00	323.8	408.3	635.0		14.250			7.43	11.9	14.0
		147.4	444.5	12.78				387.35	25.58				
12	300	325.0	17.50					15.250	1.125	11 1/2°			
		191.4	482.6					431.80	25.40				
12	300	400.0	19.00	381.0	613.2	762.0		17.000	1.000	15°	210.1	32.8	38.1
		226.8	520.7	15.00				450.85	31.75		8.35	12.9	15.0
12	300	500.0	20.50					17.750	1.250	11 1/2°			

*ALSO AVAILABLE AS -A = HIGH PULSE OUTPUT



State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

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

Interoffice Memorandum

TO: Carol Browner
FROM: Howard Rhodes *[Signature]*
DATE: December 7, 1992
SUBJ: Approval of Alternate Standard or Procedure; ASP 92-O-01,
Orlando Utilities Commission - Indian River Power Plant -
Combustion Turbines C and D

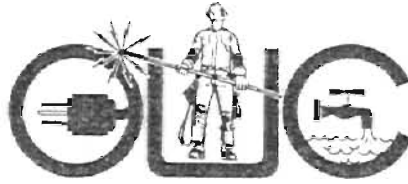
Attached for your approval and signature is an Order prepared by the Bureau of Air Regulation that will authorize the above mentioned utility to collect pollutant samples at more points within each stack and determine the stack gas flow rate from the fuel consumption of the gas turbine.

The Orlando Utilities Commission has constructed two combustion turbines which are equipped with noise reduction baffles. The baffles provide only five air passages through the stack. The manufacturer of the installation included one sampling port for each passage. The Orlando Utilities Commission has requested approval to collect samples at 50 points within the stack instead of the 49 points required by EPA Method 20. The EPA has reviewed the request and recommended approval. The EPA's only concern was that the location of the sampling points could cause certain measurements to be biased high. The Orlando Utilities Commission proposed to use EPA procedures to determine the stack gas flow rate from the fuel consumption data. This proposal negates the concern about biased flow measurements.

I recommend your approval and signature.

HR/mh

Attachment



ORLANDO UTILITIES COMMISSION

500 SOUTH ORANGE AVENUE • P. O. BOX 3193 • ORLANDO, FLORIDA 32802 • 407/423-9100

Certified Mail No. P-744-600-668
Return Receipt Requested

November 30, 1992

Mr. Charles M. Collins
Program Administrator
Air Section
Florida Department of
Environmental Regulation
3319 Maguire Blvd., Suite 232
Orlando, FL 32803

Re: Repeat of Initial Performance Tests
Combustion Turbine "C"
DER Permit No. AC05-193720

Dear Mr. Collins:

Please regard this letter as notification of compliance testing for Combustion Turbine C, located at the Orlando Utilities Commission's Indian River Plant. The retest is currently scheduled for December 9 and 10, 1992 at 8:00 a.m., and is necessary because of the installation of a new nozzle design in Combustion Turbine C. I will confirm these dates and times prior to the tests.

If you have any questions, please call me at 423-9133.

Very truly yours,

Robert F. Hicks
Sr. Environmental Engineer

RFH:rc

xc: W. H. Herrington
G. A. DeMuth
V. F. Gallucci
Tim Turba
C. H. Fancy, FDER Tall.

RECEIVED

DEC 02 1992

Division of Air
Resources Management





ORLANDO UTILITIES COMMISSION

500 SOUTH ORANGE AVENUE • P. O. BOX 3193 • ORLANDO, FLORIDA 32802 • 407/423-9100

Certified Mail No. P-744-600-665
Return Receipt Requested

November 24, 1992

Mr. C. H. Fancy, Bureau Chief
Bureau of Air Regulation
Florida Department of
Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

RECEIVED

NOV 30 1992

Division of Air
Resources Management

Re: Permit No. AC05-193720, PSD-FL-173,
Combustion Turbines C and D
Request for Extension of Permit

Dear Mr. Fancy:

This letter is a request for an extension of the above-referenced construction permit, which covers installation of two combustion turbines at the Orlando Utilities Commission's Indian River Power Plant. The two combustion turbines, each of which is a 129 MW Simple Cycle Gas Turbine, are located in Brevard County near Titusville, Florida.

The current construction permit will expire on December 31, 1992. This request is for an extension of six months additional time, until June 30, 1993. The circumstances leading to this request, and the details of future activities during the construction permit extension, are discussed herein.

Background:

The construction permit was issued to Orlando Utilities Commission on September 10, 1991. Construction commenced and continued on schedule and in conformance with the General and Specific Conditions of the permit.

By letter of August 26, 1992, and subsequent letters dated September 10, September 22, October 16, and November 20, 1992 (rescheduling notices), OUC notified the Bureau of Air Regulation that construction was near completion and compliance testing was scheduled, as required by the Permit Conditions and F.A.C. Rule 17-2.700.



Mr. C. H. Fancy
November 24, 1992
Page 2

Problems Experienced During Compliance Testing:

During the course of compliance testing, high vibration levels were encountered in the combustion turbines during operation. This problem was first discovered on CT C. Although Westinghouse, the turbine manufacturer, had earlier made some modifications to CT D in an effort to eliminate the magnitude of the vibration, the vibration levels were not significantly reduced.

Earlier, Westinghouse had discovered problems in the manufacturing process, when performance testing was conducted on units other than the Indian River C and D combustion turbines. The problems were identified by Westinghouse as improper machining of the combustion turbine shaft and the coupling between the combustion turbine and the turbine generator.

CT D was disassembled and the shaft was returned to Westinghouse for remachining. During the remachining of CT D shaft, Westinghouse introduced a modification on their combustion can water spray nozzle on a non-OUC unit that had experienced similar problems as the OUC combustion turbines. This modification included the use of spray nozzles with an 80 degree spray pattern versus 50 degree spray pattern, which improved the vibration level of the combustion turbine, as well as reducing noise levels. There is some indication that opacity levels may also be somewhat reduced during firing of oil, with the modified nozzles. Westinghouse recommended this nozzle modification be made on CT D while the unit was down for shaft remachining. Because of the prospect of improved performance of the units, OUC agreed to the modification of nozzles for both CTs C and D.

Schedule of Current Activities:

The CT D nozzle modifications were made and the shaft was received from the Westinghouse machine shop on November 15, 1992. CT D is being reassembled with the remachined shaft and modified nozzles.

CT C will be fitted with the modified nozzles concurrently with CT D. In the interest of completing the compliance testing, OUC has determined that remachining of CT C shaft will be delayed until March 1993. This delay will provide OUC and Westinghouse the benefit of operating experience from CT D to assure that shaft remachining is the correct procedure to reduce the noise and vibration levels. Because remachining of the shaft is strictly a mechanical function, it does not affect the combustion process. Thus, emissions will not be adversely impacted. Improved performance, with the potential of improved opacity, will result from the nozzle modifications.

Mr. C. H. Fancy
November 24, 1992
Page 3

The two combustion turbines are expected to be ready for compliance testing the week of December 7, 1992. Because of the expiration date of the current construction permit, December 31, 1992, additional time is required to process and submit the compliance test results for the two combustion turbines.

This request for an extension of the construction permit application date is made pursuant to Specific Condition Number 24 of the Permit, and F.A.C. Rule 17-4.090. Because of the circumstances and timeliness of the related events, OUC was unable to provide the request for this extension of time prior to 60 days before the expiration of the permit.

OUC hereby makes a formal request for a six month extension of the construction permit, which would extend the permit until June 30, 1993. Because compliance testing activities are scheduled in the very near term, we will appreciate your early response to our request.

Very truly yours,



G. A. DeMuth
Director
Environmental Division

GAD:rc

xc: W. H. Herrington
G. M. Standridge
F. F. Haddad
K. P. Ksionek
V. F. Gallucci
H. E. Smith
A. Alexander, FDER Central District
(Certified Mail No. P744-600-667 -
Return Receipt Requested)

P. Lewis

Bob Hicks

(407)

423-9133

O.U.C

Janetha 12-23-92
Preston,

*this got buried
on my desk. Clair
got a call from OUC
asking about it today.
We told them to send
\$50 but we would go
ahead & do this quickly
you did this permit -
Pattyn*



RECEIVED

SEP 5 1992

ORLANDO UTILITIES COMMISSION

500 SOUTH ORANGE AVENUE • P. O. BOX 3193 • ORLANDO, FLORIDA 32802

Division of Air Resources Management
407-236-4000

Certified Mail No. P 609-606-898
Return Receipt Requested

September 30, 1992

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

Re: AC 05-193720

Dear Mr. Fancy:

Pursuant to 40 CFR Part 60, Chapter 17-2, and PSD FL-173, the Orlando Utilities Commission (OUC) is hereby providing notification of the actual date of initial startup for Combustion Turbine D on September 15, 1992.

This Combustion Turbine is located at OUC's Indian River Plant, approximately 10 km. south of Titusville, FL (521.5 km. east and 3151.65 km. north).

By copy of this correspondence, I am also providing Notice to DER Central District office.

If you have any questions regarding this transmittal, please contact me at 407/423-9133.

Sincerely,

Robert F. Hicks
Senior Environmental Engineer

RFH:rc

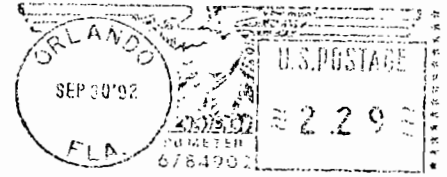
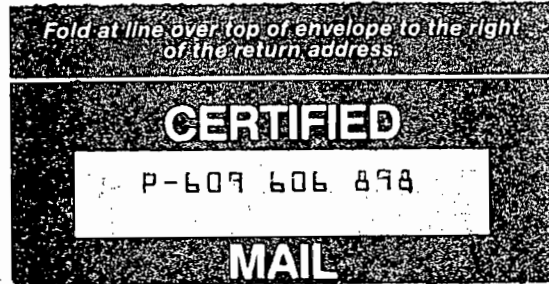
xc: W. H. Herrington
G. A. DeMuth
V. F. Gallucci
T. Turba
Alex Alexander - DER Central District office



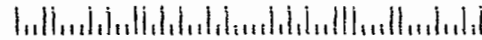


ORLANDO UTILITIES
COMMISSION

P. O. BOX 3193
ORLANDO, FLORIDA 32802



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





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

NOV 20 1991

RECEIVED

NOV 22 1991

Division of Air
Resources Management

4APT-AEB

Mr. Clair H. Fancy, P.E., Chief
Bureau of Air Regulation
Florida Department of Environmental
Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

RE: OUC Indian River Plant (PSD-FL-173)

Dear Mr. Fancy:

This is to acknowledge receipt of your final determination and Prevention of Significant Deterioration (PSD) permit for the proposed modification to the above referenced source. The modification will consist of the addition of two 129 MW simple-cycle combustion turbines to the existing facility (units C and D). We have reviewed this package as requested and have no adverse comments.

Thank you for the opportunity to review and comment on this package. If you have any questions on these comments, please contact Mr. Gregg Worley of my staff at (404) 347-5014.

Sincerely yours,

J. Russell
Jewell A. Harper, Chief
Air Enforcement Branch
Air, Pesticides, and Toxics
Management Division

cc: P. Jennis
M. Zimm
A. Zahon, C. Dist

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
NOTICE OF PERMIT

In the matter of an
Application for Permit by:

DER File No. AC 05-193720
PSD-FL-173
Brevard County

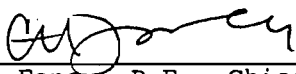
Mr. J. S. Crall
Orlando Utilities Commission
500 South Orange Avenue
P.O. Box 3193
Orlando, Florida 32802

Enclosed is Permit Number AC 05-193720 to construct and operate two 129 MW simple cycle gas turbines (units C & D). The units will be located at the Orlando Utilities Commission - Indian River Power Plant, south of John F. Kennedy Space Center near the city of Titusville, Brevard County, Florida, issued pursuant to Section(s) 403, Florida Statutes.

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

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

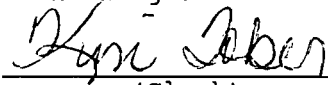

C. H. Fancy, P.E., Chief
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400
904-488-1344

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this NOTICE OF PERMIT and all copies were mailed before the close of business on 11-5-91 to the listed persons.

Clerk Stamp

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



(Clerk)

11-5-91
(Date)

Copies furnished to:
Alan Zahm, Central Dist.
Jewell Harper, EPA
S. M. Day, P.E., B&V

SENDER:

- Complete items 1 and/or 2 for additional services.
- Complete items 3 and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece next to the article number.

I also wish to receive the following services (for an extra fee):

1 Addressee's Address

2 Restricted Delivery
Consult postmaster for fee

3 Article Addressed to:
Mr. J. S. Crall
Orlando Utilities Commission
P. O. Box 3193
Orlando, FL 32802

4a Article Number
P. 832 538 740

4b Service Type
 Registered Insured
 Certified COD
 Express Mail Return Receipt for Merchandise

7 Date of Delivery

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PS Form 3811, October 1990 U.S. GPO 1990-273-961

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Permit: AC 05-193720	
PSD-FL-173	

Final Determination

Orlando Utilities Commission-Indian River Plant
Brevard County
Titusville, Florida

Two 129 MW Simple Cycle Gas Turbine Systems

Permit Number: AC 05-193720
PSD-FL-173

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

November 1, 1991

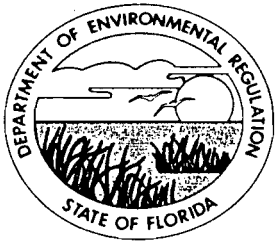
Final Determination

The Technical Evaluation and Preliminary Determination for Orlando Utilities Commission to construct and operate two 129 MW simple cycle gas turbines at their Indian River Plant, three kilometers south of John F. Kennedy Space Center near the city of Titusville in Brevard County, Florida, was distributed on September 9, 1991. The Notice of Intent to Issue was published in the Florida Today on September 24, 1991. Copies of the evaluation were available for public inspection at the Department's Tallahassee and Orlando offices.

The U.S. Environmental Protection Agency (EPA) submitted a letter commenting on the Preliminary Determination November 1, 1991, stating that they had "no adverse comment."

The applicant provided comments on the Preliminary Determination October 15, asking that we modify Specific Condition No. 2 to include the 8 and 24 hour acceptable ambient concentrations and delete the annual concentrations for inorganic mercury. The 8 and 24 hour levels, which have been in use, were replaced with better data and only the annual information is specified. An error regarding the annual beryllium emissions was corrected. The applicant also pointed out two other errors in Table 1 which have been corrected.

The final action of the Department will be to issue construction permit AC 05-193720 as proposed in the Technical Evaluation and Preliminary Determination.



Florida Department of Environmental Regulation

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

Lawton Chiles, Governor

Carol M. Browner, Secretary

PERMITTEE:
Orlando Utilities Commission
500 South Orange Avenue
P.O. Box 3193
Orlando, Florida 32802

Permit Number: AC 05-193720
Expiration Date: Dec. 31, 1992
County: Brevard
Latitude/Longitude: 28°29'32" N
80°46'59" W
Project: Two 129 MW Simple Cycle
Gas Turbines

The amendments to existing PSD construction permits AC-05-146750 and AC-05-146751 are issued under the provisions of Chapter 403, Florida Statutes, and permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawings, plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

For the construction of two 129 MW simple cycle gas turbines, to be located at the Orlando Utility Commission-Indian River Power Plant near Titusville, Florida. The UTM coordinates are 521.5 km East and 3151.65 km North.

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

Attachments:

1. Orlando Utilities Commission-Indian River Power Plant's application dated March 7, 1991.
2. Department's letter dated April 5, 1991.
3. Orlando Utilities Commission's (OUC) letter dated May 9, 1991.
4. Department's letter dated June 7, 1991.
5. OUC's letter dated June 17, 1991.
6. Department's letter dated June 19, 1991.
7. OUC's faxed letter dated October 15, 1991.
8. EPA's faxed letter dated November 1, 1991.

PERMITTEE:
Orlando Utilities Commission

Permit Number: AC 05-193720
PSD-FL-173
Expiration Date: Dec. 31, 1992

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

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

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

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

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

PERMITTEE:
Orlando Utilities Commission

Permit Number: AC 05-193720
PSD-FL-173
Expiration Date: Dec. 31, 1992

GENERAL CONDITIONS:

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

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

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

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

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

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

PERMITTEE:
Orlando Utilities Commission

Permit Number: AC 05-193720
PSD-FL-173
Expiration Date: Dec. 31, 1992

GENERAL CONDITIONS:

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

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

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

11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 17-4.120 and 17-30.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

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

13. This permit also constitutes:

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

14. The permittee shall comply with the following:

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

PERMITTEE:
Orlando Utilities Commission

Permit Number: AC 05-193720
PSD-FL-173
Expiration Date: Dec. 31, 1992

GENERAL CONDITIONS:

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

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 corrected promptly.

SPECIFIC CONDITIONS:

Emission Limits

See revision
1. The maximum allowable emissions from this facility shall not exceed the emission rates listed in Table 1.

Deleted-see revision
2. Unless the Department has determined other concentrations are required to protect public health and safety, predicted acceptable ambient air concentrations (AAC) of the following pollutants shall not be exceeded:

PERMITTEE:
Orlando Utilities Commission

Permit Number: AC 05-193720
PSD-FL-173
Expiration Date: Dec. 31, 1992

SPECIFIC CONDITIONS:

Pollutant	Acceptable Ambient Concentrations ug/m ³		
	8-hr	24-hr	Annual
Beryllium	0.02	0.005	0.0004
Lead	1.5	0.36	0.09
Inorganic Mercury Compounds all forms of Vapor, as Hg	NA	NA	0.3

See revision
3. Visible emissions shall not exceed 20 percent opacity at anytime nor exceed 10% during full load.

Operating Rates

4. This source is allowed to operate at full load for a maximum of 4,380 hours per year.

5. This source is allowed to use natural gas as the primary fuel and No. 2 distillate oil as the secondary fuel (limited as shown in Specific Condition 6 below).

6. The permitted materials and utilization rates for each simple cycle gas turbine shall not exceed the values as follows:

- Maximum No. 2 fuel oil consumption shall not exceed either of the following limitations: 10,282 gals/hr; 22,517,580 gals/yr.
- Maximum annual firing using No. 2 fuel oil shall not exceed 2,190 hours per year.
- Maximum sulfur (S) content in the oil shall not exceed 0.30 percent by weight.
- Maximum heat input shall not exceed 1,354 MMBtu/hr (gas) or 1,346 MMBtu/hr (oil). *based on LHV*
- Maximum annual firing on any fuel combination shall not exceed 4,380 hours per year.

See revision
7. Any change in the method of operation, equipment or operating hours shall be submitted to the DER's Bureau of Air Regulation and Central District offices.

PERMITTEE:
Orlando Utilities Commission

Permit Number: AC 05-193720
PSD-FL-173
Expiration Date: Dec. 31, 1992

SPECIFIC CONDITIONS:

*See
revision*

8. Any other operating parameters established during compliance testing and/or inspection that will ensure the proper operation of this facility shall be included in the operating permit.

Compliance Determination

9. Compliance with the NO_x, SO₂ (oil), CO, and visible emission standards shall be determined by the following reference methods as described in 40 CFR 60, Appendix A (July 1, 1990) and adopted by reference in F.A.C. Rule 17-2.700.

Compliance Determination

- Method 1. Sample and Velocity Traverses
- Method 2. Volumetric Flow Rate
- Method 3. Gas Analysis
- Method 9. Determination of the Opacity of the Emissions from
- Method 10. Determination of the Carbon Monoxide Emission from Stationary Sources
- Method 20. Determination of Nitrogen Oxides, Sulfur Dioxide, and Diluent Emissions from Stationary Gas Turbines.

*See
revision*

10. An initial compliance test shall be performed using both fuels. Annual NO_x compliance tests shall be performed with the fuel(s) used for more than 400 hours in the proceeding 12 month period.

*See
revision*

11. Compliance with the SO₂ emission limit can also be determined by calculations based on fuel analysis using ASTM D2880-71 for the sulfur content of liquid fuels.

12. Compliance with the total volatile organic compound emission limits will be assumed, provided the CO allowable emission rate is achieved; specific VOC compliance testing is not required.

13. During performance tests, to determine compliance with the proposed NO_x standard, measured NO_x emission at 15 percent oxygen will be adjusted to ISO ambient atmospheric conditions by the following correction factor:

where

NO_x = Emissions of NO_x at 15 percent oxygen and ISO standard ambient conditions.

NO_x obs = Measured NO_x emission at 15 percent oxygen, ppmv.

P_{ref} = Reference combustor inlet absolute pressure at 101.3 kilopascals (1 atmosphere) ambient pressure.

PERMITTEE:
Orlando Utilities Commission

Permit Number: AC 05-193720
PSD-FL-173
Expiration Date: Dec. 31, 1992

SPECIFIC CONDITIONS:

Compliance Determination

P_{Obs} = Measured combustor inlet absolute pressure at test ambient pressure.

H_{Obs} = Specific humidity of ambient air at test.

e = Transcendental constant (2.718).

T_{AMB} = Temperature of ambient air at test.

See revision

14. Test results will be the average of 3 valid runs. The Central District office will be notified at least 30 days in advance of the compliance test. The source shall operate between 90 percent and 100 percent of permitted capacity during the compliance test. Compliance test results shall be submitted to the Central District office no later than 45 days after completion.

See revision

15. Water injection shall be utilized for NO_x control. The water to fuel ratio at which compliance is achieved shall be incorporated into the permit and shall be continuously monitored.

See revision

16. To determine compliance with the capacity factor limitations each CT's fuel consumption shall be continuously measured and recorded. The permittee shall maintain daily records of this fuel usage. All records shall be maintained for a minimum of three years after the date of each record and shall be made available to representatives of the Department upon request.

See revision

17. Sulfur, nitrogen content and lower heating value of the fuel being fired in the gas turbine shall also be recorded per fuel oil shipment. These records shall also be kept by the company for at least three years and made available for regulatory agency's inspection.

Deleted-see revision

18. Compliance with the acceptable ambient concentrations for Be, Lead, and Hg emissions shall be demonstrated based on calculations certified by a Professional Engineer registered in Florida, using actual operating conditions. Determination of the ambient concentrations for chemical compounds shall be determined by Department approved dispersion modeling. This compliance determination shall be made available upon request.

Rule Requirements

19. This source shall comply with all applicable provisions of Chapter 403, Florida Statutes and Chapters 17-2 and 17-4, Florida Administrative Code.

PERMITTEE:
Orlando Utilities Commission

Permit Number: AC 05-193720
PSD-FL-173
Expiration Date: Dec. 31, 1992

SPECIFIC CONDITIONS:

20. This source shall comply with all requirements of 40 CFR 60, Subpart GG and F.A.C. Rule 17-2.660(2)(a), Standards of Performance for Stationary Gas Turbines.

21. Issuance of this permit does not relieve the facility owner or operator from compliance with any applicable federal, state, or local permitting requirements and regulations (F.A.C. Rule 17-2.210(1)).

22. This source shall comply with F.A.C. Rule 17-2.700, Stationary Point Source Emission Test Procedures.

23. Pursuant to F.A.C. Rule 17-2.210(2), Air Operating Permits, the permittee is required to submit annual reports on the actual operating rates and emissions from this facility. These reports shall include, but are not limited to the following: sulfur, nitrogen content and lower heating value of the fuel being fired, fuel usage, hours of operation, air emissions limits, etc. Annual reports shall be sent to the Department's Central District office.

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

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

Issued this 5th day
of November, 1991

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION



Carol M. Browner, Secretary

See revision

TABLE 1
ALLOWABLE EMISSION LIMITS
Simple Cycle Combustion Turbine

Pollutant	Standards		Gas Turbine Tons Per Year*		Basis
	Gas Firing/20 F	No. 2 Fuel Oil Firing/20 F	Gas	Oil	
	NO _x	25 ppm at 15% oxygen on a dry basis	42 ppmv at 15 percent oxygen on a dry basis	591.5	
SO ₂	Natural gas as fuel	0.3 percent S by weight	2.1	953	BACT
PM/PM ₁₀	0.003 lb/MMBtu	0.08 lb/MMBtu	19.5	237	Performance Data
VOC	-	-	37	112	" "
CO	-	-	313	159	" "
Mercury (Hg)	-	3.0 x 10 ⁻⁶ lbs/MMBtu	-	0.01	Est. by Appl.
Lead (Pb)	-	2.8 x 10 ⁻⁵ lbs/MMBtu	-	0.08	" "
Beryllium (be)	-	2.5 x 10 ⁻⁶ lbs/MMBtu	-	0.01	" "
Sulfuric Acid Mist	Natural gas as fuel	Low sulfur content oil	0.07	28.5	" "

* Emissions rates for both 129 MW turbines are based on a 50 percent capacity factor with a maximum of 25 percent attributed to oil firing.

Best Available Control Technology (BACT) Determination
Orlando Utilities Commission-Indian River Power Plant
Brevard County

The applicant proposes to install combustion turbine Units C and D at their Indian River facility. The generator systems will consist of two nominal 129 megawatt (MW) combustion turbines.

The combustion turbine will be capable of simple cycle operation. The applicant requested that the combustion turbine use either natural gas or distillate oil. The Department's calculations indicate the maximum annual tonnage of regulated air pollutants emitted from the facility based on 25 percent capacity factor for No. 2 fuel oil firing and 50 percent capacity factor for all fuels at peak load and ISO conditions to be as follows:

Pollutant	Potential Emissions (tons/year)						PSD Significant Emission Rate (tons/yr)
	Peak Load/20 F			Baseload/ISO			
	Natural Gas	Fuel Oil	Combine Fuels	Natural Gas	Fuel Oil	Combine Fuels	
	50% CF*	25% CF	25% CF for oil plus 25% CF for nat. gas	50% CF	25% CF	25% CF for oil plus 25% CF for nat. gas	
NO _x	591.5	506	801.8	534.5	440	707.3	40
SO ₂	2.1	953	954.1	2.5	839	840.3	40
PM	19.5	237	246.8	17.5	210	218.8	25
PM ₁₀	19.5	237	246.8	17.5	210	218.8	15
CO	313	159	315.5	287	159	302.5	100
VOC	37	112	130.5	39.5	101	120.8	40
H ₂ SO ₄	0.07	28.5	28.5	0.08	25	25	7
Be	0.0	0.01	0.01	0.0	0.01	0.01	0.0004
Hg	0.0	0.01	0.01	0.0	0.01	0.01	0.1
Pb	0.0	0.08	0.08	0.0	0.07	0.07	0.6

* CF = Capacity Factor

Florida Administrative Code Rule 17-2.500(2)(f)(3) requires a BACT review for all regulated pollutants emitted in an amount equal to or greater than the significant emission rates listed in the previous table.

Date of Receipt of a BACT Application

March 7, 1991

BACT Determination Requested by the Applicant

<u>Pollutant</u>	<u>Determination</u>
NO _x	25 ppmvd @ 15% O ₂ (natural gas burning) 42 ppmvd @ 15% O ₂ (diesel oil firing)
SO ₂	Firing of natural gas or No. 2 fuel oil with a maximum sulfur content of 0.30%
PM and PM ₁₀	Combustion control
H ₂ SO ₄	Firing of No. 2 fuel oil with a maximum sulfur content of 0.30%
Be	Firing of No. 2 fuel oil

BACT Determination Procedure

In accordance with Florida Administrative Code Chapter 17-2, Air Pollution, this BACT determination is based on the maximum degree of reduction of each pollutant emitted which the Department, on a case by case basis, taking into account energy, environmental and economic impacts, and other costs, determines is achievable through application of production processes and available methods, systems, and techniques. In addition, the regulations state that in making the BACT determination the Department shall give consideration to:

- (a) Any Environmental Protection Agency determination of Best Available Control Technology pursuant to Section 169, and any emission limitation contained in 40 CFR Part 60 (Standards of Performance for New Stationary Sources) or 40 CFR Part 61 (National Emission Standards for Hazardous Air Pollutants).
- (b) All scientific, engineering, and technical material and other information available to the Department.
- (c) The emission limiting standards or BACT determinations of any other state.
- (d) The social and economic impact of the application of such technology.

The EPA currently stresses that BACT should be determined using the "top-down" approach. The first step in this approach is to determine for the emission source in question the most stringent control available for a similar or identical source or source category. If it is shown that this level of control is technically or economically infeasible for the source in question, then the next most stringent level of control is determined and similarly

evaluated. This process continues until the BACT level under consideration cannot be eliminated by any substantial or unique technical, environmental, or economic objections.

The air pollutant emissions from simple cycle power plants can be grouped into categories based upon what control equipment and techniques are available to control emissions from these facilities. Using this approach, the emissions can be classified as follows:

- o Combustion Products (Particulates and Heavy Metals). Controlled generally by good combustion of clean fuels.
- o Products of Incomplete Combustion (CO, VOC, Toxic Organic Compounds). Controlled generally by proper combustion techniques.
- o Acid gases (SO_x, NO_x, HCl, F_l). Controlled generally by gaseous control devices.

Grouping the pollutants in this manner facilitates the BACT analysis because it enables the equipment available to control the type or group of pollutants emitted and the corresponding energy, economic, and environmental impacts to be examined on a common basis. Although all of the pollutants addressed in the BACT analysis may be subject to a specific emission limiting standard as a result of PSD review, the control of "nonregulated" air pollutants is considered in imposing a more stringent BACT limit on a "regulated" pollutant (i.e., particulates, sulfur dioxide, fluorides, sulfuric acid mist, etc.), if a reduction in "nonregulated" air pollutants can be directly attributed to the control device selected as BACT for the abatement of the "regulated" pollutants.

Combustion Products

The Orlando Utility Commission's projected emissions of particulate matter, PM₁₀, and beryllium surpass the significant emission rates given in Florida Administrative Code Rule 17-2.500, Table 500-2 for No.2 fuel oil firing only.

A PM/PM₁₀ emissions limitation of 0.08 lb/MMBtu for No. 2 fuel oil firing is reasonable as BACT for the Indian River facility.

In general, the BACT/LAER Clearinghouse does not contain specific emission limits for beryllium from turbines. BACT for these heavy metals is typically represented by the level of particulate control. As this is the case, the emission factor of 0.08 lb/MMBtu for particulate matter PM₁₀ is judged to also represent BACT for beryllium.

Products of Incomplete Combustion

The emissions of carbon monoxide and volatile organic compounds are each above the significant level and therefore require a BACT analysis.

Carbon monoxide and VOC are formed during the incomplete combustion of the fuel. High combustion temperatures, adequate excess air and good fuel/air mixing during combustion will minimize CO and VOC emissions. Therefore, NO_x control methods which use combustion staging and lowering combustion temperature by water injection, can be counterproductive with regard to CO and VOC emissions.

To achieve the proposed NO_x BACT levels requires that these control techniques be used. Therefore, this turbine design will have significantly higher CO and VOC emissions than associated with a standard combustor. At the proposed BACT NO_x emissions of 25/42 ppmvd (gas/oil), the turbine will be capable of maintaining CO and VOC emission rates of 25 ppmvd and 5 ppmvd, respectively while burning natural gas. For fuel oil firing, the CO and VOC emission rates will be 25 ppmvd and 15 ppmvd, respectively.

Based on a review of EPA's BACT/LAER Clearinghouse--A Compilation of Control Technology Determinations (1985 and 1990 editions), a combustion turbine with proper combustion control and an oxidizing catalyst that limits CO emissions to 2 ppmvd represents LAER. An oxidizing catalyst is also LAER technology for VOC emissions but the specific ppmvd emission rate was not specified in the clearinghouse document.

Catalytic reduction is a post-combustion method for controlling CO and VOC emissions. The process uses a precious metal to oxidize CO to CO₂ with the use of a catalyst and VOC hydrocarbons to CO₂ and H₂O. None of the catalyst components are considered toxic. The optimum flue gas temperature range for CO/VOC catalyst operation is between 850°F and 1,100°F. Flue gas from the combustion turbine will typically be between 950°F to 1,100°F. Therefore, a CO/VOC catalyst could be installed at the discharge of the combustion turbine.

The applicant states that the levelized annual cost for the catalyst system is about \$3.5 million/year. This system would reduce about 310 tons per year of CO/VOC at a 50% capacity factor. This reduction results in an incremental removal cost of approximately \$11,000 per ton of CO/VOC removed. This cost is well above that previously accepted as representative of BACT.

In addition, a CO/VOC catalyst located downstream of the combustion turbine exhaust will create additional back pressure reducing output by approximately 600 KW per turbine.

Other Emissions

The project will emit trace quantities of other pollutants at levels which are below the significant emission levels established for the PSD program. Federal and state regulations do not require that BACT be applied for these pollutants but the effects of the proposed BACT determinations on these pollutants must be considered.

Other Regulated and Hazardous Pollutants

The emission rates for mercury, lead and hazardous pollutants, when firing No. 2 fuel oil, have been developed based on manufacturers' information and on information contained in the EPA publications Toxic Air Pollutant Emission Factors--A Compilation for Selected Air Toxic Compounds and Sources (EPA-450/2-88-006a).

The most reliable method of controlling these emissions are complete combustion and the inherent quality of the fuel. Injection of water into the turbines to control NO_x emissions has a significant effect on controlling these pollutants. Further control has been accomplished by using either a baghouse or scrubber.

Acid Gases

The emission of sulfur dioxide, nitrogen oxides, and sulfuric acid mist represents a significant proportion of the total emissions and need to be controlled, if deemed appropriate. Sulfur dioxide emissions from combustion turbines are directly related to the sulfur content of the fuel being combusted.

The applicant has proposed the use of natural gas and No. 2 fuel oil with a maximum sulfur content of 0.30 percent to control sulfur dioxide emissions. A review of the latest edition (1990) of the BACT/LAER Clearinghouse indicates that sulfur dioxide emissions from combustion turbines have been controlled by limiting fuel oil sulfur content to a range of 0.1 to 0.30 percent, with the average for the facilities listed being approximately 0.24 percent. As this is the case, the applicant's proposal to use No. 2 fuel oil with a maximum sulfur content of 0.30 percent is judged to represent BACT.

The applicant has stated that BACT for nitrogen oxides will be met using wet (water or steam) injection necessary to limit emissions to 42 ppmvd or 25 ppmvd at 15 percent oxygen when burning No. 2 fuel oil or natural gas, respectively.

A review of the EPA's BACT/LAER Clearinghouse indicates that the lowest NO_x emission limit established to date for a combustion turbine is 4.5 ppmvd at 15 percent oxygen. This level of control was accomplished through the use of water injection and a selective catalytic reduction (SCR) system contained within the heat recovery steam generator (combined cycle operation). A review of the EPA's BACT/LAER Clearinghouse also indicated that the lowest NO_x emission levels established to date for a combustion turbine operating in a simple cycle mode was the use of water or steam injection with an improved low NO_x burner design. The OUC Indian River project will operate in the simple cycle mode.

Selective catalytic reduction is a post-combustion method for control of NO_x emissions. The SCR process combines vaporized ammonia with NO_x in the presence of a catalyst to form nitrogen and

water. The vaporized ammonia is injected into the exhaust gases prior to passage through the catalyst bed. The SCR process can achieve up to 90 percent reduction of NOx with a new catalyst. As the catalyst ages, the maximum NOx reduction will decrease to approximately 86 percent. The optimum temperature range for an SCR is approximately 650 to 750 F. Flue gas from a combustion turbine operating in a simple cycle mode will typically be 950 F to 1,100 F. Therefore, the flue gas would have to be cooled prior to the injection of ammonia and to protect the catalyst from damage due to the high flue gas temperatures. SCR manufacturers are currently experimenting with a catalyst that can withstand the high flue gas temperatures associated with simple cycle operation. However, high temperature catalysts are still in a development stage and have not been demonstrated on full scale projects.

Given the applicant's proposed BACT level for nitrogen oxides control stated above, an evaluation can be made of the cost and associated benefit of using SCR as follows:

The applicant had indicated that the total levelized annual cost (operating plus amortized capital) to install SCR for natural gas firing at 50 percent capacity factor is \$3,840,000. For fuel oil firing at 25 percent capacity factor, the total levelized annual cost to install SCR is \$2,940,000. Taking into consideration the total levelized annual cost, a cost/benefit analysis of using SCR can now be developed.

Based on the information supplied by the applicant, it is estimated that the maximum annual NOx emissions with wet injection from the Indian River facility will be 707 tons/year while firing natural gas 25% and fuel oil 25% of the year. Assuming that the SCR would reduce the NOx emissions by an additional 80 to 85 percent, the SCR would control approximately 560 tons of NOx annually. When this reduction is taken into consideration with the total levelized annual cost of \$3,840,000, the cost per ton of controlling NOx is \$6,860. This cost is higher than has previously been approved as BACT.

Environmental Impact Analysis

The predominant environmental impacts associated with this proposal would be related to the use of SCR for NOx control. The use of SCR results in emissions of ammonia, which may increase with increasing levels of NOx control. In addition, some catalysts may contain substances which are listed as hazardous waste, thereby creating an additional environmental burden. Although the use of SCR does have some environmental impacts, the disadvantages normally do not outweigh the benefit which would be provided by reducing nitrogen oxide emissions by 80 percent.

In addition to the criteria pollutants, the impacts of toxic pollutants associated with the combustion of natural gas and No. 2 fuel oil have been evaluated. Beryllium for oil fired operation

exceeds PSD significance levels. Other toxics are expected to be emitted in minimal amounts, with the total emissions combined to be less than 0.1 tons per year.

Although the emissions of the toxic pollutants could be controlled by particulate control devices such as a baghouse or scrubber, the amount of emission reductions would not warrant the added expense. As this is the case, the Department does not believe that the BACT determination would be affected by the emissions of the toxic pollutants associated with the firing of natural gas or No. 2 fuel oil.

Potentially Sensitive Concerns

With regard to controlling NOx emission with SCR, the applicant has identified the following technical limitations:

1. SCR would reduce output of combustion turbines by one percent.
2. SCR could result in the release of unreacted quantities of ammonia to the atmosphere.
3. SCR would require handling of ammonia by plant operators. Since it is a hazardous material, there is concern about safety and productivity of operators.
4. SCR results in contaminated catalyst from flue gas trace elements which could be considered hazardous. Safety of operators and disposal of spent catalyst is a concern.

BACT Determination by DER

Nox Control

A review of permitting activities for simple cycle proposals across the nation indicates that water or steam injection with improved low NOx burner design is the predominant control technology that has been required. The cost and other concerns expressed by the applicant for using additional control measures are valid.

The information that the applicant presented and Department calculations indicate that the incremental cost of controlling NOx (\$6,860/ton) when firing natural gas (maximum 25%) and No. 2 fuel oil (maximum 25%) is high compared to other BACT determinations which require SCR. Based on the information presented by the applicant and the studies conducted, the

Department believes that the use of SCR for NOx control is not justifiable at this time as BACT. Therefore, the Department is willing to accept low NOx burner design with the firing of natural gas as the primary fuel.

S02 Control

For sulfur dioxide, BACT is represented by firing natural gas (max. 50% CF) or No. 2 fuel oil with an average sulfur content not to exceed 0.30 percent, provided that the capacity attributed to oil firing does not exceed 25 percent.

CO/VOC Control

Based on the additional cost of using an oxidation catalyst (cost \$11,000/ton of reduction), energy (reduce by 600 KW) and environmental considerations, BACT is represented by good combustion controls to achieve 25 ppmvd for CO and 15 ppmvd VOC firing #2 fuel oil.

Other Emissions Control

The emission limitations for PM and PM10, are based on previous BACT determinations for similar facilities, with the heavy metal beryllium being addressed through the particulate limitation and sulfuric acid mist being addressed through the sulfur dioxide limitation.

The emission limits for the Orlando Utilities Commission project are thereby established as follows:

<u>Pollutant</u>	<u>Emission Limit*</u>	
	<u>Natural Gas Firing</u>	<u>No. 2 Fuel Oil Firing</u>
NOx	25 ppmvd @ 15% O ₂	42 ppmvd @ 15% O ₂
SO ₂	Natural gas as fuel	Sulfur content not to exceed 0.30%, by weight
PM & PM ₁₀	0.003 lb/MMBtu	0.08 lb/MMBtu
CO	25 ppmvd	25 ppmvd
VOC	5 ppmvd	15 ppmvd
Sulfuric Acid Mist	Emissions limited by firing natural gas and No. 2 fuel oil with 0.3% sulfur, by weight	
Beryllium	Emissions limited by firing natural gas and No. 2 fuel oil with 0.3% sulfur, by weight	

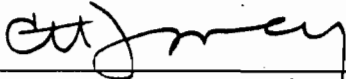
*Both turbines are limited to a maximum of 50% capacity factor with a maximum of 25% attributed to oil firing.

Details of the Analysis May be Obtained by Contacting:

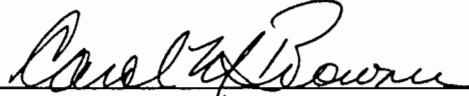
Preston Lewis, P.E., BACT Coordinator
Department of Environmental Regulation
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Recommended by:

Approved by:



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



Carol M. Browner, Secretary
Dept. of Environmental Regulation

November 1 1991
Date

Nov. 5 1991
Date



State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

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

Interoffice Memorandum

TO: Carol M. Browner

for FROM: Steve Smallwood 

DATE: November 1, 1991

SUBJ: Approval of Construction Permit AC 05-193720/PSD-FL-173
Units C & D
Orlando Utilities Commission-Indian River Plant

Attached for your approval and signature is a permit and accompanying Best Available Control Technology determination prepared by the Bureau of Air Regulation for the above mentioned company to construct and operate two 129 MW simple cycle gas turbines.

No adverse comments were received during the public notice period.

I recommend your approval and signature.

CF/PL/plm

Attachments



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

NOV - 1 1991

4APT-AEB

Mr. Clair H. Fancy, P.E., Chief
Bureau of Air Regulation
Florida Department of Environmental
Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

RECEIVED

NOV 6 1991

Division of Air
Resources Management

RE: OUC Indian River Plant (PSD-FL-173)

Dear Mr. Fancy:

NOV - 1 1991

This is to acknowledge receipt of your preliminary determination and draft Prevention of Significant Deterioration (PSD) permit for the proposed modification to the above referenced source. The modification will consist of the addition of two 129 MW simple-cycle combustion turbines to the existing facility (units C and D). Your determination of BACT for NO_x emissions consists of the utilization of low-NO_x burners to achieve emissions levels of 25 ppm when firing natural gas and 42 ppm when firing fuel oil. This determination is consistent with other recent determinations in Florida.

NOV - 1 1991

In addition, SO₂ emissions will be limited through the requirement for low sulfur (0.3%) fuel oil and a limit on the hours of operation by the turbines when firing fuel oil. We have reviewed this package as requested and have no adverse comments.

Thank you for the opportunity to review and comment on this package. If you have any questions on these comments, please contact Mr. Gregg Worley of my staff at (404) 347-5014.

Sincerely yours,

Jewell A. Harper, Chief
Air Enforcement Branch
Air, Pesticides, and Toxics
Management Division

cc: A. Zahm

cc'd: CHF }
BA } saw when received: 11-1-91 RAL
PL }
ML }

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY - REGION IV
AIR, PESTICIDES & TOXICS MANAGEMENT DIVISION
345 Courtland Street, N. E.
Atlanta, Georgia 30365
Fax Number: FTS 257-5207 or 404/347-5207

FACSIMILE TRANSMISSION SHEET

DATE: Nov. 1, 1991 NUMBER OF PAGES (Including this sheet) _____

TO: Clair Fancy PHONE: _____

ADDRESS: FDER FAX NUMBER: (904) 922-6979

FROM: Gregg Worley PHONE: (404) 347-5014

If the following pages are received poorly, please call Angela
at FTS 257- 5014 or 404/347- 5014.

SPECIAL INSTRUCTIONS FOR RECEIVER: _____

TELECOPY

TRANSMITTAL SHEET

ORLANDO UTILITIES COMMISSION

DATE: October 15, 1991

TIME: 10:30 am

PAGES SENT INCLUDING TRANSMITTAL SHEET: 4

SENT TO: Mr. G. Preston Lewis, P.E. Review Engineer
Air Permitting and Standards Section

COMPANY: Florida Department of Environmental Regulation

CITY: Tallahassee, FL

TELECOPY NUMBER: (904) 922-6979

FROM: Jim Crall EXT. 141

COMMENTS: _____

ORLANDO UTILITIES COMMISSION

TELECOPY NUMBER: (407) 236-9616

FOR PROBLEMS OR QUESTIONS CONCERNING THIS
TRANSMITTAL CALL (407) 423-9100 - EXT. 2049



ORLANDO UTILITIES COMMISSION

500 SOUTH ORANGE AVENUE • P. O. BOX 3193 • ORLANDO, FLORIDA 32802 • 407/423-9100

SENT VIA FAX
(904) 922-6979

October 15, 1991

Mr. G. Preston Lewis, P. E.
Review Engineer
Air Permitting and Standards Section
Florida Department of
Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Dear Mr. Lewis:

Enclosed are the comments we discussed for inclusion into the Final Construction Permit for the Orlando Utilities Commission's Indian River facility.

The proposed changes are minor and help to make the Permit a more accurate and complete document and correct typographical errors. Copies of the pages with suggested changes are enclosed.

If you have any questions or comments concerning these modifications, please contact me at 407/423-9141.

Very truly yours,

J. S. Crall
Director
Environmental Division

JSC:rc
Enclosure

cc: K. P. Ksionek
T. D. Slepow

PERMITTEE:
Orlando Utilities Commission

Permit Number: AC 05-193720
PSD-FL-173
Expiration Date: Dec. 31, 1992

SPECIFIC CONDITIONS:

Pollutant	Draft Acceptable Ambient Concentrations ug/m ³			
	8-hr	24-hr	Annual	
Beryllium	0.02	0.005	0.004 0.0004 ^(7yrs)	✓
Lead	1.5	0.36	0.09	✓
Inorganic Mercury Compounds all forms of Vapor, as Hg	NA ^e 0.1	NA ^e 0.024	0.3 NA	✓✓✓

to be consistent with Tech evaluation

3. Visible emissions shall not exceed 20 percent opacity at anytime nor exceed 10% during full load.

Operating Rates

4. This source is allowed to operate continuously (4,380 hours per years).

5. This source is allowed to use natural gas as the primary fuel and No. 2 distillate oil as the secondary fuel (limited as shown in Specific Condition 6 below).

6. The permitted materials and utilization rates for each simple cycle gas turbine shall not exceed the values as follows:

- Maximum No. 2 fuel oil consumption shall not exceed either of the following limitations: 10,282 gals/hr; 22,517,580 gals/yr.
- Maximum annual firing using No. 2 fuel oil shall not exceed 2,190 hours per year.
- Maximum sulfur (S) content in the oil shall not exceed 0.30 percent by weight.
- Maximum heat input shall not exceed 1,354 MMBtu/hr (gas) or 1,346 MMBtu/hr (oil).
- Maximum annual firing on any fuel combination shall not exceed 4,380 hours per year.

7. Any change in the method of operation, equipment or operating hours shall be submitted to the DER's Bureau of Air Regulation office for approval.

TABLE 1
ALLOWABLE EMISSION LIMITS
Simple Cycle Combustion Turbine

Pollutant	Standards		Gas Turbine		Basis
	Gas Firing/20 F	No. 2 Fuel Oil Firing/20 F	Tons Per Year*		
			Gas	Oil	
NO _x	25 ppm at 15% oxygen on a dry basis	42 ppmv at 15 percent oxygen on a dry basis	591.5	506	BACT
SO ₂	Natural gas as fuel	0.3 percent S by weight	2.1	953	BACT
PM/PM ₁₀	0.003 lb/MMBtu	0.08 lb/MMBtu	19.5	237	Performance Data
VOC	-	-	37	112	" "
CO	-	-	313	159	" "
Mercury (Hg)	-	3.0 x 10 ⁻⁶ lbs/MMBtu	-	0.01	Est. by Appl.
Lead (Pb)	-	2.8 x 10 ⁻⁵ lbs/MMBtu	-	0.03 0.08	" "
Beryllium (be)	-	2.5 x 10 ⁻⁶ lbs/MMBtu	-	0.01	" "
Sulfuric Acid Mist	Natural gas as fuel	Low sulfur content oil	0.07 0.05 ^a	28.5	" "

* Emissions rates for both ^{129 MW} turbines are based on a 50 percent capacity factor with a maximum of 25 percent attributed to oil firing.



RECEIVED

ORLANDO UTILITIES COMMISSION

500 SOUTH ORANGE AVENUE • P. O. BOX 3193 • ORLANDO, FLORIDA 32802

SEP 30 1991
Division of Air
Resources Management

September 27, 1991

Mr. C. H. Fancy, P. E.
Chief, Bureau of Air Regulation
Florida Department of
Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Re: Four-Unit Combustion Turbine Facility at Indian River Plant
AC 05-193720 and PSD-FL-173 Units C and D.

Dear Mr. Fancy:

Attached is a copy of the proof of publication from the Florida Today newspaper for Combustion Turbines C and D at OUC's Indian River Plant in Brevard County.

Sincerely,

J. S. Crall
Director
Environmental Division

JSC:rc
Attachment

cc: Mr. Preston Lewis - DER



Best Available Copy

FEDERAL EXPRESS

QUESTIONS? CALL 800-238-5355 TOLL FREE

AIRBILL PACKAGE TRACKING NUMBER

6901712145

63M

6901712145

RECIPIENT'S COPY

From (Your Name) Please Print J. S. Crall		Your Phone Number (Very Important) (407) 423-9100		To (Recipient's Name) Please Print Mr. C.H. Fancy, P. E.		Recipient's Phone Number (Very Important) 904 488-4807	
Company NDD UTILITIES COMMISSION		Department/Floor No.		Company Chief, Bureau of Air Regulation		Department/Floor No.	
Street Address S ORANGE AVE				Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes) 2600 Blair Stone Road			
City ANDC		State FL		City Tallahassee		State FL	
ZIP Required 32901		ZIP Required 32399-2400					

YOUR INTERNAL BILLING REFERENCE INFORMATION (First 24 characters will appear on invoice.) 512106				IF HOLD FOR PICK-UP, Print FEDEX Address Here			
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5 <input type="checkbox"/> Cash				City			
				State			
				ZIP Required			

4 SERVICES (Check only one box)		DELIVERY AND SPECIAL HANDLING		PACKAGES		WEIGHT in Pounds (Lbs.)		YOUR DECLARED VALUE		OVER SIZE		Emp. No.		Date		Federal Express Use:	
Priority Overnight Service (Delivery by next business morning) 11 <input type="checkbox"/> YOUR PACKAGING 51 <input type="checkbox"/> 16 <input type="checkbox"/> FEDEX LETTER* 56 <input type="checkbox"/> FEDEX LETTER* 12 <input type="checkbox"/> FEDEX PAK* 52 <input type="checkbox"/> FEDEX PAK* 13 <input type="checkbox"/> FEDEX BOX 53 <input type="checkbox"/> FEDEX BDX 14 <input type="checkbox"/> FEDEX TUBE 54 <input type="checkbox"/> FEDEX TUBE		1 <input type="checkbox"/> HOLD FOR PICK-UP (Fill in Box #) 2 <input checked="" type="checkbox"/> DELIVER WEEKDAY 3 <input type="checkbox"/> DELIVER SATURDAY (Extra charge) (Not available to all locations) 4 <input type="checkbox"/> DANGEROUS GOODS (Extra charge) (CSS not available for Dangerous Goods Shipments) 5 <input type="checkbox"/> CONSTANT SURVEILLANCE SVC. (CSS) (Extra charge) (Release Signature Not Applicable) 6 <input type="checkbox"/> DRY ICE Lbs. 7 <input type="checkbox"/> OTHER SPECIAL SERVICE 8 <input type="checkbox"/> 9 <input type="checkbox"/> SATURDAY PICK-UP (Extra charge) 10 <input type="checkbox"/> 11 <input type="checkbox"/> HOLIDAY DELIVERY (if offered) (Extra charge) 12 <input type="checkbox"/>		Total Total Total		DIM SHIPMENT (Heavyweight Services Only) <input type="checkbox"/> lbs.		Received At: 1 <input type="checkbox"/> Regular Stop 4 <input type="checkbox"/> Drop Box 2 <input type="checkbox"/> On-Call Stop 5 <input type="checkbox"/> Station		Emp. No. Date		<input type="checkbox"/> Cash Received <input type="checkbox"/> Return Shipment <input type="checkbox"/> Third Party <input type="checkbox"/> Chg. To Del. <input type="checkbox"/> Chg. To Hold Street Address City State Zip Received By Date/Time Received FedEx Employee Number		Base Charges Declared Value Charge Other 1 Other 2 Total Charges REVISION DATE 11/89 PART # 119501 FXEM 2/90 FORMAT #014 014 © 1989 F.E.C. PRINTED IN U.S.A.			

RECEIVED

The Times

Published Weekly on Wednesday

THE TRIBUNE

Published Weekly on Wednesday

SEP 26 1991 STAR-ADVOCATE

Published Weekly on Wednesday

Division of Air Resources Management



Published Daily

STATE OF FLORIDA COUNTY OF BREVARD

Before the undersigned authority personally appeared Sandra N. Thomas who on oath says that he/she is Legal Advertising Clerk of the FLORIDA TODAY, a newspaper published in Brevard County, Florida; that the attached copy of advertising being a Notice of Intent

Department of Environmental Regulation / permit #'s (AC-05-146750 and Ac-05-146751)

was published in the FLORIDA TODAY NEWSPAPER

in the issues of September 24, 1991

Affiant further says that the said FLORIDA TODAY NEWSPAPER

is a newspaper published in said Brevard County, Florida and that the said newspaper has heretofore been continuously published in said Brevard County, Florida regularly as stated above,

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

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

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

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

this advertisement for publication in said newspaper.

Sandra N. Thomas (signature)

Sworn and subscribed to before me this

24 day of SEPTEMBER A.D., 19 91

(signature)

My Commission Expires March 29, 1992

Proposed action: (f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and (g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action. If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this Notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C. The application is available for public inspection during business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

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

Department of Environmental Regulation Central District 3319 Maguire Boulevard Suite 232 Orlando, FL 32803-3767

Any person may send written comments on the proposed action to Mr. Barry Andrews at the Department's Tallahassee address. All comments received within 30 days of the publication of this notice will be considered in the Department's final determination.

Further, a public hearing can be requested by any person. Such requests must be submitted within 30 days of this notice.

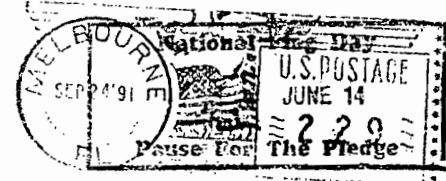
TO-10242-17-9/24/1991 Tuesday, September 24, 1991 State of Florida Department of Environmental Regulation Notice of Intent to Issue The Department of Environmental Regulation hereby gives notice of its intent to amend two of the existing PSD construction permits (AC-05-146750 and AC-05-146751) to permit Orlando Utilities Commission, 500 South Orange Avenue, Orlando, Orange County, Florida 32802, to construct and operate two 129 MW simple cycle gas turbine generators at its Indian River Plant in Brevard County. A determination of Best Available Control Technology (BACT) was required. The maximum predicted increases in ambient concentrations for carbon monoxide (CO), nitrogen oxides (NOx) and particulate matter (both TSP and PM10) for all averaging times are less than significant in the Class II area surrounding the plant, thus no increment consumption was calculated. The highest, second-highest, 3-hour, and 24-hour, and maximum annual average impacts for SO2 are 2.7, 6.5, and 0.1 ug/m3, respectively. The 3-hour and annual average values are below their respective significant levels of 25 and 1.0 ug/m3. The 24-hour SO2 significant impact area was modeled to be 600 meters. Eighteen percent (16.2 ug/m3) of the total 24-hour SO2 PSD Class II increment (91 ug/m3) was consumed within the significant impact area. The Department is issuing this intent to issue for the reasons stated in the Technical Evaluation and Preliminary Determination. A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road Tallahassee, Florida 32399-2400 within fourteen (14) days of publication of this notice. Petitioners shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, Florida Statutes. The Petition shall contain the following information: (a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the County in which the project is proposed; (b) A statement of how and when each petitioner received notice of the Department's action or proposed action; (c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action; (d) A statement of the material facts disputed by Petitioner, if any; (e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action.

cc: P. & J. Lewis C. Holladay C. Collins Collier J. Harper, EPA

FLORIDA TODAY/USA TODAY

P.O. Box 363000
Melbourne, Florida 32936-3000

G2



Patty

~~Preston Lewis~~

Florida Department of Environmental Regulation
2600 Blair Stone Rd
Tallahassee, Fl 32399-2400

Fold at line over top of envelope to the right
of the return address

CERTIFIED

P 527 807 057

MAIL



RECEIVED



Published Daily

FD-108241-11-1774C, PPT, T, 10/81

STATE OF FLORIDA
COUNTY OF BREVARD

Before the undersigned authority personally appeared Sandra N. Thomas who on oath says that he/she is Legal Advertising Clerk of the FLORIDA TODAY, a newspaper published in Brevard County, Florida; that the attached copy of advertising being a Notice of Intent

in the matter of Department of Environmental Regulation / permit #'s (AC-05-146750 and AC-05-146751) in the _____ Court

was published in the FLORIDA TODAY NEWSPAPER in the issues of September 24, 1991

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

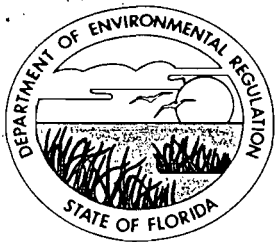
Sandra N. Thomas
Sworn and subscribed to before me this

cc: P. Lewis
C. Holladay
E. Collins, Chief
Q. Harper, EPA

24 day of SEPTEMBER, 19 91

Clayton K. Smith
Notary Public
State of Florida at Large
My Commission Expires March 29, 1992

State of Florida
Department of
Environmental Regulation
Notice of Intent to Issue
The Department of Environ-
mental Regulation hereby gives
notice of its intent to amend two
of the existing PSD construction
permits (AC-05-146750 and AC-
05-146751) to permit Orlando
Utilities Commission, Inc. South
Orange Avenue, Orlando, Orange
County, Florida, 32803, to con-
struct and operate two 179 MW
simple cycle gas turbine generat-
ors at its Indian River Plant in
Brevard County. A determination
of Best Available Control Tech-
nology (BACT) was required. The
maximum particulate increases in
ambient concentrations for car-
bon monoxide (CO), nitrogen ox-
ides (NOx) and particulate mat-
ter (both TSP and PM10) by all
existing units are less than
significant in the Class II area
surrounding the plant. Thus no in-
cremental contribution was calcu-
lated. The Federal, secondary, and
maximum ambient average im-
pacts for SO2 are 27.3, 2.3, and 0.2
micrograms per cubic meter. The
total annual average values are
below their respective significant
levels of 35 and 1.0 micrograms.
The 24-hour SO2 significant level
area was reduced to be ad-
hered to, eighteen percent (18.2
micrograms) of the total 24-hour
PSD Class II increment
(11.6 micrograms) and compared with
the significant level area. The
Department is issuing this intent
to issue for the reasons stated in
the Technical Evaluation and
Preliminary Determination.
A person whose substantial
interests are affected by the
Department's proposed permis-
sion decision may petition for an
administrative proceeding there-
in accordance with section
120.37, Florida Statutes. The peti-
tion must contain the information
set forth below and must be filed
(received) in the Office of
General Counsel of the Depart-
ment at 300 West State Road,
Tallahassee, Florida 32309-3000,
within fourteen (14) days of pub-
lication of this notice. Petitioner
shall send a copy of the petition to
the applicant at the address indi-
cated above at the time of filing.
Failure to file a petition within
this time period shall constitute a
waiver of any right such person
may have to request an adminis-
trative determination (hearing)
under section 120.37, Florida
Statutes.
The Petition shall contain the
following information:
(a) The name, address, and
telephone number of each peti-
tioner; the applicant's name
and address; the Department's
permit file number and the
County in which the project is
located.
(b) A statement of how and
when each petitioner received
notice of the Department's ac-
tion or proposed action.
(c) A statement of how each
petitioner's substantial inter-
ests are affected by the Depart-
ment's action or proposed
action.
(d) A statement of the material
facts claimed by petitioner, if
any.
(e) A statement of facts which
petitioner contends warrant re-
versal or modification of the
Department's action or pro-
posed action.
(f) A statement of which rules
or statutes petitioner contends
require reversal or modifica-
tion of the Department's action
or proposed action; and
(g) A statement of the relief
sought by petitioner, stating
precisely the action petitioner
wants the Department to take
with respect to the Depart-
ment's action or proposed
action.
If a petition is filed, the admin-
istrative hearing process is de-
termined by the agency ac-
tively. Accordingly, the
Department's final action may be
different from the position taken
by it in this Notice. Persons
whose substantial interests will
be affected by any decision of the
Department with respect to the
application have the right to peti-
tion to require a hearing to the pro-
ceeding. The petition must con-
tain the requirements
specified above and be filed (re-
ceived) within 14 days of publica-
tion of this notice in the Office of
General Counsel at the above ad-
dress of the Department. Failure
to petition within the allowed time
frame constitutes a waiver of any
right such person has to request a
hearing under section 120.37,
F.S., and to participate as a party
in the proceeding. Any subse-
quent intervention will only be at
the approval of the presiding offi-
cer upon motion filed pursuant to
Rule 30-1.02, P.A.C.
The application is available for
public inspection during business
hours, 9:00 a.m. to 5:00 p.m.,
Monday through Friday, except
local holidays, at:
Department of
Environmental Regulation
Bureau of Air Regulation
300 West State Road
Tallahassee, FL 32309-3000
Department of
Environmental Regulation
Central District
1271 Alapaha Boulevard
Suite 122
Orlando, FL 32803-3747
Any person may send written
comments on the proposed ac-
tion to Mr. Barry Anderson at
the Department's Tallahassee
address. All comments re-
ceived within 30 days of the
publication of this notice will be
considered in the Department's
final determination.
Further, a public hearing can
be requested by any person.
Such requests must be sub-
mitted within 30 days of this
notice.



Florida Department of Environmental Regulation

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

Lawton Chiles, Governor

Carol M. Browner, Secretary

September 20, 1991

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

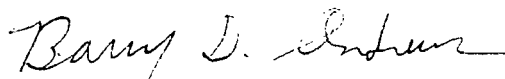
Mr. J. S. Crall
Orlando Utilities Commission
500 South Orange Avenue
P.O. Box 3193
Orlando, Florida 32802

Re: Four-unit Combustion Turbine Facility at Indian River Plant
AC 05-193720 and PSD-FL-173 Units C and D

Dear Mr. Crall:

Attached is the CORRECTED page from the BACT which you asked to be modified in order to clarify the capacity factors when firing natural gas and fuel oil. You will also notice that we have corrected the copies distribution list and provided the Central District, Alan Zahn, a copy of the Technical Evaluation and Preliminary Determination.

Sincerely,



for C. H. Fancy, P.E.

Chief

Bureau of Air Regulation

CHF/PL/gpl

Attachments

c: Alan Zahn, Central District
Jewell Harper, EPA
S. M. Day, P. E., B&V



SENDER:

- Complete items 1 and/or 2 for additional services.
- Complete items 3 and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece next to the article number.

I also wish to receive the following services (for an extra fee):

1 Addressee's Address

2 Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Mr. J. S. Crall
Orlando Utilities Commission
500 South Orange Avenue
P. O. Box 3193
Orlando, FL 32802

4a. Article Number:
P 832 538 678

4b. Service Type:
 Registered Insured
 Certified COD
 Express Mail Return Receipt for Merchandise

7. Date of Delivery:

5. Signature (Addressee):

6. Signature (Agent):
J. Sylvester


8. Addressee's Address (Only if requested and fee is paid):

PS Form 3811, October 1990 U.S. GPO: 1990-273-861 **DOMESTIC RETURN RECEIPT**



P 832 538 678

Certified Mail Receipt
No Insurance Coverage Provided
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Sent to
Mr. J. S. Crall, OUC
Street & No.
P. O. Box 3193
P.O., State & ZIP Code
Orlando, FL 32802

Postage	\$
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Special Delivery Fee	
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Return Receipt Showing to Whom, Date, & Address of Delivery	
TOTAL Postage & Fees	\$
Postmark or Date	

Mailed: 9-20-91
Permit: AC05-193720
PSD-FL-173

PS Form 3800, June 1990



Florida Department of Environmental Regulation

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

Lawton Chiles, Governor

Carol M. Browner, Secretary

September 9, 1991

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. J. S. Crall
Orlando Utilities Commission
500 South Orange Avenue
P.O. Box 3193
Orlando, Florida 32802

Re: Four-Unit Combustion Turbine Facility at Indian River Plant
AC 05-193720 and PSD-FL-173 Units C and D

Dear Mr. Crall:

Attached is one copy of the Technical Evaluation and Preliminary Determination and proposed amendment for two of the existing PSD construction permits (AC 05-146750 and AC 05-146751) to permit construction and operation of two 129 MW simple cycle gas turbines.

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

Sincerely,

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

CHF/PL/sas

Attachments

~~ALAN ZAHM, CENTRAL DISTRICT~~
c: ~~Harry Kerns, SWD~~
Jewell Harper, EPA
S. M. Day, P.E., B&V

P 832 538 947



Certified Mail Receipt
 No Insurance Coverage Provided
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PS Form 3800 June 1990

Sent to <i>J. S. Crall</i>	
Street & No. <i>OWC</i>	
P.O., State & ZIP Code <i>Orlando, FL</i>	
Postage	\$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Address of Delivery	
TOTAL Postage & Fees	\$
Postmark or Date <i>9-10-91</i> <i>AC 05-193720</i> <i>P50-FL-173</i> <i>Unit C & D</i>	

SENDER: Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.

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

1. Show to whom delivered, date, and addressee's address. 2. Restricted Delivery
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3. Article Addressed to
Mr. J. S. Crall
Orlando Utilities Comm.
500 S. Orange Ave.
P.O. BOX 3193
Orlando, FL 32802

4. Article Number
P 832 538 947

Type of Service:
 Registered Insured
 Certified COD
 Express Mail

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature - Addressee
 X

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

6. Signature - Agent
X J. E. Elyester



7. Date of Delivery

BEFORE THE STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

In the Matter of
Application for Permit by:

Orlando Utilities Commission
500 South Orange Avenue
P.O. Box 3193
Orlando, Florida 32802

DER File No. AC 05-193720
PSD-FL-173

INTENT TO ISSUE

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

The applicant, Orlando Utilities Commission-Indian River Plant, applied on March 7, 1991, to the Department of Environmental Regulation for an amendment for two of its existing PSD construction permits (AC-05-146750 and AC-05-146751) to construct two 129 MW simple cycle gas turbine generators.

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

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

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

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

The Petition shall contain the following information:

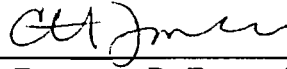
- (a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;
- (b) A statement of how and when each petitioner received notice of the Department's action or proposed action;
- (c)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

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

to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

Executed in Tallahassee, Florida

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION



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

Copies furnished to:
Harry Kerns, SWD
Jewell Harper, EPA
S. M. Day, P.E., B&V

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this NOTICE OF INTENT TO ISSUE and all copies were mailed before the close of business on 9-10-91.

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



Clerk

9-10-91
Date

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

The Department of Environmental Regulation hereby gives notice of its intent to amend two of the existing PSD construction permits (AC-05-146750 and AC-05-146751) to permit Orlando Utilities Authority-Indian River Plant, 500 South Orange Avenue, Orlando, Brevard County, Florida 32802, to construct and operate two 129 MW simple cycle gas turbine generators. A determination of Best Available Control Technology (BACT) was required. The maximum predicted increases in ambient concentrations for carbon monoxide (CO), nitrogen oxides (NO_x) and particulate matter (both TSP and PM₁₀) for all averaging times are less than significant in the Class II area surrounding the plant, thus no increment consumption was calculated. The highest, second-highest 3-hour and 24-hour, and maximum annual average impacts for SO₂ are 22.7, 6.5, and 0.4 ug/m³, respectively. The 3-hour and annual average values are below their respective significant levels of 25 and 1.0 ug/m³. The 24-hour SO₂ significant impact area was modeled to be 600 meters. Eighteen percent (16.2 ug/m³) of the total 24-hour SO₂ PSD Class II increment (91/ug/m³) was consumed within the significant impact area. The Department is issuing this Intent to Issue for the reasons stated in the Technical Evaluation and Preliminary Determination.

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

The Petition shall contain the following information:

(a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;

(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;

(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;

(d) A statement of the material facts disputed by Petitioner, if any;

(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;

(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and

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

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

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

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

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

Any person may send written comments on the proposed action to Mr. Barry Andrews at the Department's Tallahassee address. All comments received within 30 days of the publication of this notice will be considered in the Department's final determination.

Further, a public hearing can be requested by any person. Such requests must be submitted within 30 days of this notice.

Technical Evaluation
and
Preliminary Determination

Orlando Utilities Commission-Indian River Plant
Titusville, Florida

Two 129 MW Simple Cycle Gas Turbine Systems

Permit Number: AC 05-193720
PSD-FL-173

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

September 9, 1991

SYNOPSIS OF APPLICATION

I. NAME AND ADDRESS OF APPLICANT

Orlando Utilities Commission
500 South Orange Avenue
Orlando, Florida 32802

II. REVIEWING AND PROCESS SCHEDULE

Date of Receipt of Application: March 7, 1991.

1st Incompleteness Review: Department letter dated April 5, 1991.

Response to 1st Incompleteness Letter: Company letter dated May 9, 1991.

2nd Incompleteness Review: Department letter dated June 7, 1991.

Response to 2nd Incompleteness Letter: Company letter dated June 17, 1991.

Application Completeness Date: June 19, 1991.

III. FACILITY INFORMATION

III.1 Facility Location

This facility is located adjacent to the Indian River, approximately 3 kilometers south of the John F. Kennedy Space Center near the City of Titusville, Brevard County, Florida. The UTM coordinates are 521.5 km East and 3,151.6 km North.

III.2 Facility Identification Code (SIC)

Major Group No. 49 - Electric, Gas and Sanitary Services.

Industry Group No. 493 - Combination Electric, Gas, and Other Utility Services.

Industry Group No. 4931 - Electric and Other Services Combined.

III.3 Facility Category

The Orlando Utilities Commission-Indian River Power Plant is classified as a major emitting facility. The proposed additions of Units C and D will emit approximately 591.5 (gas) and 506 (oil) tons per year (TPY) of nitrogen oxides (NO_x), 2.1 (gas) and 953 (oil) TPY of sulfur dioxide (SO₂), 19.5 (gas) and 237 (oil) TPY of particulate matter (PM), 37 (gas) and 112 (oil) TPY of volatile

organic compounds (VOC), 0.01 (oil) TPY of beryllium, 0.08 (oil) TPY of lead, 0.01 (oil) TPY of mercury, and 28.5 (oil) TPY of sulfuric acid mist. The above emissions are based upon 50% capacity factor for firing natural gas and 25% capacity factor for firing No. 2 fuel oil (0.3% maximum sulfur, by weight).

IV. PROJECT DESCRIPTION

The Orlando Utilities Commission-Indian River Power Plant proposes to amend two of its existing PSD construction permits (AC-05-146750 and AC-05-146751) to permit construction and operation of two 129 MW simple cycle gas turbine systems. The units will be located at the Indian River Power Plant. The combustion turbines (CT) will be capable of generating approximately 129 MW each while operating in simple cycle. The primary fuel will be natural gas and No. 2 fuel oil with a maximum sulfur content of 0.3 percent, by weight.

V. RULE APPLICABILITY

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

The plant is located in an area designated attainment for all criteria pollutants in accordance with F.A.C. Rule 17-2.420.

The proposed project will be reviewed under F.A.C. Rule 17-2.500, Prevention of Significant Deterioration (PSD), because it will be a major modification to a major facility. This review consists of a determination of Best Available Control Technology (BACT) and unless otherwise exempted, an analysis of the air quality impact of the increased emissions. The review also includes an analysis of the project's impacts on soils, vegetation and visibility; along with air quality impacts resulting from associated commercial, residential and industrial growth.

This source shall comply with the New Source Performance Standards for Gas Turbines, Subpart GG, Appendix A, which is contained in 40 CFR 60, and is adopted by reference in F.A.C. Rule 17-2.660. The proposed source shall also comply with applicable provisions of F.A.C. Rule 17-2.700, Stack Test Procedures, and F.A.C. Rule 17-2.630, Best Available Control Technology.

VI. SOURCE IMPACT ANALYSIS

VI.1 Emission Limitations

The operation of the simple cycle combustion turbines will produce emissions of NO_x , SO_2 , CO, HC, sulfuric acid mist, PM, PM_{10} , Be, Pb, and Hg. The impact of these pollutant emissions are below the Florida ambient air quality standards (AAQS) and/or the acceptable ambient concentration levels (AAC). Table 1 lists each

contaminant and its maximum expected emission rate, along with the proposed increase of emissions.

VI.2 Air Toxics Evaluation

The operation of this source will produce emissions of chemical compounds that may be toxic in high concentrations. The emission rates of these chemicals shall not create ambient concentrations greater than the acceptable ambient concentrations (AAC) as shown below. Determination of the AAC for these organic compounds shall be determined by Department approved dispersion modeling or ambient monitoring.

$$\text{AAC} = \frac{\text{OEL}}{\text{Safety Factor}}$$

where

AAC = acceptable ambient concentration

Safety Factor = 50 for category B substances and 8 hr/day
100 for category A substances and 8 hr/day
210 for category B substances and 24 hr/day
420 for category A substances and 24 hr/day

OEL = Occupational exposure level such as ACGIH, ASHA, and NIOSH published standards for toxic materials.

MSDS = Material Safety Data Sheets

VI.3 Air Quality Analysis

a. Introduction

The operation of the two proposed 129 MW simple cycle gas turbine systems will result in emissions increases which are projected to be greater than the PSD significant emission rates for the following pollutants: CO, NO_x, SO₂, PM, PM₁₀, Be, VOCs, and H₂SO₄ mist. Therefore, the project is subject to the PSD review requirements contained in F.A.C. Rule 17-2.500 for these pollutants. Part of these requirements is an air quality impact analysis for these pollutants, which includes:

- o An analysis of existing air quality;
- o A PSD increment analysis (for SO₂, PM, and NO_x);
- o An ambient Air Quality Standards analysis (AAQS) (for SO₂, PM₁₀, NO_x, CO, and VOC);
- o An analysis of impacts on soils, vegetation, visibility and growth-related air quality impacts; and
- o A Good Engineering Practice (GEP) stack height determination.

The analysis of existing air quality generally relies on preconstruction monitoring data collected in accordance with EPA-approved methods. The PSD increment and AAQS analyses are based on air quality dispersion modeling completed in accordance with EPA guidelines.

Based on these required analyses, the Department has reasonable assurance that the simple cycle gas turbine systems, as described in this report and subject to the conditions of approval proposed herein, will not cause or contribute to a violation of any PSD increment or ambient air quality standard. A brief description of the modeling methods used and results of the required analyses follow. A more complete description is contained in the permit application on file.

b. Analysis of the Existing Air Quality

Preconstruction ambient air quality monitoring may be required for pollutants subject to PSD review. However, an exemption to the monitoring requirement can be obtained if the maximum air quality impact resulting from the projected emissions increase, as determined through air quality modeling, is less than a pollutant-specific de minimus concentration. The predicted maximum concentration increase for each pollutant subject to PSD review is given below:

	CO	SO ₂	TSP & PM ₁₀	NOx	Be
PSD de minimus Concentration (ug/m ³)	575	13	10	14	0.001
Averaging Time	8-hr	24-hr	24-hr	Annual	24-hr
Maximum Predicted Impact (ug/m ³)	1.2	6.5	1.6	0.3	4.5E-5

There are no monitoring de minimus concentrations for H₂SO₄ mist. As shown above, the predicted impacts are all less than the corresponding de minimus concentrations; therefore, no preconstruction monitoring is required for any pollutant.

c. Modeling Method

The EPA-approved Industrial Source Complex Short-Term (ISCST) dispersion model was used by the applicant to predict the impact of the proposed project on the surrounding ambient air. All recommended EPA default options were used. Direction-specific downwash parameters were used because the stacks were less than the good engineering practice (GEP) stack height. Five years of sequential hourly surface data from the Orlando, Florida National

Weather Service (NWS) station and mixing depth data from the Tampa, Florida NWS station collected during 1981 through 1985, were used in the model. Since five years of data were used, the highest-second-high short-term predicted concentrations are compared with the appropriate ambient air quality standards or PSD increments. For the annual averages, the highest predicted yearly average was compared with the standards.

For this project, emissions from fuel oil burning are significantly higher than those from natural gas combustion, while the gas flow characteristics are fairly similar, thus resulting in higher predicted ground level-pollutant impacts from fuel oil combustion. All modeling impacts were, therefore, based on fuel oil consumption.

d. Modeling Results

The applicant first evaluated the potential increase in ambient ground-level concentrations associated with the project to determine if these predicted ambient concentration increases would be greater than specified PSD significant impact levels for CO, SO₂, NO_x, PM, and PM₁₀. Dispersion modeling was performed with receptors placed along the 36 standard radial directions (10 degrees apart) surrounding the proposed source at the following downwind distances: 100 meter intervals from 200 to 600 meters, 250 meter intervals from 750 to 1,000 meters, 500 meter intervals from 1,500 to 5,000 meters, and 1,000 meter intervals from 6,000 meters to 15,000 meters. An additional ring was placed at 20,000 meters. Rings were placed out to 10,000 meters for the CO analysis. In addition to these rings, discrete receptors were spaced at 100 meter intervals along the fence line. The results of this modeling presented below show that the increases in ambient ground-level concentrations for all averaging times are less than the PSD significant impact levels for CO, NO_x, PM, and PM₁₀.

<u>Pollutant</u>	<u>Averaging Time</u>	<u>PSD Significance Level (ug/m³)</u>	<u>Ambient Concentration Increase (ug/m³)</u>
CO	8-hour	500	1.2
	1-hour	2000	8.1
SO ₂	Annual	1.0	0.4
	3-hour	25.0	22.7
	24-hour	5.0	6.5
NO ₂	Annual	1.0	0.3
PM/PM ₁₀	Annual	1.0	0.1
	24-hour	5.0	1.6

Therefore, further dispersion modeling for comparison with AAQS and PSD increment consumption were not required for CO, NO₂,

PM, or PM₁₀. The results also showed that increases in SO₂ 24-hour ground-level impacts are above PSD significance levels.

The modeling demonstrated that the SO₂ 24-hour significant impact area extends to a radial distance of 600 meters.

Modeling with interacting sources demonstrated that the maximum consumption of the PSD Class II 24-hour SO₂ increment will be 16.2 ug/m³, or 18 percent of the increment. The maximum 24-hour SO₂ impact from all modeled interacting sources was predicted to be 88.7 ug/m³, or 51 percent of the ambient air quality standard. Based on these modeling results, the impacts from the proposed facility will not violate any of the Class II increments.

The applicant modeled emissions from the noncriteria regulated pollutants. Although no air quality standards have been defined under PSD rules, the impacts from the noncriteria pollutants were compared with Department-derived de minimus concentration levels (AAC). The calculated value for Be is 3.0E-6 ug/m³, annual average, which is less than the de minimus level of 0.0004 ug/m³, annual average, while the calculated value for Hg is 0.00005 ug/m³, 24-hour average, which is less than the de minimus level of 0.024 ug/m³, 24-hour average. There is no significant impact level or de minimus level for sulfuric acid mist (H₂SO₄). However, H₂SO₄ predicted impacts are conservatively estimated by the 8-hour average CO modeled impact. This estimate for H₂SO₄ is much less than the acceptable ambient concentration as defined by the Department. Based on this result, no additional monitoring was required for this pollutant.

The nearest PSD Class I area is the Chassahowitzka Wilderness Area, located along the west coast of Florida, approximately 175 kilometers from the Project site. Because the Class I area is located more than 100 kilometers from the site, no PSD Class I increment consumption analysis was necessary.

e. Additional Impacts Analysis

The increased emissions at the Indian River Power Plant are not expected to affect the visibility in the Chassahowitzka National Wilderness area located 175 km away because of the very small maximum predicted impacts. Because the impacts from the proposed pollutants are predicted to be less than PSD significance levels, no harmful effects on soils and vegetation are expected. In addition, the proposed modification will not significantly change employment, population, housing or commercial/industrial development in the area to the extent that a significant air quality impact will result.

VII. CONCLUSION

Based on the information provided by the Orlando Utilities Commission Indian River Plant, the Department has reasonable assurance that the proposed installation of the two 129 MW simple cycle gas turbines, as described in this evaluation, and subject to the conditions proposed herein, will not cause or contribute to a violation of any air quality standard, PSD increment, or any other technical provision of Chapter 17-2 of the Florida Administrative Code.

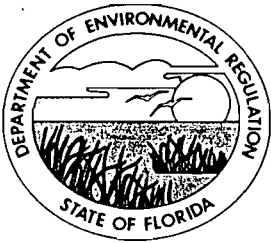
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41755- 9/9/91

VII. CONCLUSION

Based on the information provided by the Orlando Utilities Commission Indian River Plant, the Department has reasonable assurance that the proposed installation of the two 129 MW simple cycle gas turbines, as described in this evaluation, and subject to the conditions proposed herein, will not cause or contribute to a violation of any air quality standard, PSD increment, or any other technical provision of Chapter 17-2 of the Florida Administrative Code.

P. Poutelant
#4117
9/2/01





Florida Department of Environmental Regulation

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

Lawton Chiles, Governor

Carol M. Browner, Secretary

PERMITTEE:
Orlando Utilities Commission
500 South Orange Avenue
P.O. Box 3193
Orlando, Florida 32802

Permit Number: AC 05-193720
Expiration Date: Dec. 31, 1992
County: Brevard
Latitude/Longitude: 28°29'32" N
80°46'59" W
Project: Two 129 MW Simple Cycle
Gas Turbines

The amendments to existing PSD construction permits AC-05-146750 and AC-05-146751 are issued under the provisions of Chapter 403, Florida Statutes, and permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawings, plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

For the construction of two 129 MW simple cycle gas turbines, to be located at the Orlando Utility Commission-Indian River Power Plant near Titusville, Florida. The UTM coordinates are 521.5 km East and 3151.65 km North.

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

Attachments:

1. Orlando Utilities Commission-Indian River Power Plant's application dated March 7, 1991.
2. Department's letter dated April 5, 1991.
3. Orlando Utilities Commission's (OUC) letter dated May 9, 1991.
4. Department's letter dated June 7, 1991.
5. OUC's letter dated June 17, 1991.
6. Department's letter dated June 19, 1991.

PERMITTEE:
Orlando Utilities Commission

Permit Number: AC 05-193720
PSD-FL-173
Expiration Date: Dec. 31, 1992

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

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

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

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

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

PERMITTEE:
Orlando Utilities Commission

Permit Number: AC 05-193720
PSD-FL-173
Expiration Date: Dec. 31, 1992

GENERAL CONDITIONS:

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

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

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

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

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

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

PERMITTEE:
Orlando Utilities Commission

Permit Number: AC 05-193720
PSD-FL-173
Expiration Date: Dec. 31, 1992

GENERAL CONDITIONS:

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

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

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

11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 17-4.120 and 17-30.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

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

13. This permit also constitutes:

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

14. The permittee shall comply with the following:

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

PERMITTEE:
Orlando Utilities Commission

Permit Number: AC 05-193720
PSD-FL-173
Expiration Date: Dec. 31, 1992

GENERAL CONDITIONS:

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

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 corrected promptly.

SPECIFIC CONDITIONS:

Emission Limits

1. The maximum allowable emissions from this facility shall not exceed the emission rates listed in Table 1.
2. Unless the Department has determined other concentrations are required to protect public health and safety, predicted acceptable ambient air concentrations (AAC) of the following pollutants shall not be exceeded:

PERMITTEE:
Orlando Utilities Commission

Permit Number: AC 05-193720
PSD-FL-173
Expiration Date: Dec. 31, 1992

SPECIFIC CONDITIONS:

<u>Pollutant</u>	<u>Acceptable Ambient Concentrations ug/m³</u>		
	<u>8- hr</u>	<u>24-hr</u>	<u>Annual</u>
Beryllium	0.02	0.005	0.004
Lead	1.5	0.36	0.09
Inorganic Mercury Compounds all forms of Vapor, as Hg	NA	NA	0.3

3. Visible emissions shall not exceed 20 percent opacity at anytime nor exceed 10% during full load.

Operating Rates

4. This source is allowed to operate continuously (4,380 hours per years).

5. This source is allowed to use natural gas as the primary fuel and No. 2 distillate oil as the secondary fuel (limited as shown in Specific Condition 6 below).

6. The permitted materials and utilization rates for each simple cycle gas turbine shall not exceed the values as follows:

- Maximum No. 2 fuel oil consumption shall not exceed either of the following limitations: 10,282 gals/hr; 22,517,580 gals/yr.
- Maximum annual firing using No. 2 fuel oil shall not exceed 2,190 hours per year.
- Maximum sulfur (S) content in the oil shall not exceed 0.30 percent by weight.
- Maximum heat input shall not exceed 1,354 MMBtu/hr (gas) or 1,346 MMBtu/hr (oil).
- Maximum annual firing on any fuel combination shall not exceed 4,380 hours per year.

7. Any change in the method of operation, equipment or operating hours shall be submitted to the DER's Bureau of Air Regulation office for approval.

PERMITTEE:
Orlando Utilities Commission

Permit Number: AC 05-193720
PSD-FL-173
Expiration Date: Dec. 31, 1992

SPECIFIC CONDITIONS:

8. Any other operating parameters established during compliance testing and/or inspection that will ensure the proper operation of this facility shall be included in the operating permit.

Compliance Determination

9. Compliance with the NO_x, SO₂ (oil), CO, and visible emission standards shall be determined by the following reference methods as described in 40 CFR 60, Appendix A (July 1, 1990) and adopted by reference in F.A.C. Rule 17-2.700.

Compliance Determination

- Method 1. Sample and Velocity Traverses
- Method 2. Volumetric Flow Rate
- Method 3. Gas Analysis
- Method 9. Determination of the Opacity of the Emissions from
- Method 10. Determination of the Carbon Monoxide Emission from Stationary Sources
- Method 20. Determination of Nitrogen Oxides, Sulfur Dioxide, and Diluent Emissions from Stationary Gas Turbines.

10. An initial compliance test shall be performed using both fuels. Annual NO_x compliance tests shall be performed with the fuel(s) used for more than 400 hours in the proceeding 12 month period.

11. Compliance with the SO₂ emission limit can also be determined by calculations based on fuel analysis using ASTM D2880-71 for the sulfur content of liquid fuels.

12. Compliance with the total volatile organic compound emission limits will be assumed, provided the CO allowable emission rate is achieved; specific VOC compliance testing is not required.

13. During performance tests, to determine compliance with the proposed NO_x standard, measured NO_x emission at 15 percent oxygen will be adjusted to ISO ambient atmospheric conditions by the following correction factor:

where

NO_x = Emissions of NO_x at 15 percent oxygen and ISO standard ambient conditions.

NO_{x obs} = Measured NO_x emission at 15 percent oxygen, ppmv.

P_{ref} = Reference combustor inlet absolute pressure at 101.3 kilopascals (1 atmosphere) ambient pressure.

PERMITTEE:
Orlando Utilities Commission

Permit Number: AC 05-193720
PSD-FL-173
Expiration Date: Dec. 31, 1992

SPECIFIC CONDITIONS:

Compliance Determination

- P_{obs} = Measured combustor inlet absolute pressure at test ambient pressure.
- H_{obs} = Specific humidity of ambient air at test.
- e = Transcendental constant (2.718).
- T_{AMB} = Temperature of ambient air at test.

14. Test results will be the average of 3 valid runs. The Central District office will be notified at least 30 days in advance of the compliance test. The source shall operate between 90 percent and 100 percent of permitted capacity during the compliance test. Compliance test results shall be submitted to the Central District office no later than 45 days after completion.

15. Water injection shall be utilized for NO_x control. The water to fuel ratio at which compliance is achieved shall be incorporated into the permit and shall be continuously monitored.

16. To determine compliance with the capacity factor limitations each CT's fuel consumption shall be continuously measured and recorded. The permittee shall maintain daily records of this fuel usage. All records shall be maintained for a minimum of three years after the date of each record and shall be made available to representatives of the Department upon request.

17. Sulfur, nitrogen content and lower heating value of the fuel being fired in the gas turbine shall also be recorded per fuel oil shipment. These records shall also be kept by the company for at least three years and made available for regulatory agency's inspection.

18. Compliance with the acceptable ambient concentrations for Be, Lead, and Hg emissions shall be demonstrated based on calculations certified by a Professional Engineer registered in Florida, using actual operating conditions. Determination of the ambient concentrations for chemical compounds shall be determined by Department approved dispersion modeling. This compliance determination shall be made available upon request.

Rule Requirements

19. This source shall comply with all applicable provisions of Chapter 403, Florida Statutes and Chapters 17-2 and 17-4, Florida Administrative Code.

PERMITTEE:
Orlando Utilities Commission

Permit Number: AC 05-193720
PSD-FL-173
Expiration Date: Dec. 31, 1992

SPECIFIC CONDITIONS:

20. This source shall comply with all requirements of 40 CFR 60, Subpart GG and F.A.C. Rule 17-2.660(2)(a), Standards of Performance for Stationary Gas Turbines.

21. Issuance of this permit does not relieve the facility owner or operator from compliance with any applicable federal, state, or local permitting requirements and regulations (F.A.C. Rule 17-2.210(1)).

22. This source shall comply with F.A.C. Rule 17-2.700, Stationary Point Source Emission Test Procedures.

23. Pursuant to F.A.C. Rule 17-2.210(2), Air Operating Permits, the permittee is required to submit annual reports on the actual operating rates and emissions from this facility. These reports shall include, but are not limited to the following: sulfur, nitrogen content and lower heating value of the fuel being fired, fuel usage, hours of operation, air emissions limits, etc. Annual reports shall be sent to the Department's Central District office.

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

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

Issued this _____ day
of _____, 1991

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

Carol M. Browner, Secretary

TABLE 1
ALLOWABLE EMISSION LIMITS
Simple Cycle Combustion Turbine

Pollutant	Standards		Gas Turbine		Basis
	Gas Firing/20 F	No. 2 Fuel Oil Firing/20 F	Tons Per Year*		
			Gas	Oil	
NO _x	25 ppm at 15% oxygen on a dry basis	42 ppmv at 15 percent oxygen on a dry basis	591.5	506	BACT
SO ₂	Natural gas as fuel	0.3 percent S by weight	2.1	953	BACT
PM/PM ₁₀	0.003 lb/MMBtu	0.08 lb/MMBtu	19.5	237	Performance Data
VOC	-	-	37	112	" "
CO	-	-	313	159	" "
Mercury (Hg)	-	3.0×10^{-6} lbs/MMBtu	-	0.01	Est. by Appl.
Lead (Pb)	-	2.8×10^{-5} lbs/MMBtu	-	0.03	" "
Beryllium (be)	-	2.5×10^{-6} lbs/MMBtu	-	0.01	" "
Sulfuric Acid Mist	Natural gas as fuel	Low sulfur content oil	0.05	28.5	" "

* Emissions rates for both turbines are based on a 50 percent capacity factor with a maximum of 25 percent attributed to oil firing.

Best Available Control Technology (BACT) Determination
Orlando Utilities Commission-Indian River Power Plant
Brevard County

The applicant proposes to install combustion turbine Units C and D at their Indian River facility. The generator systems will consist of two nominal 129 megawatt (MW) combustion turbines.

The combustion turbine will be capable of simple cycle operation. The applicant requested that the combustion turbine use either natural gas or distillate oil. The Department's calculations indicate the maximum annual tonnage of regulated air pollutants emitted from the facility based on 25 percent capacity factor for No. 2 fuel oil firing and 50 percent capacity factor for all fuels at peak load and ISO conditions to be as follows:

Pollutant	Potential Emissions (tons/year)						PSD Significant Emission Rate (tons/yr)
	Peak Load/20 F			Baseload/ISO			
	Natural Gas	Fuel Oil	Combine Fuels	Natural Gas	Fuel Oil	Combine Fuels	
	50% CF*	25% CF	25% CF for oil plus 25% CF for nat. gas	50% CF	25% CF	25% CF for oil plus 25% CF for nat. gas	
NO _x	591.5	506	801.8	534.5	440	707.3	40
SO ₂	2.1	953	954.1	2.5	839	840.3	40
PM	19.5	237	246.8	17.5	210	218.8	25
PM ₁₀	19.5	237	246.8	17.5	210	218.8	15
CO	313	159	315.5	287	159	302.5	100
VOC	37	112	130.5	39.5	101	120.8	40
H ₂ SO ₄	0.07	28.5	28.5	0.08	25	25	7
Be	0.0	0.01	0.01	0.0	0.01	0.01	0.0004
Hg	0.0	0.01	0.01	0.0	0.01	0.01	0.1
Pb	0.0	0.08	0.08	0.0	0.07	0.07	0.6

* CF = Capacity Factor

Florida Administrative Code Rule 17-2.500(2)(f)(3) requires a BACT review for all regulated pollutants emitted in an amount equal to or greater than the significant emission rates listed in the previous table.

Date of Receipt of a BACT Application

March 7, 1991

BACT Determination Requested by the Applicant

<u>Pollutant</u>	<u>Determination</u>
NO _x	25 ppmvd @ 15% O ₂ (natural gas burning) 42 ppmvd @ 15% O ₂ (diesel oil firing)
SO ₂	Firing of natural gas or No. 2 fuel oil with a maximum sulfur content of 0.30%
PM and PM ₁₀	Combustion control
H ₂ SO ₄	Firing of No. 2 fuel oil with a maximum sulfur content of 0.30%
Be	Firing of No. 2 fuel oil

BACT Determination Procedure

In accordance with Florida Administrative Code Chapter 17-2, Air Pollution, this BACT determination is based on the maximum degree of reduction of each pollutant emitted which the Department, on a case by case basis, taking into account energy, environmental and economic impacts, and other costs, determines is achievable through application of production processes and available methods, systems, and techniques. In addition, the regulations state that in making the BACT determination the Department shall give consideration to:

- (a) Any Environmental Protection Agency determination of Best Available Control Technology pursuant to Section 169, and any emission limitation contained in 40 CFR Part 60 (Standards of Performance for New Stationary Sources) or 40 CFR Part 61 (National Emission Standards for Hazardous Air Pollutants).
- (b) All scientific, engineering, and technical material and other information available to the Department.
- (c) The emission limiting standards or BACT determinations of any other state.
- (d) The social and economic impact of the application of such technology.

The EPA currently stresses that BACT should be determined using the "top-down" approach. The first step in this approach is to determine for the emission source in question the most stringent control available for a similar or identical source or source category. If it is shown that this level of control is technically or economically infeasible for the source in question, then the next most stringent level of control is determined and similarly

evaluated. This process continues until the BACT level under consideration cannot be eliminated by any substantial or unique technical, environmental, or economic objections.

The air pollutant emissions from simple cycle power plants can be grouped into categories based upon what control equipment and techniques are available to control emissions from these facilities. Using this approach, the emissions can be classified as follows:

- o Combustion Products (Particulates and Heavy Metals). Controlled generally by good combustion of clean fuels.
- o Products of Incomplete Combustion (CO, VOC, Toxic Organic Compounds). Controlled generally by proper combustion techniques.
- o Acid gases (SO_x, NO_x, HCl, F_l). Controlled generally by gaseous control devices.

Grouping the pollutants in this manner facilitates the BACT analysis because it enables the equipment available to control the type or group of pollutants emitted and the corresponding energy, economic, and environmental impacts to be examined on a common basis. Although all of the pollutants addressed in the BACT analysis may be subject to a specific emission limiting standard as a result of PSD review, the control of "nonregulated" air pollutants is considered in imposing a more stringent BACT limit on a "regulated" pollutant (i.e., particulates, sulfur dioxide, fluorides, sulfuric acid mist, etc.), if a reduction in "nonregulated" air pollutants can be directly attributed to the control device selected as BACT for the abatement of the "regulated" pollutants.

Combustion Products

The Orlando Utility Commission's projected emissions of particulate matter, PM₁₀, and beryllium surpass the significant emission rates given in Florida Administrative Code Rule 17-2.500, Table 500-2 for No.2 fuel oil firing only.

A PM/PM₁₀ emissions limitation of 0.08 lb/MMBtu for No. 2 fuel oil firing is reasonable as BACT for the Indian River facility.

In general, the BACT/LAER Clearinghouse does not contain specific emission limits for beryllium from turbines. BACT for these heavy metals is typically represented by the level of particulate control. As this is the case, the emission factor of 0.08 lb/MMBtu for particulate matter PM₁₀ is judged to also represent BACT for beryllium.

Products of Incomplete Combustion

The emissions of carbon monoxide and volatile organic compounds are each above the significant level and therefore require a BACT analysis.

Carbon monoxide and VOC are formed during the incomplete combustion of the fuel. High combustion temperatures, adequate excess air and good fuel/air mixing during combustion will minimize CO and VOC emissions. Therefore, NO_x control methods which use combustion staging and lowering combustion temperature by water injection, can be counterproductive with regard to CO and VOC emissions.

To achieve the proposed NO_x BACT levels requires that these control techniques be used. Therefore, this turbine design will have significantly higher CO and VOC emissions than associated with a standard combustor. At the proposed BACT NO_x emissions of 25/42 ppmvd (gas/oil), the turbine will be capable of maintaining CO and VOC emission rates of 25 ppmvd and 5 ppmvd, respectively while burning natural gas. For fuel oil firing, the CO and VOC emission rates will be 25 ppmvd and 15 ppmvd, respectively.

Based on a review of EPA's BACT/LAER Clearinghouse--A Compilation of Control Technology Determinations (1985 and 1990 editions), a combustion turbine with proper combustion control and an oxidizing catalyst that limits CO emissions to 2 ppmvd represents LAER. An oxidizing catalyst is also LAER technology for VOC emissions but the specific ppmvd emission rate was not specified in the clearinghouse document.

Catalytic reduction is a post-combustion method for controlling CO and VOC emissions. The process uses a precious metal to oxidize CO to CO₂ with the use of a catalyst and VOC hydrocarbons to CO₂ and H₂O. None of the catalyst components are considered toxic. The optimum flue gas temperature range for CO/VOC catalyst operation is between 850°F and 1,100°F. Flue gas from the combustion turbine will typically be between 950°F to 1,100°F. Therefore, a CO/VOC catalyst could be installed at the discharge of the combustion turbine.

The applicant states that the levelized annual cost for the catalyst system is about \$3.5 million/year. This system would reduce about 310 tons per year of CO/VOC at a 50% capacity factor. This reduction results in an incremental removal cost of approximately \$11,000 per ton of CO/VOC removed. This cost is well above that previously accepted as representative of BACT.

In addition, a CO/VOC catalyst located downstream of the combustion exhaust will create additional back pressure reducing output by approximately 600 KW per turbine.

Other Emissions

The project will emit trace quantities of other pollutants at levels which are below the significant emission levels established for the PSD program. Federal and state regulations do not require that BACT be applied for these pollutants but the effects of the proposed BACT determinations on these pollutants must be considered.

Other Regulated and Hazardous Pollutants

The emission rates for mercury, lead and hazardous pollutants, when firing No. 2 fuel oil, have been developed based on manufacturers' information and on information contained in the EPA publications Toxic Air Pollutant Emission Factors--A Compilation for Selected Air Toxic Compounds and Sources (EPA-450/2-88-006a).

The most reliable method of controlling these emissions are complete combustion and the inherent quality of the fuel. Injection of water into the turbines to control NO_x emissions has a significant effect on controlling these pollutants. Further control has been accomplished by using either a baghouse or scrubber.

Acid Gases

The emission of sulfur dioxide, nitrogen oxides, and sulfuric acid mist represents a significant proportion of the total emissions and need to be controlled, if deemed appropriate. Sulfur dioxide emissions from combustion turbines are directly related to the sulfur content of the fuel being combusted.

The applicant has proposed the use of natural gas and No. 2 fuel oil with a maximum sulfur content of 0.30 percent to control sulfur dioxide emissions. A review of the latest edition (1990) of the BACT/LAER Clearinghouse indicates that sulfur dioxide emissions from combustion turbines have been controlled by limiting fuel oil sulfur content to a range of 0.1 to 0.30 percent, with the average for the facilities listed being approximately 0.24 percent. As this is the case, the applicant's proposal to use No. 2 fuel oil with a maximum sulfur content of 0.30 percent is judged to represent BACT.

The applicant has stated that BACT for nitrogen oxides will be met using wet (water or steam) injection necessary to limit emissions to 42 ppmvd or 25 ppmvd at 15 percent oxygen when burning No. 2 fuel oil or natural gas, respectively.

A review of the EPA's BACT/LAER Clearinghouse indicates that the lowest NO_x emission limit established to date for a combustion turbine is 4.5 ppmvd at 15 percent oxygen. This level of control was accomplished through the use of water injection and a selective catalytic reduction (SCR) system contained within the heat recovery steam generator (combined cycle operation). A review of the EPA's BACT/LAER Clearinghouse also indicated that the lowest NO_x emission levels established to date for a combustion turbine operating in a simple cycle mode was the use of water or steam injection with an improved low NO_x burner design. The OUC Indian River project will operate in the simple cycle mode.

Selective catalytic reduction is a post-combustion method for control of NO_x emissions. The SCR process combines vaporized ammonia with NO_x in the presence of a catalyst to form nitrogen and

water. The vaporized ammonia is injected into the exhaust gases prior to passage through the catalyst bed. The SCR process can achieve up to 90 percent reduction of NOx with a new catalyst. As the catalyst ages, the maximum NOx reduction will decrease to approximately 86 percent. The optimum temperature range for an SCR is approximately 650 to 750 F. Flue gas from a combustion turbine operating in a simple cycle mode will typically be 950 F to 1,100 F. Therefore, the flue gas would have to be cooled prior to the injection of ammonia and to protect the catalyst from damage due to the high flue gas temperatures. SCR manufacturers are currently experimenting with a catalyst that can withstand the high flue gas temperatures associated with simple cycle operation. However, high temperature catalysts are still in a development stage and have not been demonstrated on full scale projects.

Given the applicant's proposed BACT level for nitrogen oxides control stated above, an evaluation can be made of the cost and associated benefit of using SCR as follows:

The applicant had indicated that the total levelized annual cost (operating plus amortized capital) to install SCR for natural gas firing at 50 percent capacity factor is \$3,840,000. For fuel oil firing at 25 percent capacity factor, the total levelized annual cost to install SCR is \$2,940,000. Taking into consideration the total levelized annual cost, a cost/benefit analysis of using SCR can now be developed.

Based on the information supplied by the applicant, it is estimated that the maximum annual NOx emissions with wet injection from the Indian River facility will be 707 tons/year while firing natural gas 25% and fuel oil 25% of the year. Assuming that the SCR would reduce the NOx emissions by an additional 80 to 85 percent, the SCR would control approximately 560 tons of NOx annually. When this reduction is taken into consideration with the total levelized annual cost of \$3,840,000, the cost per ton of controlling NOx is \$6,860. This cost is higher than has previously been approved as BACT.

Environmental Impact Analysis

The predominant environmental impacts associated with this proposal would be related to the use of SCR for NOx control. The use of SCR results in emissions of ammonia, which may increase with increasing levels of NOx control. In addition, some catalysts may contain substances which are listed as hazardous waste, thereby creating an additional environmental burden. Although the use of SCR does have some environmental impacts, the disadvantages normally do not outweigh the benefit which would be provided by reducing nitrogen oxide emissions by 80 percent.

In addition to the criteria pollutants, the impacts of toxic pollutants associated with the combustion of natural gas and No. 2 fuel oil have been evaluated. Beryllium for oil fired operation

exceeds PSD significance levels. Other toxics are expected to be emitted in minimal amounts, with the total emissions combined to be less than 0.1 tons per year.

Although the emissions of the toxic pollutants could be controlled by particulate control devices such as a baghouse or scrubber, the amount of emission reductions would not warrant the added expense. As this is the case, the Department does not believe that the BACT determination would be affected by the emissions of the toxic pollutants associated with the firing of natural gas or No. 2 fuel oil.

Potentially Sensitive Concerns

With regard to controlling NOx emission with SCR, the applicant has identified the following technical limitations:

1. SCR would reduce output of combustion turbines by one percent.
2. SCR could result in the release of unreacted quantities of ammonia to the atmosphere.
3. SCR would require handling of ammonia by plant operators. Since it is a hazardous material, there is concern about safety and productivity of operators.
4. SCR results in contaminated catalyst from flue gas trace elements which could be considered hazardous. Safety of operators and disposal of spent catalyst is a concern.

BACT Determination by DER

Nox Control

A review of permitting activities for simple cycle proposals across the nation indicates that water or steam injection with improved low NOx burner design is the predominant control technology that has been required. The cost and other concerns expressed by the applicant for using additional control measures are valid.

The information that the applicant presented and Department calculations indicate that the incremental cost of controlling NOx (\$6,860/ton) when firing natural gas (maximum 25%) and No. 2 fuel oil (maximum 25%) is high compared to other BACT determinations which require SCR. Based on the information presented by the applicant and the studies conducted, the

Department believes that the use of SCR for NOx control is not justifiable at this time as BACT. Therefore, the Department is willing to accept low NOx burner design with the firing of natural gas as the primary fuel.

SO2 Control

For sulfur dioxide, BACT is represented by firing natural gas (max. 25% CF) or No. 2 fuel oil (max. 25% CF) with an average sulfur content not to exceed 0.20 percent.

CO/VOC Control

Based on the additional cost of using an oxidation catalyst (cost \$11,000/ton of reduction), energy (reduce by 600 KW) and environmental considerations, BACT is represented by good combustion controls to achieve 25 ppmvd for CO and 15 ppmvd VOC firing #2 fuel oil.

Other Emissions Control

The emission limitations for PM and PM10, are based on previous BACT determinations for similar facilities, with the heavy metal beryllium being addressed through the particulate limitation and sulfuric acid mist being addressed through the sulfur dioxide limitation.

The emission limits for the Orlando Utilities Commission project are thereby established as follows:

Pollutant	Emission Limit*	
	Natural Gas Firing	No. 2 Fuel Oil Firing
NOx	25 ppmvd @ 15% O ₂	42 ppmvd @ 15% O ₂
SO ₂	Natural gas as fuel	Sulfur content not to exceed 0.30%, by weight
PM & PM ₁₀	0.003 lb/MMBtu	0.08 lb/MMBtu
CO	25 ppmvd	25 ppmvd
VOC	5 ppmvd	15 ppmvd
Sulfuric Acid Mist	Emissions limited by firing natural gas and No. 2 fuel oil with 0.3% sulfur, by weight	
Beryllium	Emissions limited by firing natural gas and No. 2 fuel oil with 0.3% sulfur, by weight	

*Both turbines are limited to a maximum of 50% capacity factor with a maximum of 25% attributed to oil firing.

Details of the Analysis May be Obtained by Contacting:

Preston Lewis, P.E., BACT Coordinator
Department of Environmental Regulation
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Recommended by:

Approved by:

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

Carol M. Browner, Secretary
Dept. of Environmental Regulation

Date 1991

Date 1991



ORLANDO UTILITIES COMMISSION

500 SOUTH ORANGE AVENUE • P. O. BOX 3193 • ORLANDO, FLORIDA 32802 • 407/423-9100
VIA FEDERAL EXPRESS

August 9, 1991

Mr. G. Preston Lewis, P. E.
Review Engineer
Air Permitting and Standards Section
Florida Department of
Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Dear Mr. Lewis:

Pursuant to our telephone conversation, I am enclosing our suggestions in order to expedite processing of our PSD Permits for Units C and D (PSD-FL-173).

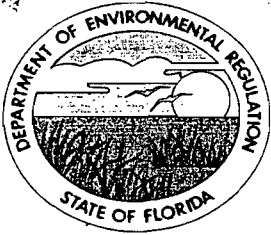
We appreciate your attention on this matter. Please call me at 407/423-9141 if you have questions or comments.

Very truly yours,

J. S. Crall
Director
Environmental Division

JSC:rc
Enclosure

cc: W. H. Herrington
F. F. Haddad
K. P. Ksionek
T. D. Slepow
S. M. Day



Florida Department of Environmental Regulation

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

Lawton Chiles, Governor

Carol M. Browner, Secretary

FAX TRANSMITTAL LETTER

DATE: 6/19/91

TO:

NAME: Jim ORALL

AGENCY: OUC

TELEPHONE: (407) 236-9616

OF PAGES (INCLUDE COVER SHEET): 2

FROM:

NAME: Director

AGENCY: DEA TALLAHASSEE

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SENDER'S NAME: Director

COMMENTS: Let me know -



Florida Department of Environmental Regulation

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

Lawton Chiles, Governor

Carol M. Browner, Secretary

June 19, 1991

Mr. J. S. Crall
Orlando Utilities Commission
500 South Orange Avenue
P.O. Box 3193
Orlando, Florida 32802

Re: Four-Unit combustion Turbine Facility at Indian River Plant
AC 05-193720 & PSD-FL-173

Dear Mr. Crall:

I have reviewed your June 17 response to our last incompleteness letter and find the above application complete.

You indicated a desire to start construction by October. As you know the Department has received a record number of applications which has resulted in the reviews requiring the full 90 days to prepare the Preliminary Determination. The anticipated completion schedule for your application is about September 15. Should this delay your construction start date and cause an economic loss, inability to meet load requirements or other hardship, please provide me sufficient information to justify expediting the review.

Sincerely,

G. Preston Lewis, P.E.
Review Engineer
Air Permitting and Standards Section



ORLANDO UTILITIES COMMISSION

500 SOUTH ORANGE AVENUE • P. O. BOX 3193 • ORLANDO, FLORIDA 32802 • 407/423-9100

June 17, 1991

Mr. C. H. Fancy, P. E.
Chief Bureau of Air Regulation
Florida Department of
Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Re: Indian River Plant Combustion Turbine facility
AC 05-193720 and PSD FL-173.

Dear Mr. Fancy:

I appreciate your and Preston Lewis' willingness to work with OUC on the timeliness of this permit.

Attached please find the additional information you requested as supplied by:

1. Black & Veatch
2. OUC's System Planning Division
3. OUC's System Operations Division

Please call me when you receive this transmittal and let me know, at your earliest convenience, when you can deem the application complete.

Sincerely,

J. S. Crall
Director
Environmental Division

JSC:rc
Attachment

cc: B. Andrews - DER, Tallahassee
P. Lewis - DER, Tallahassee
S. Day - B&V

C. Holladay, M. J. ...
C. Collins, ...
J. ...

Administration Fax: (407) 236-9616

Purchasing Fax: (407) 423-9199

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Date: 6/17/91

From (Your Name) Please Print Jim Crall		Your Phone Number (Very Important) (407) 423-9100	To (Recipient's Name) Please Print Mr. C. H. Fancy, P. E.		Recipient's Phone Number (Very Important) 904 488-13
Company ORLANDO UTILITIES COMMISSION		Department/Floor No.	Company Chief Bureau of Air Regulation		Department/Floor No.
Street Address 1 S ORANGE AVE		Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes.) 6890 Blair Stone Road			
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1. In Question 7, we asked that you "discuss the impact should the capacity factor be limited to 25 percent." The response needs to include the modification of Tables 3-1 and 3-2 for each fuel used. Please provide these modified tables.

Table 3-1 would not change if the capacity factor was limited to 25 percent. The attached Table 3-2 shows the resulting emissions based on a 25 percent capacity factor. These annual emissions rates would be the maximum potential annual emissions from the sum of all four combustion turbines.

The incremental cost for NO_x reduction would significantly increase as well. The incremental NO_x removal cost at a 25 percent annual capacity factor would be increased from the previously stated 7,060 \$/ton to 12,370 \$/ton and from the previously stated 5,200 \$/ton to 8,510 \$/ton for natural gas and oil, respectively.

2. In Question 8, the response needs to discuss how relevant the BACT costs for NO_x control would be (provided in Chapter 4) should these units be modified for combined cycle usage? Also, would the emission data provided in Chapter 4 be representative should conversion occur?

The cost for equipment shown in Chapter 4 would no longer be relevant if the units were converted to combined cycle. Since the HRSG would cool the flue gas to the appropriate SCR temperatures, the additional water treatment, storage, and injection equipment would no longer be needed. However, the annual operating costs would remain relatively unchanged. The new BACT costs would be roughly equivalent to those determined by the DER in its analysis of the City of Lakeland's PSD permit application for a 120 MW GE Frame 7 combined cycle unit which ranged from 4,600 \$/ton on oil at 100 percent capacity factor to 6,441 \$/ton on natural gas at 100 percent capacity factor (reference DER Technical Evaluation and Preliminary Determination for AC53-190437; PSD-FL-166 dated March 15, 1991).

The emissions from the combustion turbines would not be affected by the addition of HRSG

TABLE 3-2***
POTENTIAL ANNUAL
EMISSION

POLLUTANT	2-GE (tons)	2-WH (tons)*	4-GE (tons)**	PROPOSED NET INCREASE (tons)*	PSD SIGNIFICANCE LEVEL (tons)	NET SIGNIFICANCE INCREASE
CO	88	159	176	71	100	NO
NOX	1036	440	2072	-596	40	NO
SO2	1234	839	2468	-395	40	NO
TSP	175	210	350	35	25	YES
PM10	175	210	350	35	15	YES
VOC	36	101	72	65	40	YES
LEAD	0.1	0.1	0.2	0	0.6	NO
ASBESTOS	NEGL	NEGL	NEGL	NEGL	0.007	NO
BERYLLIUM	0.01	0.01	0.02	0	0.0004	NO
MERCURY	0.01	0.01	0.02	0	0.1	NO
VINYL CHLORIDE	NEGL	NEGL	NEGL	NEGL	1	NO
FLOUROIDES	NEGL	NEGL	NEGL	NEGL	3	NO
H2S04 MIST	37	2	74	-35	7	NO
TOTAL REDUCED S	NEGL	NEGL	NEGL	NEGL	10	NO
REDUCED S	NEGL	NEGL	NEGL	NEGL	10	NO
H2S	NEGL	NEGL	NEGL	NEGL	10	NO

*EMISSIONS ARE BASED ON A 25 PERCENT ANNUAL CAPACITY FACTOR FOR THE 2-WH TURBINES.

**CURRENTLY PERMITTED LEVEL.

***REVISED 6/14/91 FOR 25 PERCENT ANNUAL CAPACITY FACTOR.

June 15, 1991

TO: J.S. CRALL

DIRECTOR, ENVIRONMENTAL DIVISION

FROM: R.C. ZELL *RCZ*

DATE: JUNE 14, 1991

RE: INDIAN RIVER COMBUSTION TURBINE C & D PROJECTIONS

THE ANTICIPATED COMBINED SERVICE HOURS AND CAPACITY FACTORS FOR THE INDIAN RIVER COMBUSTION TURBINES C & D FOR THE 1993 - 1996 TIME PERIOD ARE AS FOLLOWS:

	HOURS	CAPACITY FACTOR (%)
1993	3360	19.2
1994	3944	22.5
1995	4860	27.7
1996	5526	31.5

THESE FIGURES WERE DEVELOPED USING SYSTEM PLANNING'S RECENTLY COMPLETED BUDGET PRODUCTION COST RUNS AND INFORMATION FROM SYSTEM OPERATIONS' TOM WASHBURN REGARDING FLORIDA MUNICIPAL POWER AGENCY'S SHARE UTILIZATION.

CC: W.H. HERRINGTON

G.F. ERICKSON

T.E. WASHBURN

TELEPHONE MEMORANDUM

DATE: June 17, 1991

TIME: 9:35 AM

PARTY INITIATING CALL: J. S. Crall, Director Environmental Division

TO: G. P. Cullifer, Chief Load Dispatcher System Operations Division

SUBJECT: Anticipated Operation of Combustion Turbines C and D

Conversation: Combustion Turbines C and D are anticipated to be operated in a similar manner as A and B. When the system pool requirement calls for CTs, we start them and bring them up with the load.

We anticipate that 75-80% of operation will be at the nominal rated capacity, less than 10% of operation will be at 25% of nominal rated capacity and the remaining 10-15% of operation will be following load somewhere in between.

TELECOPY

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JUN 17 1991

Division of Air Resources Management

DATE: 6/7/91

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SENT TO: C. H. Fony

COMPANY: DER

CITY: Tallahassee

TELECOPY NUMBER: 904/922-6979

Jim CRALL OUC EXT. 407/423-9141

COMMENTS: Please deliver ASAP.

ORLANDO UTILITIES COMMISSION

TELECOPY NUMBER: (407) 236-9616

FOR PROBLEMS OR QUESTIONS CONCERNING THIS TRANSMITTAL CALL (407) 423-9100 - EXT. 2049

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Florida Department of Environmental Regulation

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

Lawton Chiles, Governor

Carol M. Browner, Secretary

June 7, 1991

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. J. S. Crall
Orlando Utilities Commission
500 South Orange Avenue
P. O. Box 3193
Orlando, Florida 32802

Re: Four-Unit Combustion Turbine Facility at Indian River Plant
AC 05-193720 & PSD-FL-173

Dear Mr. Crall:

The Department has reviewed your May 9, 1991 letter as a response to an incompleteness letter to the above referenced application package. The response to questions Nos. 7 and 8 are incomplete and need further clarification. Therefore, please submit the following information, including all assumptions, calculations and reference material, to the Department's Bureau of Air Regulation and processing of your application package will resume:

1. In Question 7, we asked that you "discuss the impact should the capacity factor be limited to 25 percent." The response needs to include the modification of Tables 3-1 and 3-2 for each fuel used. Please provide these modified tables. Also, provide the 1991-1993 projected (anticipated) service hours and loading (peak, base or minimum).
2. In Question 8, the response needs to discuss how relevant the BACT costs for NOx control would be (provided in Chapter 4) should these units be modified for combined cycle usage? Also, would the emission data provided in Chapter 4 be representative should conversion occur?

If you have any questions, please call Preston Lewis at 904-488-1344 or write to me at the above address.

Sincerely,


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

CHF/PL/plm

c: C. Collins, Central District
J. Harper, EPA
S. M. Day, P.E., B&V
Preston Lewis } 6-7-91
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May 9, 1991

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MAY 10 1991

Bureau of
Air Regulation

Mr. C. H. Fancy, Chief
Bureau of Air Regulation
Florida Department of
Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Re: Combustion Turbine Facility
Indian River Plant
AC 05-193720 - PSD-FL-173

Dear Mr. Fancy:

Enclosed are OUC's responses to your letter of April 5, 1991 requesting additional information on our March 7 submittal, regarding the subject facility. These responses also incorporate FDER's requests made during the April 23, 1991 meeting with Barry Andrews, in Tallahassee, and include the supporting dispersion modeling documentation.

I trust that this information will render our application complete and request that FDER resume the processing within adequate time to meet an October 1, 1991 commence construction date.

If you have questions concerning the responses, please call me at 407/423-9141 or Mr. Steve Day (Black & Veatch) at 913/339-2880.

Very truly yours,

J. S. Crall
Director
Environmental Division

JSC:rc
Enclosure

cc: W. H. Herrington
F. F. Haddad
K. P. Ksionek
T. D. Slepow
S. M. Day (B&V)
B. Andrews (DER - Tall.)

P. Lewis
M. F. ...
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**OUC - INDIAN RIVER
PREVENTION OF SIGNIFICANT DETERIORATION (PSD)
PERMIT APPLICATION**

ATTACHMENT - RESPONSES TO FDER COMMENTS

QUESTION 1

Please provide a complete list of all interacting sources considered in the analysis. In addition, please provide the calculations or modeling used to eliminate any interacting source from final modeling consideration.

Response 1

In order to evaluate SO₂ ambient air quality standards (AAQS) and PSD increment compliance, interacting sources were included in the air dispersion modeling analysis. As discussed in Section 6.4.1 of the OUC Indian River PSD permit application, a list of potential interacting sources was obtained from the Florida Department of Environmental Regulations (FDER)--Bureau of Air Quality Management for sources located within the project's screening area. The screening area is defined as the area circumscribed by a circle with a radius equal to the significant impact area of 0.6 kilometers plus 50 kilometers (50.6 kilometers total). Because sources are grouped by counties in the FDER database, some SO₂ sources outside of the screening area were also included in the initial inventory list.

The inventory list contained information regarding source location, identification, and allowable SO₂ emissions. The complete list of FDER inventory sources is given in the attached Table 1.

The following four steps were used to eliminate sources from the inventory for the AAQS and PSD analyses. These methods were discussed in Section 6.4.1 of the PSD permit application.

- 1) Using the source locations, the distance to the OUC Indian River facility was determined. All sources further than 50.6 kilometers were eliminated from further analysis.
- 2) The remaining sources were initially evaluated using a "screening threshold" method developed by the North Carolina Bureau of Air Quality. The North Carolina method is based on a relationship of allowable emissions and distance to the proposed source. The formula for this method is listed below.

$Q = 20D$ Where Q is allowable source emissions given in tpy, and D is the distance to the proposed OUC Indian River source in kilometers.

If the "ratio" (Q/D) was calculated to be less than 20, the source was eliminated from the inventory. In the case where a single facility has multiple sources, facility emissions, instead of source emissions, were used to determine ratios. Because the ratio for the NASA-Kennedy Space Center facility was just slightly less than 20, these sources were evaluated further.

- 3) The next step was to obtain a master detail list, including stack parameters and UTM coordinates, from the FDER for the remaining inventory sources.
- 4) For the remaining sources, screening-level modeling was performed with EPA's SCREEN dispersion model. SCREEN is a first level screening model that calculates 1-hour concentrations assuming worst-case meteorological conditions. The screening-level modeling is included with this attachment. Each of the remaining sources were modeled using their respective allowable SO₂ emission rate and combustion parameters to determine a 1-hour ground-level impact at the nearest Indian River significant impact area boundary. The 1-hour values were converted to 24-hour values by multiplying the impacts by a factor of 0.4 per EPA guidance document EPA-450/4-88-010. The project only had significant SO₂ 24-hour offsite impacts. Therefore, it was not necessary to assess the other sources' impacts for different averaging periods.

The 24-hour values were then compared to the 24-hour SO₂ significant impact level of 5 ug/m³. This modeling demonstrated that several of the remaining sources have predicted 24-hour SO₂ impacts exceeding 5 ug/m³. These sources were included in the final analysis and are listed as sources 83, and 92 through 95 in Table 1.

QUESTION 2

Please provide a figure detailing the plant's boundary and the location of boundary receptors used in the modeling analysis. Also, provide a discussion detailing what measures are in place to prohibit public access to the plant's property.

Response 2

The plant boundary and the modeled boundary receptors are shown in attached Figure 1. As shown, receptors are located at approximately 200-meter intervals

along the property boundary. The coordinates of these receptors relative to the Unit A combustion turbine stack were listed in the modeling output provided as part of the PSD permit application.

A chain link fence is located around the perimeter of the property boundary. This fence prohibits public access onto the plant property.

QUESTION 3

Please identify which monitor was used to establish the background concentration for sulfur dioxide. During what time period was this data obtained?

Response 3

As stated in Section 6.4.2 of the PSD application, a background concentration of 44 ug/m³ was added to the modeled 24-hour SO₂ impact from the OUC Indian River plant. This concentration was obtained from the ambient monitoring station located at the OUC Stanton Energy Center (SEC). This location was selected after considering the availability of data from FDER and independent monitoring networks. A review of FDER's 1986 Air Quality Monitoring Report identified that FDER did not have a location in close proximity to the project site.

The SEC monitoring site is approximately 20 miles west of the OUC Indian River plant. OUC has been continuously monitoring ambient SO₂ concentrations at this site since 1980. The site has continuously met PSD monitoring criteria and is assumed to conservatively represent background air quality conditions in this part of Florida.

The value used for the OUC Indian River PSD application represents the highest measured 24-hour concentration during the 1980-1988 monitoring period. As of 1989, data reporting was no longer required for permitting purposes at SEC and the data are not readily available.

QUESTION 4

For the AAQS and PSD analyses, the modeling of only the two receptors that indicated a significant impact is insufficient. The entire off-site significant impact area must be modeled.

Response 4

OUC and B&V met with the FDER on April 23, 1991 to discuss FDER's concerns regarding the recent PSD permit application. As the result of this meeting, B&V has performed additional modeling for varying turbine operating scenarios. Specific information regarding the operating scenarios is given in Responses 5 & 6.

The significant impact areas for the various scenarios were determined with modeled offsite receptors placed at 10 degree increments along the following rings:

- 100-meter intervals from 200 to 600 meters,
- 250-meter intervals from 750 to 1,000 meters,
- 500-meter intervals from 1,500 meters to 5,000 meters,
- 1,000-meter intervals from 6,000 to 15,000 meters, and
- 20,000 meters.

This modeling resulted in the same significant impact distance (600 meters) as the initial modeling for SO₂. The 24-hour averaging period was once again the only averaging period which exceeded the significant impact criteria.

Those offsite receptors that were within the 600-meter radius were included in the AAQS and PSD modeling analyses. The modeling results for the various operating scenarios are summarized in Tables 2 and 3. The highest, highest second-highest 3-hour SO₂ concentration was predicted to be 22.7 ug/m³. This receptor location was along eastern plant fenceline. This concentration was below EPA's significance level of 25 ug/m³.

The associated operating scenario assumed that all combustion turbines were firing oil at a minimum potential operating load with performance characteristics associated with a 104 F ambient temperature. This scenario is very conservative in that the facility would not realistically operate at minimum load for all turbines. For this situation, it would be more economical for one or two turbines to operate at baseload rather than four at minimum loads. The same operating scenario resulted in the maximum 24-hour SO₂ concentration of 6.5 ug/m³. The annual impacts were about 0.4 ug/m³ and well below the 1.0 ug/m³ significance levels. These predicted project impacts were about only 10 percent higher than those included in the initial application submittal.

Table 3 summarizes the SO₂ 24-hour impacts for the AAQS and PSD analyses. The AAQS analysis included the same potential interacting sources as initially modeled. The revised modeling for the project and these sources resulted in a maximum predicted impact of 88.7 ug/m³. Considering a background level of 44 ug/m³, the total impact was about 133 ug/m³ or about 51 percent of the Florida 24-hour SO₂ standard of 260 ug/m³. The PSD Class II SO₂ increment consumption was predicted to be only 16.2 ug/m³ or approximately 18 percent of allowed increment.

Paper and diskette copies of this additional air quality modeling have been included with these responses.

Table 2
Project Maximum Impacts for Various Operational Scenarios

	<u>Peak/20 F</u>	<u>Base/ISO</u>	<u>Min/104 F</u>
<u>3-Hour SO2 Impacts</u>			
PSD Significance Level (ug/m ³)	25	25	25
Project Impacts (ug/m ³)	21	19.8	22.7
Receptor Location (m/deg)	13,000/180	498.3/95	446.5/90
Year	1982	1985	1983
Day/Period	68/2	43/1	83/6
<u>24-Hour SO2 Impacts</u>			
PSD Significance Level (ug/m ³)	5.0	5.0	5.0
Project Impacts (ug/m ³)	5.8	5.9	6.5
Receptor Location (m/deg)	446.5/90	446.5/90	446.5/90
Year	1985	1985	1985
Day	137	137	137
<u>Annual SO2 Impacts</u>			
PSD Significant Level (ug/m ³)	1.0	1.0	1.0
Project Impacts (ug/m ³)	0.4	0.4	0.3
Receptor Location (m/deg)	10,000/240	10,000/240	7,000/240
Year	1984	1984	1984

Table 3
AAQS and PSD Modeling Analysis

	<u>AAQS</u>	<u>PSD Class II</u>
Maximum 24-hour SO ₂ Impact (ug/m ³)	88.7	16.2
Location (m/deg)	600/240	446.5/90
Year/Day	1984/215	1985/137
Background (ug/m ³)	44	--
Total Impacts (ug/m ³)	132.7	16.2
Standard/Increment (ug/m ³)	260	91
Percent of Standard/Increment	51	18

QUESTION 5

The permitted emission rates for the existing units do not coincide with those listed in Table 3.1 of the new application. Please explain.

QUESTION 6

The new application stack parameters given in Table 3-1 for the existing units do not coincide with information given in original application. Please explain.

Response 5 and 6

The emission rates and stack parameters modeled for the original combustion turbine PSD application (1988) were based on manufacturer's performance data. The GE Frame 6 combustion turbines were assumed to operate at base load and ambient conditions of 14.7 psi atmospheric pressure, 59 F dry bulb temperature, and 60 percent relative humidity (International Standard Operating conditions). The permit as issued allows for adjustments to the maximum heat input rate based on ambient temperature. Maximum heat input at the site would occur at an ambient temperature of 20 F.

For a more conservative approach, the GE Frame 6 and Westinghouse combustion turbines were modeled for this PSD permit application amendment with stack and emission parameters corresponding to 20 F ambient temperature (year around). These conditions represent the 3-hour maximum potential pollutant emission rates and in this amendment have been conservatively used for the entire year. The combustion turbine source parameters and their corresponding ambient conditions were documented in Table 3-1 of the PSD permit application.

At a subsequent meeting on April 23, 1991, the FDER requested that additional operating scenarios be evaluated by air quality modeling. To comply with that request, B&V has identified various potential worse case operating scenarios. The specific modeling parameters for these scenarios are included in Table 4. These scenarios conservatively represent the maximum emission rate and heat input, standard operating conditions, and minimum flow volume and heat input, respectively for all four turbines.

- Scenario 1. Ambient temperature of 20 F and peak load.
- Scenario 2. Ambient temperature 59 F (ISO conditions) and baseload.
- Scenario 3. Ambient temperature of 104 F and minimum load.

Each of these scenarios was modeled with the ISCST dispersion model and the five years of meteorological data. From the modeling, the extent of any significant impact areas and the maximum predicted impacts were determined. As shown in Response 4, Scenario 3 resulted in the highest predicted impacts and was the only scenario considered further for the PSD and AAQS analyses.

QUESTION 7

Usually, simple cycle combustion turbines are used for peaking generation services. In your application, you state the units will operate 8,760 hours. Are these units going to be used for peaking? If so, what are the projected actual service hour? Discuss the impact should the capacity factor be limited to 25 percent.

QUESTION 8

Do you have any plans to convert these units from simple, cycle to combined cycle? If so, when would this be done? Please discuss.

Response 7 and 8

The OUC Indian River Units C and D will be constructed as simple cycle units. Units in Florida are dispatched on the most economical basis with those having the highest cost to operate being the last units to be dispatched. Although simple cycle units are the least expensive plants to build, they are currently the most expensive to operate and therefore, are the last to be dispatched. Therefore, at least initially, the units will be used for peaking capacity and annual capacity factors are expected to be low.

OUC does not have any current plans to convert these units to combined cycle. However, the units are being designed with space available to add heat recovery steam generators in the future. As the capacity factor of the units increase, OUC will need to add additional base load or intermediate load units. This can be accomplished by adding the heat recovery steam generators at the Indian River plant site or by other means. With the proposed addition of Stanton 2, the OUC system should have sufficient baseload capacity for the remainder of the 1990's. Therefore, the decision for the next facility will not be made until later.

OUC has requested 8,760 hours per year in order to provide the maximum flexibility in the operation of the units. A portion of the units are owned by others and their requirements will affect the use of the units as well as OUC's requirements, the availability of other units in OUC's system, and economy sales and purchases from the broker system. There are no air quality impact reasons for limiting the annual capacity factor since all annual increments and standards will be maintained without such a limit. From a BACT standpoint, OUC does not see a need to request a limitation to the annual capacity factor, since the cost of adding SCR to a simple cycle unit for NO_x control is already well in excess of prior BACT levels. If FDER restricts the annual capacity factor, it will have no effect on the operation of the unit unless OUC desires to exceed the arbitrary limit set by the FDER. In that case, OUC would be forced to file for an amendment to the permit to increase the limit set by the FDER and perhaps need

to request an emergency order if the limit interfered with OUC's ability to meet load demands. OUC would be comfortable with permit conditions that included a 100 percent capacity factor on natural gas and 25 percent annual capacity factor for No. 2 fuel oil.

TABLE 4
COMBUSTION PARAMETERS FOR VARIOUS OPERATIONAL SCENARIOS

PARAMETERS	PEAK LOAD/20 F TEMP		BASE LOAD/ISO		MINIMUM LOAD/104 F TEMP*	
	GE FRAME 6	WESTINGHOUSE 501-D5	GE FRAME 6	WESTINGHOUSE 501-D5	GE FRAME 6	WESTINGHOUSE 501-D5
STACK HEIGHT (FT)	36	50	36	50	36	50
STACK DIAMETER (FT)	12.36	22.14	12.36	22.14	12.36	22.14
VOLUMETRIC FLOW RATE (ACFM)	786290	1970269	697015	1818355	384646	1267144
STACK EXIT VELOCITY (FPM)	6552	5117	5808	4723	3205.8	3291.4
TEMPERATURE (F)	1035	977	1003	976	648	674
STACK EMISSIONS:						
SO2 (G/S/UNIT)	21.7	54.8	17.74	48.27	4.91	21.87
NOx (G/S/UNIT)	18.6	29.1	14.9	28.48	4.16	10.46
CO (G/S/UNIT)	1.5	9.1	1.26	9.1	1.89	7.62
PM (G/S/UNIT)	3.1	13.6	1.26	13.4	1.49	6.2



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May 9, 1991

RECEIVED

MAY 10 1991

Bureau of
Air Regulation

Mr. C. H. Fancy, Chief
Bureau of Air Regulation
Florida Department of
Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Re: Combustion Turbine Facility
Indian River Plant
AC 05-193720 - PSD-FL-173

Dear Mr. Fancy:

Enclosed are OUC's responses to your letter of April 5, 1991 requesting additional information on our March 7 submittal, regarding the subject facility. These responses also incorporate FDER's requests made during the April 23, 1991 meeting with Barry Andrews, in Tallahassee, and include the supporting dispersion modeling documentation.

I trust that this information will render our application complete and request that FDER resume the processing within adequate time to meet an October 1, 1991 commence construction date.

If you have questions concerning the responses, please call me at 407/423-9141 or Mr. Steve Day (Black & Veatch) at 913/339-2880.

Very truly yours,

J. S. Crall
Director
Environmental Division

JSC:rc
Enclosure

- cc: W. H. Herrington
- F. F. Haddad
- K. P. Ksionek
- T. D. Slepov
- S. M. Day (B&V)
- B. Andrews (DER - Tall.)

F. Haddad
H. Ksionek
T. Slepov
S. Day
B. Andrews - EPA

**OUC - INDIAN RIVER
PREVENTION OF SIGNIFICANT DETERIORATION (PSD)
PERMIT APPLICATION**

ATTACHMENT - RESPONSES TO FDER COMMENTS

QUESTION 1

Please provide a complete list of all interacting sources considered in the analysis. In addition, please provide the calculations or modeling used to eliminate any interacting source from final modeling consideration.

Response 1

In order to evaluate SO₂ ambient air quality standards (AAQS) and PSD increment compliance, interacting sources were included in the air dispersion modeling analysis. As discussed in Section 6.4.1 of the OUC Indian River PSD permit application, a list of potential interacting sources was obtained from the Florida Department of Environmental Regulations (FDER)--Bureau of Air Quality Management for sources located within the project's screening area. **The screening area is defined as the area circumscribed by a circle with a radius equal to the significant impact area of 0.6 kilometers plus 50 kilometers (50.6 kilometers total).** Because sources are grouped by counties in the FDER database, some SO₂ sources outside of the screening area were also included in the initial inventory list.

*Not
Close
to a
Class I
Area
Per MAI
6/7/91*

The inventory list contained information regarding source location, identification, and allowable SO₂ emissions. The complete list of FDER inventory sources is given in the attached Table 1.

The following four steps were used to eliminate sources from the inventory for the AAQS and PSD analyses. These methods were discussed in Section 6.4.1 of the PSD permit application.

- 1) Using the source locations, the distance to the OUC Indian River facility was determined. All sources further than 50.6 kilometers were eliminated from further analysis.
- 2) The remaining sources were initially evaluated using a "screening threshold" method developed by the North Carolina Bureau of Air Quality. The North Carolina method is based on a relationship of allowable emissions and distance to the proposed source. The formula for this method is listed below.

$Q = 20D$ Where Q is allowable source emissions given in tpy, and D is the distance to the proposed OUC Indian River source in kilometers.

If the "ratio" (Q/D) was calculated to be less than 20, the source was eliminated from the inventory. In the case where a single facility has multiple sources, facility emissions, instead of source emissions, were used to determine ratios. Because the ratio for the NASA-Kennedy Space Center facility was just slightly less than 20, these sources were evaluated further.

- 3) The next step was to obtain a master detail list, including stack parameters and UTM coordinates, from the FDER for the remaining inventory sources.
- 4) For the remaining sources, screening-level modeling was performed with EPA's SCREEN dispersion model. SCREEN is a first level screening model that calculates 1-hour concentrations assuming worst-case meteorological conditions. The screening-level modeling is included with this attachment. Each of the remaining sources were modeled using their respective allowable SO₂ emission rate and combustion parameters to determine a 1-hour ground-level impact at the nearest Indian River significant impact area boundary. The 1-hour values were converted to 24-hour values by multiplying the impacts by a factor of 0.4 per EPA guidance document EPA-450/4-88-010. The project only had significant SO₂ 24-hour offsite impacts. Therefore, it was not necessary to assess the other sources' impacts for different averaging periods.

The 24-hour values were then compared to the 24-hour SO₂ significant impact level of 5 ug/m³. This modeling demonstrated that several of the remaining sources have predicted 24-hour SO₂ impacts exceeding 5 ug/m³. These sources were included in the final analysis and are listed as sources 83, and 92 through 95 in Table 1.

QUESTION 2

Please provide a figure detailing the plant's boundary and the location of boundary receptors used in the modeling analysis. Also, provide a discussion detailing what measures are in place to prohibit public access to the plant's property.

Response 2

The plant boundary and the modeled boundary receptors are shown in attached Figure 1. As shown, receptors are located at approximately 200-meter intervals

along the property boundary. The coordinates of these receptors relative to the Unit A combustion turbine stack were listed in the modeling output provided as part of the PSD permit application.

A chain link fence is located around the perimeter of the property boundary. This fence prohibits public access onto the plant property.

QUESTION 3

Please identify which monitor was used to establish the background concentration for sulfur dioxide. During what time period was this data obtained?

Response 3

As stated in Section 6.4.2 of the PSD application, a background concentration of 44 ug/m³ was added to the modeled 24-hour SO₂ impact from the OUC Indian River plant. This concentration was obtained from the ambient monitoring station located at the OUC Stanton Energy Center (SEC). This location was selected after considering the availability of data from FDER and independent monitoring networks. A review of FDER's 1986 Air Quality Monitoring Report identified that FDER did not have a location in close proximity to the project site.

The SEC monitoring site is approximately 20 miles west of the OUC Indian River plant. OUC has been continuously monitoring ambient SO₂ concentrations at this site since 1980. The site has continuously met PSD monitoring criteria and is assumed to conservatively represent background air quality conditions in this part of Florida.

The value used for the OUC Indian River PSD application represents the highest measured 24-hour concentration during the 1980-1988 monitoring period. As of 1989, data reporting was no longer required for permitting purposes at SEC and the data are not readily available.

QUESTION 4

For the AAQS and PSD analyses, the modeling of only the two receptors that indicated a significant impact is insufficient. The entire off-site significant impact area must be modeled.

Response 4

OUC and B&V met with the FDER on April 23, 1991 to discuss FDER's concerns regarding the recent PSD permit application. As the result of this meeting, B&V has performed additional modeling for varying turbine operating scenarios. Specific information regarding the operating scenarios is given in Responses 5 & 6.

The significant impact areas for the various scenarios were determined with modeled offsite receptors placed at 10 degree increments along the following rings:

- 100-meter intervals from 200 to 600 meters.
- 250-meter intervals from 750 to 1,000 meters,
- 500-meter intervals from 1,500 meters to 5,000 meters,
- 1,000-meter intervals from 6,000 to 15,000 meters, and
- 20,000 meters.

This modeling resulted in the same significant impact distance (600 meters) as the initial modeling for SO₂. The 24-hour averaging period was once again the only averaging period which exceeded the significant impact criteria.

Those offsite receptors that were within the 600-meter radius were included in the AAQS and PSD modeling analyses. The modeling results for the various operating scenarios are summarized in Tables 2 and 3. The highest, highest second-highest 3-hour SO₂ concentration was predicted to be 22.7 ug/m³. This receptor location was along eastern plant fence line. This concentration was below EPA's significance level of 25 ug/m³.

The associated operating scenario assumed that all combustion turbines were firing oil at a minimum potential operating load with performance characteristics associated with a 104 F ambient temperature. This scenario is very conservative in that the facility would not realistically operate at minimum load for all turbines. For this situation, it would be more economical for one or two turbines to operate at baseload rather than four at minimum loads. The same operating scenario resulted in the maximum 24-hour SO₂ concentration of 6.5 ug/m³. The annual impacts were about 0.4 ug/m³ and well below the 1.0 ug/m³ significance levels. These predicted project impacts were about only 10 percent higher than those included in the initial application submittal.

Table 3 summarizes the SO₂ 24-hour impacts for the AAQS and PSD analyses. The AAQS analysis included the same potential interacting sources as initially modeled. The revised modeling for the project and these sources resulted in a maximum predicted impact of 88.7 ug/m³. Considering a background level of 44 ug/m³, the total impact was about 133 ug/m³ or about 51 percent of the Florida 24-hour SO₂ standard of 260 ug/m³. The PSD Class II SO₂ increment consumption was predicted to be only 16.2 ug/m³ or approximately 18 percent of allowed increment.

Paper and diskette copies of this additional air quality modeling have been included with these responses.

Table 2
Project Maximum Impacts for Various Operational Scenarios

	<u>Peak/20 F</u>	<u>Base/ISO</u>	<u>Min/104 F</u>
<u>3-Hour SO2 Impacts</u>			
PSD Significance Level (ug/m ³)	25	25	25
Project Impacts (ug/m ³)	21	19.8	22.7
Receptor Location (m/deg)	13,000/180	498.3/95	446.5/90
Year	1982	1985	1983
Day/Period	68/2	43/1	83/6
<u>24-Hour SO2 Impacts</u>			
PSD Significance Level (ug/m ³)	5.0	5.0	5.0
Project Impacts (ug/m ³)	5.8	5.9	6.5
Receptor Location (m/deg)	446.5/90	446.5/90	446.5/90
Year	1985	1985	1985
Day	137	137	137
<u>Annual SO2 Impacts</u>			
PSD Significant Level (ug/m ³)	1.0	1.0	1.0
Project Impacts (ug/m ³)	0.4	0.4	0.3
Receptor Location (m/deg)	10,000/240	10,000/240	7,000/240
Year	1984	1984	1984

Table 3
 AAQS and PSD Modeling Analysis

	AAQS	PSD Class II
Maximum 24-hour SO ₂ Impact (ug/m ³)	88.7	16.2
Location (m/deg)	600/240	446.5/90
Year/Day	1984/215	1985/137
Background (ug/m ³)	44	--
Total Impacts (ug/m ³)	132.7	16.2
Standard/Increment (ug/m ³)	260	91
Percent of Standard/Increment	51	18

QUESTION 5

The permitted emission rates for the existing units do not coincide with those listed in Table 3.1 of the new application. Please explain.

QUESTION 6

The new application stack parameters given in Table 3-1 for the existing units do not coincide with information given in original application. Please explain.

Response 5 and 6

The emission rates and stack parameters modeled for the original combustion turbine PSD application (1988) were based on manufacturer's performance data. The GE Frame 6 combustion turbines were assumed to operate at base load and ambient conditions of 14.7 psi atmospheric pressure, 59 F dry bulb temperature, and 60 percent relative humidity (International Standard Operating conditions). The permit as issued allows for adjustments to the maximum heat input rate based on ambient temperature. Maximum heat input at the site would occur at an ambient temperature of 20 F.

For a more conservative approach, the GE Frame 6 and Westinghouse combustion turbines were modeled for this PSD permit application amendment with stack and emission parameters corresponding to 20 F ambient temperature (year around). These conditions represent the 3-hour maximum potential pollutant emission rates and in this amendment have been conservatively used for the entire year. The combustion turbine source parameters and their corresponding ambient conditions were documented in Table 3-1 of the PSD permit application.

At a subsequent meeting on April 23, 1991, the FDER requested that additional operating scenarios be evaluated by air quality modeling. To comply with that request, B&V has identified various potential worse case operating scenarios. The specific modeling parameters for these scenarios are included in Table 4. These scenarios conservatively represent the maximum emission rate and heat input, standard operating conditions, and minimum flow volume and heat input, respectively for all four turbines.

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Each of these scenarios was modeled with the ISCST dispersion model and the five years of meteorological data. From the modeling, the extent of any significant impact areas and the maximum predicted impacts were determined. As shown in Response 4, Scenario 3 resulted in the highest predicted impacts and was the only scenario considered further for the PSD and AAQS analyses.

TABLE 4
COMBUSTION PARAMETERS FOR VARIOUS OPERATIONAL SCENARIOS

PARAMETERS	PEAK LOAD/20 F TEMP		BASE LOAD/150		MINIMUM LOAD/104 F TEMP*	
	GE FRAME 6	WESTINGHOUSE 501-D5	GE FRAME 6	WESTINGHOUSE 501-D5	GE FRAME 6	WESTINGHOUSE 501-D5
STACK HEIGHT (FT)	36	50	36	50	36	50
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STACK EMISSIONS:						
SO ₂ (G/S/UNIT)	21.7	54.8	17.74	48.27	4.91	21.87
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CO (G/S/UNIT)	1.5	9.1	1.26	9.1	1.89	7.62
PM (G/S/UNIT)	3.1	13.6	1.26	13.4	1.49	6.2

QUESTION 7

Usually, simple cycle combustion turbines are used for peaking generation services. In your application, you state the units will operate 8,760 hours. Are these units going to be used for peaking? If so, what are the projected actual service hour? Discuss the impact should the capacity factor be limited to 25 percent.

QUESTION 8

Do you have any plans to convert these units from simple, cycle to combined cycle? If so, when would this be done? Please discuss.

Response 7 and 8

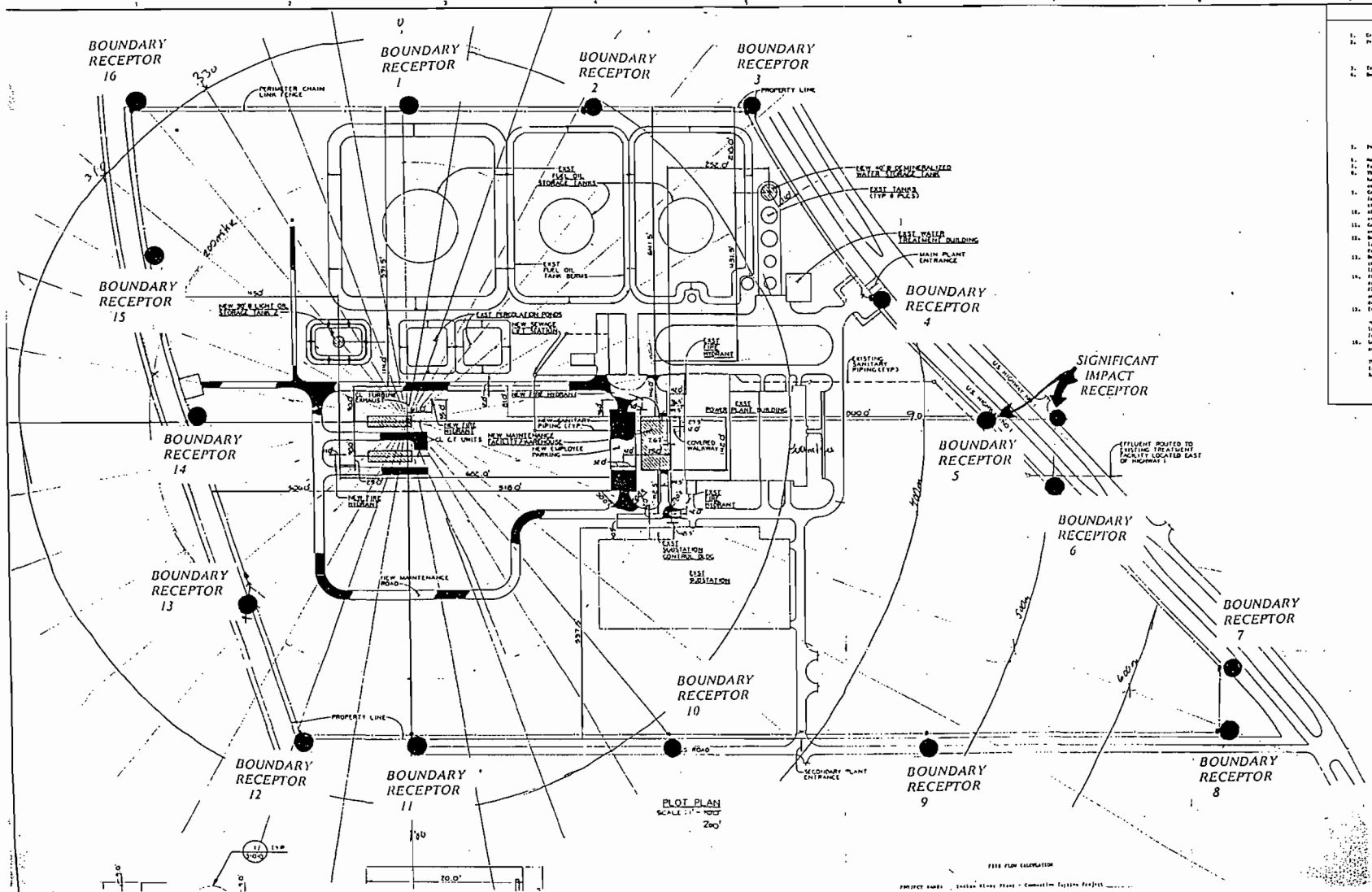
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OUC does not have any current plans to convert these units to combined cycle. However, the units are being designed with space available to add heat recovery steam generators in the future. As the capacity factor of the units increase, OUC will need to add additional base load or intermediate load units. This can be accomplished by adding the heat recovery steam generators at the Indian River plant site or by other means. With the proposed addition of Stanton 2, the OUC system should have sufficient baseload capacity for the remainder of the 1990's. Therefore, the decision for the next facility will not be made until later.

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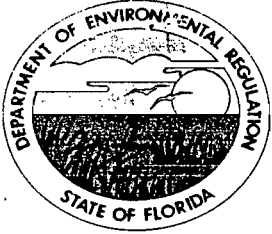
to request an emergency order if the limit interfered with OUC's ability to meet load demands. OUC would be comfortable with permit conditions that included a 100 percent capacity factor on natural gas and 25 percent annual capacity factor for No. 2 fuel oil.

FIGURE 1



1" = 260'

File Copy



Florida Department of Environmental Regulation

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

Lawton Chiles, Governor

April 5, 1991

Carol M. Browner, Secretary

J. S. Crall
Orlando Utilities Commission
500 South Orange Avenue
P. O. Box 3193
Orlando, Florida 32802

Re: Four-Unit Combustion Turbine Facility at Indian River Plant
AC 05-193720 - PSD-FL-173

Dear Mr. Crall:

We have reviewed your March 7 application concerning the above referenced permit and find it to be incomplete. If the question requests air pollution emissions information, please respond on each fuel authorized to burn. The processing of your application will resume upon receipt of the following information:

1. Please provide a complete list of all interacting sources considered in the analysis. In addition, please provide the calculations or modeling used to eliminate any interacting source from final modeling consideration.
2. Please provide a figure detailing the plant's boundary and the location of boundary receptors used in the modeling analysis. Also, provide a discussion detailing what measures are in place to prohibit public access to the plant's property.
3. Please identify which monitor was used to establish the background concentration for sulfur dioxide. During what time period was this data obtained?
4. For the AAQS and PSD analyses, the modeling of only the two receptors that indicated a significant impact is insufficient. The entire off-site significant impact area must be modeled.
5. The permitted emission rates for the existing units do not coincide with those listed in Table 3.1 of the new application. Please explain.
6. The new application stack parameters given in Table 3-1 for the existing units do not coincide with information given in original application. Please explain.
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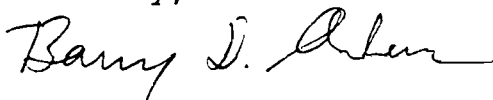
J. S. Crall
Page 2

peaking? If so, what are the projected actual service hours? Discuss the impact should the capacity factor be limited to 25%.

8. Do you have any plans to convert these units from simple cycle to combined cycle? If so, when would this be done? Please discuss.

If you have any questions, please call Preston Lewis at 904-488-1344 or write to me at the above address.

Sincerely,



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

CHF/PL/plm

c: C. Collins, Central District
J. Harper, EPA
S. M. Day, P.E., B&V

Preston Lewis }
Max Linn } 4-5-91 *PLM*
Ready File }

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Mr. J. S. Crall
OUC
500 So. Orange Ave.
P.O. Box 3193
Orlando, FL 32802

4. Article Number
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6. Signature - Agent
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7. Date of Delivery

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 PS Form 3800, June 1985

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City, State and ZIP Code Orlando, FL 32802	
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Florida Department of Environmental Regulation

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

Lawton Chiles, Governor

Carol M. Browner, Secretary

March 19, 1991

Ms. Jewell A. Harper, Chief
Air Enforcement Branch
U.S. EPA, Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Dear Ms. Harper:

RE: Orlando Utilities Commission
Indian River Plant
Brevard County, PSD-FL-173

Enclosed for your review and comment is the above referenced PSD permit application. If you have any comments or questions, please contact Preston Lewis or Max Linn at the above address or at (904)488-1344.

Sincerely,

Patricia G. Adams

Patricia G. Adams
Planner
Bureau of Air Regulation

/pa

Enclosure



ORLANDO UTILITIES COMMISSION

500 SOUTH ORANGE AVENUE • P. O. BOX 3193 • ORLANDO, FLORIDA 32802 • 407/423-9100

VIA FEDERAL EXPRESS
RETURN RECEIPT REQUESTED

February 28, 1991

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

Attention: Mr. C. H. Fancy, Chief
Bureau of Air Regulation

Gentlemen:

Enclosed is an original and five copies of the Orlando Utilities Commission Indian River Combustion Turbine CT-C and CT-D application for amendment to authority to construct.

Each bound application prepared by our Consultant, Black & Veatch, contains a copy of FDER Form 17-1.202(1), the Ambient Air Quality Impact Assessment and the BACT Analysis. In addition, computer printouts and a diskette of all the air modeling computer runs supporting the application are enclosed.

This letter also requests an amendment to the start construction dates of units CT-C and CT-D and the expiration date in the authority to construct for these units (AC 05-146750 and AC 05-146751). The current scheduled commence construction date for CT-C is October 1991 and for CT-D is November 1991. We are requesting that the permit expiration date be extended to eighteen (18) months following issuance of this amendment to PSD-FL-130.

Attached you will find a letter of authorization for W. H. Herrington and the required \$5000 application fee.

Best Available Copy

FEDERAL EXPRESS QUESTIONS? CALL 800-238-5355 TOLL FREE

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Street Address 30 S ORANGE AVE		Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes) 2600 Blair Stone Road (Twin Towers Office)	
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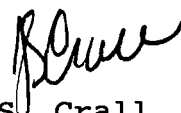
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Mr. C. H. Fancy, Chief
Bureau of Air Regulation
FDER - Tallahassee

Page 2

If you have any questions, please call me at 407/423-9141 or
Mr. Steve Day at Black & Veatch 913/339-2880.

Very truly yours,



J. S. Crall, Director
Environmental Division

JSC:rc
jc0228

Attachment

cc: P. Lewis
M. Linn
B. Andrews
C. Collins, C. Dist.
J. Harper, EPA



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1991 MAR -7 AM 9:31

ORLANDO UTILITIES COMMISSION

500 SOUTH ORANGE AVENUE • P. O. BOX 3193 • ORLANDO, FLORIDA 32802 • 305/423-9100

February 5, 1986

ROYCE B. WALDEN
President

Environmental Protection Agency
345 Courtland Street, NE
Atlanta, GA 30308

GRACE C. LINDBLOM
First Vice President

Florida Department of
Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32301

W. M. SANDERLIN
Second Vice President

Gentlemen:

BILL FREDERICK,
Mayor

This letter shall be the letter of authorization for William H. Herrington, Manager of Electric Operations for the Orlando Utilities Commission to sign statements on behalf of the Orlando Utilities Commission as they relate to applications to the Environmental Protection Agency and Florida Department of Environmental Regulation to operate and/or construct pollution sources.

JAMES H. PUGH, JR.
Immediate Past President

Sincerely,

HARRY C. LUFF
Executive Vice President

T. C. Pope
General Manager

TED C. POPE
General Manager

TCP:ch

Orlando Utilities Commission

ORLANDO, FLORIDA

"Where Electricity Powers Progress"

63-215
631

No. 062379

PAY TO THE
ORDER OF

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REGULATION

2600 BLAIR STONE ROAD

TALLAHASSEE, FL

32399-2406

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AFTER 180 DAYS

DATE
02/28/91

\$5000.00

SUN BANK, N.A.
MAIN OFFICE:
ORLANDO, FLORIDA 32801

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AUTHORIZED SIGNATURE

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

Attention: Mr. C. H. Fancy, Chief
Bureau of Air Regulation

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Attached you will find a letter of authorization for W. H. Herrington and the required \$5000 application fee.

001031

YOUNG, VAN ASSENDERP, VARNADOE & BENTON, P. A.
ATTORNEYS AT LAW

GALLIE'S HALL
225 SOUTH ADAMS STREET
POST OFFICE BOX 1833
TALLAHASSEE, FLORIDA 32302-1833
TELEPHONE (904) 222-7206

C. LAURENCE KEESEY

ORLANDO UTILITIES COMMISSION
INDIAN RIVER PLANT--GAS TURBINE ADDITIONS
FILE NO. 17135.22.0401

APPLICATION TO AMEND PERMITS NOS. AC-05-146750 and AC-05-146751
TO CONSTRUCT A MAJOR EMITTING FACILITY IN ACCORDANCE
WITH PREVENTION OF SIGNIFICANT DETERIORATION REQUIREMENTS

FEBRUARY 1991



BLACK & VEATCH

Question and Comment Jochan River

① Alter C Permit - Question

Water injection to control NO_x emissions but
cost estimate "not available for water treatment
and injection". Need this!

Comments

- 3% S #2 fuel and Natural Gas as fuel
 - 42/25 ppmvd (NO_x) (#2 fuel oil/NATURAL GAS)
 - Desire to use N.G. as primary fuel but #2 oil if N.G. is unavailable or is economically more feasible
 - Two W CT (110MW) ~~instead of~~ ^{TWO} GE CT (35MW)
 - ~~already installed~~ (2) 35MW CT's
 - Operate 8760 Hrs/yr
 - #2 fuel oil worst case burn rate
 - (2) GE CT 534.1 MBTU/H
 - 2 W CT 1,345.5 MBTU/H
- HHV = 18,582 BTU/LB for #2 Fuel oil

② Page 3-3

The table indicates that the emissions for SO_2 , NO_x , CO and PM are significantly higher per permit for W vs GE. Even with two ^{110MW} units instead of ^{TWO 35MW UNITS} four, the emissions ~~are~~ ^{seem} greater ^{than #2 fuel}. Please discuss reasons and provide basis for calculations.

(over)

Table 4-1 Provide BACT Comparable
Cost data for NO_x plus SCR. Please
discuss calculation and the basis for ~~estimates~~.
All cost estimates, ~~price~~: "SCR Reactors
manufacturer quotes dated _____."

SCR and SNCR are rejected
for mostly technical reasons - Cost of Cooling
Water (SCR) and need for higher ambient
temperature (SNCR). Do you have any
plans to convert that simple cycle
to a Combined Cycle?

You request 8760 hrs/yr operation,
burns, normally simple cycle combustion
burners are used as peaking units and operate
less than 2500 hrs/yr. Can you
reduce the hrs/yr to 2000?

Orlando Utilities
Indian River

- (4) 35 mw Single Cycle Combustion Turbine
Construction Permit issued 9/1/88.
(2) units operating permits 8/30/90

Now adding two 110 MW Single Cycle W
Combustion Turbines instead of 6E units

- will include Water injection to control NO_x emission and Low NO_x burner design
- asking for 8760 HRS/yr

- Emission page 3-5

CO , NO_x , SO_2 , TSP, PM_{10} , VOC

Be, and H_2SO_4 must exceed PSD.

- low NO_x burners and water injection will reduce NO_x emission to 25/42 PPMvd (@ 15% O_2) burning N.G. or oil respectively. (Page 4-11) BACT

- Use of .3% Sulfur oil will be BACT.

- CO , VOC, Particulates and Be will be controlled by ^{Good} Carbon

Patty

(407) 423-9141

Jai Crow 1 arledo with
Indian River Facility
Permit FL 130

2 units built

2 units not built

Admired } cost for two units became larger
or modify }

① Date for start Now

② W 100 on w EACH instead of 60 on w

How much \$ to send?

17.4.05 p4 p8.1
4. p4 p4.3

\$ 5000 fee

Can we discuss?

Patty

Max limit - Modeling

CONTENTS

	<u>Page</u>
1.0 INTRODUCTION	1-1
2.0 PROJECT DESCRIPTION	2-1
2.1 PROJECT SITE	2-1
2.2 PROJECT FACILITY	2-1
2.3 PROJECT OPERATION	2-4
2.4 PROJECT FUELS	2-4
3.0 SOURCE CHARACTERIZATION	3-1
3.1 APPLICABILITY OF REGULATIONS	3-1
3.2 GEP STACK HEIGHT DETERMINATION	3-1
3.3 STACK PARAMETERS AND SOURCE EMISSIONS	3-2
4.0 BEST AVAILABLE CONTROL TECHNOLOGY	4-1
4.1 INTRODUCTION	4-1
4.2 NITROGEN OXIDES EMISSION CONTROL	4-2
4.3 SULFUR DIOXIDE AND SULFURIC ACID MIST EMISSIONS	4-12
4.4 PARTICULATE MATTER EMISSIONS	4-12
4.5 BERYLLIUM EMISSIONS	4-13
4.6 CARBON MONOXIDE AND VOLATILE ORGANIC COMPOUNDS	4-13
4.7 OTHER EMISSIONS	4-16
5.0 AIR QUALITY DISPERSION MODELING METHODOLOGY	5-1
5.1 MODEL SELECTION AND DESCRIPTION	5-1
5.2 MODEL OPTIONS AND ASSUMPTIONS	5-2
5.3 RECEPTOR LOCATIONS	5-2
5.4 METEOROLOGICAL DATA	5-3
6.0 AIR QUALITY IMPACT ANALYSIS	6-1
6.1 DISPERSION MODELING RESULTS	6-1
6.2 SIGNIFICANT IMPACT AREA DETERMINATION	6-3
6.3 PRECONSTRUCTION MONITORING REQUIREMENTS	6-4
6.4 AAQS AND PSD INCREMENT COMPLIANCE DETERMINATION	6-4
6.5 TOXIC AIR POLLUTANT ANALYSIS	6-7
7.0 ADDITIONAL IMPACT ANALYSIS	7-1
7.1 VISIBILITY	7-1
7.2 SOILS AND VEGETATION	7-1
7.3 GROWTH	7-1

CONTENTS

Page

LIST OF TABLES

TABLE 3-1	COMBUSTION TURBINE STACK PARAMETERS AND EMISSION RATES	3-3
TABLE 3-2	POTENTIAL ANNUAL EMISSIONS FROM THE COMBUSTION TURBINES	3-5
TABLE 4-1	COMPARATIVE CAPITAL COSTS OF ALTERNATIVE NO _x CONTROL TECHNOLOGY FOR NATURAL GAS FIRING	4-5
TABLE 4-2	COMPARATIVE LEVELIZED ANNUAL COSTS OF ALTERNATIVE NO _x CONTROL TECHNOLOGY DURING NATURAL GAS FIRING	4-6
TABLE 4-3	COMPARATIVE CAPITAL COSTS OF ALTERNATIVE NO _x CONTROL TECHNOLOGY FOR NO. 2 FUEL OIL FIRING	4-7
TABLE 4-4	COMPARATIVE LEVELIZED ANNUAL COSTS OF ALTERNATIVE NO _x CONTROL TECHNOLOGY DURING NO. 2 FUEL OIL FIRING	4-8
TABLE 4-5	EVALUATION CRITERIA	4-10
TABLE 4-6	COMPARATIVE CAPITAL COSTS OF ALTERNATIVE CO/VOC CONTROL TECHNOLOGY	4-15
TABLE 4-7	OTHER REGULATED AND HAZARDOUS AIR POLLUTANTS	4-18
TABLE 6-1	DISPERSION MODELING RESULTS - FUEL OIL COMBUSTION	6-2
TABLE 6-2	INTERACTING SOURCE INVENTORY LIST	6-6
TABLE 6-3	TOXIC POLLUTANT EMISSIONS AND AIR QUALITY IMPACTS	6-9
TABLE 7-1	VISIBILITY ANALYSIS RESULTS	7-2

CONTENTS

Page

LIST OF FIGURES

FIGURE 2-1	PROJECT SITE LOCATION MAP	2-2
FIGURE 2-2	PROJECT SITE ARRANGEMENT	2-3

APPENDICES

APPENDIX A	GEP ANALYSIS	A-1
APPENDIX B	MODELING RUN LISTING	B-1

1.0 Introduction

In January 1988, Orlando Utilities Commission (OUC) submitted a PSD permit application to construct four new nominal 35 MW (50 MW peak capacity) simple cycle combustion turbines at their Indian River generating station near Titusville, Florida. The application specified four General Electric (GE) Frame 6 combustion turbines, with provisions for the immediate installation of units A and B, and phased construction for the final two units (C and D). Construction permits were issued by the Florida Department of Environmental Regulation (FDER) for all four units on September 1, 1988. Units A and B were installed shortly after permit issuance. Operating permits were issued for these units on August 30, 1990.

The construction of the third and fourth combustion turbines was initially scheduled to begin on November 1, 1989, and November 1, 1990, respectively. However, because of increasing power needs in central Florida, the design of the Indian River facility has been revised. The new design substitutes two nominal 110 MW (129 MW peak capacity) Westinghouse 501-D5 combustion turbines for the previously proposed GE units.

An amendment for two of the existing PSD construction permits (AC-05-146750 and AC-05-146751), with associated air quality dispersion modeling and BACT determination, is necessary prior to installation of these two units. The air dispersion modeling is needed to evaluate the ambient air quality impacts of the two Westinghouse units in conjunction with the two existing GE units. The BACT determination is required per the existing permit's specific condition 15 to evaluate the latest technologies available to reduce pollutant emissions from the Westinghouse combustion turbines. The BACT determination provided in this application is based solely on the two proposed Westinghouse units.

This document, along with the attached "Application to Amend Authority to Construct Air Pollution Sources" forms (DER Form 17-1.202(1)) should be considered a formal request to amend the PSD construction permits for Units C and D at the Indian River facility. This document contains all the necessary information to demonstrate the facility's continued compliance with all applicable federal and state air quality standards.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

\$5000 pd.
3-7-91
Receipt #151252
BOB GRAHAM
GOVERNOR
VICTORIA J. TSCHINKEL
SECRETARY
G. DOUG DUTTON
DISTRICT MANAGER

RTHEAST DISTRICT
3425 BILLS ROAD
JACKSONVILLE, FLORIDA 32207



AC 05-193720
PSD-FL-173

AMEND AUTHORITY TO
APPLICATION TO ~~OPERATE~~/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Combustion Turbine Facility New¹ Existing¹
APPLICATION TYPE: Construction* Operation Modification *Amendment
COMPANY NAME: Orlando Utilities Commission COUNTY: Brevard
Identify the specific emission point source(s) addressed in this application (i.e. Line
Kiln No. 4 with Venturi Scrubber; Peaking Unit No. 2, Gas Fired) 4-Unit Combustion
Turbine Facility
SOURCE LOCATION: ~~Street~~ Indian River Plant City Titusville
UTM: East 521.5 km North 3151.6 km
Latitude 28 ° 29 ' 32 " N Longitude 80 ° 46 ' 59 " W
APPLICANT NAME AND TITLE: Orlando Utilities Commission
APPLICANT ADDRESS: 500 South Orange Avenue, Orlando, FL 32802

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Orlando Utilities Commission
Amendment to the
I certify that the statements made in this application for an Existing 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: [Signature]
William H. Herrington, Manager Electric Operations
Name and Title (Please type)
Date: 3/5/91 Telephone No. 407/423-9100

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 this
permit application. There is reasonable assurance, in my professional judgment, that

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

the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and all 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 _____

Steven M. Day

Name (Please Type)

Black & Veatch

Company Name (Please Type)

P.O. Box 8405, Kansas City, MO 64114

Mailing Address (Please Type)

Florida Registration No. 43028 Date: February 26, 1991 Telephone No. 913-339-2000

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.

A project description is provided in Section 2 of this Application to Amend. The project will result in full compliance.

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

Start of Construction October 1991 Completion of Construction September 1992

- 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.)

The amended Units C & D will be equipped with water injection to control NO_x emissions.

However, a cost estimate for the water treatment and injection system is not available at this time.

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

Construction Permits: AC-05-146750 - December 8, 1989

AC-05-146751 - December 8, 1989

E. Requested permitted equipment operating time: hrs/day _____; days/wk _____; wks/yr _____
if power plant, hrs/yr 8760; if seasonal, describe: _____

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

- | | |
|---|------------|
| 1. Is this source in a non-attainment area for a particular pollutant? | <u>No</u> |
| a. If yes, has "offset" been applied? | <u>N/A</u> |
| b. If yes, has "Lowest Achievable Emission Rate" been applied? | <u>N/A</u> |
| c. If yes, list non-attainment pollutants. _____ | <u>N/A</u> |
| 2. Does best available control technology (BACT) apply to this source?
If yes, see Section VI. | <u>Yes</u> |
| 3. Does the State "Prevention of Significant Deterioration" (PSD)
requirement apply to this source? If yes, see Sections VI and VII. | <u>Yes</u> |
| 4. Do "Standards of Performance for New Stationary Sources" (NSPS)
apply to this source? | <u>Yes</u> |
| 5. Do "National Emission Standards for Hazardous Air Pollutants"
(NESHAP) apply to this source? | <u>No</u> |

- H. Do "Reasonably Available Control Technology" (RACT) requirements apply
to this source? No
- a. If yes, for what pollutants? N/A
- b. If yes, in addition to the information required in this form,
any information requested in Rule 17-2.650 must be submitted.

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

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

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

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% wt		
XXX N/A				

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

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

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

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

Name of Contaminant	Emission ¹		Allowed Emission Rate per Rule 17-2	Allowable ³ Emission lbs/hr	Potential ⁴ Emission		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/yr	T/yr	
			(See Section 3.0 of the Application to Amend)				

¹See Section V, Item 2.

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

³Calculated from operating rate and applicable standard.

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

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

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles Size Collected (in microns) (If applicable)	Basis for Efficiency (Section V Item 5)
(See Section 4.0 of the Application to Amend)				

E. Fuels - Units C & D only

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avq/hr	max./hr	
Natural Gas @ ISO	Base Load	1.42 mcf/h/unit	1,226/unit
No. 2 Fuel Oil @ ISO	Base Load	9,057 gal/h/unit	1,185/unit
Natural Gas (worst-case)	Peak Load	1.54 mcf/h/unit	1,354/unit
No. 2 Fuel Oil (worst-case)	Peak Load	10,282 gal/h/unit	1,346/unit

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

Fuel Analysis: (Typical No. 2 Fuel Oil)

Percent Sulfur: 0.30 (max) Percent Ash: _____

Density: 7.05 lbs/gal Typical Percent Nitrogen: _____

Heat Capacity: 18,582 BTU/lb 131,003 BTU/gal

Other Fuel Contaminants (which may cause air pollution): See Section 4.0 of the Application to Amend

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

Annual Average None Maximum None

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

No liquid or solid wastes will be generated.

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

Stack Height: See Section 3.0 of the _____ ft. Stack Diameter: _____ ft.
 Application to Amend
 Gas Flow Rate: _____ ACFM _____ OSCFM Gas Exit Temperature: _____ °F
 Water Vapor Content: _____ % Velocity: _____ FPS

SECTION IV: INCINERATOR INFORMATION

N/A

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

Description of Waste _____

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

Approximate Number of Hours of Operation per day _____ day/wk _____ wks/yr. _____

Manufacturer: _____

Date Constructed _____ Model No. _____

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

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

Gas Flow Rates: _____ ACFM _____ OSCFM* Velocity: _____ FPS

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

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

Brief description of operating characteristics of control devices: _____

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

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

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

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

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

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

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

Yes No

Contaminant	Rate or Concentration
SO ₂	150 ppmvd or 0.80 percent S in fuel
NO _x	75 ppmvd (plus heat rate adjustment)

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

Yes No

Contaminant	Rate or Concentration

C. What emission levels do you propose as best available control technology? *Units C & D only

Contaminant	Rate or Concentration
SO ₂	0.30 percent sulfur in fuel
NO _x	42/25 ppmvd (No. 2 fuel oil/natural gas)
CO	25 ppmvd
VOC	15/5 ppmvd (No. 2 fuel oil/natural gas)

D. Describe the existing control and treatment technology (if any). See Section 4.0 of the Application to Amend

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

Explain method of determining

5. Useful Life:

6. Operating Costs:

7. Energy:

8. Maintenance Cost:

9. Emissions:

Contaminant

Rate or Concentration

Contaminant	Rate or Concentration

10. Stack Parameters

a. Height:

Ft.

b. Diameter:

Ft.

c. Flow Rate:

ACFM

d. Temperature:

*F.

e. Velocity:

FPS

E. Describe the control and treatment technology available (As many types as applicable use additional pages if necessary). See Section 4.0 of the Application to Amend

1.

a. Control Device:

b. Operating Principles:

c. Efficiency:¹

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:²

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

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

2.

a. Control Device:

b. Operating Principles:

c. Efficiency:¹

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:²

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

¹ Explain method of determining efficiency.

² Energy to be reported in units of electrical power - KWH design rate.

j. Applicability to manufacturing processes:

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

3.

a. Control Device:

b. Operating Principles:

c. Efficiency:¹

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:²

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

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

4.

a. Control Device:

b. Operating Principles:

c. Efficiency:¹

d. Capital Costs:

e. Useful Life:

f. Operating Cost:

g. Energy:²

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

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

F. Describe the control technology selected: See Section 4.0 of the Application to Amend

1. Control Device:

2. Efficiency:¹

3. Capital Cost:

4. Useful Life:

5. Operating Cost:

6. Energy:²

7. Maintenance Cost:

8. Manufacturer:

9. Other locations where employed on similar processes:

a. (1) Company:

(2) Mailing Address:

(3) City:

(4) State:

¹Explain method of determining efficiency.

²Energy to be reported in units of electrical power - KWH design rate.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:¹

Contaminant

Rate or Concentration

Contaminant	Rate or Concentration

(8) Process Rate:¹

b. (1) Company:

(2) Mailing Address:

(3) City:

(4) State:

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:¹

Contaminant

Rate or Concentration

Contaminant	Rate or Concentration

(8) Process Rate:¹

10. Reason for selection and description of systems:

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

SECTION VII - PREVENTION OF SIGNIFICANT DETERIORATION

A. Company Monitored Data No preconstruction monitoring required - See Section 6.0 of the Application to Amend

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

Period of Monitoring _____ / _____ / _____ to _____ / _____ / _____
month day year month day year

Other data recorded _____

Attach all data or statistical summaries to this application.

Specify bubbler (B) or continuous (C).

2. Instrumentation, Field and Laboratory

a. Was instrumentation EPA referenced or its equivalent? Yes No

b. Was instrumentation calibrated in accordance with Department procedures?
 Yes No Unknown

B. Meteorological Data Used for Air Quality Modeling (per FDER approval)

1. 5 Year(s) of data from 01 / 01 / 81 to 12 / 31 / 85
month day year month day year

2. Surface data obtained from (location) Orlando, Florida

3. Upper air (mixing height) data obtained from (location) Tampa, Florida

4. Stability wind rose (STAR) data obtained from (location) N/A

C. Computer Models Used

1. Screen (UNAMAP 6) Modified? If yes, attach description.

2. ISCST (UNAMAP 6) Modified? If yes, attach description.

3. _____ Modified? If yes, attach description.

4. _____ Modified? If yes, attach description.

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

Applicants Maximum Allowable Emission Data Units C & D only

Pollutant	Emission Rate	
	13.6 g/s/unit (oil)	
159 / PM ₁₀	0.6 g/s/unit (natural gas)	grams/sec
	54.8 g/s/unit (oil)	
50 ²	0.1 g/s/unit (natural gas)	grams/sec

E. Emission Data Used in Modeling See Section 3.0 and 6.0 of the Application to Amend

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

F. Attach all other information supportive to the PSD review. See Application to Amend

Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources. See Section 4.0 of the Application to Amend

Attach scientific, engineering, and technical material, reports, publications, journals, and other competent relevant information describing the theory and application of the requested best available control technology. See Section 4.0 of the Application to Amend

2.0 Project Description

2.1 Project Site

The OUC Indian River generating station is located in Brevard County, Florida, on land currently owned by OUC. A project site location map is shown in Figure 2-1. The Indian River generating station is located adjacent to the Indian River, approximately 3 kilometers south of the John F. Kennedy Space Center. The site encompasses approximately 80 acres of which only about 2.5 acres will be disturbed for construction of the proposed Units C and D combustion turbines. Unpaved areas disturbed by construction activities will be landscaped to match the surrounding conditions.

The two Westinghouse combustion turbine units will be located directly south of the existing GE units. The approximate UTM coordinates of the Westinghouse units are as follows:

Unit C: 521.19 km East, 3151.54 km North

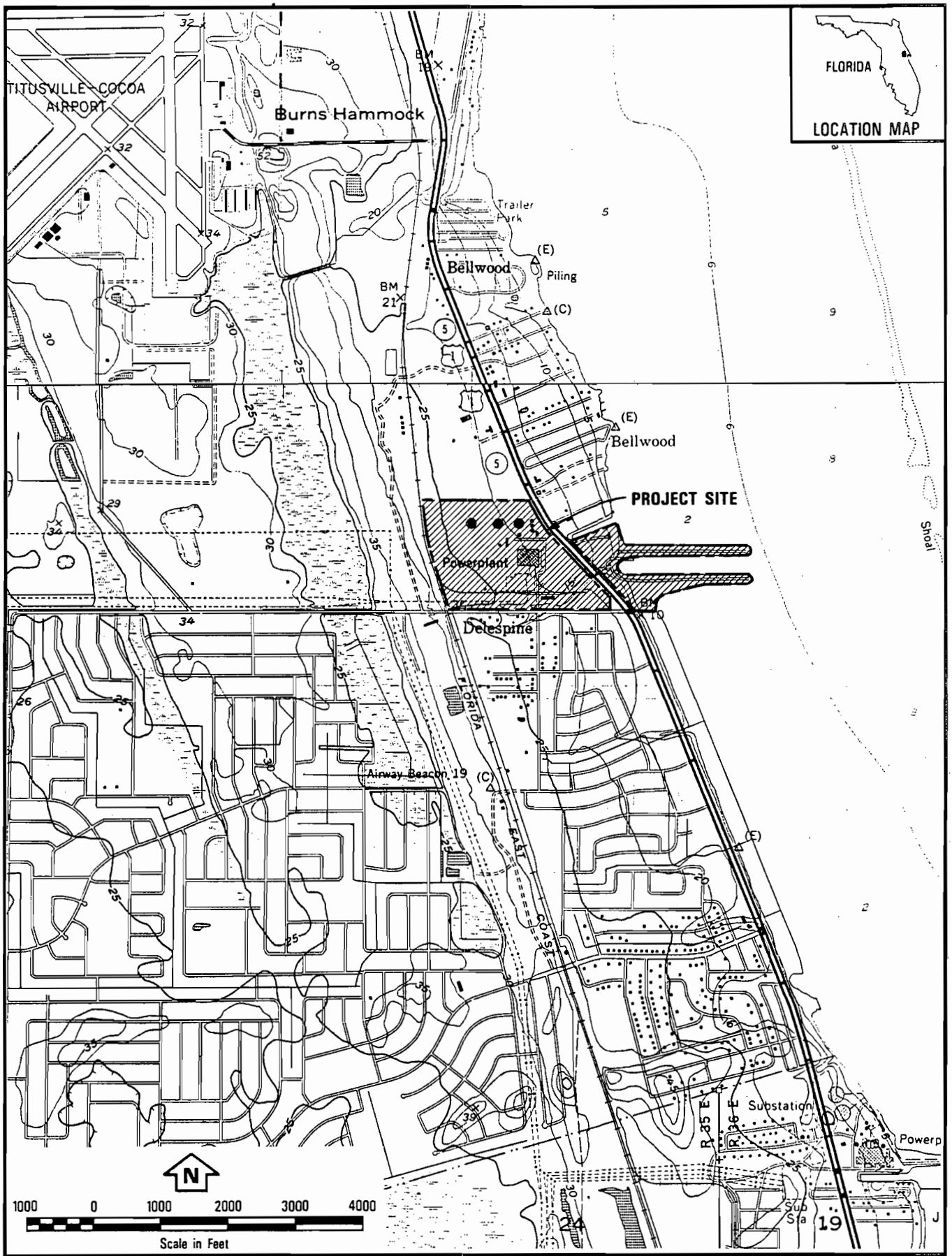
Unit D: 521.19 km East, 3151.50 km North

2.2 Project Facility

The original combustion turbine project plan called for the installation of four GE combustion turbine generators, a demineralized water storage tank, a No. 2 fuel oil storage tank, and a warehouse for storage of the combustion turbine generator spare parts. The original project also included provisions for the relocation of a 1 MW diesel generator from OUC's Lake Highland facility to the Indian River Plant Site.

The amended project plan revises only the final two combustion turbine units. All other facilities were installed with the initial Units A and B. A plant site arrangement is shown in Figure 2-2.

The Westinghouse 501-D5 simple cycle turbine package includes the combustion turbine engine assembly; generator and exciter; starting package; and inlet and exhaust systems. It is constructed in modules for easy shipping and installation. Coupled to the compressor end of the combustion turbine rotor shaft is the open air cooled generator with the exciter connected directly to it. Air enters the combustion turbine through an inlet duct located on the side of the unit. Within the duct are filters and a silencer for sound



Base Map Source: USGS,
Titusville and Sharpes, FL quadrangles

PROJECT SITE LOCATION

Figure 2-1

attenuation. The exhaust leaves the unit through a transition duct into a 50 foot vertical stack.

Ground water will be demineralized and used as injection water to the combustion turbines for NO_x control. All of the combustion turbine's auxiliary requirements (electrical distribution system) can be met with the existing equipment.

2.3 Project Operation

The addition of the Westinghouse combustion turbines is designed to have a minimal impact on the existing facility operations. A majority of the construction of the new turbines can be accomplished without disrupting utility services. However, short outages may be required for some electrical and piping interconnections to the existing systems. The Westinghouse combustion turbines are designed to operate 8,760 hours per year.

2.4 Project Fuels

The Westinghouse combustion turbines are designed to fire natural gas as the primary fuel and No. 2 fuel oil as a backup fuel. The combustion turbines are also designed with black start capability. The Indian River generating station receives natural gas from Florida Gas & Transmission, Citrus Industries Company, or on the spot market via the existing gas pipeline on a continual basis. The No. 2 fuel oil is transported to the site by truck. No. 2 fuel oil will be used when the natural gas supply is interrupted or if this fuel becomes economically advantageous. Of the two fuels, No. 2 fuel oil will produce higher pollutant emission rates than natural gas. Therefore, combustion and emission parameters for No. 2 fuel oil usage were used in the dispersion modeling to determine worst-case ambient air quality impacts.

3.0 Source Characterization

This section discusses the applicability of federal, state, and local air quality regulations, good engineering practice (GEP) stack height determination, stack parameters and source emission rates, and the current air quality status at the Indian River plant site. Current engineering estimates and the projections of the final design were used to establish the modeling parameters.

3.1 Applicability Of Regulations

The application to amend the existing PSD construction permits for Units C & D is subject to Prevention of Significant Deterioration (PSD) regulations because the original planned installation of four combustion turbines at the Indian River plant constituted a major modification to an existing major stationary source, and the plant is located in an area designated as "attainment" or "unclassifiable" for all applicable criteria pollutants. In addition, Specific Condition 15 in the construction permits require PSD review of any units for which construction is not commenced within 18 months of permit issuance. New Source Performance Standards (NSPSs) Subpart GG and Florida Air Pollution and Permit Rules and Regulations are also applicable.

3.2 GEP Stack Height Determination

A GEP stack height analysis was conducted for the existing and proposed buildings and structures at the Indian River plant. Pollutant dispersion from stacks built to the maximum GEP height will not be influenced by surrounding building turbulence. If stacks are built lower than GEP, special air quality modeling techniques such as downwash and cavity analysis are required to demonstrate compliance with air quality standards. EPA's Guideline For Determination of Good Engineering Practice Stack Height (1985) was used as a basis for this GEP analysis.

The existing GE and proposed Westinghouse combustion turbine stacks are located approximately 700 to 1,000 feet west of the existing Unit 3 steam generator building. At this distance, the combustion turbines are not

influenced by this or any other existing structures at the plant. Therefore, only the combustion turbine structures themselves will influence the GEP stack height determinations.

The results of the GEP determinations and direction specific downwash parameters are given in Appendix A. The GEP stack height for Unit A (existing GE combustion turbine) is 70 feet. The remaining three combustion turbines all have calculated GEP stack heights of 100 feet. Because all four turbine stacks will be built to less than GEP height, building parameters from the combustion turbines were used to calculate direction specific building downwash conditions. The direction specific building downwash was incorporated into the revised air quality dispersion modeling analysis provided with this application. Building downwash was not evaluated in the original (1988) permit application.

3.3 Stack Parameters and Source Emissions

The stack parameters and source emission rates for fuel oil and natural gas firing of all four combustion turbines are given in Table 3-1. All calculations are based on preliminary engineering and/or manufacturer performance data. Stack parameters and emission rates were calculated for peak load operating conditions and 20 F, sea level (14.7 psi) pressure, and 60 percent relative humidity ambient conditions. These conditions represent the worst-case operating conditions at the facility.

Only No. 2 fuel oil combustion parameters were used in the dispersion modeling because the emissions from No. 2 fuel oil combustion are equal to or greater than those for natural gas combustion for each pollutant.

The estimated worst-case pollutant emissions from the four combustion turbines are based on a design fuel burn rate of 534.1 MBtu/h for the two GE units and 1,345.5 MBtu/h for the two Westinghouse units. These fuel burn rates represent a peak load condition while firing No. 2 fuel oil. A lower heating value (LHV) of 18,582 Btu/lb was used for the No. 2 fuel oil.

The NO_x emission estimates for the two existing GE Frame 6 combustion turbines are based on an approved BACT outlet concentration of 65 ppmvd (at 15 percent O₂) while firing No. 2 fuel oil. A BACT outlet concentration of 42 ppmvd (at 15 percent O₂) while firing No. 2 fuel oil was used for the proposed

Table 3-1
 Combustion Turbine Stack Parameters and Emission Rates*

<u>Parameters</u>	<u>GE Frame 6</u>	<u>Westinghouse 501-D5</u>
Stack Height (ft)	36	50
Stack Diameter (ft)	12.36	22.14
Volumetric Flow (acfm)	786,290	1,970,269
Stack Exit Velocity (fpm)	6,552	5,117
Temperature (F)	1,035	977
Emissions:		
SO ₂ (g/s/unit) - Fuel Oil	21.7	54.8
- Natural Gas	0.02	0.06
NO _x (g/s/unit) - Fuel Oil	18.6	29.1
- Natural Gas	10.9	17.2
CO (g/s/unit) - Fuel Oil	1.5	9.1
- Natural Gas	1.5	9.1
PM (g/s/unit) - Fuel Oil	3.1	13.6
- Natural Gas	0.4	0.6

*Stack parameters and emission rates are based on peak load operations at 20 F ambient temperature, sea level (14.7 psi) pressure, and 60 percent relative humidity. These conditions will result in the maximum heat input and pollutant emission rates.

Westinghouse combustion turbines. These emissions are based on low NO_x burner controls and the use of water injection to control NO_x emissions.

The SO₂ pollutant emission estimates for all four combustion turbines were based on firing No. 2 fuel oil with a maximum fuel sulfur content of 0.3 percent by weight. All other criteria pollutant emission rates, except lead, were obtained from data provided by the turbine manufacturers.

Emission rates for noncriteria and toxic air pollutant emissions were based on information contained in the EPA document entitled Toxic Air Pollutant Emission Factors- A Compilation for Selected Air Toxic Compounds and Sources, (EPA-450/2-88-006a). Emission rates for the PSD noncriteria pollutants beryllium (Be), lead (Pb), and mercury (Hg) were given in this document for fuel oil combustion. Sulfuric acid (H₂SO₄) mist emission rates were estimated as 3 percent of the SO₂ emission rate for fuel oil combustion. Asbestos, fluorides (F), and vinyl chloride (C₂H₃Cl) are not found in measurable quantities from No. 2 fuel oil firing. No measurable levels of any noncriteria pollutants are found to result from natural gas firing.

Be, Pb, and Hg are found in No. 2 fuel oil in trace amounts. A typical Be concentration in fuel oil is 2.5×10^{-6} pounds per million Btu. Pb concentrations are estimated at 2.8×10^{-5} pounds per million Btu. Hg concentrations are estimated to be 3.0×10^{-6} pounds per million Btu.

H₂SO₄ mist results from oxidation of the SO₂ in the flue gas to sulfur trioxide (SO₃). The SO₃ then combines with water vapor to form the sulfuric acid mist. Approximately 3 percent of the SO₂ is converted to sulfuric acid mist. Based on these estimates, the sulfuric acid mist concentration is 9.7×10^{-3} pounds per million Btu for No. 2 fuel oil combustion.

Table 3-2 presents the maximum potential annual emissions from the addition of all four combustion turbines. These emissions are based on ISO operating conditions. ISO conditions most closely approximate the annual operating conditions of these units. Revised ambient air quality modeling has been conducted for SO₂, NO_x, PM, and CO.

Table 3-2
Potential Annual Emissions From the Combustion Turbines

Pollutant	Potential Annual Emissions*			PSD Significance Levels	Σ x c under PSD
	2-GE (tons)	2-WH (tons)	Total (tons)		
CO	88	635	723	100	yes ↓
NO _x	1,036	1,760	2,796	40	
SO ₂	1,234	3,356	4,590	40	
TSP	175	838	1,013	25	
PM ₁₀	175	838	1,013	15	
VOC	36	403	439	40	
Lead	0.1	0.3	0.4	0.6	NO
Asbestos	negl	negl	negl	0.007	NO
Beryllium	0.01	0.03	0.04	0.0004	yes
Mercury	0.01	0.03	0.04	0.1	NO
Vinyl Chloride	negl	negl	negl	1.0	NO
Fluorides	negl	negl	negl	3.0	NO
H ₂ SO ₄ mist	37	101	138	7.0	yes
Total Reduced S	negl	negl	negl	10.0	NO
Reduced S	negl	negl	negl	10.0	↓
H ₂ S	negl	negl	negl	10.0	

1346 ~~tons~~ / HR

ISO ~~3.0~~ LB / MM BTU

*Estimated annual emission rates are based on operations at ISO conditions. ISO conditions are defined as 59 F ambient temperature, sea level (14.7 psi) pressure, and 60 percent relative humidity. These conditions most closely approximate the annual operating conditions of these units.

4.0 Best Available Control Technology (BACT)

4.1 Introduction

OUC Indian River Plant is currently permitted to construct four GE Frame 6 simple cycle combustion turbines (Permit Nos. AC 05-144482, AC 05-146749, AC 05-146750, and AC 05-146751). Under these permits, the NO_x emission limits were set at 42 ppmvd or 65 ppmvd at 15 percent oxygen when burning natural gas or No. 2 fuel oil, respectively. These emission levels are achieved with water injection. The permit also stipulated that only natural gas or No. 2 fuel oil can be burned in the combustion turbine. SO_2 emissions are controlled by limiting the maximum sulfur content of the No. 2 fuel oil to 0.30 percent by weight.

The four turbines are being installed in two construction phases. In Phase I, OUC installed two of the four GE combustion turbines (peak output of 50 MW each). These two units are currently operating at the Indian River Plant. However, due to an increase in power demand, Phase II will consist of the installation and operation of two Westinghouse 501-D5 simple cycle combustion turbines. The peak output for these turbines is approximately 129 MW each and is significantly higher than was previously permitted. This change in equipment constitutes the need for an amendment to Permit Nos. AC 05-146750 and AC 05-146751.

Natural gas and No. 2 fuel oil will continue as the primary and backup fuels, respectively. Section 3.0 concluded that when 0.30 percent sulfur No. 2 fuel oil is used in all four turbines for the maximum project operation (8,760 hours per year), the emissions of the following regulated pollutants are subject to the provisions of the PSD Program.

- Nitrogen Oxides (NO_x)
- Sulfur Dioxide (SO_2)
- Sulfuric Acid Mist (H_2SO_4)
- Volatile Organic Compounds (VOC)
- Particulate (Total and PM10)
- Beryllium (Be)
- Carbon Monoxide (CO)

A BACT determination was previously performed for the four proposed GE turbines. The two operating GE turbines are using the control measures demonstrated as BACT from that evaluation. Specific condition 15 in the

construction permits requires OUC to obtain from DER a review and, if necessary, a modification of the control technology and allowable emissions for any unit on which construction did not commence within 18 months of issuance of the permit. Construction for Units C and D has not begun within this time period. Consequently, this BACT analysis will address the control of applicable emissions of these PSD pollutants when burning either natural gas, or No. 2 fuel oil. Also included are evaluations of the effects of the BACT systems selected on the emissions of unregulated hazardous pollutants.

Under the federal Clean Air Act, BACT represents the maximum degree of pollutant reduction determined on a case-by-case basis considering technical, economic, energy, and environmental considerations. However, BACT cannot be less stringent than the emission limits established by the applicable New Source Performance Standards (NSPS) Subpart GG.

This BACT analysis follows the general requirements of EPA's draft "top down" BACT guidance document (May 1990). This approach requires that the BACT analysis start by assuming the use of the Lowest Available Emission Rate (LAER) control alternative. Less efficient emission control technologies are subsequently evaluated if LAER is determined to be unreasonable considering the above factors.

The BACT analysis for Phase II of the OUC Indian River combustion turbine project is contained in the following sections. The cost data and predicted emission rates are for only the two proposed Westinghouse 501D combustion turbines.

4.2 Nitrogen Oxides Emissions Control

During combustion, two types of NO_x are formed; fuel NO_x and thermal NO_x . Fuel NO_x emissions are formed through the oxidation of a portion of the nitrogen contained in the fuel. Thermal NO_x emissions are generated through the oxidation of a portion of the nitrogen contained in the combustion air. Nitrogen oxides formation can be limited by lowering combustion temperatures, and staging combustion (a reducing atmosphere followed by an oxidizing atmosphere).

The following subsections describe the potential NO_x control technologies, associated costs for the feasible technologies, and energy/environmental considerations.

4.2.1 Alternative NO_x Emission Reduction Systems

The EPA has established an NSPS limitation for NO_x emissions from electric utility combustion turbines at 75 parts per million dry volume (ppmvd) at 15 percent oxygen (O₂), with a correction for fuel bound nitrogen content and turbine heat rate [40 CFR 60.332(b)]. A review of EPA's BACT/LAER Clearinghouse--A Compilation of Control Technology Determinations (1985 and 1990 editions) was performed to determine the control technology resulting in the lowest NO_x emission levels established to date for simple cycle combustion turbines. The identified technology was the use of water or steam injection with an improved low NO_x burner design.

For this BACT analysis, three potential control technologies are evaluated: selective catalytic reduction (SCR), selective non-catalytic reduction (SNCR), and improved low NO_x burner design.

4.2.1.1 Selective Catalytic Reduction SCR. SCR is a post-combustion method for the control of NO_x emissions. The SCR process combines vaporized ammonia with NO_x in the presence of a catalyst to form nitrogen and water. The vaporized ammonia is injected into the exhaust gases prior to passage through the catalyst bed. The SCR process can achieve up to 90 percent reduction of NO_x with a new catalyst. An aged catalyst will provide a maximum of approximately 80 to 85 percent NO_x reduction.

The optimum flue gas temperature range for SCR operation is approximately 650 to 750 F. Flue gas from the simple cycle combustion turbines will typically be 950 F to 1,100 F. Therefore, the gas must be cooled prior to the injection of ammonia.

The most economical method to reduce the flue gas temperature is through humidification with water. The water quality for humidification must be free of sodium and salt deposits to protect the SCR catalyst. The project's proposed water treatment system is designed to provide only enough water to the CT units for turbine water injection. **Therefore, an expansion of the water treatment facility would be required to demineralize the additional water required for humidification prior to the SCR.**

4.2.1.2 Selective Non-catalytic Reduction (SNCR). NO_x emissions from a few fluidized bed combustion sources have been controlled through the installation of an SNCR systems such as Thermal DeNO_x. An SNCR system requires gas temperatures of at least 1,500 F for NO_x reduction. The

temperature at the outlet of a combustion turbine is too low (950 F to 1,100 F) for such systems. Raising the flue gas exit temperature to 1,500 F would require supplemental heating of the flue gas and increases total emissions. Therefore, this alternative is judged technically unacceptable for a combustion turbine application and will not be evaluated further.

4.2.1.3 Improved Low NO_x Burner Design. Combustion turbine manufacturers are marketing an improved low NO_x burner design. These burners provide improved air/fuel mixing and reduced flame temperatures. This burner technology along with water or steam injection result in lower concentrations of NO_x in comparison to standard combustion chamber design with water injection (25 versus 42 ppmvd when firing natural gas). Accordingly, the capital and annual cost of a low NO_x combustor to meet a 25/42 (natural gas/oil) ppmvd NO_x emission limit is considered base for this evaluation.

4.2.2 Capital and Operating Costs of Alternatives

Tables 4-1 through 4-4 present the capital and levelized annual costs for the two viable NO_x control systems for natural gas and No. 2 fuel oil combustion. The annual reduction of NO_x emissions is based on the Westinghouse turbines operating 8,760 hours per year. The differential capital costs for the SCR system include the costs of the catalytic reactors, ammonia storage/injection system, expansion of the water treatment facilities, and balance of plant equipment which includes foundations and erection of the ammonia storage system.

In addition to the equipment costs, the total capital costs include a contingency charge, escalation, indirect costs, and interest during construction. Contingency is added to account for uncertainties associated with estimating the capital costs for a project. Escalation is added to account for the increase

Table 4-1
 Comparative Capital Costs of Alternative NO_x
 Control Technology For Natural Gas Firing*

	Improved Low NO _x Burner Design <u>Plus SCR</u>	Improved Low NO _x Burner <u>Design</u>
Differential Combustion Turbine Costs	Base	Base
SCR Reactors	\$4,780,000	NA
Ammonia Storage and Injection Equipment	\$460,000	NA
Water Treatment, Storage and Injection Equipment	\$2,800,000	Base
Balance-of-Plant	<u>\$140,000</u>	<u>Base</u>
Direct Capital Cost (1990)	\$8,180,000	Base
Contingency	\$1,230,000	Base
Escalation	<u>\$820,000</u>	<u>Base</u>
Direct Capital Cost	\$10,230,000	Base
Indirects	\$1,640,000	Base
Interest During Construction	<u>\$470,000</u>	<u>Base</u>
Total Capital Costs (1992)	\$12,340,000	Base

*Based on two Westinghouse turbines.

Table 4-2
 Comparative Levelized Annual Costs of Alternative NO_x
 Control Technology During Natural Gas Firing*

	Improved Low NO _x Burner Design <u>Plus SCR</u>	Improved Low NO _x Burner <u>Design</u>
Operation and Maintenance Costs	\$3,170,000	Base
Ammonia	\$180,000	NA
Energy	\$130,000	Base
Generating Cost Adjustment	\$1,320,000	Base
Fixed Charges	<u>\$1,340,000</u>	<u>Base</u>
Total Annual Costs	\$6,140,000	Base
Annual NO _x Emissions	220 tons	1,090 tons
Incremental Annual NO _x Emission Reduction	870 tons	Base
Incremental Levelized Cost per Ton of NO _x Removed	\$7,060	Base

*Based on two turbines and 8,760 hours/year of natural gas fired operation at ISO conditions (59 F and 60 percent relative humidity).

Table 4-3
 Comparative Capital Costs of Alternative NO_x
 Control Technology for No. 2 Fuel Oil Firing*

	Improved Low NO _x Burner Design <u>Plus SCR</u>	Improved Low NO _x Burner Design <u>Design</u>
Differential Combustion Turbine Costs	Base	Base
SCR Reactors	\$4,760,000	NA
Ammonia Storage and Injection Equipment	\$460,000	NA
Water Treatment, Storage and Injection Equipment	\$2,800,000	Base
Balance-of-Plant	<u>\$140,000</u>	<u>Base</u>
Direct Capital Cost (1990)	\$8,160,000	Base
Contingency	\$1,220,000	Base
Escalation	<u>\$810,000</u>	<u>Base</u>
Direct Capital Cost	\$10,190,000	Base
Indirects	\$1,630,000	Base
Interest During Construction	<u>\$460,000</u>	<u>Base</u>
Total Capital Costs (1992)	\$12,280,000	Base

*Based on two Westinghouse turbines.

Table 4-4
 Comparative Levelized Annual Costs of Alternative NO_x
 Control Technology for No. 2 Fuel Oil Firing*

	Improved Low NO _x Burner Design <u>Plus SCR</u>	Improved Low NO _x Burner Design <u>Design</u>
Operation and Maintenance Costs	\$4,170,000	Base
Ammonia	\$300,000	NA
Energy	\$130,000	Base
Generating Cost Adjustment	\$1,240,000	Base
Fixed Charges	<u>\$1,340,000</u>	<u>Base</u>
Total Annual Costs	\$7,180,000	Base
Annual NO _x Emissions	380 tons	1,760 tons
Incremental Annual NO _x Emission Reduction	1,380 tons	Base
Incremental Levelized Cost per Ton of NO _x Removed	\$5,200	Base

*Based on two turbines and 8,760 hours/year of No. 2 fuel oil fired operation at ISO conditions (59 F and 60 percent relative humidity).

in equipment and labor costs between the time of the evaluation and the midpoint of construction when the equipment costs are assumed to be paid.

Indirects are added to account for general costs, engineering services, field construction management services, and owner costs. Interest during construction accounts for interest paid to construct the facility and assumes that all payments are made in a lump sum at the midpoint of the construction period. Interest therefore, accrues from the midpoint of construction until commercial operation. The sum of all these items then represents the total capital cost for the installation. The evaluation criteria for this phase of the project is shown in Table 4-5.

Levelized annual costs include operating and maintenance costs (including catalyst replacement), ammonia additive, energy, lost generating capacity and fixed charges on the capital investment. The differential energy cost and lost generating capacity for the SCR alternative are the result of the reduced net output of the turbine due to the additional back pressure added by the SCR and the energy requirements of the associated equipment.

The incremental costs are presented for both natural gas and No. 2 fuel oil firing. A \$6.1 million/year levelized annual cost for an SCR results in an incremental removal cost of approximately \$7,060 per ton of NO_x reduction (natural gas). This system should be capable of reducing NO_x emissions by 870 tons per year. In comparison, an SCR for No. 2 fuel oil firing is estimated to have a \$7.2 million/year levelized annual cost. This cost and a reduction of 1,380 tons of NO_x per year results in an incremental cost of about \$5,200 per ton of NO_x reduction.

4.2.3 Energy and Environmental Considerations

The BACT analysis also considers energy and environmental factors. Compared to the improved low NO_x burner design with water or steam injection, the energy requirements of the SCR system would reduce the output of the combustion turbines by approximately 0.5 percent. This output loss directly effects the potential revenue for the facility.

An environmental consideration is that the catalyst can be contaminated because of the continued exposure to trace elements in the flue gas. Therefore, a spent catalyst must be handled and disposed of following hazardous waste procedures. Some catalytic elements are toxic and have to be replaced

Table 4-5
Evaluation Criteria

Contingency, %	15
Indirects, %	16
Escalation, %	7
Present Worth Discount Rate, %	8
Interest During Construction, %	8
Fixed Charges on Capital	10.87
Economic Life, yr	25
Capacity Factor, %	100
Ammonia, \$/ton	250
Labor, \$/yr	45,000
1990 Energy, mills/kwh	70
Commercial Operation	09/01/92
Catalyst Life, yrs	2

periodically. A toxic catalyst will require that hazardous waste disposal procedures must to be followed.

Additionally, ambient air quality modeling demonstrated that the project's ambient air quality impacts are less than the PSD significance criteria for NO_x of 1.0 mg/m^3 and also less than 1 percent of the Florida AAQS, when burning natural gas or No. 2 fuel oil. Meaningful improvements in ambient air quality cannot be achieved through the use of an SCR system.

The use of an SCR system could result in a negative environmental impact. Ammonia is considered a hazardous material and must be handled and stored with extreme care. Homes are located less than 500 feet from the plant boundary. An accidental release of ammonia could potentially result in serious impacts on the residents in these homes.

4.2.4 Conclusions

Installation of an SCR system with approximately 80 percent reduction would meet a NO_x emission limit of 5/9 ppmvd (natural gas/No. 2 fuel oil) and would add approximately \$12.3 million to the capital cost of the project. This addition equipment increases the total project levelized annual costs by \$6.1 to \$7.2 million. The associated incremental removal cost is approximately \$7,060 to \$5,200 per ton of NO_x removed while burning natural gas or No. 2 fuel oil, respectively assuming 8,760 hours per year of facility operation.

Environmentally, ambient air quality modeling has indicated that the project's ambient air quality impacts will be well below NO_x increments and air quality standards significance levels. Also, there are potential environmental risks associated with the use of an SCR system due to unreacted ammonia being released to the atmosphere and disposal methods required for spent catalysts. Therefore, the NO_x BACT proposed for the Westinghouse 501D combustion turbines is the use of a improved low NO_x burner design with water injection to achieve NO_x emissions of 25/42 ppmvd (at 15 percent O_2) when burning natural gas or No. 2 fuel oil, respectively.

4.3 Sulfur Dioxide and Sulfuric Acid Mist Emissions

The NSPS established by the EPA for emissions from combustion turbines sets a maximum SO₂ level in the flue gas of 150 ppmvd (at 15 percent O₂) and a maximum fuel sulfur content of 0.8 percent by weight (40 CFR 60.333). The EPA has not established a combustion turbine NSPS for sulfuric acid mist (H₂SO₄). The turbine manufacturers' emission data indicate that approximately 3 percent of the SO₂ in the flue gas is oxidized to SO₃ which combines with water to form H₂SO₄.

Current BACT/LAER Clearinghouse documents do not list any natural gas, or No. 2 fuel oil fired combustion turbines that are required to use flue gas desulfurization (FGD) systems to meet SO₂ emission requirements. The addition of an FGD system would be an excessive method of SO₂ emission control. The significant capital and operating cost associated with FGD systems could seriously impact the economic feasibility of this phase of the project.

Most PSD permits for No. 2 fuel oil fired combustion turbines have limits for maximum allowable fuel sulfur contents. The use of low sulfur No. 2 fuel oil (maximum of 0.30 percent sulfur) would impose no significant differential capital costs on the project. Additionally ambient air quality dispersion modeling indicated that the facility will comply with PSD increments and air quality standards when burning 0.30 percent sulfur No. 2 fuel oil.

Based on economic, energy, and environmental considerations, the limitation of No. 2 fuel oil sulfur content to 0.30 percent by weight and firing natural gas are proposed as BACT for the SO₂ emissions.

4.4 Particulate Matter Emissions

The emission of particulates from the combustion turbine facility will be controlled by ensuring as complete combustion of the fuel as possible. The NSPS for combustion turbines do not establish an emission limit for particulates. A review of the EPA's BACT/LAER Clearinghouse documents did not reveal any post-combustion particulate matter control technologies being used on gas/oil fueled combustion turbines.

The natural gas and No. 2 fuel oil used for the facility will only contain trace quantities of particulates. Therefore, the proposed BACT for total

suspended particulate and particulate matter smaller than 10 microns (PM₁₀) is complete combustion of the fuel.

4.5 Beryllium Emissions

The emissions of beryllium (Be) from the combustion turbine facility will be determined by the Be content of the fuels. Natural gas has no measurable Be content and No. 2 fuel oil typically contains a trace amount of Be. This amount is on the order of 2.5×10^{-6} pounds per million Btu (lbs/MBtu). The annual Be emissions when firing No. 2 fuel oil for 8,760 hours/year are predicted to be 0.03 tons per year. Therefore, Be is a significant PSD pollutant for the project.

Review of the EPA's BACT/LAER Clearinghouse documents did not reveal any combustion turbine project which has been required to install supplemental pollution control equipment to reduce Be emissions.

Accordingly, complete combustion of the No. 2 fuel oil is proposed as BACT for Be emissions.

4.6 Carbon Monoxide and Volatile Organic Compounds

Carbon monoxide and VOC are formed during the incomplete combustion of the fuel. High combustion temperatures, adequate excess air and good fuel/air mixing during combustion will minimize CO and VOC emissions. Therefore, NO_x control methods of combustion staging and lowering combustion temperature by water injection can be counterproductive with regard to CO and VOC emissions.

To achieve the proposed NO_x BACT levels requires that these control techniques be used. Therefore, this turbine design will have significantly higher CO and VOC emissions than associated with a standard combustor. At the proposed BACT NO_x emissions of 25/42 ppmvd (gas/oil), the turbine will be capable of maintaining CO and VOC emission rates of 25 ppmvd and 5 ppmvd, respectively while burning natural gas. For fuel oil firing, the CO and VOC emission rates will be 25 ppmvd and 15 ppmvd respectively.

Based on a review of EPA's BACT/LAER Clearinghouse--A Compilation of Control Technology Determinations (1985 and 1990 editions), a combustion turbine with proper combustion control and an oxidizing catalyst that limits

CO emissions to 2 ppmvd represents LAER. An oxidizing catalyst is also LAER technology for VOC emissions but the specific ppmvd emission rate was not specified in the clearinghouse document.

4.6.1 Catalytic Reduction

Catalytic reduction is a post-combustion method for reduction of CO and VOC emissions. The process uses a precious metal to oxidize CO to CO₂ with the use of a catalyst and VOC hydrocarbons to CO₂ and H₂O. None of the catalyst components are considered toxic. The optimum flue gas temperature range for CO/VOC catalyst operation is between 850 F and 1,100 F. Flue gas from the combustion turbine will typically be between 950 F to 1,100 F. Therefore, a CO/VOC catalyst could be installed at the discharge of the combustion turbine.

4.6.2 Capital and Operating Costs

Table 4-6 presents the capital and levelized annual costs of a CO/VOC catalyst system. The CO and VOC emissions are based on firing No. 2 fuel oil for a maximum of 8,760 hours per year. The capital costs of the catalyst system includes the cost of the catalyst and balance-of-plant equipment. In addition to the 1990 equipment costs the total capital costs include a contingency charge, escalation, indirect costs, and interest during construction.

Levelized annual costs include operating and maintenance costs (including catalyst replacement), heat rate penalty, lost generating capacity, and fixed charges on capital investment.

A levelized annual cost for the catalyst system is calculated to be about \$3.5 million/year. This system will result in a net total combined reduction of 620 tons per year of CO/VOC, while burning No. 2 fuel oil. This reduction results in an incremental removal cost of approximately \$5,660 per ton of CO/VOC removed. This system is designed to limit CO emission to 5 ppmvd and VOC emissions to 7.5 ppmvd.

Table 4-6
Comparative Capital Costs of Alternative
CO/VOC Control Technology*

	<u>Catalyst</u>
Oxidation Reactors	\$3,020,000
Balance of Plant	<u>\$100,000</u>
Direct Capital Cost (1990)	\$3,120,000
Contingency	\$470,000
Escalation	<u>\$310,000</u>
Direct Capital Cost	\$3,900,000
Indirects	\$620,000
Interest During Construction	<u>\$180,000</u>
Total Capital Costs (1992)	\$4,700,000
Operation and Maintenance Costs	\$1,350,000
Heat Rate Penalty	\$50,000
Generating Cost Adjustment	\$1,600,000
Fixed Charges	<u>\$510,000</u>
Total Annual Costs	\$3,510,000
Annual CO and VOC Emissions	860 tons
Incremental Annual CO and VOC Emission Reduction	620 tons

*Based on two turbines and 8,760 hours/year of No. 2 fuel oil fired operation at ISO conditions (59 F and 60 percent relative humidity).

4.6.3 Other Considerations

A CO/VOC catalyst located downstream of the combustion turbine exhaust will produce an additional back pressure on the combustion turbine. The added back pressure will reduce the electrical output capability of the turbine. Additional back pressure of 3 to 4 inches of water gauge would reduce turbine output by approximately 600 KW per turbine. Lost generating capacity translates directly into lost project revenue. A CO/VOC catalyst will also oxidize SO₂ to SO₃ which upon condensation will form sulfuric acid. This formation will result in increased sulfuric acid emissions to the atmosphere.

4.6.4 Conclusions

On natural gas, VOC emissions are already quite low (5 ppmvd) and no further control technology could be feasibly applied.

A CO/VOC catalyst control system designed to meet a CO and VOC emission limits on oil of 5 ppmvd and 7.5 ppmvd, respectively would add approximately \$4.7 million to the capital cost of the project. The total levelized annual costs for the project increases by \$3.5 million resulting in an incremental removal cost of approximately \$5,660 per ton of CO/VOC removed while burning No. 2 fuel oil for 8,760 hours per year (at 100 percent capacity). This catalyst control system would also be effective at reducing CO emissions on natural gas by the same amount as on oil.

Based on economic, energy, and environmental considerations, the CO and VOC BACT proposed for the project modification is the use of good combustion controls to achieve CO emissions of 25 ppmvd and VOC emissions of 15 ppmvd when burning No. 2 fuel oil and operating the unit for 8,760 hours per year.

4.7 Other Emissions

The project will emit trace quantities of other pollutants at levels which are below the significant emission levels established for the PSD program. Federal and state regulations do not require that BACT be applied for these pollutants, but the effects of the proposed BACT determinations on these pollutants must be considered.

4.7.1 Other Regulated and Hazardous Pollutants

Table 4-7 presents uncontrolled emission estimates for other regulated (mercury, and lead) and hazardous pollutants when firing No. 2 fuel oil. These emission rates have been developed based on manufacturers' information and on information contained in the EPA publications Toxic Air Pollutant Emission Factors--A Compilation For Selected Air Toxic Compounds and Sources (EPA-450/2-88-006a).

The only identified methods of controlling the emission of these pollutants are complete combustion and the inherent quality of the fuel. Injection of water into the turbines to control NO_x emissions has a significant effect on controlling these pollutants. Complete combustion will be required to achieve the identified emission rates of formaldehyde.

Table 4-7
Other Regulated and Hazardous Pollutant Emissions

<u>Pollutant</u>	<u>Emission Rate</u> lb/MBtu	<u>Annual Emission*</u> tons
Arsenic	4.2 E-6	0.04
Beryllium	2.5 E-6	0.03
Cadmium	1.1 E-5	0.11
Chromium	4.8 E-5	0.50
Copper	2.8 E-4	2.90
Formaldehyde**	4.1 E-4	4.26
Lead	2.8 E-5	0.29
Manganese	2.6 E-5	0.27
Mercury	3.0 E-6	0.03
Nickel	1.7 E-4	1.76

*Annual emissions are total for two combustion turbines and are based on annual operation of 8,760 hours/year firing No. 2 fuel oil at ISO conditions (59 F and 60 percent relative humidity) and a fuel burn rate of 1,185 MBtu/h.

**Formaldehyde is also found in natural gas combustion. The emission rates are 8.8 E-5 lb/MBtu or 0.91 tpy.

5.0 Air Quality Dispersion Modeling Methodology

This section discusses the modeling methodology used for determining the ambient air quality impacts for CO, NO_x, SO₂, PM and other trace pollutants resulting from the addition of all four combustion turbines. The modeling methodology used in this analysis is consistent with the methodology used in the previously approved Indian River PSD permit application to construct the four GE Frame 6 combustion turbines submitted in 1988. The air quality modeling input and output computer files supporting this permit amendment will be provided to the FDER with this application.

5.1 Model Selection and Description

The EPA has developed modeling guidelines to provide a common basis for assessing air quality impacts. These guidelines are contained in the document entitled "Guideline on Air Quality Models (Revised)", July 1986, and supplemented in July 1987.

In order to assess the overall combustion turbine impacts, the modeling analyses incorporated simple terrain (terrain with elevations below stack top), rural land use, calculation of short-term and annual pollutant impacts, and building downwash effects. Within EPA's guideline document, the Industrial Source Complex Short-Term (ISCST) dispersion model is recommended for such modeling situations. The ISCST model is a steady-state Gaussian plume model which can be used to assess pollutant concentrations from a wide variety of sources associated with an industrial source complex. This model can also account for plume rise as a function of downwind distance, stack-tip downwash, buoyancy induced dispersion, and concentration adjustments for calm periods.

The ISCST model was used with five years of meteorological data to assess pollutant impacts at receptors in the vicinity of the Indian River generating station. The ISCST model was also used to perform the air dispersion modeling for the January 1988 application.

5.2 Model Options and Assumptions

EPA has issued guidelines to assist in determining what model options should be used. The following assumptions were made for this modeling analyses:

- Standard EPA default modeling options were applied.
- Building downwash was considered as appropriate. Direction-specific building dimensions were included to examine the effects of the building downwash.
- The highest second-highest short-term concentrations and the highest annual concentrations were used for comparison to the standards and PSD increments.
- The site was considered rural based on actual land use within 3 km.

5.3 Receptor Locations

The ISCST model allows the use of either a polar or rectangular receptor grid to predict ground-level concentrations. Polar receptor coordinates were selected for this analysis. The Unit A (existing GE unit) stack represents the center of the receptor array.

Receptor locations were selected with adequate density to ensure that the maximum and highest, second-highest predicted concentrations were determined. Because of the downwash conditions resulting from less than GEP stack heights on the combustion turbines, the short-term impacts were expected to occur within 1,000 meters of the plant. The long term impacts are also influenced by downwash conditions, but were expected to occur at a greater distance from the source.

Rings for the SO₂, NO_x, and TSP analysis were initially placed at 100 meter intervals from 200 to 600 meters, 250 meter intervals from 750 to 1,000 meters, 500 meter intervals from 1,500 meters to 5,000 meters, and 1,000 meter intervals from 6,000 to 15,000 meters. An additional ring was placed at 20,000 meters. Rings were placed out to 10,000 meters for the CO analysis. In addition to these rings, discrete receptors were spaced at 100 meter intervals around the plant fenceline.

The modeled receptor grid represents a denser grid than the one used for the 1988 application. The 1988 application placed receptors along rings located at 0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.5, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, and 14 kilometers.

5.4 Meteorological Data

The ISCST dispersion model was used with five years (1981-1985) of sequential hourly surface meteorological data and twice-daily mixing depths. The surface and mixing depths data were selected from a location most representative of the general area being modeled. A representative location corresponds to the station closest to the location being modeled which is in the same climatic regime.

Hourly surface data from nearby Orlando, Florida and mixing depth data from Tampa, Florida were obtained from the FDER. The data were selected as the most representative of meteorological conditions at the Indian River plant. The data were preprocessed into the "CRSTER" format and all five years were used in the modeling. This is the same data set used for the 1988 PSD permit to construct application assessment.

6.0 Air Quality Impact Analysis

An air quality impact analysis was performed using the modeling methodology described in the previous section. The analysis was performed to determine which pollutants emitted from the four combustion turbines, have the potential to impact ambient air quality above PSD ambient air quality "significance levels". In addition, if significant impacts are determined, a "significant impact area" must be defined, preconstruction monitoring requirements need to be examined, and an ambient air quality standard (AAQS) and PSD increment consumption analysis must be performed.

6.1 Dispersion Modeling Results

The results of the dispersion modeling are presented in Table 6-1. Appendix B contains a listing of the modeling runs which show the extent of the ambient impacts. One hard copy set of the modeling runs and a computer diskette is included with the application.

The maximum impact location for the annual averaging period is 10,000 meters southwest of the plant. The highest, second-highest 1-hour, 3-hour, 8-hour, and 24-hour average impact locations are 256 meters southwest, 13,000 meters south, 498 meters east, and 477 meters east of the plant, respectively. The locations of the 1-hour, 8-hour, and 24-hour impacts are a direct result of building downwash effects. A secondary 3-hour highest, second highest impact of 19.3 mg/m^3 occurs at 498 meters east.

The highest, second-highest 1-hour and 8-hour average CO impacts are 8.1 and 1.2 ug/m^3 , respectively. These values are well below the significant impact levels of $2,000$ and 500 ug/m^3 , respectively. Therefore, no further air quality impact analysis is required for CO.

The highest, second-highest 3-hour and 24-hour, and maximum annual average impacts for SO_2 are 21.0 , 5.8 , and 0.4 ug/m^3 , respectively. The 3-hour and annual average values are below their respective significance levels of 25 and 1.0 ug/m^3 . However, the 24-hour impact is slightly above its significance level of 5.0 ug/m^3 . Therefore, additional air quality impact analysis is required for SO_2 .

Table 6-1
Dispersion Modeling Results
Fuel Oil Combustion

Modeled SO₂ Concentrations

<u>Parameter</u>	3-Hour <u>Impact*</u>	24-Hour <u>Impact*</u>	Annual <u>Impact**</u>
PSD Significance Level (ug/m ³)	25.0	5.0	1.0
Impact Concentration (ug/m ³)	21.0	5.8	0.4
Receptor Location:			
Distance (meters)	13,000	446.5	10,000
Direction (degrees)	180	90	240
Year	1982	1985	1984
Day/Period	68/2	137/1	--

Modeled CO Concentrations

<u>Parameter</u>	1-Hour <u>Impact*</u>	8-Hour <u>Impact*</u>
PSD Significance Level (ug/m ³)	2,000	500
Impact Concentration (ug/m ³)	8.1	1.2
Receptor Location:		
Distance (meters)	256.0	498.3
Direction (degrees)	200	95
Year	1981	1985
Day/Period	286/16	43/1

*Concentrations are highest, second-highest values.

**Concentrations are maximum values.

Pollutant specific dispersion modeling for NO_x and PM was not performed. The results of the SO₂ modeling can be used to show that NO_x and PM impacts will be below their respective significant impact levels.

The NO_x emission rates for each of the four combustion turbines are less than the associated SO₂ emission rate. Because the maximum annual SO₂ impact is below the significance criteria of 1.0 ug/m³, it can be concluded that the maximum annual NO_x impact will also be below its 1.0 ug/m³ significance level. Therefore, no additional analysis was performed for NO_x.

The PM emission rates for each of the four combustion turbines are approximately one-fourth to one-seventh the corresponding SO₂ emission rate. If these ratios are applied to the maximum annual and highest, second-highest 24-hour modeled SO₂ impacts, the estimated PM impacts are well below their respective significant impact levels of 1.0 and 5.0 ug/m³. Therefore, no additional analysis was performed for PM.

6.2 Significant Impact Area Determination

A significant impact area must be established for each applicable pollutant and averaging period for which an AAQS exists. In accordance with PSD guidance, the various pollutant impact areas are defined as the circular area whose radius is equal to the greatest distance from the source at which a significant impact level is predicted. If dispersion modeling demonstrates that a pollutant does not produce a significant impact, further air quality assessment of this pollutant is not required.

The significant impact criteria and pollutant impacts from the four combustion turbines were given in Table 6-1. The only pollutant that is predicted to have a significant impact is SO₂. The highest, second-highest 24-hour SO₂ impact was predicted to be 5.8 ug/m³, located on the eastern plant fenceline, 447 meters from the Unit A stack (origin). Additional modeling results showed the significant impact area extends outward to a radius of 600 meters. No other averaging period for SO₂ exceeded its significance criteria. Therefore, 600 meters is the extent of the significance area for SO₂. Dispersion modeling also shows that only two receptors within the significant impact area (447 meters, 90 degrees and 500 meters, 90 degrees) have predicted impacts above the significance level. As a result, only these two receptor locations will be evaluated further.

6.3 Preconstruction Monitoring Requirements

Based on the results of the dispersion modeling, pollutant emissions from all four combustion turbines do not result in ambient impacts above PSD de minimis monitoring levels. Therefore, ambient monitoring will not be required.

6.4 AAQA and PSD Increment Compliance Determination

Criteria pollutants with ambient air quality impacts above significant ambient air quality levels must demonstrate compliance with AAQS and PSD increment consumption. Based on the dispersion modeling results, only SO₂ requires an AAQS and PSD increment compliance determination.

6.4.1 Interacting Source Inventories

In order to evaluate SO₂ AAQS and PSD increment compliance, interacting sources must be included in the air dispersion modeling analysis. A source emissions inventory was obtained from the FDER for all sources within 50.6 kilometers (significant impact area plus 50 kilometers) of the project site.

Initially, a method recommended by the North Carolina Bureau of Air Quality was used to eliminate insignificant sources from the inventory. Sources were dropped from the inventory if their ratio of annual emissions (tpy) divided by their distance from the Indian River plant site (km) was less than 20.

Next, the remaining sources were individually examined using the EPA-approved SCREEN (UNAMAP 6) air dispersion model to determine if each source would have a significant SO₂ impact on the two significant receptors near the Indian River plant. SCREEN conservatively predicts 1-hour concentrations using worst-case meteorology and user-specified source information. To convert 1-hour impacts to representative 24-hour average values, the 1-hour value is multiplied by 0.4.

Those sources that were shown to have insignificant maximum 24-hour average SO₂ impacts based on the screening modeling analysis, were dropped from the inventory. The remaining sources were included in the AAQS. A list of the remaining sources is given in Table 6-2.

The remaining list of interacting sources includes two OUC Stanton Energy Center sources, two Florida Power & Light sources, one Kennedy Space Center source, and the three existing steam boilers at the Indian River facility.

From the remaining list of interacting sources, FDER has stated that only the two Stanton Energy Center sources are SO₂ PSD sources. Therefore, only the four Indian River combustion turbines and the two Stanton Energy Center sources were included in the PSD increment analysis

6.4.2 AAQS Analysis

Sources that emit pollutants with resultant air quality impacts greater than the PSD significance levels are required to perform an air quality assessment to show compliance with the applicable AAQs. The air quality assessment must evaluate the combined impacts from potential interacting sources, existing plant sources, and proposed new sources. These combined impacts are then added to a representative background pollutant concentration to arrive at a total maximum pollutant impact concentration.

Based on the earlier dispersion modeling results, the only pollutant that was predicted to have ambient impacts above PSD significance levels was SO₂. In addition, only the 24-hour averaging period impact exceeded the significance criteria. Therefore, this analysis only evaluated compliance with the 24-hour average SO₂ AAQS.

The ISCST dispersion model was used to assess the combined impacts from the existing Indian River steam and combustion turbine sources, the proposed Westinghouse combustion turbines at the Indian River plant, the OUC-SEC coal fired boilers, the Florida Power & Light Cape Canaveral ~~coal~~ oil/gas^h fired boilers, and the Kennedy Space Center source. The model predicted a combined highest, second-highest SO₂ concentration of 80.2 ug/m³.

This predicted concentration was added to a representative background concentration of 44 ug/m³ to arrive at a maximum predicted impact concentration of 124.2 ug/m³. This concentration is below both the federal 24-hour SO₂ AAQS of 365 ug/m³ and more stringent state 24-hour AAQS for SO₂ of 260 ug/m³. Therefore, this analysis shows the change from the GE

Table 6-2

Interacting Source Inventory List

<u>Source Name</u>	<u>Location</u> <u>UTM-E</u> km	<u>Location</u> <u>UTM-N</u> km	<u>SO₂ Emission</u> <u>Rate</u> g/s	<u>Stack</u> <u>Height</u> ft	<u>Stack</u> <u>Diameter</u> ft	<u>Stack Gas</u> <u>Temperature</u> F	<u>Stack Gas</u> <u>Flow Volume</u> acfm
OUC-SEC #1	483.5	3150.6	625.3	550	19	127	1,202,867
OUC-SEC #2	483.5	3150.6	625.3	550	19	127	1,202,867
FPL-CC (#1,2)	522.9	3148.9	2,494.8	397	18.7	275	975,000
NASA-KSC	534.0	3162.0	6.4	35	2.2	497	8,947
OUC-IR #1	521.3	3151.7	288.4	300	14	325	795,323
OUC-IR #2	521.3	3151.7	720.1	300	14	325	795,323
OUC-IR #3	521.3	3151.7	1,056.4	300	14.1	340	1,004,045

combustion turbines to the larger Westinghouse units will not cause or contribute to an exceedance of any applicable AAQS.

6.4.3 PSD Increment Analysis

PSD regulations were developed as a result of the 1977 Clean Air Act Amendments to ensure that air quality does not significantly deteriorate in area currently meeting the AAQs. At this time PM (TSP), SO₂, and NO₂ are the only pollutants for which PSD increments have been defined. PSD guidelines require an analysis of the consumption of PSD increment if PM (TSP), SO₂, or NO₂ impacts are greater than the PSD significant ambient air quality impact levels.

Air dispersion modeling of the four combustion turbines demonstrated that the predicted 24-hour SO₂ impacts will be above PSD significant impact levels at two receptor locations beyond the plant fenceline. NO_x, and PM impacts are predicted to remain below PSD significant impact levels.

ISCST dispersion modeling was performed to compare the combined impacts of the four combustion turbines and the two OUC-SEC PSD sources with the 24-hour Class II PSD increment for SO₂. The analysis was performed at the two receptors where significant 24-hour SO₂ impacts were found. All five years of meteorological data were conservatively modeled, although the significant impacts only occurred during one year of the modeling.

The results of the combined SO₂ PSD increment consumption analysis showed the four combustion turbines plus the OUC-SEC PSD source consumes 15.5 ug/m³ or 17 percent of the total 24-hour SO₂ PSD increment of 91 ug/m³. Therefore, the Project will not cause or contribute to an exceedance of the 24-hour SO₂ PSD increment consumption requirements.

6.5 Toxic Air Pollutants

An analysis was conducted to assess the toxic air pollutant impacts resulting from the four combustion turbines. The emission factors for the toxic pollutants were obtained from the EPA document, Toxic Air Pollutant Emission Factors -- A compilation for Selected Air Toxic Compounds and Sources (EPA-450/2-88-006a), and are expressed in units of lb/MBtu. A nominal emission rate (in g/s) equivalent to a 1 lb/MBtu pollutant emission factor was modeled for the four combustion turbines. The resultant impacts

were derived by multiplying the nominal modeled impacts by the pollutant emission factors.

The impacts for each of the toxic air pollutants emitted by the combustion turbines were compared to the FDER-provided acceptable ambient concentrations (AAC) and de minimis monitoring criteria. The toxic air pollutant impacts, the AAC, and the de minimis ambient air monitoring concentrations are given in Table 6-3. As shown, the impacts of all toxic pollutants emitted by the Project will be much less than the corresponding AAC and the de minimis monitoring concentrations. Therefore, no further modeling analysis or preconstruction monitoring is necessary for the toxic pollutants.

Table 6-3

Toxic Pollutant Emissions and Air Quality Impacts

<u>Pollutant</u>	<u>Emission Factor</u> lb/MBtu	<u>Averaging Period</u>	<u>Resultant Ambient Impact</u> ug/m ³	<u>Acceptable Ambient Concentrations</u> ug/m ³	<u>De Minimis Monitoring Criteria</u> ug/m ³
Arsenic	4.2E-6	8-Hour	1.4E-4	2.0	--
		24-Hour	7.5E-5	0.5	--
		Annual	5.04E-6	0.0002	--
Beryllium	2.5E-6	8-Hour	8.1E-5	0.02	--
		24-Hour	4.5E-5	0.005	0.001
		Annual	3.0E-6	0.0004	--
Benzene ^(a)	7.1E-4	8-Hour	2.3E-2	30	--
		24-Hour	1.3E-2	7.1	--
		Annual	8.5E-4	0.12	--
Cadmium	1.1E-5	8-Hour	3.6E-4	0.5	--
		24-Hour	2.0E-4	0.12	--
		Annual	1.3E-5	0.0006	--
Chromium	4.8E-5	8-Hour	1.6E-3	0.5	--
		24-Hour	8.5E-4	0.12	--
Copper	2.8E-4	8-Hour	9.1E-3	10	--
		24-Hour	5.0E-3	2.4	--
Formaldehyde	4.1E-4	Annual	4.9E-4	0.08	--
Lead	8.9E-6	8-Hour	2.9E-4	1.5	--
		24-Hour	1.6E-4	0.36	0.1 ^(b)
		Annual	1.1E-5	0.09	--

Table 6-3
Toxic Pollutant Emissions and Air Quality Impacts

<u>Pollutant</u>	<u>Emission Factor</u> lb/MBtu	<u>Averaging Period</u>	<u>Resultant Ambient Impact</u> ug/m ³	<u>Acceptable Ambient Concentrations</u> ug/m ³	<u>De Minimis Monitoring Criteria</u> ug/m ³
Manganese	2.6E-5	8-Hour	8.5E-4	50	--
		24-Hour	4.6E-4	12	--
Mercury	3.0E-6	8-Hour	9.8E-5	0.1	--
		24-Hour	5.3E-5	0.024	0.25
Nickel	1.7E-4	8-Hour	5.5E-3	0.5	--
		24-Hour	3.0E-3	0.12	--
		Annual	2.0E-4	0.004	--

(a) For natural gas combustion only.

(b) Quarterly average.

7.0 Additional Impact Analysis

PSD regulations require that Project impacts on visibility, soils and vegetation, and growth also be examined.

7.1 Visibility

The nearest PSD Class I area is the Chassahowitz Wilderness Area located along the west coast of Florida, approximately 175 kilometers from the Project site. A screening Level-1 visibility analysis was performed for the PSD Class I area. Emission rates for the four turbines firing fuel oil at base load were used with the EPA-approved VISCREEN model to determine the Project's maximum visual impacts. The results of the analysis are given in Table 7-1.

The maximum visual impacts were compared to the visual criteria for assessing plume contrast and Delta E. Delta E is a color difference parameter developed to specify the perceived magnitude of changes in the color and brightness of the sky due to the plume. The analysis demonstrated that the Project's visual impacts are well below the criteria levels.

7.2 Soils and Vegetation

Simple cycle combustion turbine projects are typically considered "clean facilities" that result in very low predicted ground-level pollutant impacts. The low predicted impacts are the direct result of complete combustion and very effective pollutant dispersion. Dispersion is enhanced by the thermal and momentum buoyancy characteristics of the combustion turbine exhaust.

As a result of the low pollutant emission rates and effective pollutant dispersion characteristics, the project impacts on soils and vegetation will be minimal.

7.3 Growth

Economic, population, industrial, and other types of growth are occurring in the vicinity of the Indian River plant. The associated growth cannot be directly attributed to growth induced by the operation of the new combustion

Table 7-1

Visual Effects Screening Analysis for
 Source: OUC INDIAN RIVER
 Class I Area: CHASSAHOWITZ WILDERNESS

*** Level-1 Screening ***
 Input Emissions for

Particulates	33.40	G	/S
NOx (as NO2)	95.40	G	/S
Primary NO2	.00	G	/S
Soot	.00	G	/S
Primary SO4	.00	G	/S

**** Default Particle Characteri

Transport Scenario Speci

Background Ozone:		ppm
Background Visual Range:	25.00	km
Source-Observer Distance:	175.00	km
Min. Source-Class I Distance:	175.00	km
Max. Source-Class I Distance:	190.00	km
Plume-Source-Observer Angle:	11.25	degrees
Stability:	6	
Wind Speed:	1.00	m/s

R E S U L T S

Asterisks (*) indicate plume impacts that exceed screening criteria

Maximum Visual Impacts INSIDE Class I Area
 Screening Criteria ARE NOT Exceeded

Backgrnd	Theta	Azi	Distance	Alpha	Delta E		Contrast	
					Crit	Plume	Crit	Plume
SKY	10.	84.	175.0	84.	2.00	.013	.05	.000
SKY	140.	84.	175.0	84.	2.00	.002	.05	-.000
TERRAIN	10.	84.	175.0	84.	2.00	.000	.05	.000
TERRAIN	140.	84.	175.0	84.	2.00	.000	.05	.000

Maximum Visual Impacts OUTSIDE Class I Area
 Screening Criteria ARE NOT Exceeded

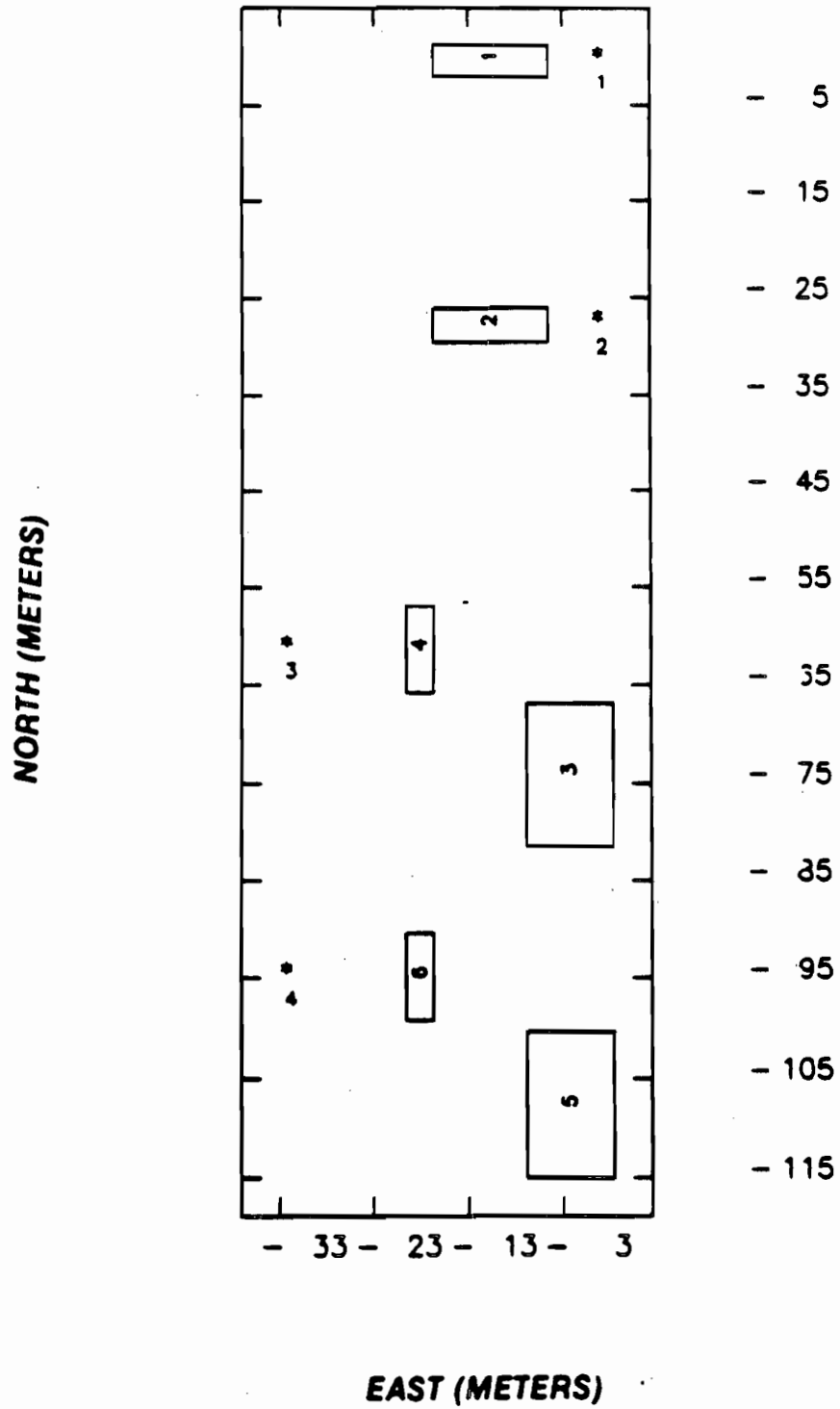
Backgrnd	Theta	Azi	Distance	Alpha	Delta E		Contrast	
					Crit	Plume	Crit	Plume
SKY	10.	75.	169.4	94.	2.00	.013	.05	.000
SKY	140.	75.	169.4	94.	2.00	.003	.05	-.000
TERRAIN	10.	65.	163.3	104.	2.00	.000	.05	.000
TERRAIN	140.	65.	163.3	104.	2.00	.000	.05	.000

turbines. Therefore, the addition of the combustion turbines is not expected to induce any secondary growth in the surrounding area.

Appendix A
GEP ANALYSIS

OUC INDIAN RIVER

BUILDING DOWNWASH ANALYSIS



1 RBRZWAKE
 IBM-PC VERSION (2.0)
 (C) COPYRIGHT 1989, TRINITY CONSULTANTS, INC.
 SERIAL NUMBER 6440 SOLD TO BLACK & VEATCH CONSULTING ENG
 RUN NAME: OUCIR5
 RUN BEGAN ON 02-22-91 AT 17:01:19

1 NUMBER OF SOURCES = 4

THE FOLLOWING OPTIONS HAVE BEEN CHOSEN:
 CALCULATIONS ARE MADE FOR THE ISCST MODEL.
 ALL STACKS MUST BE WITHIN 5L TO BE CONSIDERED FOR DIRECTION SPECIFIC DOWNWASH
 DOWNWASH IS CALCULATED IN 36 RADIAL DIRECTIONS.

BUILDINGS ARE COMBINED REPEATEDLY.

ALGORITHMS:

 0 = NO DOWNWASH
 1 = HUBER-SNYDER DOWNWASH
 2 = SCHULMAN-SCIRE DOWNWASH

1

INPUT BUILDINGS

DESCRIPTION	BLDG #	BLDG HT(M)	# OF CORNERS	X (M)	Y (M)
GE-1 DUCT WORK	1	8.53	4	-4.58	1.68
				-16.77	1.68
				-16.77	-1.68
				-4.58	-1.68
GE-2 DUCT WORK	2	8.53	4	-4.57	-25.75
				-16.75	-25.75
				-16.75	-29.11
				-4.57	-29.11
WH-1 AIR INLET	3	12.19	4	2.29	-66.45
				-6.93	-66.45
				-6.93	-81.08
				2.29	-81.08
WH-1 AIR DUCT	4	7.70	4	-19.66	-56.54
				-16.78	-56.54
				-16.78	-65.38
				-19.66	-65.38
WH-2 AIR INLET	5	12.19	4	2.30	-99.97
				-6.92	-99.97
				-6.92	-114.60
				2.30	-114.60
WH-2 AIR DUCT	6	7.70	4	-19.65	-90.07
				-16.79	-90.07
				-16.79	-98.91
				-19.65	-98.91

1

COMBINED BUILDINGS

STRUCTURE 1 HAS A HEIGHT 12.19 METERS AND CONTAINS THE FOLLOWING BUILDINGS:
 BUILDING # 3: WH-1 AIR INLET

STRUCTURE 2 HAS A HEIGHT 12.19 METERS AND CONTAINS THE FOLLOWING BUILDINGS:
 BUILDING # 5: WH-2 AIR INLET

STRUCTURE 3 HAS A HEIGHT 8.53 METERS AND CONTAINS THE FOLLOWING BUILDINGS:
 BUILDING # 1: GE-1 DUCT WORK

STRUCTURE 4 HAS A HEIGHT 8.53 METERS AND CONTAINS THE FOLLOWING BUILDINGS:
 BUILDING # 2: GE-2 DUCT WORK

STRUCTURE 5 HAS A HEIGHT 7.70 METERS AND CONTAINS THE FOLLOWING BUILDINGS:
 BUILDING # 3: WH-1 AIR INLET
 BUILDING # 4: WH-1 AIR DUCT

STRUCTURE 6 HAS A HEIGHT 7.70 METERS AND CONTAINS THE FOLLOWING BUILDINGS:
 BUILDING # 5: WH-2 AIR INLET
 BUILDING # 6: WH-2 AIR DUCT

1

INPUT STACKS

STACK ID #	STACK #	STACK HT (M)	X (M)	Y (M)
1	1	10.97	.00	.00
2	2	10.97	.00	-27.43
3	3	15.24	-33.08	-60.96
4	4	15.24	-33.08	-94.49

1

STACK ID # 1, STACK # 1

THE DOMINANT STRUCTURE WITHIN 5L IS
STRUC= 3 H= 8.53 W= 12.64 GEP= 21.34

DIRECTION SPECIFIC BUILDING DOWNWASH					
DEGREE	STRUCTURE #	HEIGHT	WIDTH	GEP	ALGORITHM
10	3	8.53	12.59	21.34	2
20	3	8.53	12.60	21.34	2
30	3	8.53	12.23	21.34	2
40	3	8.53	11.49	21.34	2
50	3	8.53	10.40	21.34	2
60	3	8.53	9.00	21.34	2
70	3	8.53	7.32	19.51	2
80	3	8.53	5.42	16.66	2
90	3	8.53	3.35	13.56	1
100	3	8.53	5.42	16.66	2
110	3	8.53	7.32	19.51	2
120	3	8.53	9.00	21.34	2
130	3	8.53	10.40	21.34	2
140	3	8.53	11.49	21.34	2
150	3	8.53	12.23	21.34	2
160	3	8.53	12.60	21.34	2
170	3	8.53	12.59	21.34	2
180	0	.00	.00	.00	0
190	3	8.53	12.59	21.34	2
200	3	8.53	12.60	21.34	2
210	3	8.53	12.23	21.34	2
220	3	8.53	11.49	21.34	2
230	3	8.53	10.40	21.34	2
240	3	8.53	9.00	21.34	2
250	3	8.53	7.32	19.51	2
260	3	8.53	5.42	16.66	2
270	3	8.53	3.35	13.56	1
280	3	8.53	5.42	16.66	2
290	3	8.53	7.32	19.51	2
300	3	8.53	9.00	21.34	2
310	3	8.53	10.40	21.34	2
320	3	8.53	11.49	21.34	2
330	3	8.53	12.23	21.34	2
340	3	8.53	12.60	21.34	2
350	3	8.53	12.59	21.34	2
360	0	.00	.00	.00	0

1

STACK ID # 2, STACK # 2

THE DOMINANT STRUCTURE WITHIN 5L IS
 STRUC= 1 H= 12.19 W= 17.29 GEP= 30.48

DIRECTION SPECIFIC BUILDING DOWNWASH					
DEGREE	STRUCTURE #	HEIGHT	WIDTH	GEP	ALGORITHM
10	1	12.19	11.62	29.62	2
20	4	8.53	12.59	21.34	2
30	4	8.53	12.23	21.34	2
40	4	8.53	11.49	21.34	2
50	4	8.53	10.40	21.34	2
60	4	8.53	9.00	21.34	2
70	4	8.53	7.32	19.52	2
80	4	8.53	5.42	16.67	2
90	4	8.53	3.36	13.57	1
100	4	8.53	5.42	16.67	2
110	4	8.53	7.32	19.52	2
120	4	8.53	9.00	21.34	2
130	4	8.53	10.40	21.34	2
140	3	8.53	11.49	21.34	2
150	3	8.53	12.23	21.34	2
160	3	8.53	12.60	21.34	2
170	3	8.53	12.59	21.34	2
180	0	.00	.00	.00	0
190	4	8.53	12.58	21.34	2
200	4	8.53	12.59	21.34	2
210	4	8.53	12.23	21.34	2
220	4	8.53	11.49	21.34	2
230	4	8.53	10.40	21.34	2
240	4	8.53	9.00	21.34	2
250	4	8.53	7.32	19.52	2
260	4	8.53	5.42	16.67	2
270	4	8.53	3.36	13.57	1
280	4	8.53	5.42	16.67	2
290	4	8.53	7.32	19.52	2
300	4	8.53	9.00	21.34	2
310	4	8.53	10.40	21.34	2
320	4	8.53	11.49	21.34	2
330	4	8.53	12.23	21.34	2
340	4	8.53	12.59	21.34	2
350	1	12.19	11.62	29.62	2
360	1	12.19	9.22	26.02	2

1

STACK ID # 3, STACK # 3

THE DOMINANT STRUCTURE WITHIN 5L IS
 STRUC= 1 H= 12.19 W= 17.29 GEP= 30.48

DIRECTION SPECIFIC BUILDING DOWNWASH					
DEGREE	STRUCTURE #	HEIGHT	WIDTH	GEP	ALGORITHM
10	0	.00	.00	.00	0
20	0	.00	.00	.00	0
30	0	.00	.00	.00	0
40	0	.00	.00	.00	0
50	0	.00	.00	.00	0
60	5	7.70	32.23	19.25	1
70	5	7.70	30.57	19.25	1
80	5	7.70	27.98	19.25	1
90	5	7.70	24.54	19.25	1
100	5	7.70	22.46	19.25	1
110	5	7.70	19.69	19.25	1
120	5	7.70	17.28	19.25	1
130	1	12.19	17.13	30.48	2
140	0	.00	.00	.00	0
150	0	.00	.00	.00	0
160	0	.00	.00	.00	0
170	0	.00	.00	.00	0
180	0	.00	.00	.00	0
190	0	.00	.00	.00	0
200	4	8.53	12.59	21.34	1
210	4	8.53	12.23	21.34	1
220	4	8.53	11.49	21.34	1
230	0	.00	.00	.00	0
240	5	7.70	32.23	19.25	1
250	5	7.70	30.57	19.25	1
260	5	7.70	27.98	19.25	1
270	1	12.19	14.63	30.48	2
280	1	12.19	16.01	30.48	2
290	1	12.19	16.90	30.48	2
300	1	12.19	17.28	30.48	2
310	1	12.19	17.13	30.48	2
320	2	12.19	16.47	30.48	2
330	2	12.19	15.30	30.48	2
340	6	7.70	20.26	19.25	1
350	0	.00	.00	.00	0
360	0	.00	.00	.00	0

1

STACK ID # 4, STACK # 4

THE DOMINANT STRUCTURE WITHIN SL IS
STRUC= 1 H= 12.19 W= 17.29 GEP= 30.48

DIRECTION SPECIFIC BUILDING DOWNWASH						
DEGREE	STRUCTURE #	HEIGHT	WIDTH	GEP	ALGORITHM	
10	0	.00	.00	.00	0	
20	0	.00	.00	.00	0	
30	0	.00	.00	.00	0	
40	0	.00	.00	.00	0	
50	0	.00	.00	.00	0	
60	6	7.70	32.22	19.25	1	
70	6	7.70	30.56	19.25	1	
80	6	7.70	27.97	19.25	1	
90	6	7.70	24.53	19.25	1	
100	6	7.70	22.44	19.25	1	
110	6	7.70	19.67	19.25	1	
120	6	7.70	17.28	19.25	1	
130	2	12.19	17.13	30.48	2	
140	0	.00	.00	.00	0	
150	0	.00	.00	.00	0	
160	0	.00	.00	.00	0	
170	0	.00	.00	.00	0	
180	0	.00	.00	.00	0	
190	0	.00	.00	.00	0	
200	5	7.70	29.02	19.25	1	
210	5	7.70	31.28	19.25	1	
220	1	12.19	16.47	30.48	2	
230	1	12.19	17.13	30.48	2	
240	1	12.19	17.28	30.48	2	
250	1	12.19	16.90	30.48	2	
260	6	7.70	27.97	19.25	1	
270	2	12.19	14.63	30.48	2	
280	2	12.19	16.01	30.48	2	
290	2	12.19	16.90	30.48	2	
300	2	12.19	17.28	30.48	2	
310	2	12.19	17.13	30.48	2	
320	0	.00	.00	.00	0	
330	0	.00	.00	.00	0	
340	0	.00	.00	.00	0	
350	0	.00	.00	.00	0	
360	0	.00	.00	.00	0	

1

STACK # 1

STACK ID: 1,	BUILDING HEIGHT: 8.53,										BUILDING WIDTH: 12.64	
8.53	8.53	8.53	8.53	8.53	8.53	8.53	8.53	8.53	8.53	8.53	8.53	8.53
8.53	8.53	8.53	8.53	8.53	8.53	.00	8.53	8.53	8.53	8.53	8.53	8.53
8.53	8.53	8.53	8.53	8.53	8.53	8.53	8.53	8.53	8.53	8.53	8.53	.00
12.59	12.60	12.23	11.49	10.40	9.00	7.32	5.42	3.35	5.42	7.32	9.00	
10.40	11.49	12.23	12.60	12.59	.00	12.59	12.60	12.23	11.49	10.40	9.00	
7.32	5.42	3.35	5.42	7.32	9.00	10.40	11.49	12.23	12.60	12.59	.00	

STACK # 2

STACK ID: 2,	BUILDING HEIGHT: 12.19,										BUILDING WIDTH: 17.29	
12.19	8.53	8.53	8.53	8.53	8.53	8.53	8.53	8.53	8.53	8.53	8.53	8.53
8.53	8.53	8.53	8.53	8.53	8.53	.00	8.53	8.53	8.53	8.53	8.53	8.53
8.53	8.53	8.53	8.53	8.53	8.53	8.53	8.53	8.53	8.53	8.53	12.19	12.19
11.62	12.59	12.23	11.49	10.40	9.00	7.32	5.42	3.36	5.42	7.32	9.00	
10.40	11.49	12.23	12.60	12.59	.00	12.58	12.59	12.23	11.49	10.40	9.00	
7.32	5.42	3.36	5.42	7.32	9.00	10.40	11.49	12.23	12.59	11.62	9.22	

STACK # 3

STACK ID: 3,	BUILDING HEIGHT: 12.19,										BUILDING WIDTH: 17.29	
.00	.00	.00	.00	.00	7.70	7.70	7.70	7.70	7.70	7.70	7.70	7.70
12.19	.00	.00	.00	.00	.00	.00	.00	8.53	8.53	8.53	.00	7.70
7.70	7.70	12.19	12.19	12.19	12.19	12.19	12.19	12.19	12.19	7.70	.00	.00
.00	.00	.00	.00	.00	32.23	30.57	27.98	24.54	22.46	19.69	17.28	
17.13	.00	.00	.00	.00	.00	.00	.00	12.59	12.23	11.49	.00	32.23
30.57	27.98	14.63	16.01	16.90	17.28	17.13	16.47	15.30	20.26	.00	.00	

STACK # 4

STACK ID: 4,	BUILDING HEIGHT: 12.19,										BUILDING WIDTH: 17.29	
.00	.00	.00	.00	.00	7.70	7.70	7.70	7.70	7.70	7.70	7.70	7.70
12.19	.00	.00	.00	.00	.00	.00	.00	7.70	7.70	12.19	12.19	12.19
12.19	7.70	12.19	12.19	12.19	12.19	12.19	12.19	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	32.22	30.56	27.97	24.53	22.44	19.67	17.28	
17.13	.00	.00	.00	.00	.00	.00	29.02	31.28	16.47	17.13	17.28	
16.90	27.97	14.63	16.01	16.90	17.28	17.13	.00	.00	.00	.00	.00	

1

RUN ENDED ON 02-22-91 AT 17:01:22

Appendix B
MODELING RUN LISTING

ARCHIVE LISTING OF OUC INDIAN RIVER AIR DISPERSION MODELING RUNS

<u>File</u>	<u>Pollutant</u>	<u>Type</u>	<u>Year</u>	<u>Model</u>	<u>Receptors</u>	<u>Comments</u>
OUC1P.LST	S02	SIA	1981	ISCST	100M - 20 KM	SIGNIFICANT IMPACT DETERMINATION FOR S02. (NOX AND TSP IMPACTS DETERMINED FROM RESULTS).
OUC2P.LST	S02	SIA	1982	ISCST	100M - 20 KM	
OUC3P.LST	S02	SIA	1983	ISCST	100M - 20 KM	
OUC4P.LST	S02	SIA	1984	ISCST	100M - 20 KM	
OUC5P.LST	S02	SIA	1985	ISCST	100M - 20 KM	
OUC01P.LST	CO	SIA	1981	ISCST	100M - 20 KM	SIGNIFICANT IMPACT DETERMINATION FOR CO.
OUC02P.LST	CO	SIA	1982	ISCST	100M - 20 KM	
OUC03P.LST	CO	SIA	1983	ISCST	100M - 20 KM	
OUC04P.LST	CO	SIA	1984	ISCST	100M - 20 KM	
OUC05P.LST	CO	SIA	1985	ISCST	100M - 20 KM	
PTOXIC1.LST	TOXIC	TLV	1981	ISCST	100M - 20 KM	TOXIC POLLUTANT IMPACT COMPARISON TO TLVs AND OTHER FDER ACCEPTABLE LEVELS.
PTOXIC2.LST	TOXIC	TLV	1982	ISCST	100M - 20 KM	
PTOXIC3.LST	TOXIC	TLV	1983	ISCST	100M - 20 KM	
PTOXIC4.LST	TOXIC	TLV	1984	ISCST	100M - 20 KM	
PTOXIC5.LST	TOXIC	TLV	1985	ISCST	100M - 20 KM	
NQS11P.LST	S02	NAAQS	1981	ISCST	2 DISCRETE	BASED ON INVENTORY PROVIDED BY FDER
NQS12P.LST	S02	NAAQS	1982	ISCST	2 DISCRETE	
NQS13P.LST	S02	NAAQS	1983	ISCST	2 DISCRETE	
NQS14P.LST	S02	NAAQS	1984	ISCST	2 DISCRETE	
NQS15P.LST	S02	NAAQS	1985	ISCST	2 DISCRETE	
PSD11P.LST	S02	PSD	1981	ISCST	2 DISCRETE	BASED ON INVENTORY PROVIDED BY FDER
PSD12P.LST	S02	PSD	1982	ISCST	2 DISCRETE	
PSD13P.LST	S02	PSD	1983	ISCST	2 DISCRETE	
PSD14P.LST	S02	PSD	1984	ISCST	2 DISCRETE	
PSD15P.LST	S02	PSD	1985	ISCST	2 DISCRETE	
OUCCTP.PNT	S02	SIA	--	ISCST	--	SOURCE INPUT FILE USED FOR S02 SIA ANALYSIS
OUC COP.PNT	CO	SIA	--	ISCST	--	SOURCE INPUT FILE USED FOR CO SIA ANALYSIS
TOXIC.PNT	TOXIC	TLV	--	ISCST	--	SOURCE INPUT FILE USED FOR TOXIC ANALYSIS
OUCNQSP.PNT	S02	NAAQS	--	ISCST	--	SOURCE INPUT FILE USED FOR S02 NAAQS ANALYSIS
OUCPSDP.PNT	S02	PSD	--	ISCST	--	SOURCE INPUT FILE USED FOR S02 PSD ANALYSIS
OUCIR5.BLD	--	SIA	--	ISCST	--	BUILDING DOWNWASH FILE WITH RELATIVE COORDINATES
OUCIR6.BLD	--	NQS/PSD	--	ISCST	--	BUILDING DOWNWASH FILE WITH UTM COORDINATES

INFORMATION ON THE PROGRAMS PKARC.COM AND PKXARC.COM

To conserve disks, computer files are often archived using the PKARC program. This process redistributes data within a file to eliminate formatted space, thus alleviating the storage problems inherent with the large list files.

One or more files may be stored as a single archive file. Likewise, individual files may be retrieved from an archive file.

To retrieve these files the PKARC and PKXARC programs have been included on a disk. To view the name of the files contained in an archive file, you will need to enter PKARC V XXXXX.ARC where XXXXX is the archive file name. The various archive names and related information are provided on the enclosed log sheet. To retrieve all files from a single archive file, type PKXARC XXXXX.ARC *.*. This not only produces files that can be accessed to view or print, but also leaves the archive file intact. The retrieved files will have the same names as the file names in the archive file. An individual file may be retrieved from an archive file by typing PKXARC XXXXX.ARC xxxxx.lst. Where xxxxx is the file name. Additional information about the PKARC program is available by typing PKARC.