RECEIVED
FEB 01 1996
BUREAU OF
AIR REGULATION

Florida Department of
Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

FAX TRANSMITTAL LETTER

TO:

NAME: Kanani Wynans

AGENCY: DARM

TELEPHONE NUMBER (FAX No.): —

NUMBER OF PAGES (including cover sheet): _____

FROM:

NAME: Alan Zahm

AGENCY: DEP- Central

(Transmitted on a Brother FAX600)
Orlando FAX Telephone Number (407) 897 - 5963 - S/C: 342 -5963

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

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

SENDER'S NAME: Alan Zahm

COMMENTS: Copies of amendments for your file.

Florida Department of
Environmental Protection

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

Lawton Chiles
Governor

Virginia B. Wetherell
Secretary

NOTICE OF PERMIT ISSUANCE

CERTIFIED MAIL
P 712 572 650

Reedy Creek Improvement District
Post Office Box 10170
Lake Buena Vista, Florida 32830-0170

Attention: Thomas M. Moses, District Administrator

Orange County - AP
GE Gas Fired Turbine Generator with Heat Recovery System

Dear Mr. Moses:

Enclosed is Permit Number AO48-170280 to change the permit conditions for the above referenced source pursuant to Section(s) 403.087, Florida Statutes.

A person whose substantial interests are affected by this permit 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 14 days of receipt of this permit. 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 constitutes 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;

Executed in Orlando, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

cmc

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

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

Clerk 12/15/93
Date

AA/lbl

CERTIFICATE OF SERVICE

This is to certify that this NOTICE OF PERMIT and all copies were mailed before the close of business on 12-15-93 to the listed persons by, D. Jones.

Specific Condition No. 10c

From

"The project shall comply with all the applicable requirements of:

a. Chapter 17-2. FAC
b. 40 CFR 60, Subpart GG, Gas Turbines
c. 40 CFR 60, Subpart Db, Industrial Steam Generating Units"

To

"The project shall comply with all the applicable requirements of:

a. Chapter 17-200 series, F.A.C.
b. 40 CFR 60, Subpart GG, Gas Turbines"

All other conditions remain the same.

This letter must be attached to your permit and becomes a part of that permit.

Sincerely,

cmc Waldau

A. Alexander, P.E.
District Director

Date 12/15/93

AA/lbl

Florida Department of Environmental Regulation

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

Lawton Chiles, Governor — Carol M. Browner, Secretary

Reedy Creek Improvement District
Post Office Box 10,170
Lake Buena Vista, Florida 32830-0170

Attention: Thomas M. Moses, District Administrator

Orange County - AP
GE Gas Fired Turbine Generator
with Heat Recovery System
Permit No. A048-170280
Change of Conditions

Dear Mr. Moses:

We are in receipt of your request for a change of the permit conditions. The permit conditions are changed as follows:

Specific Condition No. 5

The only change affects sulfur dioxide (SO_2) under "Gas Fired", in which the maximum allowable emissions limit is changed from 0.2 lb/hr and 0.8 TPY to 1.2 lbs/hr and 5.1 TPY.

All other conditions remain the same.

This letter must be attached to your permit and becomes a part of that permit.

Sincerely,

A. Alexander, District Director

8-13-91
Date

AA/jtt

Copies to:

Edward Godwin, P.E.

Florida Department of Environmental Regulation

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

Lawton Chiles, Governor

Carol M. Browner, Secretary

May 29, 1991

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Thomas M. Moses, District Administrator
Reedy Creek Improvement District
P. O. Box 10170
Lake Buena Vista, Florida 32830

Re: AC 48-137740 - Gas Turbine/HRSG/Duct Burner
AC 48-105243 - EPCOT Diesel Generator No. 1
AC 48-106650 - EPCOT Diesel Generator No. 2

Dear Mr. Moses:

The Department is in agreement with your request received March 5, 1991, for increasing the sulfur dioxide emission limit when firing natural gas in the gas turbine/HRSG located at Central Energy plant at Bay Lake and also increasing the carbon monoxide emission limit from the two diesel generators at the EPCOT Center referenced above. The Department will make the following changes:

AC 48-137740
Gas Turbine and Heat Recovery Steam
Generator with Duct Burner

Specific Condition No. 5

The only change affects sulfur dioxide (SO_2) under "Gas Fired," in which the maximum allowable emissions limit is changed from 0.2 lb/hr and 0.8 TPY to 1.2 lbs/hr and 5.1 TPY.

AC 48-105243
EPCOT Center Diesel Generator No. 1

Specific Condition No. 2

[illegible] allowable carbon monoxide, in which the maximum allowable emissions rate is changed from 1.5 lb/hr to 3.0 lbs/hr.

AC 48-106650
EPCOT Center Diesel Generator No. 2

Specific Condition No. 2

The only change affects carbon monoxide, in which the maximum allowable emissions rate is changed from 1.5 lb/hr to 3.0 lbs/hr.

All other conditions for the three permits referenced above remain as issued. This letter must be attached to each permit and shall become a part of the permits.

Sincerely,

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

SS/MB/plm

c: C. Collins, Central Dist.
E. Godwin, P.E., RCES
K. F. Kosky, P.E., KBN

Florida Department of
Environmental Protection

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

Lawton Chiles
Governor

Virginia B. Wetherell
Secretary

NOTICE OF PERMIT ISSUANCE

CERTIFIED MAIL
P 712 572 650

Reedy Creek Improvement District
Post Office Box 10170
Lake Buena Vista, Florida 32830-0170

Attention: Thomas M. Moses, District Administrator

Orange County - AP
GE Gas Fired Turbine Generator with Heat Recovery System

Dear Mr. Moses:

Enclosed is Permit Number AO48-170280 to change the permit conditions for the above referenced source pursuant to Section(s) 403.087, Florida Statutes.

A person whose substantial interests are affected by this permit 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 14 days of receipt of this permit. 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 constitutes 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;

Executed in Orlando, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

cmc

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

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

Clerk 12/15/93
Date

AA/lbl

CERTIFICATE OF SERVICE

This is to certify that this NOTICE OF PERMIT and all copies were mailed before the close of business on 12-15-93 to the listed persons by, D. Jones.

(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 permit. 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 notice in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time 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 permit is final and effective on the date filed with the Clerk of the Department 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 extension of time, this permit will not be effective until further Order of the Department.

When the Order (Permit) is final, 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 the Final Order is filed with the Clerk of the Department

Florida Department of
Environmental Protection

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

Lawton Chiles
Governor

Virginia B. Wetherell
Secretary

Reedy Creek Improvement District
Post Office Box 10170
Lake Buena Vista, Florida 32830-0170

Attention: Thomas M. Moses, District Administrator

Orange County - AP
GE Gas Fired Turbine Generator with Heat Recovery System
Permit No. AO48-170280
Change of Conditions

Dear Mr. Moses:

We are in receipt of your request for a change of the permit conditions. The permit conditions are changed as follows:

Specific Condition No. 2

From

"Natural gas shall be the primary fuel fired in the turbine and duct burner system. No. 2 fuel oil can be used as a backup fuel for up to 14 days per year".

To

"Natural gas shall be the primary fuel fired in the turbines and duct burner system. No. 2 fuel oil can be used as a backup fuel in the turbine only for up to 14 days per year".

Specific Condition No. 5

From

"The duct burner NOx emissions shall not exceed (corresponding to 0.2lb/MMBtu) 4.6 lb/hr for gas or oil at 23MMBtu heat input or 40lb/hr for gas or oil at 198MMBtu/hr."

To

"The duct burner NOx emissions shall not exceed (corresponding to 0.2 lb/MMBtu) 4.6 lb/hr for gas at 23MMBtu heat input or 40lb/hr for gas at 198MMBtu/hr."

Department of
Environmental Protection

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

Lawton Chiles
Governor

Virginia B. Wetherell
Secretary

March 30, 1995

CERTIFIED MAIL- RETURN RECEIPT REQUESTED

Mr. Thomas M. Moses
District Administrator
Reedy Creek Improvement District
Post Office Box 10170
Lake Buena Vista, Florida 32830-0170

Dear Mr. Moses:

RE: Reedy Creek Improvement District (RCID)
GE Gas Turbine with Heat Recovery Steam Generator
PSD-FL-123, AC48-137740

The Department is in receipt of your letter dated February 1, 1995, requesting revisions and deletions of several conditions of the above mentioned permit. The Department considered your request and agreed to revise your permit as proposed in your letter.

The revisions of the specific conditions of the permit are finalized as follows:

SPECIFIC CONDITION No. 7 9, see original permit

FROM:

Initial and annual compliance testing shall be conducted with the fuels used in the preceeding 12 month period using:

1. EPA Method 20 for NOx and SO2
2. EPA Method 10 for CO
3. EPA Method 5 for PM
4. EPA Method 9 for VE

Other DER approved methods may be used for compliance testing only after prior Department approval.

TO:

Pursuant to Rule 62-297.340, F.A.C., Frequency of Compliance Tests, initial and annual compliance testing shall be conducted with the fuels used in the preceeding 12 month period using:

1. EPA Method 20 for NOx and SO2
2. EPA Method 10 for CO
3. EPA Method 9 for VE

Other **DEP** approved methods may be used for compliance testing only after prior Department approval.

SPECIFIC CONDITION No.7

FROM:

The Black Start Cumming No. 2 oil fired emergency generator, when fired on a normal basis to maintain a state of readiness shall not be operated beyond the 10 minutes/week check out period.

For inventory purposes only, the emergency generator's expected emissions are listed below:

POLLUTANT	lb/yr
NOx	232
CO	36
VOC	9
PM	8
SO2	30

TO:

Pursuant to Rule 62-210.300(3)(u) F.A.C., this condition will be deleted.

It should be noted that pursuant to Rule 62-210.300(3), F.A.C., this source, although exempt from permitting requirements of Chapter 62-210 and Chapter 62-4, F.A.C., is subject to any applicable emission standard specified in Rule 62-252.300, and 62-296, F.A.C., other than Best Available Control Technology (BACT) or Lowest Achievable Emission Rate (LAER) requirements.

Furthermore, pursuant to Rule 62-213.420(3)(m), F.A.C., this source, although currently exempt from permitting, is required to be included in the Title V operation permit application.

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;
(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.

A copy of this letter shall be filed with the construction permit, Nos. AC48-137740 and PSD-FL-123, and shall become a part of the permit.

Sincerely,

Howard L. Rhodes, Director
Division of Air Resources
Management

HLR/th/t

Enclosure:
Mr. T.M. Moses' letter dated February 1, 1995

cc: Charles Collins
Jewell Harper, EPA

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

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:
Thomas M. Moses, Dist. Admin
Reedy Creek Improve. District
P O Box 10170
Lake Buena Vista, Fl
32830-0170

4a. Article Number Z 311 902 934

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

7. Date of Delivery APR 1995

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

5. Signature (Addressee)

6. Signature (Agent)

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.

Z 311 902 934

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

UNITED STATES POSTAL SERVICE

PS Form 3800, March 1993

Sent to: Thomas Moses	
Street and No. Reedy Creek	
P.O., State and ZIP Code Lake B. V., Fl	
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 3-31-95	

PSD-Fl-123
AC48-137740

Florida Department of
Environmental Protection

Memorandum

TO: Howard L. Rhodes

FROM: Clair Fancy

DATE: March 29, 1995

SUBJECT: Reedy Creek Improvement District (RCID)
Amendment of Permit No. AC 48-137740, PSD-FL-123
and Construction Permit Nos. AC48-105243 &
AC48-106650

Attached for your approval and signature are two letters to amend the referenced permits.

There will be no change in the intent of the previously issued permits, nor will it result in an increase of emissions.

CHF/th/t

attachment

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:
Thomas M. Moses
Reedy Creek Improve. Dist.
Utilities Division
P.O. BOX 10170
Lake Buena Vista, Fl
32830-0170

4a. Article Number
Z 751 860 027

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

7. Date of Delivery
FEB 1995 RECEIVED

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

5. Signature (Addressee)

6. Signature (Agent)
[signature]

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

Thank you for using Return Receipt Service.

Z 751 860 027

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

UNITED STATES POSTAL SERVICE

Sent to Thomas Moses	
Street and No. Reedy Creek Util	
P.O., State and ZIP Code Lake Buena Vista, Fl	
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 2-15-95	

Pmt # AC48-137750
PSD-Fl-123
Pmt #s AC 48-105243
AC 48-106650

PS Form **3800**, March 1993

Department of
Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

February 15, 1995

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. Thomas M. Moses
District Administrator
Reedy Creek Improvement District
Utilities Division
P. O. Box 10170
Lake Buena Vista, Florida 32830-0170

Dear Mr. Moses:

RE: Reedy Creek Improvement District
Permit No. AC48-137750, PSD-FL-123
Permit Nos. AC48-105243 and AC48-106650

The Bureau of Air Regulation has reviewed the above referenced requests and determined that they will require permit amendments as well as a processing fee of $500 ($250 for each request). As soon as the fee is received, we will be begin processing your requests. If you have any questions, please call Patty Adams at (904)488-1344.

Sincerely,

Patricia G. Adams

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

CHF/pa

cc: Teresa Heron

0102056

REEDY CREEK
IMPROVEMENT DISTRICT

P.O. BOX 10170 LAKE BUENA VISTA, FLORIDA 32830-0170 TELEPHONE (407) 828-2241

March 7, 1995

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

RE: Reedy Creek Improvement District
Permit No. AC48-137750, PSD-FL-123
Permit Nos. AC48-105243 and AC48-106650

Dear Mr. Fancy:

In accordance with your letter dated February 15, 1995, Reedy Creek Improvement District herewith provides a check in the amount of $500.00 for the processing fee associated with requested amendments of the above referenced permits. Please direct any questions to Elaine Potusky at (407) 824-6113.

Sincerely,

Thomas M. Moses

TM/EP/skl

REEDY CREEK
IMPROVEMENT DISTRICT

P.O. BOX 10170 LAKE BUENA VISTA, FLORIDA 32830-0170 TELEPHONE (407) 828-2241

al
Elaine

April 17, 1995

RECEIVED

APR 18 1995

Division of Air
Resources Management

Mr. Howard L. Rhodes
Director
Division of Air Resources Management
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

RE: Reedy Creek Improvement District
GE Gas Turbine with Heat Recovery Steam Generator
PSD-FL-123, AC48-137740

Dear Mr. Rhodes:

Reedy Creek Improvement District (RCID) is in receipt of your letter dated March 30, 1995 in which the Department agrees to RCID's proposed revisions of the above referenced permit. RCID respectfully requests the Department's deletion of the reference (in its amended Specific Condition No. 7) that the Black Start Cummings No. 2 oil fired emergency generator is subject to any applicable emission standard specified in Rule 62-252.300 since this rule applies to Gasoline Dispensing Facilities - Stage I Vapor Recovery.

Please contact Elaine Potusky with any questions or concerns you may have regarding this request.

Sincerely,

Thomas M. Moses
District Administrator

cc: Chuck Collins, Central District
Office of General Counsel
Jewell Harper, USEPA

REEDY CREEK
IMPROVEMENT DISTRICT

P.O. BOX 10170 LAKE BUENA VISTA, FLORIDA 32830-0170 TELEPHONE (407) 828-2241

February 1, 1995

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

RE: Reedy Creek Improvement District
GE Gas Turbine with Heat Recovery Steam Generator
PSD-FL-123, AC48-137740

Dear Mr. Fancy:

On March 3, 1988, the Department issued Construction Permit AC48-137740 to Reedy Creek Improvement District (RCID) authorizing construction and operation of a GE gas turbine (GT) and heat recovery steam generator system (HRSG). The GT is fired primarily with natural gas with back-up distillate fuel oil. In accordance with Specific Condition No. 2, use of distillate fuel oil in the GT is limited to no more than 14 days per year (336 hours per year).

Specific Condition No. 9 of Construction Permit AC48-137740 requires initial and annual compliance testing for particulate matter (PM) in addition to visible emissions (VE). Regulation 62-297.340(e), F.A.C. states that annual compliance tests for PM emissions shall not be required for any fuel burning source that does not burn liquid and/or solid fuel, other than during startup, for a total of more than 400 hours per year. Because liquid fuel will not be burned in the GT for more than a total of 400 hours per year, RCID requests that Construction Permit AC48-137740 be revised to delete the requirement for PM testing consistent with 62-297.340(e), F.A.C.

Specific Condition No. 7 contains requirements pertinent to the "Black Start" Cummins oil-fired emergency generator. Regulation 62-210.300(3)(u), F.A.C. exempts emergency diesel generators, heating units and general purpose diesel engines operating no more than 400 hours per year from Department permit requirements. Because the "Black Start" generator operates no more than 400 hours per year, RCID requests that Construction Permit AC48-137740 be revised to delete Specific Condition No. 7 in accordance with 62-210.300(3)(u), F.A.C.

Your expeditious response to these permit revision requests is appreciated. Please contact Ed Godwin at (407) 824-4943 if you have any questions.

Sincerely,

Thomas M Moses
District Administrator

cc: Mr. Charles Collins, P.E.
Central District

Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

June 16, 1995

CERTIFIED MAIL- RETURN RECEIPT REQUESTED

Mr. Thomas M. Moses
District Administrator
Reedy Creek Improvement District
Post Office Box 10170
Lake Buena Vista, Florida 32830-0170

Dear Mr. Moses:

RE: Reedy Creek Improvement District (RCID)
EPCOT Center Diesel Generators No. 1 and No. 2
Construction Permits AC 48-105243 and AC 48-106650 and
GE Gas Turbine with Heat Recovery Steam Generator,
PSD-FL-123 and AC 48-137740

The Department is in receipt of your letter dated April 17, 1995, requesting a revision of Specific Conditions Nos. 2 and 7 of the above mentioned permits. The Department considered your request and agrees to revise your permits as proposed in your letters.

The revision of Specific Condition No. 2 of each permit is finalized as follows:

SPECIFIC CONDITION No. 2 FOR PERMITS AC 48-105243 and AC 48-106650 EPCOT CENTER DIESEL GENERATOR No. 1 and No. 2

FROM:

Old Specific Condition No.2

Emissions rates shall not exceed:

	Max. Allowable Rate lb/hr	Actual Emissions tons/yr
Particulate Matter	10.0	9.5
Sulfur Dioxide	14.5	14.0
Nitrogen Oxides	126.0	126.0
Carbon Monoxide	1.5	2.8
Volatile Organic Compounds	2.0	2.0

TO:

New Specific Condition No. 2

Emissions rates shall not exceed:

	Max. Allowable Rate lb/hr	Annual Emissions tons/yr
Particulate Matter	10.0	9.5
Sulfur Dioxide	14.5	14.0
Nitrogen Oxides	126.0	126.0
Carbon Monoxide	**2.9**	2.8
Volatile Organic Compounds	**2.1**	**2.0**

SPECIFIC CONDITION No. 7 FOR PERMITS PSD-FL-123 & AC 48-137740 GE GAS TURBINE WITH HEAT RECOVERY STEAM GENERATOR

RCID COMMENT:

RCID requested to delete reference to Rule 62-252.300, F.A.C., since this rule applies to Gasoline Dispensing Facilities.

DEPARTMENT RESPONSE:

The Department acknowledges that Rule 62.252.300, F.A.C. does not apply to this source. However, this reference will not be deleted since it is part of the general statement of Rule 62-210.300(3), F.A.C., Exemptions. For clarification, specific condition No. 7 will be revised as follows:

FROM:

Old Specific Condition No.7

Pursuant to Rule 62-210.300(3)(u) F.A.C., this condition will be deleted.

It should be noted that pursuant to Rule 62-210.300(3), F.A.C., this source, although exempt from permitting requirements of Chapter 62-210 and Chapter 62-4, F.A.C., is subject to any applicable emission standard specified in Rule 62-252.300, and 62-296, F.A.C., other than Best Available Control Technology (BACT) or Lowest Achievable Emission Rate (LAER) requirements.

Furthermore, pursuant to Rule 62-213.420(3)(m), F.A.C., this source, although currently exempt from permitting, is required to be included in the Title V operation permit application.

TO:

New Specific Condition No. 7

In accordance with Rule 62-210.300(3)(u) F.A.C., the Black Start Cummings No.2 fuel oil fired emergency electric generator is exempt from permitting requirements.

Pursuant to Rule 62-210.300(3), F.A.C., this source, although exempt from permitting requirements of Chapter 62-210 and Chapter 62-4, F.A.C., "shall be subject to any applicable emission standard specified in Rule 62-252.300, and 62-296, F.A.C., other than Best Available Control Technology (BACT) or Lowest Achievable Emission Rate (LAER) requirements."

Furthermore, pursuant to Rule 62-213.420(3)(m), F.A.C., this source, although currently exempt from permitting, is required to be included in the Title V operation permit application.

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;
(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.

A copy of this letter shall be filed with the construction permits, Nos. AC48-105243, AC48-106650 and AC48-137740 and shall become part of each permit.

Sincerely,

for Howard L. Rhodes, Director
Division of Air Resources Management

HLR/th/t

Enclosure:
Mr. T. M. Moses' letter of April 17 and June 2, 1995

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this **PERMIT AMENDMENT** and all copies were mailed by certified mail before the close of business on 6-20-95 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.

Clerk 6-20-95
Date

Copies to be furnished to:

Chuck Collins

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:
Thomas M. Moses, D. Admin
Reedy Creek Improve. District
P.O. Box 10170
Lake Buena Vista, Fl
32830-0170

4a. Article Number
Z 392 979 047

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

7. Date of Delivery
6/23/95

5. Signature (Addressee)

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

6. Signature (Agent)
DW

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

Thank you for using Return Receipt Service.

Z 392 979 047

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

UNITED STATES POSTAL SERVICE

PS Form **3800**, March 1993

Sent to Thomas Moses	
Street and No. Reedy Creek	
P.O., State and ZIP Code Lake B V, Fl	
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 AC48-105243 6-20-95 " -106650 PSO-F1-123 + AC48-137740	

Florida Department of
Environmental Protection

Memorandum

TO: Howard Rhodes

FROM: Clair Fancy Signed

DATE: June 16, 1995

SUBJECT: Reedy Creek Improvement District (RCID)
Construction Permits Nos. AC48-105243, AC48-106650 and AC48-137740 & PSD-FL-123

Attached for your approval and signature is a letter that will amend the above mentioned permits for the RCID facility. The amendment will clarify the language of specific condition No. 7 and will correct an emission rate as requested. This permit amendment will not change the intent of the previously issued permits, nor will it result in a significant increase of emissions.

I recommend your approval and signature.

CHF/th/kt

Florida Department of
Environmental Protection

Memorandum

TO: Howard Rhodes

FROM: Clair Fancy

DATE: October 10, 1994

SUBJECT: Amendment to Construction Permit AC48-137740
(AO48-170280)
Reedy Creek Improvement District (RCID)

Attached for your approval and signature is a permit amendment prepared by the Bureau of Air Regulation for the above mentioned company to have a customized fuel monitoring schedule as provided by Subpart GG of the federal new source performance standards.

I recommend your approval and signature.

CF/TH/bjb

Attachment

Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

October 10, 1994

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Thomas M. Moses
District Administrator
Reedy Creek Improvement District
P. O. Box 10170
Lake Buena Vista, Florida 32830-0170

Dear Mr. Moses:

Re: Amendment to Construction Permit
AC48-137740 **AO**48-170280
PSD-FL-123
Custom Fuel Monitoring Schedule
Reedy Creek Improvement District

This is in response to your June 15, 1994, letter, requesting a Custom Fuel Monitoring Schedule for sulfur content of the fuel and to clarify the applicable regulations for the subject facility. The facility is required to comply with Section 60.334(b) of Subpart GG of the New Source Performance Standards, which allows sources to apply for a custom fuel monitoring schedule. In addition, Specific Condition No. 10 is revised to include the 40 CFR 60, Subpart Db, NSPS for Industrial-Commercial Institutional Steam Generating Units. Therefore, the permit specific conditions are amended as follows:

New Specific Condition No. 14

The following custom fuel monitoring schedule shall be used at this facility:

Custom Fuel Monitoring Schedule for Natural Gas

1. **Monitoring of fuel nitrogen content shall not be required while natural gas is the only fuel being fired in the gas turbines.**

2. **Sulfur Monitoring**

   a. **Analysis for sulfur content of the natural gas shall be conducted using one of the approved ASTM reference methods for the measurement of sulfur in gaseous fuels, or**

an approved alternative method. The approved methods are ASTM D1072-80, ASTM D3030-81, ASTM D3246-81, and ASTM D4084-82 as referenced in 40 CFR 60.335(b)(2).

b. This custom fuel monitoring schedule shall become effective on the date this amendment becomes valid. Effective the date of this custom schedule, sulfur monitoring shall be conducted at least once per calendar quarter. Sulfur analyses results shall be reported in units of grains of sulfur per 100 cubic feet of natural gas and shall be submitted with the quarterly excess emissions report required by 40 CFR 60.7. (EPA's letter dated June 15, 1994).

c. The sulfur content of the fuel shall also be expressed as maximum sulfur dioxide emissions (lb/hr) and shall be consistent with the limits specified in Specific Condition 5 of permit AC 48-137740.

d. Should any sulfur analysis as required in items 2(b) above indicate noncompliance with 40 CFR 60.333, the owner or operator shall notify the Department of such excess emissions and the custom schedule shall be re-examined. Sulfur monitoring shall be conducted weekly during the interim period when this custom schedule is being re-examined.

3. If there is a change in fuel supply, the owner or operator must notify the Department of such change for re-examination of this custom schedule. A substantial change in fuel quality shall be considered as a change in fuel supply. Sulfur monitoring shall be conducted weekly during the interim period when this custom schedule is being re-examined.

4. Records of sample analysis and fuel supply pertinent to this custom schedule shall be retained for a period of three years, and be available for inspection by personnel of federal, state, and local air pollution control agencies.

<u>Custom Fuel Monitoring Schedule for Liquid Fuel</u>

1. Sulfur and nitrogen content of the liquid fuel:

Upon delivery of the fuel, a sample shall be randomly taken from one compartment of each truck and composited for analysis (for verification of the vendor data) by a third party laboratory using ASTM Method D-3228 for nitrogen analysis, and ASTM Method D-4294 for sulfur analyses.

Specific Condition No. 10

FROM:

The project shall comply with all the applicable requirements of:

a. Chapter 17-2, FAC
b. 40 CFR 60, Subpart GG, Gas Turbines

TO:

The project shall comply with all the applicable requirements of:

a. Chapters 62-209 through 62-297, F.A.C.
b. 40 CFR 60, Subpart GG, Standards of Performance for Stationary Gas Turbines.
c. 40 CFR 60, Subpart Db, Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units.

In accordance with Rule 17-213.420(3), F.A.C., Standard Application Form and Required Information, the permittee is required to include all applicable requirements as defined in Rule 17-213.100(7), F.A.C., for each emission unit at this facility when applying for a Title V operating permit.

Attachments to be Incorporated

Mr. Thomas M. Moses' June 5, 1994, letter.
(Permit Amendment Fee Received September 8, 1994)

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 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, 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;
(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 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, F.A.C.

This letter amendment must be attached to Construction Permit No. AC48-137740 (AO48-170280), and shall become a part of the permit.

Sincerely,

Howard L. Rhodes
Director
Division of Air Resources Management

HLR/TH/bjb

Attachments

cc: C. Collins, CD
J. Harper, EPA
J. Bunyak, NPS

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 10/11/94 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.

Barbara J. Boutwell 10/11/94
Clerk Date

REEDY CREEK
IMPROVEMENT DISTRICT

P.O. BOX 10170 LAKE BUENA VISTA, FLORIDA 32830-0170 TELEPHONE (407) 828-2241

August 22, 1994

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

Re: Reedy Creek Improvement District
Permit No. AO48-170280, PSD-FL-123
Customized Fuel Monitoring Schedule

Dear Mr. Fancy:

Enclosed is our check for $250.00 that represents the application processing fee referenced in your letter of August 4, 1994. This fee references our June 15, 1994, letter request for approval of a customized fuel monitoring schedule for the subject source.

RCID appreciates the Department's consideration in this matter. We trust the processing of our permit amendment may now proceed. If you require additional information relative to this request please call Mr. Edward Godwin at (407) 824-4943.

Sincerely,

Thomas M. Moses
District Administrator

BK/TMM/BP
Enclosure

cc: Alex Alexander, FDEP Central District
Ed Godwin, Reedy Creek Energy Services, Inc.

REEDY CREEK
IMPROVEMENT DISTRICT
UTILITIES DIVISION
P.O. BOX 10,175 LAKE BUENA VISTA, FL 32830-0175

SUN BANK MID FLORIDA, N.A.
OKEECHOBEE OFFICE

225757

63-115
631 115

DATE 08/25/94

AMOUNT *******250.00**

PAY TO THE ORDER OF *******250.00 DOLLARS

FL DEPT OF ENVIRONMENTAL PROTECTION
TWIN TOWER OFFICE BLDG
2600 BLAIRSTONE RD
TALLAHASSEE, FL 32399-2400

[redacted]

RECEIVED
SEP 0 8 1994
BAR ASBESTOS

Rec'd 8/10/94 KDD

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. Thomas M. Moses
District Administrator
Reedy Creek Improvement District
Utilities Division
P. O. Box 10175
Lake Buena Vista, Florida 32830-0175

4a. Article Number
P 872 562 711

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

7. Date of Delivery 8 8 94

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**

Is your RETURN ADDRESS completed on the reverse side?

Thank you for using Return Receipt Service.

P 872 562 711

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

UNITED STATES POSTAL SERVICE

Sent to: Mr. Thomas M. Moses	
Street and No.: P. O. Box 10175	
P.O., State and ZIP Code: Lake Buena Vista, FL 32830-0175	
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: 8/4/94 A048-170280, PSD-FL-123	

PS Form **3800**, JUNE 1991

file copy

Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

August 4, 1994

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. Thomas M. Moses
District Administrator
Reedy Creek Improvement District
Utilities Division
P. O. Box 10175
Lake Buena Vista, Florida 32830-0175

Dear Mr. Moses:

RE: Reedy Creek Improvement District
Permit No. AO48-170280, PSD-FL-123
Customized Fuel Monitoring Schedule

The Bureau of Air Regulation has reviewed the above referenced request and determined that it will require a permit amendment and a $250 processing fee. As soon as the fee is received, we will be begin processing your request. If you have any questions, please call Patty Adams at (904)488-1344.

Sincerely,

Patty Adams

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

CHF/pa

cc: Teresa Heron

Patty copy: district
local
mike Harley
orig for F. Le

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

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

JUL 18 1994

RECEIVED
JUL 25 1994
Bureau of
Air Regulation

4APT-AEB

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

SUBJ: Approval of NSPS Custom Fuel Monitoring Schedule for: Reedy Creek Improvement District (RCID) Gas Fired Turbine with Heat Recovery System
Permit No. AO48-170280

Dear Mr. Fancy:

This is to acknowledge a letter from Mr. Thomas M. Moses of RCID dated June 15, 1994, requesting approval of a customized fuel monitoring schedule for the above referenced project. This letter was jointly transmitted to the U.S. Environmental Protection Agency (EPA), and to you. Since the authority for implementing §60.334(b) of 40 CFR Part 60, Subpart GG has not been delegated to the State of Florida, we have reviewed RCID's custom fuel monitoring schedule.

Based on our review, we have determined that the proposed schedule is acceptable, as long as this source also complies with items 2(d), 3, and 4 of the attachment to the custom fuel monitoring guidance memo issued by EPA Headquarters on August 14, 1987. A copy of this memo was included with RCID's request as an enclosure.

If you have any questions regarding this letter, please contact Mr. Mirza P. Baig of my staff at 404/347-5014.

Sincerely yours,

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

cc: Thomas M. Moses, RCID

REEDY CREEK IMPROVEMENT DISTRICT
UTILITIES DIVISION
P.O. BOX 10175, LAKE BUENA VISTA, FLORIDA 32830-0175 TELEPHONE (407) 824-4913

June 15, 1994

Ms. Jewel A Harper, Chief
Air Enforcement Branch
Air, Pesticides, and Toxics Management Division
U.S. Environmental Protection Agency
345 Courtland Street, N.E.
Atlanta, GA 30365

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

SUBJECT: Reedy Creek Improvement District
Gas Fired Turbine with Heat Recovery System
Permit No. AO48-170280

Dear Ms. Harper and Mr. Fancy:

This correspondence requests approval of custom fuel monitoring schedules for the determination of sulfur and nitrogen content as required by the New Source Performance Standards (NSPS) for Stationary Gas Turbines [40 Code of Federal Regulations (CFR) Part 60, Subpart GG]. Reedy Creek Improvement District (RCID) submits this request in accordance with the following requirements of Section (§) 60.334 (b):

> *(b) The owner or operator of any stationary gas turbine subject to the provisions of this subpart shall monitor sulfur content and nitrogen content of the fuel being fired in the turbine. The frequency of determination of these values shall be as follows:*
> *(1) If the turbine is supplied its fuel from a bulk storage tank, the values shall be determined on each occasion that fuel is transferred to the storage tank from any other source.*
> *(2) If the turbine is supplied its fuel without intermediate bulk storage the values shall be determined and recorded daily. Owners, operators or fuel vendors may develop custom schedules for determination of the values based on the design and operation of the affected facility and the characteristics of the fuel supply. These custom schedules shall be substantiated with data and must be approved by the Administrator before they can be used to comply with paragraph (b) of this section.*

As it is RCID's understanding that the U.S. Environmental Protection Agency (EPA) has not delegated the authority to implement § 60.334 (4) to the Florida Department of Environmental Protection (FDEP), this request is submitted concurrently to EPA Region IV and FDEP.

Section 60.334(b)(1) requires sulfur and nitrogen content of the fuel to be determined upon fuel transfer into the storage tank. RCID requests approval of the following procedure to assure adequate confidence in the fuel sulfur and nitrogen content of the liquid fuel. Fuel analyses are provided to RCID by the fuel vendor prior to purchase and delivery of the fuel. Upon delivery of the fuel, a sample is randomly taken from one compartment of each truck and composited for analysis (for verification of the vendor data) by a third party laboratory using ASTM Method D-3228 for nitrogen analyses, and ASTM Method D-4294 for sulfur analyses.

As indicated by §60.334(b)(2), the NSPS imply that daily sampling be performed when there is not an intermediate bulk storage tank, even if the fuel is pipeline natural gas. Discussions with EPA's Office of Air Quality Planning and Standards (OAQPS) and their guidance memorandum (Attachment I) confirm this interpretation of the rule. Specifically, a custom fuel monitoring schedule must be developed and approved for pipeline natural gas. The schedule should address the sulfur content of the fuel; the nitrogen content is natural gas is not required.

The sulfur content for natural gas submitted in this request was developed from data supplied by the Florida Gas Transmission Company (FGT). Attachment II provides a summary of the gas analyses. The natural gas burned by the RCID facility is provided by FGT who regularly samples for total sulfur in the natural gas to assure that the hydrogen sulfide content is low and the concentrations of Mercaptan (an odorant) are sufficient. NSPS require the sulfur content of the fuel be no more than 0.8 percent by weight. The highest recorded value of sulfur concentration over the 8-month study period (see Table 1) is 0.8 grains per 100 cf, therefore providing a significant margin for complying with the NSPS limit.

The EPA guidance memorandum suggests sampling be conducted twice monthly for the first six months, quarterly over the next six months, and during the first and third quarters of each calendar year. The eight months of data provided in Table 1, representing 3 to 4 samples per month, demonstrate the sulfur content of the natural gas meets the NSPS. Additional random analyses performed by FGT provided the following results:

Date of Analyses	Sulfur Content (grains/100cf)
03/10/92	0.50
06/30/92	0.40
09/29/92	0.26
01/05/93	0.31
03/02/93	0.27
06/01/93	0.16
09/28/93	0.12
12/14/93	0.42
02/09/94	0.04

These data, collected over the past several years, have clearly demonstrated that the NSPS limit is easily met. RCID therefore respectfully requests EPA approval of a custom fuel monitoring schedule that requires this RCID facility to submit representative sulfur analyses supplied by the natural gas pipeline company on a quarterly basis with the excess emissions report submitted in accordance with the provisions of §60.7(c). This schedule will provide EPA and FDEP with assurance that the NSPS are being achieved.

Please contact Ed Godwin, P.E. of Reedy Creek Energy Services, Inc. [telephone (407) 824-4943] with any questions or concerns you may have relative to this request.

Sincerely,

Thomas M. Moses
District Administrator

TM/EP/skl

Attachment

cc: Alex Alexander, FDEP Central District
Ed Godwin, Reedy Creek Energy Services, Inc.

Attachment I

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

AUG 14 1987

OFFICE OF
AIR AND RADIATION

MEMORANDUM

SUBJECT: Authority for Approval of Custom Fuel Monitoring Schedules Under NSPS Subpart GG

FROM: John B. Rasnic, Chief
Compliance Monitoring Branch

TO: Air Compliance Branch Chiefs
Regions II, III, IV, V, VI and IX

Air Programs Branch Chiefs
Regions I-X

The NSPS for Stationary Gas Turbines (Subpart GG) at 40 CFR 60.334(b)(2) allows for the development of custom fuel monitoring schedules as an alternative to daily monitoring of the sulfur and nitrogen content of fuel fired in the turbines. Regional Offices have been forwarding custom fuel monitoring schedules to the Stationary Source Compliance Division (SSCD) for consideration since it was understood that authority for approval of these schedules was not delegated to the Regions. However, in consultation with the Emission Standards and Engineering Division, it has been determined that the Regional Offices do have the authority to approve Subpart GG custom fuel monitoring schedules. Therefore it is no longer necessary to forward those requests to Headquarters for approval.

Over the past few years, SSCD has issued over twenty custom schedules for sources using pipeline quality natural gas. In order to maintain national consistency, we recommend that any schedules Regional Offices issue for natural gas be no less stringent than the following: sulfur monitoring should

be bimonthly, followed by quarterly, then semiannual, given at least six months of data demonstrating little variability in sulfur content and compliance with §60.333 at each monitoring frequency; nitrogen monitoring can be waived for pipeline quality natural gas, since there is no fuel-bound nitrogen and since the free nitrogen does not contribute appreciably to NO_x emissions. Please see the attached sample custom schedule for details. Given the increasing trend in the use of pipeline quality natural gas, we are investigating the possibility of amending Subpart GG to allow for less frequent sulfur monitoring and a waiver of nitrogen monitoring requirements where natural gas is used.

Where sources using oil request custom fuel monitoring schedules, Regional Offices are encouraged to contact SSCD for consultation on the appropriate fuel monitoring schedule. However, Regions are not required to send the request itself to SSCD for approval.

If you have any questions, please contact Sally M. Farrell at FTS 382-2875.

Attachment

cc: John Crenshaw
George Walsh
Robert Ajax
Earl Salo

Enclosure

Conditions for Custom Fuel Sampling Schedule for Stationary Gas Turbines

1. Monitoring of fuel nitrogen content shall not be required while natural gas is the only fuel fired in the gas turbine.

2. Sulfur Monitoring

   a. Analysis for fuel sulfur content of the natural gas shall be conducted using one of the approved ASTM reference methods for the measuremant of sulfur in gaseous fuels, or an approved alternative method. The reference methods are: ASTM D1072-80; ASTM D3031-81; ASTM D3246-81; and ASTM D4084-82 as referenced in 40 CFR 60.335(b)(2).

   b. Effective the date of this custom schedule, sulfur monitoring shall be conducted twice monthly for six months. If this monitoring shows little variability in the fuel sulfur content, and indicates consistent compliance with 40 CFR 60.333, then sulfur monitoring shall be conducted once per quarter for six quarters.

   c. If after the monitoring required in item 2(b) above, or herein, the sulfur content of the fuel shows little variability and, calculated as sulfur dioxide, represents consistent compliance with the sulfur dioxide emission limits specified under 40 CFR 60.333, sample anaylsis shall be conducted twice per annum. This monitoring shall be conducted during the first and third quarters of each calendar year.

   d. Should any sulfur analysis as required in items 2(b) or 2(c) above indicate noncompliance with 40 CFR 60.333, the owner or operator shall notify the State Air Control Board) of such excess emissions and the custom schedule shall be re-examined by the Environmental Protection Agency. Sulfur monitoring shall be conducted weekly during the interim period when this custom schedule is being re-examined.

3. If there is a change in fuel supply, the owner or operator must notify the State of such change for re-examination of this custom schedule. A substantial change in fuel quality shall be considered as a change in fuel supply. Sulfur monitoring shall be conducted weekly during the interim period when this custom schedule is being re-examined.

4. Records of sample analysis and fuel supply pertinent to this custom schedule shall be retained for a period of three years, and be available for inspection by personnel of federal, state,and local air pollution control agencies.

Attachment II

Sulfur Content, Heat Content, and SO_2 Emission Factors for Natural Gas

Date	Sulfur content (gr/100 cf)	Heat Content (BTU/scf)	SO_2 Emission Factor (lb/10^6 BTU)	SO_2 Emission Factor (lb/10^6 cf)
02/06/90	0.03	1,031	0.00083	0.857
02/13/90	0.05	1,028	0.00014	0.143
02/20/90	0.35	1,025	0.00098	1.000
02/27/90	0.45	1,024	0.00126	1.286
03/06/90	0.45	1,025	0.00125	1.286
03/13/90	0.30	1,026	0.00084	0.857
03/20/90	0.35	1,026	0.00097	1.000
03/27/90	0.35	1,025	0.00098	1.000
04/03/90	0.60	1,026	0.00167	1.714
04/10/90	0.25	1,022	0.00070	0.714
04/17/90	0.40	1,026	0.00111	1.143
04/24/90	0.30	1,022	0.00084	0.857
05/01/90	0.40	1,020	0.00112	1.143
05/08/90	0.25	1,034	0.00069	0.714
05/15/90	0.20	1,023	0.00056	0.571
06/05/90	0.45	1,020	0.00126	1.286
06/12/90	0.40	1,018	0.00112	1.143
06/19/90	0.70	1,017	0.00197	2.000
06/26/90	0.45	1,019	0.00126	1.286
07/03/90	0.55	1,022	0.00154	1.571
07/10/90	0.35	1,022	0.00098	1.000
07/17/90	0.45	1,021	0.00126	1.286
07/30/90	0.30	1,021	0.00084	0.857
08/07/90	0.50	1,024	0.00140	1.429
08/14/90	0.45	1,022	0.00126	1.286
08/21/90	0.40	1,022	0.00112	1.143
08/28/90	0.70	1,022	0.00196	2.000
09/04/90	0.55	1,029	0.00153	1.571
09/11/90	0.40	1,025	0.00111	1.143
09/18/90	0.45	1,026	0.00125	1.286
09/25/90	0.40	1,026	0.00111	1.143
10/02/90	0.45	1,029	0.00125	1.286
10/09/90	0.45	1,025	0.00125	1.286
10/16/90	0.70	1,028	0.00195	2.000
10/28/90	0.80	1,024	0.00223	2.286
Average	0.43	1,024	0.00119	1.216
Maximum	0.80	1,034	0.00223	2.286
Minimum	0.05	1,017	0.00014	0.143
Std. Dev.	0.15	4	0.00042	0.427

Source: Florida Gas Transmission Company, 1990

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. Thomas M. Moses
District Administrator
Reedy Creek Improvement District
P. O. Box 10170
Lake Buena Vista, FL 32830-0170

4a. Article Number
P 872562488

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

7. Date of Delivery
11/3/93

5. Signature (Addressee)

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

6. Signature (Agent)

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

Thank you for using Return Receipt Service.

P 872 562 488

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

UNITED STATES POSTAL SERVICE

Sent to: Mr. Thomas M. Moses	
Street and No.: P. O. Box 10170	
P.O. State and ZIP Code: Lake Buena Vista, FL	
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: 11/01/93 AC48-137740 (A048-170280) PSDOFL-123	

PS Form **3800**, JUNE 1991

Florida Department of
Environmental Protection

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

Lawton Chiles
Governor

Virginia B. Wetherell
Secretary

October 29, 1993

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Thomas M. Moses
District Administrator
Reedy Creek Improvement District
P. O. Box 10170
Lake Buena Vista, Florida 32830-0170

Dear Mr. Moses:

RE: Reedy Creek Improvement District (RCID)
Gas Turbine Generator and Heat Recovery Steam Generator with Duct Burner
Orange County - Permit No. AC48-137740 (AO48-170280)
PSD-FL-123

The Department is in receipt of your letter dated September 29, 1993, on behalf of the above mentioned facility, requesting a permit amendment to change the continuous opacity monitoring requirement for the Heat Recovery Steam Generator (HRSG). RCID proposes to disconnect the fuel oil lines from the HRSG, thereby rendering it incapable of firing fuel oil and eliminating the requirement for a continuous opacity monitor system. The Department has considered your request and has agreed to amend the permit as proposed in your letter. This permit will be amended to include the following:

SPECIFIC CONDITION NO. 2:

FROM:

Only natural gas shall be fired in the turbine and duct burner. No. 2 oil shall be used in periods of curtailed natural gas supply. The duration of oil firing shall not exceed 14 days annually.

TO:

Natural gas shall be the **primary fuel** fired in the turbines and duct burner system. No. 2 fuel oil **can be used as a backup fuel in the turbine only for up to** 14 days per year.

SPECIFIC CONDITION NO. 5:

FROM:

The duct burner NO_x emissions shall not exceed (corresponding to 0.2 lb/MMBtu) 4.6 lb/hr for gas or oil at 23 MMBtu input or 40 lbs/hr for gas or oil at 198 Btu/hr.

TO:

The duct burner NO_x emissions shall not exceed (corresponding to 0.2 lb/MMBtu) 4.6 lb/hr for **gas** at 23 MMBtu heat input or 40 lbs/hr for **gas** at 198 MMBtu/hr.

SPECIFIC CONDITION NO. 10(c)

FROM:

The project shall comply with all the applicable requirements of:

a. Chapter 17-2, FAC.
b. 40 CFR 60, Subpart GG, Gas Turbines.
c. 40 CFR 60, Subpart Db, Industrial Steam Generating Units.

TO:

The project shall comply with all the applicable requirements of:

a. Chapter 17-2, FAC.
b. 40 CFR 60, Subpart GG, Gas Turbines.

If you have any questions, please contact Teresa Heron at (904) 488-1344 or write to me at the above address.

Sincerely,

Howard L. Rhodes

Howard L. Rhodes
Director
Division of Air Resources
Management

HLR/TH/bjb

cc: Alex Alexander

Memorandum

Florida Department of
Environmental Protection

TO: Howard Rhodes

FROM: for Clair Fancy

DATE: October 29, 1993

SUBJ: Reedy Creek Improvement District (RCID)
AC 48-137740, PSD-FL123

Attached for your approval and signature is a permit amendment to the construction permit for the Reedy Creek Improvement District (RCID). The amendment will eliminate the continuous opacity monitoring requirement for the (HRSG) Heat Recovery Steam Generator. RCID is proposing to disconnect the fuel oil lines from the HRSG. The amendment is consistent with 40 CFR 60 NSPS Subpart Db, Industrial Steam Generating units.

I recommend your approval and signature.

CF/TH/bb

Attachment

Preston -
Is this
ICI permit
is working on
it Patty

Patty Ed Godwin
(407) 824-4943
Reedy Creek -
Delivered
modification.
Oct 1, 1993.
Eliminate fuel oil
and opacity monitoring/
test. How we
responded? Preston

REEDY CREEK IMPROVEMENT DISTRICT

COST CENTER	ACCOUNT	PUR. ORDER	INVOICE NUMBER	AMOUNT	DESCRIPTION
260	3699999		AC48-137740	250.00	PERMIT AMEND PROCESS FEE

FL DEP FL DEPT OF ENVIRONMENTAL PROTECTION 41544

REEDY CREEK IMPROVEMENT DISTRICT
P.O. BOX 10,170 LAKE BUENA VISTA, FL 32830-0170

SUN BANK, N.A.
MAIN OFFICE
P.O. BOX 3833
ORLANDO, FL 32897

63-838/631 215

41544
0000736
DATE 10/08/93

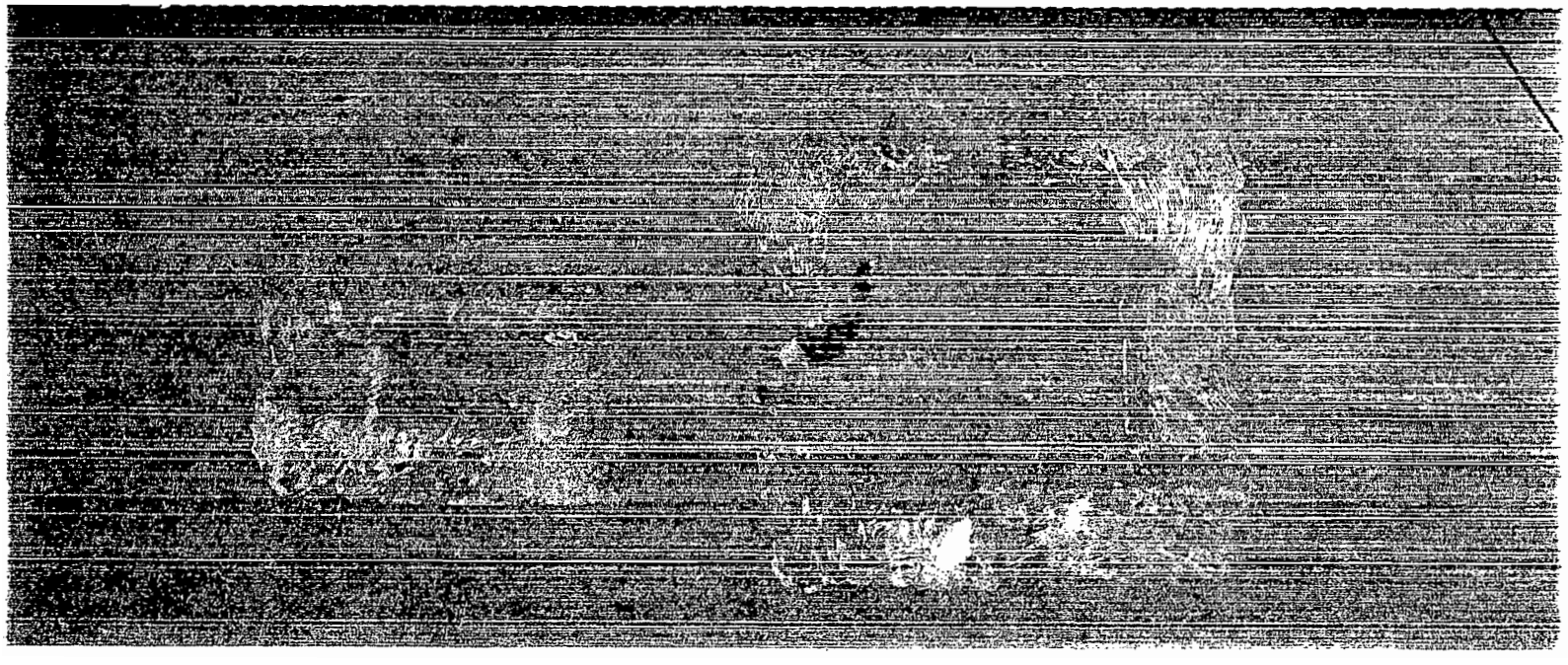
AMOUNT *******250.00**

PAY TO THE ORDER OF *******250.00 DOLLARS

FL DEPT OF ENVIRONMENTAL PROTECTION
2600 BLAIR STONE ROAD
TALLAHASSEE, FL
32399-2400

Thomas M Mann
Ann G Blakeslee

[redacted]



REEDY CREEK
IMPROVEMENT
DISTRICT

DISTRICT ADMINISTRATOR
Thomas M. Moses

October 8, 1993

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

0000736

Re: Reedy Creek Improvement District
AC48-137740, Request for Permit Amendment

Dear Mr. Fancy:

We are enclosing our check in the amount of $250 for a permit amendment submitted on September 29 for the above-referenced permit.

We appreciate your letter of October 5 advising us of the fee and allowing us to forward the check to you.

Sincerely,

Thomas M. Moses
District Administrator

TMM:dlp
Enclosure: Check

002222

Rec'd 10/11/93 KKW

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. Thomas M. Moses
District Administrator
Reedy Creek Improvement District
Post Office Box 10170
Lake Buena Vista, FL 32830

4a. Article Number
P 230 524 309

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

XX

7. Date of Delivery
10-7-93

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**

Is your RETURN ADDRESS completed on the reverse side?

Thank you for using Return Receipt Service.

P 230 524 309

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

UNITED STATES POSTAL SERVICE

Sent to: Mr. Thomas M. moses	
Street and No.: Post Office Box 10170	
P.O., State and ZIP Code: Lake Buena Vista, FL 32830	
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: 10/5/93 AC48-137740	

PS Form 3800, June 1991

Florida Department of
Environmental Protection

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

Lawton Chiles
Governor

Virginia B. Wetherell
Secretary

October 5, 1993

CERTIFIED MAIL-RETURN RECEIPT

Mr. Thomas M. Moses
District Administrator
Reedy Creek Improvement District
Post Office Box 10170
Lake Buena Vista, FL 32830-0170

Dear Mr. Moses:

RE: Reedy Creek Improvement District
AC48-137740, Request for Permit Amendment

The Bureau of Air Regulation received your September 29, 1993, request for the above referenced project. 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 Patty Adams at (904)488-1344.

Sincerely,

Patty Adams

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

CHF/pa

cc: Teresa Heron

REEDY CREEK
IMPROVEMENT DISTRICT

P.O. BOX 10170 LAKE BUENA VISTA, FLORIDA 32830-0170 TELEPHONE (407) 828-2241

RECEIVED
OCT 4 1993
Division of Air
Resources Management

September 29, 1993

Mr. Claire H. Fancy, P.E.
Central Air Permitting
Division of Air Regulation
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400

RE: Orange County--AC48-137740 (AO48-170280)
Reedy Creek Improvement District
Gas Turbine Generator and Heat Recovery Steam Generator with Duct Burner

Dear Mr. Fancy:

The purpose of this correspondence is to request a change in the continuous opacity monitoring requirement for the above-referenced source. The construction permit Specific Condition #10(c) requires compliance with 40 CFR 60, Subpart Db, "Industrial Steam Generating Units". The subject Heat Recovery Steam Generator is equipped with duct burners that are capable of firing natural gas as the primary fuel and #2 fuel oil as a backup fuel. This capability to fire #2 fuel oil in the Heat Recovery Steam Generator results in the requirement to install, operate and maintain a Continuous Opacity Monitor System (COMS). RCID currently operates a COMS for this purpose. NSPS Section 60.48b(a) and Section 60.43b(f) are the pertinent references for this requirement.

RCID proposes to physically disconnect the fuel oil lines from the Heat Recovery Steam Generator, thereby rendering it incapable of firing fuel oil and eliminating the requirement for a continuous opacity monitor system. RCID requests that the construction permit language be modified as follows (new text is *italicized*):

Specific Condition #2:

Present:

"Natural gas shall be the primary fuel fired in the turbine and duct burner system. No. 2 fuel oil can be used as a backup fuel for up to 14 days per year.

Requested:

"Natural gas shall be the primary fuel fired in the turbine and duct burner system. No. 2 fuel oil can be used as a backup fuel *in the gas turbine only* for up to 14 days per year.

Specific Condition #5:

Present:

"The duct burner NOX emissions shall not exceed (corresponding to 0.2 lb/MMBtu) 4.6 lb/hr for gas or oil at 23 MMBtu heat input or 40 lbs/hr for gas or oil at 198 MMBtu/hr."

Requested:

"The duct burner NOX emissions shall not exceed (corresponding to 0.2 lb/MMBtu) 4.6 lb/hr for gas at 23 MMBtu heat input or 40 lbs/hr for gas at 198 MMBtu/hr."

Specific Condition #10(c):

Present:

"The project shall comply with all the applicable requirements of:
a. Chapter 17-2, FAC
b. 40 CFR 60, Subpart GG, Gas Turbines
c. 40 CFR 60, Subpart Db, Industrial Steam Generating Units."

Requested:

"The project shall comply with all the applicable requirements of:
a. Chapter 17-2, FAC
b. 40 CFR 60, Subpart GG, Gas Turbines

RCID appreciates the Department's consideration in this matter. If you have any questions or comments, please call Ms. Elaine Potusky at (407) 824-6113 or Mr. Edward Godwin, P.E. at (407) 824-4943.

Sincerely,

Thomas M. Moses
District Administrator

cc: Alex Alexander, P.E.
John Brown, P.E.
Edward Godwin, P.E.
Glenn McLeod
Elaine Potusky

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:
Thomas R Moses
Reedy Creek Improvement
PO BOX 10170
Lake Buena Vista, FL 32830-0170

4. Type of Service:
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail

Article Number
P062921954

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature – Addressee
X

6. Signature – Agent
X

7. Date of Delivery
1-15-93

fee paid

8. Addressee's

DOMESTIC RETURN R

P 062 921 954

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

Sent to Thomas Moses	
Street and No. Reedy Creek Imp.	
P.O., State and ZIP Code Lake Buena Vista FL	
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 1-13-93 AC 48-137740 PSD-F1-123	

PS Form 3800, June 1991

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 7, 1993

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Thomas M. Moses
District Administrator
Reedy Creek Improvement District
Post Office Box 10170
Lake Buena Vista, Florida 32830-0170

Re: Request for Amendment of Permit No. AC48-137740, PSD-FL-123

This is in reply to your letters dated September 22 and October 9, 1992, requesting amendment of the subject permit to (1) avoid the continuous emission monitoring requirement of Subpart Db, (2) include a limit on total annual hours for fuel oil firing, and (3) convert the weekly time limit on diesel generator operation to an annual time limit.

Item (1) above will not require an amendment for the following reason. Since 40 CFR 60, Subpart Db, Section 60.48b(h) provides an exemption from the continuous emission monitoring (CEM) requirement for the primary operation mode (i.e., turbine firing), the Department will not consider the "duct burner only" operation as a "stand alone boiler" but rather as a temporary operation mode of the combined cycle system wherein the turbine is unfired. Therefore, the Subpart Db CEM exemption will still apply when the facility must be operated without firing the turbine. No amendment is needed as long as the primary operation mode requires turbine firing.

Items (2) and (3) above will be amended since the permit language should be clarified. Therefore, specific conditions 2, 5, and 7 are amended as shown below.

<u>Specific Condition No. 2</u>

Present:

Only natural gas shall be fired in the turbine and duct burner. No. 2 fuel oil shall be used in periods of curtailed natural gas supply. The duration of oil firing shall not exceed 14 days annually.

Amended:

Natural gas shall be the primary fuel fired in the turbine and duct burner system. No. 2 fuel oil can be used as a backup fuel for up to 14 days per year.

Specific Condition No. 5 (Footnote 1)

Present:

Oil will be fired only when there is natural gas curtailment. It will be fired for no more than 14 days annually.

Amended:

Fuel oil firing shall be limited to 14 days per year.

Specific Condition No. 7

Present:

The "Black Start" Cummins No. 2 oil fired emergency generator, when fired on a normal basis to maintain a state of readiness shall not be operated beyond the 10 minutes/week check out period.

Amended:

The "Black Start" Cummins No. 2 oil fired emergency generator, when fired on a normal basis to maintain a state of readiness, shall not be operated for more than 9 hours per year.

This letter shall become an attachment of construction permit No. AC48-137740 (PSD-FL-123).

Sincerely,

Howard L. Rhodes

Howard L. Rhodes, P.E.
Director
Division of Air Resources Management

HR/JR/w

cc: A. Zahm, CD
J. Harper, EPA
H. Culp, P.E.
J. Bunyak, NPS

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 7, 1993

SUBJECT: Amendment of Permit No. AC48-137740, PSD-FL-123
Reedy Creek Improvement District

Attached for your approval and signature is a permit amendment prepared by the Bureau of Air Regulation. The amendments consist of minor changes in permit language to clarify the limitations on fuel oil use and emergency generator operation.

I recommend your approval and signature.

HR/CF/w

Attachments

**REEDY CREEK
IMPROVEMENT DISTRICT**

P.O. BOX 10170 LAKE BUENA VISTA, FLORIDA 32830-0170 TELEPHONE (407) 828-2241

October 9, 1992

RECEIVED
DER - MAIL ROOM
1992 OCT 13 AM 11: 19

Mr. C. 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

Subject: Orange County - A.P.
Reedy Creek Improvement District
Gas Turbine/Heat Recovery Steam Generator
AC48-137740

Dear Mr. Fancy:

Please find enclosed our check for $250 that represents the application processing fee referenced in your letter of September 30, 1992. This fee references our September 22, 1992 letter request for a construction permit modification for the subject source.

In reviewing our September 22 request, we have discovered that our discussion of the requested changes to Specific Condition 4 did not provide any information on the historical capacity factor of the HRSG. You may find this information to be of value in your consideration of our request. The annual capacity factors of the HRSG as a stand-alone boiler were: 1989 - 1.9%; 1990 - 3.0%; 1991 - 2.9%; 1992 (to date) - 2.9%.

RCID appreciates the Department's consideration in this matter. We trust that processing of our application may now proceed. Please do not hesitate to call Mr. Edward Godwin at (407) 824-4943 if you require any additional information.

Sincerely,

Thomas M Moses

Thomas M. Moses
District Administrator

Enclosure

00103/

EG/TMM/jm

cc: Edward Godwin, P.E., Reedy Creek Energy Services, Inc.
Kennard F. Kosky, P.E., KBN Engineering & Applied Sciences
~~M. Daig~~ G. Reynolds
A. Zahm, C Dist

REEDY CREEK IMPROVEMENT DISTRICT

P.O. BOX 10170 LAKE BUENA VISTA, FLORIDA 32830-0170 TELEPHONE (407) 828-2241

October 9, 1992

Mr. C. 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

Subject: Orange County - A.P.
Reedy Creek Improvement District
Gas Turbine/Heat Recovery Steam Generator
AC48-137740

Dear Mr. Fancy:

Please find enclosed our check for $250 that represents the application processing fee referenced in your letter of September 30, 1992. This fee references our September 22, 1992 letter request for a construction permit modification for the subject source.

In reviewing our September 22 request, we have discovered that our discussion of the requested changes to Specific Condition 4 did not provide any information on the historical capacity factor of the HRSG. You may find this information to be of value in your consideration of our request. The annual capacity factors of the HRSG as a stand-alone boiler were: 1989 - 1.9%; 1990 - 3.0%; 1991 - 2.9%; 1992 (to date) - 2.9%.

RCID appreciates the Department's consideration in this matter. We trust that processing of our application may now

REEDY CREEK IMPROVEMENT DISTRICT - UTILITIES DIVISION
REVENUE FUND - OPERATING ACCOUNT
P. O. Box 10,170 Lake Buena Vista, FL 32830-0170

63-215 / 631 215 CHECK NO. 00215705

215705

TWO HUNDRED FIFTY DOLLARS NO CENTS

PAY TO THE ORDER OF
DEPT OF ENVIR REGULATION
2600 BLAIR STONE RD
TALLAHASSEE ,FL 32399

DATE 10-08-92

CHECK AMOUNT ********250.00

REEDY CREEK IMPROVEMENT DISTRICT

BY

SUN BANK, N.A. MAIN OFFICE, P.O. BOX 3833, ORLANDO, FL 32897

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 30, 1992

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. Thomas M. Moses
District Administrator
Reedy Creek Improvement District
P. O. Box 10170
Lake Buena Vista, FL 32830-0170

Dear Mr. Moses:

RE: Air Construction Permit No. AC 48-137740
Request for Permit Amendment

The Bureau of Air Regulation received your September 22, 1992, request for the above referenced project. 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 Patty Adams at (904)488-1344.

Sincerely,

Patricia B. Adams

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

CHF/pa

cc: Mirza Baig

Rec'd 10/7/92 KEES

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:
Thomas M. Moses
Reedy Creek Improve. Dist.
P.O. Box 10170
Lake Buena Vista, Fl 32830-0170

4. Type of Service:
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail

Article Number
P062921892

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature – Addressee
X

6. Signature – Agent
X

7. Date of Delivery
10-29-92

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

DOMESTIC RETURN RECEIPT

P 062 921 892

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

UNITED STATES POSTAL SERVICE

Sent to Thomas Moses	
Street and No. Reedy Creek ID	
P.O., State and ZIP Code Lake Buena Vista, Fl	
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 9-30-92	
AC 46-137740	

PS Form 3800, June 1991

REEDY CREEK
IMPROVEMENT DISTRICT-UTILITIES DIVISION
P.O. BOX 10170, LAKE BUENA VISTA, FLORIDA 32830-0170 TELEPHONE (407) 824-4913

September 22, 1992

RECEIVED
SEP 25 1992
Division of Air
Resources Management

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

Subject: Orange County - A.P.
Reedy Creek Improvement District
Gas Turbine/Heat Recovery Steam Generator
AC 48-137740

Dear Mr. Fancy:

Reedy Creek Improvement District was issued the above referenced permit dated March 3, 1988, to construct and operate a cogeneration facility consisting of a 38 MW gas turbine and heat recovery steam generator (HRSG). The HRSG has a duct burner system capable of supplemental firing as well as firing as a stand-alone boiler. The primary fuel for both the gas turbine and duct burners is natural gas.

Representatives for RCID met with Mr. Alan Zahm of the Central District on July 16, 1992 to discuss the need to make some clarifications in the operation permit (A048-170280). While a few of the changes could be performed by the Central District, a federally enforceable condition must be added to provide clarification in the construction permit. It is RCID's understanding that federally enforceable provisions must be specified in the construction permit. Mr. Zahm indicated that RCID should request a change to the construction permit from your Bureau. In addition to the federally enforceable change requested by this letter, some other minor changes are also requested. Listed below are the changes requested.

Specific Condition 4--This condition of the construction permit states: "When the gas turbine is not in operation, the duct burner heat input may be increased up to, but not to exceed, 198 MMBtu/hr." This is the same condition incorporated into the operation permit (i.e., Specific Condition 4) and allows the operation of the HRSG as a stand-alone boiler. Since there is no limitation on the capacity factor of such operation, then all the requirements of the New Source

407-828-2241 - FAX 407-824-4529.

Performance Standards (NSPS) Subpart Db apply. The NSPS require a continuous emission monitor for nitrogen oxides (NOx) in all affected facilities except those for which a specific exemption applies. Exemption applies only to duct burners in a combined cycle system [see 40 Code of Federal Regulations (CFR) Section 60.48b(h)] and facilities that combust oil and natural gas, have a 10 percent capacity factor, and have federally enforceable limits to the facility operation (see 40 CFR Section 60.44b(j).

When the permit was submitted, it was RCID's intent to operate the HRSG as a stand-alone boiler only when the gas turbine was not operating which intuitively would be for a limited time. However, the specific condition issued does not limit operation of the HRSG as a stand-alone boiler. To date the HRSG has been operated as a stand-alone boiler for much less than a 10 percent capacity factor. RCID requests that Specific Condition 4 of the construction permit be amended to limit the operation of the HRSG as a stand-alone boiler to less than 10 percent capacity factor. The requested amendment would add the following wording to Specific Condition 4:

> "The total annual heat input under this mode of operation shall not exceed 173,448 MMBtu/hr."

The requested heat input of 173,448 MMBtu/hr is the maximum heat input of the HRSG as a stand-alone boiler at a 10 percent capacity factor (198 MMBtu/hr x 8,760 hrs/yr x 0.1).

Specific Conditions 2 and 5--These conditions limit the operation of the gas turbine/heat recovery system on oil. Specifically, Specific Condition 2 states: "Only natural gas shall be fired in the turbine and duct burner. No. 2 fuel oil shall be used in periods of curtailed natural gas supply. The duration of oil firing shall not exceed 14 days annually." Footnote 1 of Specific Condition 5 states: "Oil will be fired only when there is natural gas curtailment. It will be fired for no more than 14 days annually." The same conditions were placed in the operation permit (Specific Conditions 2 and 5, respectively). However, the basis for the Prevention of Significant Deterioration (PSD) applicability and limitation on oil firing (i.e., tons per year limitations in annual emissions for oil firing) was 14 full-load equivalent days. In addition, these conditions would limit the operation on oil to only when gas curtailments occur. While this is normally the case, other conditions may occur where oil firing is required; e.g., testing or maintenance. Such conditions would appear to be unauthorized by these conditions. Since

the wording in these conditions appear unclear, it is requested that these conditions be re-worded as:

> Specific Condition 2--"Natural gas shall be the primary fuel fired in the turbine and duct burner system. No. 2 fuel oil can be used as a backup fuel and shall not exceed a heat input of 151,200 MMBtu/yr."
>
> Specific Condition 5--"The maximum annual heat input when firing oil shall be limited to an equivalent of 151,200 MMBtu/yr."

The 151,200 MMBtu/yr is the maximum hourly heat input times the number of hours in 14 days (450 MMBtu/hr x 24 hr/day x 14 days/yr).

Specific Condition 7--This condition limits the operation of the "black start" Cummins diesel generator to 10 minutes/week. Such operation is insufficient for the purpose of testing the generator and maintain a state of readiness. Therefore, a change in this condition is requested which would allow using the generator for up to 520 minutes per year (10 minutes/week x 52 weeks/yr). The requested revision is:

> "The Black Start Cummins No. 2 oil fired emergency generator, when fired on a normal basis to maintain a state of readiness, shall not be operated for more than 520 minutes per year." (Note: the remainder of condition remains the same).

RCID appreciates the Department's consideration in this matter. Please call if you have any questions.

Sincerely,

Thomas M. Moses
District Administrator

EG/TMM/fjw

cc: Edward Godwin, P.E., Reedy Creek Energy Services, Inc.
Kennard F. Kosky, P.E., KNB Engineering

Bob Kohl

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. H. Robert Kohl, P.E.
Reedy Creek Energy Serv. Inc.
P.O. BOX 10000
Lake Buena Vista, FL
32830-1000

4. Article Number
P 832 538 938

Type of Service:
☐ Registered ☐ Insured
☑ Certified ☐ COD
☐ Express Mail

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature — Addressee
X

6. Signature — Agent
X

7. Date of Delivery 8-26-91

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

RECEIVED
AUG 30 1991
Division of Air Resources Management

PS Form **3811**, Mar. 1987 ★ U.S.G.P.O. 1987-178-268 **DOMESTIC RETURN RECEIPT**

P 832 538 938

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

UNITED STATES POSTAL SERVICE

Sent to	Mr. H. Robert Kohl
Street & No.	Reedy Creek Energy
P.O., State & ZIP Code	Lake Buena Vista, FL
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	8-23-91

AC 48-137740

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

August 23, 1991

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. H. Robert Kohl, P.E., Director
Reedy Creek Energy Services, Inc.
Post Office Box 10000
Lake Buena Vista, Florida 32830-1000

Re: Combined Cycle Gas Turbine with Duct Burner
Permit Number AC 48-137740

Dear Mr. Kohl:

The Central Florida District office has forwarded your letter dated May 3, 1991, requesting an amendment to Specific Condition No. 7 of the above referenced project. Specifically, you would like to operate the "Black Start" Cummins No. 2 oil fired emergency generator on a continuous basis during shortfall periods, and not be limited to the 10 minutes per week checkout period (as currently allowed) to maintain a state of readiness.

The Department will need the following information before it can process your request:

1. What is the new maximum time in hours/week and hours/year you would like to operate the emergency generator at?

2. Will there be a significant net increase in emissions if the emergency generator is allowed to operate at the new (higher) operating time?

3. Submit a list of all air sources with the corresponding permit numbers and expiration dates along with the allowable and actual emissions for the entire facility, before and after the proposed modification.

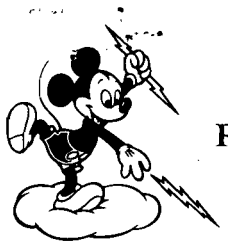
We will continue to process your request as soon as a satisfactory response to the above requested information has been received. If you have any questions, please feel free to contact Mirza Baig, of my staff, at 904-488-1344.

Sincerely,

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

CHF/MB/plm

c: John Turner, Central Dist.



REEDY CREEK ENERGY SERVICES, INC.

May 3, 1991

Mr. Alex Alexander
Deputy Assistant Secretary
Florida Department of Environmental Regulation
3319 Maguire Boulevard, Suite 232
Orlando, FL 32803-3767

RE: Combined Cycle Gas Turbine with Duct Burner
FDER Permit A048-170280

AC48-137740

Dear Mr. Alexander:

This letter will serve to confirm our conversation of May 2, 1991, wherein we discussed the potential use of our 1,200 kw "Black Start Emergency Diesel Generator". As you are aware, the electrical power system in the State of Florida has been and will continue to be in a state of duress where available reserves may not be adequate to meet the demand this summer. As a member of the Florida Coordinating Group, Reedy Creek Improvement District and Reedy Creek Energy Services Inc. have an obligation to assist in the support of the state power system.

We are proposing that we be allowed to use our 1,200 kw "Black Start Emergency Diesel Generator" in support of the state's power needs during periods of impending or actual electrical power shortfall. This would require continuous operation of the generator during said shortfall periods which would exceed the currently permitted usage of ten minutes/week.

vague In order to provide you with reasonable assurances that the generator is being operated in actual support of state power needs, we propose that an after-the-fact report be submitted to your agency by us within ten working days of the cessation of operation. This report would contain the actual hours and dates of operation, total megawatthours produced during that period and the reasons for having to operate the generator for an extended period.

S-C-# 7

P.O. Box 10,000 / Lake Buena Vista, Florida 32830-1000 / 407-824-4024

DEPARTMENT OF ENVIRONMENTAL REGULATION

ROUTING AND TRANSMITTAL SLIP

ACTION NO

ACTION DUE DATE

	Initial	Date
1. TO: (NAME, OFFICE, LOCATION) Barry Andrews		
2. Bureau of Air Regulation		
3. Department of Environmental Regulation Twin Towers Office Building 2600 Blair Stone Road Tallahassee, FL 32399-2400		
4.		

REMARKS:

Please process Mr. Kohl's 5/3/91 letter as a request to change the construction permit AC48-137740 and copy us on correspondence.

RECEIVED
MAY 28 1991
Division of Air Resources Management

INFORMATION	
	Review & Return
	Review & File
	Initial & Forward

DISPOSITION	
	Review & Respond
	Prepare Response
	For My Signature
	For Your Signature
	Let's Discuss
	Set Up Meeting
	Investigate & Report
	Initial & Forward
	Distribute
	Concurrence
	For Processing
	Initial & Return

FROM: John Turner

DATE 5/24/91

PHONE SC 325-1202

We respectfully request your favorable consideration of this proposal. If you have any comments or questions, please call me at (407) 824-4026.

Sincerely,

H. Robert Kohl

H. Robert Kohl, P.E.
Director

EG/HK/fw

cc: Tom Moses
Bob Penn
M. Baig

Florida Department of Environmental Regulation

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

Lawton Chiles, Governor

Carol M. Browner, Secretary

H. Robert Kohl, P.E., Director
Reedy Creek Energy Services, Incorporated
Post Office Box 10,000
Lake Buena Vista, Florida 32830-1000

OCD-AP-91-423

Orange County - AP
Combined Cycle Gas Fired
Turbine Generator
AO48-170280 and AC48-137740

Dear Mr. Kohl:

Your March 3, 1991 request to allow operation of the "Black Start Emergency Diesel Generator" in excess of the permitted limitation on hours of operation is being forwarded to the Bureau of Air Regulation staff in Tallahassee for their review. The air construction permit AC48-137740 issued by that office must be modified before our office can modify the air operating permit AO48-170280.

If you have any questions, please call John Turner at 407/894-7555 or write to the above address.

Sincerely,

Alan D. Zahm

Alan D. Zahm, P.E.
Supervisor, Permitting
Air Resources Management

22 May '91
Date

AA/jtt

cc: Barry Andrews

REEDY CREEK IMPROVEMENT DISTRICT

P.O. BOX 10170 LAKE BUENA VISTA, FLORIDA 32830-0170 TELEPHONE (407) 828-2034

RECEIVED

MAR 05 1991

DER - BAQM

March 1, 1991

Mr. Clair H. Fancy, P.E.
Central Air Permitting
Division of Air Regulation
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Subject: Orange County--AC 48-137740 (AO 48-170280)
Reedy Creek Improvement District
Gas Turbine and Heat Recovery Steam Generator with Duct Burner

Dear Mr. Fancy:

The purpose of this correspondence is to request a change in the sulfur dioxide emission limit for the above-referenced source when firing natural gas. The construction permit issued for the gas turbine plant has permitted SO_2 limits of 0.2 lb/hr and 0.8 ton per year (TPY) when firing natural gas. The operating permit has included these limits. This maximum SO_2 emission limit (i.e., 0.2 lb/hr) was based on the emission factor contained in the U.S. Environmental Protection Agency (EPA) document AP-42 (Compilation of Air Pollutant Emission Factors). The emission factor is based on an average sulfur content of natural gas of 0.2 grain/100 cubic feet (cf) of natural gas.

Initial compliance determinations using fuel analyses suggested that this limit was appropriate. However, recent fuel analyses provided by Florida Gas Transmission Company (FGT) during our compliance test period indicated a sulfur content of 0.35 gr/100 cf, which numerically exceeds the permitted amount. After further investigation and discussions with FGT, it is apparent that the sulfur content of pipeline natural gas in Florida is higher than the AP-42 emission factor and is somewhat variable. The main source of sulfur in pipeline natural gas is odorants (dimethyl sulfide and mercaptan) placed in the natural gas for safety reasons and small amounts of hydrogen sulfide. An evaluation of 8 months of data provided by FGT indicates an average sulfur content of 0.43 gr/100 cf with a maximum of 0.8 gr/100 cf (see Table 1).

Since Reedy Creek Improvement District has no control over the sulfur content in the pipeline natural gas (and neither does any other user), a permit modification is respectfully requested. In order to assure that future compliance determinations do not exceed a revised permit limit, we request an emission limit based on 1.2 gr/100 cf or 1.2 lb SO_2/hr (345x10_6 Btu/hr x cf/1,024 Btu x 1.2 gr sulfur (S)/100 cf x lb/7,000 gr x 2 lb SO_2/lb S). The annual SO_2 emissions would be calculated as 5.1 TPY for 8,760 hours/yr operation which was authorized in the construction permit. The total SO_2 emissions from both natural gas and oil firing would be 25.1 TPY with this requested permit change. It should be noted that oil firing is limited to no more than 14 days per year. The annual permit limit for SO_2 is less than the Prevention of Significant Deterioration (PSD) significant emission rate of 40 TPY.

Please call if you have any questions or comments.

Sincerely,

Thomas M. Moses
District Administrator

EG/TMM/fjw

cc: Alex Alexander, P.E., FDER Central District
Charles Collins, P.E., FDER Central District
Edward Godwin, P.E., RCES
Kennard F. Kosky, P.E., KBN
B. Andrews

Sulfur Content, Heat Content, and SO_2 Emission Factors for Natural Gas

Date	Sulfur Content (gr/100 cf)	Heat Content (Btu)	SO_2 Emission Factor (lb/10^6 Btu)	SO_2 Emission Factor (lb/10^6 cf)
2/6/90	0.30	1,031	0.00083	0.857
2/13/90	0.05	1,028	0.00014	0.143
2/20/90	0.35	1,025	0.00098	1.000
2/27/90	0.45	1,024	0.00126	1.286
3/6/90	0.45	1,025	0.00125	1.286
3/13/90	0.30	1,026	0.00084	0.857
3/20/90	0.35	1,026	0.00097	1.000
3/27/90	0.35	1,025	0.00098	1.000
4/3/90	0.60	1,026	0.00167	1.714
4/10/90	0.25	1,022	0.00070	0.714
4/17/90	0.40	1,026	0.00111	1.143
4/24/90	0.30	1,022	0.00084	0.857
5/1/90	0.40	1,020	0.00112	1.143
5/8/90	0.25	1,034	0.00069	0.714
5/15/90	0.20	1,023	0.00056	0.571
6/5/90	0.45	1,020	0.00126	1.286
6/12/90	0.40	1,018	0.00112	1.143
6/19/90	0.70	1,017	0.00197	2.000
6/26/90	0.45	1,019	0.00126	1.286
7/3/90	0.55	1,022	0.00154	1.571
7/10/90	0.35	1,022	0.00098	1.000
7/17/90	0.45	1,021	0.00126	1.286
7/30/90	0.30	1,021	0.00084	0.857
8/7/90	0.50	1,024	0.00140	1.429
8/14/90	0.45	1,022	0.00126	1.286
8/21/90	0.40	1,022	0.00112	1.143
8/28/90	0.70	1,022	0.00196	2.000
9/4/90	0.55	1,029	0.00153	1.571
9/11/90	0.40	1,025	0.00111	1.143
9/18/90	0.45	1,026	0.00125	1.286
9/25/90	0.40	1,026	0.00111	1.143
10/2/90	0.45	1,029	0.00125	1.286
10/9/90	0.45	1,025	0.00125	1.286
10/16/90	0.70	1,028	0.00195	2.000
10/28/90	0.80	1,024	0.00223	2.286
Average:	0.43	1,024	0.00119	1.216
Maximum:	0.80	1,034	0.00223	2.286
Minimum:	0.05	1,017	0.00014	0.143
Std. Dev.	0.15	4	0.00042	0.427

Source: Florida Gas Transmission Company, 1990.

DELIVER
PICK-UP
SHIP
HOLD AT GATE

DELIVERY OR SHIPPING NOTICE

NO. _____

DATE 3/4/91

P.O. NO. or REF. _____

TO:

Mr. Clair H. Fancy, P.E.
Central Air Permitting
Division of Air Regulation
Florida Department of
Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

SHIPPER:

- ☐ THE WALT DISNEY COMPANY
  500 So. Buena Vista St., Burbank, CA 91521 • (818) 840-1000
- ☐ WALT DISNEY PICTURES
  500 So. Buena Vista St., Burbank, CA 91521 • (818) 840-5151
- ☐ WED ENTERPRISES, 1401 Flower St., Glendale, CA 91201 • (818) 956-6500
- ☐ MAPO, 1400 Grand Central Ave., Glendale, CA 91201 • (818) 956-7300
- ☐ WALT DISNEY TELECOMMUNICATIONS AND NON-THEATRICAL COMPANY
  500 So. Buena Vista St., Burbank, CA 91521 • (818) 840-1111
- ☐ DISNEYLAND-VISTA RECORDS
  350 So. Buena Vista St., Burbank, CA 91521 • (818) 840-1000
- ☐ BUENA VISTA DISTRIBUTION CO., INC.
  350 So. Buena Vista St., Burbank, CA 91521 • (818) 840-5000
- ☐ WED ENTERPRISES
  6904 Tujunga Ave., North Hollywood, CA 91605 • (818) 956-6500
- ☐ THE DISNEY CHANNEL, 4111 W. Alameda Ave., Burbank, CA 91505 • (818) 846-6661
- ☐ WALT DISNEY WORLD CO.
  P. O. Box 10,000 Lake Buena Vista, FL 32830-1000 • (407) 824-2222
- ☐ WALT DISNEY TELECOMMUNICATIONS AND NON-THEATRICAL COMPANY • WAREHOUSE
  4563 Colorado Blvd., Los Angeles, CA 90039 • (818) 956-3070
- ☐ WALT DISNEY WORLD COMPANY • Park Printing
  7481 President's Drive, Orlando Central Park, Orlando, FL 32809
- ☒ REEDY CREEK ENERGY SERVICES;5300 N. Cast Dr.
  Lake Buena Vista, FL 32830 407-824-4952

VIA	SHIPPING CHARGES
Best Way	XX☒ Prepaid ☐ Collect

DATE REQUIRED AT DESTINATION	ORIGIN	ACCOUNT			REVENUE AND COST CONTROL
		CONTROL	SUB	DETAIL	
March 5, 1991	6 9	3 1 3	5 3	0 0	J U 0 9 1 9 2 1

ITEM	QUANTITY	DESCRIPTION OF ITEMS	INVENTORY ITEM CODE	VALUE
1	1	Letter; Orange County--AC 48-137740 (A) 48-170280 Gas Turbine and Heat Recovery Steam Generator with Duct Burner		
2	1	Letter; EPCOT Center Diesel Generators No.1 and No. 2		

NO. OF PIECES	TOTAL WEIGHT	TOTAL VALUE
2		$

REQUESTED BY: Fran Winchester

DEPARTMENT: Engineering & Construction

AUTHORIZED BY: Edward Godwin

RECEIVED THE ABOVE GOODS IN SATISFACTORY CONDITION EXCEPT AS NOTED

RECEIVED BY _____ DATE

28559 R1

COPIES TO: WAREHOUSE (4 copies for Freight or Express); MAIL ROOM (2 copies for Parcel Post); TRANSPORTATION (3 copies for Delivery)

Florida Department of Environmental Regulation

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

Lawton Chiles, Governor — Carol M. Browner, Secretary

Reedy Creek Improvement District
Post Office Box 36
Lake Buena Vista, Florida 32830

Attention: Thomas M. Moses, District Administrator

Orange County - AP
GE Gas Fired Turbine Generator with Heat Recovery System
Permit No. AO48-170280
Change of Conditions

Dear Mr. Moses:

We are in receipt of your request for a change of the permit conditions. The conditions are changed as follows:

CONDITION
Permit Specific Condition No. 9

FROM:
9. Annual compliance testing conducted annually from the date of February 1, 1989 shall be conducted with the fuels used in the preceeding 12 month period using:

1. EPA Method 20 for NO_x and SO_2
2. EPA Method 10 for CO
3. EPA Method 5 for PM
4. EPA Method 9 for VE

Other DER approved methods may be used for compliance testing only after prior Departmental approval.

TO:
9. Annual compliance testing conducted annually from the date of February 1, 1989 shall be conducted with the fuels used in the preceeding 12 month period using:

1. EPA Method 20 for NO_x and SO_2
2. EPA Method 10 for CO
3. EPA Method 17 for PM
4. EPA Method 9 for VE

Other DER approved methods may be used for compliance testing only after prior Departmental written approval.

All other conditions remain the same.

This letter must be attached to your permit and becomes a part of that permit.

Sincerely,

cmc Richard B Sedd

A. Alexander, P.E.
for Deputy Assistant Secretary

2/15/91
Date

AA:jtj

Florida Department of Environmental Regulation

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

Lawton Chiles, Governor

Carol M. Browner, Secretary

Reedy Creek Improvement District
Post Office Box 10,170
Lake Buena Vista, Florida 32830-0170

Attention: Thomas M. Moses, District Administrator

Orange County - AP
GE Gas Fired Turbine Generator
with Heat Recovery System
Permit No. A048-170280
Change of Conditions

Dear Mr. Moses:

We are in receipt of your request for a change of the permit conditions. The permit conditions are changed as follows:

Specific Condition No. 5

The only change affects sulfur dioxide (SO_2) under "Gas Fired", in which the maximum allowable emissions limit is changed from 0.2 lb/hr and 0.8 TPY to 1.2 lbs/hr and 5.1 TPY.

All other conditions remain the same.

This letter must be attached to your permit and becomes a part of that permit.

Sincerely,

amc

A. Alexander, District Director

8-13-91
Date

AA/jtt

Copies to:

Edward Godwin, P.E.

Florida Department of Environmental Regulation
Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400
Lawton Chiles, Governor
Carol M. Browner, Secretary

May 29, 1991

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Thomas M. Moses, District Administrator
Reedy Creek Improvement District
P. O. Box 10170
Lake Buena Vista, Florida 32830

Re: AC 48-137740 - Gas Turbine/HRSG/Duct Burner
AC 48-105243 - EPCOT Diesel Generator No. 1
AC 48-106650 - EPCOT Diesel Generator No. 2

Dear Mr. Moses:

The Department is in agreement with your request received March 5, 1991, for increasing the sulfur dioxide emission limit when firing natural gas in the gas turbine/HRSG located at Central Energy plant at Bay Lake and also increasing the carbon monoxide emission limit from the two diesel generators at the EPCOT Center referenced above. The Department will make the following changes:

AC 48-137740
Gas Turbine and Heat Recovery Steam
Generator with Duct Burner

Specific Condition No. 5

The only change affects sulfur dioxide (SO_2) under "Gas Fired," in which the maximum allowable emissions limit is changed from 0.2 lb/hr and 0.8 TPY to 1.2 lbs/hr and 5.1 TPY.

AC 48-105243
EPCOT Center Diesel Generator No. 1

Specific Condition No. 2

The only change affects carbon monoxide, in which the maximum allowable emissions rate is changed from 1.5 lb/hr to 3.0 lbs/hr.

AC 48-106650
EPCOT Center Diesel Generator No. 2

Specific Condition No. 2

The only change affects carbon monoxide, in which the maximum allowable emissions rate is changed from 1.5 lb/hr to 3.0 lbs/hr.

All other conditions for the three permits referenced above remain as issued. This letter must be attached to each permit and shall become a part of the permits.

Sincerely,

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

SS/MB/plm

c: C. Collins, Central Dist.
E. Godwin, P.E., RCES
K. F. Kosky, P.E., KBN

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. Thomas M. Moses
Reedy Creek Improvement District
P.O. Box 32.
Lake Buena Vista, Fl 32830

4. Article Number
P 407 853 142

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
1-28-91

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

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

P 407 853 142

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

Sent to Thomas Moses	
Street and No. Reedy Creek ID	
P.O. State and ZIP Code Lake B.V., Fl	
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 1-25-91	
AC 48-137740	

PS Form 3800, June 1985 U.S.G.P.O. 1989-234-555

Florida Department of Environmental Regulation

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

Lawton Chiles, Governor Carol Browner, Secretary

January 15, 1991

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Thomas M. Moses
Reedy Creek Improvement District
Post Office Box 36
Lake Buena Vista, Florida 32830

Dear Mr. Moses:

The Department received your request for modification of the construction permit referenced below. The request is acceptable and the following shall be changed:

Project: AC 48-137740

FROM:

9. Initial and annual compliance testing shall be conducted with the fuels used in the preceeding 12 month period using:

1. EPA Method 29 for NOx and SO_2
2. EPA Method 10 for CO
3. EPA Method 5 for PM
4. EPA Method 9 for VE

Other DER approved methods may be used for compliance testing only after prior Departmental approval. The compliance protocol shall be worked out with DER's District office prior to initial compliance tests.

TO:

9. Initial and annual compliance testing shall be conducted with the fuels used in the preceeding 12 month period using:

1. EPA Method 29 for NOx and SO_2
2. EPA Method 10 for CO
3. EPA Method 17 for PM
4. EPA Method 9 for VE

Other DER approved methods may be used for compliance testing only after prior Departmental approval. The compliance protocol shall be worked out with DER's District office prior to initial compliance tests.

Attachment to be Incorporated:

Letter from Reedy Creek Energy Services dated January 9, 1991, requesting a change in the particulate matter test method.

This letter must be attached to your construction permit, AC 48-137740, and shall become a part of that permit.

Sincerely,

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

SS/JR/plm

c: C. Collins, Central District
H. Culp, P.E.
B. Bealls, EPA
M. Flores, NPS

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

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

Interoffice Memorandum

TO: Steve Smallwood

FROM: Clair Fancy

DATE: January 15, 1991

SUBJ: Amendment to Construction Permit AC 48-137440
Reedy Creek Improvement District

Attached for your approval and signature is a letter modifying the particulate matter test method for the above referenced construction permit.

The Bureau recommends approval of this amendment.

CF/JR/plm

Attachment

REEDY CREEK ENERGY SERVICES, INC.

P.O. BOX 10,000 • LAKE BUENA VISTA, FLORIDA 32830-1000

(407) 824-4024

January 9, 1991

Mr. Barry Andrews, P.E.
Division of Air
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

RE: FDER Permit A048-170280 and AC48-137740

Dear Mr. Andrews:

Reedy Creek Energy Services, Inc. is the Engineer and Operator of the Reedy Creek Improvement District 30.8 MW gas-fired turbine generator constructed and operated under the above-referenced permits.

On December 14, 1990, Reedy Creek Improvement District requested by letter that you change Specific Condition #9 of the construction permit to allow use of EPA Method 17 for particulate matter in lieu of the stipulated EPA Method 5. At that time, you were kind enough to provide Mr. Charles Collins of the Central District with a verbal approval so that an enforcement-related particulate test could be conducted on December 21, 1990.

At this time, we are attempting to conduct an annual emissions test of the facility on 11 January, 1991. Mr. Collins has informed me, however, that without your written modification to the construction permit allowing use of EPA Method 17, he must enforce the use of EPA Method 5.

I am requesting that you modify the permit specific condition #9 as requested and inform Mr. Collins by fax so that we may proceed with the compliance test on Friday, 11 January, as scheduled.

If you have any questions or comments, please call me at (407) 824-4943. My telefax number is (407) 824-4529. We appreciate your assistance in this matter.

Sincerely,

Edward Godwin, P.E.
Chief Mechanical Engineer

EG/fw

cc: Charles Collins, P.E.

TELECOPIER COVER SHEET

DATE: 1/09/91

TO: BARRY ANDREWS, P.E. TELECOPIER # 904-922-6979

FROM: ED GODWIN, P.E. TELECOPIER # 407-834-4552

RE: ACID/RCES PERMIT NO. AC48-137740/AO48-170280

Special Instructions: THANK YOU FOR YOUR ASSISTANCE.

If you do not receive all of these pages, please call back as soon as possible: 407-834-4553.

TOTAL NUMBER OF PAGES BEING SENT 4 INCLUDING THIS PAGE.

REEDY CREEK
IMPROVEMENT DISTRICT

P.O. BOX 10170 LAKE BUENA VISTA, FLORIDA 32830-0170 TELEPHONE (407) 828-2034

December 14, 1990

Mr. Barry Andrews, P.E.
Division of Air
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: FDER Permit A048-170280 and AC48-137740

Dear Mr. Andrews:

Reedy Creek Improvement District operates a 30.8MW gas fired turbine generator in a combined-cycle configuration under operating permit A048-170280. During the first annual compliance test, performed March 14, 1990, it was discovered that the facility was not meeting permitted limits for Particulate Matter (PM) and Volatile Organic Compounds (VOC). Subsequently, in September, the Central District issued a Warning Notice for non-compliance for these two emissions. Meetings with Mr. Charles Collins and Reedy Creek Improvement District were held to discuss the Warning Notice. RCID chose to pursue an informal solution that involved submission of a Remediation Plan to the Central District. The Remediation Plan was accepted and RCID has been investigating the performance of the facility and the potential causes of the March emission results.

Research stack emission tests performed on September 21 and again on December 3 indicated that the facility is operating within permit limits for VOC. The facility's emissions of particulate matter exceed the permitted value using EPA Method 5 in accordance with Permit Specific Condition #9. Using EPA Method 17, however, particulate matter emissions are well within the permit limit. These test results are listed in Attachment 1.

We have notified the Central District of our desire to perform a Compliance Test on December 21 to demonstrate that the facility operates within permitted emission values for PM and VOC using EPA Methods 17 and 25A. Mr. Collins has informed me that in order to substitute Method 17 in lieu of Method 5, approval for the change to the construction and operating permits is required from your office.

Reedy Creek Improvement District hereby requests your

favorable consideration of the following modification to AC48-137740 and A048-170280.

Change Specific Condition #9, Item 3 to:

"EPA Method 17 for PM"

If you concur with this request, please inform Mr. Charles Collins of the Central District as soon as possible so that we may proceed with demonstrating compliance on December 21. If you have any questions or comments, please call me at (407) 828-2241. My telefax number is (407) 828-8096. We appreciate your assistance in this matter.

Sincerely,

Thomas M. Moses
District Administrator

EG/TMM/fjw

Attachment

cc: Charles Collins, P.E.

bcc: Janice Adkins
Ed Godwin
Frank Jones
Bob Kindle
Bob Kohl
Kenn Kosky
Ray Maxwell
Bob Penn
Willard Smith

ATTACHMENT I

Reedy Creek Improvement District

Combined Cycle Gas Turbine Facility

Construction Permit #AC48-137740

Operating Permit #A048-170280

Particulate Emissions (PM) Permit Limits: 0.8 lb/hr

Volatile Organic Compounds (VOC) Permit Limits: 6.0 lb/hr

TEST RESULTS (lb/hr)

	Permit	21 Sept., 1990	3 December, 1990
PM (Method 5)	0.8	1.8	1.56
PM (Method 17)		0.5	0.31
VOC	6.0	0.0	0.31

Florida Department of Environmental Regulation

Central District • 3319 Maguire Boulevard, Suite 232 • Orlando, Florida 32803-3767 • 407-894-7555

Bob Martinez, Governor Dale Twachtmann, Secretary John Shearer, Assistant Secretary
Alex Alexander, Deputy Assistant Secretary

Permittee:
Reedy Creek Improvement District
P.O. Box 36
Lake Buena Vista, FL 32830

Attention: Thomas M. Moses
Director/ General Manager

I. D. Number:
Permit/Certification
Number: A048-170280
Date of Issue:
Expiration Date: 12/15/94
County: Orange
Latitude/Longitude:
28°25'34"N/81°34'48"W
UTM: 17-442.0 KmE; 3139.0 KmN
Project: Gas Fired Turbine Generator with Heat Recovery System

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

The permittee can operate a 30.8 MW GE LM5000 gas fired turbine generator system with a heat input capacity of 345 MMBTU/hr. The project includes an in-line duct burner, heat recovery boiler and steam turbine, at the Central Energy Plant. This source is located at Bay Lake, near Lake Buena Vista, Orange County, Florida.

General Conditions are attached to be distributed to the permittee only.

PERMITTEE:
Reedy Creek Improvement District

Attention: Thomas M. Moses
Director/General Manager

I. D. Number:
Permit/Certification Number:
A048-170280
Date of Issue:
Expiration Date: 12/15/94

SPECIFIC CONDITIONS:

1. The turbine may operate continuously (8760 hrs/yr).

2. Only natural gas shall be fired in the turbine and duct burner. No. 2 oil shall be used in periods of curtailed natural gas supply. The duration of oil firing shall not exceed 14 days annually.

3. The maximum heat input to the turbine and the duct burner combined shall not exceed 345 MMBTU/hr. (normal duct burner heat input rate of 23 MMBTU/hr).

4. When the gas turbine is not in operation, the duct burner heat input may be increased up to, but not to exceed, 198 MMBTU/hr.

5. The emissions, from the turbine and duct burner combined, shall not exceed:

Pollutant	Gas Fired lb/hr.	Gas Fired TPY*	Oil Fired[1] lb/hr	Oil Fired[1] TPY
Nitrogen Oxides (NOX) peak @ 40°F	112		132	
average	77	337	100	17
Sulfur Dioxide (SO_2)	0.2	0.8	118	20
Particulates (PM)	0.8	3.5	9	2
Carbon Monoxide (CO)	11	48	24	4
Volatile Organics (VOCs)	6	26	6	1
Visible Emissions (VE)	5% opacity		10% opacity	
NOx, at 15% O_2 dry basis peak	74 ppmv		82 ppmv[2]	
Average	58 ppmv		68 ppmv	
SO_2, at 15% oxygen dry basis	-		58 ppmv	

*TPY (tons per year)

1 Oil will be fired only when there is natural gas curtailment. It will be fired for no more than 14 days annually.

2 Variation in concentration with variation in ambient air temperature documented by a plot of pollutant concentration versus ambient temperature, as per initial compliance test results.

PERMITTEE:
Reedy Creek Improvement District

Attention: Thomas M. Moses
Director/General Manager

I. D. Number:
Permit/Certification Number:
A048-170280
Date of Issue:
Expiration Date: 12/15/94

SPECIFIC CONDITIONS:

The average emissions will be calculated using hourly logged averages to obtain a 30 day average and then using 12 consecutive 30 day averages to obtain an annual average. The DER District Office may alter this averaging method after due consideration of alternative compliance plans.

The duct burner NOx emissions shall not exceed (corresponding to 0.2 lb/MMBTU) 4.6 lb/hr for gas or oil at 23 MMBTU heat input or 40 lbs/hr. for gas or oil at 198 MMBTU/hr.

6. The No. 2 oil sulfur content shall not exceed 0.4 percent.

7. The "Black Start" Cummins No. 2 oil fired emergency generator, when fired on a normal basis to maintain a state of readiness, shall not be operated beyond the 10 minutes/week check out period.

For inventory purposes only, the emergency generator's expected emissions are listed below:

Pollutant	lbs/year
NOx	232
CO	36
VOC	9
PM	8
SO_2	30

8. Water injection shall be utilized for NOx control at a minimum of 0.55 water to fuel ratio. If compliance testing warrants this ratio to be re-investigated, the ratio at which compliance is maintained shall be incorporated into the permit.

9. Annual compliance testing conducted annually from the date of February 1, 1989 shall be conducted with the fuels used in the preceding 12 months period using:

1. EPA Method 20 for NOx and SO_2
2. EPA Method 10 for CO
3. EPA Method 5 for PM
4. EPA Method 9 for VE

Other DER approved methods may be used for compliance testing only after prior Departmental approval.

PERMITTEE:
Reedy Creek Improvement District

Attention: Thomas M. Moses
Director/General Manager

I. D. Number:
Permit/Certification Number:
AO48-170280
Date of Issue:
Expiration Date: 12/15/94

SPECIFIC CONDITIONS:

10. The project shall comply with all the applicable requirements of:

    a. Chapter 17-2, FAC
    b. 40 CFR 60, Subpart GG, Gas Turbines
    c. 40 CFR 60, Subpart Db, Industrial Steam Generating Units.

11. DER's District Office shall be notified in writing 15 days prior to source testing. Written reports of the tests shall be submitted to the district office within 45 days of test completion.

12. Any change in the method of operation, fuels, equipment or operating hours shall be submitted for approval to DER's District Office.

13. Each calendar year on or before March 1, submit for each source, an Annual Operations Report DER Form 17-1.202(6) for the preceding calendar year in accordance with Rule 17-4.14, F.A.C.

14. An operation permit renewal must be submitted at least 60 days prior to the expiration date of this permit (Rule 17-4.09, F.A.C.).

ISSUED 1-3-90

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

A. Alexander
Deputy Assistant Secretary
3319 Maguire Boulevard
Suite 232
Orlando, Florida 32803

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. Thomas M. Moses
Reedy Creek Improvement District
P. O. Box 10170
Lake Buena Vista, FL 32830-0170

4. Article Number
P 938 762 762

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

Always obtain signeture of addressee or agent and DATE DELIVERED.

5. Signature — Address
X

6. Signature — Agent
X

7. Date of Delivery

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

Rec'd 11/27/89 KRD

PS Form **3811**, Mar. 1988 ★ U.S.G.P.O. 1988-212-865 DOMESTIC RETURN RECEIPT

P 938 762 762

RECEIPT FOR CERTIFIED MAIL

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

Sent to Mr. Thomas M. Moses, RCID	
Street and No. P.O. Box 10170	
P.O. State and ZIP Code Lake Buena Vista, FL 32830	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date Mailed: 11-27-89 Permit: AC 48-137740	

PS Form 3800, June 1985

Florida Department of Environmental Regulation

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

Bob Martinez, Governor | Dale Twachtmann, Secretary | John Shearer, Assistant Secretary

November 13, 1989

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Thomas M. Moses
Reedy Creek Improvement District
P. O. Box 10170
Lake Buena Vista, Florida 32830-0170

Dear Mr. Moses:

Re: RClD Cogeneration Plant Permit Extension
AC 48-137740

The Department has reviewed your request for the extension of the expiration date for the above mentioned permit and agrees with your request. The following shall be changed and added to the permit:

Change Expiration Date

From: November 1, 1989
To: May 1, 1990

Attachment to be Added

13. RClD letter received November 1, 1989.

This letter must be attached to the above mentioned permit and shall become a part of that permit.

Sincerely,

Dale Twachtmann
Secretary

DT/plm

c: C. Collins, Central District
H. Culp, P.E.

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

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

11/14/89
Office of the Secretary

Interoffice Memorandum

TO: Dale Twachtmann

FROM: Steve Smallwood for Clayton

DATE: November 13, 1989

SUBJ: Permit Expiration Date Extension
Reedy Creek Improvement District
AC 48-137740

Attached for your approval and signature is a permit expiration date extension, for the Reedy Creek Cogeneration project, prepared by the Bureau of Air Regulation.

I recommend your approval and signature.

Attachment

SS/PR/plm

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. Thomas M. Moses
Reedy Creek Improvement District
P. O. Box 36
Lake Buena Vista, FL 32830

4. Article Number
P 938 762 573

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 — Address
X

6. Signature — Agent
X Debbie Smith

7. Date of Delivery
5-26-89

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

PS Form **3811**, Mar. 1988 * U.S.G.P.O. 1988-212-865 **DOMESTIC RETURN RECEIPT**

Recd 5/30/89 KWD

P 938 762 573

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

Sent to Mr. Thomas M. Moses, RCID	
Street and No. P.O. Box 36	
P.O., State and ZIP Code Lake Buena Vista, FL 32830	
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 Permit: AC 48-137740 Mailed: 5-24-89	

PS Form 3800, June 1985

EXPRESS

EXPRESS SHIPPING LABEL
FOR USE BY POWERSHIP CUSTOMERS ONLY

PART # 112678 REV. 10/88 WCSC
© 1988 Federal Express Corporation
189

2862375966

From

Ship Date 11-01-89

WALT DISNEY WORLD
3241 VISTA RD
LAKE BUENA VISTA FL 32830

To *(If Hold for Pickup, Print FEDEX Address Here)(We Cannot Deliver to P.O. Boxes or P.O. # Zip Codes.)*

CLAIR H. FANCY
FL. DEPT. OF ENVIRONMENTAL
2600 BLAIR STONE RD.
TALLAHASSEE FL 32301

Release No.

Reference Info
JU091921

SERVICE CODE 1- PRIORITY 1 2- COURIER PAK ENVELOPE 3- COURIER PAK BOX 4- COURIER PAK TUBE 5- STANDARD AIR 6- OVERNIGHT LETTER

WEIGHT	DECLARED VALUE	OVER SIZE
001	00000	☐

SPECIAL HANDLING CODES 1 HOLD FOR PICK UP 2 DELIVER WEEK DAY 3 DELIVER SATURDAY 4 DANGEROUS GOODS 5 10 12 HOLIDAY DELIVERY

Routing Code
93 TLH

REEDY CREEK
IMPROVEMENT DISTRICT

P.O. BOX 10170 LAKE BUENA VISTA, FLORIDA 32830-0170 TELEPHONE (407) 828-2034

31 October, 1989

Mr. Clair H. Fancy
Bureau Chief - Air
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32301-2400

RE: RCID Cogeneration Plant
Gas Fired Turbine Generator
Construction Permit AC48-137740

Dear Mr. Fancy:

The construction permit for the RCID Cogeneration Plant expires November 1, 1989. It appears that the Operational Permit #A048-170280 will not be issued by your department prior to the expiration of the construction permit. Therefore, we respectfully request an extension of Construction Permit #AC48-137740 for six months, the extension to expire May 1, 1990.

If you have any additional questions or comments, please let us know as soon as possible. Thank you for your assistance in this project and we look forward to receiving our final operating permit.

Very truly yours,

Thomas M. Moses
District Administrator

TMM:fw

Florida Department of Environmental Regulation

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

Bob Martinez, Governor | Dale Twachtmann, Secretary | John Shearer, Assistant Secretary

May 17, 1989

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Thomas M. Moses
Reedy Creek Improvement District
Post Office Box 36
Lake Buena Vista, Florida 32830

Dear Mr. Moses:

Re: Extension of Expiration Date, RCID Cogeneration Plant, AC 48-137740

The Department has received and reviewed your request dated April 27, 1989, for an extension of the expiration date of the above referenced permit.

The Department is in agreement with your request. The following shall be changed and added to the permit:

Expiration Date Change:

From: June 1, 1989
To: November 1, 1989

Attachment to be Added:

12. RCID letter dated April 27, 1989.

This letter must be attached to your construction permit, AC 48-137740, and shall become a part of the permit.

Sincerely,

Dale Twachtmann
Secretary

DT/PR/plm

cc: C. Collins, CF District
W. Aronson, EPA
M. Flores, NPS

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

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

Interoffice Memorandum

RECEIVED
MAY 16 1989
Office of the Secretary

TO: Dale Twachtmann

FROM: Steve Smallwood

SUBJ: Approval of Permit Extension for Reedy Creek Improvement District Cogeneration Plant, AC 48-137740

DATE: May 15, 1989

Attached for your approval and signature is a permit extension prepared by Central Air Permitting for the above mentioned company to allow for the retesting of the gas turbine with the duct burner in low fire mode.

I recommend your approval and signature.

SS/PR/s

Attachments

RECEIVED
MAY 18 1989
DER - BAQM

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: Dale Twachtmann

FROM: Steve Smallwood

SUBJ: Approval of Permit Extension for Reedy Creek Improvement District Cogeneration Plant, AC 48-137740

DATE: May 15, 1989

Attached for your approval and signature is a permit extension prepared by Central Air Permitting for the above mentioned company to allow for the retesting of the gas turbine with the duct burner in low fire mode.

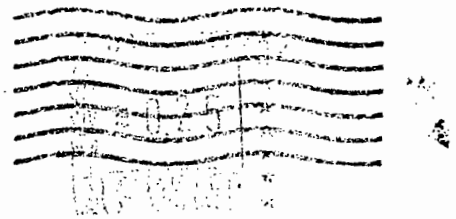
I recommend your approval and signature.

SS/PR/s
Attachments

Patty -
This went upstairs 5/16
Clara

REEDY CREEK
IMPROVEMENT
DISTRICT

P.O. BOX 36 LAKE BUENA VISTA, FLORIDA 32830



Mr. C.H. Fancy, PE
Deputy Chief
Bureau of Air Quality Management
FLORIDA DEPARTMENT OF ENVIRONMENTAL
REGULATION
2600 Blair Stone Road
Tallahassee, FL 32399-2400

P.M.
5-3-89
Orlando, FL

file copy

REEDY CREEK
IMPROVEMENT
DISTRICT

DIRECTOR/GENERAL MANAGER
Thomas M. Moses

April 27, 1989

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

RE: RCID Cogeneration Plant
Gas Fired Turbine Generator Construction Permit
Extension Request
AC 48-137740

Dear Mr. Fancy:

Pursuant to our records, the above noted Permit will expire on June 1, 1989.

After field construction was substantially completed, we conducted emission compliance testing on the unit and forwarded our Source Test Report to Mr. Collins of your Orlando office on March 14, 1989.

One facet of the extended testing indicated possible non-compliance (duct burner operation on low-fire mode) and the Orlando office suggested this part of the testing be redone. While obtaining new test pricing for this work, the 12,000 hp steam turbine mechanically failed and is now under extended repair. While this part of the plant is out of service we cannot effectively re-test our duct burner emissions. Thus, it does not appear we will be able to file a Certificate of Completion, Operating Permit Application, and renewed test results 90 days prior to the current expiration date of the existing Construction Permit.

As of now we hope to re-test in late May or early June and be able to submit the results in July. Assuming no additional mechanical or performance problems, it is our intention to file an Operating Permit Application shortly thereafter.

The 90 day advance submission period needed prior to expiration of the construction Permit (Rules 17-2 and 17-4, FAC) indicates a date of November 1, 1989. Therefore, we hereby request that the Bureau approve an additional five (5) month extension of our construction Permit to allow completion of our requirements by November 1, 1989.

We appreciate your interest in behalf of this project, and your specific concern. Please contact us if you have questions.

Yours very truly,

Thomas M. Moses
Director/General Manager

TMM/dh

cc: Charles Collins
CF District
Florida DER, Orlando

copied: P. Raval
CHF/BT

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:	4. Article Number
Mr. Thomas M. Moses Rbedy Creek Improvement District Post Office Box 36 Lake Buena Vista, Florida 32830	P 274 007 458
	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 [signature]	
7. Date of Delivery 9-24-88	

PS Form **3811**, Mar. 1987 ★ U.S.G.P.O. 1987-178-268 **DOMESTIC RETURN RECEIPT**

Rec'd 9/29/88 KLW

P 274 007 458

RECEIPT FOR CERTIFIED MAIL

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

Sent to Mr. Thomas M. Moses, RCID	
Street and No. P. O. Box 36	
P.O. State and ZIP Code Lake Buena Vista, FL 32830	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date Mailed: 9-22-88 Permit: AC 48-137740	

PS Form 3800, June 1985 ★ U.S.G.P.O. 1985-480-794

Florida Department of Environmental Regulation

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

Bob Martinez, Governor Dale Twachtmann, Secretary John Shearer, Assistant Secretary

September 14, 1988

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Thomas M. Moses
Reedy Creek Improvement District
Post Office Box 36
Lake Buena Vista, Florida 32830

Dear Mr. Moses:

Re: Extension of Expiration Date, RCID Cogeneration Plant, AC 48-137740

The Department has received and reviewed your request dated August 23, 1988, for an extension of the expiration date of the above referenced permit.

The Department is in agreement with your request. The following shall be changed and added to the permit:

Expiration Date Change:

From: December 1, 1988
To: June 1, 1989

Attachment to be Added:

11. RCID letter dated August 23, 1988.

This letter must be attached to your construction permit, AC 48-137740, and shall become a part of the permit.

Sincerely,

Dale Twachtmann
Secretary

DT/ks

cc: C. Collins, CF District
W. Aronson, EPA
M. Flores, NPS

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: Dale Twachtmann

FROM: Steve Smallwood

SUBJ: Extension of Expiration Date
Reedy Creek Improvement District Cogeneration Plant
Permit No. AC 48-137740

DATE: September 14, 1988

Attached for your approval and signature is a letter prepared by Central Air Permitting to extend expiration date of the construction permit issued to the above mentioned company for a cogeneration plant. The facility is located in Orange County, Florida.

I recommend your approval and signature.

SS/PR/s

attachments

REEDY CREEK
IMPROVEMENT
DISTRICT

P.O. BOX 36 LAKE BUENA VISTA, FLORIDA 32830

ORLANDO
AUG 23 '88
FLA

U.S. POSTAGE

Mr. C.H. Fancy, PE
Deputy Chief
Bureau of Air Quality Management
Florida Dept. of Env. Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

FL 328 ORLANDO
AUG 24 1988
PM

PM
8-23-88
Orlando, FL

file copy

REEDY CREEK
IMPROVEMENT
DISTRICT

DIRECTOR/GENERAL MANAGER
Thomas M. Moses

RECEIVED

AUG 26 1988

DER-BAQM

August 23, 1988

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

RCID Cogeneration Plant
Gas Fired Turbine Generator Permit
Application Extension Request
AC 48-137740

Dear Mr. Fancy:

As your files will indicate, the above cited Construction Permit will expire on December 1, 1988.

Although the construction phase is well underway it does not appear we will be able to file a Certificate of Completion, Operation Permit Application and related testing results 90 days prior to the expiration date of the current Construction Permit.

We expect start-up to occur in early November 1988 with compliance testing later that month. Assuming no mechanical or performance problems ensue, we'd expect test data results and completion activities to occur in December. With onset of the holidays and leaving some margin for operational shake-down needs for this 38 MW facility, it appears that our Operating Permit Application submittal will occur in January, 1989.

P.O. BOX 36 LAKE BUENA VISTA, FLORIDA 32830 TELEPHONE (305) 828-2034

Noting the 90 day advance submission period needed prior to expiration of the Construction Permit (Rules 17-2 and 17-4, FAC) brings us to a date of May 1, 1989. Therefore, we formally request that the Bureau approve this request for a five (5) month extension of our Construction Permit allowing us to complete our activities by May 1, 1989.

Your attention to this matter is sincerely appreciated. Please contact us if you have any questions.

Very truly yours,

Thomas M. Moses

Thomas M. Moses
Director/General Manager

TMM:dh

copied: Pradeep Raval
Chuck Collins, CF Dist.
Wayne Aronson, EPA
Miguel Flores, NPS
CHF/BT

BEST AVAILABLE COPY

PM
5 Apr. 1988

File copy

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

APR 05 1988

4APT-APB

RECEIVED

APR 7 1988

DER-BAQM

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

Re: Reedy Creek (PSD-FL-123)

Dear Mr. Fancy:

This is to acknowledge receipt of your final determination and permit for the Reedy Creek Improvement District. We have reviewed your determination and permit and determined the documents to be satisfactory.

Thank you for the opportunity to provide you with our input. If you have any additional comment or information, please feel free to contact me or Gary Ng of my staff at (404) 347-2864.

Sincerely yours,

Bruce P. Miller

Bruce P. Miller, Chief
Air Programs Branch
Air, Pesticides, and Toxics
Management Division

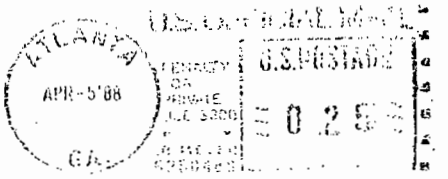
Copied: CHF/BT
Pradeep Raval } 4-8-88
Tom Sawicki

BEST AVAILABLE COPY

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET
ATLANTA, GEORGIA 30365

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

AIR-4



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

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

Interoffice Memorandum

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

M E M O R A N D U M

TO: Bill Thomas

FROM: Vivian F. Garfein

DATE: March 10, 1988

RE: OGC Case No. 87-1624
Permit Application No. 48-137740

On December 3, 1987, REEDY CREEK IMPROVEMENT DISTRICT was granted an extension of time until February 8, 1988, in which to file a petition for administrative proceedings concerning the above captioned case. No petition was filed within the allotted extension of time.

If you have not already done so, please have a final order prepared as soon as possible which appropriately disposes of the permit application so that our file in the case can be closed. Please send me a copy of the final order, or, if the permit application has been withdrawn, a letter confirming the withdrawal date.

Please call if there are any questions.

DEPARTMENT OF ENVIRONMENTAL REGULATION

ROUTING AND TRANSMITTAL SLIP

ACTION NO

ACTION DUE DATE

1. TO: (NAME, OFFICE, LOCATION) Bill Thomas	Initial	
	Date	
2. Air	Initial	
	Date	
3.	Initial	
	Date	
4.	Initial	
	Date	

REMARKS:

RECEIVED

MAR 10 1988

DER - BAQM

INFORMATION	
	Review & Return
	Review & File
	Initial & Forward

DISPOSITION	
	Review & Respond
	Prepare Response
	For My Signature
	For Your Signature
	Let's Discuss
	Set Up Meeting
	Investigate & Report
	Initial & Forward
	Distribute
	Concurrence
	For Processing
	Initial & Return

FROM: V Garfein

DATE 3/10

PHONE

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
NOTICE OF PERMIT

Mr. Thomas M. Moses
Reedy Creek Improvement District
Post Office Box 36
Lake Buena Vista, Florida 32830

March 8, 1988

Enclosed is permit No. AC 48-137740, for Reedy Creek Improvement District to construct a 38 MW natural gas-fired turbine generator and heat recovery system with a total heat input of 450 MMBtu/hr at the Central Energy Plant near Lake Buena Vista, Orange County, Florida. This permit is issued pursuant to Section 403, Florida Statutes.

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

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

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

Copy furnished to:

T. Sawicki, CF District
H. Culp, P.E.
W. Aronson, EPA
M. Flores, NPS

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 fee and check box(es) for additional service(s) requested.

1. ☒ Show to whom delivered, date, and addressee's address. 2. ☐ Restricted Delivery.

3. Article Addressed to:

Mr. Thomas M. Moses
Reedy Creek Improvement District
P.O. Box 36
Lake Buena Vista, FL 32830

4. Article Number
P 274 010 491

Type of Service:
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail

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

5. Signature — Addressee
X

6. Signature — Agent
X R. Bell

7. Date of Delivery
3/14/88

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

PS Form 3811, Feb. 1986 **DOMESTIC RETURN RECEIPT**

Rec'd 3/14/88 LBW

P 274 010 491

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

Sent to: Thomas M. Moses
Reedy Creek Improve. Dist.
Street and No. P.O. Box 36
P.O. State and ZIP Code Lake Buena Vista, FL 32830

Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date	Mailed: 03/09/88 Permit: AC 48-137740

PS Form 3800, June 1985 ★ U.S.G.P.O. 1985-480-794

Final Determination

Reedy Creek Improvement District
Orange County
Lake Buena Vista, Florida

Gas Fired Turbine Generator

Permit No. AC 48-137740

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

March 1, 1988

Final Determination

Reedy Creek's application to construct a 38 MW natural gas fired turbine generator and heat recovery system at the Central Energy Plant near Lake Buena Vista, Orange County, Florida, has been reviewed by the Department. Public Notice of the Department's Intent to Issue the permit was published in the Orlando Sentinel on February 12, 1988.

No comments were received in response to the Public Notice.

The final action of the Department will be to issue the permit as proposed in the Revised Technical Evaluation and Preliminary Determination.

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

PERMITTEE:
Reedy Creek Improvement
District
Post Office Box 36
Lake Buena Vista, FL 32830

Permit Number:AC 48-137740
Expiration Date: December 1, 1988
County: Orange
Latitude/Longitude: 28° 25' 34"N
81° 34' 48"W
Project: GE Gas Fired Turbine Generator with Heat Recovery System

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

For the construction of a 38 MW GE LM5000 gas fired turbine generator system with a heat input capacity of 450 MMBtu/hr. The project will include an in-line duct burner, heat recovery boiler and steam turbine, at the Central Energy Plant at Bay Lake, near Lake Buena Vista, Orange County, Florida.

Construction will be in accordance with the permit application and plans, documents, and reference material submitted unless otherwise stated in the General and Specific Conditions herein.

Attachments:

1. Reedy Creek's application package dated August 5, 1987.
2. EPA's letter dated September 3, 1987.
3. Letter of incompleteness dated September 4, 1987.
4. Reedy Creek's response dated September 18, 1987.
5. U.S. Department of the Interior's letter dated September 28, 1987.
6. EPA's letter dated October 22, 1987.
7. Reedy Creek's revised application dated December 21, 1987.
8. DER's letter dated January 11, 1988.
9. Reedy Creek's letter dated January 22, 1988.
10. DER's Technical Evaluation package dated February 4, 1988.

PERMITTEE:
Reedy Creek Improvement District

Permit Number:AC 48-137740
Expiration Date: December 1, 1988

GENERAL CONDITIONS:

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

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

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

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

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

GENERAL CONDITIONS:

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

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

a. Having access to and copying any records that must be kept under the conditions of the permit;

b. Inspecting the facility, equipment, practices, or operations regulated or required under this permit; and

c. Sampling or monitoring any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

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

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

a. a description of and cause of non-compliance; and

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

GENERAL CONDITIONS:

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

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

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

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

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

13. This permit also constitutes:

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

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

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

GENERAL CONDITIONS:

b. The permittee shall retain at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation), copies of all reports required by this permit, and records of all data used to complete the application for this permit. The time period of retention shall be at least three years from the date of the sample, measurement, report or application unless otherwise specified by Department rule.

c. Records of monitoring information shall include:

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

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

SPECIFIC CONDITIONS:

1. The turbine may operate continuously (8760 hrs/yr).

2. Only natural gas shall be fired in the turbine and duct burner. No. 2 oil shall be used in periods of curtailed natural gas supply. The duration of oil firing shall not exceed 14 days annually.

3. The maximum heat input to the turbine and the duct burner combined shall not exceed 450 MMBtu/hr (normal duct burner heat input rate of 23 MMBtu/hr).

SPECIFIC CONDITIONS:

4. When the gas turbine is not in operation, the duct burner heat input may be increased up to, but not to exceed, 198 MMBtu/hr.

5. The emissions, from the turbine and duct burner combined, shall not exceed:

Pollutant	Gas Fired lb/hr	Gas Fired TPY*	Oil Fired[1] lb/hr	Oil Fired[1] TPY
Nitrogen Oxides (NOx) peak @ 40°F	112		132	
avg.	77	337	100	17
Sulfur Dioxide (SO_2)	0.2	0.8	118	20
Particulates (PM)	0.8	3.5	9	2
Carbon Monoxide (CO)	11	48	24	4
Volatile Organics (VOCs)	6	26	6	1
Visible Emissions (VE)	5% opacity		10% opacity	
NOx, at 15% O_2 dry basis peak	74 ppmv		82 ppmv[2]	
avg.	58 ppmv		68 ppmv	
SO_2, at 15% oxygen dry basis	--		58 ppmv	

*TPY (tons per year)

[1]Oil will be fired only when there is natural gas curtailment. It will be fired for no more than 14 days annually.

[2]Variation in concentration with variation in ambient air temperature to be documented by a plot of pollutant concentration versus ambient temperature, as per initial compliance test results.

The average emissions will be calculated using hourly logged averages to obtain a 30 day average and then using 12 consecutive 30 day averages to obtain an annual average. The DER District office may alter this averaging method after due consideration of alternative compliance plans.

The duct burner NOx emissions shall not exceed (corresponding to 0.2 lb/MMBtu) 4.6 lb/hr for gas or oil at 23 MMBtu heat input or 40 lbs/hr for gas or oil at 198 MMBtu/hr.

6. The No. 2 oil sulfur content shall not exceed 0.4 percent.

7. The "Black Start" Cummins No. 2 oil fired emergency generator, when fired on a normal basis to maintain a state of readiness, shall not be operated beyond the 10 minutes/week check out period.

For inventory purposes only, the emergency generator's expected emissions are listed below:

Pollutant	lbs/year
NOx	232
CO	36
VOC	9
PM	8
SO_2	30

8. Water injection shall be utilized for NOx control at a minimum of 0.6/1.0 water to fuel ratio. If compliance testing warrants this ratio to be re-investigated, the ratio at which compliance is maintained shall be incorporated into the permit.

9. Initial and annual compliance testing shall be conducted with the fuels used in the preceeding 12 month period using:

1. EPA Method 20 for NOx and SO_2
2. EPA Method 10 for CO
3. EPA Method 5 for PM
4. EPA Method 9 for VE

Other DER approved methods may be used for compliance testing only after prior Departmental approval. The compliance protocol shall be worked out with DER's District office prior to initial compliance tests.

10. The proposed project shall comply with all the applicable requirements of:

a) Chapter 17-2, FAC
b) 40 CFR 60, Subpart GG, Gas Turbines
c) 40 CFR 60, Subpart Db, Industrial Steam Generating Units

11. DER's district office shall be notified in writing 15 days prior to source testing. Written reports of the tests shall be submitted to the district office within 45 days of test completion.

The construction shall reasonably conform to the plans and schedule submitted in the application. If the permittee is unable to complete construction on schedule, the Department must be notified in writing 60 days prior to the expiration of the construction permit and submit a new schedule and request for an extension of the construction permit, (Rule 17-2, FAC).

PERMITTEE:
Reedy Creek Improvement District

Permit Number:AC 48-137740
Expiration Date: December 1, 1988

SPECIFIC CONDITIONS:

To obtain a permit to operate, the permittee must demonstrate compliance with the conditions of the construction permit and submit a complete application for an operating permit, including the application fee, along with compliance test results and Certificate of Completion, to the Department's District office 90 days prior to the expiration date of the construction permit. The permittee may continue to operate in compliance with all terms of the construction permit until its expiration date. Operation beyond the construction permit expiration date requires a valid permit to operate (Rules 17-2 and 17-4, FAC).

If the construction permit expires prior to the permittee requesting an extension or obtaining a permit to operate, then all activities at the project must cease and the permittee must apply for a new permit to construct which can take up to 90 days to process a complete application (Rule 17-4, FAC).

12. Any change in the method of operation, fuels, equipment or operating hours shall be submitted for approval to DER's District office.

13. During the new turbine debugging period, not to exceed nine months, the older Orenda power trains shall not be fired unless the new GE turbine is not in operation. After the debugging period is over, the Orenda turbines and their associated equipment shall be dismantled.

Issued this 3 day of March 1988

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION

Dale Twachtmann

Dale Twachtmann, Secretary

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

Interoffice Memorandum

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

TO: Dale Twachtmann

FROM: Howard L. Rhodes

SUBJECT: Approval of Reedy Creek Improvement District
State Construction Permit Number: AC 48-137740

DATE: March 1, 1988

Attached for your approval and signature is a permit prepared by Central Air Permitting for the above mentioned company to construct a 38 MW natural gas fired turbine generator and heat recovery system at the Central Energy Plant near Lake Buena Vista, Orange County, Florida. No comments were received during the public notice period.

Day 90 after which these permits will be issued by default is April 12, 1988.

I recommend your approval and signature.

HLR/aqm/pr

attachments

RECEIVED
MAR 3 1988
Office of the Secretary

RECEIVED
MAR 8 1988
DER - BAQM

DEPARTMENT OF ENVIRONMENTAL REGULATION

ROUTING AND TRANSMITTAL SLIP

ACTION NO

ACTION DUE DATE

	Initial	Date
1. TO: (NAME, OFFICE, LOCATION) Vivian F. Garfein		
2.		
3.		
4.		

REMARKS:

Per your request attached is the Final Determination for Ready Creek AC 48-137740.

INFORMATION	
	Review & Return
	Review & File
	Initial & Forward

DISPOSITION	
	Review & Respond
	Prepare Response
	For My Signature
	For Your Signature
	Let's Discuss
	Set Up Meeting
	Investigate & Report
	Initial & Forward
	Distribute
	Concurrence
	For Processing
	Initial & Return

FROM: B. Thomas

DATE 3-17-88

PHONE 488-1344

REGULATION

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

ATION

Creek Improvement
d turbine generator
ut of 450 MMBtu/hr at
, Orange County,
ction 403, Florida

judicial review of
Statutes, by the
9.110, Florida
f the Department in
e Road,
a copy of the
filing fees with
Notice of Appeal
s permit is filed

A DEPARTMENT
L REGULATION

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

Copy furnished to:

T. Sawicki, CF District
H. Culp, P.E.
W. Aronson, EPA
M. Flores, NPS

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.

3. Article Addressed to:
Thomas M. Moses
Reedy Creek Imporvement Dist.
P.O. Box 36
Lake Buena Vista, FL 32830

4. Article Number
P 274 010 453

Type of Service:
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature — Addressee
X

6. Signature — Agent
X

7. Date of Delivery
2-10-88

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

PS Form 3811, Feb. 1986 DOMESTIC RETURN RECEIPT

P 274 010 453

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

Thomas M. Moses
~~Reedy Creek Improvement Dist.~~
Street and No.
P.O. Box 36
P.O., State and ZIP Code
Lake Buena Vista, FL 32830

Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date Mailed: 02/08/88 Permit: AC 48-137740	

PS Form 3800, June 1985 ★ U.S.G.P.O. 1985-480-794

Jill

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

February 5, 1988

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. Thomas M. Moses
Reedy Creek Improvement District
Post Office Box 36
Lake Buena Vista, Florida 32830

Dear Mr. Moses:

Attached is one copy of the Revised Technical Evaluation and Preliminary Determination and proposed permit for Reedy Creek Improvement District to construct a 38 MW natural gas-fired turbine generator and heat recovery system with a total heat input of 450 MMBtu/hr at the Central Energy Plant near Lake Buena Vista, Orange County, Florida.

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

Sincerely,

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

CHF/ks

Attachments

cc: T. Sawicki, CF District
H. Culp, P.E.
W. Aronson, EPA
M. Flores, NPS

BEFORE THE STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

In the Matter of
Applications for Permits by:

Reedy Creek Improvement District
Post Office Box 36
Lake Buena Vista, Florida 32830

DER File No. AC 48-137740

INTENT TO ISSUE

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

The applicant, Reedy Creek Improvement District, applied on August 6, 1987, to the Department of Environmental Regulation for a permit to construct a 38 MW natural gas-fired turbine generator and a heat recovery system with a total heat input of 450 MMBtu/hr, at the Central Energy Plant near Lake Buena Vista, Orange County, Florida.

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

Pursuant to Section 403.815, F.S. and DER Rule 17-103.150, FAC, you (the applicant) are required to publish at your own expense the enclosed Notice of Proposed Agency Action on permit applications. The notice must be published one time only in a section of a major local newspaper of general circulation in the county in which the project is located and within thirty (30) days from receipt of this intent. Proof of publication must be provided to the Department within seven days of publication of the notice. Failure to publish the notice and provide proof of publication within the allotted time may result in the denial of the permits.

The Department will issue the permits with the attached conditions unless 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. Petitions must comply with the requirement of Florida Administrative Code Rules 17-103.155 and

28-5.201 (copy enclosed) and be filed with (received by) the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Petitions filed by the permit applicant must be filed within fourteen (14) days of receipt of this intent. Petitions filed by other persons must be filed within fourteen (14) days of publication of the public notice or within fourteen (14) days of receipt of this intent, whichever first occurs. 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, concerning the subject permit application. Petitions which are not filed in accordance with the above provisions will be dismissed.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

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

Copies furnished to:

T. Sawicki, CF District
H. Culp, P.E.
W. Aronson, EPA
M. Flores, NPS

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

28-5.15 Requests for Formal and Informal Proceedings

(1) Requests for proceedings shall be made by petition to the agency involved. Each petition shall be printed, typewritten or otherwise duplicated in legible form on white paper of standard legal size. Unless printed, the impression shall be on one side of the paper only and lines shall be double spaced and indented.

(2) All petitions filed under these rules should contain:

(a) The name and address of each agency affected and each agency's file or identification number, if known;

(b) The name and address of the petitioner or petitioners;

(c) All disputed issues of material fact. If there are none, the petition must so indicate;

(d) A concise statement of the ultimate facts alleged, and the rules, regulations and constitutional provisions which entitle the petitioner to relief;

(e) A statement summarizing any informal action taken to resolve the issues, and the results of that action;

(f) A demand for the relief to which the petitioner deems himself entitled; and

(g) Such other information which the petitioner contends is material.

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 2-8-88.

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.

M. Jane Wise 2-8-88
Clerk Date

State of Florida
Department of Environmental Regulation
Notice of Intent

The Department of Environmental Regulation hereby gives notice of its intent to issue a permit to Reedy Creek Improvement District to construct a 38 MW natural gas-fired turbine generator and a heat recovery system with a total heat input of 450 MMBtu/hr, at the Central Energy Plant near Lake Buena Vista, Orange County, Florida. The Department is issuing this Intent to Issue for the reasons stated in the attached Technical Evaluation and Preliminary Determination.

Persons whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative determination (hearing) in accordance with Section 120.57, Florida Statutes. The petition must conform to the requirements of Chapters 17-103 and 28-5, Florida Administrative Code, and must be filed (received) in the Department's Office of General Counsel, 2600 Blair Stone Road, Twin Towers Office Building, Tallahassee, Florida 32399-2400, within fourteen (14) days of publication of this notice. Failure to file a petition within this time period constitutes a waiver of any right such person has to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

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 proposed agency action. Therefore, persons who may not wish to file a petition may wish to intervene in the proceeding. A petition for intervention must be filed pursuant to Rule 28-5.207, Florida Administrative Code, at least five (5) days before the final hearing and be filed with the hearing officer if one has been assigned at the Division of Administrative Hearings, Department of Administration, 2009, Apalachee Parkway, Tallahassee, Florida 32301. If no hearing officer has been assigned, the petition is to be filed with the Department's Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Failure to petition to intervene within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, Florida Statutes.

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

Dept. of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

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

Any person may send written comments on the proposed action to Mr. Bill Thomas at the Department's Tallahassee address. All comments mailed within 30 days of the publication of this notice will be considered in the Department's final determination.

Revised
Technical Evaluation
and
Preliminary Determination

Reedy Creek Improvement District
Lake Buena Vista, Orange County, Florida

Gas Fired Turbine Generator
Permit No. AC 48-137740

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

February 5, 1988

I. Application

A. Applicant

Reedy Creek Improvement District
Post Office Box 36
Lake Buena Vista, Florida 32830

B. Project and Location

The applicant proposes to construct a 38 MW natural gas fired turbine generator and a heat recovery system, with a total heat input of 450 MMBtu/hr, at the Central Energy Plant, Bay Lake location, near Lake Buena Vista, Orange County, Florida. The proposed project will emit the pollutants nitrogen oxides (NOx), sulfur dioxide (SO_2), particulate matter (PM), carbon monoxide (CO), and volatile organic compounds (VOCs).

The UTM coordinates of this facility are Zone 17, 442 km East and 3139 km North.

C. Sources Reviewed

This technical evaluation will review the following sources:

1) The proposed GE turbine and its associated duct burner and heat recovery system

2) "Black" start Cummins emergency diesel generator

3) The two small Orenda turbines and their associated heat recovery systems which are being replaced.

Reedy Creek applied for a construction permit for the proposed project on August 5, 1987, and the application was deemed complete on December 22, 1987.

D. Facility Category

Reedy Creek's facility in Lake Buena Vista is classified in accordance with the Standard Industrial Classification (SIC) Code as Major Group 49, Electric, Gas and Sanitary Services; Group No. 493, Electric Gas and Other Services; Industry No. 4931, Electric Services.

The existing facility is classified as major in accordance with Chapter 17-2 of the Florida Administrative Code (FAC).

II. Project Description

The applicant proposes to replace two smaller Orenda turbines and their associated heat recovery system with a GE LM5000, 38 MW gas fired, oil stand-by, combustion turbine followed by an integrated heat recovery steam boiler and steam turbine, including an in-line 198 MMBtu/hr capacity gas fired duct burner. An emergency 1800HP diesel generator will also be installed and maintained in a state of readiness.

Both the turbine and downstream duct burner will fire No. 2 oil if natural gas supply is curtailed. The duct burner at low fire rate (normal mode) will have a 23 MMBtu/hr heat input rate and at high fire rate (when turbine is out of service) it will have a heat input rate of upto 198 MMBtu/hr.

NOx emissions will be controlled by water injection while other criteria pollutants (combustion products) will be controlled by good combustion practices.

During the equipment change over period of shutting down the existing Orenda turbines and starting up the GE turbine, the existing No. 1 and 2 turbine installations will be maintained on a standby basis through a six-month project debugging period. The existing No. 1 waste heat boiler will also be kept on standby but the No. 2 boiler will be dismantled to make room for the new GE/Vogt unit. The project will have one main stack and one emergency by-pass stack.

It is anticipated that after a reasonable debugging period the remaining standby Orenda turbines and associated boiler will cease operation.

As background information, it should be noted that the Department's Intent to Issue the permit for the proposed project, dated November 23, 1987, has been retracted in consideration of the applicant's revised permit application. Whereas the initial submittal was subject to a PSD review, the revised application is not because the net emissions increase is no longer significant in accordance with Rule 17-2.500, FAC. However, the self imposed NOx emission limits requested by the applicant to avoid the PSD review are substantially lower than NSPS requirements.

III. Rule Applicability

The proposed project will emit the pollutants NOx, SO_2, PM, CO, and VOCs. It is subject to preconstruction review requirements in accordance with Chapter 403 of the Florida Statutes and Chapters 17-2 and 17-4 of the Florida Administrative Code (FAC).

The proposed project will be located in Orange County, an area designated as nonattainment for ozone and attainment for NOx, SO_2, PM and CO in accordance with Rule 17-2.410 and 17-2.420, FAC, respectively.

The proposed project is more than a 100 km from the Chassahowitzka National Wilderness Area, a Class I area, in accordance with Rule 17-2.440, FAC.

The proposed project will be a minor modification to a major facility since emission increases are less than significant (17-2, Table 500-2, FAC) and is therefore not subject to a Prevention of Significant Deterioration (PSD) Review in accordance with Rule 17-2.500(2)(d)4, FAC.

The proposed project will not be subject to the New Source Review for Nonattainment Areas in accordance with Rule 17-2.510(2)(d)4, FAC, as emissions of VOC are less than significant (17-2. Table 500-2, FAC).

The proposed project will be subject to 40 CFR 60 Subpart GG - Standards of Performance for Stationary Gas Turbines.

The proposed project will also be subject to 40 CFR 60 Subpart Db - Standards of Performance for Fossil Fuel Fired Steam Generating Units, for the duct burner.

The proposed project will be required to show compliance with the emission limiting standards in accordance with:

a) Rule 17-2.700, FAC
b) 40 CFR 60, Subpart GG
c) 40 CFR 60, Subpart Db

Initial and annual compliance test will be conducted in accordance with the above listed rules for the following:

1. NOx and SO_2, EPA Method 20
2. CO, EPA Method 10
3. PM, EPA Method 5
4. Visible Emissions (VE), EPA Method 9

Other DER approved methods may be used with prior Departmental approval.

IV. Emission Limitations

By shutting down existing Orenda turbines the applicant proposes to net out of a PSD review, while bringing the proposed project on line.

Pollutant	Proposed Project Emission (TPY)	Shutdown Project Emissions (TPY)	Net Increase Emissions (TPY)
NO_2	342	304	38
SO_2	21	0.4	21
CO	51	84	(33)
VOC	26	30	(4)

As reflected by the calculations in the application and more stringent limits than the New Source Performance Standards, the emissions from the combined cycle gas turbine, including the duct burner,will not exceed:

Pollutant	Gas Fired lb/hr	Gas Fired TPY*	Oil Fired[1] lb/hr	Oil Fired[1] TPY
Nitrogen Oxides (NOx) peak @ 40°F	112		132	
avg.	77	337	100	17
Sulfur Dioxide (SO_2)	0.2	0.8	118	20
Particulates (PM)	0.8	3.5	9	2
Carbon Monoxide (CO)	11	48	24	4
Volatile Organics (VOCs)	6	26	6	1
Visible Emissions (VE)	5% opacity		10% opacity	
NOx, at 15% O_2 dry basis peak	74 ppmv		82 ppmv[2]	
avg.	58 ppmv		68 ppmv	
SO_2, at 15% oxygen dry basis	--		58 ppmv	

*TPY (tons per year)

[1]Oil will be fired only when there is natural gas curtailment. It will be fired for no more than 14 days annually.

[2]Variation in concentration with variation in ambient air temperature as per compliance plot, as submitted in the application and to be confirmed by initial compliance tests.

The duct burner NOx emissions shall not exceed (corresponding to 0.2 lb/MMBtu) 4.6 lb/hr for gas or oil at 23 MMBtu heat input and 40 lbs/hr for gas or oil at 198 MMBtu/hr.

Since there is a temperature dependence for NOx emissions from the turbine (the winter months will have higher NOx emissions than the summer months), the compliance tests will initially need to be done in a manner which establishes this relationship.

The "TPY" emission limit establishes allowable emission to avoid PSD applicability for NOx.

The "average lb/hr" emission limit, which will be the average of 12 consecutive 30 day averages as logged by the computerized system, establishes compliance for a time period shorter than a year.

The "peak lb/hr" emission limit reflects the allowable emissions which will be encountered at low ambient temperatures (around 40°F).

The DER District office will formalize the compliance protocol with Reedy Creek prior to initial compliance tests.

V. Air Quality Impact Analysis

The technical evaluation of this application determined that air modeling or air monitoring would not be required to provide reasonable assurance that Florida's air quality standards would not be violated.

The ambient air quality impact analysis done in consideration of Reedy Creek's initial submittal, consisting of higher emissions, resulted in the following annual NOx impacts:

Maximum Impact from Proposed Project: 0.9 ug/m^3
Predicted Total Impact (including background): 16.9 ug/m^3
Florida AAQS: 100 ug/m^3

These are conservative estimates as far as the revised application is concerned.

VI. Conclusion

Based on the information provided by Reedy Creek, the Department has reasonable assurance that the proposed project, as described in this evaluation and subject to the conditions proposed herein, will not cause or contribute to a violation of an ambient air quality standard or PSD increment, or any other provision of Chapter 17-2, FAC.

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

PERMITTEE:
Reedy Creek Improvement District
Post Office Box 36
Lake Buena Vista, FL 32830

Permit Number:AC 48-137740
Expiration Date: December 1, 1988
County: Orange
Latitude/Longitude: 28° 25' 34"N
81° 34' 48"W
Project: GE Gas Fired Turbine Generator with Heat Recovery System

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

For the construction of a 38 MW GE LM5000 gas fired turbine generator system with a heat input capacity of 450 MMBtu/hr. The project will include an in-line duct burner, heat recovery boiler and steam turbine, at the Central Energy Plant at Bay Lake, near Lake Buena Vista, Orange County, Florida.

Construction will be in accordance with the permit application and plans, documents, and reference material submitted unless otherwise stated in the General and Specific Conditions herein.

Attachments:

1. Reedy Creek's application package dated August 5, 1987.
2. EPA's letter dated September 3, 1987.
3. Letter of incompleteness dated September 4, 1987.
4. Reedy Creek's response dated September 18, 1987.
5. U.S. Department of the Interior's letter dated September 28, 1987.
6. EPA's letter dated October 22, 1987.
7. Reedy Creek's revised application dated December 21, 1987.
8. DER's letter dated January 11, 1988.
9. Reedy Creek's letter dated January 22, 1988.
10. DER's Technical Evaluation package dated February 4, 1988.

PERMITTEE:
Reedy Creek Improvement District

Permit Number:AC 48-137740
Expiration Date: December 1, 1988

GENERAL CONDITIONS:

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

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

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

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

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

GENERAL CONDITIONS:

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

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

a. Having access to and copying any records that must be kept under the conditions of the permit;

b. Inspecting the facility, equipment, practices, or operations regulated or required under this permit; and

c. Sampling or monitoring any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

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

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

a. a description of and cause of non-compliance; and

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

GENERAL CONDITIONS:

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

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

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

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

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

13. This permit also constitutes:

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

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

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

GENERAL CONDITIONS:

b. The permittee shall retain at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation), copies of all reports required by this permit, and records of all data used to complete the application for this permit. The time period of retention shall be at least three years from the date of the sample, measurement, report or application unless otherwise specified by Department rule.

c. Records of monitoring information shall include:

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

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

SPECIFIC CONDITIONS:

1. The turbine may operate continuously (8760 hrs/yr).

2. Only natural gas shall be fired in the turbine and duct burner. No. 2 oil shall be used in periods of curtailed natural gas supply. The duration of oil firing shall not exceed 14 days annually.

3. The maximum heat input to the turbine and the duct burner combined shall not exceed 450 MMBtu/hr (normal duct burner heat input rate of 23 MMBtu/hr).

SPECIFIC CONDITIONS:

4. When the gas turbine is not in operation, the duct burner heat input may be increased up to, but not to exceed, 198 MMBtu/hr.

5. The emissions, from the turbine and duct burner combined, shall not exceed:

Pollutant	Gas Fired lb/hr	Gas Fired TPY*	Oil Fired[1] lb/hr	Oil Fired[1] TPY
Nitrogen Oxides (NOx) peak @ 40°F	112		132	
avg.	77	337	100	17
Sulfur Dioxide (SO_2)	0.2	0.8	118	20
Particulates (PM)	0.8	3.5	9	2
Carbon Monoxide (CO)	11	48	24	4
Volatile Organics (VOCs)	6	26	6	1
Visible Emissions (VE)	5% opacity		10% opacity	
NOx, at 15% O_2 dry basis peak	74 ppmv		82 ppmv[2]	
avg.	58 ppmv		68 ppmv	
SO_2, at 15% oxygen dry basis	--		58 ppmv	

*TPY (tons per year)

[1]Oil will be fired only when there is natural gas curtailment. It will be fired for no more than 14 days annually.

[2]Variation in concentration with variation in ambient air temperature to be documented by a plot of pollutant concentration versus ambient temperature, as per initial compliance test results.

The average emissions will be calculated using hourly logged averages to obtain a 30 day average and then using 12 consecutive 30 day averages to obtain a annual average. The DER District office may alter this averaging method after due consideration of alternative compliance plans.

The duct burner NOx emissions shall not exceed (corresponding to 0.2 lb/MMBtu) 4.6 lb/hr for gas or oil at 23 MMBtu heat input or 40 lbs/hr for gas or oil at 198 MMBtu/hr.

6. The No. 2 oil sulfur content shall not exceed 0.4 percent.

7. The "Black Start" Cummins No. 2 oil fired emergency generator, when fired on a normal basis to maintain a state of readiness, shall not be operated beyond the 10 minutes/week check out period.

For inventory purposes only, the emergency generator's expected emissions are listed below:

Pollutant	lbs/year
NOx	232
CO	36
VOC	9
PM	8
SO_2	30

8. Water injection shall be utilized for NOx control at a minimum of 0.6/1.0 water to fuel ratio. If compliance testing warrants this ratio to be re-investigated, the ratio at which compliance is maintained shall be incorporated into the permit.

9. Initial and annual compliance testing shall be conducted with the fuels used in the preceeding 12 month period using:

1. EPA Method 20 for NOx and SO_2
2. EPA Method 10 for CO
3. EPA Method 5 for PM
4. EPA Method 9 for VE

Other DER approved methods may be used for compliance testing only after prior Departmental approval. The compliance protocol shall be worked out with DER's District office prior to initial compliance tests.

10. The proposed project shall comply with all the applicable requirements of:

a) Chapter 17-2, FAC
b) 40 CFR 60, Subpart GG, Gas Turbines
c) 40 CFR 60, Subpart Db, Industrial Steam Generating Units

11. DER's district office shall be notified in writing 15 days prior to source testing. Written reports of the tests shall be submitted to the district office within 45 days of test completion.

The construction shall reasonably conform to the plans and schedule submitted in the application. If the permittee is unable to complete construction on schedule, the Department must be notified in writing 60 days prior to the expiration of the construction permit and submit a new schedule and request for an extension of the construction permit, (Rule 17-2, FAC).

PERMITTEE:
Reedy Creek Improvement District

Permit Number:AC 48-137740
Expiration Date: December 1, 1988

SPECIFIC CONDITIONS:

To obtain a permit to operate, the permittee must demonstrate compliance with the conditions of the construction permit and submit a complete application for an operating permit, including the application fee, along with compliance test results and Certificate of Completion, to the Department's District office 90 days prior to the expiration date of the construction permit. The permittee may continue to operate in compliance with all terms of the construction permit until its expiration date. Operation beyond the construction permit expiration date requires a valid permit to operate (Rules 17-2 and 17-4, FAC).

If the construction permit expires prior to the permittee requesting an extension or obtaining a permit to operate, then all activities at the project must cease and the permittee must apply for a new permit to construct which can take up to 90 days to process a complete application (Rule 17-4, FAC).

12. Any change in the method of operation, fuels, equipment or operating hours shall be submitted for approval to DER's District office.

13. During the new turbine debugging period, not to exceed nine months, the older Orenda power trains shall not be fired unless the new GE turbine is not in operation. After the debugging period is over, the Orenda turbines and their associated equipment shall be dismantled.

Issued this_____day of_____, 19___

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION

_____
Dale Twachtmann, Secretary

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET
ATLANTA, GEORGIA 30365

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

AIR-4

3·1·88

~~DHF~~
~~BP~~ } FYI

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

PM
24 Feb. 1988
Atlanta, GA

file copy

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

FEB 24 1988

APT-APB/gn

RECEIVED
FEB 29 1988
DER-BAQM

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

Re: Reedy Creek (PSD-FL-123)

Dear Mr. Fancy:

This is to acknowledge receipt of your February 5, 1988, preliminary determination and proposed permit for the above-referenced source. We have reviewed your determination and determined that this would be a minor modification not subject to PSD review. Therefore, this determination will not be subject to review under the Region IV Overview of State Programs policy.

Thank you for the opportunity for providing our comments. I also appreciate your efforts in working with the source to step up the source's NO_x control measures. Cooperation is such an important factor in resolving any issues. We are looking forward to receiving copies of the final determination and permit upon issuance. If you have any additional information or comments, please feel free to contact me or Gary Ng of my staff at (404) 347-2864.

Sincerely yours,

Bruce P. Miller

Bruce P. Miller, Chief
Air Programs Branch
Air, Pesticides, and Toxics
Management Division

Copied. Pradeep Raval
CHF/BT
3.1.88

The Orlando Sentinel

Published Daily
Orlando, Orange County, Florida

ADVERTISING CHARGE $97.44

State of Florida } ss.
COUNTY OF ORANGE

Before the undersigned authority personally appeared Nancy A. Puglia who on oath says that she is the Legal Advertising Representative of the Orlando Sentinel, a Daily newspaper published at Orlando, in Orange County, Florida; that the attached copy of advertisement, being a Notice of Intent in the matter of Permit to Reedy Creek Improvement District in the _____ Court, was published in said newspaper in the issues of February 12, 1988

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

Nancy A. Puglia

Sworn to and subscribed before me this 12th day of February A.D., 1988

Notary Public

Notary Public, State of Florida at Large
My Commission Expires March 4, 1989
Bonded Thru Notary Public Underwriters

FORM NO. AD-262

State of Florida
Department of Environmental Regulation
Notice of Intent

The Department of Environmental Regulation hereby gives notice of its intent to issue a permit to Reedy Creek Improvement District to construct a 38 MW natural gas-fired turbine generator and a heat recovery system with a total heat input of 450 MMBtu/hr, at the Central Energy Plant near Lake Buena Vista, Orange County, Florida. The Department is issuing this Intent to Issue for the reasons stated in the attached Technical Evaluation and Preliminary Determination.

Persons whose substantial interest are affected by the Department's proposed permitting decision may petition for an administrative determination (hearing) in accordance with Section 120.57, Florida Statutes. The petition must conform to the requirements of Chapters 17-103 and 28-5, Florida Administrative Code, and must be filed (received) in the Department's Office of General Counsel, 2600 Blair Stone Road, Twin Towers Office Building, Tallahassee, Florida 32399-2400, within fourteen (14) days of publication of this notice. Failure to file a petition within this time period constitutes a waiver of any right such person has to request an admininstrative determination (hearing) under Section 120.57, Florida Statutes.

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 proposed agency action. Therefore, persons who may not wish to file a petition may wish to intervene in the proceeding. A petition for intervention must be filed pursuant to Rule 28-5.207, Florida Administrative Code, at least five (5) days before the final hearing and be filed with the hearing officer if one has been assigned at the Division of Administrative Hearings, Department of Administrative, 2009 Apalachee Parkway, Tallahassee, Florida 32301. If no hearing officer has been assigned, the petition is to be filed with the Department's Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Failure to petition to intervene within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, Florida Statutes.

The application is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:
Dept. of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
Dept. of Environmental Regulation
Central Florida District
3319 Maguire Blvd., Suite 232
Orlando, Florida 32803-3767

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

CL-235 Feb.12,1988

Copied Prudeep Pant 2/23/88

DEPARTMENT OF ENVIRONMENTAL REGULATION

ROUTING AND TRANSMITTAL SLIP

ACTION NO

ACTION DUE DATE

	Initial	Date
1. TO: (NAME, OFFICE, LOCATION) Bill Thomas		
2. Bureau of Air Quality Manag-		
3. Department of Environmental Regulation Twin Towers Office Building 2600 Blair Stone Road Tallahassee, FL 32399-2400		
4.		

REMARKS:

FYI

DER

FEB 22, 1988

BAQM

INFORMATION

- [ ] Review & Return
- [ ] Review & File
- [ ] Initial & Forward
- [ ]

DISPOSITION

- [ ] Review & Respond
- [ ] Prepare Response
- [ ] For My Signature
- [ ] For Your Signature
- [ ] Let's Discuss
- [ ] Set Up Meeting
- [ ] Investigate & Report
- [ ] Initial & Forward
- [ ] Distribute
- [ ] Concurrence
- [ ] For Processing
- [ ] Initial & Return

FROM: John Turner

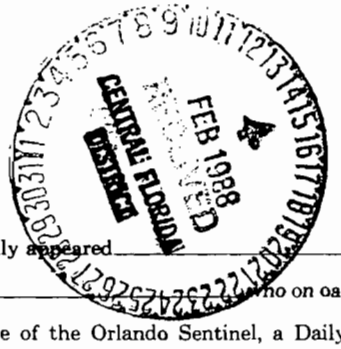
DATE 2/19/88

PHONE

904 325-1266

The Orlando Sentinel

Published Daily
Orlando, Orange County, Florida



ADVERTISING CHARGE $ 101.44

State of Florida } ss.
COUNTY OF ORANGE

Before the undersigned authority personally appeared Nancy A. Puglia who on oath says that she is the Legal Advertising Representative of the Orlando Sentinel, a Daily newspaper published at Orlando, in Orange County, Florida; that the attached copy of advertisement, being a Notice of Intent in the matter of Permit to Reedy Creek Improvement District

in the Court, was published in said newspaper in the issues of February 11, 1988

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

Nancy A. Puglia

Sworn to and subscribed before me this 12th day of February A.D. 19 88

Seal

Notary Public, State of Florida at Large
My Commission Expires March 4, 1989
Bonded Thru Brown & Brown, Inc.

Notary Public

FORM NO. AD-262

State of Florida
Department of Environmental Regulation
Notice of Intent

The Department of Environmental Regulation hereby gives notice of its intent to issue a permit to Reedy Creek Improvement District to construct a 38 MW natural gas-fired turbine generator and a heat recovery system with a total heat input of 450 MMBtu/hr, at the Central Energy Plant near Lake Buena Vista, Orange County, Florida. The Department is issuing this Intent to Issue for the reasons stated in the attached Technical Evaluation and Preliminary Determination.

Persons whose substantial interest are affected by the Department's proposed permitting decision may petition for an administrative determination (hearing) in accordance with Section 120.57, Florida Statutes. The petition must conform to the requirements of Chapters 17-103 and 28-5, Florida Administrative Code, and must be filed (received) in the Department's Office of General Counsel, 2600 Blair Stone Road, Twin Towers Office Building, Tallahassee, Florida 32399-2400, within fourteen (14) days of publication of this notice. Failure to file a petition within this time period constitutes a waiver of any right such person has to request an admininstrative determination (hearing) under Section 120.57, Florida Statutes.

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 proposed agency action. Therefore, persons who may not wish to file a petition may wish to intervene in the proceeding. A petition for intervention must be filed pursuant to Rule 28-5.207, Florida Administrative Code, at least five (5) days before the final hearing and be filed with the hearing officer if one has been assigned at the Division of Administrative Hearings, Department of Administrative, 2009 Apalachee Parkway, Tallahassee, Florida 32301. If no hearing officer has been assigned, the petition is to be filed with the Department's Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Failure to petition to intervene within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, Florida Statutes.

The application is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:
Dept. of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
Dept. of Environmental Regulation
Central Florida District
3319 Maguire Blvd., Suite 232
Orlando, Florida 32803-3767

Any person may send written comments on the proposed action to Mr. Bill Thomas at the Department's Tallahassee address. All comments mailed within 30 days of the publication of this notice will be considered in the Department's final determination.

CL-188 Feb.11,1988

DEPARTMENT OF ENVIRONMENTAL REGULATION

ROUTING AND TRANSMITTAL SLIP

ACTION NO

ACTION DUE DATE

	Initial	Date
1. TO: (NAME, OFFICE, LOCATION) Bill Thomas		
2. Bureau of Air Quality Manag.		
3. Department of Environmental Regulation		
4. Twin Towers Office Building 2600 Blair Stone Road Tallahassee, FL 32399-2400		

REMARKS:

FYI

This notice gives 30 days in the last PP when it was amended to 14 days. Therefore, this notice will not be used

DER

FEB 16

BAQM

INFORMATION	
	Review & Return
	Review & File
	Initial & Forward

DISPOSITION	
	Review & Respond
	Prepare Response
	For My Signature
	For Your Signature
*	Let's Discuss
	Set Up Meeting
	Investigate & Report
	Initial & Forward
	Distribute
	Concurrence
	For Processing
	Initial & Return

FROM: John Turner

DATE 2/15/88

PHONE SC 325-1266

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

February 11, 1988

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. Thomas M. Moses
Reedy Creek Improvement District
Post Office Box 36
Lake Buena Vista, Florida 32830

Dear Mr. Moses:

Attached is one copy of the revision in the Notice of Intent reflecting the change in the notice period requirement from 30 days to 14 days. This letter is to be attached to the Technical Evaluation and Preliminary Determination package sent to you on February 5, 1988.

Sincerely,

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

CHF/ks

Attachments

cc: T. Sawicki, CF District
H. Culp, P.E.
W. Aronson, EPA
M. Flores, NPS

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.

3. Article Addressed to:

Mr. Thomas M. Moses
Reedy Creek Improvement District
P.O. Box 36
Lake Buena Vista, FL 32830

4. Article Number
P 274 010 116

Type of Service:
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature – Addressee
X

6. Signature – Agent
X

7. Date of Delivery
2-13-88

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

PS Form 3811, Feb. 1986 DOMESTIC RETURN RECEIPT

Recd 2/17/88
MD

P 274 010 116

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

Sent to Mr. Thomas M. Moses
~~Reedy Creek Improvement Dist.~~
Street and No
P.O. Box 36
P.O. State and ZIP Code
Lake Buena Vista, FL 32830

Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date Mailed: 02/10/88 Permit: AC 48-137740	

PS Form 3800, June 1985
* U.S.G.P.O. 1985-480-794

State of Florida
Department of Environmental Regulation
Notice of Intent

The Department of Environmental Regulation hereby gives notice of its intent to issue a permit to Reedy Creek Improvement District to construct a 38 MW natural gas fired turbine generator and a heat recovery system, with a total heat input of 450 MMBtu/hr, at the Central Energy Plant, Bay Lake Location, near Lake Buena Vista, Orange County, Florida. The proposed project will emit the pollutants nitrogen oxides (NOx), sulfur dioxide (SO_2), particulate matter (PM), carbon monoxide (CO), and volatile organic compounds (VOCs). The Department is issuing this Intent to Issue for the reasons stated in the attached Technical Evaluation and Preliminary Determination.

Persons whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative determination (hearing) in accordance with Section 120.57, Florida Statutes. The petition must conform to the requirements of Chapters 17-103 and 28-5, Florida Administrative Code, and must be filed (received) in the Department's Office of General Counsel, 2600 Blair Stone Road, Twin Towers Office Building, Tallahassee, Florida 32399-2400, within fourteen (14) days of publication of this notice. Failure to file a petition within this time period constitutes a waiver of any right such person has to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

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 proposed agency action. Therefore, persons who may not wish to file a petition may wish to intervene in the proceeding. A petition for intervention must be filed pursuant to Rule 28-5.207, Florida Administrative Code, at least five (5) days before the final hearing and be filed with the hearing officer if one has been assigned at the Division of Administrative Hearings, Department of Administration, 2009, Apalachee Parkway, Tallahassee, Florida 32301. If no hearing officer has been assigned, the petition is to be filed with the Department's Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Failure to petition to intervene within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, Florida Statutes.

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

Dept. of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

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

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

State of Florida
Department of Environmental Regulation
Notice of Intent

The Department of Environmental Regulation hereby gives notice of its intent to issue a permit to Reedy Creek Improvement District to construct a 38 MW natural gas fired turbine generator and a heat recovery system, with a total heat input of 450 MMBtu/hr, at the Central Energy Plant, Bay Lake Location, near Lake Buena Vista, Orange County, Florida. The proposed project will emit the pollutants nitrogen oxides (NOx), sulfur dioxide (SO_2), particulate matter (PM), carbon monoxide (CO), and volatile organic compounds (VOCs). The Department is issuing this Intent to Issue for the reasons stated in the attached Technical Evaluation and Preliminary Determination.

Persons whose substantial interests are affected by the permitting decision may petition for an ination (hearing) in accordance with Section tes. The petition must conform to the ers 17-103 and 28-5, Florida Administrative ed (received) in the Department's Office of Blair Stone Road, Twin Towers Office , Florida 32399-2400, within fourteen (14) f this notice. Failure to file a petition od constitutes a waiver of any right such an administrative determination (hearing) Florida Statutes.

filed, the administrative hearing process ate agency action. Accordingly, the tion may be different from the proposed fore, persons who may not wish to file a intervene in the proceeding. A petition for filed pursuant to Rule 28-5.207, Florida Administrative Code, at least five (5) days before the final hearing and be filed with the hearing officer if one has been assigned at the Division of Administrative Hearings, Department of Administration, 2009, Apalachee Parkway, Tallahassee, Florida 32301. If no hearing officer has been assigned, the petition is to be filed with the Department's Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Failure to petition to intervene within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, Florida Statutes.

2-10-88

Mr. Baxter,

Revised Notice of Intent as per our conversation today.

PR.

REEDY CREEK ENERGY SERVICES, INC.

P.O. BOX 10,000 • LAKE BUENA VISTA, FLORIDA 32830-1000

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

Best Available Copy

1·26·88

~~CAFF~~
~~???~~ } FYI

FEDERAL EXPRESS — **QUESTIONS? CALL 800-238**

AIRBILL NUMBER 5748403404

51 7294M 5748403404

DER

[redacted] Date 01/22/88

JAN 25

BAQM

1	
From (Your Name) Please Print	Your Phone Number (Very Important) ( )
Company WALT DISNEY WORLD CO	Department/Floor No.
Street Address 3300 BONNET CREEK DRIVE	
City LAKE BUENA VISTA State FL	ZIP Required For Correct Invoicing 32830

2	
To (Recipient's Name) Please Print C H FANCY, DPTY CHIEF	Recipient's Phone Number (Very Important) ( )
Company BUR OF AIR QUALITY MGEMENT FLA DEPT OF ENV REGULATIONA	Department/Floor No.
Exact Street Address *(Use of P.O. Boxes or P.O.® Zip Codes Will Delay Delivery And Result in Extra Charge.)* 2600 BLAIR STONE ROAD TWIN TOWERS	
City TALLAHASSEE State FL	ZIP Street Address Zip Required 32399-2400

3 YOUR BILLING REFERENCE INFORMATION (FIRST 24 CHARACTERS WILL APPEAR ON INVOICE.)

PAYMENT [X] Bill Sender [ ] Bill Recipient's FedEx Acct. No. [ ] Bill 3rd Party FedEx Acct. No. [ ] Bill Credit Card
[ ] Cash [redacted]

H HOLD FOR PICK-UP AT THIS FEDERAL EXPRESS LOCATION: Street Address (See Service Guide or Call 800-238-5355)
City State
ZIP ®Zip Code of Street Address Required

4 SERVICES — CHECK ONLY ONE BOX

1 [ ] **PRIORITY 1** Overnight Delivery Using Your Packaging
6 [X] **OVERNIGHT LETTER*** (Our Packaging) 9½"x12½"

OVERNIGHT DELIVERY USING OUR PACKAGING
2 [ ] Courier-Pak Overnight Envelope* 12"x 15½"
3 [ ] Overnight Box 12½"x 17½"x 3" A [ ]
4 [ ] Overnight Tube 38"x 6"x 6"x 6" B [ ]
*Declared Value Limit $100.

STANDARD AIR
5 [ ] Delivery not later than second business day

SERVICE COMMITMENT
PRIORITY 1 - Delivery is scheduled early next business morning in most locations. It may take two or more business days if the destination is outside our primary service areas.
STANDARD AIR - Delivery is generally next business day or not later than second business day. It may take three or more business days if the destination is outside our primary service areas.

DELIVERY AND SPECIAL HANDLING — CHECK SERVICES REQUIRED
1 [ ] **HOLD FOR PICK-UP** (Fill in Section H at right)
2 [X] **DELIVER WEEKDAY**
3 [ ] **DELIVER SATURDAY** (Extra charge)
4 [ ] **DANGEROUS GOODS** (P-1 and Standard Air Packages only Extra charge)
5 [ ] **CONSTANT SURVEILLANCE SERVICE (CSS)** (Extra charge) (Do Not Complete Section 5)
6 [ ] **DRY ICE** ______ Lbs
7 [ ] **OTHER SPECIAL SERVICE** ______
8 [ ]
9 [ ] **SATURDAY PICK-UP** (Extra charge)
10 [ ]

PACKAGES	WEIGHT	YOUR DECLARED VALUE	OVER SIZE
	LBS	NDV	
	LBS		
	LBS		
	LBS		
Total	Total	Total NDV	

Received At
1 [ ] Regular Stop 2 [ ] On-Call Stop
3 [ ] Drop Box 4 [ ] B.S.C. 5 [X] Station

Federal Express Corp. Employee No. 36762

Date/Time For Federal Express Use 1/22 1:35

Emp. No. Date
[ ] Cash Received
[ ] Return Shipment
[ ] Third Party [ ] Chg. To Del. [ ] Chg. To Hold
Street Address
City State Zip
Received By:
X
Date/Time Received FedEx Employee Number

Federal Express Use
Base Charges
Declared Value Charge
Origin Agent Charge
Other
Total Charges

PART #106001 REV. 5/87 PRINTED U.S.A. GBFE

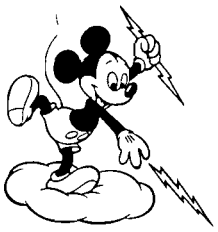
007

5 Sender authorizes Federal Express to deliver this shipment without obtaining a delivery signature and shall indemnify and hold harmless Federal Express from any claims resulting therefrom.
Release Signature:

RECIPIENT'S COPY

Federal Express File Copy

Airbill # 5748403404
Mailed 1-22-88



REEDY CREEK ENERGY SERVICES, INC.

P.O. BOX 10,000 • LAKE BUENA VISTA, FLORIDA 32830-1000

(305) 824-4024

January 22, 1988

DER

JAN 25 1988

BAQM

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

RCID CoGeneration Plant
Contract No. 86W-306
RCES Letter No. RC-165
Gas Fired Turbine Generator
Permit Application
AC 48-137740 .

Dear Mr. Fancy:

Per the January 15, 1988 request of Mr. Pradeep Raval, who is developing the above Permit's Preliminary Determination, the following data is offered:

1. The maximum NOx emissions expected from the facility will occur in the winter at approximately the 40 degree F. ambient temperature level. Thus, when burning natural gas, the maximum NOx emission expected from the main stack will be 112 pounds per hour or about 74 ppmvd. When burning diesel oil (for a period not to exceed 14 days per year), the maximum NOx emission expected from the main stack will be 132 pounds per hour on about 82 ppmvd. Concurrent peak CO emissions expected will be 12 pounds per hour on gas and 24 pounds per hour on oil. Similarly, SO2 emissions (oil only) for a brief peak period could be up to 126 pounds per hour.

2. For compliance follow-up by the District Office, please be assured our data storage/retrieval system will have the capability of providing hourly NOx emission readout information for review and control assessment purposes. Information regarding this system is contained in our September 18, 1987 supplemental data package forwarded to you by Mr. Moses.

We trust the above information satisfies your Permit development needs and that the Preliminary Determination can be issued promptly.

Very truly yours,

Blaise Ellis
CoGeneration Project Manager

BE/df

cc: Tom Moses - RCID

Copied. Pradeep Raval
CHF | BT
1-26-88

PS Form 3811, July 1983 447-845

SENDER: Complete items 1, 2, 3 and 4.

Put your address in the "RETURN TO" space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for service(s) requested.

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

3. Article Addressed to:
Mr. Thomas M. Moses
Reedy Creek Improvement District
P.O. Box 40
Lake Buena Vista, FL 32830

4. Type of Service:
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail

Article Number
P 274 010 476

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)*

DOMESTIC RETURN RECEIPT

P 274 010 476

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

Sent Mr. Thomas M. Moses ~~Reedy Creek Improve. Dist.~~	
Street and No. P.O. Box 40	
P.O., State and ZIP Code Lake Buena Vista, FL 32830	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date Mailed: 01-13-88 Permit: 48-137740	

PS Form 3800, June 1985 * U.S.G.P.O. 1985-480-794

File

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

January 11, 1988

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Thomas M. Moses
Reedy Creek Improvement District
Post Office Box 40
Lake Buena Vista, Florida 32830

Dear Mr. Moses:

Re: Application for Construction of a Gas-Fired Turbine Generator, Permit No. AC 48-137740

The Department has received your revised application package dated December 21, 1987.

Your application will be reviewed with the amendments as submitted. The Department's Intent to Issue dated November 23, 1987, is no longer valid as the Technical Evaluation and Preliminary Determination will change in consideration of your submittal dated December 21, 1987. If it is determined that PSD no longer applies, the PSD File Number PSD-FL-123, will be closed.

If you have any questions, please call Pradeep Raval at (904)488-1344 or write to me at the above address.

Sincerely,

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

CHF/PR/s

cc: R. Sadow
T. Sawicki
W. Aronson
M. Flores

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

November 23, 1987

Mr. Wayne Aronson
Chief
Program Support Section
U.S. EPA, Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Dear Mr. Aronson:

RE: Technical Evaluation & Preliminary Determination
Reedy Creek Improvement District
Air Construction Permit: AC 48-137740
Federal Permit Number: PSD-FL-123

Enclosed for your review and comment is the Technical Evaluation & Preliminary Determination and draft permit for the above referenced facility. If you have any comments or questions, please contact Pradeep Raval or Max Linn by December 11, 1987, at the above address or at (904)488-1344.

Sincerely,

M. V. Janes

Margaret V. Janes
Bureau of Air Quality
Management

/mj

enclosure

REEDY CREEK ENERGY SERVICES, INC.
P.O. BOX 10,000 • LAKE BUENA VISTA, FLORIDA 32830-1000
(305) 824-4024

December 21, 1987

Bureau of Air Quality Management
Florida Department of
Environmental Regulation
2600 Blair Stone Road
Twin Towers Building
Tallahassee, FL 32399-2400

DER
DEC 22 1987
BAQM

Attention Mr. C. H. Fancy, PE
Deputy Chief

Gas Fired Turbine
Generator Permit Application
AC48-137740
PSD-FL-123

Dear Mr. Fancy:

Per our technical meeting of December 8, 1987 at your offices, please accept these amendments to the above Permit Application.

In order to resolve the outstanding BACT issues, it was discussed at that meeting that we might amend our permit application in one of two ways: 1) select an approach involving PSD Review with application of BACT determination based on an economic criterion of $1000/ton of NOx reduction; 2) select an approach involving a voluntary limitation of annual NOx emissions to below the significance level. We have selected the latter methodology. We believe the attached satisfies the items discussed per the stipulated guidelines.

It was suggested that if we were able to submit these revisions before the Holidays, your staff would be able to act on this application promptly. As our 1988 schedule is now being impacted severely, we would greatly appreciate your timely response.

As requested previously, if you have any questions on this application, please contact us immediately, thus allowing our timely follow-up.

Very truly yours,

Edward Godwin, P.E.
Project Engineer
Reedy Creek Energy Services, Inc.

bgfh:D509:k

Attachments

pc Mr. Thomas M. Moses

Copied: Pradeep Raval, CHF/BT, Tom Sawicki } 12-23-87

Ford, Bacon & Davis Incorporated
Engineers Constructors
Ronald D. Sadow, P.E.
Manager of Environmental Engineering
P. O. Box 1894
4001 Jackson Street
Monroe, LA 71210
318/323-9000

12-23-87

Return ASAP

FEDERAL EXPRESS

QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL NUMBER 5151306790

7203M 5151306790

Date: 12/21/87

1 From (Your Name) Please Print: RON SADOW
Your Phone Number (Very Important): (318) 323-9000
Company: FORD BACON & DAVIS INC
Department/Floor No.:
Street Address: 4001 JACKSON STREET
City: MONROE State: LA ZIP Required For Correct Invoicing: 71202

2 To (Recipient's Name) Please Print: MR. C.H. FANCY
Recipient's Phone Number (Very Important): ( )
Company: BUREAU OF AIR QUALITY MANAGEMENT FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATIONS
Department/Floor No.:
Exact Street Address (Use of P.O. Boxes or P.O. ® Zip Codes Will Delay Delivery And Result in Extra Charge.): 2600 BLAIR STONE ROAD TWIN TOWERS BLD
City: TALLAHASSEE State: FL ZIP Street Address Zip Required: 32399-2400

3 YOUR BILLING REFERENCE INFORMATION (FIRST 24 CHARACTERS WILL APPEAR ON INVOICE.): XXXXXX10268R

PAYMENT: [X] Bill Sender [ ] Bill Recipient's FedEx Acct. No. [ ] Bill 3rd Party FedEx Acct. No. [ ] Bill Credit Card [ ] Cash

4 SERVICES CHECK ONLY ONE BOX

1 [ ] PRIORITY 1 Overnight Delivery Using Your Packaging
6 [ ] OVERNIGHT LETTER* (Our Packaging) 9½"x12½"
OVERNIGHT DELIVERY USING OUR PACKAGING
2 [X] Courier-Pak Overnight Envelope* 12"x 15½"
3 [ ] Overnight Box 12½"x 17½"x 3" A [ ]
4 [ ] Overnight Tube 38"x 6"x 6" B [ ]
*Declared Value Limit $100.
5 [ ] STANDARD AIR Delivery not later than second business day

SERVICE COMMITMENT
PRIORITY 1 - Delivery is scheduled early next business morning in most locations. It may take two or more business days if the destination is outside our primary service areas.
STANDARD AIR - Delivery is generally next business day or not later than second business day. It may take three or more business days if the destination is outside our primary service areas.

DELIVERY AND SPECIAL HANDLING CHECK SERVICES REQUIRED

1 [ ] HOLD FOR PICK-UP (Fill in Section H at right)
2 [X] DELIVER WEEKDAY
3 DELIVER SATURDAY (Extra charge) [ ]
4 [ ] DANGEROUS GOODS (P-1 and Standard Air Packages only. Extra charge)
5 [ ] CONSTANT SURVEILLANCE SERVICE (CSS) (Extra charge) (Do Not Complete Section 5)
6 [ ] DRY ICE ____ Lbs.
7 [ ] OTHER SPECIAL SERVICE ____
8 [ ]
9 [ ] SATURDAY PICK-UP (Extra charge)
10 [ ]

	PACKAGES	WEIGHT	YOUR DECLARED VALUE	OVER SIZE
	1	2 LBS		
		LBS		
		LBS		
		LBS		
Total	1	Total 2	Total	

Received At: 1 [X] Regular Stop 2 [ ] On-Call Stop 3 [ ] Drop Box 4 [ ] B.S.C. 5 [ ] Station
Federal Express Corp. Employee No.: 50509
Date/Time For Federal Express Use: 12/21 1645

5 Sender authorizes Federal Express to deliver this shipment without obtaining a delivery signature and shall indemnify and hold harmless Federal Express from any claims resulting therefrom.
Release Signature:

H HOLD FOR PICK-UP AT THIS FEDERAL EXPRESS LOCATION: Street Address (See Service Guide or Call 800-238-5355)
City: State:
ZIP ® Zip Code of Street Address Required

Emp. No.: Date:
[ ] Cash Received
[ ] Return Shipment [ ] Third Party [ ] Chg. To Del. [ ] Chg. To Hold
Street Address:
City: State: Zip:
Received By: X
Date/Time Received: FedEx Employee Number:

Federal Express Use
Base Charges
Declared Value Charge
Origin Agent Charge
Other
Total Charges

PART #106001
REV. 5/87
PRINTED U.S.A. NCREC
007

RECIPIENT'S COPY

Air Bill #5151306790 Federal Express 12-21 Monroe LA File Copy

REEDY CREEK ENERGY SERVICES, INC.

P.O. BOX 10,000 • LAKE BUENA VISTA, FLORIDA 32830-1000

(305) 824-4024

December 21, 1987

Bureau of Air Quality Management
Florida Department of
Environmental Regulation
2600 Blair Stone Road
Twin Towers Building
Tallahassee, FL 32399-2400

Attention Mr. C. H. Fancy, PE
Deputy Chief

Gas Fired Turbine
Generator Permit Application
AC48-137740
PSD-FL-123

Dear Mr. Fancy:

Per our technical meeting of December 8, 1987 at your offices, please accept these amendments to the above Permit Application.

In order to resolve the outstanding BACT issues, it was discussed at that meeting that we might amend our permit application in one of two ways: 1) select an approach involving PSD Review with application of BACT determination based on an economic criterion of $1000/ton of NOx reduction; 2) select an approach involving a voluntary limitation of annual NOx emissions to below the significance level. We have selected the latter methodology. We believe the attached satisfies the items discussed per the stipulated guidelines.

It was suggested that if we were able to submit these revisions before the Holidays, your staff would be able to act on this application promptly. As our 1988 schedule is now being impacted severely, we would greatly appreciate your timely response.

As requested previously, if you have any questions on this application, please contact us immediately, thus allowing our timely follow-up.

DER
DEC 22 1987
BAQM

Very truly yours,

Edward Godwin, P.E.
Project Engineer
Reedy Creek Energy Services, Inc.

bgfh:D509:k

Attachments

pc Mr. Thomas M. Moses

Copied: Pradeep Raval
CHF/BT
Tom Sawicki - CF Dist } 12-23-87

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

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

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: _____ [ ] New[1] [ ] Existing[1]

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

COMPANY NAME: _____ COUNTY: _____

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peaking Unit No. 2, Gas Fired) _____

SOURCE LOCATION: Street _____ City _____

UTM: East _____ North _____

Latitude ____° ____' ____"N Longitude ____° ____' ____"W

APPLICANT NAME AND TITLE: _____

APPLICANT ADDRESS: _____

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of _____

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

*Attach letter of authorization

Signed: _____

_____
Name and Title (Please Type)

Date: _____ Telephone No. _____

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

This is to certify that the engineering features of this pollution control project have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that

[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 the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signed Harold L. Culp

Harold L. Culp, PE

Name (Please Type)

Ford, Bacon & Davis, Inc.

Company Name (Please Type)

P. O. Box 1894, Monroe, Louisiana 71210

Mailing Address (Please Type)

Florida Registration No. 29275 Date: 12/21/1987 Telephone No. (318) 323-9000

SECTION II: GENERAL PROJECT INFORMATION

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

Installation of a gas fired, aircraft derivative, turbine generator using water injection for NOx control, standby fuel oil, duct burner, steam generator and steam turbine to produce up to 38 MW of power for Reedy Creek Improvement District usage. See attached reports

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

Start of Construction January 15, 1987 Completion of Construction November 30, 1988

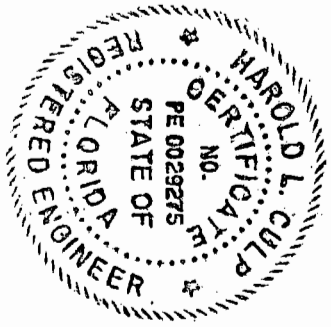
C. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

Integral design of equipment and not individually available.

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

Will replace existing smaller turbines and boilers A048-106735 and A048-106733.

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



Signed Harold L Culp

Harold L. Culp, PE

Name (Please Type)

Ford, Bacon & Davis, Inc.

Company Name (Please Type)

P. O. Box 1894, Monroe, Louisiana 71210

Mailing Address (Please Type)

Florida Registration No. 29275 Date: 12/21/1987 Telephone No. (318) 323-9000

SECTION II: GENERAL PROJECT INFORMATION

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

Installation of a gas fired, aircraft derivative, turbine generator using water injection for NOx control, standby fuel oil, duct burner, steam generator and steam turbine to produce up to 38 MW of power for Reedy Creek Improvement District usage. See attached reports.

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

Start of Construction January 15, 1987 Completion of Construction November 30, 1988

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.)

Integral design of equipment and not individually available.

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

Will replace existing smaller turbines and boilers A048-106735 and A048-106733.

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

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

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: _____ [ ] New[1] [ ] Existing[1]

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

COMPANY NAME: _____ COUNTY: _____

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peaking Unit No. 2, Gas Fired) _____

SOURCE LOCATION: Street _____ City _____

UTM: East _____ North _____

Latitude ____° ____' ____"N Longitude ____° ____' ____"W

APPLICANT NAME AND TITLE: _____

APPLICANT ADDRESS: _____

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of _____

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

*Attach letter of authorization

Signed: _____

_____
Name and Title (Please Type)

Date: _____ Telephone No. _____

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

This is to certify that the engineering features of this pollution control project have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that

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

E. Requested permitted equipment operating time: hrs/day 24 ; days/wk 7 ; wks/yr 52 ; if power plant, hrs/yr 8760 ; if seasonal, describe: Expect gas turbine itself to experience some maintenance downtime but request operating time allowance of 8760 hours/year on an average basis. Duct burners also operational 8760 hours/year.

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

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

   a. If yes, has "offset" been applied? No

   b. If yes, has "Lowest Achievable Emission Rate" been applied? No

   c. If yes, list non-attainment pollutants. Ozone

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

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

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

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

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

   a. If yes, for what pollutants? 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 justification for any answer of "No" that might be considered questionable.

See attachments

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

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

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

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

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] Requested Max. Maximum lbs/hr	Actual T/yr	Allowed[2] Emission Rate per Rule NSPS 17-2	Allowable[3] Emission lbs/hr	Potential[4] Emission lbs/hr	T/yr	Relate to Flow Diagram
CO gas	11	46.4			11	46.4	
CO *oil	24	4.0	N/A	N/A	24	4.0	Main
NOx gas	77	324.3	gas 152.1ppm	gas 206	248 (No H_2O)	1020	
NOx *oil	100	16.8	oil 103.5ppm	oil 153	328	55	Stack
PM gas	0.8	3.4			0.8	3.4	
PM *oil	9	1.5	N/A	N/A	9	1.5	(See flow
SO_2 gas	0.19	0.8	oil 0.8%S		0.19	0.8	
SO_2 *oil	118	19.8	150ppmvd-15%O_2	14 days	118	19.8	diagram)
•VOC gas	6	25.3			6	25.3	
•VOC *oil	6	1.0	N/A	N/A	6	1.0	

*Standby No. 2 fuel oil to be used not more than 14 days/year •Methane plus non-methane

[1]See Section V, Item 2.
NOx - Reference Method 20 44 FR 52792

[2]Reference applicable emission standards and units (e.g. Rule 17-2.600(5)(b)2. Table II, E. (1) - 0.1 pounds per million BTU heat input)
NOx at ppmvd and 15% O_2 (NSPS)

[3]Calculated from operating rate and applicable standard.

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

Projected using water injection based on mfg. data (no data without water except for NOx). CO and VOC also change with amount of water injection thus can vary from above emission rates.

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)
Water Injection	NOx	65-75%	N/A	Mfg. data
(See vendor data)				

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
Natural Gas	0.373	0.448	450.0
No. 2 Fuel Oil (for only 14 days/yr)	2720	3184	447.5

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

Fuel Analysis:

Percent Sulfur: 0.001± (gas) 0.32 (oil) Percent Ash: 0 (gas) 0.005 (oil)

Density: 7.1± (oil) lbs/gal Typical Percent Nitrogen: 0.756 (gas) 0 (oil)

Heat Capacity: 20797 LHV (gas) BTU/lb 131,350 LHV (oil) BTU/gal

Other Fuel Contaminants (which may cause air pollution): None of significance

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

Annual Average _____ Maximum _____

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

Any miscellaneous oils will be collected and reclaimed by outside contract. Miscellaneous boiler/cooling tower blowdowns and water treatment regenerant/reject streams will be discharged to the sanitary sewer and treated.

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

Stack Height: 65 (M) 65 (B) ft. Stack Diameter: 11.16 (M) 12.41 (B) ft. (equivalents - rectangular)

Gas Flow Rate: 301,777(M) 506,188(B) ACFM 185,697 (M) 185,800 (B) DSCFM Gas Exit Temperature: 800 (B) 285 (M) °F.

Water Vapor Content: 9.4 (M) 9.1 (B) % Velocity: 51.42 (M) 69.75 (B) FPS

M = Main Stack
B = Bypass Stack

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 Diamter: _____ Stack Temp. _____

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

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

Type of pollution control device: [ ] Cyclone [ ] Wet Scrubber [ ] Afterburner

[ ] Other (specify) _____

Brief description of operating characteristics of control devices: _____

_____

_____

_____

_____

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

_____

_____

_____

_____

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 processes and outlets for airborne emissions. Relate all flows to the flow diagram.

9. The appropriate application fee in accordance with Rule 17-4.05. The check should be made payable to the Department of Environmental Regulation.

10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit.

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

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

[X] Yes [ ] No

Contaminant	Rate or Concentration
NOx	*152.1 ppmvd 15% O_2
SO_2	0.015% by vol., 15% O_2, dry, fuel under
	0.8% S by weight
	*Converts to 206 lbs./hr. NOx - on gas

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

[X] Yes [ ] No

Contaminant	Rate or Concentration
NOx, SO_2	
See 40 CFR subpart GG plus text of	60.330 et al
attached Addendum No. 1	

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

Contaminant	Rate or Concentration
NOx	77 lbs/hr (gas) 100 lbs/hr (oil - 14 days/year)
SO_2	0.32% sulfur fuel oil (#2) - less than 0.8%

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

1. **Control Device/System:** Water injection into combustor
2. **Operating Principles:** Reduce flame temperatures
3. **Efficiency:*** 65-75% overall
4. **Capital Costs:** See text attached

*Explain method of determining

5. **Useful Life:** Combustor dome about 12,000 hours
6. **Operating Costs:** See text
7. **Energy:** 20 gpm gas, 35 gpm oil (water usage)
8. **Maintenance Cost:** See text
9. **Emissions:**

Contaminant (See IIIc)	Rate or Concentration
NOx	77 lbs/hr (gas), 100 lbs/hr (oil)
SO_2	0.19 lbs/hr (gas), 118 lbs/hr (oil - for only 14 days/yr)

10. **Stack Parameters** M = Main Stack B = Bypass Stack

a. **Height:** 65 (M) 65 (B) ft.
b. **Diameter:** 11.16 (M) 12.41 (B) ft.
c. **Flow Rate:** 301,777(M) 506,188(B) ACFM
d. **Temperature:** 285 (M) 800 (B) °F.
e. **Velocity:** 51.42 (M) 69.75 (B) FPS

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

1. (See VI, D and text)

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:

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:

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

ADDENDUM NO. 1

TO

ORIGINAL PERMIT APPLICATION REPORT FOR REEDY CREEK IMPROVEMENT DISTRICT AT LAKE BUENA VISTA, FLORIDA

DER FILE NO. AC-48-137740
FED. PERMIT PSD-FL-123

Prepared by:

Ford, Bacon & Davis, Inc.
Engineers - Constructors
Monroe, Louisiana

Original - July 29, 1987
Addendum 1 - December 21, 1987

TABLE OF CONTENTS

I. Background

II. Amended Approach

III. Technical Definition

A. Contemporaneous Decreases

B. N0x Control Costs and Emissions

C. Compliance Verification

IV. Conclusions

APPENDIX

Exhibit 1 - N0x Emissions vs Cost

Exhibit 2 - Combustion Performance Data

Exhibit 3 - Inlet Temperatures vs Predicted N0x Emissions

ADDENDUM NO. 1

I. Background

This document and accompanying pages of the Department of Environmental Regulation (DER Form 17-1.202(1)) constitute amendments to the original air permit application submitted by the Reedy Creek Improvement District on August 5, 1987.

As noted in the Bureau of Air Quality Management's (BAQM) Technical Evaluation and Preliminary Determination issued November 23, 1987, the Agency supported findings of the original application, except for the fact that the Best Available Control Technology (BACT) was not applied fully in the area of nitrogen oxides (NOx). Although the District proposed emitting about two-thirds of the NOx allowed under New Sources Performance Standards (NSPS), the BAQM felt that current technology would support about one-fourth to half of the requested allowance.

This was discussed in detail at a meeting held in the BAQM offices on December 8, 1987 attended by the Applicant, consultants for the Applicant, gas turbine representatives and Bureau staff personnel. The main issue involved the use of steam injection vs water and the appropriate quantities to achieve a discharge of down to 25 ppmvd of NOx (about 150 tons/year) on an acceptable cost-effective basis. Including related matters, participants discussed the fact that the proposed District turbine was not a STIG (steam injected gas) unit, thus wasn't designed to accept steam in the combuster dome, nor would the heat balance at the District support the large quantities of steam required.

The Manager of GE Gas Turbines pointed out there was no demonstrated, commercial unit in the world that could achieve a 25 ppmvd N0x emission using water injection, and even if possible, the combuster life would be so short (due to impact erosion) that commercialization could not be sustained. Even water rates equivalent to 42 ppmvd N0x emission shortens average combuster life to an expected 6,000 hours or half that experienced at 62 ppmvd.

An important BAQM/EPA consideration for gas turbine N0x control is their documented cost-effective hurdle determination whereby a cost of up to $1,000 per ton of N0x emission controlled is reasonable for BACT. From a regulatory view, NSPS is only a starting point for a BACT determination, and BACT is often more stringent than NSPS.

By definition the BAQM considers the $1,000/ton test as the incremental cost to be considered starting at the final level chosen for the initial application (103 ppmvd N0x emission on gas) rather than at NSPS or the point of zero water injection (no control). The District has structured their compliance response consistent with this definition.

The BAQM confirmed that, if at least two years of data out of the last five are used as documented N0x, CO and other relevant pollutant emission levels from the existing Orenda turbines and boilers (due to be shutdown), these totals may be used as contemporaneous decreases against the new GE turbine.

It was also stipulated that the N0x emissions variation applicable to the Reedy Creek sources over the past five years (or since the latest PSD based application which was PSD-FL-109 received June 7, 1985) must be accounted for when determining the overall net emissions increases.

It was noted the Applicant could not cost-effectively meet a 25 ppmvd NOx limitation with a water injected turbine while a total 103 ppmvd limit probably would not satisfy the $1,000 per ton test of NOx removed.

Thus it was agreed that Reedy Creek would submit an amended Permit Application based on higher water rates and a more cost effective NOx control and emission level.

If the emission totals were below the significance levels (with proper credit given for the existing units to be shutdown) then PSD review would not be required. What ever type application amendment was submitted, the Agency would act on it as promptly as possible due to ongoing project delays.

II. Amended Approach

This application amendment, based on the above guidelines, includes:

a) Determination of contemporaneous NOx and CO decreases available from existing equipment to be shutdown,

b) Compilation of costs accrued by operating at different levels of NOx control aimed at meeting $1,000 per ton incremental NOx removal target,

c) Development of representative combustion calculations to verify compliance conditions and equipment applications,

d) Formulation of temperature dependent curves depicting NOx emissions under varying seasonal conditions for compliance purposes.

e) Definition of concentrations and mass weights to be emitted with proper control levels, translate allowables to DER Form 17-1.202(1).

III. Technical Definition

A. Contemporaneous Decreases

Based on Annual Operating Reports developed by ESE of Gainesville, Florida for the Districts Utility Company, and subsequently forwarded to the DER for the years 1984-5-6, the following emissions occurred:

1984 Emissions (Tons)*

	Particulates	NOx	SO2	CO	Hydrocarbons
CEP Turbine 1	5.52	162.7	0.24	45.3	16.55
CEP Turbine 2	5.61	165.5	0.24	46.1	16.83
Boiler 1	0.11	3.19	0.01	0.80	0.06
Boiler 2	0.16	4.39	0.02	1.10	0.09
	11.40	335.78	0.51	93.3	33.53

*Orenda turbines and their boilers

1985 Emissions (tons)

CEP Turbine 1	4.40	129.8	0.19	36.1	13.20
CEP Turbine 2	5.54	163.4	0.24	45.5	16.61
Boiler 1	0.11	3.05	0.01	0.76	0.06
Boiler 2	0.18	5.09	0.02	1.27	0.10
	10.23	301.34	0.46	83.63	29.97

	1986 Emissions (tons)				
CEP Turbine 1	4.5	134.1	0.2	37.3	13.6
CEP Turbine 2	4.6	135.0	0.2	37.6	13.7
Boiler 1	0.09	2.6	0.01	0.7	0.05
Boiler 2	0.12	3.4	0.01	0.9	0.07
	9.31	275.1	0.42	76.5	27.42

Of the major pollutants, the following averaged totals are the contemporaneous decreases appropriate to this application (DER 17-2.510 (2) e):

NOx	304 tons/year
SO2	0.4 tons/year
CO	84.4 tons/year
Hydrocarbons	30.3 tons/year

There were no changes in Reedy Creek operations since the last submitted PSD application that affect the above listed credits.

B. NOx Control Costs and Emissions

Exhibit 1, as attached, depicts the economic study defining costs of abating NOx emissions for natural gas and oil firing. Conditions were based on the following 40 year average of Orlando weather data obtained from the National Weather Service:

Month	Temperature	Relative Humid. (%)
Jan.	60.5	73.5
Feb.	61.5	71.0

Mar.	66.8	70.3
Apr.	72.0	68.3
May	77.3	71.0
Jun.	80.9	76.5
Jul.	82.4	78.3
Aug.	82.5	79.8
Sept.	81.1	79.8
Oct.	74.9	75.8
Nov.	67.5	75.0
Dec.	62.0	75.5

Average 12 month temperature = 72.4°F

Average 12 month humidity = 74.6%

Average gas firing period temperature = 73°F

Relative humidity to turbine due to evaporative cooler = 95%

It has been decided that use of No. 2 oil by the District would occur only 14 days per year (using January as the gas curtailment period) thus the average temperature for the remainder of the year (73°F) was used to adjust NOx tonnages for a year.

Fuel gas prices, being the largest incremental item, are based on Gas Research Institute projected fuel gas costs. October was chosen as a representative month due to its closeness to the 11½ month average temperature and the expected total NOx tonnages illustrated by the manufacturer's combustion calculations contained in Exhibit 2 and derived as follows:

Month and Conditions - Yearly Basis Emission

January - Turbine and Duct Burner on back-up fuel (oil) for 14 days (336 hours)

99.77 lbs/hr N0x = 16.76 tons

117.88 lbs/hr S02 = 19.8 tons

22.54 lbs/hr CO = 3.78 tons

- on gas for remaining 17 days of January along with remaining months of year as follows:

Total time of yearly turbine operation	8760 hrs
Less oil burning in January, if required	-336 hrs
	8424 hrs on gas

February thru December - Turbine and duct burner on gas except when turbine is down and then the duct burner is on gas at hi-fire (198 MM BTU/hr at 68°F).

Turbine on gas =	8424 hrs
Turbine and duct burner - 76.24 lbs/ hr N0x x 8424 =	321.1 tons
- 0 lbs/hr SO2	
- 10.71 lbs/hr CO x 8424 =	45.1 tons

Thus total average emissions for the installation over a years period becomes:

N0x	337.9 tons
SO2	19.8 tons
CO	48.9 tons
Hydrocarbons	25.2 tons (from Exhibit 2).

Deducting contemporaneous decreases previously listed results in a net yearly emission change of:

NOx	33.9 tons
SO2	19.4 tons
CO	(35.5) tons
Hydrocarbons	(5.1) tons

These emission increases are all below the PSD significance levels.

Based on Exhibit 2, when burning oil, NOx emissions from the turbine, including the duct burner, will approximate 67 ppmvd on a 15% oxygen basis (14 days per year). Fuel gas usage on the same basis for the balance of the year yields NOx emissions of 57 ppmvd and 36 ppmvd with only the duct burner in service. Exhibit 1 illustrates, while burning gas, the level of approximately 61½ ppmvd that corresponds to a NOx removal cost totaling $1,051/ton. This indicates the cost-effective threshold to be in the low sixties ppmvd area, using the $1,000/ton incremental approach.

C. Compliance Verification

RCID proposes that compliance with the annual NOx emission limit be determined and verified by the establishment of a constant, enforceable water/fuel ratio. It is proposed that this water/fuel ratio be established during initial compliance testing. Because fuel consumption, and therefore NOx emissions, varies with inlet temperature, a curve of NOx vs inlet temp was derived (Exhibit 3). When average monthly inlet temperatures and operating hours are applied to this curve, the total annual NOx emissions will be equal to or

less than the amended emission limit. It is proposed the initial compliance testing establish an enforceable water/fuel ratio that, at the actual turbine inlet temperature prevailing at the time, gives a NOx emission rate that falls on or below the curve.

It is noted that inlet temp (T2) is used rather than ambient temperature (TAMB). The use of an evaporative cooler in this project conditions the inlet air from ambient to a lower dry bulb temperature and a relatively constant 95% Relative Humidity. This modified inlet air condition results in a more predictable NOx emission curve and greatly simplifies the task of compliance testing by eliminating the need to adjust ambient humidity conditions to standard conditions. G.E. data indicate that, at constant 95% humidity, T2 is usually 4 to 6½°F below ambient temperatures.

T2 will always be recorded data, along with water, fuel usages and ambient temperatures, thus the constant correlation between temperatures and NOx emissions can be monitored, making a variable situation constant for overall reconcilation and compliance control.

Exhibit 3 illustrates temperature dependent NOx conditions for the project and the turbine NOx emission level (excluding duct burner) of 59 ppmvd which occurs during the typical October gas usage period. Lower winter temperatures will cause rises in NOx emissions and higher summer temperatures result in lower emission, the overall yearly result being compliance with the annual emission limit.

Month	Ambient °F Temperature	T2 Actual Inlet Temperature °F
Jan.	60.5	56.0
Feb.	61.5	56.6
Mar.	66.8	61.1
Apr.	72.0	65.3
May	77.3	70.9
Jun	80.9	75.2
Jul.	82.4	77.5
Aug.	82.5	77.9
Sept.	81.1	76.5
Oct.	74.9	69.9
Nov.	67.5	62.8
Dec.	62.0	57.5

IV. Conclusions

This submission is to amend, rather than replace, the previous application package submitted August 5, 1987 and is requested to be considered on that basis.

The District is committing to increase water injection rates for turbine NOx control with their attendant costs. The cost-effective NOx emission point for the turbine alone is 59 ppmvd (15% 02) average (57 ppmvd with supplementary duct burner) based on the $1,000/ton incremental removal hurdle rate.

The proposed amendment will be achieved at a NOx control cost in excess of the $1000/ton that would be considered reasonable had PSD/BACT review been required.

All net emission increases for the described plant modification fall beneath PSD significance thresholds when considering net contemporaneous emission changes.

Ambient air quality net impacts for N0x are negligible with less than 1/3 ug/m^3 expected. Current background levels of N0x are about 16 ug/m^3.

The current cogeneration upgrade project is essentially on hold due to abatement considerations noted in this revised application. Based on these data the District is requesting prompt and favorable consideration of this submittal.

RDS:bgfh:D509:k:12-20-87

Exhibit 1

NOx Emissions vs Cost

NO_x EMISSIONS vs COST

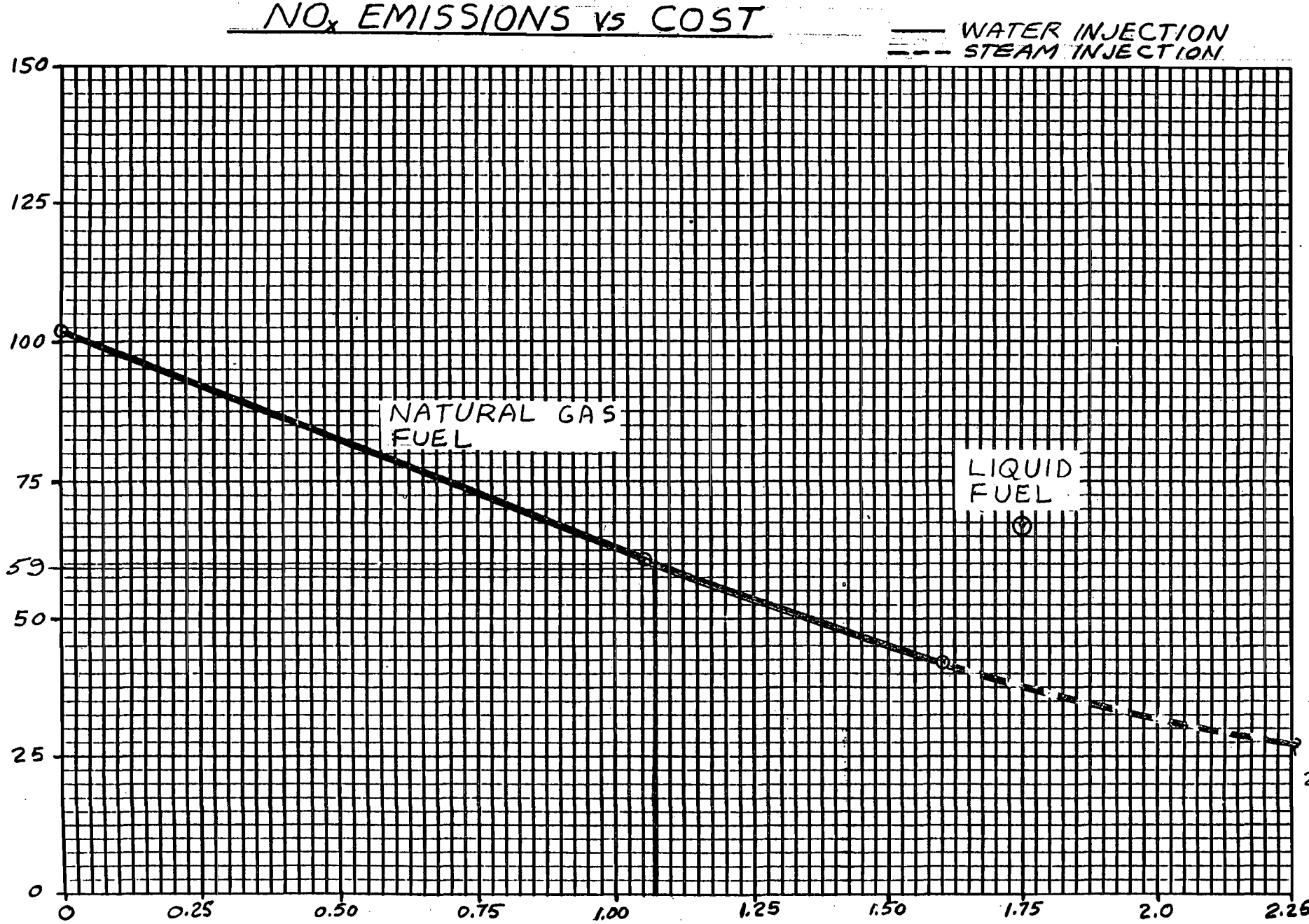


EXHIBIT 1

NOx EMISSION VS COST
NATURAL GAS FIRING
103 PPM USED AS BASE

DER FILE AC 48-137740
FEDERAL PSD-FL-123

DATED DECEMBER 18, 1987

	A	B	C	D	E	F	G	H
		Fuel & Elect.*(2)	Water*	Maint.*	Capital*	Annualized* Capital (4)	Total* Yearly	Average Increase $/Ton (3)
1.	103 PPM (1) 593 Tons/Yr	0	0	0	0	0	0	0
2.	61.6 PPM (1) 316.5 Tons/Yr	234	30.7	24.6	24	1.2	290.5	$1051/T
3.	42 PPM (1) 225 Tons/Yr	421.9	54.7	110	77	3.9	590.5	$1605/T
4.	25 PPM (1) 133 T/Yr Steam Injection Only	1058.8	145	-	80	4.0	1207.8	$2626/T

* - $1000

NOTES:
(1) PPM Vol. dry basis corrected to 15% O_2
(2) Fuel Cost: The required fuel cost to evaporate the water injected that exits the exhaust stack as vapor at 280°F. (Fuel cost's based on RCID actuals for 1986, 1987 and escalated according to GRI data to develop a 15 yr. average = $3.75/MM BTU) (Constant 1986 $)
Elect. Cost: The required electrical cost for operation of NOx water pumps and differential cost of purchased-to-generated power during gas turbine repairs.
(3) Calculation for average $/ton, for example 61.6 PPM case: H2 = G2/(A1-A2) tons.
(4) Annualized capital is based on straight line depreciation for 20 years.

GENERAL NOTES:

Comparison chart based on ambient operating temperature of 73°F.

bgfh:d509:kl

NOx EMISSION VS COST
LIQUID FUEL
103 PPM USED AS BASE

DER FILE AC 48-137740
FEDERAL PSD-FL-123

DATED DECEMBER 18, 1987

	A	B	C	D	E	F	G	H
		Fuel & Elect.*(2)	Water*	Maint.*	Capital*	Annualized* Capital (4)	Total*	Average Increase $/Ton (3)
1.	103 PPM NOx (1) 22.8 Tons/2 wks	0	0	0	0	0	0	0
2.	67.19 PPM NOx (1) 16.7 Tons/2 wks	8.1	1.6	0.95	0.92	.05	10.7	$1750/T

* - $1000

NOTES:

(1) PPM Vol. dry basis, corrected to 15% O_2

(2) Fuel Cost: The required fuel cost to evaporate the water injected that exits the stack as vapor at 280°F. (Fuel cost's based on RCID actuals for 1986, 1987 and escalated according to GRI data to develop a 15 yr. average $3.75/MM BTU) (Constant 1986 $).
Elect. Cost: The required electrical cost for operation of NOx water pumps and differential cost of purchased-to-generated power during gas turbine repairs.

(3) Calculation for average $/ton, for example: H2 = G2/(A1 - A2) tons.

(4) Annualized capital cost is based on straight line depreciation for 20 years.

GENERAL NOTE:

January used as basis for fuel oil.

bgfh:d509:k1(2)

NATURAL GAS PRICE PROJECTIONS FOR USE IN AIR PERMITTING

File: COGENAIR
Date: 17 December, 1987
By: Ed Godwin, RCES
Basis of Projection: Gas Research Institute (GRI), 1987 Analysis
Plant Operation Period: 1989 - 2003
All Figures in 1986 $/MMBTU

Year	GRI Cost of Acquisition	GRI Cost To End-Users	RCES Acquisition
1985	$2.44	$4.17	$2.71*
1986	$1.82	$2.95	$2.74*
1987	$1.93	$3.08	$2.69*
1988	$2.04	$3.22	$2.81
1989	$2.17	$3.36	$2.94
1990	$2.30	$3.52	$3.07
1991	$2.41	$3.63	$3.17
1992	$2.54	$3.74	$3.27
1993	$2.67	$3.86	$3.37
1994	$2.80	$3.98	$3.48
1995	$2.95	$4.11	$3.59
1996	$3.10	$4.24	$3.70
1997	$3.25	$4.38	$3.82
1998	$3.42	$4.52	$3.94
1999	$3.60	$4.66	$4.07
2000	$3.78	$4.81	$4.20
2001	$3.95	$5.00	$4.36
2002	$4.13	$5.20	$4.53
2003	$4.32	$5.40	$4.71
2004	$4.52	$5.62	$4.90
2005	$4.73	$5.84	$5.09
2006	$4.94	$6.07	$5.30
2007	$5.17	$6.31	$5.51
2008	$5.41	$6.56	$5.72
2009	$5.65	$6.82	$5.95
2010	$5.91	$7.09	$6.19

Average RCES Cost of Gas Acquisition for the First Fifteen Years of Operation: 1989 - 2003 = $3.75/MMBTU

* - Actual Purchase Costs.

Exhibit 2

Combustion Performance Data

EXHIBIT 2

PROJECT: Vogt/Reedy Creek Utilities Dec. 17, 1987 Page 1
Operating Case 17A, Turbine Water/Fuel Ratio of 0.9409 JAN.

TURBINE EXHAUST GAS FLOW (LBS/HR): 1026277

TURBINE EXHAUST GAS TEMPERATURE: 794 Degrees F.

Turbine on Oil & water injection

TURBINE EXHAUST GAS COMPOSITION:	% WT.	LBS/HR	Vol. %	Vol.% Dry
Oxygen O2	16.0564	164783.1	14.326	15.477
Carbon Dioxide CO2	5.7939	59461.46	3.759	4.061
Water Vapor H2O	4.6909	48141.62	7.434	0
Nitrogen N2	72.2053	741025.8	73.588	79.498
Argon Ar	1.2315	12638.60	0.880	0.951
Carbon Monoxide CO	0.00147	15.11	0.0015	0.0016
Nitrogen Oxides NOx	0.00949	97.42	0.0059	0.0064
Hydrocarbons CH4	0.00019	1.95	0.0003	0.0004
Hydrocarbons C2H6	0	0	0	0
Sulfur Dioxide SO2	0.01090	111.86	0.0049	0.0052
Particulate	0	0	0	0
TOTAL	100.00	1026277.	100.000	100.000

Water injection rate = 35 gpm

CO - PPMV Dry, Reference 15% Oxygen: 17.62
NOx - PPMV Dry, Reference 15% Oxygen: 69.14 ✓
CH4 - PPMV Dry, Reference 15% Oxygen: 3.97
C2H6 - PPMV Dry, Reference 15% Oxygen: 0.00
SO2 - PPMV Dry, Reference 15% Oxygen: 57.02

Exhaust Gas Molecular Weight: 28.552

Fuel: #2 Fuel Oil

Heating Value: 19504 BTU/LB (HHV)
18400 BTU/LB (LHV)

Duct Burner Heat Input: 19.550 Million BTU/HR (Gross HHV)
18.443 Million BTU/HR (Net LHV)
Supplementary

Oil

Fuel ~~Gas~~ Elemental Composition:

	WEIGHT %	LBS/HR
CARBON	87.300%	875.059
HYDROGEN	12.400%	124.292
OXYGEN	0	0
SULFUR	0.300%	3.007
NITROGEN	0	0
ASH	0	0
TOTAL	100.000%	1002.358

Emissions Added by the Duct Burner (LB/Million BTU HHV):

NOx as NO2:	0.120
Carbon Monoxide:	0.380
UBHC as CH4:	0.190
UBHC as C2H6:	0
Particulate:	0.050

ADDITIONAL AIR SOURCES:

Flame Scanner Cooling Air:	1890	LBS/HR
Augmenting Combustion Air:	0	LBS/HR
Atomizing Air:	7560	LBS/HR
Total	9450	LBS/HR

JAN.

Page 2

Turbine + duct burner on oil with water injection

COMBUSTION PRODUCTS DOWNSTREAM OF THE DUCT BURNER

Downstream Firing Temperature: 851 Degrees F.

COMBUSTION PRODUCTS (LBS/HR)

	Upstream	Fuel	Air	Total
Oxygen O2	164783.1	-3317.54	2187.675	163653.2
Carbon Dioxide CO2	59461.46	3202.715	0	62664.17
Water Vapor H2O	48141.62	1111.175	0	49252.80
Nitrogen N2	741025.8	0.000	7262.325	748288.1
Argon Ar	12638.60	0	0	12638.60
Carbon Monoxide CO	15.11	7.43	0	22.54 ✓
Nitrogen Oxides NOx	97.42	2.35	0	99.77 ✓
Hydrocarbons CH4	1.95	3.71	0	5.66 ✓
Hydrocarbons C2H6	0	0	0	0
Sulfur Dioxide SO2	111.86	6.01	0	117.88 ✓
Particulate	0.00	0.98	0	0.98
TOTAL	1026277.	1016.825	9450.000	1036743.

Water injection rate = 35 gpm

COMBUSTION PRODUCTS - VOLUME BASIS

	Moles/HR	Vol. %	Vol. % Dry
Oxygen O2	5114.165	14.086	15.232
Carbon Dioxide CO2	1423.862	3.922	4.241
Water Vapor H2O	2733.230	7.528	0
Nitrogen N2	26715.03	73.579	79.569
Argon Ar	316.376	0.871	0.942
Carbon Monoxide CO	0.805	0.0022	0.0024
Nitrogen Oxides NOx	2.169	0.0060	0.0065
Hydrocarbons CH4	0.353	0.0010	0.0011
Hydrocarbons C2H6	0	0	0
Sulfur Dioxide SO2	1.840	0.0051	0.0055
Particulate	0.081	0.0002	0.0002
TOTAL	36307.91	100.000	100.000

CO - PPMV Dry, Reference 15% Oxygen:	24.93
NOx - PPMV Dry, Reference 15% Oxygen:	67.19 ✓
CH4 - PPMV Dry, Reference 15% Oxygen:	10.94
C2H6 - PPMV Dry, Reference 15% Oxygen:	0.00
SO2 - PPMV Dry, Reference 15% Oxygen:	57.01

Exhaust Gas Molecular Weight: 28.558

COEN Company, Incorporated
1510 Rollins Road; Burlingame, CA 94010
(415) 697-0440
Automatic Telefax Number (415) 579-3255

PROJECT: Vogt/Reedy Creek Utilities Dec. 17, 1987 Page 5 OCT.
Operating Case 19A, Turbine Water/Fuel Ratio of 0.67
TURBINE EXHAUST GAS FLOW (LBS/HR): 956696

Turbine on G
& water injectio

TURBINE EXHAUST GAS TEMPERATURE: 805 Degrees F.

TURBINE EXHAUST GAS COMPOSITION:	% WT.	LBS/HR	Vol. %	Vol.% Dry
Oxygen O2	16.2191	155167.4	14.300	15.733
Carbon Dioxide CO2	4.2308	40475.89	2.712	2.984
Water Vapor H2O	5.8189	55669.18	9.112	0
Nitrogen N2	72.4870	693480.3	72.997	80.316
Argon Ar	1.2361	11825.71	0.873	0.961
Carbon Monoxide CO	0.00024	2.29	0.0002	0.0003
Nitrogen Oxides NOx	0.00769	73.59	0.0047	0.0052
Hydrocarbons CH4	0.00016	1.53	0.0003	0.0003
Hydrocarbons C2H6	0	0	0	0
Sulfur Dioxide SO2	0	0	0	0
Particulate	0	0	0	0
Water injection rate = 20 gpm TOTAL	100.00	956696.0	100.000	100.000

CO - PPMV Dry, Reference 15% Oxygen: 3.03
NOx - PPMV Dry, Reference 15% Oxygen: 59.12 ✓
CH4 - PPMV Dry, Reference 15% Oxygen: 3.53
C2H6 - PPMV Dry, Reference 15% Oxygen: 0
SO2 - PPMV Dry, Reference 15% Oxygen: 0

Bypass stack
d = 12.41'
v = 69.75 fps
506,188 acfm

Exhaust Gas Molecular Weight: 28.213

Fuel: Natural Gas

Heating Value: 21065 BTU/LB (HHV)
19000 BTU/LB (LHV)

Duct Burner Heat Input: 22.150 Million BTU/HR (Gross HHV)
19.979 Million BTU/HR (Net LHV) supplementary

Fuel Gas Elemental Composition:

	WEIGHT %	LBS/HR
CARBON	73.480%	772.648
HYDROGEN	24.080%	253.203
OXYGEN	1.684%	17.707
SULFUR	0	0
NITROGEN	0.756%	7.949
ASH	0	0
TOTAL	100.000%	1051.507

Emissions Added by the Duct Burner (LB/Million BTU HHV):

NOx as NO2:	0.120
Carbon Monoxide:	0.380
UBHC as CH4:	0.190
UBHC as C2H6:	0
Particulate:	0

ADDITIONAL AIR SOURCES:

Flame Scanner Cooling Air:		1890 LBS/HR
Augmenting Combustion Air:		0 LBS/HR
Atomizing Air:		0 LBS/HR
	Total	1890 LBS/HR

Oct.

Page 6

Turbine + duct burner on gas with water injection

COMBUSTION PRODUCTS DOWNSTREAM OF THE DUCT BURNER

Downstream Firing Temperature: 878 Degrees F.

COMBUSTION PRODUCTS (LBS/HR)

Stack = 285°F

	Upstream	Fuel	Air	Total
Oxygen O2	155167.4	-4047.96	437.535	151557.0
Carbon Dioxide CO2	40475.89	2827.889	0	43303.78
Water Vapor H2O	55669.18	2263.634	0	57932.81
Nitrogen N2	693480.3	7.949	1452.465	694940.7
Argon Ar	11825.71	0	0	11825.71
Carbon Monoxide CO	2.29	8.42	0	10.71 ✓
Nitrogen Oxides NOx	73.59	2.66	0	76.24 ✓
Hydrocarbons CH4	1.53	4.21	0	5.74 ✓
Hydrocarbons C2H6	0	0	0	0
Sulfur Dioxide SO2	0	0	0	0
Particulate	0	0	0	0
TOTAL	956696.0	1066.791	1890.000	959652.8

Water injection rate = 20 gpm

COMBUSTION PRODUCTS - VOLUME BASIS

Main stack
d = 11.16'
V = 51.42 fps
301,777 acfm

	Moles/HR	Vol. %	Vol. % Dry
Oxygen O2	4736.158	13.912	15.363
Carbon Dioxide CO2	983.953	2.890	3.192
Water Vapor H2O	3214.918	9.443	0
Nitrogen N2	24810.45	72.878	80.478
Argon Ar	296.028	0.870	0.960
Carbon Monoxide CO	0.382	0.0011	0.0012
Nitrogen Oxides NOx	1.657	0.0049	0.0054
Hydrocarbons CH4	0.358	0.0011	0.0012
Hydrocarbons C2H6	0	0	0
Sulfur Dioxide SO2	0	0	0
Particulate	0	0	0
TOTAL	34043.90	100.000	100.000

CO - PPMV Dry, Reference 15% Oxygen:	13.20
NOx - PPMV Dry, Reference 15% Oxygen:	57.81 ✓
CH4 - PPMV Dry, Reference 15% Oxygen:	12.35
C2H6 - PPMV Dry, Reference 15% Oxygen:	0
SO2 - PPMV Dry, Reference 15% Oxygen:	0

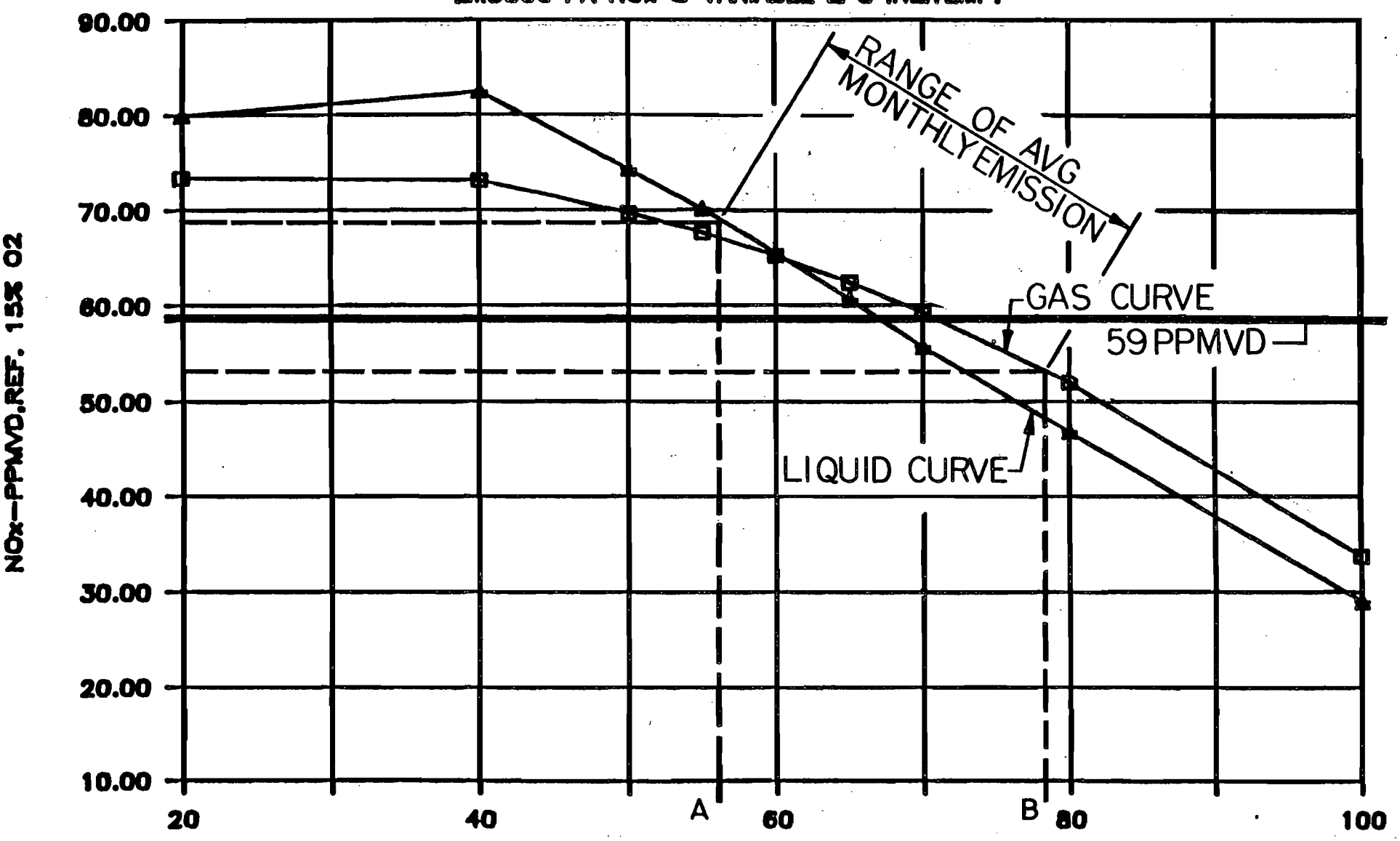
Exhaust Gas Molecular Weight: 28.193

COEN Company, Incorporated
1510 Rollins Road; Burlingame, CA 94010
(415) 697-0440
Automatic Telefax Number (415) 579-3255

Exhibit 3

Inlet Temperatures vs Predicted NOx Emissions

REEDY CREEK ENERGY SERVICES



A-LOWEST AVG MONTHLY TEMP-(NWS DATA)

B-HIGHEST AVG MONTHLY TEMP-(NWS DATA)

EXHIBIT 3

pkg
12/11/87

File Copy

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

November 23, 1987

Mr. Miguel Flores
Chief, Permit Review and Technical
Support Branch
National Park Service-Air
Post Office Box 25287
Denver, Colorado 80225

Dear Mr. Flores:

RE: Technical Evaluation & Preliminary Determination
Reedy Creek Improvement District
Air Construction Permit: AC 48-137740
Federal Permit Number: PSD-FL-123

Enclosed for your review and comment is the Technical Evaluation & Preliminary Determination and draft permit for the above referenced facility. If you have any comments or questions, please contact Pradeep Raval or Max Linn by December 11, 1987, at the above address or at (904)488-1344.

Sincerely,

M.V. Janes

Margaret V. Janes
Bureau of Air Quality
Management

/mj

enclosure

PS Form 3811, July 1983 447-845

DOMESTIC RETURN RECEIPT

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: Thomas M. Moses, Dir.
Reedy Creek Improvement Dist
1675 Buena Vista Drive, Suite 265
Post Office Box 36
Lake Buena Vista, FL 32830

4. Type of Service:
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail

Article Number
P 274 007 647

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature – Addressee
X

6. Signature – Agent
X

7. Date of Delivery
11-28-87

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

P 274 007 647

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

Sent to Thomas M. Moses, Dir.
Reedy Creek Improvement Dist.
Street and No. 1675 Buena Vista Drive, St. 265
P.O. State and ZIP Code P.O. Box 36
Lake Buena Vista, FL 32830

Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$

Postmark or Date
Mailed: 11/23/87
Permit: AC 48-137740
Federal: PSD-FL-123

PS Form 3800, June 1985 * U.S.G.P.O. 1985-480-794

file Copy

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

November 23, 1987

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. Thomas M. Moses
Director/General Manager
Reedy Creek Improvement District
1675 Buena Vista Drive
Suite 265
Post Office Box 36
Lake Buena Vista, FL 32830

Dear Mr. Moses:

Attached is one copy of the Technical Evaluation and Preliminary Determination and proposed permit to construct a 38 MW natural gas fired turbine generator with a heat reovery system, with a total heat input of 445.2 MMBtu/hr, at the Central Energy Plant, Bay Lake location, near Lake Buena Vista, Orange County, Florida. The proposed project will emit the pollutants nitrogen oxides (NOx), sulfur dioxide (SO_2), particulate matter (PM), carbon monoxide (CO), and volatile organic compounds (VOCs).

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

Sincerely,

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

CHF/bm

Attachments

cc: T. Sawicki, CF Dist.
H. Culp, P.E.
W. Aronson, EPA
M. Flores, NPS

State of Florida
Department of Environmental Regulation
Notice of Intent

The Department of Environmental Regulation hereby gives notice of its intent to issue a permit to construct a 38 MW natural gas fired turbine generator with a heat recovery system, with a total heat input of 445.2 MMBtu/hr, at the Central Energy Plant, Bay Lake Location, near Lake Buena Vista, Orange County, Florida. The proposed project will emit the pollutants nitrogen oxides (NOx), sulfur dioxide (SO_2), particulate matter (PM), carbon monoxide (CO), and volatile organic compounds (VOCs). The Department is issuing this Intent to Issue for the reasons stated in the attached Technical Evaluation and Preliminary Determination.

Persons whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative determination (hearing) in accordance with Section 120.57, Florida Statutes. The petition must conform to the requirements of Chapters 17-103 and 28-5, Florida Administrative Code, and must be filed (received) in the Department's Office of General Counsel, 2600 Blair Stone Road, Twin Towers Office Building, Tallahassee, Florida 32399-2400, within fourteen (14) days of publication of this notice. Failure to file a petition within this time period constitutes a waiver of any right such person has to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

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 proposed agency action. Therefore, persons who may not wish to file a petition may wish to intervene in the proceeding. A petition for intervention must be filed pursuant to Rule 28-5.207, Florida Administrative Code, at least five (5) days before the final hearing and be filed with the hearing officer if one has been assigned at the Division of Administrative Hearings, Department of Administration, 2009, Apalachee Parkway, Tallahassee, Florida 32301. If no hearing officer has been assigned, the petition is to be filed with the Department's Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Failure to petition to intervene within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, Florida Statutes.

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

Dept. of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

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

Any person may send written comments on the proposed action to Mr. Bill Thomas at the Department's Tallahassee address. All comments mailed within 30 days of the publication of this notice will be considered in the Department's final determination.

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

28-5.15 Requests for Formal and Informal Proceedings

(1) Requests for proceedings shall be made by petition to the agency involved. Each petition shall be printed, typewritten or otherwise duplicated in legible form on white paper of standard legal size. Unless printed, the impression shall be on one side of the paper only and lines shall be double spaced and indented.

(2) All petitions filed under these rules should contain:

(a) The name and address of each agency affected and each agency's file or identification number, if known;

(b) The name and address of the petitioner or petitioners;

(c) All disputed issues of material fact. If there are none, the petition must so indicate;

(d) A concise statement of the ultimate facts alleged, and the rules, regulations and constitutional provisions which entitle the petitioner to relief;

(e) A statement summarizing any informal action taken to resolve the issues, and the results of that action;

(f) A demand for the relief to which the petitioner deems himself entitled; and

(g) Such other information which the petitioner contends is material.

BEFORE THE STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

In the Matter of
Application for Permit by:

Reedy Creek Improvement District
Post Office Box 40
Lake Buena Vista, Florida 32830

DER File No. AC 48-137740
Fed. Permit: PSD-FL-123

INTENT TO ISSUE

The Department of Environmental Regulation hereby gives notice of its intent to issue a permit (copy attached) to construct a 38 MW natural gas fired turbine generator with a heat recovery system, with a total heat input of 445.2 MMBtu/hr, at the Central Energy Plant, Bay Lake location, near Lake Buena Vista, Orange County, Florida. The proposed project will emit the pollutants nitrogen oxides (NOx), sulfur dioxide (SO_2), particulate matter (PM), carbon monoxide (CO), and volatile organic compounds (VOCs). The Department is issuing this Intent to Issue for the reasons stated in the attached Technical Evaluation and Preliminary Determination.

The applicant, Reedy Creek Inprovement District, applied on August 6, 1987, to the Department of Environmental Regulation for a construction permit.

The Department has permitting jurisdiction under Chapter 403, Florida Statutes (F.S.), and Florida Administrative Code (FAC) Rules 17-2 and 17-4. The project is not exempt from permitting procedures. The Department has determined that an air construction permit was needed for the proposed work.

Pursuant to Section 403.815, F.S., and FAC Rule 17-103.150, you (the applicant) are required to publish at your own expense the enclosed Notice of Proposed Agency Action on permit application. The notice must be published one time only in a section of a major local newspaper of general circulation in the county in which the project is located and within thirty (30) days from receipt of this intent. Proof of publication must be provided to the Department within seven days of publication of

the notice. 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 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, F.S. Petitions must comply with the requirement of FAC Rules 17-103.155 and 28-5.201 (copies enclosed) and be filed with (received by) the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Petitions filed by the permit applicant must be filed within fourteen (14) days of receipt of this intent. Petitions filed by other persons must be filed within fourteen (14) days of publication of the public notice or within fourteen (14) days of receipt of this intent, whichever first occurs. 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., concerning the subject permit application. Petitions which are not filed in accordance with the above provisions will be dismissed.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

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

Copies furnished to:

T. Sawicki, CF Dist.
H. Culp, P.E.
W. Aronson, EPA
M. Flores, NPS

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 11-23-87.

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.

Martha J. Wise 11/23/87
Clerk Date

Technical Evaluation
and
Preliminary Determination

Reedy Creek Improvement District
Lake Buena Vista, Orange County, Florida

Gas Fired Turbine Generator
Permit No. AC 48-137740
PSD-FL-123

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

November 20, 1987

I. Application

A. Applicant

Reedy Creek Improvement District
Post Office Box 40
Lake Buena Vista, Florida 32830

B. Project and Location

The applicant proposes to construct a 38 MW natural gas fired turbine generator with a heat recovery system, with a total heat input of 445.2 MMBtu/hr, at the Central Energy Plant, Bay Lake location, near Lake Buena Vista, Orange County, Florida. The proposed project will emit the pollutants nitrogen oxides (NOx), sulfur dioxide (SO_2), particulate matter (PM), carbon monoxide (CO), and volatile organic compounds (VOCs).

The UTM coordinates of this facility are Zone 17, 442 km East and 3139 km North.

C. Sources Reviewed

This technical evaluation will review the following sources:

1) The proposed GE turbine and its associated duct burner and heat recovery system

2) "Black" start Cummins emergency diesel generator

3) The two small Orenda turbines and their associated heat recovery systems which are being replaced.

Reedy Creek applied for a construction permit for the proposed project on August 5, 1987, and the application was deemed complete on September 23, 1987.

D. Facility Category

Reedy Creek's facility in Lake Buena Vista is classified in accordance with the Standard Industrial Classification (SIC) Code as Major Group 49, Electric, Gas and Sanitary Services; Group No. 493, Electric Gas and Other Services; Industry No. 4931, Electric Services.

The existing facility is classified as major in accordance with Chapter 17-2 of the Florida Administrative Code (FAC).

II. Project Description

The applicant proposes to replace two smaller Orenda turbines and their associated heat recovery system with a GE LM5000, 38 MW gas fired, oil stand-by, combustion turbine followed by an integrated heat recovery steam boiler and steam turbine, including an in-line 198 MMBtu/hr capacity gas fired duct burner. An emergency 1800HP diesel generator will also be installed and maintained in a state of readiness.

Both the turbine and downstream duct burner will fire No. 2 oil if natural gas supply is curtailed. The duct burner at low fire rate (normal mode) will have a 23 MMBtu/hr heat input rate and at high fire rate (when turbine is out of service) it will have a heat input rate of upto 198 MMBtu/hr.

During the equipment change over period, of shutting down the existing Orenda turbines and starting up the GE turbine, the existing No. 1 and 2 turbine installations will be maintained on a standby basis through a six-month project debugging period. The existing No. 1 waste heat boiler will also be kept on standby but the No. 2 boiler will be dismantled to make room for the new GE/Vogt unit. The project will have one main stack and one emergency by-pass stack.

It is anticipated that after a reasonable debugging period the remaining standby Orenda turbines and associated boiler will cease operation. Of the pollutants emitted, only NOx emissions will be significant and, therefore, will be controlled by water injection.

III. Rule Applicability

The proposed project will emit the pollutants NOx, SO_2, PM, CO, and VOCs. It is subject to preconstruction review requirements in accordance with Chapter 403 of the Florida Statutes and Chapters 17-2 and 17-4 of the Florida Administrative Code (FAC).

The proposed project will be located in Orange County, an area designated as nonattainment for ozone and attainment for NOx, SO_2, PM and CO in accordance with Rule 17-2.410 and 17-2.420, FAC, respectively.

The proposed project is more than a 100 km from the Chassahowitzka National Wilderness Area, a Class I area, in accordance with Rule 17-2.440, FAC.

The proposed project will be a major modification to a major facility since emission increases are significant (17-2, Table 500-2, FAC) and is therefore subject to a Prevention of Significant Deterioration (PSD) Review in accordance with Rule 17-2.500(2)(d)4, FAC.

The proposed project will not be subject to the New Source Review for Nonattainment Areas in accordance with Rule 17-2.510(2)(d)4, FAC, as emissions of VOC are less than signficant (17-2. Table 500-2, FAC).

The proposed project will be subject to 40 CFR 60 Subpart GG - Standards of Performance for Stationary Gas Turbines.

The proposed project will be also subject to 40 CFR 60 Subpart Db - Standards of Performance for Fossil Fuel Fired Steam Generating Units.

The applicable emission limiting standards will be determined by the Best Available Control Technology (BACT) for NOx, PM and SO_2, in accordance with Rule 17-2.630, FAC.

The proposed project will be required to show compliance with the emission limiting standards in accordance with:

a) Rule 17-2.700, FAC
b) 40 CFR 60, Subpart GG
c) 40 CFR 60, Subpart Db

Initial and annual compliance test will be conducted with the above listed rules for the following:

1. NOx and SO_2, EPA Method 20
2. CO, EPA Method 10
3. PM, EPA Method 5
4. Visible Emissions (VE), EPA Method 9

Other DER approved methods may be used with prior Departmental approval.

IV. Emission Limitations

As reflected by the BACT Determination attached and required by the New Source Performance Standards, the emissions from the combined cycle gas turbine including the duct burner will not exceed 25 ppm NOx and 150 ppm SO_2 at 15% O_2 and:

	Gas Fired		Oil Fired	
Pollutant	lb/hr	TPY*	lb/hr	TPY
Nitrogen Oxides (NOx)	75	310	75	27
Sulfur Dioxide (SO_2)	0.2	0.8	112	39
Particulates (PM)	0.5	2.1	9	4
Carbon Monoxide (CO)	15	64	20	7
Volatile Organics (VOCs)	7.5	32	8	3
Visible Emissions (VE)	5% opacity		10% opacity	

The duct burner NOx emissions shall not exceed (corresponding to 0.2 lb/MMBtu) 2.3 lb/hr for gas or oil at 23 MMBtu heat input or 38.5 lb/hr for oil and 39.6 lb/hr for gas at 198 MMBtu/hr.
*TPY (tons per year)

V. Air Quality Impact Analysis

1. Introduction

The proposed cogeneration turbine, to be located near Lake Buena Vista, Florida, on the Walt Disney complex, will emit the criteria pollutants sulfur dioxide (SO_2) and nitrogen oxides (NO_x). Only NO_x will be emitted in a PSD-significant amount.

The air quality impact analysis required by the PSD regulations for the pollutant NO_x includes:

- An analysis of existing air quality;
- An Ambient Air Quality Standards (AAQS) analysis;
- An analysis of impacts on soils, vegetation, and visibility and of growth-related air quality impacts; and
- 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 AAQS analysis depends on the air quality dispersion modeling carried out in accordance with EPA guidelines.

Based on these required analyses, the Department has reasonable assurance that the proposed cogeneration turbine, as described in this report and subject to the conditions of approval proposed herein, will not cause or contribute to a violation of any ambient air quality standard. A discussion of the modeling methodology and required analysis follows.

2. Modeling Methodology

The EPA-approved Industrial Source Complex Short-Term (ISCST) dispersion model was used in the air quality impact analysis. This model determines ground-level concentrations of inert gases or small particles emitted into the atmosphere by point, area, and volume sources. The model incorporates elements for plume rise, transport by the mean wind, Gaussian dispersion, and pollutant removal mechanisms such as deposition and transformation. The ISCST model also allows for the separation of sources, building wake downwash, and various other input and output features. A series of specific model features, recommended by the EPA, are referred to as the regulatory options. These features were used to address the air quality

impacts of the proposed facility in both screening and refined analyses.

The modeling used a radial receptor grid with the center of the grid coinciding with the location of the proposed facility. Radials were spaced at 10° increments from 10° to 360°. A standard progression of receptor distances was estimated using PTPLU in accordance with the technique specified in the "Regional Workshop on Air Quality Modeling-A Summary Report," EPA-450/4-82-015, April 1981. PTPLU was used to identify the distance to the highest estimated concentration for the various combinations of atmospheric stability classes and wind speeds. The shortest of the distances predicted by PTPLU was selected as the first receptor. Eight more distances were selected by multiplying the first receptor distance by each of the following constants: 1.3, 1.7, 2.3, 3.0, 3.9, 5.2, 6.8, and 9.0.

The meteorological data used in the ISCST model consisted of five years (1981-1985) of hourly surface data taken at Orlando, Florida. Mixing heights used in the model were based on upper air data from Tampa, Florida, for the same period.

Two types of modeling analyses were performed by the applicant. The first was a facility maximum impact analysis. This analysis shows the maximum ground-level NO_x impact for the proposed new facility, taking into consideration the shutdown of the Orenda turbines. The second, the AAQS analysis, was performed using the emissions from the proposed new facility by itself, plus existing background.

The emission rates and stack parameters used in evaluating the ambient air impact are contained in Tables 1 and 2 respectively.

Table 1. Emission Rates

Source	Pollutant	Emission Rate (g/s)
New Facility	NO_x	17.43
Existing Facility	NO_x	8.26

Table 2. Stack Parameters

Source	Stack Height(m)	Exit Temperature(K)	Exit Velocity(m/s)	Stack Diameter(m)
New Facility	19.81	413.71	15.39*	3.40
Existing Facility	12.44	455.37	15.88	2.96

* This value was used in the modeling runs. However, the applicant subsequently changed this value to 15.91 m/s. This

change has a conservative effect on the modeling results because of the increased exit velocity and decreased concentrations of NO_x contained in the larger emission volume (NO_x tonnage per year remains the same).

3. Analysis of Existing Air Quality

Preconstruction ambient air quality monitoring is required for all pollutants subject to PSD review. In general, one year of quality assured data using an EPA reference, or the equivalent, monitor must be submitted. Sometimes less than one year of data, but no less than four months, may be accepted.

An exemption to the monitoring requirement can be obtained if the maximum air quality impact, as determined through air quality modeling, is less than a pollutant-specific "de minimus" concentration. In addition, if current monitoring data already exist, and these data are representative of the proposed source area, then at the discretion of the Department these data may be used.

The predicted ambient impact of the net emission increase of NO_x is less than the monitoring "de minimus" level for this pollutant. As such no additional monitoring was required.

There are currently two NO_2 monitors in the Orlando, Florida, area. In 1985, the maximum annual arithmetic mean for this pollutant was 16 ug/m^3. For purposes of this application, this value is considered the "background" concentration for NO_2 in this area.

4. Ambient Air Quality Standards Analysis

Given existing air quality in the area of the proposed cogeneration facility, emissions from the new facility are not expected to cause or contribute to a violation of the AAQS for NO_2. The results of the AAQS analysis are contained in Table 3.

Table 3. Ambient Air Quality Impact

Pollutant and Averaging Time	Maximum Impact Cogeneration Facility (ug/m^3)	Predicted Total Impact (ug/m^3)	Florida AAQS (ug/m^3)
NO_2			
Annual	0.9	16.9	100

The total impact on ambient air was obtained by adding the "background" concentration to the maximum modeled concentration. The development of the background concentration was discussed in the previous section.

5. Additional Impacts Analysis

a. Impacts on Soils and Vegetation

The maximum ground-level concentration predicted to occur for NO_x as a result of the proposed project, including a background concentration, will be below the applicable AAQS including the national secondary standard developed to protect public welfare-related values. As such, this project is not expected to have a harmful impact on soils and vegetation.

b. Impact on Visibility

The proposed facility is located southwest of Orlando, Florida, about 135 km east-southeast of the Chassahowitzka Wilderness Area, the closest Federal Mandatory Class I area. Due to the distance between the proposed facility and the nearest Class I area (greater than 100 km) a visibility impact analysis is not required. However, the applicant submitted an EPA-approved Level I Visibility Analysis. The results of this exercise indicate that the proposed facility will have virtually no impact on visibility in the Class I area.

c. Growth-Related Air Quality Impacts

The proposed facility is not expected to significantly change employment, population, housing or commercial/industrial development in the area to the extent that an air quality impact will result.

d. GEP Stack Height Determination

Good Engineering Practice (GEP) stack height means the greater of: (1) 65 meters or (2) the maximum nearby building height plus 1.5 times the building height or width, whichever is less. For the proposed project a stack height of 19.81 meters is proposed. The proposed stack height is well below the GEP limit of 65 meters.

VI. Conclusion

Based on the information provided by Reedy Creek, the Department has reasonable assurance that the proposed project as described in this evaluation, and subject to the conditions proposed herein, will not cause or contribute to a violation of an ambient air quality standard or PSD increment, or any other provision of Chapter 17-2, FAC.

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

PERMITTEE:
Reedy Creek Improvement
District
Post Office Box 40
Lake Buena Vista, FL 32830

Permit Number:AC 48-137740
Expiration Date: December 1, 1988
County: Orange
Latitude/Longitude: 28° 25' 34"N
81° 34' 48"W
Project: GE Gas Fired Turbine Generator with Heat Recovery System

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

For the construction of a 38 MW GE LM5000 gas fired turbine generator system with a heat input capacity of 445.2 MMBtu/hr. The project will also include an in-line duct burner and heat recovery boiler, at the Central Energy Plant at Bay Lake, near Lake Buena Vista, Orange County, Florida.

Construction will be in accordance with the permit application and plans, documents, and reference material submitted unless otherwise stated in the General and Specific Conditions herein.

This project's federal permit number is PSD-FL-123.

Attachments:

1. Reedy Creek's application package dated August 5, 1987.
2. EPA's letter dated September 3, 1987.
3. Letter of incompleteness dated September 4, 1987.
4. Reedy Creek's response dated September 18, 1987.
5. U.S. Department of the Interior's letter dated September 28, 1987.
6. EPA's letter dated October 22, 1987.

PERMITTEE:
Reedy Creek Improvement District

Permit Number:AC 48-137740
Expiration Date: December 1, 1988

GENERAL CONDITIONS:

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

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

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

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

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

GENERAL CONDITIONS:

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

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

a. Having access to and copying any records that must be kept under the conditions of the permit;

b. Inspecting the facility, equipment, practices, or operations regulated or required under this permit; and

c. Sampling or monitoring any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

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

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

a. a description of and cause of non-compliance; and

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

GENERAL CONDITIONS:

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

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

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

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

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

13. This permit also constitutes:

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

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

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

GENERAL CONDITIONS:

b. The permittee shall retain at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation), copies of all reports required by this permit, and records of all data used to complete the application for this permit. The time period of retention shall be at least three years from the date of the sample, measurement, report or application unless otherwise specified by Department rule.

c. Records of monitoring information shall include:

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

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

SPECIFIC CONDITIONS:

1. The turbine may operate continuously (8760 hrs/yr).

2. Only natural gas shall be fired in the turbine and duct burner. No. 2 oil shall be used in periods of curtailed natural gas supply. The duration of oil firing shall not exceed 29 days annually.

3. The maximum heat input to the turbine and the duct burner shall not exceed 445.2 MMBtu/hr (normal duct burner heat input rate of 23 MMBtu/hr).

PERMITTEE:
Reedy Creek Improvement District

Permit Number:AC 48-137740
Expiration Date: December 1, 1988

SPECIFIC CONDITIONS:

4. When the gas turbine is not in operation, the duct burner heat input may be increased upto, but not to exceed, 198 MMBtu/hr.

5. The emissions, from the turbine and duct burner combined, shall not exceed 25 ppm for NOx and 150 ppm for SO_2 at 15% oxygen content dry basis and:

Pollutant	Gas Fired lb/hr	Gas Fired TPY*	Oil Fired lb/hr	Oil Fired TPY
Nitrogen Oxides (NOx)	75	310	75	27
Sulfur Dioxide (SO_2)	0.2	0.8	112	39
Particulates (PM)	0.5	2.1	9	4
Carbon Monoxide (CO)	15	64	20	7
Volatile Organics (VOCs)	7.5	32	8	3
Visible Emissions (VE)	5% opacity		10% opacity	

The duct burner NOx emissions shall not exceed (corresponding to 0.2 lb/MMBtu) 2.3 lb/hr for gas or oil at 23 MMBtu heat input or 38.5 lb/hr for oil and 39.6 lb/hr for gas at 198 MMBtu/hr.
*TPY (tons per year)

6. The No. 2 oil sulfur content shall not exceed 0.32 percent.

7. The "Black Start" Cummins No. 2 oil fired emergency generator, when fired on a normal basis to maintain a state of readiness shall not be operated beyond the 10 minutes/week check out period.

For inventory purposes only, the emergency generator's expected emissions are listed below:

Pollutant	lb/yr
NOx	232
CO	36
VOC	9
PM	8
SO_2	30

8. Water injection shall be utilized for NOx control at a minimum of 0.6/1.0 water to fuel ratio. If compliance testing warrants this ratio to be re-investigated, the ratio at which compliance is maintained shall be incorporated into the permit.

9. Initial and annual compliance testing shall be conducted with the fuels used in the preceeding 12 month period using:

1. EPA Method 20 for NOx and SO_2
2. EPA Method 10 for CO
3. EPA Method 5 for PM
4. EPA Method 9 for VE

Other DER approved methods may be used for compliance testing only after prior Departmental approval.

10. DER's district office shall be notified in writing 15 days prior to source testing. Written reports of the tests shall be submitted to the district office within 45 days of test completion.

The construction shall reasonably conform to the plans and schedule submitted in the application. If the permittee is unable to complete construction on schedule, the Department must be notified in writing 60 days prior to the expiration of the construction permit and submit a new schedule and request for an extension of the construction permit, (Rule 17-2, FAC).

To obtain a permit to operate, the permittee must demonstrate compliance with the conditions of the construction permit and submit a complete application for an operating permit, including the application fee, along with compliance test results and Certificate of Completion, to the Department's District office 90 days prior to the expiration date of the construction permit. The permittee may continue to operate in compliance with all terms of the construction permit until its expiration date. Operation beyond the construction permit expiration date requires a valid permit to operate. (Rules 17-2 and 17-4, FAC).

If the construction permit expires prior to the permittee requesting an extension or obtaining a permit to operate, then all activities at the project must cease and the permittee must apply for a new permit to construct which can take up to 90 days to process a complete application. (Rule 17-4, FAC)

11. Any change in the method of operation, fuels, equipment or operating hours shall be submitted for approval to DER's District office.

PERMITTEE:
Reedy Creek Improvement District

Permit Number:AC 48-137740
Expiration Date: December 1, 1988

SPECIFIC CONDITIONS:

12. The proposed project shall comply with all the applicable requirements of:

a) Chapter 17-2, FAC
b) 40 CFR 60, Subpart GG, Gas Turbines
c) 40 CFR 60, Subpart Db, Industrial Steam Generating Units

13. During the new turbine debugging period, not to exceed nine months, the older Orenda power trains shall not be fired unless the new GE turbine is not in operation. After the debugging period is over, the Orenda turbines and their associated equipment shall be dismantled.

Issued this_____day of_____, 19___

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION

_____
Dale Twachtmann, Secretary

Best Available Control Technology (BACT) Determination
Reedy Creek Improvement District
Orange County

The applicant proposes to install a cogeneration facility to better meet power needs at the Reedy Creek Improvement District (Walt Disney World). The cogeneration facility, which consists of a combined cycle power plant utilizing a General Electric (GE) aircraft derivative dual fuel combustion turbine attached to a waste heat recovery steam boiler and turbine, will replace two older smaller gas turbines and three associated heat recovery steam generators. The turbine will be fired normally with natural gas, but has the capability of standby operation with No. 2 fuel oil (diesel oil) for limited periods of time. In addition, the cogeneration facility will utilize a supplementary duct burner which will be normally fired with natural gas, but also is capable of firing No. 2 fuel oil (diesel oil) as a standby fuel. The guaranteed heat input rate for the system is estimated to be 311 million BTU/hr based on a fuel input of approximately 14,950 lb/hr of natural gas and a lower heating value of about 20,800 Btu/lb.

The applicant has indicated the net potential annual tonnage of regulated air pollutants emitted from the facility to be as follows:

Pollutant	Maximum Potential Emissions (tons/year) Natural Gas (8500 hrs/yr)	Diesel Fuel (29 days/yr)	PSD Significant Emission Rate (tons/year)
NOx	606	51.8	40
SO_2	0.75	39.0	40
PM	1.7	2.8	25
CO	50.1	6.1	100
VOC	25.9	2.3	40

Florida Administative 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. In addition, the duct burner requires a BACT determination for particulates and sulfur dioxide as set forth in the Florida Administrative Code Rule 17-2.600 (6) - Emissions Limiting and Performance Standards.

BACT Determination Requested by the Applicant

The BACT determinations requested by the applicant on a pollutant by pollutant basis are given below:

Pollutant	Determination
NOx	145 lbs/hr (natural gas firing) 150 lbs/hr (diesel oil firing)
SO_2	Low sulfur fuel (natural gas, diesel fuel with sulfur content not to exceed 0.32%)
PM	Firing of natural gas and diesel oil

Date of Receipt of a BACT application:

August 6, 1987

Review of Group Members:

This determination was based upon comments received from the applicant, EPA Region IV, and the Stationary Source Control Section.

BACT Determination Procedure:

In accordance with Florida Administrative Code Chapter 17-2, Air Pollution, this BACT determination will be based on the maximum degree of reduction of each pollutant emitted which the Department (DER), 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.

BACT Determined by DER:

Pollutant	Emission Limit
NOx	25 ppm (dry volume) at 15% O_2
SO_2	Emissions limited by natural gas and diesel oil firing (sulfur content not to exceed 0.32%)
Particulate	Emissions limited by natural gas and diesel oil firing (sulfur content not to exceed 0.32%)

BACT Determination Rationale

The DER's BACT determination is essentially equivalent to that proposed by the applicant except for the pollutant nitrogen oxides (NOx). The applicant has stated that BACT for nitrogen oxides will be met by using water injection at a 0.6/1.0 water to fuel ratio. This level of water injection will reduce the nitrogen oxides emissions to a level which is less than the New Source Performance Standard (NSPS) for Stationary Gas Turbines which computes to 152.1 ppm (215 lbs/hr) and 103.5 ppm (153 lbs/hr) for natural gas and diesel oil firing respectively. It is important to note that NSPS is only a starting point for a BACT determination. BACT can be and is often more stringent than NSPS. In accordance with this criteria, the Department has evaluated the following alternative control measures as representing BACT for this installation.

1) Increase of water to fuel injection ratio to further decrease the emissions of nitrogen oxides.

2) Selective Catalytic Reduction

The emissions of nitrogen oxides from gas turbines can be controlled to a large extent by the injection of either water or steam. The injection of water or steam into the combustion process provides a heat sink which absorbs some of the heat of reaction, thereby reducing peak combustion temperatures and the rate of nitrogen oxides formation. The degree of nitrogen oxides reduction achieved for a given turbine depends on the rate and method of introducing the water.

A review of the latest supplements (1986 and 1987) to the BACT/LAER Clearinghouse indicates that the nitrogen oxides emissions from several other gas turbines operating in the U.S. are much lower than the applicant's proposed emission rate. These differences in many cases are attributed to the use of selective catalytic reduction, however, some installations are reporting greatly reduced emissions brought about by higher water

to fuel injection ratios alone. One such installation is an indentical turbine (GE LM5000) operating in the State of California. For this unit, BACT for nitrogen oxides (25 ppm dry volume at 15% O_2) is being accomplished using steam injection at a steam/fuel ratio of 1.7 to 1.

In order to justify an increase in the water to fuel ratio as BACT, an economic analysis must be completed. With regard to determining the cost effectiveness of air pollution control, the EPA has developed costing guidelines to obtain the highest reduction of emissions per dollars invested. This method of maximizing emission reductions per capital invested is a major factor when New Source Performance Standards (NSPS) are developed by the EPA. For NOx emissions EPA has determined that a cost of up to $1,000 per ton of emissions controlled ($0.50/lb) is reasonable for NSPS.

The applicant has indicated that the proposed injection ratio of 0.6 to 1 is equivalent to a water consumption of 8 gallons per minute. Given this information, the cost/benefit analysis of increasing the water injection rate to reduce nitrogen oxides emissions to the level achieved by the identical equipment in California can be completed.

In accordance with the permit review completed for the identical unit in California, a nitrogen oxides emission rate of 25 ppm would be equivalent to an annual emission rate of approximately 205 tons per year. This represents a nitrogen oxides reduction of 401 tons per year for natural gas firing when compared to the proposed emission resulting from the 0.6 to 1 water injection rate. By increasing the water injection rate to a ratio of 1.7 to 1, the water requirement would increase by approximately 14.7 gallons per minute. This increase in water usage would increase the cost of nitrogen oxides control based on the cost of the water itself and the cost of treating the additional water that would be injected into the turbine.

Assuming that the cost of purchasing and treating the water are $1.50 and $2.50 per 1,000 gallons respectively, the cost increase to control nitrogen oxide to the 25 ppm level would be $29,988 per year for natural gas firing. This corresponds to a cost of approximately $75.00 per ton of nitrogen oxides controlled, which is insignificant compared to EPA's guideline of $1,000 for NSPS purposes.

It should be noted that the economic analysis computed above does not take into consideration that the applicant has proposed water injection and the alternative control measure evaluated uses steam injection. The cost associated with generating and injecting steam, when compared to injecting water, would not appreciably increase the cost of operating the facility. Since the facility uses a combined cycle operation, there would be steam available to use for injection purposes. Although this

would detract from the overall efficiency of the combined cycle, manufacturers have reported that steam injection results in about a 2 percent improvement over water injection in the heat rate of the turbine and a comparable increase in power output. As is the case, it is expected that the net cost of using steam injection as compared to water injection would not be significant.

Selective Catalytic Reduction (SCR) is a process that can be used in conjunction with water/steam injection to further reduce the emissions of nitrogen oxides from gas turbines. In order to justify the use of SCR as representing BACT, a cost/benefit analysis must again be completed.

The applicant has indicated that the addition of SCR would result in an nitrogen oxides emissions rate of 9 ppm. Although the economic analysis of using SCR for this particular installation has not been addressed, the applicant has submitted an analysis showing the cost/benefit of using steam injection at a ratio of 1.5 to 1 and has compared that to using SCR. In accordance with this analysis, the cost of using SCR would amount to an additional $13,400 per ton of nitrogen oxides controlled. This cost is well above the guideline discussed earlier and hence is judged to be prohibitively expensive.

The applicant has stated that natural gas and diesel will be used as fuels for the duct burner. Natural gas and diesel fuel generally contain low levels of sulfur and hence produce low emissions of sulfur dioxide when combusted. The emissions of particulates are also low since they are largely related to the fuel's sulfur content. As is the case, the Department has determined that the firing of natural gas or the firing of diesel fuel with a sulfur content not to exceed 0.32% is BACT for the duct burner.

Environmental Impact Analyses

Dispersion modeling has predicted that the impact from the facility will be 0.92% ug/m^3 when using the nitrogen oxides control proposed by the applicant. When the background concentration of 16 ug/m^3 is taken into consideration, the total concentration is well below the National Ambient Air Quality Standard of 100/ug/m^3 expressed as an annual average. Although the nitrogen oxides impact would be further reduced by increasing the water/steam injection rate, the impact is deemed to be reasonable when using the control proposed by the applicant.

The impacts of sulfur dioxide and particulates from the duct burner will be minimal. Natural gas combustion emits insignificant amounts of sulfur and particulates. Diesel fuel, on the other hand, emits higher levels of these pollutants but will be used on a standby basis only. As is the case, the

particulate and sulfur dioxide impacts associated with burning either natural gas or diesel fuel in the duct burner are not perceived to be a threat to air quality.

Energy Impact Analyses

Both of the control options should not result in energy impacts which are significant when compared to the applicant's proposal. The energy requirement to increase the injection of water/steam to the turbine is not excessive. If steam was injected at a ratio of 1.7 to 1, it is estimated that the additional heat input would be approximately 1.7 million BTU per hour when compared to injecting water at a 0.6 to 1 ratio. This is assuming that the steam would have to be produced from water by heat addition. However, since the facility is a combined cycle unit, steam is readily available and any reduction in the overall efficiency of the system would be compensated greatly by the improvement in heat rate when compared to water injection.

The applicant has indicated that the operating cost of SCR is less than using steam injection. The expense of using SCR is primarily attributed to the capital cost and not the cost of operation. As is the case, the energy impacts of using SCR are not judged to be significant. It is important to note that this facility is an energy producer and the energy that would be required to either increase the ratio of injection or operate a SCR would represent a very small fraction of the rated heat output.

Conclusion

The Department has determined that the level of control proposed by the applicant for the cogeneration facility does not represent BACT for nitrogen oxides. The applicant's proposal has been compared to other control strategies that have been deemed as BACT for similar facilities operating in the U.S. From an economic, energy and environmental standpoint, the applicant's proposal is only justified with respect to the ambient impact. However, when economics and energy impacts are taken into consideration, the overall impact of controlling the emissions of nitrogen oxides to the level established as BACT (25 ppm dry volume at 15% O_2) for another facility using an identical turbine does not appear to be prohibitive.

The Department has also concluded from the economic analysis that the cost of using selective catalytic reduction in conjunction with steam injection is not economically feasible for the incremental benefit achieved. As is the case, the Department has concluded that BACT for nitrogen oxides is to limit the emissions to a level of 25 ppm dry volume corrected to 15% O_2. Aside from nitrogen oxides, the Department agrees with the applicant that BACT is being applied.

Details of the Analysis May be Obtained by Contacting:

Barry Andrews, P.E., BACT Coordinator
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blairstone Road
Tallahassee, Florida 32399-2400

Recommended by:

_____
C. H. Fancy, P.E.
Deputy Bureau Chief, BAQM

_____
Date

Approved by:

_____
Dale Twachtmann, Secretary

_____
Date

PM
10/22/87
Atlanta, GA

File Copy

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

OCT 22 1987

4APT/APB-am

DER

OCT 26 1987

BAQM

Ms. Margaret V. Janes, Planner
Bureau of Air Quality Management
Department of Environment Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: Reedy Creek Improvement District (PSD-FL-123)

Dear Ms. Janes:

Thank you for submitting the October 2, 1987, supplementary information package with regard to the above-referenced source for our review. After reviewing the document, a question arose regarding the proposed water flowrate in the water deNO_x system.

After examining Figure 1 & Figure 3 (NO_x vs. water injection curves), we have noticed that the curves show an upshift characteristic as the capacity of the turbine increases. In other words, the amount of water needed to achieve a certain amount of control is also proportional to the turbine's capacity. With this in mind, we have compared Reedy Creek's unit to a similar California unit (a copy of its BACT/LAER Clearinghouse information was enclosed in our September 3, 1987, letter). The California unit has a capacity of approximately 50 MW with a 25 ppm NO_x emission limit. The control of NO_x is through a steam system that will remove 75% of the total NO_x emissions. If this unit's NO_x vs. water injection curve were to be imposed on Figure 1, the corresponding water flowrate for a 25 ppm NO_x emission concentration would be greater than 25 GPM. This flowrate in turn is much greater than Reedy Creek's proposed water flowrate of 8 GPM. Thus, will Reedy Creek's flowrate satisfy a 75% control? Also, since both Reedy Creek and the California units have 75% NO_x control, why is Reedy Creek proposing an NO_x emission limit of 142 ppm? Does the California unit run that much cleaner?

We would also like to provide an additional comment with regard to the sufficiency of Reedy Creek's best available control technology (BACT) determination. Since Reedy Creek only addressed the feasibilities of two control alternatives, the determination may not be sufficient. Besides the water injection (75% control) and the water injection/catalytic reduction (80% control) systems, Reedy Creek ought to assess other alternatives in terms of their environmental, economic, and energy considerations. As part of the assessment, Reedy Creek should include a chart that compares each alternative's associated costs. In the future, EPA will soon require states to consider a "top-down" approach in evaluating BACT for all sources.

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET
ATLANTA, GEORGIA 30365

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

U.S. OFFICIAL MAIL
PENALTY FOR PRIVATE USE $300
P.B. METER 6250438
U.S. POSTAGE 0.22
ATLANTA GA. OCT 22'87

Ms. Margaret V. Janes, Planner
Bureau of Air Quality Management
Department of Environment Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

10/24/87

FYI
thanks,

To explain briefly, this approach begins with establishing the most stringent available control as the first control alternative. If this control can be proven to be either technically or economically infeasible, the next most stringent level of control is determined and similarly evaluated and so on. We would recommend that Reedy Creek use this "top-down" approach.

Thank you for the opportunity to provide our comments. If you have any questions, please contact me or Gary Ng of my staff at (404) 347-2864.

Sincerely yours,

Bruce P. Miller

Bruce P. Miller, Chief
Air Programs Branch
Air, Pesticides, and Toxics
Management Division

Copied: CHF/BT
Barry Andrews
Pradeep Raval
Max Hinn
Tom Sawicki
} 10/26/87

C48-137740
PSD-FL-123

NO PM Dt.
on envelop

File Copy

United States Department of the Interior

FISH AND WILDLIFE SERVICE

TAKE PRIDE IN AMERICA

MAILING ADDRESS:
Post Office Box 25486
Denver Federal Center
Denver, Colorado 80225

STREET LOCATION:
134 Union Blvd.
Lakewood, Colorado 80228

IN REPLY REFER TO:
RW ADQ
MAIL STOP 60130

SEP 28 1987

DER
OCT 12 1987
BAQM

Ms. Margaret V. Janes
Bureau of Air Quality Management
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dear Ms. Janes:

We have reviewed the information you sent to us regarding the Reedy Creek Improvement District's proposed cogeneration project near Lake Buena Vista, Florida. This location is approximately 100 km southeast of the Chassahowitzka National Wildlife Refuge, a class I air quality area administered by the Fish and Wildlife Service. We appreciate your continued early notification of permitting activities that have the potential to impact the air quality or air quality related values of class I areas in Florida.

The proposed project includes replacing two existing gas turbines with one larger gas turbine, resulting in a 318 ton per year net increase in nitrogen oxide emissions. We agree with the Reedy Creek Improvement District that water injection is the best control technology available to minimize nitrogen oxide emissions from the proposed turbine. Based on the information provided, the proposed project will increase ambient nitrogen dioxide concentrations by a maximum of 0.32 micrograms per cubic meter. This maximum concentration is expected to occur at a distance of 1.4 km from the proposed project. Because the expected nitrogen dioxide concentrations will decrease as the distance from the project site increases, impacts on the Chassahowitzka National Wildlife Refuge, located 100 km from the project site, should be insignificant. Therefore, we do not expect the proposed Reedy Creek turbine project to significantly impact the air quality or air quality related values of the refuge.

If you have any questions regarding this matter, please contact John Bunyak at (303) 969-2072.

Sincerely,

John L. Spinks Jr.

Deputy Regional Director
Region 6

Copied: CHF/BT
Pradeep Raval
Max Linn
} 10/13/(mm)

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
POST OFFICE BOX 25486
DENVER FEDERAL CENTER
DENVER, COLORADO 80225

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

42

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF
THE INTERIOR
INT-423

Ms. Margaret James
Bureau of Air Quality Mgmt
Florida Dept of Env. Regulation
Twin Towers Office Bldg
2600 Blair Stone Road
Tallahassee, FL 32399-2400

file

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

September 25, 1987

Mr. Miguel Flores
Chief
Permit Review and Technical
Support Branch
National Park Service-Air
Post Office Box 25287
Denver, Colorado 80225

Dear Mr. Flores:

RE: Reedy Creek Improvement District
State Construction Permit: AC 48-137740
Federal Permit Number: PSD-FL-123

Enclosed for your review and comment is additional information on the above referenced permittee. If you have any comments or questions, please contact Pradeep Raval or Max Linn at the above address or at (904)488-1344.

Sincerely,

Margaret Janes

Margaret V. Janes
Planner
Bureau of Air Quality
Management

/mj

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

September 25, 1987

Mr. Wayne Aronson
Chief
Program Support Section
U.S. EPA, Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Dear Mr. Aronson:

RE: Reedy Creek Improvement District
State Construction Permit: AC 48-137740
Federal Permit Number: PSD-FL-123

Enclosed for your review and comment is additional information on the above referenced permittee. If you have any comments or questions, please contact Pradeep Raval or Max Linn at the above address or at (904)488-1344.

Sincerely,

Margaret James

Margaret V. James
Planner
Bureau of Air Quality
Management

/mj

Federal Express
4? 8 35 44 835
9/22/87

File Copy

REEDY CREEK
IMPROVEMENT
DISTRICT

DIRECTOR/GENERAL MANAGER
Thomas M. Moses

DER
SEP 23 1987
BAQM

September 18, 1987

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

Re: Gas Fired Turbine
Generator Permit
Application
AC48-137740
PSD-FL-123

Dear Mr. Fancy:

Pursuant to your letter of September 4, 1987 informing us that our submittal of August 6, 1987 was considered incomplete, please consider the following information and attachments our reply.

Item 1

Acknowledging that a NOx continuous emission monitor is not required, you have asked that we submit details of the methods and devices we intend to employ to provide a continuous means of verifying NOx emissions compliance.

Attachment I is a background document paper authorized by GE outlining the methods and results of abating LM5000 turbine emissions through the use of water injection. Our proposed 32 MW, 42 to 44.7 M HP unit falls adjacent to the contained curves for a 33.3 MW and 41.5 HP machine, and the graphed abscissas are marked indicating our projected water use rates. These values are consistent with those contained in those data forwarded with our original application.

Attachment II contains a description of our water injection ratio control facility along with a simplified flow interface schematic and relevant manufacturer's literature. After start-up calibration and verification

Best Available Copy

FEDERAL EXPRESS

QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL NUMBER 4888544835

DATE 9-24-87

715 98M

DER

SEP 23 1987

AIRBILL NUMBER 4888544835

1 From (Your Name)	Your Phone Number (Very Important)
Company REEDY CREEK IMPROVEMENT DIST	Department/Floor No.
Street Address 1675 BUENA VISTA DR STE 265	
City LAKE BUENA VISTA State FL	ZIP Required For Correct Invoicing 32830

2 To (Recipient's Name)	Recipient's Phone Number (Very Important) ( )
Company BAQM	Department/Floor No.
Exact Street Address (Use of P.O. Boxes or P.O. ® Zip Codes Will Delay Delivery And Result in Extra Charge.)	
City State	ZIP Street Address Zip Required

3 YOUR BILLING REFERENCE INFORMATION (FIRST 24 CHARACTERS WILL APPEAR ON INVOICE.)

PAYMENT [X] Bill Sender [ ] Bill Recipient's FedEx Acct. No. [ ] Bill 3rd Party FedEx Acct. No. [ ] Bill Credit Card [ ] Cash

H HOLD FOR PICK-UP AT THIS FEDERAL EXPRESS LOCATION:
Street Address (See Service Guide or Call 800-238-5355)
City State
ZIP ® Zip Code of Street Address Required

4 SERVICES CHECK ONLY ONE BOX

1 [X] PRIORITY 1 Overnight Delivery Using Your Packaging
6 [X] OVERNIGHT LETTER* (Our Packaging) 9½"x12½"

OVERNIGHT DELIVERY USING OUR PACKAGING
2 [ ] Courier-Pak Overnight Envelope* 12"x 15½"
3 [ ] Overnight Box 12½"x 17½"x 3" A [ ]
4 [ ] Overnight Tube 38"x 6"x 6"x 6" B [ ]
*Declared Value Limit $100.

STANDARD AIR
5 [ ] Delivery not later than second business day

SERVICE COMMITMENT
PRIORITY 1 - Delivery is scheduled early next business morning in most locations. It may take two or more business days if destination is outside our prim...
STANDARD AIR - Delivery is ... later than second business day ... days if the destination is outside...

DELIVERY AND SPECIAL HANDLING CHECK SERVICES REQUIRED
1 [ ] HOLD FOR PICK-UP (Fill in Section H at right)
2 [X] DELIVER WEEKDAY
3 [ ] DELIVER SATURDAY (Extra charge)
4 [ ] DANGEROUS GOODS (P-1 and Standard Air Packages only, Extra charge)
5 [ ] CONSTANT SURVEILLANCE SERVICE (CSS) (Extra charge) (Do Not Complete Section 5)
6 [ ] DRY ICE ______ Lbs.
7 [ ] OTHER SPECIAL SERVICE ______
8 [ ]

PACKAGES	WEIGHT	YOUR DECLARED VALUE	OVER SIZE
1	2 lbs		
	LBS		
	LBS		
	LBS		
Total 1	Total 2	Total	

Received At
1 [ ] Regular Stop 2 [ ] On-Call Stop
3 [X] Drop Box 4 [ ] B.S.C. 5 [ ] Station

Federal Express Corp. Employee No.

Date/Time For Federal Express Use 9/2 1634

Emp. No. Date
[ ] Cash Received
[ ] Return Shipment
[ ] Third Party [ ] Chg. To Del. [ ] Chg. To Hold
Street Address
City State Zip
Received By: X
Date/Time Received FedEx Employee Number

Federal Express Use
Base Charges
Declared Value Charge
Origin Agent Charge
Other
Total Charges

PART #106001 FEC-S-751-1000 REVISION DATE 10/86 PRINTED U.S.A. GBFE

RECIPIENT'S COPY

5 Sender authorizes Fe... and hold harmless F... Release Signature: ... nd shall indemnify

9/25/87

CHF: FYI

Please return. Thanks

(using Reference Method 20), we feel this system will ensure continuous control and indication of pre-set deviation points and satisfy continuous compliance observation needs to within at least 1-1 1/2±% accuracy. We request your review and concurrence of this design installation.

Item II

You have requested a current analysis of our natural gas supply with emphasis on supporting the fact that the gas does contain fuel-bound nitrogen along with documentation of the procedure and lab test method that formulates such a finding. We acknowledge that EPA Region IV has taken the position on a similar 1987 application that natural gas does not contain measurable amounts of fuel-bound nitrogen and that emissions credit cannot be given in the calculation of allowable NOx emissions under NSPS, Subpart GG, as we have documented in our August application.

Attachment III is the response communique received from Florida Gas Transmission Company on the subject. Our application used data from 1984 stipulating 0.453 mole percent (same as 0.756 weight percent) of fuel-bound nitrogen. The recent analysis indicates 0.445 mole percent or essentially little change. Florida Gas Transmission maintains their samples are not contaminated by outside air as indicated by the zero oxygen levels and that their results are valid. Our consulting engineer, who has worked with other domestic gas suppliers, indicates that various true fuel-bound nitrogen levels in natural gas are a normal occurrence.

Collectively, we feel Region IV's position is untenable and we respectfully request that the Reedy Creek Improvement District be fully credited for fuel-bound nitrogen in their natural gas supply. This would then enable proper utilization of the discharge standard formula contained in Paragraph 60.332 (a) (1) supplemented by the emission allowance defined by 60.332 (a) (3) of Subpart GG. We would also monitor the fuel's nitrogen content, as analyzed by our supplier frequently, so as to ensure proper adherence with regulatory requirements.

It is requested that emission allowances outlined in our original application be concurred with and approved by your agency.

Item III

We appreciate your advice in that it may be to the District's best interest to seek an SO_2 emission allowance, for oil burning, greater that that of 39 tons per year.

We have discussed this point, at some depth previously, but upon analysis of our loads, continuities, supplier dependability and relevant factors, we have decided that an equivalent allowance of oil consumption for 29 operating days per year (39 tons per year of SO_2) is sufficient for District needs. Therefore, it is requested that the oil consumption and allowance figures cited in our original application be retained.

If you have any questions on these issues, please inform us promptly, so there will be a minimum of delay in formally acting on our August application package.

Thank you for your consideration of this response.

Very truly yours,

Thomas M. Moses

Thomas M. Moses
Director/General Manager

TMM:dh

Attachments:

pc Mr. Fred Harden w/attach.
(Reedy Creek Improvement District)
Mr. Frank Jones w/attach.
(Reedy Creek Utilities Company)

Tom Sawicki - CF Dist.
Miguel Flores - NPS
Wayne Aronson - EPA
Pradeep Raval
CHF1BT
Nat Finn
Barry Andrus

} 9/24/87 mr

ATTACHMENTS

ATTACHMENT I

GENERAL ELECTRIC

AIRCRAFT ENGINE BUSINESS GROUP
GENERAL ELECTRIC COMPANY • 1 NEUMANN WAY • CINCINNATI, OHIO 45215 • (513) 243-2000

September 16, 1987

Mr. Cary Holt
Stewart & Stevenson Services, Inc.
16415 Texas, 77015

Subject: 7LM5000PA Emissions Test Data

Dear Cary,

The attached is a description of emission testing and data from tests conducted on both natural gas and liquid fueled LM5000 engines with water injection for NOx suppression. Also included is a brief description of the emissions calculation methodology as integrated into the engine performance computer model.

The author of this paper is Dr. T.F. Lyon of GE's Combustor Technology Department. He also participated in the testing and the development of the computer model.

If any further information is desired, please let me know.

Regards,

W. W. Hockensmith

2500W/37

I

ZLM5000 EMISSIONS WITH DUAL FUEL CAPABILITY AND WATER INJECTION

Emissions Test Data - Gas Fuel

An emissions test of a natural gas fueled LM5000 with water injection was performed on December 7, 1983 at the Simpson Paper Co., Shasta Mill, Anderson, CA. Exhaust gas samples were obtained from a probe inserted into an existing sampling port near the top of the exhaust stack. The continuously flowing sample was analyzed for carbon monoxide (CO), oxides of nitrogen (NO_x), carbon dioxide (CO_2) and oxygen (O_2).

The four instruments used for the analysis were:

CO - Thermo-Electron Co. Model 48 NDIR.

CO_2 - CARLE Instruments Model AGC311 Gas Cromatograph/TCD

NO_x - Thermo-Electron Co. Model 10 Chemiluminescent

O_2 - Sybron-Taylor Model 54A Paramagnetic

A total of 38 test points were obtained over a range of total power output from 9 to 37 MW and water injection from 0 to 24 gal/min. The engine was equipped with dual fuel duplex-type fuel nozzles, part numbers L31422/P01, 02, 03. Although the engine had dual fuel capability, only gas fuel was used in this emissions test program.

Figure 1 shows NO_x plotted against combustor water flow rate at various

power levels. The NO_x is expressed as ppm by volume, dry, referenced to 15% O_2 and combustor water is in gal/min. The power levels are electric generator output in megawatts.

The NO_x reduction curve is shown in Figure 2. In this plot, the NO_x ratio (NO_x with water injection divided by NO_x without suppression) is plotted against water to fuel weight ratio. As is generally the case, this plot is independent of power at the highest power levels.

In contrast to the NO_x, CO levels tend to increase with increasing water injection rate as shown in Figure 3. As can be seen in this figure, CO is very low (a few ppm) at low water injection rates and high power levels. At the lower power levels, CO is quite sensitive to water injection rate.

Emissions Test Data - Liquid Fuel

An emissions test of a liquid fueled LM5000 gas generator with water injection was conducted at the GE Evendale, OH plant, test cell #37 during the period from April 25 to May 5, 1978. The engine "load" was provided by a fixed conical exhaust nozzle which was sized to produce the correct backpressure on the low pressure turbine. Power output was calculated as isentropic gas horsepower or that power which would be produced by isentropic expansion across the fixed exhaust nozzle. The actual mechanical power produced in a complete gas turbine system is about 87% of the isentropic gas horsepower.

I

The fuel nozzles used were part numbers L25282 P01 and P02. These are liquid only fuel nozzles and are similar to the liquid side of the dual fuel duplex fuel nozzles. Water is introduced into the fuel system just upstream of the fuel manifold. Fuel was marine diesel (MIL-F-16884).

Exhaust samples were withdrawn through two probes located just downstream of the exhaust plane and mounted at different radial positions on a "windshield wiper" type of actuator. For each test point, twelve samples were obtained, six from each probe, at various locations across the exhaust plane.

Samples were analyzed for CO, CO_2, NO_x and total hydrocarbons (HC). Analytical instrumentation included:

CO - Beckman Model 865 (NDIR)

CO_2 - Beckman Model 864 (NDIR)

NO_x - Bechman Model 951 (Chemiluminescent)

HC - Beckman Model 402 (Flame Ionization)

Figure 4 shows NO_x in ppm Ref. 15% O_2 plotted against water injection rate at four power levels. The power levels are isentropic gas horsepower as described previously.

Figure 5 shows the NO_x reduction curve which is the NO_x ratio plotted against water to fuel weight ratio. The NO_x reduction obtained with liquid fuel and water injection is very similar to that obtained with gas fuel and water injection (see Figure 2).

I

Emissions Calculation Methodology

An emissions calculation methodology has been developed and integrated into the engine performance decks for the LM1600, LM2500 and LM5000 engines. This capability permits the exhaust composition to be accurately projected for a wide range of parameters which reliably simulate engine performance under actual operating conditions. Utilizing this capability, such factors as ambient conditions, inlet and exit losses, fuel composition, water or steam injection rates and engine deterioration are all accounted for in the emissions calculations.

Basically the same model is used for each of the engines. The model is calibrated for a particular engine type using engine test data which is empirically matched to analytical expressions or data tables contained within the performance program. Data from the two tests described above was used to calibrate the LM5000 model for water injection.

The program can accommodate any fuel composition containing carbon, hydrogen, oxygen, sulfur and nitrogen. Exhaust products are argon (Ar), nitrogen (N_2), oxygen (O_2), carbon dioxide (CO_2), water (H_2O), sulfur dioxide (SO_2), carbon monoxide (CO), total hydrocarbons (HC) and oxides of nitrogen (NO_x) (nine species). Species concentrations are calculated in three subroutines contained within the performance program. The first of these is called the burner subroutine, in which CO and HC are calculated as a function of compressor discharge temperature (T_3) and injected water or steam to fuel ratio. In this

I

subroutine, the effect of CO and HC on combustion efficiency is also evaluated and the appropriate adjustment to engine performance is made.

The NO_x subroutine calculates the NO_x concentration which is determined by compressor discharge temperature (T_3) and pressure (P_3), total inlet humidity (including evaporative cooler, if any), injected water or steam, fuel-air ratio and combustor reference velocity. In addition, NO_x from fuel-bound nitrogen is evaluated and the total NO_x is adjusted accordingly. The effect of non-standard gaseous fuel on NO_x is evaluated in the fuel program which is separate from the performance deck. In the fuel program, the maximum adiabatic flame temperature is calculated from the fuel composition, and a correction factor for NO_x is then computed. This correction factor is input to the performance program.

With emissions of CO, HC and NO_x thus calculated in the first two subroutines, SO_2 and the major species (Ar, O_2, N_2, CO_2, H_2O) are calculated in the exhaust composition subroutine by means of mass balance equations. The fuel sulfur is assumed to be converted to SO_2. The mass balance equations are derived by evaluating the products of the reaction of the actual fuel with standard dry air plus inlet moisture (from total inlet humidity) plus injected water or steam (if any).

The program output contains the complete exhaust composition as mole percent wet, mole percent dry (all water removed), weight percent wet and weight percent dry. Also included are NO_x in ppm Ref. 15% O_2, NO_x emission index and NO_x and CO in lb. per hour. Other related emission parameters can also be evaluated and included in the output.

LM5000 ESN 474-110
SIMPSON PAPER CO. - SHASTA MILL
DEC. 7, 1983
NAT. GAS FUEL - WATER INJECTION

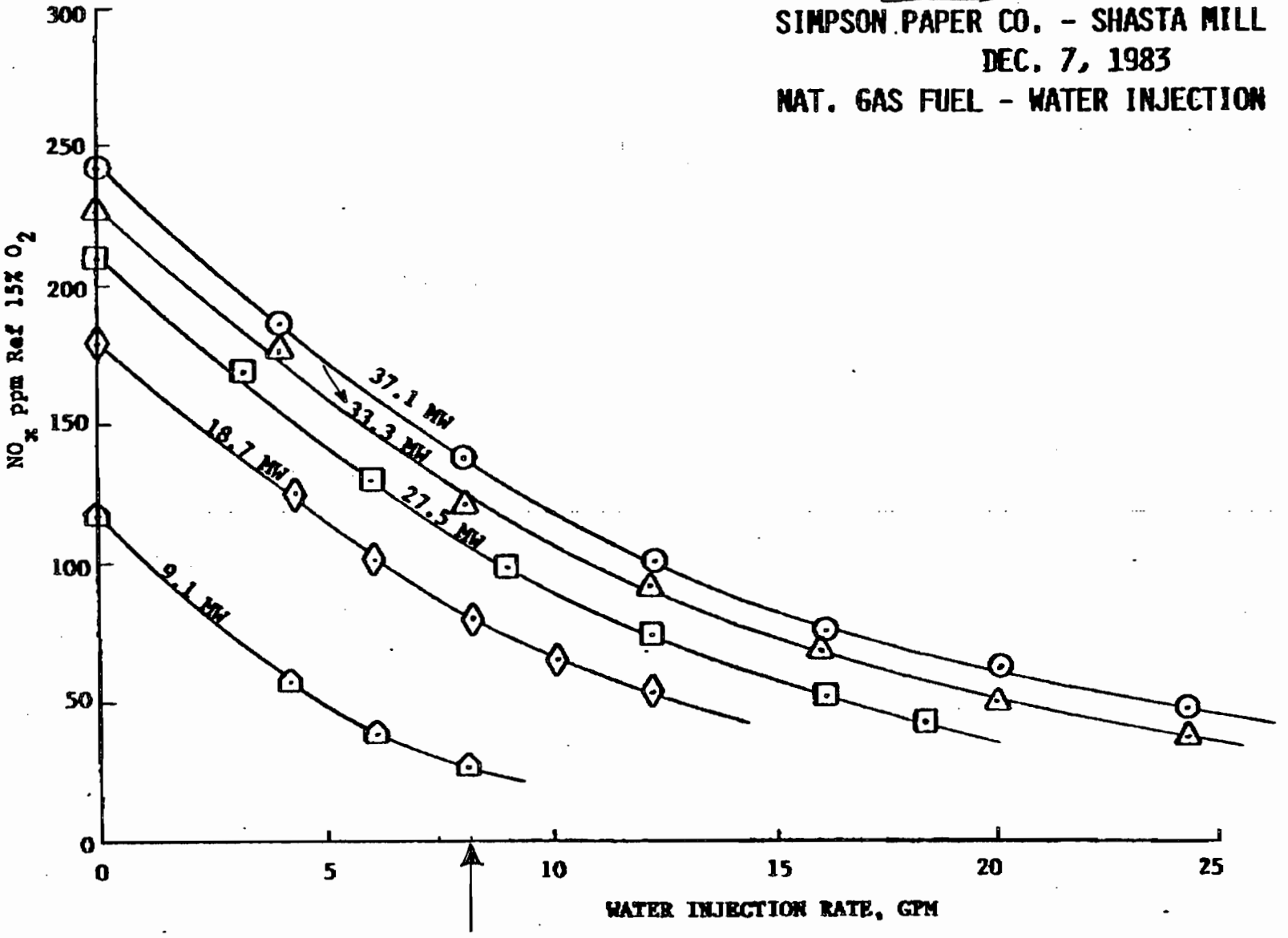


FIGURE 1. NO_x VS. WATER INJECTION RATE - GAS FUEL

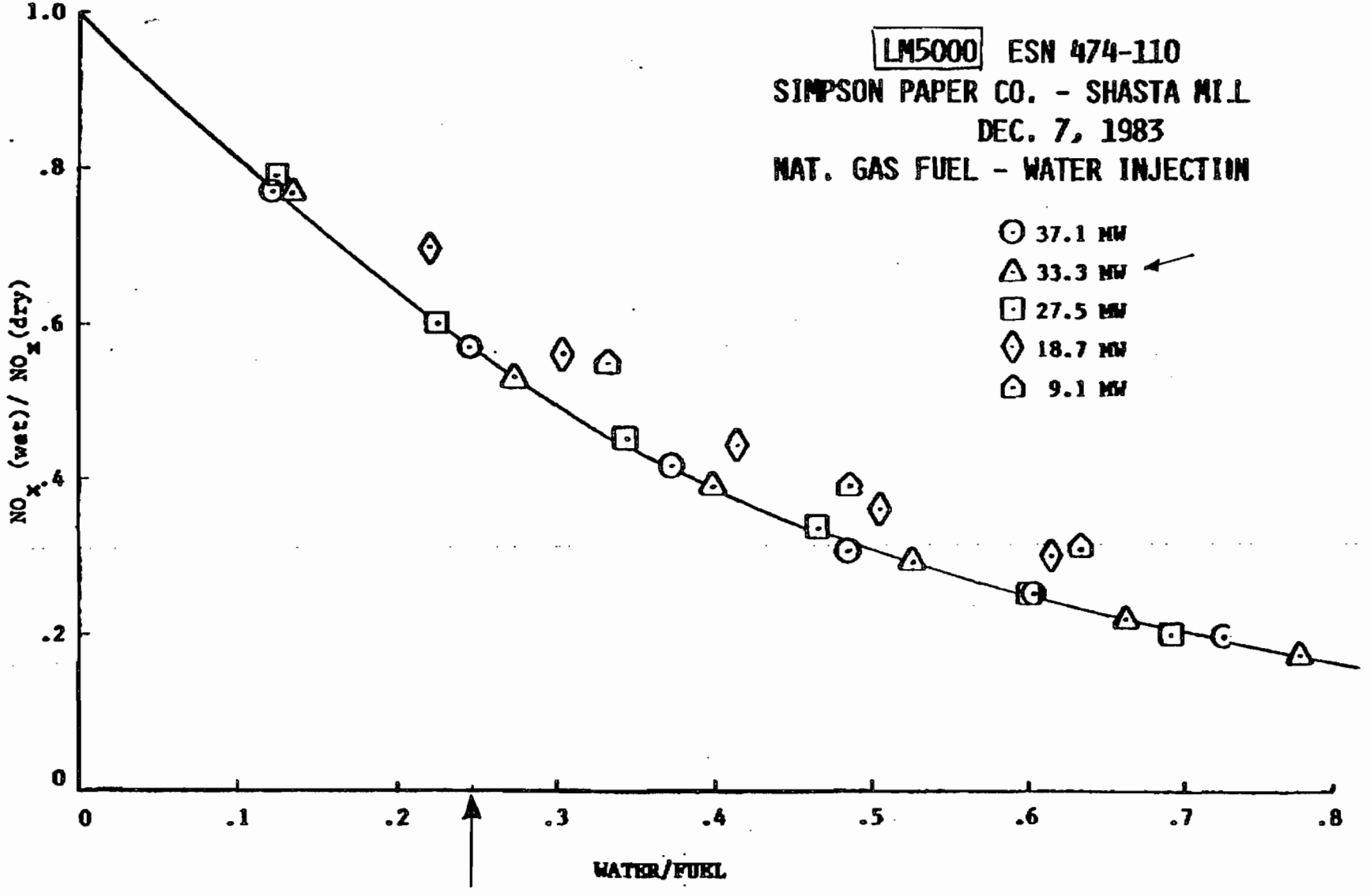


FIGURE 2. NO_x REDUCTION RATIO VS. WATER – FUEL RATIO – GAS FUEL

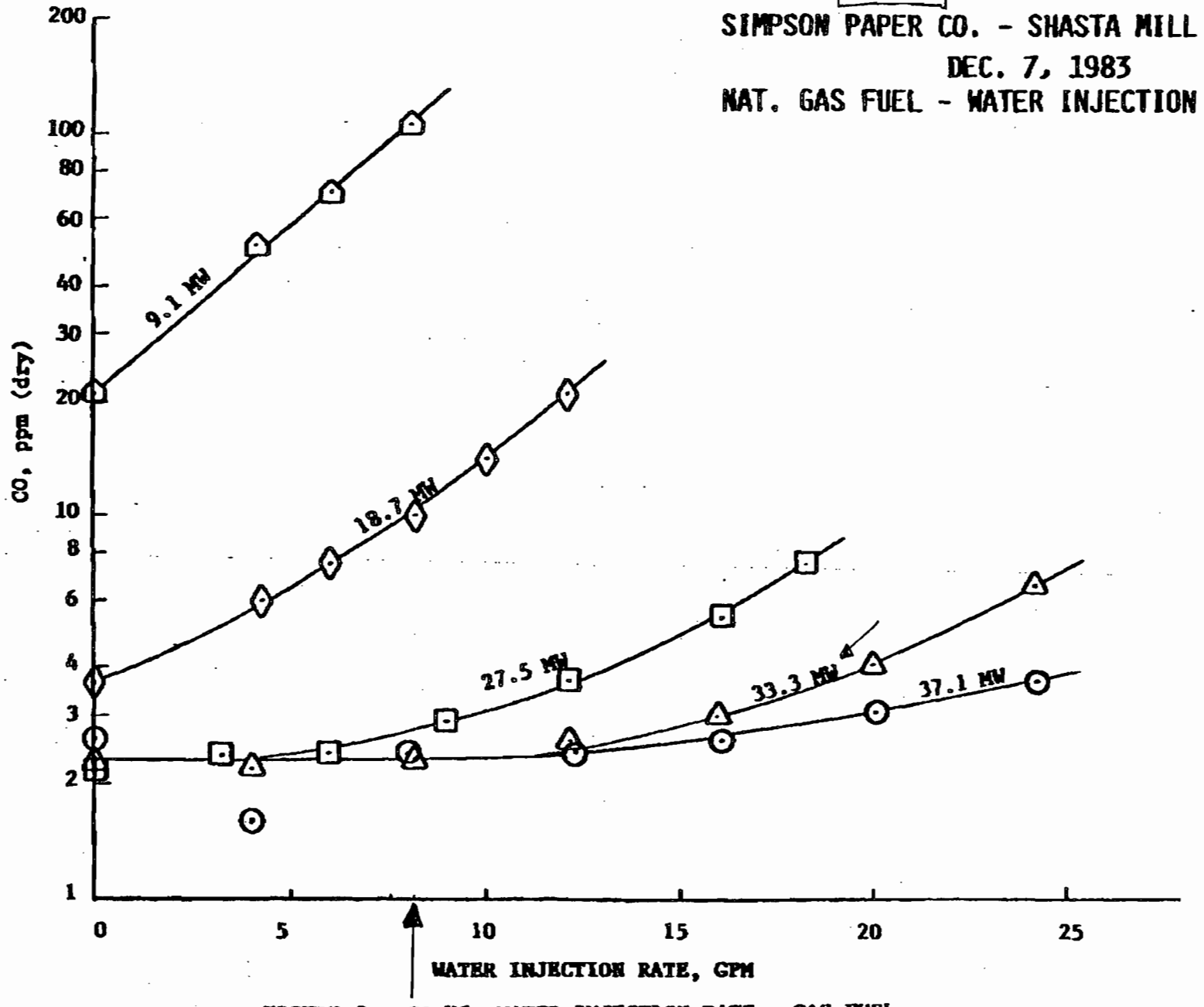


FIGURE 3. CO VS. WATER INJECTION RATE - GAS FUEL

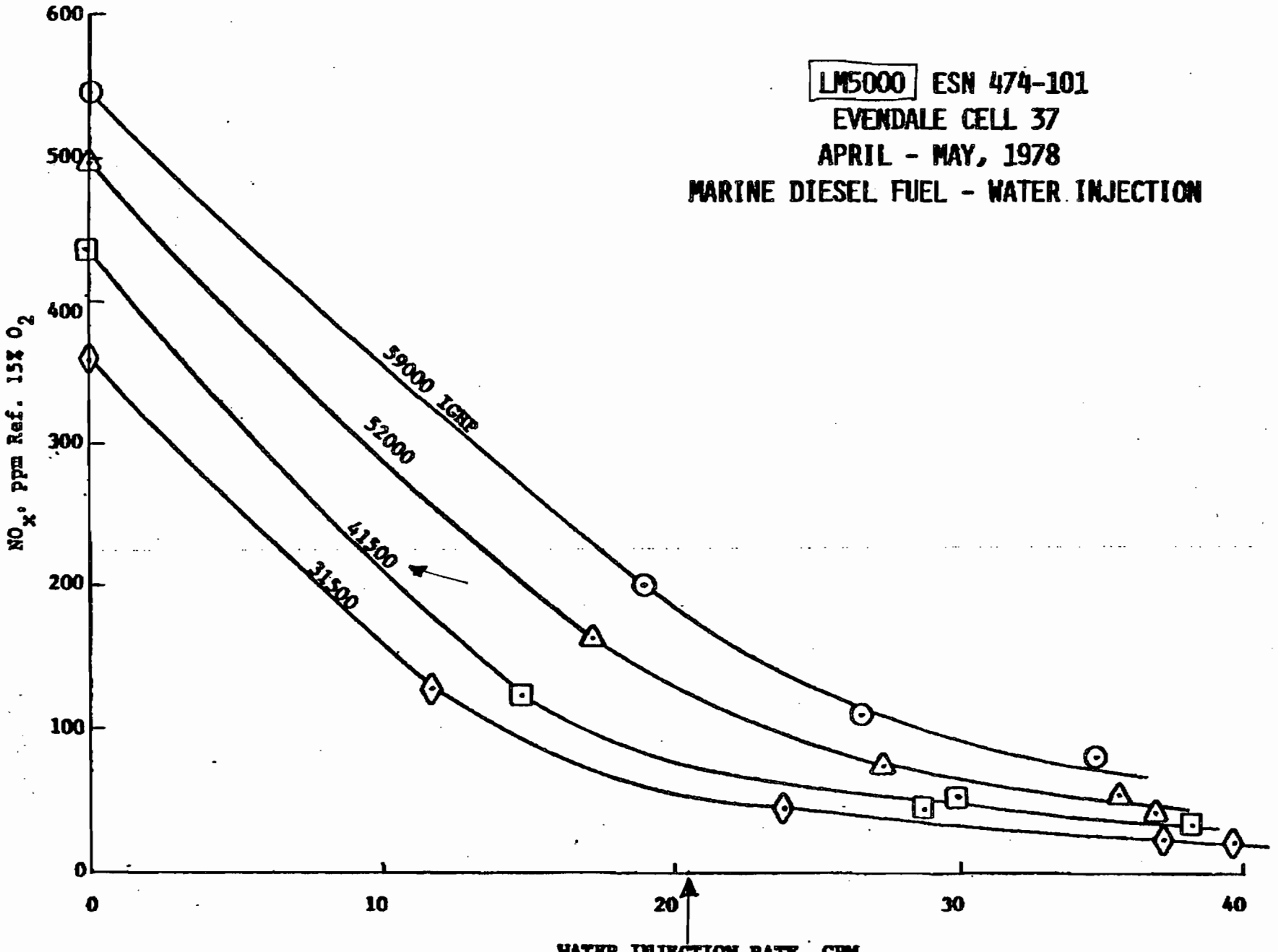


Figure 4. NO_x VS. WATER INJECTION RATE - LIQUID FUEL

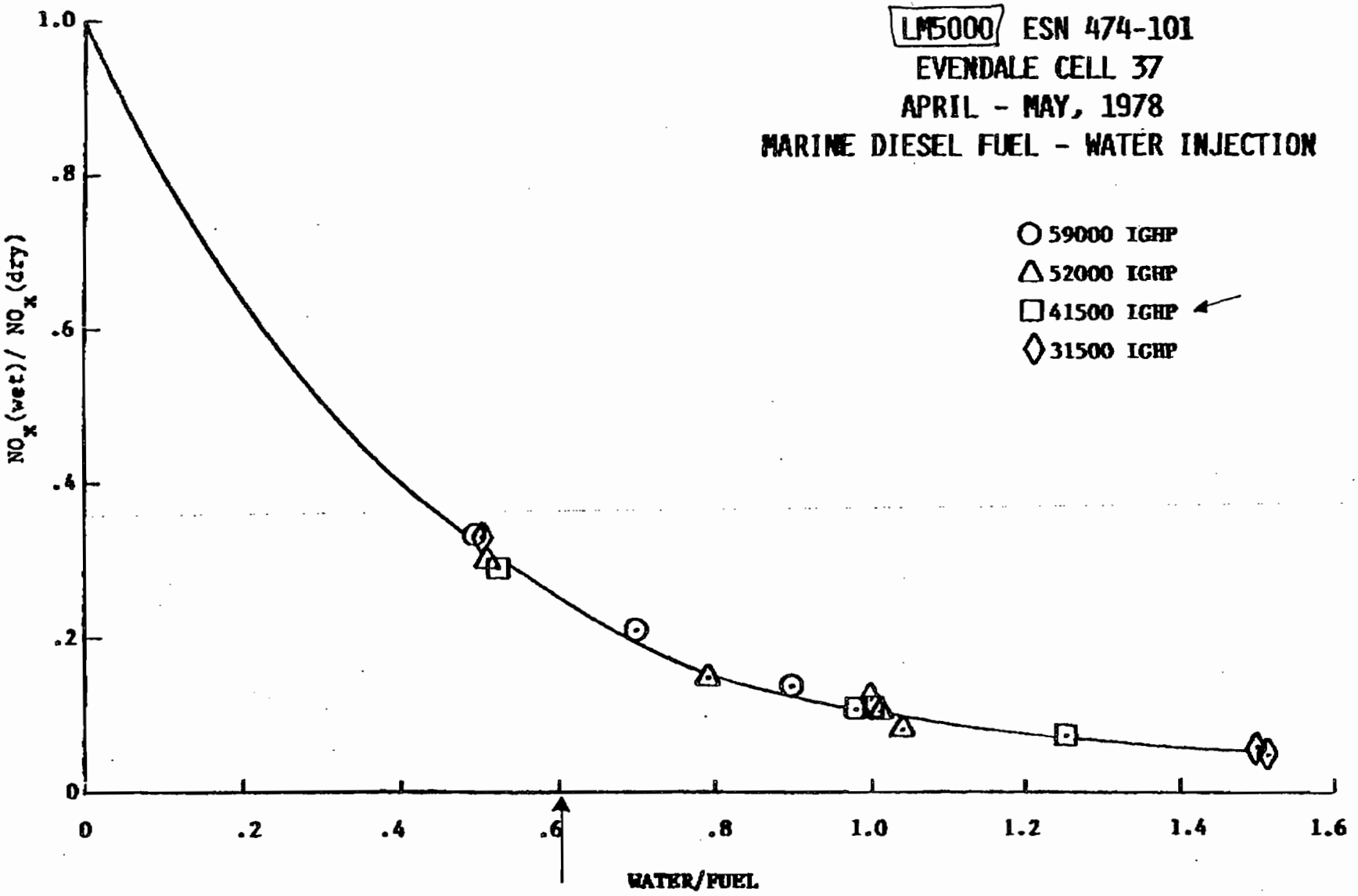


Figure 5. NO_x REDUCTION RATIO VS. WATER - FUEL RATIO - LIQUID FUEL

ATTACHMENT II

NOx WATER INJECTION AND FUEL RATIO CONTROL SYSTEM

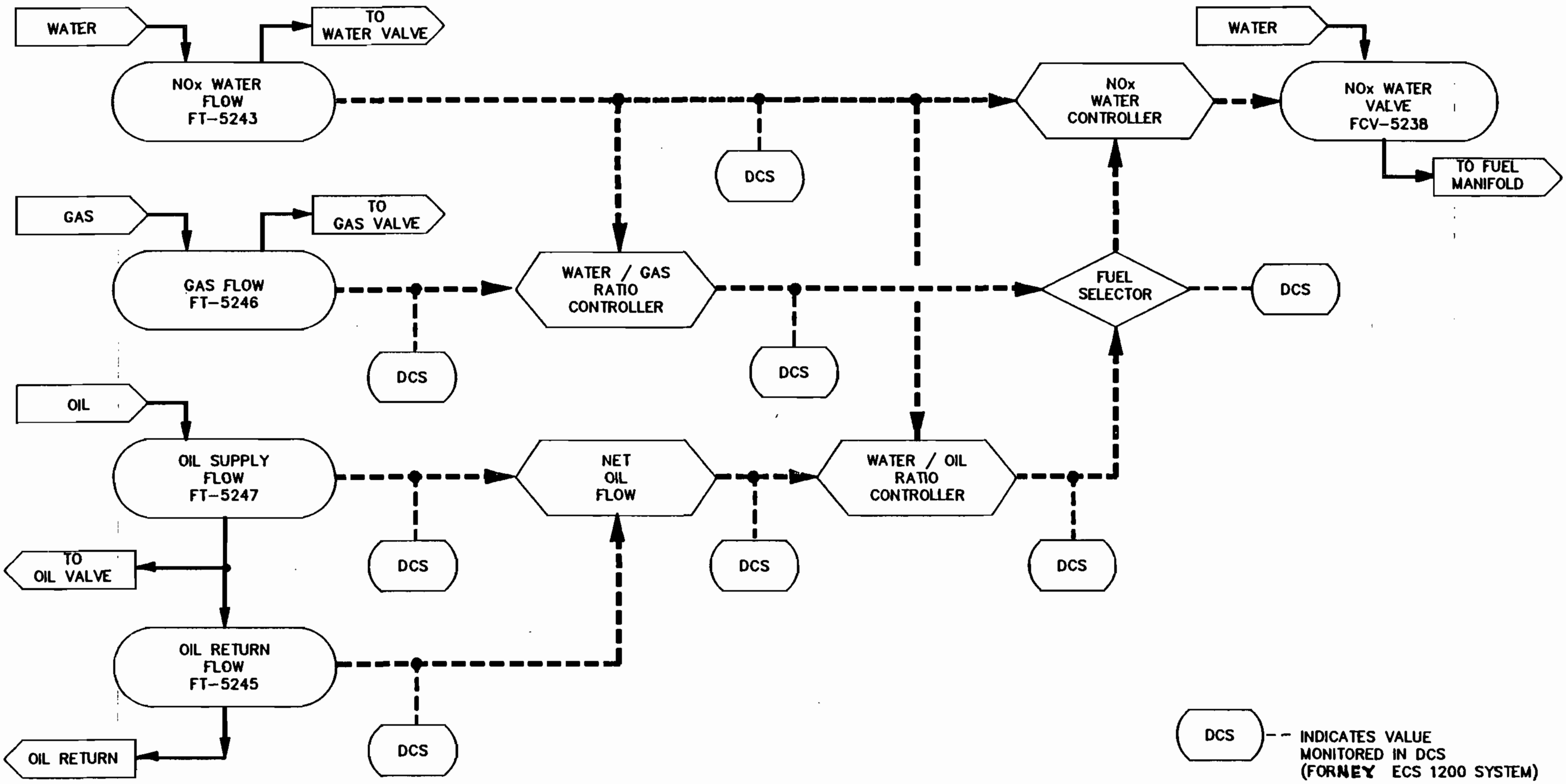
The NOx Water/Fuel ratio, along with ambient temperatures, will be used to determine NOx emissions compliance. The NOx water flow rate, gas flow rate, oil supply and return flow rates (used to obtain net oil consumption), plus the ambient temperature will be monitored and trended on the Digital Equipment Corporation MicroVAX computer system which is a part of the overall Distributed Control System (DCS).

The electrical load on the generator will also be monitored and trended, since NOx water is not required until the generator reaches 25% load (which is also dependent on ambient temperature).

The water/fuel ratio for whichever fuel is in use will be calculated from the above measurements. This ratio, along with the ambient temperature, will be compared to the emission values obtained during start-up testing, and the ratios inputted to the gas turbine computer will be corrected as necessary to obtain the required reduction in NOx levels. The gas turbine NOx water flow controller will automatically adjust the water flow rate to match the required ratio values obtained during start-up. If the controller cannot maintain the correct value as calculated by the MicroVAX system, then a deviation alarm based on a six-minute average (as is currently done with continuous emissions monitoring) will be generated on the DCS and logged to an alarm printer.

Additionally, a shift, daily, and monthly log report will be generated detailing the amount of water and fuel used, amount of time the generator was on load, minimum, average, and maximum ratios (expected and actual), number of deviation alarms, total amount of time of the deviations, average NOx ppm value and the total pounds of NOx emitted per hour.

The necessary hardware utilized is as attached.



35621001 JOB NO. 16356L 9/18/87

Reedy Creek Utilities Co., Engineering Department
P.O. BOX 40, Lake Buena Vista, Florida 32830 TELEPHONE (305)824-4024

SHEET TITLE: GAS TURBINE / NOx WATER CONTROL WOODWARD GOVERNOR MODEL 503 FAULT TOLERANT DIGITAL CONTROLLER

PROJECT AREA: CENTRAL ENERGY PLANT NORTH SERVICE AREA
UNIT NAME: CO-GENERATION PLANT
W.H. WILLIAMS, PROJECT MANAGER
E. GODWIN, PROJECT ENGINEER

		ISSUE NO.	APPR BY	DATE	ISSUED FOR	REV. NO.	APPR BY	DATE	DESCRIPTION
DATE	9/18/87	5				△			
SCALE	NONE	4				△			
DRAWN	AEC	3				△			
CHECKED	FAlcon	2				△			
APPROVED		1				△			
APPROVED									

SHT. SIZE B; DOCUMENT NO. RCID NO.306-86W; SHEET NO. 1 of 1; REV.; AREA BLDG.

RCU1117A 7-10-87

NOMENCLATURE FOR NOx CONTROL INSTRUMENTATION

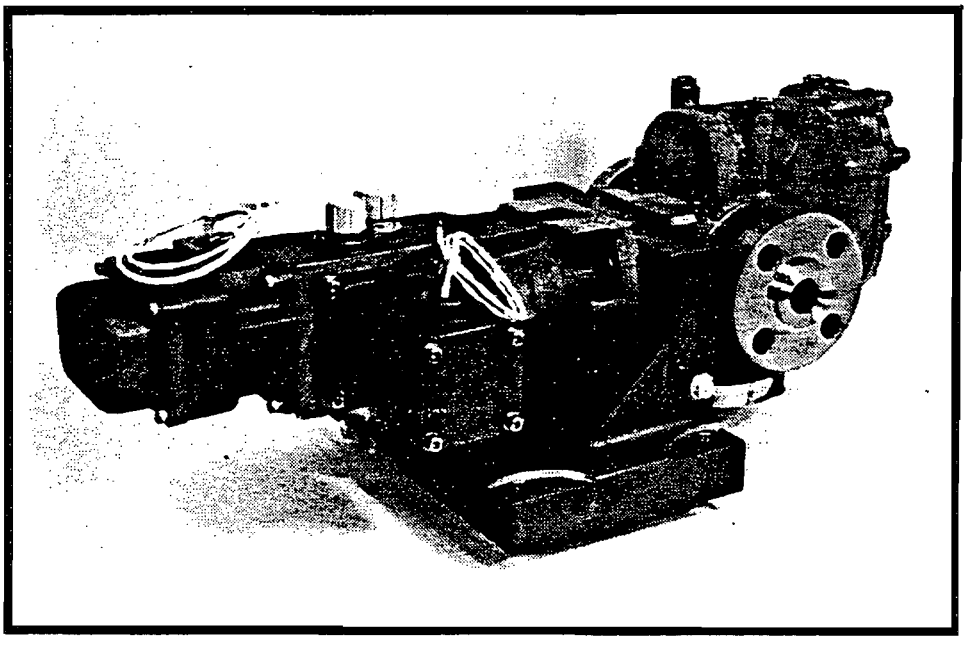
FT-5243	NOx Water Meter - Yokogawa Model YF102-ALSA-S3S3 1" Vortex Shedding Flow Meter, Range 3.3 to 82 GPM
FCV-5238	NOx Water Control Valve - Woodward 3151A/TM-40 1½" - 600# RF Flg. 316 SS Body; 316 SS Trim; Elect. Actuator, 4-20 mA; Range 0-65 GPM
FT-5246	Gas Meter - Yokogawa Model YF-108-AGSA-S3S3 3" Vortex Shedding Flow Meter, Range 29 to 730 M SCFH
FT-5245 FT-5247	Oil Flow Meters - Yokogawa Model YF-102-ALSA-S3S3 1" Vortex Shedding Flow Meter, Range 3.3 to 82 GPM
FCV-5201	Fuel Gas Control Valve - Woodward TM55-3103 Electro-Hydraulic Fuel Valve With Dual Coil Actuator, for Natural Gas Service; 2" - 600# RF FLG
FCV-5202	Fuel Oil Control Valve - Woodward TM55-1907 Electro-Hydraulic Fuel Valve With Dual Coil Actuator; 1" JIC (Oil-Tight) Connection

WOODWARD
®

3151A WATER VALVE/ TM-40LP ACTUATOR ASSEMBLY

FOR

GAS-TURBINE WATER INJECTION SYSTEM



WOODWARD GOVERNOR COMPANY

SECTION 1

GENERAL INFORMATION

Introduction

The 3151A Water Valve/TM-40LP Actuator assembly is manufactured by Woodward Governor Company, Engine and Turbine Controls Division, P.O. Box 1519, Fort Collins, Colorado, 80522. Phone (303) 482-5811.

The 3151A Water Valve/TM-40LP Actuator assembly meters water to gas-turbine combustors as part of a nitrous oxide (NOx) emission-reduction system.

Description

This section describes the 3151A Water Valve/TM-40LP Actuator. A schematic drawing, Figure 1-1, illustrates the working relationships of the various parts.

Water Valve

The 3151A Water Valve is intended for use with high-pressure centrifugal-type pumps and provides metered bypass flow for pump-stability and heat-balance considerations.

The water valve is primarily constructed of stainless steel. A replaceable, hardened, stainless-steel sleeve is located in the drain flange area of the valve housing, and protects the housing from cavitation damage. The sleeve can be rotated in one-quarter turn increments, or it can be replaced, to extend valve life when used in severe conditions.

Ceramic is used on metering valve and regulator valve parts to prevent galling and to resist erosion in an area subjected to high-velocity water streams.

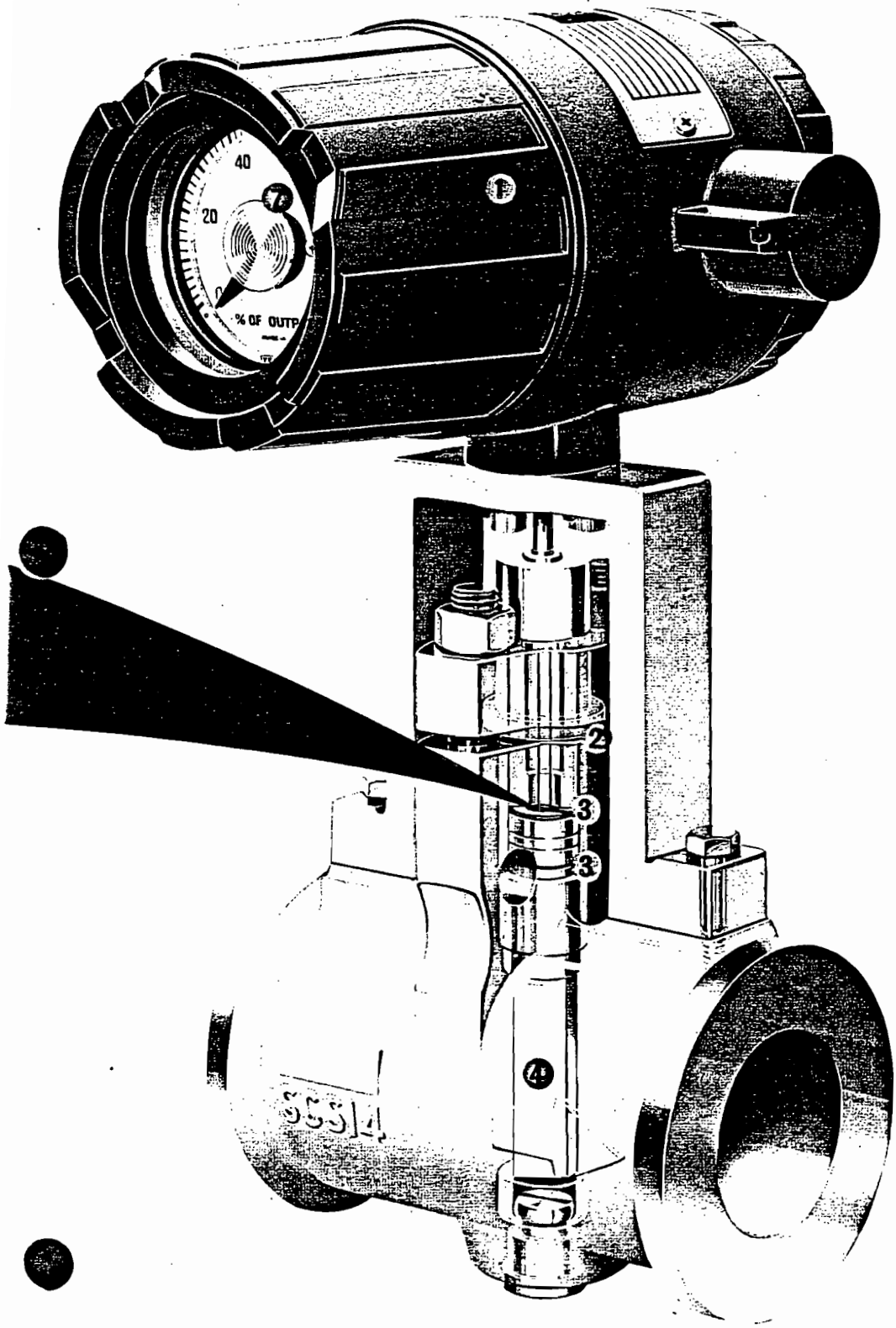
These design features make the 3151A Water Valve highly resistant to erosion, corrosion, and cavitation.

The Water Valve is designed to meter up to 45 gallons of water per minute with input water pressures from 350 psi to 1500 psi. The minimum flow is one gallon of water per minute.

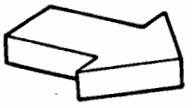
The degree-of-flow accuracy is either 5.0% of point or 0.5% of maximum flow--whichever value is greater.

Standard seal material allows operation with water temperatures up to 150 degrees F. Special seal material is available for operation with higher water temperatures.

No moving parts, no sensor ports exposed to process fluid.



1. Transmitter
2. Gasket
3. Sensing Element
4. Vortex Shedder
5. Electrode
6. Piezoelectric Element
7. Output Signal Indicator (Option)



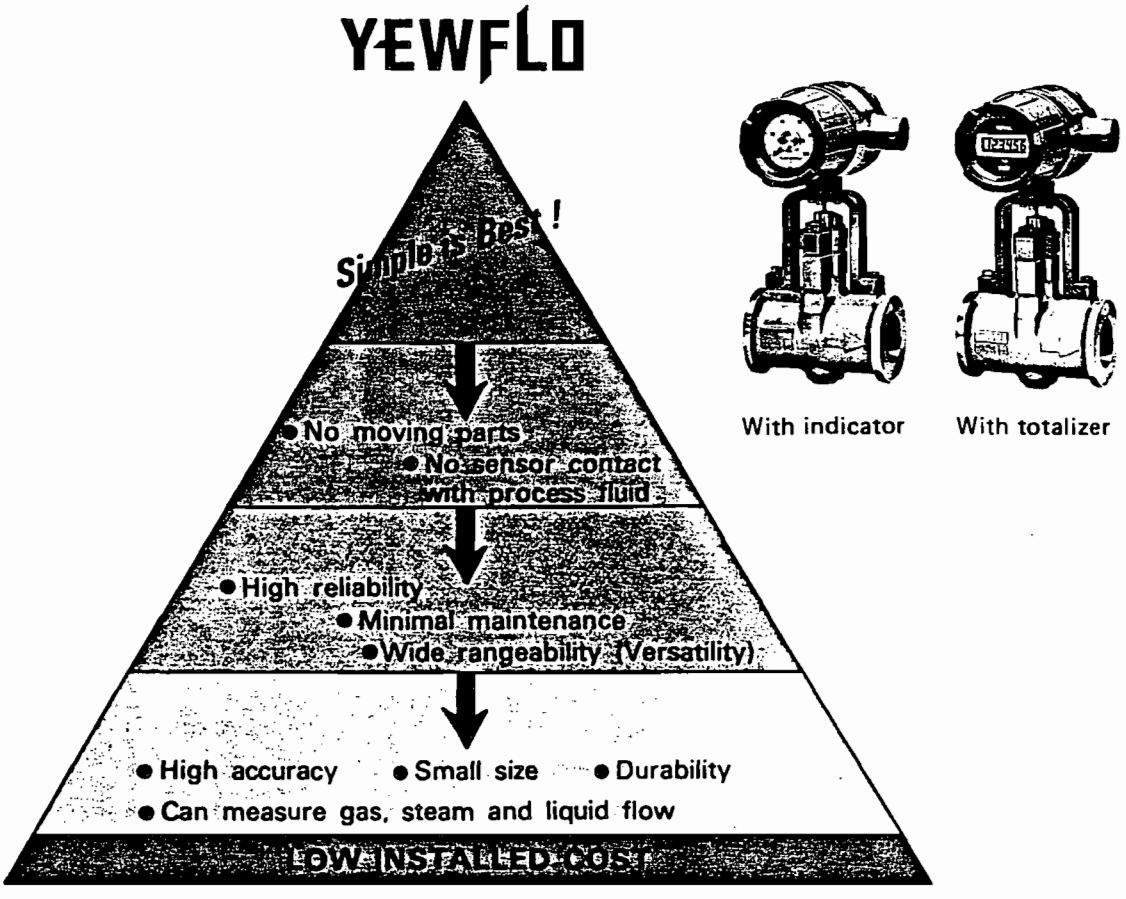
Flow

Brand-new from YOKOGAWA
YEWFLO—the flowmeter for the future.

Introduction:

In 1968 YOKOGAWA developed the first vortex shedding flowmeter in the world for measuring flarestack and flue gas flow rates.

Building on this, YOKOGAWA has developed a new generation of vortex type flowmeters — suitable for gas and steam as well as liquid flow measurement — and is marketing them under the name **YEWFLO**.



With indicator With totalizer

Features:

- **Simple construction, with no moving parts.**

Vortices stress the shedder body, which transmits stress to a piezoelectric sensor. The solid shedder body, which is in contact with the measurement fluid, is simple and strong, and has no moving parts. Further, there are no sensor ports exposed to process fluid.

As a result of these features, the flowmeter is exceptionally reliable and requires virtually no periodic maintenance.

- **Sensor and fluid are not in contact — vortex stress is transmitted via the shedder body — and the sensor is located outside the flow line.**
- **Low installed cost.**

The flowmeter offers wafer and flange type mounting in the process line. With the two-wire or pulse output type transmitter, no additional equipment, with the exception of a power supply, is required, and the all-inclusive installed cost is very competitive compared with other flowmeters.

- **Compact and lightweight, the flowmeter is easy to install.**
- **Wide rangeability — versatility: measures gas, steam and liquid flow.**

Because special materials are used, and the sensor is well isolated from the process fluid and located outside the flowline, the flowmeter can be used even under severe conditions — it will tolerate high or low temperatures and pressures, and can measure gas, steam and liquid flow. It has wide rangeability.

- **High accuracy.**

The flowmeter output is accurate and linear, and is unaffected by fluid temperature, pressure, density or viscosity. Its accuracy, repeatability, linearity and rangeability match the needs of control systems.

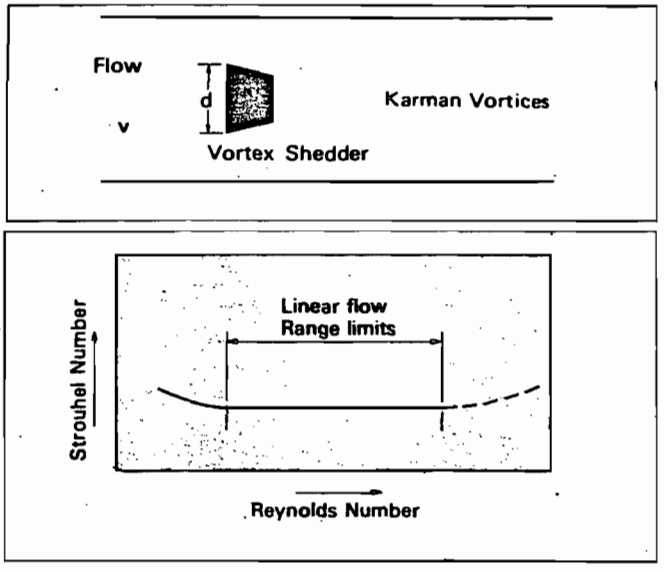
Presenting a new breakthrough in accuracy and dependability specially developed piezoelectric element senses vortex frequency.

Principle of vortex flowmeter operation:

When a fluid stream flows around a bluff body (vortex shedder), viscosity-related effect produce vortices downstream. The vortices are shed from one side of the shedder, and then the other side, in a regular train as shown in the figure.

The vortex shedding frequency (f), flow velocity (v), and shedder width (d) relate as follows:

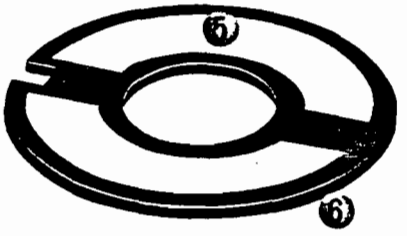
$$f = St \cdot v/d$$



The dimensionless constant St is called the "Strouhal number", and is a significant parameter in vortex flow measurement.

The figure shows a typical graph of Strouhal numbers vs. Reynolds numbers for a cylindrical vortex shedder. Within a wide range of Reynolds numbers, vortex shedding frequency is directly proportional to fluid velocity and is unaffected by changes in fluid density or viscosity. If the Strouhal number (St) for a given vortex shedder is known, flow rate can be measured by means of the vortex shedding frequency.

Simple is Best !

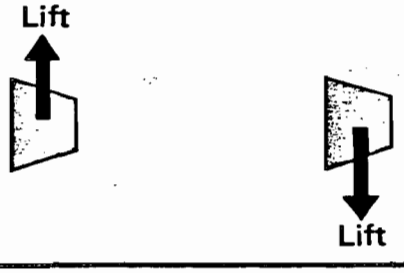


Vortex frequency sensing:

A piezoelectric sensor element is embedded inside the vortex shedder which is located outside the pipeline.

When vortices are shedding, the shedder is lift as shown in the figure below. The direction of the stress alternates at the vortex shedding frequency. The piezo element converts the stress into an electric pulse signal. Pipeline vibrations can be cancelled within a dual piezoelectric sensor.

The sensor is suitable for use over wide temperature range. It is also simple, robust, and maintainance-free – there are no moving parts, and no sensor ports exposed to process fluid.



Standard Specifications:

Fluid to be measured:	Liquid, Gas or Steam
Measurable flow rates:	Reynolds number from 5,000 to 7,000,000. The relationship between kinematic viscosity of specific weight and minimum flow rate is shown in Figures 2, and 3 respectively.
Accuracy:	Reynolds number ≧ 20,000 (40,000 for 6 inch and 8 inch meters). Liquid: ±0.8% of rate. Gas and Steam: ±1.5% of rate. For analog output, add ±0.1% of full scale to the above value.
Output signal:	
Analog output:	4 to 20 mA, 2 wire system
Pulse output:	Voltage pulses, 3 wire system
Power supply:	
Analog output:	12 to 45 VDC (CSA Explosionproof: 12 to 42V)
Pulse output:	12 to 30 VDC
Process temperature:	–40 to 300°C (–40 to 572°F) Refer to Figure 1 for intergral converter type. High process temperature version (–40 to 400°C or 752°F) available on request.
Maximum process pressure:	Flange rating.
Ambient temperature:	–40 to 80°C (–40 to 176°F)
With indicator:	–20 to 60°C (–4 to 140°F)
With totalizer:	–10 to 60°C (14 to 140°F)
Ambient humidity:	5 to 100% RH
Cable conduit connection:	½NPT Female .
Material:	
Case:	Aluminum alloy.
Body:	ASTM A296 Grade CF8M (AISI 316) stainless steel or ASTM A216 Grade WCC carbon steel.
Vortex shedder:	AISI 329 stainless steel (equivalent to or better than 316ss corrosion resistance)
Finish:	Darkgreen / baked polyurethane resin paint
Enclosure classification:	NEMA protection type 4 watertight and dust-tight.
Electrical classification:	Approved by FM. Explosionproof class I, Groups B,C & D, Division 1 & 2. Dustignitionproof class II, Groups E, F & G, Division 1 & 2. Class III, Division 1 & 2. Approved by CSA. Explosionproof class I, Groups C & D, Division 1 & 2. Dustignitionproof class II, Groups E, F & G, Division 1 & 2. Suitable for class III, Division 1 & 2.
Options:	Indicator; 0 to 100% uniform scale. Code: /TBL. Totalizer; Six-digit LCD display. Code: /TBT. Stainless steel tag number plate.; Code: /SCT

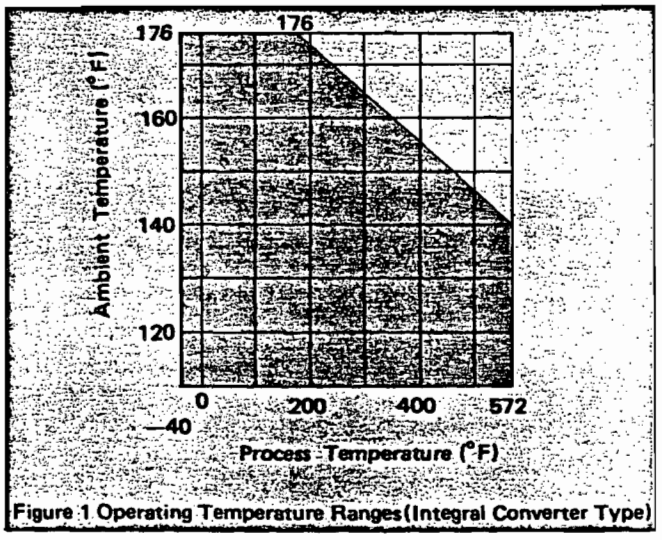


Figure 1 Operating Temperature Ranges(Integral Converter Type)

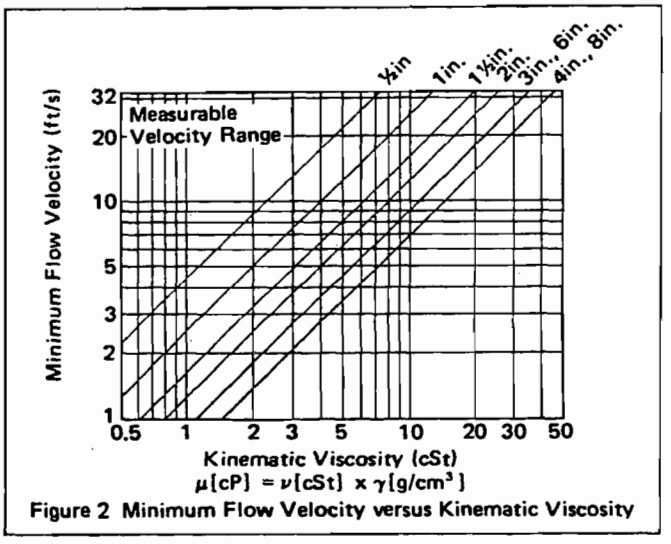


Figure 2 Minimum Flow Velocity versus Kinematic Viscosity

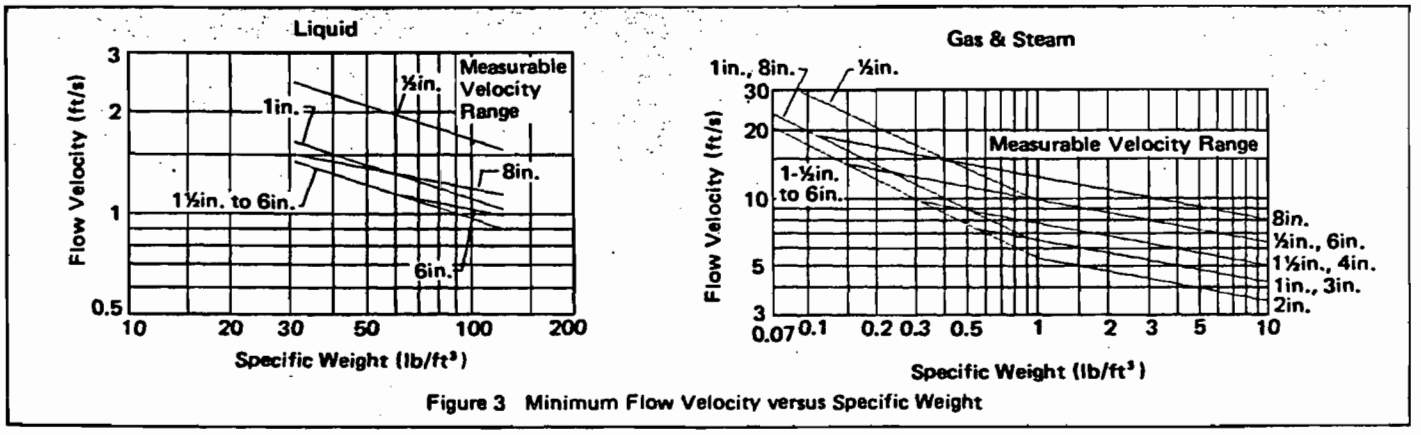


Figure 3 Minimum Flow Velocity versus Specific Weight

Minimum flow rate

The minimum flow rate measurable by the vortex flowmeter is determined by two factors:

(1) Kinematic viscosity.
The Strouhal number is constant with Reynolds numbers 20,000 or greater.
Kinematic viscosity, which affects Reynolds number, thus limits the minimum measurable flow rate, as in Figure 2.

(2) Specific weight
The specific weight of the fluid, which affects sensor sensitivity, also limits the minimum measurable flow rates, as shown in Figure 3.

The "minimum measurable flow rates" determined by (1) kinematic viscosity and (2) specific weight are read from the two graphs and the larger of the two limits taken as the minimum measurable flow rate.

Water Flow Rates (At standard conditions of 15°C (59°F).)

Nominal Size		Minimum and Maximum Measurable Fow Rates in GPM
mm	inch	
15	½	1.6 (3.7) and 26
25	1	(1) 3.3(7.3)* and 82 (2)
40	1½	6.9(11.3)* and 196
50	2	12(14.5)* and 324
80	3	22 and 627
100	4	39 and 1090
150	6	84 and 2390
200	8	171 and 4280

(1) Minimum flow rates are based on Figure 3.
(2) Maximum flow rates are based on 10 m/s (32 ft/s).

Flowmeter Nominal K-Factor

Nominal Size		Nominal K-Factor		
mm	inch	pulse/litre	pulse/ACF	pulse/U.S.gal
15	½	376	10645	1423
25	1	68.6	1940	259
40	1½	18.7	530	70.8
50	2	8.95	253	33.9
80	3	3.33	94.3	12.6
100	4	1.43	40.3	5.39
150	6	0.441	12.5	1.67
200	8	0.185	5.24	0.70

ACF: Actual cubic feet.

Air Flow Rates at Selected Process Pressures (At standard conditions of 15°C (59°F) and 1.0332 kg/cm² absolute (14.7 psia). SCFH: Standard cubic feet per hour.)

Nominal size		Flow Rate Limits	Minimum and Maximum Measurable Flow Rates in SCFH							
			0 psig (1) (0 kg/cm²)	50 psig (4.52 kg/cm²)	100 psig (7.03 kg/cm²)	150 psig (10.5 kg/cm²)	200 psig (14.1 kg/cm²)	300 psig (21.1 kg/cm²)	400 psig (28.1 kg/cm²)	500 psig (35.2 kg/cm²)
mm	inch									
15	½	min.(2)	210	440	585	738	913	1240	1550	1840
		max.(3)	1670	7480	13200	19000	24800	36300	47900	59500
25	1	min.	467(754)*	979	1310	1570	1900	2580	3220	3820
		max.	5290	23200	41200	59200	77200	113000	149000	185000
40	1½	min.	954(1170)*	2070	3260	4360	5380	7310	9110	10900
		max.	12500	55300	98000	140000	183000	269000	354000	407000
50	2	min.	1580	3320	4420	5290	6180	8380	10500	12500
		max.	20700	91000	162000	232000	303000	445000	524000	524000
80	3	min.	3050	6400	8760	11800	14500	19700	24600	29200
		max.	40600	178000	317000	455000	593000	731000	731000	731000
100	4	min.	5330	11600	18200	24300	30100	40800	50900	60500
		max.	69900	307000	545000	783000	963000	963000	963000	963000
150	6	min.	11700	31900	50500	67400	83300	114000	141000	168000
		max.	154000	677000	1200000	1420000	1420000	1420000	1420000	1420000
200	8	min.	24400	45800	72300	96600	120000	163000	203000	241000
		max.	274000	1210000	1900000	1900000	1900000	1900000	1900000	1900000

(1) Pressure listed is at process temperature of 15°C (59°F).
(2) Minimum values are based on Figure 3.
(3) Maximum flow rates are based on the lower of 80 m/s (262 ft/s) or Reynolds number limit (7,000,000), whichever is lower.

Saturated Steam Flow Rates at Selected Process Pressures

Nominal size		Flow Rate Limits	Minimum and Maximum Measurable Flow Rates in lb/h										
			15 psig (1.05 kg/cm²)	25 psig (1.76 kg/cm²)	50 psig (3.52 kg/cm²)	75 psig (5.27 kg/cm²)	100 psig (8.03 kg/cm²)	125 psig (8.79 kg/cm²)	150 psig (10.55 kg/cm²)	175 psig (12.30 kg/cm²)	200 psig (14.06 kg/cm²)	250 psig (17.58 kg/cm²)	300 psig (21.09 kg/cm²)
mm	inch												
15	½	min.(1)	16.0	18.3	24.2	26.9	31.9	33.1	36.2	38.4	40.7	45.1	49.0
		max.(2)	122	160	279	345	487	526	627	705	793	974	1150
25	1	min.	34.6(40.2)*	39.7(41.3)*	49.9	58.2	65.3	71.8	77.8	83.2	88.2	97.7	107
		max.	379	499	790	1070	1510	1630	1910	2190	2460	3020	3580
40	1½	min.	70.8	82.0	102	119	134	148	168	187	205	242	277
		max.	906	1190	1880	2560	3610	3900	4570	5230	5880	7220	8560
50	2	min.	118	135	169	198	222	244	264	282	299	331	360
		max.	1490	1970	3120	4240	5980	6450	7570	8650	9730	11900	14100
80	3	min.	227	260	327	381	427	470	509	544	577	649	743
		max.	2890	3810	6020	8190	11500	12400	14600	16700	18800	23000	27300
100	4	min.	396	453	570	664	745	824	935	1050	1150	1350	1550
		max.	5050	6650	10500	14200	20100	21700	25500	29100	32800	40200	47700
150	6	min.	866	991	1280	1640	1960	2290	2600	2890	3180	3740	4280
		max.	11000	14500	22900	31200	44000	47500	55700	63700	71700	88000	101000
200	8	min.	1810	2080	3130	3710	4880	5190	5970	6560	7210	8490	9720
		max.	19800	26000	41200	56000	79000	85300	100000	114000	128000	132000	135000

(1) Minimum values are based on Figure 3.
(2) Maximum flow rates are based on 80 m/s (262 ft/s) or Reynolds number limit (7,000,000), whichever is lower.

*The values in parentheses show the minimum linear flow rate (Re = 20,000) when they are higher than the minimum measurable flow rate.

YF100 Vortex Flowmeter

Model	Suffix Code	Description
YF101	. . . . .	Size 15 mm (½ inch)
YF102	. . . . .	Size 25 mm (1 inch)
YF104	. . . . .	Size 40 mm (1½ inch)
YF105	. . . . .	Size 50 mm (2 inch)
YF108	. . . . .	Size 80 mm (3 inch)
YF110	. . . . .	Size 100 mm (4 inch)
YF115	. . . . .	Size 150 mm (6 inch)
YF120	. . . . .	Size 200 mm (8 inch)
Converter	–AL	Integral type (Liquid)
	–AG	Integral type (Gas or Steam)
	–NN	Remote converter type
Output Signal	S	4 to 20mA DC
	P	Pulse Output
	N	Remote converter type
Process connection	A1	ANSI Class 150 flange type
	A2	ANSI Class 300 flange type
	A3	ANSI Class 600 flange type (Not applicable for 200 mm (8 inch))
	B1	ANSI Class 150 wafer type
	B2	ANSI Class 300 wafer type
	B3	ANSI Class 600 wafer type
Electrical connection	A	ANSI ½NPT Female
Vortex shedder Material	–S3 . .	AISI 316 Stainless Steel
Body Material	S3 . . .	AISI 316 Stainless Steel
	C6 . .	Carbon Steel
Style Code	*C .	Style C
Electrical Classification		/FMF ... FM Explosionproof /CSF ... CSA Explosionproof
Options		/□/□

YFA11 Vortex Flow Converter (Remote Converter)

Model	Suffix code	Description
YFA11	. . . . .	Vortex Flow Converter
Fluid	–L	Liquid
	–G	Gas or Steam
Output Signal	S	4 to 20 mA DC
	P	Pulse Output
Mounting	P	2 inch Pipe Mounting
Electrical connection	A	ANSI ½ NPT Female
Flowmeter Nominal Size	–01 . . .	15 mm (½ inch)
	–02 . . .	25 mm (1 inch)
	–04 . . .	40 mm (1½ inch)
	–05 . . .	50 mm (2 inch)
	–08 . . .	80 mm (3 inch)
	–10 . . .	100 mm (4 inch)
	–15 . . .	150 mm (6 inch)
	–20 . . .	200 mm (8 inch)
Style Code	*C . . .	Style C
Electrical Classification		/FMF ... FM Explosionproof /CSF ... CSA Explosionproof
Options		/□/□

Flowmeter Selection Guide

Nominal Size	mm	15	25	40	50	80	100	150	200
	inch	½	1	1½	2	3	4	6	8
Process Connection	Wafer	YES	YES	YES	YES	YES	YES	NO	NO
	Flange	NO	NO	NO	YES	YES	YES	YES	YES
Body Material	Stainless Steel	YES	YES	YES	YES	YES	YES	YES	YES
	Carbon Steel	NO	NO	NO	NO	NO	NO	YES	YES

ORDERING INSTRUCTIONS

1. Model, suffix and optional codes.
2. Flow Conditions.
   a. Fluid name, or Gas composition.
   b. Maximum scale reading, normal flow and minimum flow rates.
   c. Maximum and normal operating temperatures.
   d. Maximum and normal operating pressures.
   e. Specific weight at flowing conditions.
   f. Viscosity at flowing conditions.
   g. Relative humidity at flowing conditions (wet gas only).

YOKOGAWA
Yokogawa Electric Corporation

YOKOGAWA CORPORATION OF AMERICA (YCA)
2 Dart Road, Shenandoah, Ga. 30265, U.S.A.
Tel.: 404-253-7000
Telex: 230810-766-4760 YCA SHEN

SALES HEADQUARTERS:
200 West Park Drive, Suite 251, Peachtree City, Ga. 30269 U.S.A.
Tel.: 404-487-1471

HOUSTON OFFICE:
1800 West Loop South, Suite 320, Houston, Texas, 77027, U.S.A.
Tel.: 713-621-9075

NEW JERSEY OFFICE:
Meadows Office Complex II 201 Route 17 North Rutherford,
New Jersey 07070, U.S.A.
Tel.: 201-933-9888

Represented by:

December 10, 1986/1-18(D) Printed in Japan

II

1.0 GENERAL DESCRIPTION

The ECS-1200 Distributed Control System has been applied in a wide range of applications such as electric generating plants steel, cement, chemical, petrochemical and refining facilities.

The ECS-1200 controller has the ability to perform both interlock-sequential and regulatory continuous control. The sequential and continuous control features are fully integrated so that interaction between them is transparent. Two processors are used within the ECS-1200 controller. Sequential control is assigned to one processor and continuous control is assigned to the other processor.

The processors used for the control are Intel 8086 with 8087 floating point coprocessors. This is true of both interlock-sequential and continuous control. Both processors share the resources of the controller bus and have access to the I/O and calculated variables. Configuration tables for continuous control and interlock programs are stored in CMOS memory with triple redundant battery backup. This backup provides a minimum of 400 hours retention of these configuration tables.

ECS-1200 controllers are provided with a set of systems level programs that define the operating environments for specific control applications. These include programs that define the data areas in the controller memory, the I/O scanning routines of the input/output interface (IOIF), and the communications instructions between multiple controllers in a network.

High-level language interpreters and bus protocol instructions are stored in EPROM for security and permanence. Regulatory algebraic blocks are also defined in this area of memory.

Tables for storage of the distributed control system database are defined and built during system configuration. The size and nature of these tables depends on the number and type of I/O at each controller.

II

REEDY CREEK UTILITIES CO., INC. PROJECT
Forney Engineering Company Proposal No. S7-0168
December 5, 1986

SECTION 2

PROPOSED SYSTEM AND SERVICES

I. PROCESS CONTROL SUBSYSTEM (HRSG, Duct Burner, Gas Turbine, Steam Turbine)

This subsystem provides sequential and regulatory control of the plant through the use of Forney provided I/O equipment. One (1) redundant process controller is proposed to handle all monitoring, control loops, and sequencing. The ECS-1200 controller is provided with 768 Kbytes of battery backed CMOS RAM and includes processing resources to accomodate the following I/O requirements:

1280 DI points
640 DO points
432 AI points
144 AO points

Although your requirements do not presently require the total capacity available, your future requirements may include expansion and the ECS-1200 will be capable of expansion to meet those needs.

At present we are providing I/O cards for the following requirements (including 20% spare cards):

280 AI Points
64 AO Points
136 DI Points
72 DO Points

The controller's contain separate sequential and regulatory CPUs (central processing units) which plug into a multibus cage and access a shared database.

Controller redundancy is accomplished by a complete duplicate of the CPUs, power supply, multibus card cage, application logics, etc. Automatic bumpless failover from the on-line primary controller to the stand-by secondary is initiated when the on-line controller fails sanity checking. This arrangment provides a complete one for one hardware and software backup for all control loops.

Redundant communication, at 1 megabaud, with the operator console, gateway controller and HIFR is provided by the use of two communication "C" links. Both "C" links are active at all times and failover from one link to the other is automatic and does not require operator activity.

I/O link connections to the redundant process controller will be through automatic failover switches that will ensure non-interrupted communication during control transfer from the primary to the secondary controller. The failover switches will be controlled by the RTXs (real time executor), located in each controller. The RTX provides watchdog time checks and sanity checking of the controllers. During automatic failover, the operators will be alerted through the normal alarm sequence.

All I/O cards are individually fused and can be removed or inserted while under power supply.

II. OPERATOR CONSOLE SUBSYSTEM

This subsystem includes two operator consoles; one in the main control room and one in the local control room, and a redundant ECS-1200 control remote connected to the other subsystems by the "C" link. This control remote stores all dynamic information related to graphic displays and accesses all required data from the other system devices.

The main control room console consists of a 96 inch wide console with housing for three CRTs, the local control room console consists of a 96 inch wide console with housing for one CRT, and desk top space for two more.

The operator CRTs use Forney's patented touch screen operation to provide effective and efficient operator-to-process interface. Each CRT with touch screen and auxiliary keyboard is driven by a separate video driver. All custom process graphics are stored in the memory of the drivers so that each screen can be designed to access all system graphics or only those related to a particular grouping. This capability allows each CRT to act independently as dedicated devices or to act independently as universal devices which can serve as backup units to each other. An alarm printer, to record all alarms in the system, and a color video copier are also provided for each control room.

III. ENGINEER'S CONSOLE SUBSYSTEM

On-line programming modifications can be accomplished using Forney's standard personal programming unit, which is a modified personal computer. The unit operates in MDOS and is supplied with proprietary Forney software to allow access to all system parameters. The programming console connects to the system processor in the operator console controller.

IV. HIFR SUBSYSTEM

This subsystem provides the interface between the ECS-1200 system and

the VECTOR-1200 computer. The HIFR is a nonredundant intelligent remote.

V. COMPUTER SUBSYSTEM

This subsystem includes a MicroVAX II computer, IBM PC-AT terminal, fixed hard disk, removable hard disk, two report printers, system console printer and a tape drive. It will perform the data acquisition/recording, performance calculations and mass data storage.

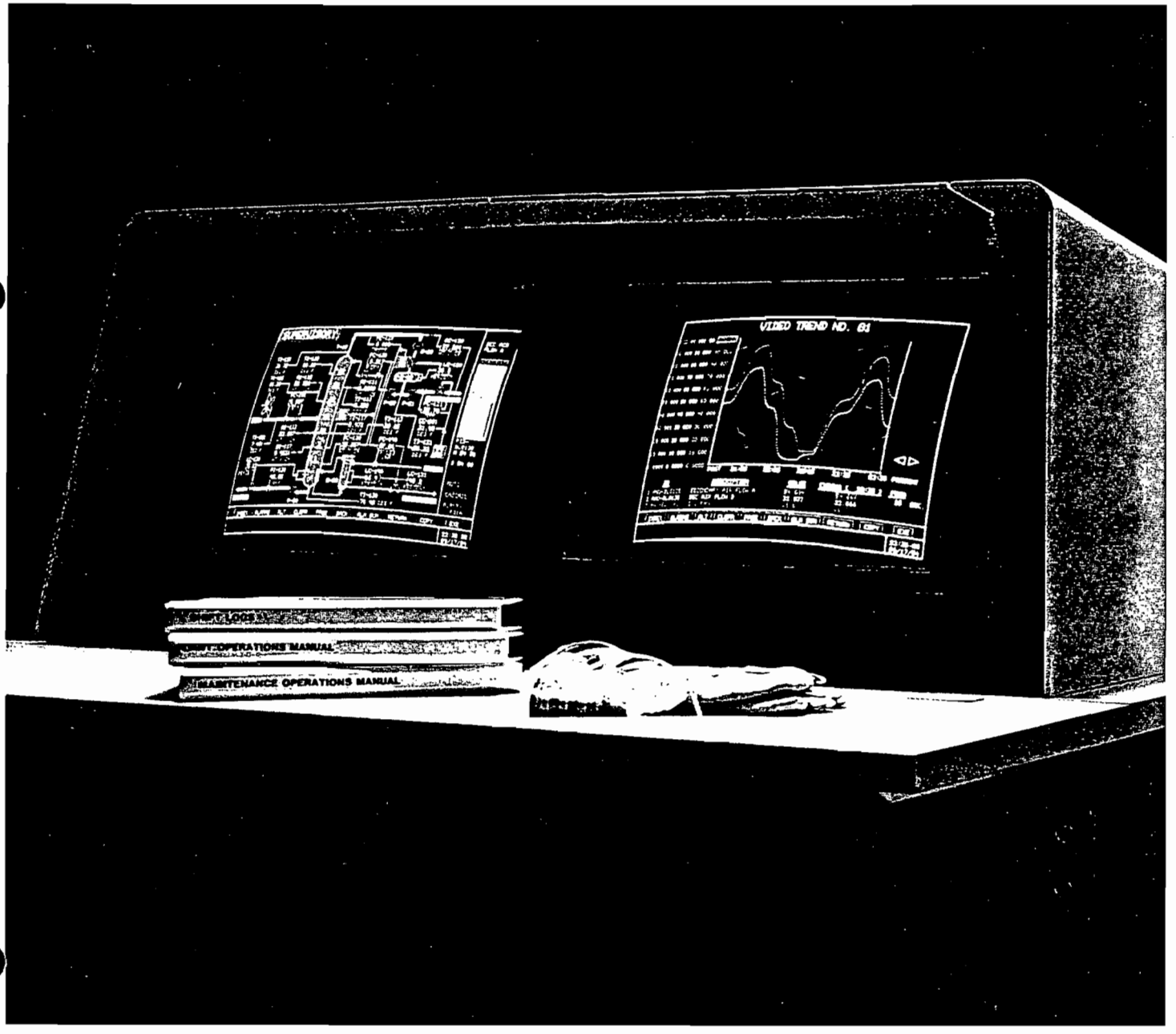
VI. GATEWAY SUBYSTEM

This subsystem contains the gateways to the analog transient recorder, MOD 30 link, SCADA system and CEMS.

II

FORNEY®
MODEL ECS-1200

A control system incorporating powerful fully interactive sequence and regulatory languages

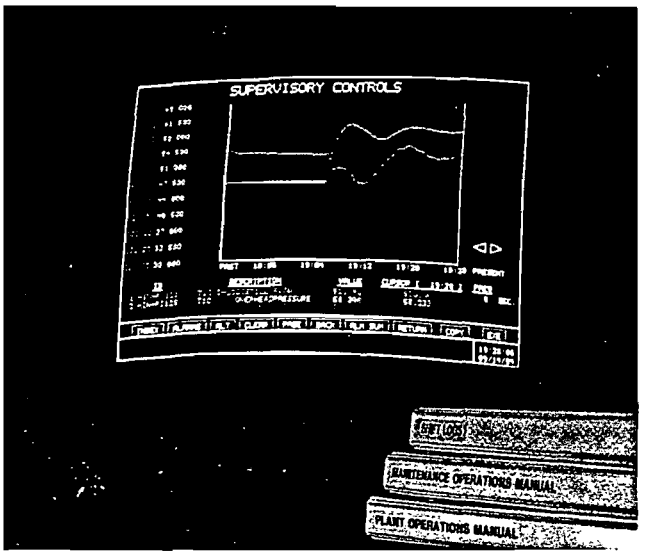


over 30 years of depth and experience in control systems

Introduction

The Model ECS-1200 is a microprocessor based programmable control system. It combines proven, state-of-the-art hardware and innovative software to provide a *powerful, flexible* and *reliable* industrial grade control system.

Knowledge of computer languages such as Fortran or Assembler is not necessary, since the ECS-1200 is designed to execute sequential and regulatory control by the use of the simple, user-oriented programming languages, CQ-III and CQ-IV, developed by Forney Engineering.



Model ECS-1200 Supervisory Control

System Architecture

The ECS-1200 control system utilizes a family of modular hardware and software packages designed with reliability as a primary objective. ECS-1200's architecture can accommodate a wide variety of functional I/Os, operator interfaces and system configurations.

An ECS-1200 control system may consist of one or a network of intelligent multiplexing units called remotes. A remote may simply be a wire replacer or may contain logic controllers. An installation may have a totally centralized system or a distributed system where each remote stands alone. The versatility of the ECS-1200 concept provides the client with unlimited choices in system design from the most basic requirements to the most complex. This can be accomplished by providing the system with configurations of a centralized controller, distributed controllers or a combination of both.

Each ECS-1200 remote contains a system bus through which all data transactions are made. The system bus is interfaced to the I/O bus by means of an interface module. Star and Multidrop configurations or a combination of the two is possible.

Full automatic bumpless redundancy is available permitting failover to a standby controller in the event of primary controller failure.

After the ECS-1200 has been properly configured using one or more remotes, the system is assembled using standard modular building blocks as shown in Figure 1.

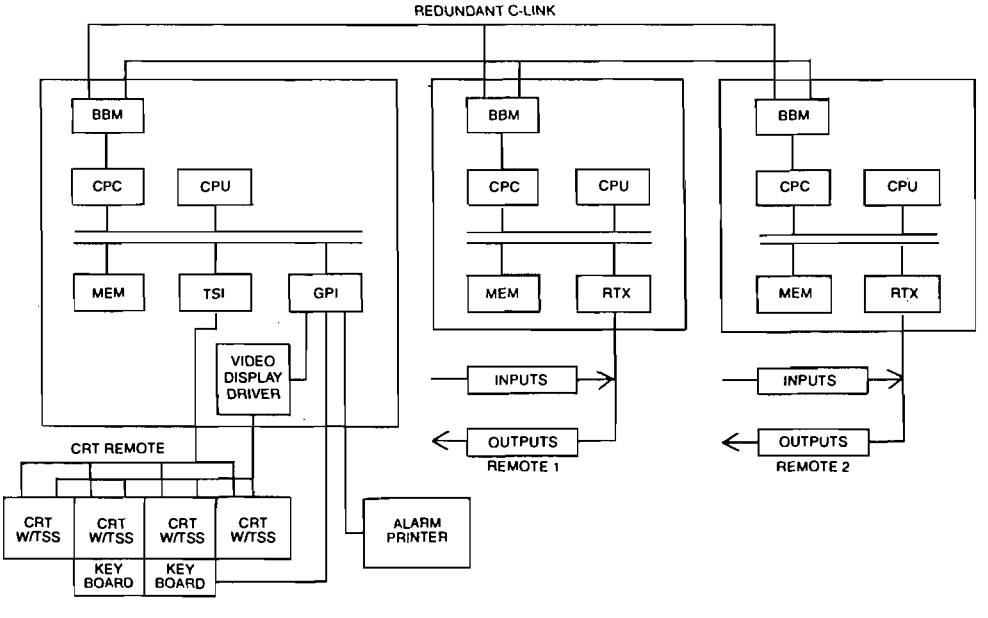
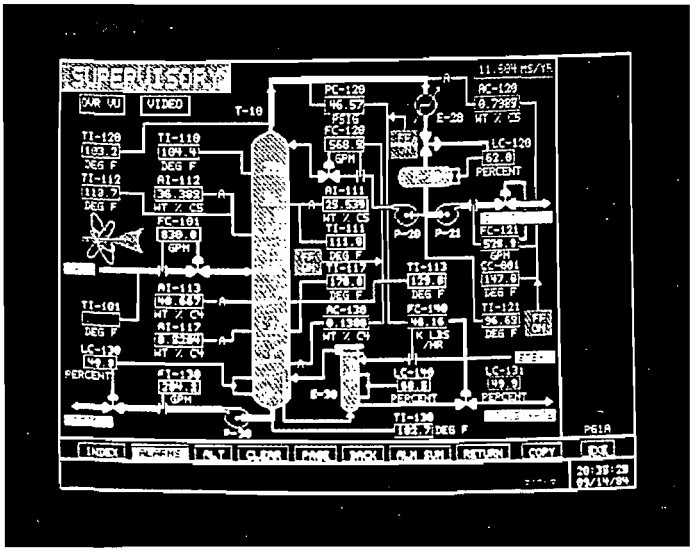


Figure 1. Typical ECS-1200 Distributed Control System

Major System Features

Operator Station

- CRT stations using 19" dynamic displays with touch-sensitive screens eliminate the "keyhole" effect.
- Interface to conventional control panels available by means of prefabricated plug-in cables.
- "Graphics-Build" package allows on-line modification of existing displays or creation of new ones.
- Overview, group, loop, trend, alarm and diagnostic displays, as well as custom graphics are standard.



Process Graphics

Communication Security

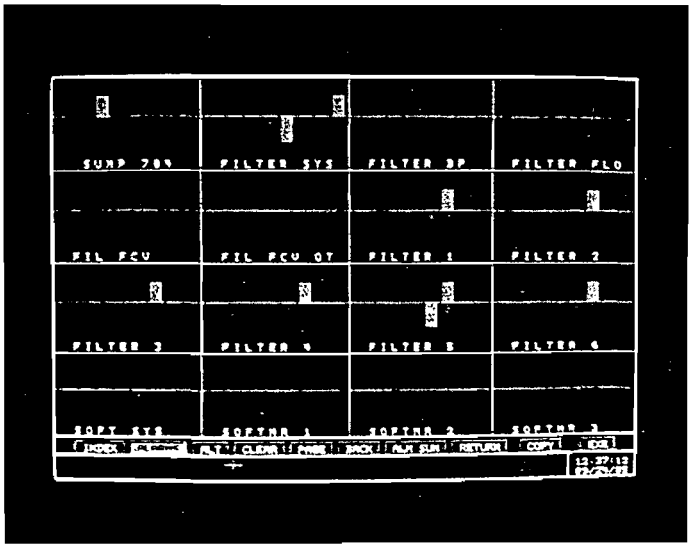
- Continuously checked redundant communication channels (C-Link) with automatic failover to alternate link without system degradation or loss of data.
- "Master for the Moment" concept eliminates possible central point of failures.
- C-Link operates at speeds up to 1 megabaud.
- Double block transmission plus CRC-16 error checking.
- Data transparency.
- Valid for Star or Multidrop loop systems.
- Positive acknowledgement of data and control.

System Redundancy

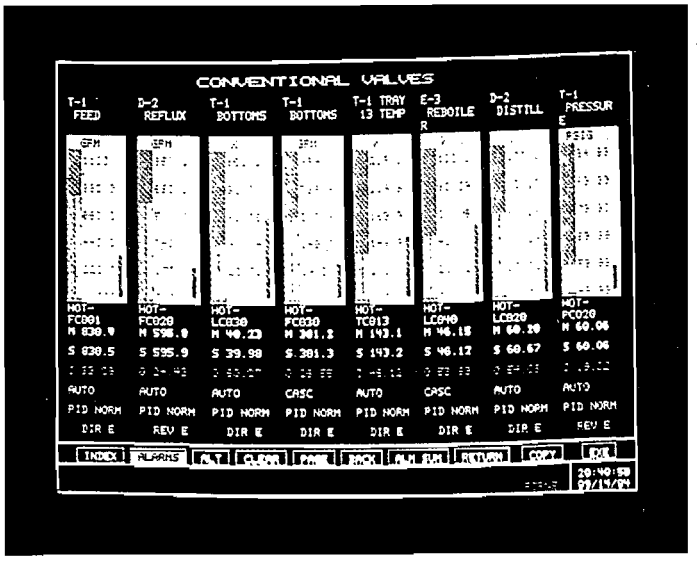
- Full automatic bumpless controller switchover on failure of primary controller.
- Redundant communications link hardware.
- Input/output power supply system optionally available.

System Control Security

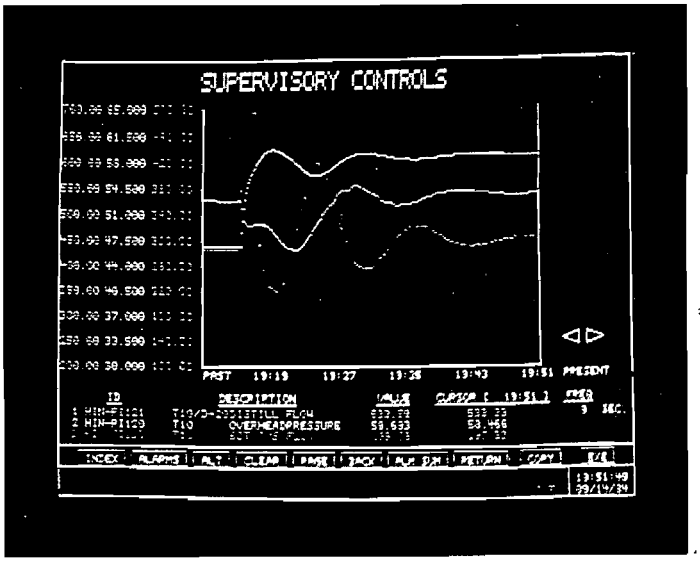
- Universal propagation of questionable process variable status.
- Universal propagation of antiwind-up code.
- Universal propogation of algorithm initialization.
- Individual output clamping capability.



Process Overview



Group Display



Trend Display

Input/Output Integrity

- Full complement of digital and analog cards is available.
- Digital cards are designed to provide 2500 volts of channel-to-channel and channel-to-ground isolation.
- Analog cards are designed to withstand up to 1500 volts of isolation.

Closed Loop Supervisory/DDC Controls

- Full automatic redundancy eliminates "graceful-degradation" problem.
- Interface with the process through existing distributed systems and/or ECS-1200's RTX.
- Touch screen process interface eliminates "keyhole" effect.
- Advanced control techniques such as:
  Closed loop analyzer controls
  Feedforward
  Decouplers
  Minimizers and maximizers
  Constraint controllers

Host Computer Independence

- The presence of a host computer is *not* required to achieve any of the functions described above.

Scan and Execution Speed

- Adjustable in increments of 1/10 of a second.

Applications Programming

The ECS-1200 provides two powerful control languages, one for sequential control, CQ-III, and one for regulatory control, CQ-IV, which run at the same level of hardware. These languages have a number of complementary features that allow for complex, coordinated batch structures and the implementation of sophisticated control concepts such as cascading, decoupling, feed forward, constraint control, etc.

The sequential language is also capable of performing addition, subtraction, multiplication and division operations on floating-point data, independently of the regulatory program. The block-type regulatory algorithms supplied can be linked in any order desired. These algorithms operate at the same level of hardware as the sequential program and include features that allow the sequential and regulatory programs to interact. These features include the ability of the sequential program to deactivate one regulatory strategy and activate another, to select an alternate predetermined set of tuning constants for a PID block and to pass counter and timer values to and from the regulatory strategies.

The PID function provides options for non-linear variation of gain with increasing error and external adjustment of gain. The sequential program has the ability to test and acknowledge the data output of each regulatory block for information about the quality or status of that data, such as whether the instrument is faulty, whether that control block is active, what control mode is selected and a number of other conditions. For the applications engineer, this opens up the arena of self-diagnosing control programs.

With the degree of flexibility shown above and a full complement of potent state-of-the-art algorithms, implementation of advanced control techniques is only limited by the experience and creativity of the control engineer.

Closed Loop Supervisory Control Techniques can be implemented either through your existing distributed control system (the ECS-1200 acts as host), directly interfacing with your process or a combination of both. The immediate results can be measured by increased profits resulting from better hands-off control even when process upsets occur.

Some of the typical applications where the above can be experienced are:

- Heaters:
  Capacity increase in the order of **10%**
  Energy conservation in the order of **3%**
- Compressors:
  Capacity increase in the order of **10%**
  Energy conservation in the order of **10%**
- Columns:
  Capacity increase in the order of **10%**
  Yield improvement in the order of **2%**
  Energy conservation in the order of **10%**.

If we use as a specific example an application where Closed Loop Supervisory Control is used in conjunction with the ECS-1200 and compare it to the results obtained through conventional control using other distributed control systems, it is possible to understand how quickly profits may be increased if such an application is implemented.

VECTOR, from Control Applications, establishes a new level of software performance. The culmination of the experience and knowledge acquired in the development of over 100 software systems, VECTOR is the first to bring the state-of-the-art to a product that meets today's needs. VECTOR was designed to dramatically increase the amount of useful information and capabilities available, increasing the scope of operator control and adding to productivity. VECTOR's unmatched range of capabilities results from the system's unique combination of Supervisory Control and Data Acquisition (SCADA) and Information Management functions in a single fully integrated package. Unlike many other products available, VECTOR is the only system to combine these functions without compromising real-time performance. By linking two key functions in a single system, VECTOR effectively bridges the gap that has existed among operations, engineering, management, and data processing.

With VECTOR, all company departments can have a total range of Information Management capabilities at their disposal for such functions as report writing, graphic generation, and data retrieval, while data processing has access to real-time data for a "right now" orientation that was heretofore unavailable from a single system. VECTOR's capabilities are further enhanced by its compatibility with DEC VAX software products, plus it is designed to make the most of the powerful 32-bit VAX architecture. VECTOR's DEC VAX compatibility ensures its continued use years after many other systems become obsolete.

VECTOR is truly an easy-to-use system. Its "fill-in-the-blanks" mode with on-line help not only simplifies operation, it also makes addition/deletion functions a do-it-yourself operation. A fourth generation system, VECTOR allows the operator to tell the computer "what-to-do" without having to give instructions as to "how-to-do-it". VECTOR's overall simplicity of operation allows it to be up and running almost immediately upon delivery. Custom programming features can be added simultaneous to on-going operation in a safe and efficient manner.

Integrated Information Management

The VECTOR databases are compatible with DEC's information architecture allowing for full and direct use of any DEC Information Management package including: Datatrieve, Common Data Dictionary, and Terminal Data Management System. VECTOR automatically accesses the appropriate information architecture facility to determine how to meet user requests for information, making ease of operation a key feature. Additionally, all users can access any data in the VECTOR System so that real-time data can be used with historical information in report formulation. VECTOR's Information Management features include the capability to:

- Write reports using real-time input
- Present data in graphic as well as tabular formats
- Build operator entry and data presentation forms keyed to VECTOR data
- Fulfill user requests for information through automatic access of the appropriate part of the system
- Distribute data access via DECnet as well as other networking facilities
- Sort and manipulate information by simple English commands

Supervisory Control and Data Acquisition (SCADA)

With over 100 systems delivered, Control Applications has distinguished itself by producing some of the most highly sophisticated SCADA programs available. The experience and knowledge derived from the building of each of these systems is incorporated in the design of VECTOR making it the most complete and versatile SCADA system available. Key VECTOR SCADA functions include the capability to:

- Collect analog and digital data from field devices and process the acquired raw data into useful information
- Allow the addition or deletion of data points and color graphics while operating the system
- Deliver meaningful color graphics at both local and remote consoles
- Generate high resolution, full graphics with smooth continuous lines for realistic pictorials
- Store data and retrieve it in the form of trends, reports, or for use in application programs
- Set up a multi-level user access system to prevent unauthorized persons from altering the system or accessing privileged information
- Monitor data points on a continuous basis and annunciate any deviations from user established limits
- Initiate and monitor setpoint and discrete control messages with field devices
- Maintain security checks on communications to prevent faulty transmissions from affecting the information
- Employ multiple computers for high availability applications and distributed processing

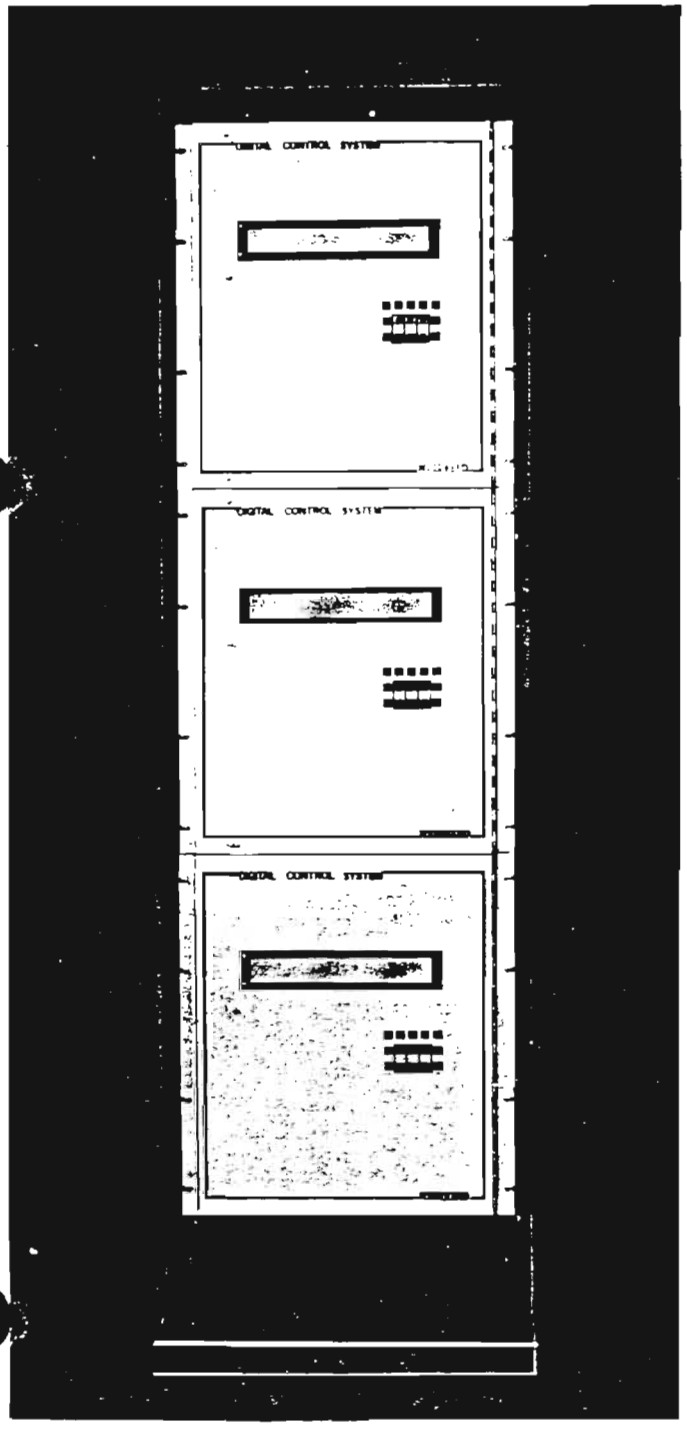
Combining SCADA and Information Management Capabilities

The increased accuracy and capabilities presented by the combination of SCADA and Information Management functions are key features of the system. By employing a VECTOR System, accounting or inventory control is now capable of accessing, in real-time, the exact status of any manufacturing or process operation. Decisions can now be based on the most current information. Manufacturing, at the same time, is able to professionally produce accurate reports using Information Management tools that were, to date, limited to a few people within the organization. In addition, VECTOR can serve to increase programmer productivity. The powerful tools available to the programmer using VECTOR enable him to concentrate on desired results and not waste time and effort with simple operating functions.

Vector is the first and only system to link the SCADA and Information Management functions of your company in a convenient stand alone product. The wide range of capabilities afforded by VECTOR and its ease of operation ensure that your organization will benefit through better communications, increased cooperation, and higher productivity.

WOODWARD®

FAULT TOLERANT 503 DIGITAL CONTROL SYSTEM



APPLICATIONS

The 503 DCS was designed for use in systems where shutdown costs are exceedingly high. These systems are typically found in (but not limited to) continuous processing operations.

The 503 DCS is a true fault-tolerant system; it must not be confused with dual redundant systems that often are erroneously referred to as fault-tolerant.

Like any true fault-tolerant system, Woodward's 503 DCS uses three computers to simultaneously read and compare all control functions.

Should one computer fail, the remaining two computers will provide continuous process control.

Since the 503 DCS mathematically approaches 100 percent availablity, the user is assured of extremely low risks of system downtime due to control failure.

The 503 DCS is designed for use in new systems, and is easily adaptable to existing systems.

It has a full range of engine and turbine fuel-control functions; it is capable of performing sequencing functions.

RELIABILITY

The 503 DCS consists of three computer systems. The failure of any one of the three systems will not cause a control system shutdown.

NEW DIGITAL CONTROL OFFERS THE TRIPLEX ADVANTAGE

Woodward Governor Company has designed and is manufacturing a true fault-tolerant control for prime mover applications

Fault-tolerant computers came of age when the United States began space exploration. The National Aeronautics and Space Administration (NASA) required computer-based control systems that were highly reliable and always available. These systems had to remain operational in event of signal or processor faults. Availability was necessary because once a mission was in progress, there was little or no opportunity to repair faults.

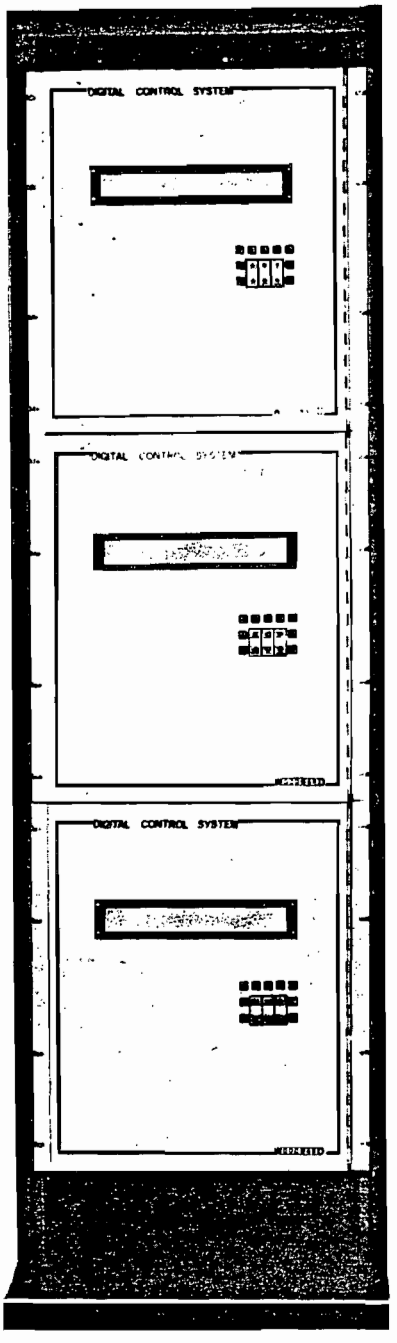
Woodward Governor Company, the world's oldest and largest designer and builder of prime mover controls exclusively, realized that an engine and turbine control able to provide features patterned after NASA's control concept would benefit many users of prime mover controls—among these were the metal, chemical, and pulp industries. Therefore, engineers at Woodward's Engine and Turbine Controls Division in Fort Collins, Colorado, undertook a study of space-age control systems. Their goal was to determine which control system would best fulfill the needs of the prime mover industry.

Fault Tolerance—What Is It?

First, Woodward engineers defined the concept of fault tolerance. They specified that a Woodward fault-tolerant system must be capable of tolerating any single-point fault and continue reliable operation in the presence of the fault. Also, the system must have the ability to detect and announce the device or component fault, to allow easy, rapid correction of the fault, and to return the control to fault-tolerant status without interrupting diesel or turbine operation.

High Availability

Woodward's team identified two major systems—a duplex (parallel or backup) system and a triplex (voting) system—for investigation. Each system presents varying degrees of availability.



85500-A-56

Woodward's 503 Digital Control System incorporates the triplex fault-tolerant design.

A system's degree of availability is dependent on several factors. Woodward's team determined that a truly reliable fault-tolerant control must have the ability to:

- Tolerate any single-point fault;
- Handle simplex, duplex, or triplex inputs and outputs;
- Quickly detect and isolate a fault;
- Inform the user about the presence of a fault;
- Provide the means to quickly correct the fault;
- Quickly retest the system after fault correction;
- Operate in "real time" with the process;
- Continue running while locking out the fault.

Dual Processor (Redundant) System

Woodward engineers investigated the redundant system first. This system uses two processors and provides a degree of backup control. One processor monitors the other, and if a fault occurs in the primary processor, a switch transfers control to the secondary processor.

Unwanted Switchovers

The engineers quickly identified a major flaw in the redundant system: the switchover takes time resulting in a loss of computing time and in a potential loss of data. Transfer bumps and channel windups that could occur during the switchover are not trivial problems and must be carefully considered. These conditions adversely affect system operation and could, under certain conditions, cause system shutdown.

Difficult to Troubleshoot

Another undesirable feature detected was the length of the redundant system's mean-time-to-repair (MTTR). Often the duplex system must be shut down in order to perform repairs, and troubleshooting may require skilled technicians who are familiar with the control and its circuitry. Troubleshooting offers another potential source of error—human error. All these factors can result in longer-than-desired repair times.

Duplex Design Can Never Provide True Fault Tolerance

Further investigation revealed that several methods have been tried in order to improve a redundant system's ability to handle faults.

One attempted solution is having dual processors operate in parallel. However, if a fault occurs, how does the system determine which processor is at fault? The logical decision is to halt the process. Also, this solution requires more equipment in order to operate, and more equipment normally results in a deterioration of the Mean-Time-Between-(Control System) Failure (MTBF).

Another concept is the "system O.K." message. This involves the processor sending a message that only can be sent by a "working" computer. The message is sent to circuitry called a watchdog timer. The timer must receive the "O.K." signal within predetermined time intervals. If a signal is not received within the intervals, sending-device control fault is assumed and the receiving control assumes process operation.

The watchdog method involves considerable processing requirements and only can identify processor status—it does not identify faulty inputs or outputs. Also, since the "O.K." message requires computing, it cannot be sent on a continuous basis. Errors that are not detectable could occur during the "O.K." transmission. This concept continues to remain vulnerable to data and signal losses during switchovers.

More advanced techniques can be built into the system. However, the engineers quickly concluded that these techniques result only in more hardware and that they frequently result in an increase in the system's cost and a decrease in the system's MTBF. After design work is completed, the system can protect only against the errors planned for by the designer. Unplanned errors still can occur—and perhaps escape detection.

Sensor and wiring faults account for approximately 90% of all system failures. The study team determined that input/output sensor management must receive careful consideration. In order to maintain high system availability, important sensors must be duplicated and critical sensors (in order to achieve true fault tolerance) must be triplicated. The duplex computational or I/O sensor hardware may offer difficulties in sorting input faults, and cannot accommodate triplicate inputs.

A great concern to any prime mover expert is that these systems will not always offer real-time process control. They can lose inputs, contain recovery sequences slowing normal processing, or contain undetected errors. The system may be inoperable during repair, and it then becomes susceptible to human error during troubleshooting and repair cycles. Pre-testing may require further downtime before the system can be restarted.

The study concluded that the only way to achieve even minimal levels of availability is to provide for

significant amounts of self-test, cross-checking, parity-checking, and wrap-around of I/O. Even under these conditions, true fault tolerance has eluded the system designer.

After careful and extensive study, the engineering team decided that redundancy would not, could not, offer the high degree of control reliability required by modern industrial technology.

Three Processor (Triplex) System

Woodward studied the triplex concept next. This system uses three processors, three memories, and a fault-tolerant voting system. The processors use identical programs to provide common operations.

The team found that exacting synchronization allows each processor's input and output data to be compared to data gathered by the remaining two processors. The data is voted on, and the majority rules—two of the three processors must agree before action can take place.

The study identified many advantages of a triplex system.

Real-Time Operation

A great advantage of a triplex system is its ability to operate in real time, all the time.

A triplex system contains no switches or timers that can interfere with data acquisition, cause missed beats, or result in loss of real-time control. Triplex synchronization allows each processor to continually check its own operation and the operation of the system's other processors.

If one system fails, the remaining two systems provide continuous control operation. Since all data is subjected to the voting process before leaving the fault-containment areas, erroneous data is locked out and never can appear on an output signal. This voting process eliminates channel windup and transfer bumps.

Sensors Easily Triplicated

Triplication of critical I/O sensors is easily accomplished. Each sensor is connected to one of the three pieces of computing hardware. The synchronized voting structure broadcasts all three sensor readings to all three computers. Action determined by the application software and appropriate to the sensor values is taken.

Easy-To-Use System

Triplex fault detection immediately alerts the operator of the presence of the fault. The alert may be in the form of a visual indication, an audio indication, or a combination of the two alerts. The operator easily can trace the cause of the fault through the use of user-supplied indicators or by consulting the unit's LCD display. When the LCD display is consulted, the system's diagnostics inform the operator which of the three processors contains (or detected) the fault.

The modular concept found in triplex systems greatly simplifies troubleshooting. The faulty processor can be shut down to make repairs. (The remaining two processors continuously operate in real-time conditions.) Hardware repairs are made simply by replacing the faulty module or system sensor. Once repaired, the processor will perform self-diagnostics to ensure normal operation before returning to service. Resynchronization to the running units is fast and automatic.

Nonvolatile memory assists in the triplex approach to fault correction. If a processor is shut down for repair, no reprogramming time is required.

Very Reliable

It is not unusual for the MTBF of a triplex system to exceed 100 years, and MTTR is held to a minimum due to modular construction. System availability closely approaches 100%.

The engineers determined that the triplex control could well be the most reliable part of any process.

Reliability And Availability Make Economic Good Sense

Woodward engineers wanted not only to design the best system available but keep the system affordable. They discovered that a well-designed duplex system normally will contain about the same amount of hardware as a triplex system. Often there is very little or no difference in initial cost. The greater the sophistication of the duplex system, the less the cost differential—if any. Yet no matter what the cost differential, a duplex system presently will not provide the comprehensive fault detection, the means of rapid fault correction, or the true fault-tolerant operation that a triplex system provides.

An additional economic benefit is that fault-tolerant reliability often eliminates the need for and the expense of backup systems, separate operator

control panels, or other equipment that may be necessary to provide a highly available system.

The engineers decided that one common means of determining cost is by computing total cost of downtime. Total downtime cost is determined by multiplying the control failure rate by the MTTR. That answer is then factored by a downtime cost. Therefore any system with a longer MTBF and a shorter MTTR has an advantage of reduced cost. The more expensive the cost of downtime, the greater the advantage.

The extended (system) MTBF common to the triplex design, and the reduced MTTR (provided by rapid fault detection and correction inherent in the triplex design) easily demonstrates the triplex advantage.

True Fault Tolerance Now Available in a Woodward Control

The Woodward team concluded that only a thoroughly designed triplex system could offer the customer the reliability and availability so long associated with Woodward controls. Therefore, they set about designing a true fault-tolerant (triplex) control, not a pseudo fault-tolerant (redundant) control.

Today, Woodward Governor Company offers a control that was inspired by a system originally designed for NASA. This state-*of*-the-art control is Woodward's 503 Digital Control System; it is capable of providing fault-tolerant control for all types of prime movers or processes.

For additional information contact our Application Engineering Department.
Woodward Governor Company (303) 482-5811, ext. 1577
Engine & Turbine Controls Division
P.O. Box 1519, Ft. Collins, CO., 80522 U.S.A.

Ft. Collins, Colorado, U.S.A.	(303) 482-5811, ext. 1577
Levittown, Pennsylvania, U.S.A.	(215) 943-0666
Tomisato, Chiba, Japan	81-476-93-4661
Slough, England	44-753-26835
Hoofddorp, The Netherlands	31-2503-13241
Kingsgrove, N.S.W., Australia	61-2-758-2322
Campinas, S.P., Brazil	55-192-31-4977
Corporate Headquarters	
Rockford, Illinois, U.S.A.	(815) 877-7441

86/09/F

Thermocouple inputs are received by a 2-channel isolated module or a 10-channel non-isolated module. The number of modules used per chassis is dependent on the number of signals received.

COMPUTER OUTPUTS

Final-driver modules drive actuators with 20 to 160 mAdc or 4 to 20 mAdc signals.

Relay panels include 24 or 48 relays to provide relay contacts.

Output modules provide 0 to 1 mAdc or 4 to 20 mAdc signal for analog meters or other controllers.

INPUT POWER SOURCES

Each computer can operate on either an ac or a dc input voltage The ac power can be 120 or 240 Vac (±10 %) at 47 to 400 Hz. The dc input can be 24 or 125 Vdc (±10%).

If desired, one of these supplies may be a primary power source and the other a secondary source to protect against power failures.

MAINTENANCE

Each computer is easily maintainable. The modules are standard modules and are easily replaced in event of failure. Since they are standard, re-order lead times are minimal. Replacement of the modules may be accomplished without removing the chassis from the rack.

If one computing system should fail, it is individually removalble for routine maintenance or bench checks. Removal of one chassis does not shut down the user's process.

SYSTEM RATE GROUPS AND SYSTEM EXPANSION

Control loops are programmed to operate at 10, 20, 40, or 80 millisecond intervals. The system designer may assign a more frequent interval to the critical elements.

The computer's motherboard will accept a maximum of 12 I/O modules. An expansion rack allows the addition of another 12 modules.

ENVIRONMENTAL OPERATION

The 503 DCS was designed to operate in an environment with a temperature of -15 to +55 degrees centigrade; the humidity may be up to 95% noncondensing.

Vibration meets MIL-STD-167 requirements and shock protection meets standards set in MIL-S-810D.

EMI/RFI meets MIL-STD-461A and the unit will withstand surge as required in IEEE 472/ANSI C37.90a.

RACK MOUNTING

The DCS was designed for mounting in a standard 19-inch rack. This unit may stand alone, or it may be combined with other features in the control board.

Each computer system is assembled using high-quality parts and is subjected to pretesting before final assembly. The printed circuit boards (PCB) are designed and manufactured to the highest standards of quality in Woodward's PCB facility. Hand wiring is eliminated through the use of PCBs in both the modular boards and the motherboards. The modules feature ground and power planes to reduce noise susceptibility. Each system may contain redundant power supplies to further decrease failure risks.

Required repairs are easily diagnosed and corrected through internal self-diagnostic circuitry. These integated diagnostics allow fault detection and isolation. Memories, processors, and I/O modules are checked for proper operation. Standard modular construction makes on-line repair fast and accurate.

PROCESSING AND PROGRAMMING EQUIPMENT

Each computer's CPU contains a Z8001 microprocessor with memory supplied by UV-EPROM, E-EPROM, and RAM chips. Each system also contains a fault-tolerant control module. This module allows the fault-tolerant voting to occur.

A memory of 128K bytes allows for many options in the writing of programs for the DCS. A password-type security system is available to protect the application program.

RS-232 PORTS

Each computer contains two RS-232 ports. These ports allow communication with peripheral devices (CRTs, printers, data storage equipment) and other computers. The ports feature standard ASCII character handling with baud rates and message protocols programmable to meet specific user needs.

SYSTEM INPUTS/OUTPUTS

All inputs are received by each of the three microprocessors. Each microprocessor will individually analyze these signals to the same operational criteria. Critical sensors should be replicated to enhance system availability. Non-critical signals may be sent to all three processors from a single input device.

The 503 DCS is capable of sensing discrete and analog inputs. Typical sources are speed, temperature, fuel flow, vibration, or any other source capable of being sensed and generating a signal.

Outputs control fuel flow and other signals or warnings.

The system designer will determine the type(s) of input/output signals for all monitored operations.

COMPUTER INPUTS

Each computer is capable of receiving three isolated signals from magnetic pick-ups. This feature allows for redundant speed sensing. Additional speed sensing modules may be added if required.

Each discrete input module allows for 28 isolated inputs. The inputs are received from switch or relays and are 24 Vdc. The number of discrete modules per chassis is determined by the number of inputs required.

Analog inputs are received and conditioned in a 4-channel isolated module or a 10-channel non-isolated module. The analog signal is obtained from a transducer or a sensor producing a 4 to 20-milliamp direct current signal. The number of analog input modules per chassis is determined by the number and type of signals being monitored.

Florida Gas Transmission Company

P. O. Box 44 Winter Park, Florida 32790 (305) 646-1100

ATTACHMENT III

September 15, 1987

Mr. Ed Godwin
Chief Mechanical Engineer
Reedy Creek Utilities Co., Inc.
Post Office Box 40
Lake Buena Vista, Florida 32830

Dear Ed:

Please find for your information a copy of the July, 1987 gas analysis of Florida Gas Transmission Company's (FGT) natural gas from our mainline near Brooker, Florida. Since there is no other natural gas purchased downstream of the sample point, the gas analysis would not change.

The molecular percentage of nitrogen is 0.4450 for the July 28, 1987 sample. This is not an unusual amount of nitrogen to be found in the natural gas. It is possible that sample cylinders can be contaminated with air from time to time but, in that event, the oxygen level would be high and the sample analysis would be disregarded. For this sample, please note that the oxygen level is zero, indicating a good sample was taken.

Also enclosed for your use is a copy of a drawing of the technique used in obtaining samples. As noted on the drawing, all cylinders are evacuated at the lab to 30" HG before being shipped out for the next sample.

I hope this answers your questions but, if not, please give me a call.

Very truly yours,

JAMES C. DOWDEN
Director of Marketing

JCD:ben
Enclosures

08/14/87

FLORIDA GAS TRANSMISSION CO.
TECHNICAL OPERATIONS DEPT.
P. O. BOX 44
WINTER PARK FL 32790-0044

FGT - MARKET SERVICES
MR. JIM DOWDEN
P. O. BOX 44
WINTER PARK FL 32790

GAS ANALYSIS ID NUMBER 87 0575 MEAS. DIST. 07

METER STATION NAME FLA HYDROCARBON - OUTLET STATION NO. 47188

FIELD DATA TAKEN BY A. Kattawar DATE TAKEN 07-28-87
PRESSURE 650 TEMPERATURE 0 SPEC GRAV 0.5800
BTU 1015 WATER 0.0000 H2S
DATA ANALYZED BY Michael P. Campo DATE ANAL. 08-07-87

COMPONENT	MOLE %	B.T.U.	GPM	SPEC GRAV
OXYGEN	0.0000	0.0000	0.0000	0.0000
NITROGEN	0.4450	0.0000	0.0000	0.0043
CARBON DIOXIDE	0.8700	0.0000	0.0000	0.0132
METHANE	96.2490	957.2000	0.0000	0.5332
ETHANE	2.1440	37.3500	0.0000	0.0223
PROPANE	0.2610	6.4700	0.0719	0.0040
I BUTANE	0.0060	0.1900	0.0020	0.0001
N.BUTANE	0.0040	0.1300	0.0013	0.0001
I PENTANE	0.0030	0.1200	0.0011	0.0001
N PENTANE	0.0030	0.1200	0.0011	0.0001
HEXANE PLUS	0.0150	0.7700	0.0066	0.0005
TOTALS	100.0000	1002.3500	0.0840	0.5779

BTU/CU FT AT 14.73 PSIA 60 DEG F CORRECTED FOR Z
CALCULATED SATURATED 1004 DRY 1022 0.0000 LB/MMCF 1022
CALORIMETER SATURATED 1004 DRY 1022
SPECIFIC GRAVITY - AIR = 1.0000 CALC 0.5779 RANAREX 0.5790

COMPRESSIBILITY FACTOR - Z = 0.9979
SUPERCOMPRESSIBILITY FACTOR CALC AT 0.5790 SP GR 600 PSIG 90 DEG
BY TEST WITH BURNETT APPARATUS 1.0350
CALC AGA-NX-19 NO DILUENTS 1.0367
CALC AGA-NX-19 ADJUSTED FOR DILUENTS 1.0355

NOTES PHYSICAL CONSTANTS FROM AGA 3
GPM FROM NGPA PUB NO 2145-84
HEXANE PLUS DERIVED FROM ALPHAGAZ REF STANDARD

REMARKS 3000 cc line pressure spot sample.
Percent difference with respect to Burnett Apparatus
for calculated value using AGA-NX-19 formula and
adjusted for diluents equals (+ 0.048).

III

SELECT ? COMP ? CANC ? LIST FWD=PF8
MD3A PAGE 1 OF 1 FLORIDA GAS TRANSMISSION CO. CURR DATE 09-27-1984
GAS ANALYSIS ID NUMBER 84 0405 MEAS. DIST. 07
METER STATION NAME FLA HYDROCARBON - OUTLET STATION NO. 47188

FIELD DATA TAKEN BY A. KATTAWAR DATE TAKEN 05-21-84
PRESSURE 711 TEMPERATURE 0 SPEC GRAV 0.5820
BTU 1020 WATER 0.6000 H2S 0.1 GR
DATA ANALYZED BY MICHAEL P. CAMPO DATE ANAL. 05-30-84

COMPONENT	MOLE %	B.T.U.	GPM	SPEC GRAV
OXYGEN	0.0000	0.0000	0.0000	0.0000
NITROGEN	0.4530	0.0000	0.0000	0.0044
CARBON DIOXIDE	0.8830	0.0000	0.0000	0.0134
METHANE	95.8730	953.4600	0.0000	0.5311
ETHANE	2.5790	44.9300	0.0000	0.0268
PROPANE	0.1610	3.9900	0.0443	0.0025
I BUTANE	0.0090	0.2900	0.0029	0.0002
N. BUTANE	0.0080	0.2600	0.0025	0.0002
I PENTANE	0.0060	0.2400	0.0022	0.0001
N. PENTANE	0.0010	0.0400	0.0004	0.0000
HEXANE PLUS	0.0270	1.3900	0.0108	0.0009
TOTALS	100.0000	1004.6000	0.0631	0.5796

BTU/CU FT @ 14.73 PSIA 60 DEG F CORRECTED FOR Z
CALCULATED SATURATED 1007 DRY 1025 0.6000 LB/MMCF 1025
CALORIMETER SATURATED 1008 DRY 1026
SPECIFIC GRAVITY - AIR = 1.0000 CALC 0.5796 RANAREX 0.5790

COMPRESSIBILITY FACTOR - Z = 0.9979
SUPERCOMPRESSIBILITY FACTOR CALC AT 0.5790 SP GR 600 PSIG 90 DEG
BY TEST WITH BURNETT APPARATUS 1.0348
CALC AGA-NX-19 NO DILUENTS 1.0367
CALC AGA-NX-19 ADJUSTED FOR DILUENTS 1.0355

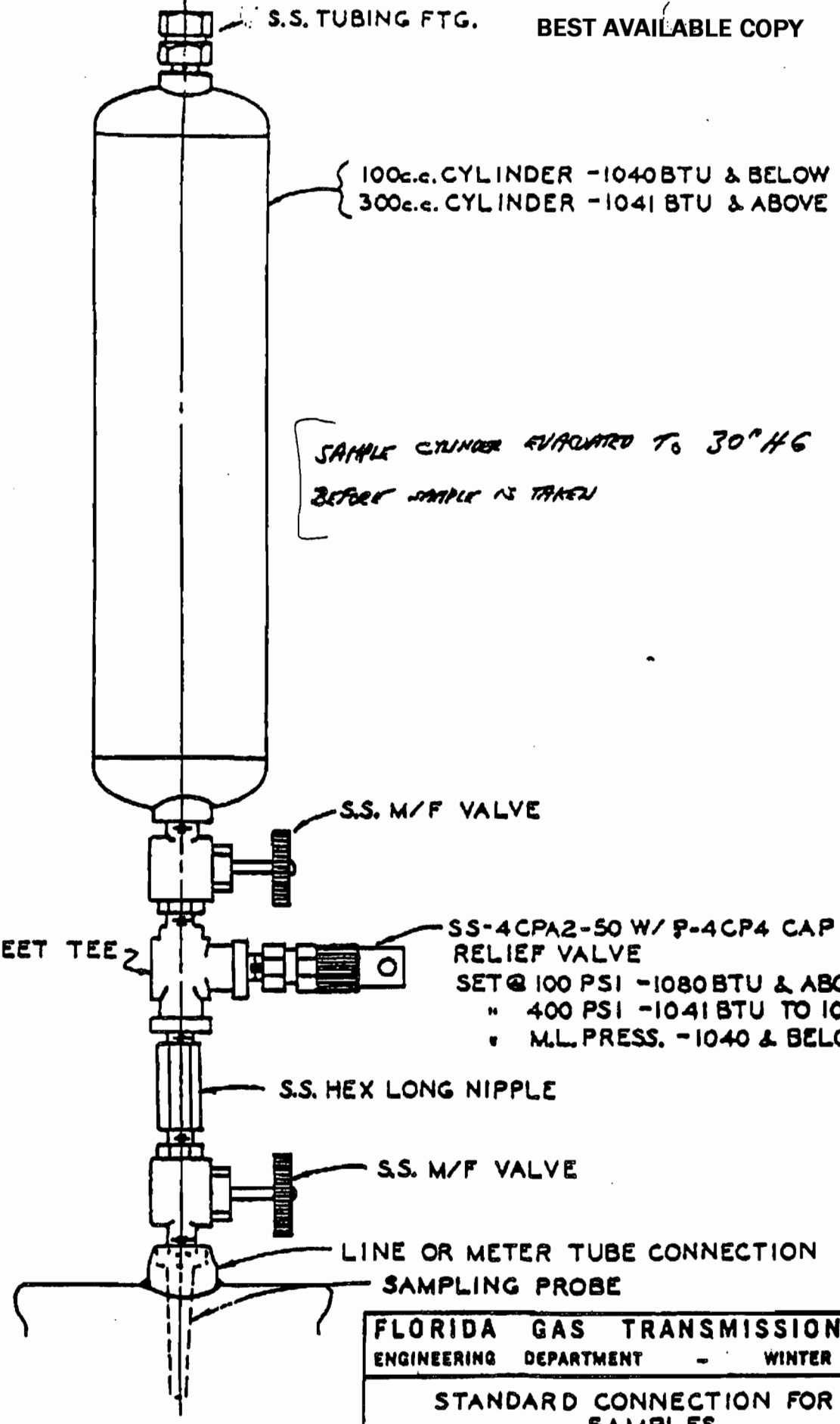
NOTES PHYSICAL CONSTANTS FROM AGA 3 GPM FROM NGPA PUB NO 2145-62
HEXANE PLUS DERIVED FROM PHILLIPS REF STANDARD

REMARKS PERCENT DIFFERENCE WITH RESPECT TO BURNETT APPARATUS
FOR CALCULATED VALUE USING AGA-NX-19 FORMULA AND
ADJUSTED FOR DILUENTS EQUALS (+ 0.068).

TYPE ? SPOT ? CONT ? PROD ANALYSIS COMMENT
ANALYSIS REVIEWED BY YOUNG R. REVIEWED ON 05-31-84

Algonquin Gas
Trans. Co;
Boston. = 0.34 mole % N_2
= 0 mole % O_2

III C



FLORIDA GAS TRANSMISSION COMPANY
ENGINEERING DEPARTMENT - WINTER PARK, FLORIDA

STANDARD CONNECTION FOR TAKING SAMPLES

DRAWN BY: E.W.S.	DATE: 9-9-81	APPROVED BY:	APPROVED BY: CHIEF ENGR.
CHECKED BY:	DATE:	W. O.	DWG. NO. 200.90.7 A
APPROVED BY:	DATE:	SCALE: NONE	

NO.	DATE	REVISIONS	DR.	CK'D.	APPR.

III

FLORIDA GAS TRANSMISSION COMPANY
AN ENRON AFFILIATE
GAS ANALYTICAL LABORATORY

The procedure for determining the composition of the natural gas in the FLORIDA GAS pipeline is:

(1) A sample of gas is taken from the pipeline in a stainless steel cylinder through a probe which goes to the center of the pipeline.

(2) At the time the sample is taken the specific gravity of the gas being sampled is determine by a portable gravitometer.

(3) The sample is shipped to the Zachary Laboratory to be analyzed. (LA.)

(4) When the sample arrives in Zachary it is placed in an oven overnight.

(5) The sample is then connected to the chromatograph by a 1/8 inch stainless tubing.

(6) The plumbing associated with the chromatograph and the connections to the sample cylinder are evacuated.

(7) The valve on the cylinder is opened allowing gas to fill the evacuated space to a positive pressure of about 20 to 40 psig.

(8) The gas is then bled down to atmospheric pressure.

(9) Steps 6 and 7 are repeated several times.

(10) With the pressure now at atmospheric pressure the chromatograph is started.

The Carle chromatograph separates the gaseous mixture into individual pure components. The pure components are measured prior to being eluted from the chromatograph. An electrical signal proportional to the amount of each component is sent to a SP 4100 computing intergrator as it is measured. The SP 4100 logs the time which the signal is recieved and the amount of signal. The time is used to identify the component and the amount of signal is used to determine the quantity of that component. After all of the components in the gaseous mixture have been indentified and amount of each is known; the SP 4100 reports each component as a normalized percentage of the total mixture which will add up to 100 %. Using the physical constants reported in AGA #3 for pure components the specific gravity is calculated and compared to the field gravity. If the gravity differ

by more than 0.004 another sample will be requested.

Prior to analyzing a gaseous mixture of unknown composition the SP 4100 is calibrated by following steps 5 through 10 using a third party certified standard of known composition. The time of each component and the known quantity of each component are enter into a file on the SP 4100. With the SP 4100 in a calibration mode it will log and file the actual time and amount of signal associated with each component of the certified standard. After the calibration is completed the SP 4100 is placed in a run mode. When the SP 4100 is in the run mode it will compared the time and amount of signal for the unknown component to the filed time and amount of signal of the known components. This information will be used to identify the component and the quantity of the unknown component. As stated above the quantity of the component is reported as a normalized percentage of the total mixture.

Fla Gas Trans Co.
Michael P. Compo
9-19-87
Zachary, La.

III

FLORIDA GAS TRANSMISSION COMPANY
AN ENRON AFFILIATE
GAS ANALYTICAL LABORATORY
MICHAEL Paul CAMPO
POST OFFICE BOX 477
LOWER ZACHARY ROAD

ZACHARY, LOUISIANA 70791

Phone Number: (504) 654-0851

****

The Composition of the gas in the FLORIDA GAS PIPELINE is determined by chromatography. The chromatographs are calibrated by using a certified standard from a third party. In our Zachary Lab we are using a Carle GC model 111 192-A and a certified standard from Alphagaz.

Mike Cruse of Alphagaz informed me that the standard sent to Fla Gas in Zachary was prepared by mixing actual masses of pure gases. The mixture of gases is then analyzed as a secondary check. The weights used to determine the mass of each gas in the mixture are traceable to the National Bureau of Standards.

Michael P. Campo
9-17-87

2-23-87 -MC

III

ALPHAGAZ
SPECIALTY GASES DIVISION
LIQUID AIR CORPORATION
3070 West Cedar Street, Beaumont, Texas 77704
Telephone (409) 835-3958

ANALYSIS CERTIFICATION

CALIBRATION GAS ONLY

REPORT FOR: FLORIDA GAS TRANSMISSION CO

DATE: 10/22/86
CYLINDER VOLUME: 1300 LITERS
CYLINDER SERIAL: PGS5464

COMPOSITIONAL ANALYSIS:

COMPONENT	MOLE %	B.T.U.	SP.GRAVITY
OXYGEN	.496		5.479808E-03
NITROGEN	1.495		.01445964
CARBON DIOXIDE	3.2		.048624
ETHANE	2.97	52.6581	.03083454
PROPANE	1.9	47.9427	.0289275
ISO BUTANE	1	32.607	.020068
NORMAL BUTANE	1	32.698	.020068
NORMAL PENTANE	.39	15.6737	9.71529E-03
ISO PENTANE	.392	15.7180	9.765112E-03
HEXANES PLUS	.197	10.4098	6.526019E-03
METHANE	86.96	880.122	.48167144
	---------	----------	----------
TOTALS	100.0000	1087.82957	.676139349

THE ABOVE CALCULATIONS BASED ON 14.730 PSIA.

COMPRESSIBILITY FACTOR (1/Z) =1.00281036
DRY B.T.U. AT 14.696 PSIA AND CORRECTED FOR COMP. =1088.36876
WET B.T.U. AT 14.696 PSIA AND CORRECTED FOR COMP. =1069.43114
REAL SPECIFIC GRAVITY =.678039542

ANALYST

111

Table 9-14. Characteristics of Typical Non-petroleum Liquid Fuels

	Conventional coal-tar fuels*				Synthetic crude oils, by hydrogenation		
	CTF 50	CTF 100	CTF 250	CTF 400	Oil shale	Tar sands†	Coal
Density, lb./U.S. gal., 60°F.	8.5	8.5	9.8	10.3	6.8	7.2	7.7
Viscosity, Redwood No. 1, sec.	30–50 at 100°F.	35–50 at 100°F.	50–80 at 250°F.				
Ultimate analysis, %:							
Carbon	87.4	88.9	90.0	90.1	86.1	87.10	87.20
Hydrogen	7.9	7.4	5.9	5.4	13.84	12.69	11.48
Oxygen	3.6	2.6	2.4	2.4	0.12	0.04	0.72
Nitrogen	0.9	0.9	1.2	1.4	0.01	0.07	0.25
Sulfur	0.2	0.2	0.5	0.7	0.02	0.10	0.00
Ash‡	Trace	Trace	0.08	0.15			
C/H ratio	11.0	12.0	15.5	16.5	6.2	6.9	7.6
Gross calorific value, B.t.u./lb.	16,500 to 17,500	16,500 to 17,500	16,200 to 16,700	15,800 to 16,300			

*CTF 50, 100, etc., indicate approximate preheat temperature, °F., for atomization of fuel in burners (terminology used in British Standard B.S. 14
†Tar sands, although a form of petroleum, are included in this table for comparison.
‡Inorganic mineral constituents of coal-tar fuel:
5 to 50 p.p.m.: Ca, Fe, Pb, Zn, (Na, in tar treated with soda ash)
0.05 to 5 p.p.m.: Al, Bi, Cu, Mg, Mn, K, Si, Na, Sn
Less than 0.05 p.p.m.: As, B, Cr, Ge, Ti, V, Mo
Not detected: Sb, Ba, Be, Cd, Co, Ni, Sr, W, Zr

and refined into relatively conventional fuels in demonstration plants but not commercially as yet. Data on the non-petroleum crudes are shown also in Table 9-14.

GASEOUS FUELS

Natural Gas. Natural gas, in normal usage, is construed to be a naturally occurring mixture of hydrocarbons and non-hydrocarbons associated with petroliferous geologic formations. It consists primarily of methane (CH_4) with minor amounts of ethane (C_2H_6) and other heavier hydrocarbons and certain non-combustibles such as carbon dioxide, nitrogen, and helium. Natural gas as supplied by the utility companies usually contains from 80 to 95 per cent methane, with ethane, propane, and nitrogen making up the remainder. The heating value of such gases ranges from 900 to 1200 B.t.u./cu. ft., with the specific gravity (air = 1.0) varying from 0.58 to 0.79.

Although there is no single composition that may be termed the "typical" natural gas, Table 9-15 shows analyses of natural gas as distributed in a number of cities in the United States.

Natural gas may be termed "dry," indicating less than 0.1 of gasoline vapor per 1000 cu. ft., or "wet," indicating more 0.1 gal./1000 cu. ft. Additional terms "sweet" and "sour" are to denote absence or presence of hydrogen sulfide (H_2S).

As shown in the American Gas Association 1971 Gas Facts, pr recoverable reserves of natural gas totaled 290.7 trillion cu. f the end of 1970, whereas net production was 22.4 trillion cu Production of natural gas (including liquids) accounted for 38.2 cent of the total energy produced in the United States. Also the end of 1970, 914,800 miles of mains and pipe lines wer service, supplying on an average 40.9 million customers.

Research is currently under way to produce an interchange high-B.t.u. gas from coal, lignite, or oil shale. Among the proce under investigation are gasification to synthesis gas followed catalytic methanation, and hydrogenation.

Liquefied Natural Gas. The technology of liquefaction of nat gas is an old art; however, it has recently enjoyed renewed inte for shipment and storage. A number of storage projects have b completed or are under construction both in the United States elsewhere, utilizing either a cascade or expansion liquefaction c and storage by means of metal double-wall or prestressed conc

Table 9-15. Analyses of Natural Gas*†

City	Components of gas, % by volume									Heating value,‡ B.t.u./cu. ft.	Spec gravi
	Methane	Ethane	Propane	Butanes	Pentanes	Hexanes plus	CO_2	N_2	Misc.		
Baltimore, Md.	94.40	3.40	0.60	0.50	0.00	0.00	0.60	0.50	...	1051	0.59
Birmingham, Ala.	93.14	2.50	.67	.32	.12	.05	1.06	2.14	...	1024	.59
Boston, Mass.	93.51	3.82	.93	.28	.07	.06	0.94	0.39	...	1057	.60
Columbus, Ohio	93.54	3.58	0.66	.22	.06	.03	.85	1.11	...	1028	.59
Dallas, Texas	86.30	7.25	2.78	.48	.07	.02	.63	2.47	...	1093	.64
Houston, Texas	92.50	4.80	2.00	.30	...	...	.27	0.13	...	1031	.62
Kansas City, Mo.	72.79	6.42	2.91	.50	.06	Trace	.22	17.10	...	945	.69
Los Angeles, Calif.	86.50	8.00	1.90	.30	.10	.10	.50	2.60	...	1084	.63
Milwaukee, Wis.	89.01	5.19	1.89	.66	.44	.02	.00	2.73	.06 He	1051	.62
New York, N.Y.	94.52	3.29	0.73	.26	.10	.09	.70	0.31	...	1049	.59
Phoenix, Ariz.	87.37	8.11	2.26	.13	.00	.00	.61	1.37	...	1071	.63
Salt Lake City, Utah	91.17	5.29	1.69	.55	.16	.03	.29	0.82	...	1082	.61
San Francisco, Calif.	88.69	7.01	1.93	.28	.03	.00	.62	1.43	.01 He	1086	.62
Washington, D.C.	95.15	2.84	0.63	.24	.05	.05	.62	0.42	...	1042	.58

*Reproduced by permission from "Gas Engineers Handbook," American Gas Association, Industrial Press, New York, 1965.
†Average analyses (1954 data) obtained from the operating utility company(s) supplying the city. The gas supply may vary considerably from these da especially where more than one pipe line supplies the city. Also, as new supplies may be received from other sources, the analyses may change. Peak sha (if used) is not accounted for in these data.
‡Gross or higher heating value at 30 in. Hg, 60°F., dry. To convert to a saturated basis deduct 1.73%: *i.e.*, 17.3 from 1000, 19 from 1100.

CHEMICAL ENGR. HANDBOOK - PERRY
5TH EDITION

Table 18a. Analyses of Typical Gaseous Fuels

Type of Gas	Analysis in percent by volume								
	CH_4	C_2H_6	C_3H_8	C_4H_{10}	CO	H_2	CO_2	O_2	N_2
Natural, Birmingham, Ala.	90.0	5.0	...	...	...	...	...	...	5.0
Natural, Cleveland, Ohio[a]	82.9	11.9	0.3		...	...	0.2	0.3	4.4
Natural, Kansas City, Mo.	84.1	6.7	...	...	...	...	0.8	...	8.4
Natural, Pittsburgh, Pa.	83.4	15.8	...	...	...	...	...	...	0.8
Blast furnace	...	...	...	...	27.5	1.0	11.5	...	60.0
Producer, bituminous	3.0	...	...	...	27.0	14.0	4.5	0.6	50.9
Coke oven, by-product	32.3	...	...	3.2	5.5	51.9	2.0	0.03	4.8
Blue (water), bituminous	4.6	...	...	0.7	28.2	32.5	5.5	0.9	27.6
Carbureted blue, low gravity	10.9	2.5	...	6.1	21.9	49.6	3.6	0.4	5.0
Carbureted blue, heavy oil	13.5	...	...	8.2	26.8	32.2	6.0	0.9	12.4
Sewage, Decatur	68.0	...	...	...	...	2.0	22.0	...	6.0
Commercial propane, natural gas	...	2.2	97.3	0.5					
Commercial propane, refinery gas	...	2.0	72.9	0.8	(24.3% C_3H_6)				
Commercial butane, natural gas	...	...	6.0	70.7 n-, 23.3 iso					
Commercial butane, refinery gas	...	...	5.0	50.1 n-, 16.5 iso-	(28.3% C_4H_8)				

[a]Courtesy of East Ohio Gas Co. Other data adapted from *Gaseous Fuels*, L. Shnidman (Editor), American Gas Association, N.Y., 1948.

Table 18b. Properties of Typical Gaseous Fuels

Type of Gas	Specific gravity	Calorific value Btu per cu ft		Gross Btu per cu ft std air	Cu ft air req'd per cu ft gas	Combustion products in cu ft per cu ft gas				Ultimate $\%CO_2$ in dry flue gas
		Gross	Net			CO_2	H_2O	N_2	Total	
Natural, Birmingham, Ala.	0.60	1002	904	106.2	9.44	1.00	1.95	7.51	10.46	11.8
Natural, Cleveland, Ohio[a]	0.635	1059	959	105.9	10.00	1.08	2.03	7.95	11.06	12.0
Natural, Kansas City, Mo.	0.63	974	879	106.3	9.17	0.98	1.88	7.33	10.20	11.8
Natural, Pittsburgh, Pa.	0.61	1129	1021	106.2	10.62	1.15	2.14	8.41	11.70	12.0
Blast furnace	1.02	92	92	135.3	0.68	0.39	0.01	1.14	1.54	25.5
Producer, bituminous	0.86	163	153	131.6	1.24	0.34	0.20	1.49	2.03	18.6
Coke oven, by-product	0.40	569	509	104.4	5.45	0.53	1.32	4.36	6.21	10.8
Blue (water), bituminous	0.70	260	239	126.0	2.07	0.41	0.45	2.34	3.20	14.9
Carbureted blue, low gravity	0.54	536	461	106.1	5.05	0.66	1.09	4.04	5.79	14.0
Carbureted blue, heavy oil	0.66	530	451	101.7	5.21	0.79	1.00	4.23	6.02	15.7
Sewage, Decatur	0.79	690	621	105.2	6.55	0.90	1.38	5.24	6.52	14.7
Commercial propane, natural gas	1.55	2558	2358	107.5	23.8	2.98	3.98	18.80	25.76	13.7
Commercial propane, refinery gas	1.77	2504	2316	108.0	23.2	2.99	3.74	18.35	25.08	14.0
Commercial butane, natural gas	2.04	3210	2961	104.8	30.6	3.94	4.94	24.20	33.08	14.0
Commercial butane, refinery gas	2.00	3184	2935	106.1	30.0	3.95	4.67	23.75	32.37	14.3

[a]Courtesy of East Ohio Gas Co. Other data adapted from *Gaseous Fuels*, L. Shnidman (Editor), American Gas Association, N.Y., 1948.

SOURCE TYPE/SIZE: NATURAL GAS TURBINES — 49.90 MW

COMPANY NAME/SITE LOCATION: PG & E, STATION T — SAN FRANCISCO, CA
JESSIE ST BETWEEN 6TH & MINT *

DETERMINATION IS BACT FOR A MODIFIED SOURCE.
PERMIT NO. SFB 86-01
DETERMINATION MADE BY: EPA REGION IX (AGENCY) — LINH TRAN (AGENCY CONTACT PERSON) — (415)-974-7631 (PHONE)

DATE OF PERMIT ISSUANCE-- 08/25/86
ESTIMATED DATE OF START-UP-- 1987

PROCESSES SUBJECT TO THIS PERMIT	THROUGHPUT CAPACITY	POLLUTANT EMITTED	EMISSION LIMITS / CONTROL EQUIPMENT OR PROCESS MODIFICATION	... & BASIS ... PCT EFF
TURBINE, GAS, GE LM5000	396.00 MMBTU/H	NOX	25.0000 PPM AT 15% O2	BACT
			63.0000 LB/H	
			STEAM INJ. AT STEAM/FUEL RATIO = 1.7/1	75.00

NOTES --------
A CO OXIDIZING CATALYST SYSTEM FOR THE CONTROL OF CO EMISSIONS.

(*) INDICATES DATUM WAS TRUNCATED FOR THIS TABLE.

REVIEW STATUS: INITIAL REVIEW POST STARTUP

PM
9-3-87
Atlanta, Ga.

File Copy

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

SEP 3 1987

DER
SEP 8 1987
BAQM

4APT/APB-aes

Margaret V. Janes
Bureau of Air Quality
Management
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: Reedy Creek Improvement District

Dear Ms. Janes:

This is to acknowledge receipt of the application for a proposed modification at the above-referenced source. The proposed modification involves the replacement of two existing turbines by a General Electric LM 5000 dual-fuel combustion turbine coupled to a heat recovery steam boiler and a steam turbine. As a result of this modification, there will be a net emissions increase for NO_x.

After reviewing the application, we have one comment pertaining to the applicant's proposed modification. We would like to point out that the new source performance standard (NSPS) for NO_x (40 CFR 60 Subpart GG) is only a starting point for a best available control technology (BACT) determination. BACT can be and is often more stringent than NSPS. Therefore, the NO_x emission limit of 152.1 ppm (dry, 15% O_2) may not be representative of BACT. After searching through the second supplement to the 1985 edition of BACT/LAER Clearinghouse, the NO_x emission limits appear to be in the range of 8-42 ppm with an exception of 124 ppm. This 124 ppm belongs to a peat fueled turbine that is located at Carolina Cogeneration Co., Inc. in North Carolina. Since peat contains large amounts of nitrogen, the unit's BACT is not representative of the ordinary turbines. The rest of the units are located in California. Although some of the units' emission limits represent LAER, there are a few of the units that do represent BACT. One of these units is a GE LM 5000 unit (BACT/LAER information is enclosed) that is identical to the one proposed in the application. By employing a steam injection system with a 75% control as BACT, the resulting NO_x emission limit is 25 ppm at 15% O_2. Thus, in order to have a more realistic BACT emission limitation for the proposed unit, additional information on the approximate NO_x emissions from the turbine is needed.

9/9/87

~~CAF~~ :

[illegible]

FYI

Thank you for providing us with the opportunity to comment. If you have any questions, please contact me or Mr. Gary Ng of my staff at (404) 347-2864.

Sincerely yours,

Bruce P. Miller

Bruce P. Miller, Chief
Air Programs Branch
Air, Pesticides, and Toxics
Management Division

Enclosure

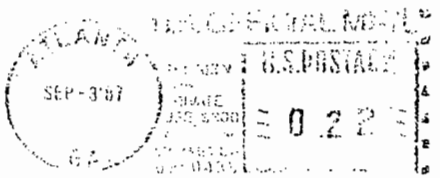
Copied: CHF/BT
Barry Andrews
Bradley Rawl
Max Finn
Tom Sawicki - Central FL Dist.
M. Flores - NPS

9/9/87

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET
ATLANTA, GEORGIA 30365

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

AIR-4



Ms. Margaret V. Janes
Bureau of Air Quality Management
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

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: Thomas M. Moses
Reedy Creek Improvement District
Post Office Box 40
Lake Buena Vista, FL 32830

4. Type of Service:	Article Number
☐ Registered ☐ Insured ☒ Certified ☐ COD ☐ Express Mail	P 274 007 700

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)*

DOMESTIC RETURN RECEIPT

P 274 007 700

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL

See Reverse

Sent to Thomas M. Moses ~~Reedy Ck. Improvement Dist.~~	
Street and No. P.O. Box 40	
P.O. State and ZIP Code Lake Buena Vista, FL 32830	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date Mailed: 09/04/87 Permit: AC 48-137740 Federal: PSD-FL-123	

PS Form 3800, June 1985

* U.S.G.P.O. 1985-480-794

Bill

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

September 4, 1987

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Thomas M. Moses
Reedy Creek Improvement District
Post Office Box 40
Lake Buena Vista, Florida 32830

Dear Mr. Moses:

Re: Review of Application for Construction of a Gas Fired Turbine Generator, Permit No. AC 48-137740, PSD-FL-123

The Department has received your application package dated August 6, 1987, and has deemed it incomplete. To further process your application, please submit the following, including all calculations, assumptions and reference material:

1. Although a NOx CEM will not be required for your project as proposed, in accordance with NSPS Subparts GG and Db, continuous verification of compliance is required. Please submit details of the method(s) you intend to use to verify the unit's continuous compliance, for the Department's approval. If you intend to install monitoring devices, submit the manufacturer's specifications/literature.

2. Please submit an analysis of your natural gas, which states the fuel-bound nitrogen content specifically, with supporting documentation of the test methods and procedures used.

3. Please note that a specific condition in the proposed permit will put a federally enforceable operating hours limit on your oil fired operation since SO_2 emission (for 29 days of operation) will be at 39.9 tons per year, just below significant levels. If you wish to retain more flexibility, please revise your calculations reflecting the "maximum allowable" hours and rates for oil-fired operation.

If you have any questions please call Pradeep Raval at (904)488-1344 or write to me at the above address.

Sincerely,

Raval

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

CHF/PR/s

Attachments

cc: R. Sadow
T. Sawicki
W. Aronson
M. Flores

Air Consulting and Engineering

February 25, 1987
151 87 01

DER
APR 1 1987
BAQM

Mr. A.T. Sawicki
Florida Department of
Environmental Regulation
3319 Maguire Blvd., Suite 232
Orlando, Florida 32803

RE: Kissimmee Utilities Commission Gas Turbine Allowable NO_x Emissions As Specified In Permit Number AO-49-093754

Dear Mr. Sawicki:

On behalf of Kissimmee Utilities Commission (KUC), Air Consulting and Engineering (ACE) has investigated the current maximum allowable emissions specified in the referenced operating permit. It would appear from the information and calculations included in this submittal, that KUC should be allowed a maximum NO_x emission of 130 ppm corrected to standard conditions versus the current limit of 79 ppm. This adjustment is necessary in accordance with Subpart GG NSPS standards which allows credit for fuel bound nitrogen. It is my belief that the fuel bound nitrogen content of natural gas was either never investigated during the original permitting effort or that the fuel analysis has changed since that time period.

Please review the enclosed data. If you agree with my assessment, I wish to ask for a permit change to reflect the higher allowable emission. I would also like to point out that the high water injection rates that are now necessary to ensure a maximum emission of 79 ppm results in greater fuel usage (decreased efficiency) and considerable combuster and turbine damage (increased maintenance cost). The high water rates also result in higher than necessary carbon monoxide emissions at all loads.

Please contact Mr. Jeff Ling of KUC or me if you have any questions regarding this request.

Respectfully,

AIR CONSULTING AND ENGINEERING

Stephen L. Neck, P.E.

SLN:ctg

attachments

cc: Mr. Jeff Ling (KUC)

2106 N.W. 67th Place, Suite 4 • Gainesville, Florida 32606 • (904) 335-1889

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

April 10, 1987

Mr. Bruce Miller
Chief, Air Facilities Branch
Air & Waste Management Division
USEPA - Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Dear Mr. Miller:

Re: PSD-FL-087
Kissimmee Utilities (Osceola County)

Attached, for your information, is a copy of Kissimmee Utilities' request to increase NOx emission concentrations from their 49.9 MW-Combined Cycle Gas Turbine.

The construction permits for this unit, PSD-FL-087 and AC 49-46521, were originally issued on February 19, 1982, and November 25, 1981, respectively.

In 1983, the Company failed to apply for an operating permit within the time allowed by the construction permit. Therefore, we requested a submission of a new application. The application was reviewed and a new state permit was issued on March 30, 1984.

On April 1, 1984, we received the above mentioned request. Currently, we are in the process of modifying the BACT determination and specific conditions for state permits AC 49-74856 and AO 49-093754.

If you have any questions, please call Teresa Heron (Review Engineer) or Barry Andrews (BACT Coordinator) at (904)488-1344.

Sincerely,

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

CHF/TH/s
Attachments: sent 4/13/87 RC
cc: John Turner, DER Orlando

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET
ATLANTA, GEORGIA 30365

APR 1 1987

4APT/APB-1jf

DER
APR 14 1987
BAQM

Mr. Clair Fancy, P.E.
Deputy Chief
Bureau of Air Quality Management
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301

Re: Kissimmee Utilities (Osceola County)

Dear Mr. Fancy:

This is in regard to your letter of April 10, 1987, forwarding the above company's request to increase the allowable nitrogen oxides emissions from their 49.9 MW combined cycle gas turbine. They have requested to increase their allowable emissions concentration limit from 79 ppm to 130 ppm using the fuel bound nitrogen credit as provided for in the New Source Performance Standards, Subpart GG.

We have reviewed the company's request to use the nitrogen content of their natural gas supply in calculating the emissions rate from equations contained in Subpart GG, New Source Performance Standards. During our review, we contacted the Office of Air Quality Planning and Standards regarding the definition of fuel bound nitrogen and data regarding measured concentrations of fuel bound nitrogen in natural gas. Their response was that natural gas does not contain measurable amounts of fuel bound nitrogen and that the nitrogen content reported by the supplier is probably atmospheric nitrogen which is not credible as fuel bound nitrogen. Therefore, the company's analysis supporting their request to increase their nitrogen oxides emissions rate is not valid.

In summary, the company's request to increase nitrogen oxides emissions when burning natural gas should be denied on the basis that the reported nitrogen content of the natural gas is not fuel bound nitrogen. Unless the supplier is able to provide an analysis of their natural gas which determines fuel bound nitrogen only, with supporting documentation of test methods and procedures, credit cannot be given in the calculation of allowable nitrogen oxide emissions as provided under the New Source Performance Standards, Subpart GG.

If you have any questions regarding this determination, you may contact Michael Brandon of my staff at (404) 347-2864.

Sincerely,

Bruce P. Miller

Bruce P. Miller, Chief
Air Programs Branch
Air, Pesticides and Toxics
Management Division

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

August 7, 1987

Mr. Wayne Aronson
Chief
Program Support Section
U.S. EPA, Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Dear Mr. Aronson:

RE: Reedy Creek Improvement District
State Construction Permit Number: AC 48-137740
PSD Number: PSD-FL-123

Enclosed for your review and comment is the application packet for the above referenced company. If you have any comments or questions, please contact Pradeep Raval or Max Linn by September 4, 1987, at the above address or at (904)488-1344.

Sincerely,

M.V. Janes

Margaret V. Janes
Bureau of Air Quality
Management

/mj

cc: Pradeep Raval
Max Linn
Tom Sawicki, Central Florida Dist.
Miguel Flores, NPS

enclosures

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

August 7, 1987

Mr. Miguel Flores
Chief, Permit Review and Technical
Support Branch
National Park Service-Air
Post Office Box 25287
Denver, Colorado 80225

Dear Mr. Flores:

RE: Reedy Creek Improvement District
State Construction Permit Number: AC 48-137740
PSD Number: PSD-FL-123

Enclosed for your review and comment is an application packet for the above referenced company. The facility is within 100 kilometers of the Chassahowitzka National Wildlife Refuge. If you have any comments or questions, please contact Pradeep Raval or Max Linn by September 4, 1987, at the above address or call him at (904)488-1344.

Sincerely,

M. V. Janes

Margaret V. Janes
Bureau of Air Quality
Management

/mj

cc: Pradeep Raval
Max Linn
Tom Sawicki, Central Florida Dist.
Wayne Aronson, EPA

enclosures

File Copy

Receipt # 76175 AC48-137740
PSD-FL-123

REEDY CREEK IMPROVEMENT DISTRICT

P.O. BOX 36 LAKE BUENA VISTA, FLORIDA 32830 TELEPHONE (305) 828-2034

DER

AUG 6 1987

BAQM

August 5, 1987

FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION
Bureau of Air Quality Management
Central Air Permitting Section
2600 Blair Stone Road
Tallahassee, FL 32301-8241

Gentlemen:

Enclosed are four copies of our completed Application for a Permit to construct, including all required exhibits, attachments and reports for a major new source CoGeneration facility planned for the Central Energy Plant at our Bay Lake location near Lake Buena Vista, Florida. At the suggestion of your Engineering Department we have executed both Department forms, DER 17-1.202(1) and DER 17-2.1000(1). We have also enclosed a check for the required processing fee of $1,000.00, and letter of authorization.

We had introduced this project to, and obtained initial guidance from, members of your staff at a meeting in your office on April 10, 1987.

If you have any administrative questions, please refer them to Robert H. Kohl, Director, Reedy Creek Utilities Company, Inc. (telephone (305) 824-4026). Technical questions should be referred to our Engineer/Construction; Ford, Bacon & Davis, Inc., attention of Harold L. Culp, P.E. or R. D. Sadow, as noted in the application.

As basic engineering work is getting underway, for this modernization, we would appreciate your timely response to this submittal.

Thank you for your attention to this matter. Please advise us if we may be of any assistance.

Very truly yours,

Richard Garvey
Planning and Environmental Permitting

RG:pb

Copies: Pradeep Raval
Max Lorini
Barry Andrews
Wayne Aronson, EPA
Miguel Flores, NPS
Tom Sawicki, Orlando

REEDY CREEK
IMPROVEMENT
DISTRICT

DIRECTOR/GENERAL MANAGER
Thomas M. Moses

August 5, 1987

State of Florida
Department of Environmental Regulation
Mr. Dale Twachtmann
Secretary
Twin Towers Office Building
Tallahassee, Florida 32399-2400

Dear Mr. Twachtmann:

This letter will serve to advise you that as the Director/General Manager of the Reedy Creek Improvement District I am authorized to sign all contracts, agreements and other official documents for the Reedy Creek Improvement District.

This authorization is a part of the job responsibilities assigned to my position.

If there are any questions regarding this matter please call me.

Sincerely,

Thomas M. Moses
Director/General Manager

TMM:dh

AC 48-137740
PSD-FL-123

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

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

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Gas-Fired Turbine with Heat Recovery Boiler [X] New[1] [ ] Existing[1]

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

COMPANY NAME: Reedy Creek Improvement District COUNTY: Orange

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peaking Unit No. 2, Gas Fired) Heat Recovery Boiler Stack

SOURCE LOCATION: Street Central Energy Plant ------ Bay Lake City Lake Buena Vista

UTM: East 442.0 North 3139.0

Latitude 28 ° 25 ' 34 "N Longitude 81 ° 34 ' 48 "W

APPLICANT NAME AND TITLE: REEDY CREEK IMPROVEMENT DISTRICT
Thomas M. Moses, Director/General Manager

APPLICANT ADDRESS: P.O. Box 40 Lake Buena Vista, Florida 32830

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of RCID

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

*Attach letter of authorization

Signed: Thomas M Moses

Thomas M. Moses, Director/General Manager
Name and Title (Please Type)

Date: 8/4/87 Telephone No. (305)828-2241

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

This is to certify that the engineering features of this pollution control project have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that

[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 the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signed Harold L Culp

Harold L. Culp, PE
Name (Please Type)

Ford Bacon & Davis, Inc
Company Name (Please Type)

P.O.Box 1894 Monroe, LA 71210
Mailing Address (Please Type)

Florida Registration No. 29275 Date: 8/3/87 Telephone No. (318) 323-9000

SECTION II: GENERAL PROJECT INFORMATION

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

Installation of a gas-fired, aircraft derivative, turbine generator using water injection for NO_x control, standby fuel oil, duct burner, steam generator and steam turbine to produce up to 38 MW of power for Reedy Creek Improvement District usage. See attached reports.

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

Start of Construction September 15, 1987 Completion of Construction November 1, 1987

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.)

Integral design of equipment and not individually available

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

Will replace existing smaller turbines and boilers A048-106735 and A048-106733

E. Requested permitted equipment operating time: hrs/day 24 ; days/wk 7 ; wks/yr 52 ; if power plant, hrs/yr 8760 ; if seasonal, describe: However expect units to experience some maintenance downtime that should maximize operating time to about 8500 hours/year on an average basis.

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

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

   a. If yes, has "offset" been applied? No

   b. If yes, has "Lowest Achievable Emission Rate" been applied? No

   c. If yes, list non-attainment pollutants. Ozone

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

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

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

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

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 justification for any answer of "No" that might be considered questionable.

See Attachments

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

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

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

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

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] Requested max. Maximum lbs/hr	Actual T/yr	Allowed[2] Emission Rate per Rule 17-2 NSPS	Allowable[3] Emission lbs/hr	Potential[4] Emission lbs/hr	T/yr	Relate to Flow Diagram
CO	gas	15	63.7	N/A	N/A gas	11.8	50.1	Main
	*oil	20	6.96		oil	17.6	6.1	
NOx	gas	145	616.2	gas 152.1ppm	gas 215 gas	142.6	606	Stack
	*oil	150	52.2	oil 103.5ppm	oil 153 oil	149	51.8	
PM	gas	0.5	2.1	N/A	N/A gas	0.4	1.7	(See
	*oil	9	3.1		oil	8	2.8	
SO_2	gas	0.18	0.78	0.8% S (oil)	112 gas	0.17	0.75	Diagram)
	*oil	112	39	150 ppmvd-15% O_2	(29 days) oil	112	39	
°VOC	gas	7.5	31.8	N/A	N/A gas	6.1	25.9	
	*oil	8	2.8		oil	6.6	2.3	

[1]See Section V, Item 2. * Standby No.2 fuel oil to be used not more than 29 days/year emergency only-oil contains 0.32% S.
NOx-ReferenceMethod 20 44 FR 52792

[2]Reference applicable emission standards and units (e.g. Rule 17-2.600(5)(b)2. Table II, E. (1) - 0.1 pounds per million BTU heat input) NOx-ppmvd-15% O_2 (NSPS)

[3]Calculated from operating rate and applicable standard.

[4]Emission, if source operated without control (See Section V, Item 3).
(Projected but using water injection - based on mfg. data for 8500 $\frac{hrs}{yr}$)

° Methane plus non-methane

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)
Water injection	NOx	55-70%	N/A	Mfg. data

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
Natural gas	0.419	0.432	445.2
No.2 fuel oil (for only 29 days /yr)	2473	3248	400.0

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

Fuel Analysis:

Percent Sulfur: 0.001 ± (gas) 0.32 (oil) Percent Ash: 0 (gas) 0.005 (oil)

Density: 7.1 ± (oil) lbs/gal Typical Percent Nitrogen: 0.756 (gas) 0 (oil)

Heat Capacity: 20797 LHV (gas) BTU/lb 131,350 LHV (oil) BTU/gal

Other Fuel Contaminants (which may cause air pollution): None of significance

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

Annual Average _____ Maximum _____

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

Any miscellaneous oils will be collected and reclaimed by outside contract. Miscellaneous boiler/cooling tower blowdowns and water treatment regenerant/reject streams will be discharged to the sanitary sewer and treated.

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

Stack Height: 65 (M) 65 (B) ft. Stack Diameter: 11.16 (M) 12.41 (B) ft. (equivalents-rectangular)

Gas Flow Rate: 306,396(M) 513,790(B) ACFM 206,385 (M) 206,183 (B) DSCFM Gas Exit Temperature: 285 (M) 800 (B) °F.

Water Vapor Content: 7.3 (M) 7 (B) % Velocity: 52.2 (M) 70.8 (B) FPS

M= Main stack B= By-pass stack

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 Diamter: _____ Stack Temp. _____

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

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

Type of pollution control device: [ ] Cyclone [ ] Wet Scrubber [ ] Afterburner

[ ] Other (specify) _____

Brief description of operating characteristics of control devices: _____

_____

_____

_____

_____

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

_____

_____

_____

_____

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 processes and outlets for airborne emissions. Relate all flows to the flow diagram.

9. The appropriate application fee in accordance with Rule 17-4.05. The check should be made payable to the Department of Environmental Regulation.

10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit.

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

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

[X] Yes [ ] No

Contaminant	Rate or Concentration
NOx	*152.1 ppmvd 15% O_2 (0.0075 $\frac{14.4}{Y}$ + F) (F=.005)
SO_2	0.015% by vol., 15% 02, dry and fuel under 0.8% S by weight
	* Converts to 215 lbs/hr NOx - gas fuel

B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy) (See VI A. above)

[X] Yes [ ] No

Contaminant	Rate or Concentration
See 40 CFR Subpart GG	60.330 et al

C. What emission levels do you propose as best availsble control technology? 40 CFR GG

Contaminant	Rate or Concentration
NOx	145 lbs/hr (gas) 150 lbs/hr (oil-29 days/yr)
SO_2	0.32% sulfur fuel oil (#2) < 0.8%

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

1. Control Device/System: Water Injection into combustor
2. Operating Principles: Reduce flame temperatures
3. Efficiency:* 60-65% Generally (by vendor)
4. Capital Costs:

*Explain method of determining

5. Useful Life: Same As Machine

6. Operating Costs:

7. Energy: 8 gpm gas, 21 gpm oil (water usage)

8. Maintenance Cost:

9. Emissions:

Contaminant (See IIIc)	Rate or Concentration
NOx	145 lbs/hr (gas), 150 lbs/hr (oil)
SO2	0.18 lbs/hr (gas), 112 lbs/hr (oil - for only 29 days/yr)

10. Stack Parameters M = Main Stack B = Bypass Stack

a. Height: 65 (M) 65 (B) ft.

b. Diameter: 11.16 (M) 12.41 (B) ft.

c. Flow Rate: 306,396 (M) 513,790 (B) ACFM

d. Temperature: 285 (M) 800 (B) °F.

e. Velocity: 52.2 (M) 70.8 (B) FPS

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

1. (See VI, D)

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:

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:

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

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant (See VI D)	Rate or Concentration

(8) Process Rate:[1]

b. (1) Company:

(2) Mailing Address:

(3) City: (4) State:

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

10. Reason for selection and description of systems:

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

SECTION VII - PREVENTION OF SIGNIFICANT DETERIORATION

A. Company Monitored Data N/A (See attached PSD Report for detailed information.)

1. _____no. sites _____ TSP _____( ) SO^{2}* _____ Wind spd/dir

Period of Monitoring _____/_____/_____ to _____/_____/_____
month day year month day year

Other data recorded _____

Attach all data or statistical summaries to this application.

*Specify bubbler (B) or continuous (C).

2. Instrumentation, Field and Laboratory

a. Was instrumentation EPA referenced or its equivalent? [ ] Yes [ ] No

b. Was instrumentation calibrated in accordance with Department procedures?

[ ] Yes [ ] No [ ] Unknown

B. Meteorological Data Used for Air Quality Modeling

1. 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) BAQM

C. Computer Models Used

1. ISCST UNAMAP Version 6 Modified? Default, Rural If yes, attach description.

2. PT PLU Screening Modified? Default, Rural 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. (Attached)

D. Applicants Maximum Allowable Emission Data

Pollutant	Emission Rate	
TSP	N/A	grams/sec
SO^2	N/A	grams/sec

E. Emission Data Used in Modeling (See Attached Report)

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

F. Attach all other information supportive to the PSD review. (Attached)

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

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

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

APPLICATION FOR PERMIT TO CONSTRUCT/OPERATE AIR POLLUTANT EMISSION SOURCE

This form is not intended to be self-explanatory. An instruction booklet for air permit application forms is available from any office of the department. The booklet provides general instructions for both the applicant and the department as well as specific instructions for each numbered field.

All applicable fields must be filled in, all applicable supplemental requirements addressed, and the appropriate application fee submitted for the application to be considered complete and for the department to take action upon it. Shaded fields are reserved for DER use and must be left blank by the applicant.

APPLICATION TYPE & FACILITY IDENTIFICATION

1. Type of Permit Application (Check One)					2. Facility Identification Code			
Construction Initial	Construction Modif.	Initial Operation	Site Cert.	Amend-ment	Dist.	Office	County	Facility
☒	☐	☐	☐	☐				

CERTIFICATIONS

1. Statement By Owner Or Authorized Representative

I, the undersigned, am the owner or authorized representative* of the facility described in this application. I certify that the statements made in this application for a permit are true, correct, and complete to the best of my knowledge. Futher, I agree to operate and maintain the source of air pollutants and pollution control equipment described in this application so as to comply with all provisions of Chapter 403, Florida Statutes, and all applicable rules and regulations of the Department of Environmental Regulation and revisions thereof. I also understand that a permit, if granted by the department, will be nontransferable, and I will promptly notify the department upon sale or legal transfer of the permitted source.

*Attach letter of authorization if not currently on file.

Signature

8/4/87
Date

2. Professional Engineer Information	Name	Florida Registration Number
	Harold L. Culp, PE	29275

Organization/Firm	Street or Post Office Box
Ford, Bacon & Davis, Incorporated	P.O. Box 1894

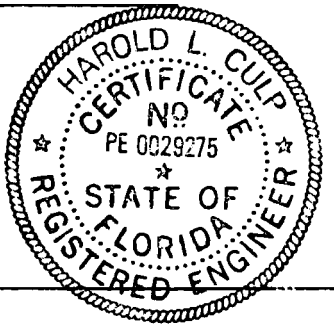
City	State	Zip	Telephone Number
Monroe	LA	71210	(318) 323-9000

3. Statement By Professional Engineer Registered In Florida (where required by Chapter 471, F.S.)

I, the undersigned, certify that the engineering features of this project have been designed or examined by me or individuals under my direct supervision and found to be in conformity with modern engineering principles applicable to the control of emissions of the air pollutants characterized in this permit application. There is reasonable assurance, in my professional judgment, that the source of air pollutants and the pollution control equipment, when properly operated and maintained, will comply with all applicable statutes of the State of Florida and all applicable rules and regulations of the Department of Environmental Regulation.

Harold L Culp
Signature

8/3/1987
Date



(Affix Seal)

AIR020					APIS	

FACILITY INFORMATION

1. Facility Owner (40 Characters) Reedy Creek Improvement District	2. Facility Ownership Code U
3. Facility Name/Location (40 Characters) Central Energy Plant - Bay Lake	4. Facility Loc. Zip Code 32830
5. Facility City Lake Buena Vista	6. City Code
7. Facility Type Code/Description 99 Gas Turbine Cogeneration	8. On Table 500-1? Y

9. Facility UTM Coordinates (km)	Zone	East	North
	17	442.0	3139.0

10. Facility Lat./Long. (o, ', ")	Latitude	Longitude
	28-25-34	81-34-48

11. Facility Compliance Tracking Codes	CDS	VOC

12. Facility Comment (60 Characters)

AIR021 | | | | | | APIS | |

OWNER/CONTACT INFORMATION

1. Owner or Authorized Representative	Name: Thomas M. Moses	(40 Characters)
	Organization/Firm: REEDY CREEK IMPROVEMENT DISTRICT	(40 Characters)
Street Address or P. O. Box: P O Box 40	City: Lake Buena Vista	
State: Florida	Zip: 32830	Telephone: (305) 828-2034
2. Facility Contact	Name: Frank Jones	(40 Characters)
	Organization/Firm: Reedy Creek Utilities Co., Inc.	(40 Characters)
Street Address or P. O. Box: 5300 N. Center Dr.	City: Lake Buena Vista	
State: Florida	Zip: 32830	Telephone: (305) 827-7700

SOURCE/PROCESS DESCRIPTION & PROJECT INFORMATION (DO NOT ENTER INTO APIS)

1. Source Identifer	2. Current DER Permit Number To replace AO 48-106735 (Turbines) and AO 48-106733 (Boilers)

3. Description of Source

GE LM5000 Gas-fired turbine generator supplemented by a gas-fired duct burner-assisted three drum heat recovery steam boiler (combined-cycle power plant).

4. Description of Process

Provide a gas-fired (aircraft) turbine generator, with standby No. 2 fuel oil, duct burner, steam generator and all auxiliaries to produce up to 38 MW of power for various District usages. See attached flow diagram.

5. Nature and Extent of Proposed Project

To shutdown two existing Orenda Gas Turbines and Waste Heat Boilers (11MW), install new, larger GE gas turbine (32 MW) and downstream waste heat recovery boiler, produce three levels of steam pressure for turbine, chiller and hot water needs. High pressure (600 psig) steam will drive a conventional turbine-coupled generator adding an additional 6 MW capacity. Project also includes an 1800 BHP, 1200 net KW, No. 2 oil "Black Start" skid-mounted generator that will not operate until a total outside utility power outage occurs. For reliability unit will be run an estimated 10 minutes/week. See supplementary information attached.

6. Projected Dates of Commencement and Completion of Construction

Commence September 15, 1987. Complete by October, 1988 to November 1, 1988.

AIR030 [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ] APIS [ ][ ][ ][ ]

SOURCE PROCESSING/TRACKING INFORMATION

1. Construction Permit/PPS Information

Permit Number Assigned This App.	PPS Number Assigned This App.	Fee Paid
AC -		

Date Permit Issued/Site Cert. Approved MM/DD/YY	Date This Permit Expires MM/DD/YY

Probable Completion Date MM/DD/YY	

2. Operation Permit Information

Permit Number Assigned This App.	Fee Paid	AOR Required?
AO -		

Date This Permit Issued MM/DD/YY	Date This Permit Expires MM/DD/YY

3. Description of Source Addressed in This Application (60 Characters)

4. Source Initial Construction Date MM/DD/YY	5. Source Type Code
09/00/87 Planned	C-3

6. Source SIC Code

4911

7. NSPS	8. NESHAP	9. 111(d)	10. PSD	11. NAA NSR	12. RACT

13. Source Comment (120 Characters)

AIR032 | | | | | | APIS | | |

SOURCE OPERATING SCHEDULE/RATE INFORMATION

1. Typical Operating Schedule	hr/dy	dy/wk	wk/yr	
	24	7	50.6-52	
2. Typical % Hours of Operation By Season	DJF	MAM	JJA	SON
	25	25	25	25
3. Requested Operating Schedule Limit(s)	hr/dy	dy/wk	wk/yr	hr/yr
	24	7	52	8760
	DO NOT ENTER INTO APIS			
4. Permitted Operating Schedule Limit(s)	hr/dy	dy/wk	wk/yr	hr/yr
5. Maximum Process Rate	Units			
N/A				
6. Maximum Production Rate	Units			
38.4 + 8.4 = 46.8	Megawatts			

AIR033 | | | | | | | APIS | | |

SOURCE EMISSION POINT/CONTROL INFORMATION

1. Emission Point Type 3	2. Point ID on Diagram TB-1	3. Sources with Common Stack N/A

4. Stack Height (ft)	5. Exit Diameter (ft)	6. Exit Temperature (°F)
65	11.16	285

7. Actual Volumetric Flow Rate (acfm)	8. Dry Standard Flow Rate (dscfm)
306,396	N/A

9. Nonstack Emission Height (ft)	10. Building Dimensions (ft)	Height	Width
0		N/A	N/A

11. Point UTM Coordinates (Optional) (km)	East	North	12. Good Engineering Practice Stack Height (ft)
			N/A

13. Emission Point Comment (52 Characters)

14a. Description of Control Equipment 'a'
Direct injection of water into combustor to reduce NOx formation (by GE).

14b. Description of Control Equipment 'b'

N/A

15. Liquid/Solid Wastes Generated by Control Equipment and Methods/Locations of Disposal

N/A

AIR034 | | | | | | APIS | |

SOURCE PROCESS INFORMATION (PAGE 1 OF 1)

1. Component Process or Type of Fuel Employed Natural gas used to fire turbine and downstream duct burner (MM CF burned) - primary fuel.			
2. Source Classification Code for Above Process/Fuel		3. Requested Annual Rate Limit 3246 DO NOT ENTER INTO APIS	
4. Rate Unit Code MCFB	5. Maximum Hourly Rate 0.432	6. Permitted Annual Rate Limit	
7. Estimated Annual Rate 3091	8. % Sulfur in Fuel 0.001±	9. % Ash in Fuel 0	10. 10^6 Btu/Unit (as Fired) in Fuel 1030.2 HHV
11. SCC Comment for Above Process/Fuel (52 Characters)			

1. Component Process or Type of Fuel Employed No. 2 fuel oil used as standby fuel to fire turbine and downstream duct burner (M GAL burned) up to 29 days/yr.			
2. Source Classification Code for Above Process/Fuel		3. Requested Annual Rate Limit 1800 DO NOT ENTER INTO APIS	
4. Rate Unit Code K GAL B	5. Maximum Hourly Rate 3.248	6. Permitted Annual Rate Limit	
7. Estimated Annual Rate 1700	8. % Sulfur in Fuel 0.32 Max.	9. % Ash in Fuel 0.005	10. 10^6 Btu/Unit (as Fired) in Fuel 141.3 HHV
11. SCC Comment for Above Process/Fuel (52 Characters)			

AIR037 | | | | | | | APIS | | |

RFP INFORMATION

1. RFP Tracked?

2. Base Year Actual Emissions

Base Year	VOC (lb/day)	NOX (lb/day)

3. Projected Year Allowable Emissions

Proj. Year	VOC (lb/day)	NOX (lb/day)

4. Comments

AIR038 | | | | | APIS | | |

PSD INFORMATION

1. PSD Increment Consuming/Expanding?	
2. Baseline Emissions	
SO2 Short Term (lb/hr)	SO2 Annual (ton/yr)
PM Short Term (lb/hr)	PM Annual (ton/yr)
3. Comments	

AIR040							APIS	

POLLUTANT INFORMATION (PAGE 1 OF 5)

1. Pollutant Emitted ID CO	2. Total % Efficiency of Control 0
3. Primary Control Device Code 000	4. Secondary Control Device Code 000
5. Emission Factor Source Test and Design Data	6. Emission Factor Reference Vendor Data

7. Potential Emission	(lb/hr)	(ton/yr)
	11.8 Nat. Gas 17.6 Standby Fuel Oil	50.1 (8500 hrs/yr) 6.1 (29 days/yr)

8. Estimated Emission (ton/yr) Gas - 50.1 (8500 hrs/yr) Oil - 6.1 (29 days/yr)	9. Emission Estimate Method Code 1 and 2
10. Requested Emission Limit(s): lb/hr — 15 gas, 20 oil; ton/yr — 63.7, 6.96 DO NOT ENTER INTO APIS	11. Requested Emission Limit in Units Other Than lb/hr N/A DO NOT ENTER INTO APIS
12. Allowable Emissions: lb/hr; ton/yr	13. Allowable Emission in Units Other Than lb/hr
14. Regulation Code	15. CEM Required?
16. Compliance Test Frequency	17. Frequency Base Date
18. Pollutant Comment (60 Characters)	

AIR040 | | | | | | APIS |

POLLUTANT INFORMATION (PAGE 2 OF 5)

1. Pollutant Emitted ID NOx	2. Total % Efficiency of Control 50-70
3. Primary Control Device Code 028	4. Secondary Control Device Code 000
5. Emission Factor Source Test and Design Data	6. Emission Factor Reference Vendor Data
7. Potential Emission (lb/hr) 142.6 Nat. Gas 149 Standby Fuel Oil	(ton/yr) 606 (8500 hrs/yr) 51.8 (29 days/yr)
8. Estimated Emission (ton/yr) Gas - 606 (8500 hrs/yr) Oil - 51.8 (29 days/yr)	9. Emission Estimate Method Code 1 and 2
10. Requested Emission Limit(s) lb/hr: 145 Gas; 150 Oil ton/yr: 616.2; 52.2 DO NOT ENTER INTO APIS	11. Requested Emission Limit in Units Other Than lb/hr N/A DO NOT ENTER INTO APIS
12. Allowable Emissions lb/hr ton/yr	13. Allowable Emission in Units Other Than lb/hr
14. Regulation Code	15. CEM Required?
16. Compliance Test Frequency	17. Frequency Base Date
18. Pollutant Comment (60 Characters)	

AIR040 | | | | | | | APIS | | |

POLLUTANT INFORMATION (PAGE 3 OF 5)

1. Pollutant Emitted ID PM	2. Total % Efficiency of Control 0
3. Primary Control Device Code 000	4. Secondary Control Device Code 000
5. Emission Factor Source Test and Design Data	6. Emission Factor Reference Vendor Data

7. Potential Emission	(lb/hr)	(ton/yr)
	0.4 Nat. Gas	1.7 (8500 hrs/yr)
	8.0 Standby Fuel Oil	2.8 (29 days/yr)

8. Estimated Emission (ton/yr) Gas - 1.7 (8500 hrs/yr) Oil - 2.8 (29 days/yr)	9. Emission Estimate Method Code 1 and 2

10. Requested Emission Limit(s)	lb/hr	ton/yr	11. Requested Emission Limit in Units Other Than lb/hr
	0.5 Gas	2.1	N/A
	9.0 Oil	3.1	
	DO NOT ENTER INTO APIS		DO NOT ENTER INTO APIS

12. Allowable Emissions	lb/hr	ton/yr	13. Allowable Emission in Units Other Than lb/hr

14. Regulation Code	15. CEM Required?
16. Compliance Test Frequency	17. Frequency Base Date

18. Pollutant Comment (60 Characters)

AIR040 | | | | | | APIS |

POLLUTANT INFORMATION (PAGE 4 OF 5)

1. Pollutant Emitted ID SO2	2. Total % Efficiency of Control 0
3. Primary Control Device Code 000	4. Secondary Control Device Code 000
5. Emission Factor Source Test and Design Data	6. Emission Factor Reference Vendor Data
7. Potential Emission: (lb/hr) 0.17 Nat. Gas; 112 Standby Fuel Oil — (ton/yr) 0.75 (8500 hrs/yr); 39.0 (29 days/yr)	
8. Estimated Emission (ton/yr) Gas - 0.75 (8500 hrs/yr) Oil - 39.0 (29 days/yr)	9. Emission Estimate Method Code 1 and 2
10. Requested Emission Limit(s): lb/hr — 0.18 Gas; 112 Oil — ton/yr — 0.78; 39 DO NOT ENTER INTO APIS	11. Requested Emission Limit in Units Other Than lb/hr N/A DO NOT ENTER INTO APIS
12. Allowable Emissions: lb/hr — ton/yr	13. Allowable Emission in Units Other Than lb/hr
14. Regulation Code	15. CEM Required?
16. Compliance Test Frequency	17. Frequency Base Date
18. Pollutant Comment (60 Characters)	

AIR040 | | | | | | APIS | |

POLLUTANT INFORMATION (PAGE 5 OF 5)

1. Pollutant Emitted	2. Total % Efficiency of Control
ID VOC	0
3. Primary Control Device Code	4. Secondary Control Device Code
000	000
5. Emission Factor	6. Emission Factor Reference
Source Test and Design Data	Vendor Data (includes methane)

7. Potential Emission	(lb/hr)	(ton/yr)
	6.1 Nat. Gas	25.9 (8500 hrs/yr)
	6.6 Standby Fuel Oil	2.3 (29 days/yr)

8. Estimated Emission (ton/yr)	9. Emission Estimate Method Code
Gas - 25.9 (8500 hrs/yr) Oil - 2.3 (29 days/yr)	1 and 2 (methane and non-methane)

10. Requested Emission Limit(s)	lb/hr	ton/yr	11. Requested Emission Limit in Units Other Than lb/hr
	7.5 Gas	31.8	N/A
	8 Oil	2.8	
	DO NOT ENTER INTO APIS		DO NOT ENTER INTO APIS

12. Allowable Emissions	lb/hr	ton/yr	13. Allowable Emission in Units Other Than lb/hr

14. Regulation Code	15. CEM Required?
16. Compliance Test Frequency	17. Frequency Base Date

18. Pollutant Comment (60 Characters)

AIR042 [ ] [ ] [ ] [ ] [ ] [ ] APIS [ ]

VISIBLE EMISSIONS INFORMATION (PAGE 1 OF 1)

1. Visible Emissions Subtype		
ID VE		
2. Requested Opacity Limit(s)	Normal Conditions	Exceptional Conditions
	4-5	N/A
	%	% min/hr
	DO NOT ENTER INTO APIS	
3. Allowable Opacity	Normal Conditions	Exceptional Conditions
	%	% min/hr
4. Regulation Code		5. CEM Required?
6. Test Frequency		7. Frequency Base Date

AIR043 [ ] [ ] [ ] [ ] [ ] [ ] APIS [ ]

FUGITIVE EMISSIONS INFORMATION (PAGE 1 OF 1)

1. Fugitive Pollutant Emitted

ID None

2. Fugitive Emission Source and Control Information

N/A

3. Quantifiable Fugitive Emission (ton/yr)

N/A

AIR046 APIS

TOXIC POLLUTANT INFORMATION PART I (PAGE PAIR __ OF __)

'RESERVED'

AIR047 | | | | | | | | | | | | | | | | | | | | APIS | | |

TOXIC POLLUTANT INFORMATION PART II (PAGE PAIR __ OF __)

'RESERVED'

AIR060 | | | | | | APIS | | |

BOILER INFORMATION

1. Boiler Manufacturer Henry Vogt Machine Company
2. Boiler Model Number Class MSG
3. Boiler Type Natural Circ. Finned Tube Heat Rec. Unit
4. Maximum Heat Input Rate (10^6 Btu/hr) 198.948
5. Maximum Steam Production Rate (lb/hr) and/or Horsepower 150,750
6. Generator Nameplate Rating (gross MW) 8.40
7. Boiler Comment (104 Characters)

AIR061 | | | | | APIS

INCINERATOR/RESOURCE RECOVERY INFORMATION

1. Incinerator Manufacturer N/A	
2. Incinerator Type	
3. Incinerator Maximum Capacity — lb/hr	ton/day
4. Dwell Time/Temperature sec. @ °F	5. Afterburner Temperature °F

6. Type(s) of Waste Incinerated

_ (Trash 0)	_ (Rubbish 1)	_ (Refuse 2)
_ (Garbage 3)	_ (Organic 4)	_ (Nonsolid By-Prod 5)
_ (Solid By-Prod 6)	_ (MSW 7)	_ (Hazardous Waste 8)

_ (Other) Description

7. Generator Nameplate Rating (gross MW)

8. Incinerator Comment (104 Characters)

AIR062 ☐☐ ☐☐☐ ☐☐ ☐☐☐☐ ☐☐ APIS ☐☐☐☐

STORAGE TANK INFORMATION (PAGE 1 OF 1)

1. Liquid Storage Tank ID N/A	2. Storage Tank Type of Control
3. Storage Tank Product	4. Storage Tank Size Category (bbl) ☐ 10,500 ☐ 67,000 ☐ 250,000
5. Storage Tank Capacity (10^3 gal)	6. Storage Tank Est. Annual Throughput (10^3 gal)
7. Storage Tank Comment (60 Characters)	

1. Liquid Storage Tank ID N/A	2. Storage Tank Type of Control
3. Storage Tank Product	4. Storage Tank Size Category (bbl) ☐ 10,500 ☐ 67,000 ☐ 250,000
5. Storage Tank Capacity (10^3 gal)	6. Storage Tank Est. Annual Throughput (10^3 gal)
7. Storage Tank Comment (60 Characters)	

1. Liquid Storage Tank ID N/A	2. Storage Tank Type of Control
3. Storage Tank Product	4. Storage Tank Size Category (bbl) ☐ 10,5000 ☐ 67,000 ☐ 250,000
5. Storage Tank Capacity (10^3 gal)	6. Storage Tank Est. Annual Throughput (10^3 gal)
7. Storage Tank Comment (60 Characters)	

SUPPLEMENTAL REQUIREMENTS

1. If not submitted previously, provide an up-to-date 8-1/2" x 11" map (e.g., the relevant portion of a USGS topographic map) showing the location of the facility and points of air pollutant emissions in relation to residences, roads, and other features of the surrounding area. [X] Attached [ ] Submitted Previously

2. If not submitted previously, provide an up-to-date 8-1/2" x 11" plot plan of the facility showing the location of manufacturing processes, control equipment, stacks, vents, and sources of fugitive emissions. [X] Attached [ ] Submitted Previously

3. If not submitted previously, provide an up-to-date 8-1/2" x 11" flow diagram identifying the individual operations and processes. Indicate where raw materials enter, where solid and liquid wastes exit, where gaseous and/or particulate emissions are evolved, and where finished products are obtained. [X] Attached [ ] Submitted Previously

4. For a construction permit application, provide an estimate of the maximum uncontrolled emission rate (in lb/hr) of each pollutant emitted and show the derivation of each such estimate (e.g., AP-42 emission factor). For a construction permit application involving the combustion of any fuel other than distillate oil, liquefied petroleum gas, or natural gas, provide an ultimate analysis of the fuel to be used. The ultimate analysis should give the density, the heat content, and the percent content by weight of carbon, hydrogen, oxygen, sulfur, nitrogen, ash, and moisture.

5. For a construction permit application, show the bases of the potential (after control) emission estimates (e.g., design calculations, design drawings, pertinent manufacturer's test data, etc.) and describe the proposed methods for showing proof of compliance with any applicable emission limiting standards.

6. For a construction permit application, provide 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.). For each such system, provide either a copy of the manufacture's guarantee of control efficiency or an engineering estimate of control efficiency as certified by a registered professional engineer. Items 4, 5, and 6 should be consistent; i.e., Uncontrolled Emission = (Potential Hourly Emission)/(1-Control Efficiency).

7. For a construction permit application subject to review under Rule 17-2.500, "Prevention of Significant Deterioration," or Rule 17-2.510, "New Source Review for Nonattainment Areas," provide all additional information required by the department under such rule (e.g., summary of contemporaneous emission changes, BACT or LAER evaluation, monitoring data, summary of modeling results, one copy of all pertinent model output, etc.).

8. For a permit application subject to the "Reasonably Available Control Technology" provisions of Rule 17-2.650, provide all additional information required by the department under that rule.

9. For a permit application involving the incineration of hazardous wastes, provide all additional information required by the department under Rule 17-30 and Chapter 403, Florida Statutes.

10. Submit the appropriate application fee in accordance with Rule 17-4.05. The check should be made payable to the Florida Department of Environmental Regulation.

PERMIT APPLICATION REPORT FOR THE INSTALLATION OF A COMBINED CYCLE POWER PLANT AT THE REEDY CREEK IMPROVEMENT DISTRICT (WALT DISNEY WORLD) CENTRAL ENERGY PLANT AT LAKE BUENA VISTA, FLORIDA

Prepared by:
Ford, Bacon & Davis, Inc.
Engineers - Constructors
Monroe, Louisiana

July 29, 1987

I6356L

TABLE OF CONTENTS

I. Introduction and Background

II. Project Premises

A. General
B. Existing Turbines
C. "Black Start" Emergency Diesel Generator
D. Illustrations

III. Compliance Basis for Gas Turbine and Steam Generator Emissions

IV. Closure

Appendix

Figure 1 and 2 - Area Map and Site Location
Figure 3 - Area Plot Plan
Figure 4 - Process Flow Diagram

Exhibit 1 - Gas Turbine Performance
Exhibit 2 - Combustion Data
Exhibit 3 - "Black Start" Generator

SUPPLEMENTAL REPORT

I. Introduction and Background

In order to better meet power needs the Reedy Creek Improvement District (Walt Disney World) is planning to shutdown two older, smaller gas turbines and their associated heat recovery steam generators, and replace them with one new GE LM5000 dual-fuel combustion turbine followed by an integrated heat recovery steam boiler and steam turbine.

The Reedy Creek Utilities Company, Inc. will be operating these facilities, but only in behalf of the Owner, which for the purposes of this application is the Reedy Creek Improvement District (RCID).

This 38 MW combined cycle plant is considered a new source of air emissions and falls under the Prevention of Significant Deterioration (PSD) regulations category for NO_X.

A meeting was held with Bureau of Air Quality Management personnel on April 10, 1987 in Tallahassee to introduce the Project and to verify details of the PSD-based Permit-to-Construct requirements. The culmination of this effort is incorporated within this application package and consists of:

a) DER Form 17-2.1000(1)
b) DER Form 17.1.202(1) - both completed forms requested by Engineering Section
c) PSD Permit Analysis Report by ERT
d) Supplemental Report containing -

   1) Area Map
   2) Plot Plan of Emission Source
   3) Process Flow Diagram
   4) Manufacturer's Performance Data - Gas Turbine
   5) Manufacturer's Combustion Products Breakdown - Turbine plus Duct Burner (Gas and Oil)
   6) Manufacturer's Data-Black Start Diesel Generator
   7) Other Relevant Information, Premises and Details

II. Project Premises

A. General

To allow for reasonable maintenance downtime the turbine/heat recovery boiler installation should be operated at about 8500 hours per year although this can vary with needs and machine availability. It is possible that for some twelve month period the equipment may perform for 8760 hours. Thus the requested emission limits are based on a maximum of 8760 hours operation and the potential, more likely, limits on 8500 hours.

These intervals are based on burning natural gas consistently. The turbine and downstream supplementary duct burner can burn No. 2 distillate oil if the natural gas supply is curtailed. This should rarely occur thus this application is based on burning oil only up to 29 days in any one year (maximum oil sulfur level of 0.32%). This interval was predicated on internal reliabilities plus acknowledging that the PSD De Minimis Permitting threshold of 40 tons/year of SO_2 need not be exceeded.

As described in the application itself, there are two emission points involved, the main or primary stack (98.14 SF square unit or an equivalent of 11'-2" diameter) and the emergency bypass stack (121.9 SF square or equivalent of 12'-5" diameter). The main stack exit temperature is 285°F, the bypass 800°F.

The main stack is in continuous service, the bypass unit is used only when the turbine is started up or the steam boiler (and steam turbine) must be shutdown. This shutdown instance should only occur 5-6 times per year for an hour or two for a total of around 12-15 hours per year. Because of this the PSD modeling and emission impact work was based on using only the cooler, lower velocity main stack which is the more conservative approach. Both stacks are to be 65 feet high,which when considering only the adjacent 52½ feet high turbine filter house (64 feet long, 39 feet wide), is substantially below the theoretical (by definition) GEP stack height of 111 feet.

The best available control technology to be used for NO_X abatement is water injection into the turbine combustor and controlled combustion for minimizing CO, particulate matter, volatile organic compound and opacity emissions. The use of selective catalytic reduction (SCR) or other flue gas denitrification steps was not considered cost effective nor environmentally appropriate for this installation.

For example, SCR systems use ammonia as the primary reducing agent for NO_X conversion and must be injected uniformly at near stoichiometric NH_3-NO_X levels with minimum ammonia slippages. The low reaction rates require large reactor configurations and added turbine backpressures. For the GE LM5000 turbine a converter system to reduce NO_X would cost about $850,000 additional over that of water/steam injection for roughly the same removal efficiencies. While water/steam injection performs well with gas or distillate oil firing, residual oils create NO_X (due to its fuel bound nitrogen) thus impairing removals. The sophisticated control system needed for precise ammonia injection (including analyzers for O_2, NO_X and CO) involves an additional $200,000.

Other operating concerns with this emerging catalytic technology are:

a) Reactor must be operated in the 625°-825°F exhaust temperature range consistently,

b) Catalyst life (noble metals) is about four years,

c) Ammonia expense, handling, slip and side reactions forming ammonium nitrates which pose explosive conditions, must be considered.

Overall, based on emission standards, removals, operating regimes, reliability and costs, the use of water injection was deemed superior for this project.

B. Existing Turbines

During the changeover created by shutting down the existing smaller Orenda turbines and starting up the new GE unit, the District and Utilities Company are desirous of maintaining the existing No. 1 and 2 turbine installations (Permit No. A048-106735 and 33) on a standby basis, in event of startup reliability problems associated with the GE unit. This permit overlap period would last approximately six months. The new, plus the two old turbines, would not be operated concurrently, only either the new or one of the old ones at a given time due to a performance failure. Thus it is requested that the existing Permit (A048-106735 and 33) not be withdrawn when the new Permit (GE plus Vogt) is issued, but kept applicable for six (6) months, with the stipulation that both power trains (GE plus Orenda) not be operated simultaneously, but independently, if required for power needs. Whereas the existing No. 1 waste heat boiler will be kept on standby for six months, the existing No. 2 boiler will be dismantled to make room for the new GE/Vogt unit (see Figure 3).

C. "Black Start" Emergency Diesel Generator

If the Reedy Creek facility ever loses their own power generation capability and outside power from the Florida Power Corporation is also not available, a "black start" emergency No. 2 diesel oil-fired generator will provide the necessary electricity to restart the gas turbine or steam boiler. While this set of circumstances will probably never occur, the unit is being provided for this purpose.

Section 17-4.04 of the Department's Regulations on Permit Exemptions (paragraph 11) indicates that any machine that does not cause the issuance of contaminants in sufficient quantity to contribute significantly to the State's pollution problems, etc. are exempted from Permit requirements. Contact with the Bureau on May 20, 1987 indicated while this may be the case, this specific activity should be described as a part of the overall application document but not detailed on a separate application form.

Data on the 1200 KW, 1800 HP Cummins generator package are contained in the Appendix (Exhibit 3). In order to maintain the generator's state of maintenance readiness, it is planned to manually operate it about 10 minutes per week or about 9 hours per year.

Cummins Engine furnished the following information:

Exhaust flow - 12,650 acfm at 810°F - 1779 HP
NO_X emission = 6.83 gm/hp/hr = 12,151 gms/hr = 26.76 lbs/hr
CO emission = 1.07 gm/hp/hr = 1904 gms/hr = 4.19 lbs/hr
Hydroc. emission = 0.27 gm/hp/hr = 480 gms/hr = 1.06 lbs/hr
Particulate emission = 0.25 gm/hp/hr = 445 gms/hr = 0.98 lbs/hr
SO_2 emission = 0.90 gm/hp/hr = 1601 gms/hr = 3.52 lbs/hr (0.32% S oil)

Thus for a 10 minute per week check-out operation the following low-level emissions result:

	lbs/week	lbs/year
NO_X	4.46	232
CO	0.70	36
Hydrocarbons	0.17	9
Particulates	0.16	8
SO_2	0.59	30

Based on these expected results stemming from a nine hour per year operation, it is requested that this unit be exempted from formal Permit requirements per Section 17-4.04 of the DER Regulations. Alternatively it may be incorporated by reference within the application sought for the gas turbine and heat recovery steam generator itself if this appears preferable by the Bureau. In any event, the applicant seeks to validate through the permit process, that this unit will be installed as part of the overall project.

D. Illustrations

Included in this report are two area maps (Figure 1 and 2) depicting the project location at the Central Energy Plant on North Central Drive near Bay Lake, and a more detailed plot plan of the facility (Figure 3) showing the new power facility on the existing developed site. Figure 4 illustrates the process flow configuration of the facility showing the heat/power cycle plus the bypass and main stack (TB-1).

III. Compliance Basis for Gas Turbine and Steam Generator Emissions

Subpart GG - Standards of Performance for Stationary Gas Turbines (40CFR 60) apply to the turbine to be installed as follows:

NO_X Standard = $0.0075 \frac{14.4}{Y} + F$ (for over 100 MM BTU/hr)
(% volume dry, 15% O_2)

Y = Manufacturer's rated heat rate at rated load (kj/w-hr)

F = Allowance for fuel bound nitrogen
(if N over 0.25 % = 0.005)
(if N under 0.015% = 0)

311.29×10^6 BTU/hr (1055 J/BTU) $\frac{1 \text{ KJ}}{1000 \text{ J}}$ =

328.4×10^6 KJ/hr

42,573.7 HP $(\frac{746 \text{ w}}{\text{HP}})$ 0.9779 (effic.) = 31,058,085 watts

$$Y = \frac{328.4 \times 10^6 \text{ KJ/hr}}{31.05 \times 10^6 \text{ w}} = 10.576 \frac{\text{KJ}}{\text{w-hr}}$$

Fuel gas has N of 0.756% thus F = 0.005

NO_X Standard = 0.0075 $(\frac{14.4}{10.576})$ + 0.005 = 0.01521 or (%, dry, 15% O_2)
152.1 ppm by volume dry for natural gas.

Similarly for No. 2 fuel oil:

$$y = \frac{340.44 \times 10^6 \text{ KJ/hr}}{32.63 \times 10^6 \text{ w}}$$

$$y = 10.433 \frac{\text{KJ}}{\text{w-hr}}$$

Fuel oil has N under 0.015% thus F = 0

NO_X Standard = .0075 $(\frac{14.4}{10.433})$ + 0 = 0.01035 or 103.5 ppm by volume dry for fuel oil

(See manufacturer's data contained in Appendix, Exhibits 1 and 2).

These manufacturer's data indicate that at the bypass stack location the gas-fired turbine can exhaust a gas flow of 513,790 acfm (481,220 acfmd at 15% O_2) at 800°F. The above gas Standard of 152.1 ppm then translates to:

0.0001521 (481,220 acfmd) = 73.19 acfmd NO_X 800°F.
NO_X at 800°F is 0.049 lbs/cf or, 215.1 lbs/hr NO_X allowed for gas firing on a dry basis and corrected for 15% oxygen.

Similarly the manufacturer's data shows that at the bypass stack the oil-fired turbine can exhaust a gas flow of 529,048 acfm (500,744 acfmd at 15% O_2) at 794°F. The above oil standard of 103.5 ppm translates to:

0.0001035 (500,744 acfmd) = 51.83 acfmd NO_X 794°F.
NO_X at 794°F is 0.049 lbs/cf or, 152.4 lbs/hr NO_X allowed for oil firing on a dry basis and corrected for 15% oxygen.

Thus design allowances are defined as follows:

NO_X Limit (gas firing) = 215 lbs/hr
NO_X Limit (oil firing) = 152.4 lbs/hr.

The manufacturer's data also indicates that when gas-firing, the total installation will emit 140.1 lbs/hr of NO_X from the turbine and an additional 2.3 lbs/hr from the downstream duct burner while at full load, for a total emission level of 142.4 lbs/hr NO_X or under the 215 lbs/hr limit.

When firing fuel oil (29 days/year) the installation will emit 146 lbs/hr of NO_X from the turbine and 2.3 lbs/hr from the duct burner, for a total emission of 148.3 lbs/hr NO_X or slightly under the 152 lbs/hr standard.

The duct burner is ordinarily firing at about 23 MM BTU/hr heat release when the upstream gas turbine is operating and at 193 to 198 (gas) MM BTU/hr when the turbine is out of service. Under the EPA Standard published 11/25/86 (40 CFR 60, 51, 227, 42769) gas or distillate oil-fired duct burners used in combined cycle turbine systems are limited to NO_X emissions of 0.20 lbs/MM BTU heat input.

These duct burners comply as indicated:

Low fire - 23 MM BTU/hr x 0.2 = 4.6 lbs NO_X per hour allowed vs. 2.3 lbs/hr expected with gas and oil.

High fire - 198 MM BTU/hr x 0.2 = 39.6 lbs NO_X per hour allowed vs. 39.6 lbs/hr expected with gas and 38.5 lbs/hr expected with oil (compared to 192.7 x 0.2 = 38.5 lbs/hr NO_X allowed for oil).

The oil to be used as emergency fuel has a sulfur content of up to 0.32 percent sulfur or within the 0.8 percent sulfur limit stipulated by the Subpart GG Standard. The fuel gas has a sulfur content of essentially 0.001 percent or within the required 0.015 percent limitation.

Data from the manufacturer shows that without water injection the turbine would discharge at least 250 lbs/hr NO_X while firing gas and 328 lbs/hr NO_X while firing distillate oil at 68°F and 59°F ambient temperatures. These two data points result in 44 to 56 percent removals using a 0.6/1.0 water to fuel ratio. On an overall performance basis, over varying seasonal temperatures, NO_X removal efficiencies of 50 to near 70 percent are anticipated.

Other emissions such as CO, particulates and volatile organic compounds are of relatively low quantity as indicated on the application and will not degrade local air qualities.

Gas turbines produce low amounts of unburned hydrocarbons because of the large amount of excess air involved in the combustion process. Carbon monoxide is also at a very low level because of the high amounts of excess air used and particulates are not a factor in this type operation.

Based on 1986 estimated data furnished to the BAQM by Reedy Creek, shutdown of the two existing Orenda turbines (and their boilers) should result in the following approximate reductions:

CO	70 tons/year *
Particulates	9 tons/year *
Volatiles	26 tons/year *

* Data largely based on AP-42 Tables.

Standards of performance as required will be based on those promulgated by 40 CFR Part 60 and administered by the BAQM through provisions of Section 17-2.660 in the Florida DER Regulations. Proof of operating compliance will be based on those test procedures outlined in Section 17-2.700 of the DER Regulations, specifically EPA Methods 1, 2, 5, 9, 10, 20 and other relevant procedures. Also the compliance testing procedures stipulated by paragraph 60.46b(f) of 40 CFR Part 60 as amended by Subpart Db published 11/25/86 (FR 51, 227, 42792) will be followed.

A continuous emission monitoring system (CEMS) may be installed if required, however indications are that under EPA Standards published November 25, 1986 (FR 51, 227, 42793 - paragraph 60.48b(h)), no NO_x monitor will be necessary. With oil used less than 29 days per year the need for any analyzer (beyond fuel consumption and water injected-to-fuel ratios) is uncertain and official guidance from the BAQM on this matter is requested.

IV. Closure

This project is utilizing the best available control technology in order to reduce and minimize adverse emissions. All critical discharge criteria will be satisfied. The accompanying Modeling (PSD) Report shows that NO_x levels will be well below the PSD significance, de minimis monitoring exemption, and required national air quality concentrations. No discernible impact on visibilities or other environmental parameters are foreseen.

Based on these findings, the Company and District requests favorable consideration of the accompanying Permit application.

RDS:tv/D164/F

APPENDIX

Figure 1 and 2 - Area Map and Site Location
Figure 3 - Area Plot Plan
Figure 4 - Process Flow Diagram

Exhibit 1 - Gas Turbine Performance
Exhibit 2 - Combustion Data
Exhibit 3 - "Black Start" Generator

RDS:tv:D164/F

Ford, Bacon & Davis
Incorporated

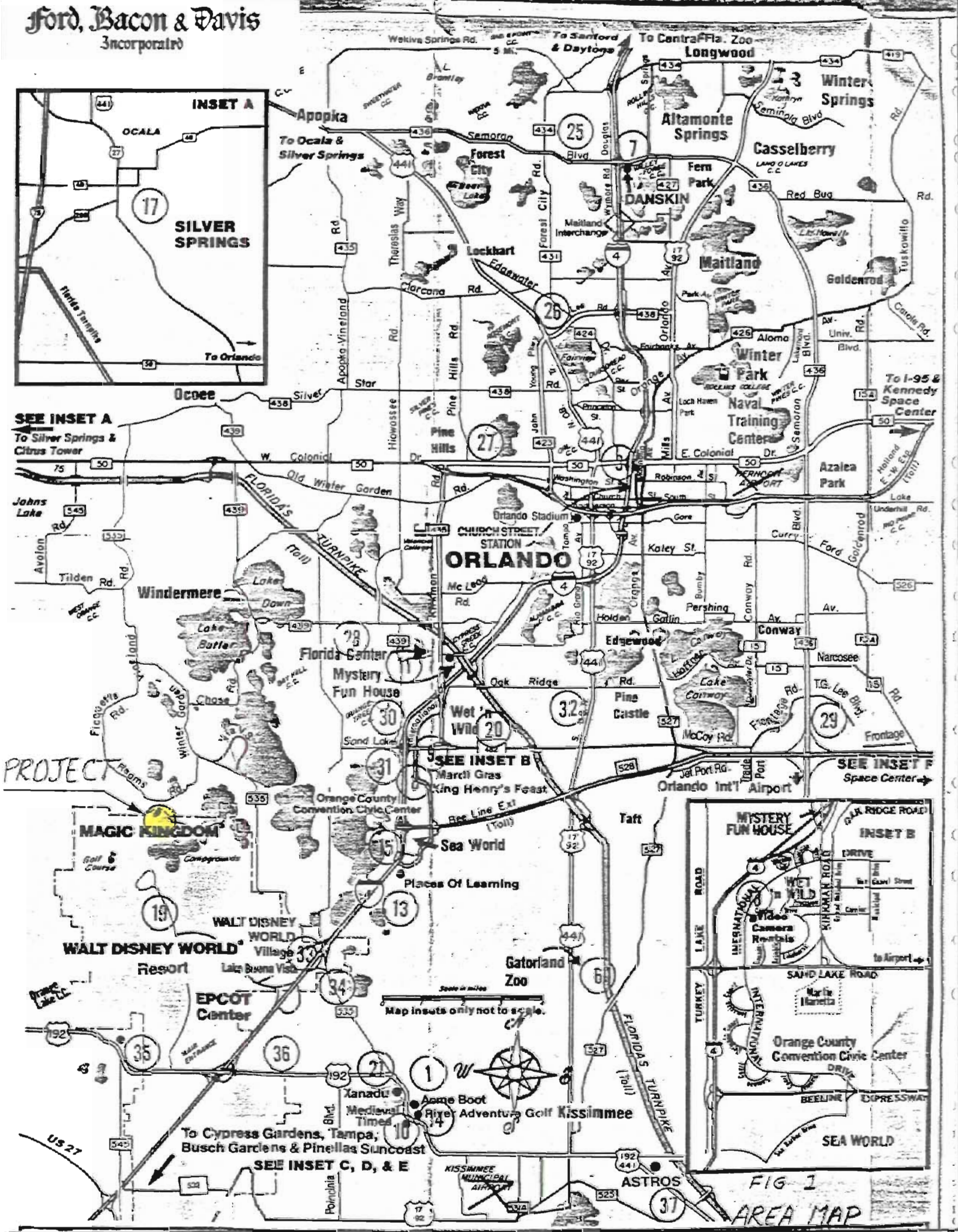


FIG 1
AREA MAP

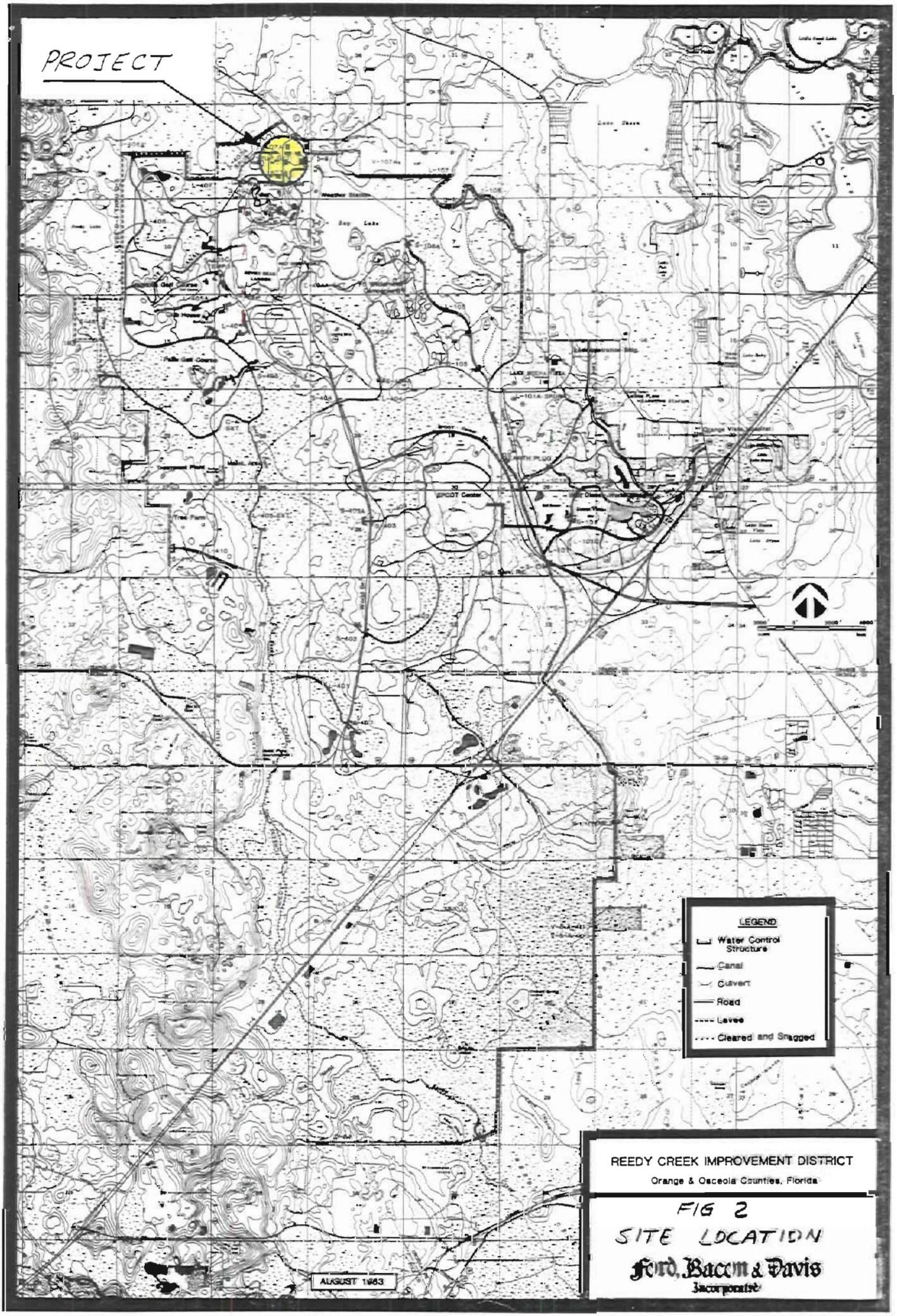

PROJECT
LEGEND
Water Control Structure
Canal
Culvert
Road
Levee
Cleared and Snagged
REEDY CREEK IMPROVEMENT DISTRICT
Orange & Osceola Counties, Florida
FIG 2
SITE LOCATION
Ford, Bacon & Davis
Incorporated
AUGUST 1983

FIG 3

AREA PLOT PLAN

BEST AVAILABLE COPY

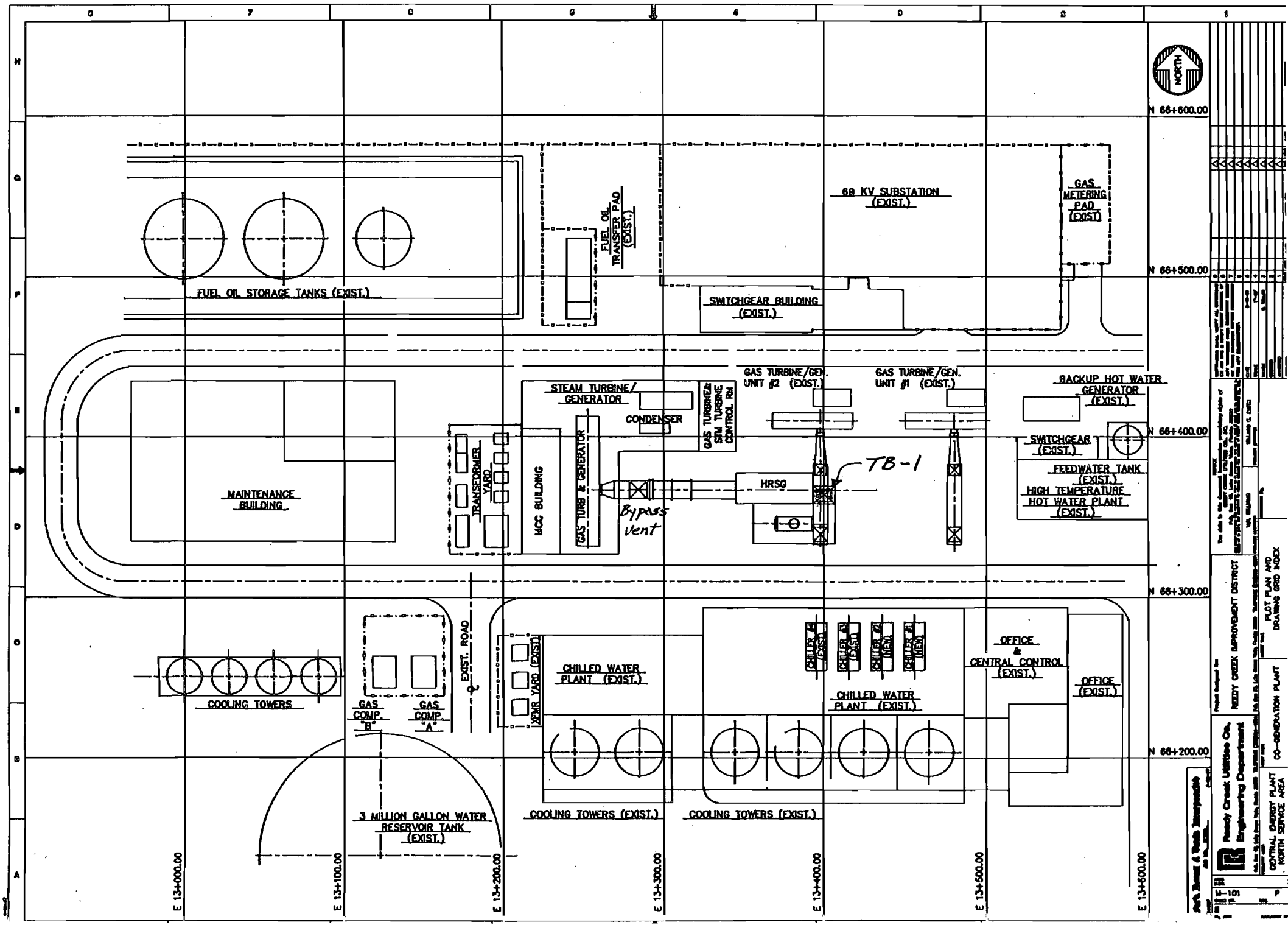
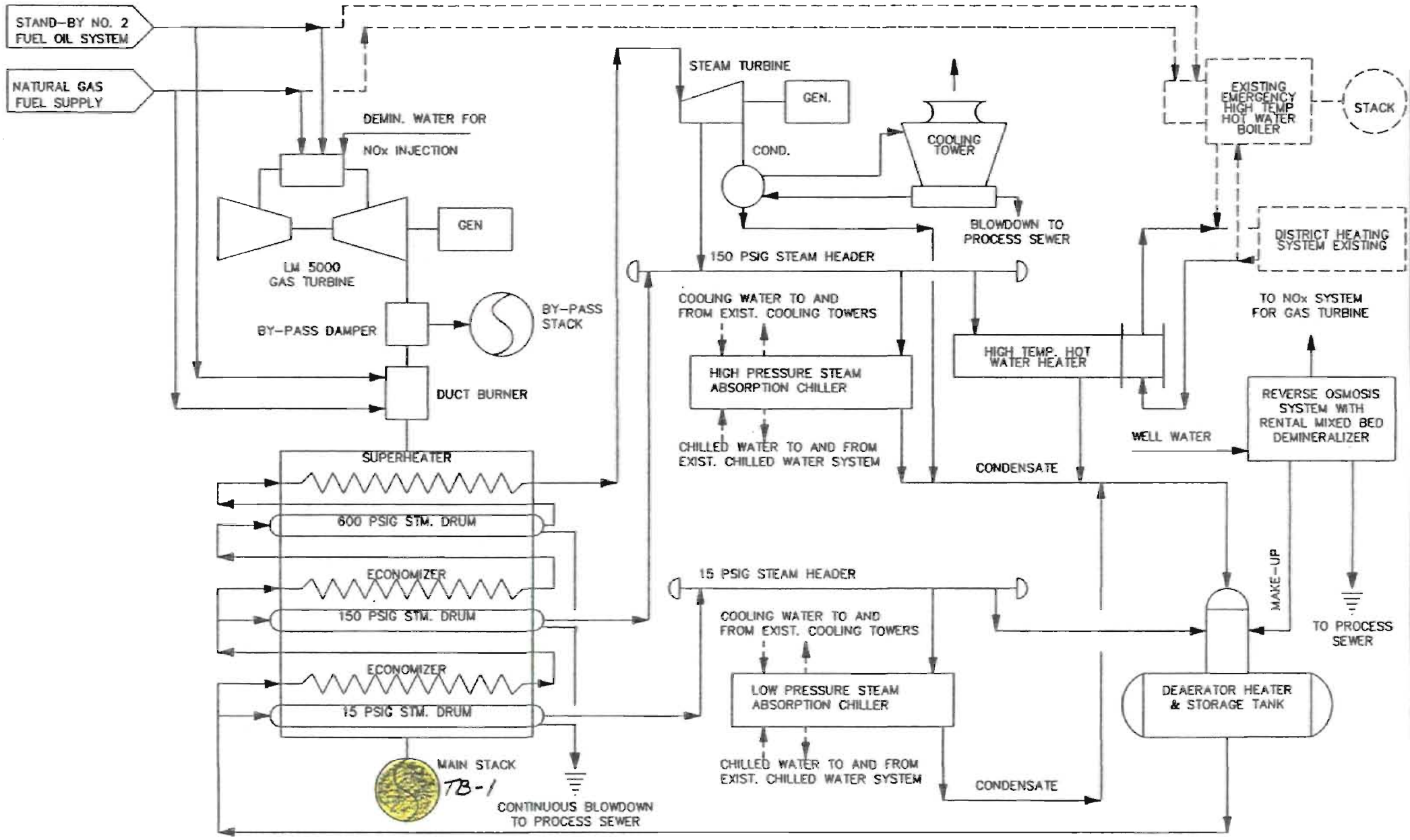


FIG 4

PROCESS FLOW DIAGRAM



REEDY CREEK UTILITIES
COGENERATION PROJECT

Ford, Bacon & Davis
Incorporated

EXHIBIT 1 (1 of 5)

6-11-87

5.1 TECHNICAL INFORMATION

5.1.1 Engineering and Performance Data

A. G.T. Mfgr. and Model No. General Electric LM5000 PA

TURBINE ALONE

B. Conditions:

1.	Elevation	100 Ft.
2.	Relative Humidity	60%
3.	Inlet Losses	4" H20
4.	Exhaust Losses	10" H20
5.	New & Clean, Electric Generator Efficiency	97.79%

Gas

C. CASE 1: Guarantee Point (Data for this case to be submitted with proposal).

1. Gas Fuel (19,000 BTU/LB-LHV)
2. Water Injection at 0.6/1.0:Water/Fuel ratio (75 PPMV) *WITH EPA HEAT RATE CORRECTION

Performance Data:

	Ambient Temp., F.	20	40	59 2)	68* 2)	80 2)	100 2)	120
1)	Shaft Power, KW	38272	36418	33479	31760 *	29748	26465	N A
	Heat Rate, BTU/KWH-LHV)	9118	9258	9436	9801.6 *	9714	10001	
	Gas Temperature at 1st Stage Vanes, F.				42,573.7 HP 311.29 x 10^6 BTU/hr			
4)	Water Injection, LB/HR	5560	5159	4393	3874	2968	1170	
	Metal Temperature at 1st Stage Vanes, F.							
	Turbine Exhaust Gas Temperature, F.	750	779	792	800	814.4	836.4	
	Turbine Exhaust Gas Flow, LB/SEC	307.58	292.73	277.08	269.74	256.0	236.86	
	Turbine Rotor Speed -High Pressure	10176	10144	10093	10132	10142	10183	
	-Low Pressure	3656	3656	3606	3597	3559	3511	
	Emissions, PPMV-WGT.TWET							
	-AR	1.2601	1.2575	1.2515	1.2500	1.2416	1.2279	
	-N2	73.8884	73.7441	73.5441	73.2970	72.9640	72.1598	
	-02	16.7589	16.6663	16.6061	16.6015	16.4902	16.3806	
	-C02	4.1162	4.1497	4.2319	4.0994	4.1879	4.1473	
	-H20	3.9664	4.1723	4.3561	4.7422	5.1063	6.1545	
	-S02	0	0	0	0	0	0	
	-CO	0.0002	0.0002	0.0003	0.0002	0.0002	0.0002	
	-HC	0.0002	0.0002	0.0002	0.0001	0.0002	0.0002	
	-NO & NO2	0.0096	0.0097	0.0098	0.0096	0.0096	0.0095	
	-Particulates LB/HR	<2	<2	<2	<2	<2	<2	↓

1) At the generator terminals.
* Guaranteed data.
2) Evaporative Cooler operating at all points except 20 deg. and 40 deg.
3) All performance estimates based on a Gas Turbine in new and clean condition
4) The actual water injection schedule will be determined by field emissions test results

6-11-87

D. Case 2: (Dry, Gas Fuel)

1. Gas Fuel (19,000 BTU/LB-LHV)
2. No Water Injection
3. No Bleed Air Extraction

Performance Data: (Same form as CASE 1).

Performance Data:

Ambient Temp., F.	20	40	59	80	100	120
Shaft Power, KW	38923	34967	32373	28526	25690	NA
Heat Rate, BTU/KWH-LHV)	8987	9204	9404	9756	10094	
Gas Temperature at 1st Stage Vanes, F.	NOT CALCULATED FOR THIS CASE					
Water Injection, LB/HR	0	0	0	0	0	
Metal Temperature at 1st Stage Vanes, F.	NOT CALCULATED FOR THIS CASE					
Turbine Exhaust Gas Temperature, F.	765	782	796	819	839	
Turbine Exhaust Gas Flow, LB/SEC	307.35	286.47	272.13	250.48	233.51	
Turbine Rotor Speed -High Pressure	10168	10055	10051	10084	10141	
-Low Pressure	3667	3615	3577	3522	3487	
Emissions, PPMV -A	1.2648	1.2629	1.2571	1.2466	1.2300	
-N2	74.3217	74.2075	73.8664	73.2496	72.2814	
-02	16.8510	16.8919	16.8131	16.6652	16.3730	
-C02	4.2244	4.1711	4.1532	4.1248	4.1221	
-H20	3.3166	3.4463	3.8917	4.6986	5.9821	
-S02	0	0	0	0	0	
-C0	0.0002	0.0002	0.0002	0.0002	0.0002	
-HC	0.0002	0.0002	0.0002	0.0002	0.0002	
-N0 & N02	0.0209	0.0200	0.0180	0.0149	0.0109	
-Particulates	<2	<2	<2	<2	<2	

1) At the generator terminals.

2) Performance is expected, not guaranteed for this case.

E. Case 3: (Liquid Fuel, Wet)

1. Liquid Fuel (18,400 BTU/LB-LHV)
2. Water Injection to EPA Standards
3. No Bleed Air Extraction

6-11-87

Performance Data: (Same form as CASE 1).

TURBINE ALONE
Oil

Performance Data:

44,722.5 HP

Ambient Temp., F.	20	40	59 ✓	80	100	120
Shaft Power, KW	39555	36083	33363	29173	25863	NA
Heat Rate, BTU/KWH-LHV)	9295	9490	9672	10019	10354	
			322.69×10⁶ BTU/hr			
Gas Temperature at 1st Stage Vanes, F.	NOT CALCULATED FOR THIS CASE					
Water Injection, LB/HR	12608	11743	10435	9496	6203	
Metal Temperature at 1st Stage Vanes, F.	NOT CALCULATED FOR THIS CASE					
Turbine Exhaust Gas Temperature, F.	761	780	794	818	840	
Turbine Exhaust Gas Flow, LB/SEC	311.87	292.62	277.75	254.51	235.24	
Turbine Rotor Speed						
-High Pressure	10159	10084	10073	10093	10134	
-Low Pressure	3674	3638	3599	3537	3489	
Emissions, PPMV						
-A	1.2489	1.2470	1.2422	1.2334	1.2197	
-N2	73.2246	73.1140	72.8346	72.3183	71.5122	
-02	16.4620	16.4721	16.4288	16.3383	16.1425	
-C02	5.7096	5.6681	5.6280	5.5638	5.5149	
-H20	3.3435	3.4879	3.8558	4.5362	5.6012	
-S02	0	0	0	0	0	
-CO	0.0008	0.0006	0.0005	0.0003	0.0003	
-HC	0.0002	0.0002	0.0002	0.0002	0.0002	
-NO & NO2	0.0104	0.0101	0.0099	0.0095	0.0091	
-Particulates Lbs/Hr	<10	<10	<10	<10	<10	

1) At the generator terminals.

2) Performance is expected, not guaranteed for this case.

3) Assumes zero sulfur in fuel ×

F. Case 4: (Liquid Fuel, Dry)

1. Liquid fuel (18,400 BTU/LB-LHV)
2. Water Injection to EPA Standard (NONE)
3. No Bleed Air Extraction

6-11-87

Performance Data: (Same form as CASE 1).

Performance Data:

Ambient Temp., F.	20	40	59	80	100	120
Shaft Power, KW	37530	33443	30918	27236	24383	NA
Heat Rate, BTU/KWH-LHV)	9101	9357	9569	9939	10318	
Gas Temperature at 1st Stage Vanes, F.	NOT CALCULATED FOR THIS CASE					
Water Injection, LB/HR	0	0	0	0	0	
Metal Temperature at 1st Stage Vanes, F.	NOT CALCULATED FOR THIS CASE					
Turbine Exhaust Gas Temperature, F.	770	790	804	827	848	
Turbine Exhaust Gas Flow, LB/SEC	302.48	280.62	266.44	245.36	228.10	
Turbine Rotor Speed -High Pressure	9992	9974	9981	10024	10080	
-Low Pressure	3624	3569	3532	3478	3441	
Emissions, PPMV -A	1.2643	1.2624	1.2566	1.2460	1.2295	
-N2	74.1155	74.0036	73.6641	73.0494	72.0827	
-02	16.9741	17.0119	16.9331	16.7831	16.4916	
-C02	5.4725	5.4046	5.3818	5.3472	5.3448	
-H20	2.1342	2.2794	2.7298	3.5431	4.8289	
-S02	0	0	0	0	0	
-CO	0.0003	0.0003	0.0003	0.0002	0.0002	
-HC	0.0002	0.0002	0.0002	0.0002	0.0002	
-NO & NO2	0.0389	0.0376	0.0342	0.0288	0.0220	
-Particulates	10	10	10	10	10	

1) At the generator terminals.

2) Performance is expected, not guaranteed for this case.

5.1.13 Part Load Exhaust Emissions

(SEE COMMENT)

6-11-87

A. Exhaust Emissions (Gas Fuel)

	NOx LB/HR	CO PPMV	SOx PPMV	Particulates LB/HR	Air Flow 10^{-5} LB/HR	Temp. F.
Synch.Sp./No Load	14	272	0	<2	3.996	682
25% Cont. Rating	45	26			5.658	694
50% Cont. Rating	81	7			7.257	730
75% Cont. Rating	108	2			8.556	765
100% Cont. Rating	136 *	2			9.696	800

B. Exhaust Emissions (Liquid Fuel)

	NOx LB/HR	CO PPMV	SOx PPMV	Particulates LB/HR	Air Flow 10^{-5} LB/HR	Temp. F.	Opacity Von Brand No. O.P.	V.B.M.
Synch.Sp./No Load	33	388	28	1.9	3.994	690	<2	≥90
25% Cont. Rating	56	67	34	3.2	5.705	698		
50% Cont. Rating	85	27	40	4.8	7.334	733		
75% Cont. Rating	113	10	46	6.4	8.665	767		
100% Cont. Rating	143 *	5	51	8.0	9.828	804		

NOTE: Performance on commercially available No. 2 home heating oil, without smoke-reducing additives.

Notes apply to all tabulated data:

1. CO is expected.
2. Only NOx is guaranteed at 110 PPMVD @ 15% O_2 (Gas)/108 PPMVD @ 15% O_2 (Dist.)
3. SO_x assumes 0.3% sulfur in liquid fuel
4. Particulates are shown in LB/HR, not PPMVD. Values include engine generated particulates only, not including particulate material which might enter the engine via water injection, fuel or inlet air.
5. *Guaranteed per conditions given in Section 5.0.1, Base Load Rating, 68°F with the evaporative cooler operating.
6. Exhaust air flow is expressed in ~~10^{-6}~~ 10^{-5}.

COMBUSTION DATA

PROJECT: Reedy Creek Utilities June 26, 1987 ✓ Page 3 TURBINE ALONE
General Electric LM-5000 - Firing Natural Gas - 68 Deg. F ON GAS WITH WATER INJECTION
TURBINE EXHAUST GAS FLOW (LBS/HR): 971064 GUAR.

TURBINE EXHAUST GAS TEMPERATURE: 800 Degrees F.
0.0315 lbs/cf

TURBINE EXHAUST GAS COMPOSITION:	% WT.	LBS/HR	Vol. %	Vol.% Dry
Oxygen O2	16.3779	159039.6	14.363	15.665
Carbon Dioxide CO2	4.3879	42609.12	2.837	3.092
Water Vapor H2O	4.4528	43239.88	7.033	0
Nitrogen N2	73.5155	713882.7	74.666	80.315
Argon Ar	1.2510	12147.73	0.891	0.958
Carbon Monoxide CO	0.0003	2.6704	0.0003	0.0003
Nitrogen Oxides NOx	0.0144	140.1440 ✓	0.0089	0.0096
Hydrocarbons CH4	0.0002	1.5314	0.0003	0.0003
Hydrocarbons C2H6	0	0	0	0
Sulfur Dioxide SO2	0	0	0	0
Particulate	0.000039	0.3836	0.0001	0.0001
TOTAL	100.000	971063.9	100.000	100.000

CO - PPMV Dry, Reference 15% Oxygen:	3.38
NOx - PPMV Dry, Reference 15% Oxygen:	107.98
CH4 - PPMV Dry, Reference 15% Oxygen:	3.38
C2H6 - PPMV Dry, Reference 15% Oxygen:	0.00
SO2 - PPMV Dry, Reference 15% Oxygen:	0.00

BYPASS STACK
d = 12.41'
V = 70.8 fps
513,790 acfm

Exhaust Gas Molecular Weight: 28.455

Burner Fuel: Natural Gas

Heating Value: 21065 BTU/LB (HHV)
19000 BTU/LB (LHV)

Duct Burner Heat Input: 23.136 Million BTU/HR (Gross HHV)
20.868 Million BTU/HR (Net LHV)

Fuel Gas Elemental Composition:

	WEIGHT %	LBS/HR
CARBON	73.480%	807.040
HYDROGEN	24.080%	264.477
OXYGEN	1.684%	18.492
SULFUR	0.000%	0.000
NITROGEN	0.756%	8.306
ASH	0.000%	0.000
TOTAL	100.000%	1098.315

Emissions Added by the Duct Burner (LB/Million BTU HHV):

NOx as NO2:	0.100
Carbon Monoxide:	0.380
UBHC as CH4:	0.190
UBHC as C2H6:	0
Particulate:	0.001

ADDITIONAL AIR SOURCES:

Flame Scanner Cooling Air:	2160 LBS/HR
Augmenting Combustion Air:	0 LBS/HR
Atomizing Air:	0 LBS/HR
Total	2160 LBS/HR

TURBINE PLUS DUCT BURNER ON GAS WITH WATER INJECTION

COMBUSTION PRODUCTS DOWNSTREAM OF THE DUCT BURNER

68°F

Downstream Firing Temperature: 874 Degrees F.

COMBUSTION PRODUCTS (LBS/HR)

0.0297 lbs/cf

BOILER STACK = 285°F (0.053 lbs/cf)

	Upstream	Fuel	Air	Total
Oxygen O2	159039.6	-4228.17	500.040	155311.5
Carbon Dioxide CO2	42609.12	2953.766	0	45562.89
Water Vapor H2O	43239.88	2364.422	0	45604.30
Nitrogen N2	713882.7	8.306	1659.960	715551.0
Argon Ar	12147.73	0	0	12147.73
Carbon Monoxide CO	2.670	8.792	0	11.462
Nitrogen Oxides NOx	140.144	2.314	0	142.458
Hydrocarbons CH4	1.531	4.396	0	5.927
Hydrocarbons C2H6	0.000	0.000	0	0.000
Sulfur Dioxide SO2	0.000	0.000	0	0.000
Particulate	0.384	0.023	0	0.407
TOTAL	971063.9	1113.839	2160.000	974337.7

✓ 8500 hrs/yr = 6057.4 ± /yr

COMBUSTION PRODUCTS - VOLUME BASIS

MAIN STACK
d = 11.16'
V = 52.2 fps
306,396 acfm

	Moles/HR	Vol. %	Vol. % Dry
Oxygen O2	4853.486	14.161	15.290
Carbon Dioxide CO2	1035.285	3.021	3.261
Water Vapor H2O	2530.761	7.384	0
Nitrogen N2	25546.26	74.536	80.478
Argon Ar	304.089	0.887	0.958
Carbon Monoxide CO	0.409	0.001	0.001
Nitrogen Oxides NOx	3.096	0.009	0.010
Hydrocarbons CH4	0.370	0.001	0.001
Hydrocarbons C2H6	0	0	0
Sulfur Dioxide SO2	0	0	0
Particulate	0.034	0.000	0.000
TOTAL	34273.79	100.000	100.000

CO - PPMV Dry, Reference 15% Oxygen:	13.55
NOx - PPMV Dry, Reference 15% Oxygen:	102.50
CH4 - PPMV Dry, Reference 15% Oxygen:	12.23
C2H6 - PPMV Dry, Reference 15% Oxygen:	0.00
SO2 - PPMV Dry, Reference 15% Oxygen:	0.00

Exhaust Gas Molecular Weight: 28.432

COEN Company, Incorporated
1510 Rollins Road; Burlingame, CA 94010
(415) 697-0440
Automatic Telefax Number (415) 579-3255

DUCT BURNER

FRESH AIR ONLY FOR GAS

ROJECT: Reedy Creek Utilities June 26, 1987 Page 5
Fresh Air Operation at 68 Deg. F - Natural Gas Firing
FRESH AIR FLOW (LBS/HR): 544000

FRESH AIR INLET TEMPERATURE: 68 Degrees F.

URBINE EXHAUST GAS COMPOSITION:	% WT.	LBS/HR	Vol. %	Vol.% Dry
Oxygen O2	20.9500	113968	18.889	18.889
Carbon Dioxide CO2	0.0300	163.2	0.020	0.020
Water Vapor H2O	0	0	0	0
Nitrogen N2	78.0900	424809.6	80.420	80.420
Argon Ar	0.9300	5059.2	0.672	0.672
Carbon Monoxide CO	0	0	0	0
Nitrogen Oxides NOx	0	0	0	0
Hydrocarbons CH4	0	0	0	0
Hydrocarbons C2H6	0	0	0	0
Sulfur Dioxide SO2	0	0	0	0
Particulate	0	0	0	0
TOTAL	100.000	544000	100.000	100.000

CO - PPMV Dry, Reference 15% Oxygen:	0.00
NOx - PPMV Dry, Reference 15% Oxygen:	0.00
CH4 - PPMV Dry, Reference 15% Oxygen:	0.00
C2H6 - PPMV Dry, Reference 15% Oxygen:	0.00
SO2 - PPMV Dry, Reference 15% Oxygen:	0.00

Exhaust Gas Molecular Weight: 28.852

Burner Fuel: Natural Gas

Heating Value: 21065 BTU/LB (HHV)
19000 BTU/LB (LHV)

Duct Burner Heat Input: 198.060 Million BTU/HR (Gross HHV) ✓
178.644 Million BTU/HR (Net LHV)

Fuel Gas Elemental Composition:

	WEIGHT %	LBS/HR
CARBON	73.480%	6908.814
HYDROGEN	24.080%	2264.102
OXYGEN	1.684%	158.306
SULFUR	0.000%	0.000
NITROGEN	0.756%	71.103
ASH	0.000%	0.000
TOTAL	100.000%	9402.326

Emissions Added by the Duct Burner (LB/Million BTU HHV):

NOx as NO2:	0.200
Carbon Monoxide:	0.160
UBHC as CH4:	0.080
UBHC as C2H6:	0
Particulate:	0.001

ADDITIONAL AIR SOURCES:

Flame Scanner Cooling Air:	2160 LBS/HR
Augmenting Combustion Air:	0 LBS/HR
Atomizing Air:	0 LBS/HR
Total	2160 LBS/HR

DUCT BURNER ALONE

 GAS FIRING

COMBUSTION PRODUCTS DOWNSTREAM OF THE DUCT BURNER

68°F

Downstream Firing Temperature: 1282 Degrees F.

COMBUSTION PRODUCTS (LBS/HR)

	Upstream	Fuel	Air	Total
Oxygen O2	113968	-36196.1	500.040	78271.92
Carbon Dioxide CO2	163.2	25286.26	0	25449.46
Water Vapor H2O	0	20241.07	0	20241.07
Nitrogen N2	424809.6	71.103	1659.960	426540.6
Argon Ar	5059.2	0	0	5059.2
Carbon Monoxide CO	0	31.690	0	31.690
Nitrogen Oxides NOx	0	39.612	0	39.612
Hydrocarbons CH4	0	15.845	0	15.845
Hydrocarbons C2H6	0	0	0	0
Sulfur Dioxide SO2	0	0	0	0
Particulate	0	0.198	0	0.198
TOTAL	544000	9489.671	2160.000	555649.6

COMBUSTION PRODUCTS - VOLUME BASIS

	Moles/HR	Vol. %	Vol. % Dry
Oxygen O2	2445.998	12.540	13.306
Carbon Dioxide CO2	578.265	2.965	3.146
Water Vapor H2O	1123.256	5.759	0
Nitrogen N2	15228.15	78.072	82.842
Argon Ar	126.645	0.649	0.689
Carbon Monoxide CO	1.131	0.0058	0.0062
Nitrogen Oxides NOx	0.861	0.0044	0.0047
Hydrocarbons CH4	0.988	0.0051	0.0054
Hydrocarbons C2H6	0	0	0
Sulfur Dioxide SO2	0	0	0
Particulate	0.016	0.000	0.000
TOTAL	19505.31	100.000	100.000

CO - PPMV Dry, Reference 15% Oxygen:	48.00
NOx - PPMV Dry, Reference 15% Oxygen:	36.53
CH4 - PPMV Dry, Reference 15% Oxygen:	41.91
C2H6 - PPMV Dry, Reference 15% Oxygen:	0.00
SO2 - PPMV Dry, Reference 15% Oxygen:	0.00

Exhaust Gas Molecular Weight: 28.492

COEN Company, Incorporated
1510 Rollins Road; Burlingame, CA 94010
(415) 697-0440
Automatic Telefax Number (415) 579-3255

DUCT BURNER

PROJECT: Reedy Creek Utilities June 26, 1987 Page 11

FRESH AIR ONLY FOR OIL

Fresh air Operation at 59 Deg. F - #2 Fuel Oil Firing
FRESH AIR FLOW (LBS/HR): 544000

FRESH AIR INLET TEMPERATURE: 59 Degrees F.

TURBINE EXHAUST GAS COMPOSITION:	% WT.	LBS/HR	Vol. %	Vol.% Dry
Oxygen O2	20.9500	113968	18.889	18.889
Carbon Dioxide CO2	0.0300	163.2	0.020	0.020
Water Vapor H2O	0	0	0	0
Nitrogen N2	78.0900	424809.6	80.420	80.420
Argon Ar	0.9300	5059.2	0.672	0.672
Carbon Monoxide CO	0	0	0	0
Nitrogen Oxides NOx	0	0	0	0
Hydrocarbons CH4	0	0	0	0
Hydrocarbons C2H6	0	0	0	0
Sulfur Dioxide SO2	0	0	0	0
Particulate	0	0	0	0
TOTAL	100.000	544000	100.000	100.000

CO - PPMV Dry, Reference 15% Oxygen:	0.00
NOx - PPMV Dry, Reference 15% Oxygen:	0.00
CH4 - PPMV Dry, Reference 15% Oxygen:	0.00
C2H6 - PPMV Dry, Reference 15% Oxygen:	0.00
SO2 - PPMV Dry, Reference 15% Oxygen:	0.00

Exhaust Gas Molecular Weight: 28.852

Burner Fuel: #2 Fuel Oil

Heating Value: 19504 BTU/LB (HHV)
18400 BTU/LB (LHV)

Duct Burner Heat Input: 192.790 Million BTU/HR (Gross HHV)
181.877 Million BTU/HR (Net LHV)

Fuel ~~Gas~~ Oil Elemental Composition:

	WEIGHT %	LBS/HR
CARBON	87.300%	8629.290
HYDROGEN	12.400%	1225.695
OXYGEN	0.000%	0.000
SULFUR	0.300%	29.654
NITROGEN	0.000%	0.000
ASH	0.000%	0.000
TOTAL	100.000%	9884.639

Emissions Added by the Duct Burner (LB/Million BTU HHV):

NOx as NO2:	0.200
Carbon Monoxide:	0.160
UBHC as CH4:	0.080
UBHC as C2H6:	0
Particulate:	0.004

ADDITIONAL AIR SOURCES:

Flame Scanner Cooling Air:	2160	LBS/HR
Augmenting Combustion Air:	28977	LBS/HR
Atomizing Air:	7920	LBS/HR
Total	39057	LBS/HR

DUCT BURNER ALONE
OIL FIRING

COMBUSTION PRODUCTS DOWNSTREAM OF THE DUCT BURNER

594F

Downstream Firing Temperature: 1236 Degrees F.

COMBUSTION PRODUCTS (LBS/HR)

	Upstream	Fuel	Air	Total
Oxygen O2	113968	-32715.5	9041.696	90294.11
Carbon Dioxide CO2	163.2	31583.20	0	31746.40
Water Vapor H2O	0	10957.71	0	10957.71
Nitrogen N2	424809.6	0.000	30015.30	454824.9
Argon Ar	5059.2	0	0	5059.2
Carbon Monoxide CO	0	30.846	0	30.846
Nitrogen Oxides NOx	0	38.558	0	38.558
Hydrocarbons CH4	0	15.423	0	15.423
Hydrocarbons C2H6	0	0	0	0
Sulfur Dioxide SO2	0	59.30783	0	59.30783
Particulate	0	0.771	0	0.771
TOTAL	544000	9970.238	39057	593027.2

COMBUSTION PRODUCTS - VOLUME BASIS

	Moles/HR	Vol. %	Vol. % Dry
Oxygen O2	2821.691	13.751	14.171
Carbon Dioxide CO2	721.345	3.515	3.623
Water Vapor H2O	608.086	2.963	0
Nitrogen N2	16237.94	79.134	81.551
Argon Ar	126.645	0.617	0.636
Carbon Monoxide CO	1.101	0.0054	0.0055
Nitrogen Oxides NOx	0.838	0.0041	0.0042
Hydrocarbons CH4	0.962	0.0047	0.0048
Hydrocarbons C2H6	0	0	0
Sulfur Dioxide SO2	0.926	0.0045	0.0046
Particulate	0.064	0.0003	0.0003
TOTAL	20519.60	100.000	100.000

CO - PPMV Dry, Reference 15% Oxygen:	48.59
NOx - PPMV Dry, Reference 15% Oxygen:	36.98
CH4 - PPMV Dry, Reference 15% Oxygen:	42.43
C2H6 - PPMV Dry, Reference 15% Oxygen:	0.00
SO2 - PPMV Dry, Reference 15% Oxygen:	40.85 ✓

Exhaust Gas Molecular Weight: 28.904

COEN Company, Incorporated
1510 Rollins Road; Burlingame, CA 94010
(415) 697-0440
Automatic Telefax Number (415) 579-3255

TURBINE ALONE ON OIL WITH WATER INJECTION

PROJECT: Reedy Creek Utilities June 26, 1987 Page 13
General Electric LM-5000 - Firing Liquid Fuel - 59 Deg. F

TURBINE EXHAUST GAS FLOW (LBS/HR): 999900.0

TURBINE EXHAUST GAS TEMPERATURE: 794 Degrees F.

TURBINE EXHAUST GAS COMPOSITION:	% WT.	LBS/HR	Vol. %	Vol.% Dry
Oxygen O2	16.2216	162199.4	14.554	15.489
Carbon Dioxide CO2	5.8397	58390.75	3.809	4.054
Water Vapor H2O	3.7903	37899.42	6.040	0
Nitrogen N2	72.8791	728717.6	74.683	79.484
Argon Ar	1.2432	12430.82	0.893	0.951
Carbon Monoxide CO	0.0008	8.2392	0.0008	0.0009
Nitrogen Oxides NOx	0.0146	146.0954 ✓	0.0091	0.0097
Hydrocarbons CH4	0.0002	2.1098	0.0004	0.0004
Hydrocarbons C2H6	0	0	0	0
Sulfur Dioxide SO2	0.010501	105 ✓	0.0094	0.0100
Particulate	0.000041	0.4100	0.0001	0.0001
TOTAL	100.000	999900.0	100.000	100.000

CO - PPMV Dry, Reference 15% Oxygen: 9.81
NOx - PPMV Dry, Reference 15% Oxygen: 105.65
CH4 - PPMV Dry, Reference 15% Oxygen: 4.38
C2H6 - PPMV Dry, Reference 15% Oxygen: 0.00
SO2 - PPMV Dry, Reference 15% Oxygen: 108.97

Exhaust Gas Molecular Weight: 28.710

Burner Fuel: #2 Fuel Oil

Heating Value: 19504 BTU/LB (HHV)
18400 BTU/LB (LHV)

Duct Burner Heat Input: 22.531 Million BTU/HR (Gross HHV)
21.256 Million BTU/HR (Net LHV)

Fuel ~~Gas~~ oil Elemental Composition:

	WEIGHT %	LBS/HR
CARBON	87.300%	1008.489
HYDROGEN	12.400%	143.245
OXYGEN	0.000%	0.000
SULFUR	0.300% ✓	3.466
NITROGEN	0.000%	0.000
ASH	0.000%	0.000
TOTAL	100.000%	1155.199

Emissions Added by the Duct Burner (LB/Million BTU HHV):

NOx as NO2:	0.100
Carbon Monoxide:	0.400
UBHC as CH4:	0.200
UBHC as C2H6:	0
Particulate:	0.004

ADDITIONAL AIR SOURCES:

Flame Scanner Cooling Air:	2160	LBS/HR
Augmenting Combustion Air:	0	LBS/HR
Atomizing Air:	7920	LBS/HR
Total	10080	LBS/HR

TURBINE PLUS DUCT BURNER

Page 14 ON OIL WITH WATER INJECTION

COMBUSTION PRODUCTS DOWNSTREAM OF THE DUCT BURNER

59°F

Downstream Firing Temperature: 863 Degrees F.

STACK = 285°F

COMBUSTION PRODUCTS (LBS/HR)

	Upstream	Fuel	Air	Total
Oxygen O2	162199.4	-3823.40	2333.520	160709.6
Carbon Dioxide CO2	58390.75	3691.068	0	62081.82
Water Vapor H2O	37899.42	1280.607	0	39180.03
Nitrogen N2	728717.6	0.000	7746.480	736464.1
Argon Ar	12430.82	0	0	12430.82
Carbon Monoxide CO	8.259	9.012	0	17.272
Nitrogen Oxides NOx	146.095	2.253	0	148.348 ✓
Hydrocarbons CH4	2.110	4.506	0	6.616
Hydrocarbons C2H6	0.000	0.000	0	0.000
Sulfur Dioxide SO2	105.000	6.931	0	111.931 ✓
Particulate	0.410	0.090	0	0.500
TOTAL	999900.0	1171.061	10080	1011151.

(0.053 lbs/cf)

317,972 acfm
dia. = 11.16'
vel. = 54.2 fps

COMBUSTION PRODUCTS - VOLUME BASIS

	Moles/HR	Vol. %	Vol. % Dry
Oxygen O2	5022.175	14.261	15.199
Carbon Dioxide CO2	1410.630	4.006	4.269
Water Vapor H2O	2174.253	6.174	0
Nitrogen N2	26292.89	74.659	79.572
Argon Ar	311.175	0.884	0.942
Carbon Monoxide CO	0.617	0.002	0.002
Nitrogen Oxides NOx	3.224	0.009	0.010
Hydrocarbons CH4	0.412	0.001	0.001
Hydrocarbons C2H6	0	0	0
Sulfur Dioxide SO2	1.747	0.005	0.005
Particulate	0.042	0.000	0.000
TOTAL	35217.17	100.000	100.000

$\frac{SO_2}{40\ ton/yr}$ limit

112 lbs/hr for 714 hrs

= 29.7 days/year MAX.

CO - PPMV Dry, Reference 15% Oxygen:	19.30
NOx - PPMV Dry, Reference 15% Oxygen:	100.93
CH4 - PPMV Dry, Reference 15% Oxygen:	12.91
C2H6 - PPMV Dry, Reference 15% Oxygen:	0.00
SO2 - PPMV Dry, Reference 15% Oxygen:	54.69 ✓

Exhaust Gas Molecular Weight: 28.715

COEN Company, Incorporated
1510 Rollins Road; Burlingame, CA 94010
(415) 697-0440
Automatic Telefax Number (415) 579-3255

Cummins Mid-South
666 Riverside Drive
P.O. Box 3080
Memphis, Tennessee
38103
Louisiana Division
4628 1-10 Service Road
P.O. Box 277
Metairie, LA 70004-0277
504-885-5675

325 New Highway 49 South • Phone 601/939-1800 • Jackson, MS 39218
1784 East Brooks Road • 901/345-7424 • Memphis, TN 38116
6600 Interstate 30 • Phone 501/568-2200 • Little Rock, AR 72209
1906 North 6th Street • Phone 501/474-7953 • Van Buren, AR 72956

December 15, 1986

EXHIBIT 3
(1 of 4)

GENERATOR

Ford, Bacon and Davis
4001 Jackson Street
Monroe, LA 71210

Attn: Gene Hodges

Re: T6356D/023 Alt.

Gentlemen:

Please find below and attached our proposal for the above referenced bid.

We propose to furnish one (1) New Cummins Generator Drive Package, Model KTTA50G1 unit factory mounted with a New Newage Stamford Generator, Model SC734C rated 1750KW, 480V continuous standby with PMG pilot exciter. This unit will be equipped with a Woodward 2301 electro hydraulic governor, as well as all monitoring and shutdown devices as specified and requested.

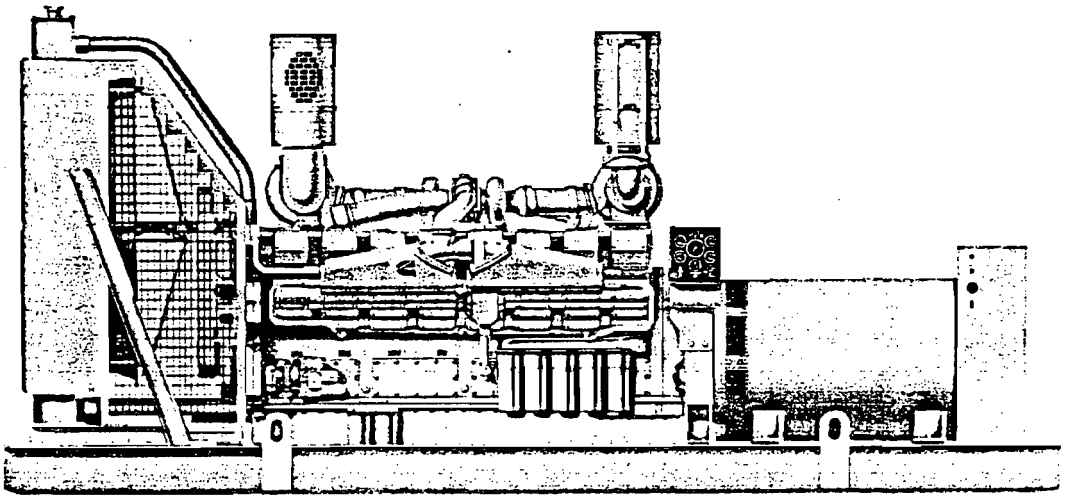
This generator unit will be mounted on a large skid (approx 29'x7') with fabcell vibration isolation devices and a 150 gallon simplex fuel oil day tank and electric transfer pump. This unit will be covered by one (1) sound attenuated generator and swithgear weatherproof enclosure (approx 29'Lx7'Wx10'H) with double access doors, sound baffler, and separate switchgear room. The switchgear room will contain one (1) enclosure (90"x42"x42") for the switchgear requested. All relays, switches, monitors, and wiring will be installed as requested throughout the enclosure. (Please see attached switchgear sheet).

The engine generator package will be manufactured, assembled, and tested at Cummins Engine Company, Inc. in Columbus, Indiana. The system shutdown devices, instrumentation, enclosure assembly, and controls will be manufactured and upfitted at Point 8 Power, Inc. in Belle Chasse, LA. Here the unit will complete the testing procedure, and be ready for shipment to the jobsite for installation.

Your cost FOB jobsite

Phone: 901 577-0666

KTTA50-GS/GC
GENERATOR SET



SPECIFICATIONS

Four Stroke Cycle, Turbocharged-Aftercooled, V-16 Cylinder Diesel Engine.

Rated Output	60 Hz 1800 RPM		50 Hz 1500 RPM	
	Standby[1] ☒	Prime[2] ☐	Standby[1] ☐	Prime[2] ☐
kW @ 0.8 PF with fan	**1200**	**1090**	**1100**	**1000**
KVA	1500	1363	1375	1250
kW @ 0.8 PF without fan	**1235**	**1125**	**1120**	**1020**
KVA	1544	1406	1400	1275
Approx. fuel consumption at ¾ rated output (with fan)				
Litres/hr.	242	223	216	197
U.S. gals/hr.	64	59	57	52

Bore and Stroke	159x159 mm	(6¼x6¼ in.)
Displacement	50 L	(3067 cu. in.)
Approx. Dry Weight	9 627 kg	(21,205 lbs.)

[1]**Standby Rating (GS)** is applicable for supplying electric power in the event of normal utility power failure and it may be used for continuous service for as long as the emergency may last. This rating conforms to ISO-3046 overload power and fuel stop power. The engine may be operated at the standby rating up to 1 500 m (5000 ft.) altitude and 38°C (100°F) ambient temperature without deration.

[2]**Prime Power Rating (GC)** is applicable for supplying electric power with intermittent overload (of 10%) up to the standby rating. This rating conforms to ISO-3046 continuous power. The engine may be operated at the prime power rating up to 2 250 m (7500 ft.) altitude and 38°C (100°F) ambient temperature without deration.

BS 5514 and DIN 6271 are based on ISO-3046.

AVAILABLE EQUIPMENT

Air Cleaners:
Dry type: ☐ Normal duty.

Controls:
Engine Instrument Panel: ☐ Starting switches, hourmeter, battery charging meter, electrical instruments for: coolant temperature, lube oil temperature and lube oil pressure, and three alarm lights for overspeed, coolant and low lube oil pressure. ☐ Tachometer.
Monitoring Switches: ☐ Low oil pressure. ☐ High coolant temperature. ☐ Low coolant level. ☐ Engine overspeed.

Generator Control Panel: ☐ Generator mounted. ☐ Manual start. ☐ Auto start. ☐ Prealarm controls.

Circuit Breaker: ☐ Main line. ☐ Exciter field.

Cooling System:
☐ Radiator with fan guards. ☐ 38°C (100°F). ☐ 52°C (125°F) ambient temperature. ☐ Heat exchanger, copper nickel element. ☐ Raw water pump. ☐ Remote cooling.

Exhaust System:
Manifold: ☐ Dry. ☐ Flexible conn.

Silencer: ☐ Industrial. ☐ Critical. ☐ Expansion adapter.

Filters:
Fleetguard. Lubricating oil: spin-on paper element full flow ☐ by-pass type. Fuel: dual spin-on paper element type.

Governors:
☐ Cummins EFC. ☐ Electric (other). ☐ Hydraulic
Operation: ☐ Droop. ☐ Isochronous.

Starting System:
Starters: ☐ 24V starter. ☐ Air starter.

Starting Aids: ☐ Starting fluid, pressurized cylinder type. ☐ Coolant heater. ☐ Oil pan immersion heater.

Battery Chargers: ☐ 24V alternator. ☐ 24V static charger.

KTTA50-GS/GC
GENERATOR SET

ENGINE DESIGN FEATURES

Aftercooler: Large capacity aftercooler results in cooler, denser intake air for more efficient combustion and reduced internal stresses for longer life. Aftercooler is located in engine coolant system, eliminating need for special plumbing.

Bearings: Precision type, steel backed inserts. 9 main bearings, 165 mm (6.5 in.) diameter. Connecting Rod—108 mm (4.25 in.) diameter.

Camshaft: Dual camshafts control all valve and injector movement. Induction hardened alloy steel with gear drive.

Crankshaft: High tensile strength steel forging. Bearing journals are induction hardened. Fully counterweighted.

Cylinder Block: Alloy cast iron with removable wet liners.

Cylinder Heads: Individual cylinder heads. Corrosion resistant inserts on intake and exhaust valve seats.

Fuel System: Cummins PT™ self-adjusting system. Integral flyweight type governor provides overspeed protection independent of main engine governor. Camshaft actuated injectors.

Lurbicating Oil Cooler: Plate type located in engine coolant system.

Lubrication: Force feed to all bearings, gear type pump. All lubrication lines are drilled passages, except pan to pump suction line.

Pistons: Aluminum, cam ground, with two compression and one oil ring. Oil cooled.

Thermostat: Modulating by-pass type.

Turbocharger: Two Brown-Bovari and two AiResearch exhaust gas driven turbochargers mounted on top of engine. Turbochargers are arranged as two pairs in series flow to provide two stage turbocharging to each cylinder bank. Two stage turbocharging allows increased power with improved fuel economy and acceleration characteristics plus excellent altitude compensation.

Valves: Dual intake and exhaust each cylinder. Each valve 56 mm (2.22 in.) diameter. Heat and corrosion resistant face on intake and exhaust valves.

Vibration Damper: Viscous type.

GENERATOR DESIGN FEATURES

Bearing: Pre-lubricated, shielded, cartridge ball bearing with lubrication provisions.

Construction: Conforms with National Electrical Manufacturers Association NEMA MG1-22.

Cooling: Cast aluminum alloy ventilating fan.

Drive Coupling: Flexible steel disks with 400% safety factor.

Exciter: Brushless rotating with solid state full wave rectifier. Mounted outboard of rotor bearing.

Insulation: Class F, meets NEMA standards for temperature rise limitations.

Main Frame: Rolled steel construction with rear mounted louvered conduit box.

Rotor: Single-piece 4 pole rotor with integrally diecast amortisseur winding and coil supports. Field winding is layer wound with thermo setting epoxy. Protective epoxy coating for abrasion and moisture protection. Rotor shrunk fit and keyed to shaft, dynamically balanced to withstand 25% overspeed.

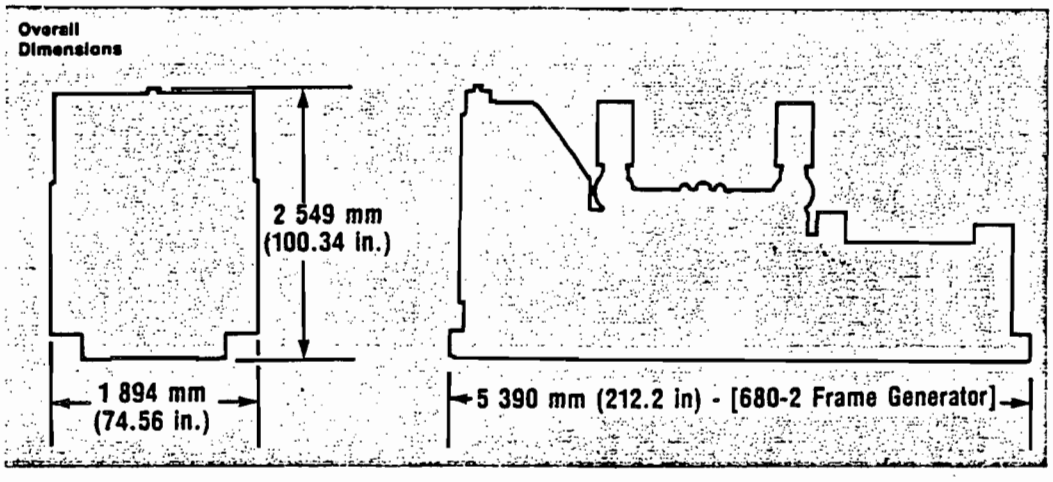
Stator: Epoxy coated for abrasion and humidity protection. 4 output leads, suitable for 3 or 4 wire Y connection.

Voltage Regulator: Solid state with SCR control. Integral RFI filter for suppression of conducted electromagnetic interference to levels meeting most commercial requirements. Integral automatic underfrequency protection. Protected against high humidity conditions. A circuit breaker provides protection for the generator rotor and excitation system.

***Voltages Available:**

Hz	Conn.	3 Wire Y	4 Wire Y
60	High Y	380 to 480	220/380 to 277/480
50	High Y	380 to 416	220/380 to 240/416

*For other voltages consult Cummins.



Cummins Engine Company, Inc.
Columbus, IN 47202
U.S.A.

Cummins has always been a pioneer in product improvement. Thus specifications may change without notice. Illustrations may include optional equipment. See specific proposal bill of material for actual equipment being furnished.

Bulletin 3380652 Printed in U.S.A. Rev. 11/85

12.0 DATA TO BE SUPPLIED WITH BID

(Ratings at 70° F, 100 ft. site elevation, including all inlet and exhaust silencer losses.)

12.1	Guaranteed net output shaft power at continous standby	1800 (1779 actual)	BHP
12.2	Guaranteed net generator output at 480V, 0.80 power factor at continous standby	1200 Net	KW
12.3	Engine type and model:	CUMMINS KTTA50 GS	
		FOUR STROKE, #2 DIESEL, V16	
12.4	BMEP at	230	PSI
12.5	Piston speed at 1800 RPM	1875	FT/MIN
12.6	Number of cylinders, bore, stroke	16	
		6.25	IN
		6.25	IN
12.7	Compression ratio	14.5/1	
12.8	Capacity of day tank	150	GALS
12.9	#2 diesel fuel consumption at: cont. standby	66	GAL/HR
	50% load	50	GAL/HR
	25% load	25	GAL/HR
	1800 RPM idle		GAL/HR
12.10	Quantity of cooling water in radiator system	100	GALS
12.11	Type of governor:	WOODWARD 2301 ELECTRIC HYDRAULIC	

Fold at line over top of envelope to the

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:
Thomas M. Moses, Dist. Admin
Reedy Creek Improve. District
PO Box 10170
Lake Buena Vista, Fl
32830-0170

4a. Article Number
Z 311 902 934

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

7. Date of Delivery
APR 1995

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

5. Signature (Addressee)

6. Signature (Agent)

RECEIVED

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.

Z 311 902 934

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

UNITED STATES POSTAL SERVICE

Sent to: Thomas Moses	
Street and No. Reedy Creek	
P.O., State and ZIP Code Lake B. V., Fl	
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 3-31-95	

PS Form 3800, March 1993

PSD-Fl-123
AC48-137740

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:
Thomas M. Moses
Reedy Creek Improve. Dist.
Utilities Division
P.O. BOX 10170
Lake Buena Vista, Fl
32830-0170

4a. Article Number
Z 751 860 027

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

7. Date of Delivery
FEB 16 1995

5. Signature (Addressee)

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

6. Signature (Agent)
RJ

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

Thank you for using Return Receipt Service.

Z 751 860 027

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

Sent to: Thomas Moses	
Street and No. Reedy Creek Util	
P.O. State and ZIP Code Lake Buena Vista, Fl	
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 2-15-95	

Pmt # AC48-137750
PSD-FI-123
Pmt #s AC 48-105243
AC 48-106650

PS Form 3800, March 1993

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:
Thomas M. Moses, D. Admin
Reedy Creek Improve. District
P.O. Box 10170
Lake Buena Vista, Fl
32830-0170

4a. Article Number
Z 392 979 047

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

7. Date of Delivery
6/23/95

5. Signature (Addressee)

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

6. Signature (Agent)
DW

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

Thank you for using Return Receipt Service.

Z 392 979 047

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

UNITED STATES POSTAL SERVICE

PS Form **3800**, March 1993

Sent to: Thomas Moses	
Street and No.: Reedy Creek	
P.O., State and ZIP Code: Lake BV, Fl	
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	6-20-95

AC48-105243
" -106650
PSO-FI-123 + AC48-137740

Rec'd 8/10/94 [illegible]

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. Thomas M. Moses
District Administrator
Reedy Creek Improvement District
Utilities Division
P. O. Box 10175
Lake Buena Vista, Florida 32830-0175

4a. Article Number: P 872 562 711

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

7. Date of Delivery: 8 8 94

5. Signature (Addressee)

6. Signature (Agent) [signature]

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 872 562 711

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

UNITED STATES POSTAL SERVICE

Sent to: Mr. Thomas M. Moses	
Street and No.: P. O. Box 10175	
P.O., State and ZIP Code: Lake Buena Vista, FL 32830-0175	
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: 8/4/94 A048-170280, PSD-FL-123	

PS Form **3800**, JUNE 1991

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. Thomas M. Moses
District Administrator
Reedy Creek Improvement District
P. O. Box 10170
Lake Buena Vista, FL 32830-0170

4a. Article Number
P 872562488

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

7. Date of Delivery
1/3 93

5. Signature (Addressee)

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

6. Signature (Agent)

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

Thank you for using Return Receipt Service.

P 872 562 488

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

UNITED STATES POSTAL SERVICE

Sent to: Mr. Thomas M. Moses	
Street and No.: P. O. Box 10170	
P.O., State and ZIP Code: Lake Buena Vista, FL	
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: 11/01/93 AC48-137740 (A048-170280) PSDOFL-123	

PS Form **3800**, JUNE 1991

Preston -
Is this
it? Teresa
is working on
it Patty

Patty Ed Godwin
(407) 824-4943
Reedy Creek -
Delivered
modification
Oct 4, 1993.
Eliminate fuel oil
and specify monitoring/
test. Have we
responded? Preston

Rec'd 10/11/93 KKW

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. Thomas M. Moses
District Administrator
Reedy Creek Improvement District
Post Office Box 10170
Lake Buena Vista, FL 32830

4a. Article Number
P 230 524 309

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

7. Date of Delivery
10-7-93

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 230 524 309

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

UNITED STATES POSTAL SERVICE

Sent to: Mr. Thomas M. moses	
Street and No.: Post Office Box 10170	
P.O., State and ZIP Code: Lake Buena Vista, FL 32830	
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: 10/5/93 AC48-137740	

PS Form 3800, June 1991

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:
Thomas M. Moses
Reedy Creek Improvement
P O BOX 10170
Lake Buena Vista, Fl 32830-0170

4. Type of Service:
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail

Article Number
P062921954

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature – Addressee
X

6. Signature – Agent
X

7. Date of Delivery
1-15-93

8. Addressee's ... (fee paid)

DOMESTIC RETURN R...

P 062 921 954

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

Sent to Thomas Moses	
Street and No. Reedy Creek Imp.	
P.O. State and ZIP Code Lake Buena Vista Fl	
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 AC 48-137740 1-13-93 PSD-FI-123	

PS Form 3800, June 1991

Recd 10/7/92 KW

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:
Thomas M. Moses
Reedy Creek Improve. Dist.
PO Box 10170
Lake Buena Vista, Fl 32830-0170

4. Type of Service:
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail

Article Number
P062921892

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature – Addressee
X

6. Signature – Agent
X DW

7. Date of Delivery
10 29 92

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

DOMESTIC RETURN RECEIPT

P 062 921 892

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

UNITED STATES POSTAL SERVICE

Sent to Thomas Moses	
Street and No. Reedy Creek ID	
P.O., State and ZIP Code Lake Buena Vista, Fl	
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 9-30-92 AC 48-137140	

PS Form 3800, June 1991

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. H. Robert Kohl, P.E.
Reedy Creek Energy Serv. Inc.
P.O. BOX 10000
Lake Buena Vista, FL
32830-1000

4. Article Number
P 832 538 938

Type of Service:
☐ Registered ☐ Insured
☑ Certified ☐ COD
☐ Express Mail

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature – Addressee
X

6. Signature – Agent
X

7. Date of Delivery
8-26-91

8. Addressee's Address *(ONLY if requested and fee paid)*
Division of Air Resources Management

RECEIVED
AUG 30 1991

PS Form **3811**, Mar. 1987 ★ U.S.G.P.O. 1987-178-268 **DOMESTIC RETURN RECEIPT**

P 832 538 938

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

UNITED STATES POSTAL SERVICE

Sent to
Mr. H. Robert Kohl
Street & No.
Reedy Creek Energy
P.O., State & ZIP Code
Lake Buena Vista, FL

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	8-23-91

AC 48-137740

PS Form **3800**, June 1990

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. Thomas M. Moses
Reedy Creek Improvement District
P.O. Box 32
Lake Buena Vista, FL 32830

4. Article Number
P 407 853 142

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
1-28-91

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

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

P 407 853 142

RECEIPT FOR CERTIFIED MAIL

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

Sent to Thomas Moses	
Street and No. Reedy Creek ID	
P.O. State and ZIP Code Lake B.V., FL	
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 1-25-91	
AC 48-137740	

☆U.S.G.P.O. 1989-234-555

PS Form 3800, June 1985

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:	4. Article Number
Mr. Thomas M. Moses Reedy Creek Improvement District P. O. Box 10170 Lake Buena Vista, FL 32830-0170	P 938 762 762 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 — Address X	8. Addressee's Address *(ONLY if requested and fee paid)*
6. Signature — Agent X	
7. Date of Delivery	

Rec'd 11/27/89 KEO

PS Form **3811**, Mar. 1988 ★ U.S.G.P.O. 1988-212-865 **DOMESTIC RETURN RECEIPT**

P 938 762 762

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

Sent to Mr. Thomas M. Moses, RCID	
Street and No. P.O. Box 10170	
P.O. State and ZIP Code Lake Buena Vista, FL 32830	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date Mailed: 11-27-89 Permit: AC 48-137740	

PS Form 3800, June 1985

● **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:	4. Article Number
Mr. Thomas M. Moses Reedy Creek Improvement District P. O. Box 36 Lake Buena Vista, FL 32830	P 938 762 573
	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 — Address X	8. Addressee's Address *(ONLY if requested and fee paid)*
6. Signature — Agent X Debbie Smith	
7. Date of Delivery 5-26-89	

PS Form **3811**, Mar. 1988 ★ U.S.G.P.O. 1988-212-865 **DOMESTIC RETURN RECEIPT**

Reed 5/30/89 KWD

P 938 762 573

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

Sent to Mr. Thomas M. Moses, RCID	
Street and No. P.O. Box 36	
P.O., State and ZIP Code Lake Buena Vista, FL 32830	
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 Permit: AC 48-137740 Mailed: 5-24-89	

PS Form 3800, June 1985

REEDY CREEK IMPROVEMENT DISTRICT

P.O. BOX 10170 LAKE BUENA VISTA, FLORIDA 32830-0170 TELEPHONE (407) 828-2034

31 October, 1989

Mr. Clair H. Fancy
Bureau Chief - Air
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32301-2400

RE: RCID Cogeneration Plant
Gas Fired Turbine Generator
Construction Permit AC48-137740

Dear Mr. Fancy:

The construction permit for the RCID Cogeneration Plant expires November 1, 1989. It appears that the Operational Permit #A048-170280 will not be issued by your department prior to the expiration of the construction permit. Therefore, we respectfully request an extension of Construction Permit #AC48-137740 for six months, the extension to expire May 1, 1990.

If you have any additional questions or comments, please let us know as soon as possible. Thank you for your assistance in this project and we look forward to receiving our final operating permit.

Very truly yours,

Thomas M. Moses
District Administrator

TMM:fw
cc: P. Raval
C. Collins

FEDERAL EXPRESS

EXPRESS SHIPPING LABEL
FOR USE BY POWERSHIP CUSTOMERS ONLY

PART # 112678 REV. 10/88 WCSC

189

286237596b

D079H

Ser 7

From

Ship Date 11-01-89

WALT DISNEY WORLD
3241 VISTA RD
LAKE BUENA VISTA FL 32830

To *(If Hold for Pickup, Print FEDEX Address Here)(We Cannot Deliver to P.O. Boxes or P.O. # Zip Codes.)*

000

CLAIR H. FANCY
FL. DEPT.OF ENVIRONMENTAL
2600 BLAIR STONE RD.
TALLAHASSEE FL 32301

Release No.

Reference Info
JU091921

OL

SERVICE CODE 1- PRIORITY 1 2- COURIER PAK ENVELOPE 3- COURIER PAK BOX 4- COURIER PAK TUBE 5- STANDARD AIR 6- OVERNIGHT LETTER

WEIGHT	DECLARED VALUE	OVERSIZE
001	00000	☐

SPECIAL HANDLING CODES: 1 HOLD FOR PICK UP; 2 DELIVER WEEKDAY; 3 DELIVER SATURDAY; 4 DANGEROUS GOODS; 5 CSS; 8 DRY ICE; 10; 12 HOLIDAY DELIVERY

Routing Code

93 TLH

PM
5-3-89
Orlando, FL

file copy

REEDY CREEK
IMPROVEMENT
DISTRICT

DIRECTOR/GENERAL MANAGER
Thomas M. Moses

April 27, 1989

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

RE: RCID Cogeneration Plant
Gas Fired Turbine Generator Construction Permit
Extension Request
AC 48-137740

Dear Mr. Fancy:

Pursuant to our records, the above noted Permit will expire on June 1, 1989.

After field construction was substantially completed, we conducted emission compliance testing on the unit and forwarded our Source Test Report to Mr. Collins of your Orlando office on March 14, 1989.

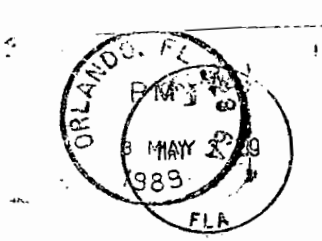
One facet of the extended testing indicated possible non-compliance (duct burner operation on low-fire mode) and the Orlando office suggested this part of the testing be redone. While obtaining new test pricing for this work, the 12,000 hp steam turbine mechanically failed and is now under extended repair. While this part of the plant is out of service we cannot effectively re-test our duct burner emissions. Thus, it does not appear we will be able to file a Certificate of Completion, Operating Permit Application, and renewed test results 90 days prior to the current expiration date of the existing Construction Permit.

As of now we hope to re-test in late May or early June and be able to submit the results in July. Assuming no additional mechanical or performance problems, it is our intention to file an Operating Permit Application shortly thereafter.

The 90 day advance submission period needed prior to expiration of the construction Permit (Rules 17-2 and 17-4, FAC) indicates a date of November 1, 1989. Therefore, we hereby request that the Bureau approve an additional five (5) month extension of our construction Permit to allow completion of our requirements by November 1, 1989.

REEDY CREEK
IMPROVEMENT
DISTRICT

P.O. BOX 36 LAKE BUENA VISTA, FLORIDA 32830



Mr. C.H. Fancy, PE
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 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. Thomas M. Moses
Rbedy Creek Improvement District
Post Office Box 36
Lake Buena Vista, Florida 32830

4. Article Number
P 274 007 458

Type of Service:
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature — Addressee
X

6. Signature — Agent
X [signature]

7. Date of Delivery
9-24-88

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

Rec'd 9/28/88 KKW

PS Form **3811**, Mar. 1987 ★ U.S.G.P.O. 1987-178-268 DOMESTIC RETURN RECEIPT

P 274 007 458

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

Sent to Mr. Thomas M. Moses, RCID	
Street and No. P. O. Box 36	
P.O., State and ZIP Code Lake Buena Vista, FL 32830	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date Mailed: 9-22-88 Permit: AC 48-137740	

PS Form 3800, June 1985 ★ U.S.G.P.O. 1985-480-794

PM
8-23-88
Orlando, FL

file copy

REEDY CREEK
IMPROVEMENT
DISTRICT

DIRECTOR/GENERAL MANAGER
Thomas M. Moses

RECEIVED
AUG 26 1988
DER-BAQM

August 23, 1988

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

RCID Cogeneration Plant
Gas Fired Turbine Generator Permit
Application Extension Request
AC 48-137740

Dear Mr. Fancy:

As your files will indicate, the above cited Construction Permit will expire on December 1, 1988.

Although the construction phase is well underway it does not appear we will be able to file a Certificate of Completion, Operation Permit Application and related testing results 90 days prior to the expiration date of the current Construction Permit.

We expect start-up to occur in early November 1988 with compliance testing later that month. Assuming no mechanical or performance problems ensue, we'd expect test data results and completion activities to occur in December. With onset of the holidays and leaving some margin for operational shake-down needs for this 38 MW facility, it appears that our Operating Permit Application submittal will occur in January, 1989.

REEDY CREEK
IMPROVEMENT
DISTRICT

P.O. BOX 36 LAKE BUENA VISTA, FLORIDA 32830

ORLANDO
AUG 23 '88
FLA

U.S. POSTAGE
$0.25
METER
226340

Mr. C.H. Fancy, PE
Deputy Chief
Bureau of Air Quality Management
Florida Dept. of Env. Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

ORLANDO, FL 328
AUG 24 1988
PM

PM
5 Apr. 1988
Atlanta, GA

file copy

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

APR 05 1988

4APT-APB

RECEIVED
APR 7 1988
DER-BAQM

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

Re: Reedy Creek (PSD-FL-123)

Dear Mr. Fancy:

This is to acknowledge receipt of your final determination and permit for the Reedy Creek Improvement District. We have reviewed your determination and permit and determined the documents to be satisfactory.

Thank you for the opportunity to provide you with our input. If you have any additional comment or information, please feel free to contact me or Gary Ng of my staff at (404) 347-2864.

Sincerely yours,

Bruce P. Miller

Bruce P. Miller, Chief
Air Programs Branch
Air, Pesticides, and Toxics
Management Division

Copies: CHF/BT
Pradip Rawal
Tom Sawicki
} 4-8-88 mm

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET
ATLANTA, GEORGIA 30365

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300
AIR-4

4.8.88

FYI

U.S. OFFICIAL MAIL
ATLANTA APR-5'88 GA.
PENALTY FOR PRIVATE USE $300
U.S. METER 6250488
U.S. POSTAGE 0.25

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

RECEIVED
APR 7 1988
DER-BAQM

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

Interoffice Memorandum

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

M E M O R A N D U M

TO: Bill Thomas

FROM: Vivian F. Garfein VFG

DATE: March 10, 1988

RE: OGC Case No. 87-1624
Permit Application No. 48-137740

On December 3, 1987, REEDY CREEK IMPROVEMENT DISTRICT was granted an extension of time until February 8, 1988, in which to file a petition for administrative proceedings concerning the above captioned case. No petition was filed within the allotted extension of time.

If you have not already done so, please have a final order prepared as soon as possible which appropriately disposes of the permit application so that our file in the case can be closed. Please send me a copy of the final order, or, if the permit application has been withdrawn, a letter confirming the withdrawal date.

Please call if there are any questions.

DEPARTMENT OF ENVIRONMENTAL REGULATION

ROUTING AND TRANSMITTAL SLIP

ACTION NO

ACTION DUE DATE

1. TO: (NAME, OFFICE, LOCATION) Bill Thomas	Initial	
	Date	
2. Air	Initial	
	Date	
3.	Initial	
	Date	
4.	Initial	
	Date	

REMARKS:

RECEIVED

MAR 10 1988

DER - BAQM

INFORMATION

- ☐ Review & Return
- ☐ Review & File
- ☐ Initial & Forward
- ☐

DISPOSITION

- ☐ Review & Respond
- ☐ Prepare Response
- ☐ For My Signature
- ☐ For Your Signature
- ☐ Let's Discuss
- ☐ Set Up Meeting
- ☐ Investigate & Report
- ☐ Initial & Forward
- ☐ Distribute
- ☐ Concurrence
- ☐ For Processing
- ☐ Initial & Return

FROM: V Garfein

DATE 3/10

PHONE

FINAL AC

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.

3. Article Addressed to:
Mr. Thomas M. Moses
Reedy Creek Improvement District
P.O. Box 36
Lake Buena Vista, FL 32830

4. Article Number
P 274 010 491

Type of Service:
☐ Registered ☐ Insured
☑ Certified ☐ COD
☐ Express Mail

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature — Addressee
X

6. Signature — Agent
X R Bunk

7. Date of Delivery
3/11/88

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

PS Form 3811, Feb. 1986 DOMESTIC RETURN RECEIPT

Rec'd 3/14/88 KW

P 274 010 491

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

Sent to Thomas M. Moses
~~Reedy Creek Improve. Dist.~~
Street and No. P.O. Box 36
P.O., State and ZIP Code Lake Buena Vista, FL 32830

Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date Mailed: 03/09/88 Permit: AC 48-137740	

PS Form 3800, June 1985 ☆ U.S.G.P.O. 1985-480-794

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.

3. Article Addressed to:	4. Article Number
Thomas M. Moses Reedy Creek Imporvement Dist. P.O. Box 36 Lake Buena Vista, FL 32830	P 274 010 453
	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	
7. Date of Delivery 2-10-88	

PS Form 3811, Feb. 1986 DOMESTIC RETURN RECEIPT

P 274 010 453

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

Thomas M. Moses ~~Reedy Creek I provement Dist.~~ Street and No. P.O. Box 36 P.O., State and ZIP Code Lake Buena Vista, FL 32830	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date Mailed: 02/08/88 Permit: AC 48-137740	

PS Form 3800, June 1985 ★ U.S.G.P.O. 1985-480-794

PM
24 Feb. 1988
Atlanta, GA

File Copy

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

FEB 24 1988

APT-APB/gn

RECEIVED
FEB 29 1988
DER-BAQM

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

Re: Reedy Creek (PSD-FL-123)

Dear Mr. Fancy:

This is to acknowledge receipt of your February 5, 1988, preliminary determination and proposed permit for the above-referenced source. We have reviewed your determination and determined that this would be a minor modification not subject to PSD review. Therefore, this determination will not be subject to review under the Region IV Overview of State Programs policy.

Thank you for the opportunity for providing our comments. I also appreciate your efforts in working with the source to step up the source's NO_x control measures. Cooperation is such an important factor in resolving any issues. We are looking forward to receiving copies of the final determination and permit upon issuance. If you have any additional information or comments, please feel free to contact me or Gary Ng of my staff at (404) 347-2864.

Sincerely yours,

Bruce P. Miller

Bruce P. Miller, Chief
Air Programs Branch
Air, Pesticides, and Toxics
Management Division

Copied: Pradeep Raval
CHF/BT
3.1.88 mr

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET
ATLANTA, GEORGIA 30365

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

AIR-4

U.S. OFFICIAL MAIL
ATLANTA GA. FEB 24 '88
PENALTY FOR PRIVATE USE $300
U.S. POSTAGE 0.22
P.B. METER 6250488

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

3·1·88

~~CHF~~
~~BT~~ } FYI

RECEIVED
FEB 1988
DER - BAQM

The Orlando Sentinel

Published Daily
Orlando, Orange County, Florida

ADVERTISING CHARGE $97.44

State of Florida } ss.
COUNTY OF ORANGE

Before the undersigned authority personally appeared Nancy A. Puglia who on oath says that she is the Legal Advertising Representative of the Orlando Sentinel, a Daily newspaper published at Orlando, in Orange County, Florida; that the attached copy of advertisement, being a Notice of Intent in the matter of Permit to Reedy Creek Improvement District in the Court, was published in said newspaper in the issues of February 12, 1988

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

Nancy A. Puglia

Sworn to and subscribed before me this 12th day of February A.D., 1988

CATHERINE BEESING NOTARY PUBLIC STATE OF FLORIDA at Large

Notary Public

Notary Public, State of Florida at Large
My Commission Expires March 4, 1989
Bonded Thru Brown & Brown, Inc.

FORM NO. AD-262

FEB 1988 RECEIVED

State of Florida
Department of Environmental Regulation
Notice of Intent

The Department of Environmental Regulation hereby gives notice of its intent to issue a permit to Reedy Creek Improvement District to construct a 38 MW natural gas-fired turbine generator and a heat recovery system with a total heat input of 450 MMBtu/hr, at the Central Energy Plant near Lake Buena Vista, Orange County, Florida. The Department is issuing this Intent to Issue for the reasons stated in the attached Technical Evaluation and Preliminary Determination.

Persons whose substantial interest are affected by the Department's proposed permitting decision may petition for an administrative determination (hearing) in accordance with Section 120.57, Florida Statutes. The petition must conform to the requirements of Chapters 17-103 and 28-5, Florida Administrative Code, and must be filed (received) in the Department's Office of General Counsel, 2600 Blair Stone Road, Twin Towers Office Building, Tallahassee, Florida 32399-2400, within fourteen (14) days of publication of this notice. Failure to file a petition within this time period constitutes a waiver of any right such person has to request an adminstrative determination (hearing) under Section 120.57, Florida Statutes.

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 proposed agency action. Therefore, persons who may not wish to file a petition may wish to intervene in the proceeding. A petition for intervention must be filed pursuant to Rule 28-5.207, Florida Administrative Code, at least five (5) days before the final hearing and be filed with the hearing officer if one has been assigned at the Division of Administrative Hearings, Department of Administrative, 2009 Apalachee Parkway, Tallahassee, Florida 32301. If no hearing officer has been assigned, the petition is to be filed with the Department's Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Failure to petition to intervene within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, Florida Statutes.

The application is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:
Dept. of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
Dept. of Environmental Regulation
Central Florida District
3319 Maguire Blvd., Suite 232
Orlando, Florida 32803-3767

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

CL-235 Feb.12,1988

Copied: Pradeep Raval 2/25/88

DEPARTMENT OF ENVIRONMENTAL REGULATION

ROUTING AND TRANSMITTAL SLIP

ACTION NO

ACTION DUE DATE

	Initial	Date
1. TO: (NAME, OFFICE, LOCATION) Bill Thomas		
2. Bureau of Air Quality Manag-		
3. Department of Environmental Regulation Twin Towers Office Building 2600 Blair Stone Road Tallahassee, FL 32399-2400		
4.		

REMARKS:

FYI

DER

FEB 22, 1988

BAQM

INFORMATION	
	Review & Return
	Review & File
	Initial & Forward

DISPOSITION	
	Review & Respond
	Prepare Response
	For My Signature
	For Your Signature
	Let's Discuss
	Set Up Meeting
	Investigate & Report
	Initial & Forward
	Distribute
	Concurrence
	For Processing
	Initial & Return

FROM: John Turner

DATE 2/19/88

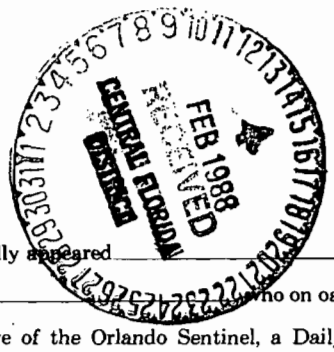
PHONE 904 325-1266

The Orlando Sentinel

Published Daily
Orlando, Orange County, Florida

ADVERTISING CHARGE $ 101.44

State of Florida } SS.
COUNTY OF ORANGE



Before the undersigned authority personally appeared Nancy A. Puglia who on oath says that she is the Legal Advertising Representative of the Orlando Sentinel, a Daily newspaper published at Orlando, in Orange County, Florida; that the attached copy of advertisement, being a Notice of Intent in the matter of Permit to Reedy Creek Improvement District

in the Court, was published in said newspaper in the issues of February 11, 1988

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

Nancy A. Puglia

Sworn to and subscribed before me this 12th day of February A.D. 19 88

Notary Public, State of Florida at Large
My Commission Expires March 4, 1989
Bonded Thru Brown & Brown, Inc.

Notary Public

FORM NO. AD-262

State of Florida
Department of Environmental Regulation
Notice of Intent

The Department of Environmental Regulation hereby gives notice of its intent to issue a permit to Reedy Creek Improvement District to construct a 38 MW natural gas-fired turbine generator and a heat recovery system with a total heat input of 450 MMBtu/hr, at the Central Energy Plant near Lake Buena Vista, Orange County, Florida. The Department is issuing this Intent to Issue for the reasons stated in the attached Technical Evaluation and Preliminary Determination.

Persons whose substantial interest are affected by the Department's proposed permitting decision may petition for an administrative determination (hearing) in accordance with Section 120.57, Florida Statutes. The petition must conform to the requirements of Chapters 17-103 and 28-5, Florida Administrative Code, and must be filed (received) in the Department's Office of General Counsel, 2600 Blair Stone Road, Twin Towers Office Building, Tallahassee, Florida 32399-2400, within fourteen (14) days of publication of this notice. Failure to file a petition within this time period constitutes a waiver of any right such person has to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

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 proposed agency action. Therefore, persons who may not wish to file a petition may wish to intervene in the proceeding. A petition for intervention must be filed pursuant to Rule 28-5.207, Florida Administrative Code, at least five (5) days before the final hearing and be filed with the hearing officer if one has been assigned at the Division of Administrative Hearings, Department of Administrative, 2009 Apalachee Parkway, Tallahassee, Florida 32301. If no hearing officer has been assigned, the petition is to be filed with the Department's Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Failure to petition to intervene within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, Florida Statutes.

The application is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:
Dept. of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
Dept. of Environmental Regulation
Central Florida District
3319 Maguire Blvd., Suite 232
Orlando, Florida 32803-3767

Any person may send written comments on the proposed action to Mr. Bill Thomas at the Department's Tallahassee address. All comments mailed within 30 days of the publication of this notice will be considered in the Department's final determination.

CL-188 Feb.11,1988

DEPARTMENT OF ENVIRONMENTAL REGULATION

ROUTING AND TRANSMITTAL SLIP

ACTION NO

ACTION DUE DATE

	Initial	Date
1. TO: (NAME, OFFICE, LOCATION) Bill Thomas		
2. Bureau of Air Quality Manag.		
3. Department of Environmental Regulation		
4. Twin Towers Office Building 2600 Blair Stone Road Tallahassee, FL 32399-2400		

REMARKS:

FYI

This notice gives 30 days in the last AP when it was amended to 14 days. Therefore, this notice will not be used.

DER

FEB 16

BAQM

INFORMATION

- [ ] Review & Return
- [ ] Review & File
- [ ] Initial & Forward
- [ ]

DISPOSITION

- [ ] Review & Respond
- [ ] Prepare Response
- [ ] For My Signature
- [ ] For Your Signature
- [ ] Let's Discuss
- [ ] Set Up Meeting
- [ ] Investigate & Report
- [ ] Initial & Forward
- [ ] Distribute
- [ ] Concurrence
- [ ] For Processing
- [ ] Initial & Return

FROM: John Turner

DATE 2/15/88

PHONE SC 325-1266

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.

3. Article Addressed to:	4. Article Number
Mr. Thomas M. Moses Reedy Creek Improvement District P.O. Box 36 Lake Buena Vista, FL 32830	P 274 010 116
	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	
7. Date of Delivery 2-13-88	

PS Form 3811, Feb. 1986 DOMESTIC RETURN RECEIPT

Rec'd 2/17/88 KEW

P 274 010 116

RECEIPT FOR CERTIFIED MAIL

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

Sent to Mr. Thomas M. Moses ~~Reedy Creek Improvement Dist.~~	
Street and No. P.O. Box 36	
P.O., State and ZIP Code Lake Buena Vista, FL 32830	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date Mailed: 02/10/88 Permit: AC 48-137740	

☆ U.S.G.P.O. 1985-480-794

PS Form 3800, June 1985

Federal Express File Copy

Airbill # 5748403404
Naliid 1.22.88

REEDY CREEK ENERGY SERVICES, INC.
P.O. BOX 10,000 • LAKE BUENA VISTA, FLORIDA 32830-1000
(305) 824-4024

January 22, 1988

DER
JAN 25 1988
BAQM

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

RCID CoGeneration Plant
Contract No. 86W-306
RCES Letter No. RC-165
Gas Fired Turbine Generator
Permit Application
AC 48-137740 .

Dear Mr. Fancy:

Per the January 15, 1988 request of Mr. Pradeep Raval, who is developing the above Permit's Preliminary Determination, the following data is offered:

1. The maximum NOx emissions expected from the facility will occur in the winter at approximately the 40 degree F. ambient temperature level. Thus, when burning natural gas, the maximum NOx emission expected from the main stack will be 112 pounds per hour or about 74 ppmvd. When burning diesel oil (for a period not to exceed 14 days per year), the maximum NOx emission expected from the main stack will be 132 pounds per hour on about 82 ppmvd. Concurrent peak CO emissions expected will be 12 pounds per hour on gas and 24 pounds per hour on oil. Similarly, SO2 emissions (oil only) for a brief peak period could be up to 126 pounds per hour.

2. For compliance follow-up by the District Office, please be assured our data storage/retrieval system will have the capability of providing hourly NOx emission readout information for review and control assessment purposes. Information regarding this system is contained in our September 18, 1987 supplemental data package forwarded to you by Mr. Moses.

1·26·88

~~CAFF~~ ~~DF~~ } FYI

FEDERAL EXPRESS® QUESTIONS? CALL 800-238

AIRBILL NUMBER 5748403404

5748403404

DER

[redacted] Date 01/22/88

1 From (Your Name) Please Print

Your Phone Number (Very Important) ( ) JAN 25

Company WALT DISNEY WORLD CO

Department/Floor No. BAQM

Street Address 3300 BONNET CREEK DRIVE

City LAKE BUENA VISTA State FL

ZIP Required For Correct Invoicing 3 2 8 3 0

2 To (Recipient's Name) Please Print C H FANCY, DPTY CHIEF

Recipient's Phone Number (Very Important) ( )

Company BUR OF AIR QUALITY MGEMENT

Department/Floor No.

FLA DEPT OF ENV REGULATIONA

Exact Street Address *(Use of P.O. Boxes or P.O.® Zip Codes Will Delay Delivery And Result In Extra Charge.)*

2600 BLAIR STONE ROAD TWIN TOWERS

City TALLAHASSEE State FL

ZIP Street Address Zip Required 32399-2400

3 YOUR BILLING REFERENCE INFORMATION (FIRST 24 CHARACTERS WILL APPEAR ON INVOICE.)

PAYMENT [X] Bill Sender [ ] Bill Recipient's FedEx Acct. No. [ ] Bill 3rd Party FedEx Acct. No. [ ] Bill Credit Card [ ] Cash [redacted]

H HOLD FOR PICK-UP AT THIS FEDERAL EXPRESS LOCATION: Street Address (See Service Guide or Call 800-238-5355)

City State

ZIP® Zip Code of Street Address Required

4 SERVICES CHECK ONLY ONE BOX

1 [ ] PRIORITY 1 Overnight Delivery Using Your Packaging

6 [X] OVERNIGHT LETTER* (Our Packaging) 9½"x12½"

OVERNIGHT DELIVERY USING OUR PACKAGING

2 [ ] Courier-Pak Overnight Envelope* 12"x 15½"

3 [ ] Overnight Box 12½"x 17½"x 3" A [ ]

4 [ ] Overnight Tube 38"x 6"x 6"x 6" B [ ]

*Declared Value Limit $100.

STANDARD AIR

5 [ ] Delivery not later than second business day

SERVICE COMMITMENT

PRIORITY 1 - Delivery is scheduled early next business morning in most locations. It may take two or more business days if the destination is outside our primary service areas.

STANDARD AIR - Delivery is generally next business day or not later than second business day. It may take three or more business days if the destination is outside our primary service areas.

DELIVERY AND SPECIAL HANDLING CHECK SERVICES REQUIRED

1 [ ] HOLD FOR PICK-UP (Fill in Section H at right)

2 [X] DELIVER WEEKDAY

3 DELIVER SATURDAY (Extra charge) [ ]

4 [ ] DANGEROUS GOODS (P-1 and Standard Air Packages only. Extra charge)

5 [ ] CONSTANT SURVEILLANCE SERVICE (CSS) (Extra charge) (Do Not Complete Section 5)

6 [ ] DRY ICE ______ Lbs.

7 [ ] OTHER SPECIAL SERVICE ______

8 [ ]

9 [ ] SATURDAY PICK-UP (Extra charge)

10 [ ]

PACKAGES	WEIGHT	YOUR DECLARED VALUE	OVER SIZE
	LBS	NDV	
	LBS		
	LBS		
	LBS		
Total	Total	Total NDV	

Received At
1 [ ] Regular Stop
2 [ ] On-Call Stop
3 [ ] Drop Box 4 [ ] B.S.C. 5 [X] Station

Federal Express Corp. Employee No. 30262

Date/Time For Federal Express Use 1/22 1:55

Emp. No. Date

[ ] Cash Received

[ ] Return Shipment

[ ] Third Party [ ] Chg. To Del. [ ] Chg. To Hold

Street Address

City State Zip

Received By:

X

Date/Time Received FedEx Employee Number

Federal Express Use

Base Charges

Declared Value Charge

Origin Agent Charge

Other

Total Charges

PART #106001 REV. 5/87 PRINTED U.S.A. GBFE

007

RECIPIENT'S COPY

5 Sender authorizes Federal Express to deliver this shipment without obtaining a delivery signature and shall indemnify and hold harmless Federal Express from any claims resulting therefrom.

Release Signature:

REEDY CREEK ENERGY SERVICES, INC.

P.O. BOX 10,000 • LAKE BUENA VISTA, FLORIDA 32830-1000

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

We trust the above information satisfies your Permit development needs and that the Preliminary Determination can be issued promptly.

Very truly yours,

Blaise Ellis
CoGeneration Project Manager

BE/df

cc: Tom Moses - RCID

Copied: Pradeep Raval
CHF | BT
1.26.88 MT

PS Form 3811, July 1983 447-845

SENDER: Complete items 1, 2, 3 and 4.

Put your address in the "RETURN TO" space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for service(s) requested.

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

3. Article Addressed to:
Mr. Thomas M. Moses
Reedy Creek Improvement District
P.O. Box 40
Lake Buena Vista, FL 32830

4. Type of Service:
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail

Article Number
P 274 010 476

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)*

DOMESTIC RETURN RECEIPT

P 274 010 476

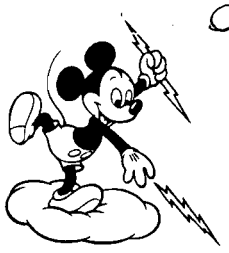
RECEIPT FOR CERTIFIED MAIL
NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL
(See Reverse)

☆ U.S.G.P.O. 1985-480-794

Sent Mr. Thomas M. Moses ~~Reedy Creek Improve. Dist.~~	
Street and No. P.O. Box 40	
P.O., State and ZIP Code Lake Buena Vista, FL 32830	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date Mailed: 01-13-88 Permit: 48-137740	

PS Form 3800, June 1985

Air Bill #5151306790 Federal Express 12-21 Monroe LA File Copy



REEDY CREEK ENERGY SERVICES, INC.
P.O. BOX 10,000 • LAKE BUENA VISTA, FLORIDA 32830-1000
(305) 824-4024

December 21, 1987

Bureau of Air Quality Management
Florida Department of
Environmental Regulation
2600 Blair Stone Road
Twin Towers Building
Tallahassee, FL 32399-2400

Attention Mr. C. H. Fancy, PE
Deputy Chief

Gas Fired Turbine
Generator Permit Application
AC48-137740
PSD-FL-123

Dear Mr. Fancy:

Per our technical meeting of December 8, 1987 at your offices, please accept these amendments to the above Permit Application.

In order to resolve the outstanding BACT issues, it was discussed at that meeting that we might amend our permit application in one of two ways: 1) select an approach involving PSD Review with application of BACT determination based on an economic criterion of $1000/ton of NOx reduction; 2) select an approach involving a voluntary limitation of annual NOx emissions to below the significance level. We have selected the latter methodology. We believe the attached satisfies the items discussed per the stipulated guidelines.

It was suggested that if we were able to submit these revisions before the Holidays, your staff would be able to act on this application promptly. As our 1988 schedule is now being impacted severely, we would greatly appreciate your timely response.

As requested previously, if you have any questions on this application, please contact us immediately, thus allowing our timely follow-up.

DER
DEC 22 1987
BAQM

Very truly yours,

Edward Godwin, P.E.
Project Engineer
Reedy Creek Energy Services, Inc.

bgfh:D509:k

Attachments

pc Mr. Thomas M. Moses

Copies: Pradeep Raval
CHF/BT
Tom Saucicki - CF Dist } 12-23-87 mm

12-23-87

CHF
SF
FYI

Return ASAP

Ford, Bacon & Davis Incorporated
Engineers Constructors
Ronald D. Sadow, P.E.
Manager of Environmental Engineering
P. O. Box 1894
4001 Jackson Street
Monroe, LA 71210
318/323-9000

FEDERAL EXPRESS®

QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL NUMBER 5151306790

7203A 5151306790

Date: 12/21/87

1 From (Your Name) Please Print: RON SADOW
Your Phone Number (Very Important): (318) 323-9000
Company: FORD BACON & DAVIS INC
Department/Floor No.:
Street Address: 4001 JACKSON STREET
City: MONROE State: LA ZIP Required For Correct Invoicing: 7 1 2 0 2

2 To (Recipient's Name) Please Print: MR. C.H. FANCY
Recipient's Phone Number (Very Important): ( )
Company: BUREAU OF AIR QUALITY MANAGEMENT FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATIONS
Department/Floor No.:
Exact Street Address (Use of P.O. Boxes or P.O. ® Zip Codes Will Delay Delivery And Result In Extra Charge.): 2600 BLAIR STONE ROAD TWIN TOWERS BLD
City: TALLAHASSEE State: FL ZIP Street Address Zip Required: 32399-2400

3 YOUR BILLING REFERENCE INFORMATION (FIRST 24 CHARACTERS WILL APPEAR ON INVOICE.): XXXXXX0268R

PAYMENT: [✓] Bill Sender [ ] Bill Recipient's FedEx Acct. No. [ ] Bill 3rd Party FedEx Acct. No. [ ] Bill Credit Card [ ] Cash

H HOLD FOR PICK-UP AT THIS FEDERAL EXPRESS LOCATION: Street Address (See Service Guide or Call 800-238-5355)
City State
ZIP ® Zip Code of Street Address Required

4 SERVICES CHECK ONLY ONE BOX

1 [ ] PRIORITY 1 Overnight Delivery Using Your Packaging — 6 [ ] OVERNIGHT LETTER* (Our Packaging) 9½"x12½"
OVERNIGHT DELIVERY USING OUR PACKAGING
2 [✓] Courier-Pak Overnight Envelope* 12"x 15½"
3 [ ] Overnight Box 12½"x 17½"x 3" — A [ ]
4 [ ] Overnight Tube 38"x 6"x 6" — B [ ]
*Declared Value Limit $100.
5 [ ] STANDARD AIR Delivery not later than second business day

SERVICE COMMITMENT
PRIORITY 1 - Delivery is scheduled early next business morning in most locations. It may take two or more business days if the destination is outside our primary service areas.
STANDARD AIR - Delivery is generally next business day or not later than second business day. It may take three or more business days if the destination is outside our primary service areas.

DELIVERY AND SPECIAL HANDLING CHECK SERVICES REQUIRED

1 [ ] HOLD FOR PICK-UP (Fill In Section H at right)
2 [✓] DELIVER WEEKDAY
3 [ ] DELIVER SATURDAY (Extra charge)
4 [ ] DANGEROUS GOODS (P-1 and Standard Air Packages only. Extra charge)
5 [ ] CONSTANT SURVEILLANCE SERVICE (CSS) (Extra charge) (Do Not Complete Section 5)
6 [ ] DRY ICE _____ Lbs.
7 [ ] OTHER SPECIAL SERVICE _____
8 [ ]
9 [ ] SATURDAY PICK-UP (Extra charge)
10 [ ]

	PACKAGES	WEIGHT	YOUR DECLARED VALUE	OVER SIZE
	1	2 LBS		
		LBS		
		LBS		
		LBS		
Total	1	Total 2	Total	

Received At: 1 [✓] Regular Stop 2 [ ] On-Call Stop 3 [ ] Drop Box 4 [ ] B.S.C. 5 [ ] Station
Federal Express Corp. Employee No.: 50505
Date/Time For Federal Express Use: 12/21 1645

Emp. No. Date
[ ] Cash Received
[ ] Return Shipment [ ] Third Party [ ] Chg. To Del. [ ] Chg. To Hold
Street Address
City State Zip
Received By: X
Date/Time Received FedEx Employee Number

Federal Express Use
Base Charges
Declared Value Charge
Origin Agent Charge
Other
Total Charges

5 Sender authorizes Federal Express to deliver this shipment without obtaining a delivery signature and shall indemnify and hold harmless Federal Express from any claims resulting therefrom.
Release Signature:

PART #106001
REV. 5/87
PRINTED U.S.A. NCREC

007

RECIPIENT'S COPY

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: Thomas M. Moses, Dir.
Reedy Creek Improvement Dist
1675 Buena Vista Drive, Suite 265
Post Office Box 36
Lake Buena Vista, FL 32830

4. Type of Service:
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail

Article Number: P 274 007 647

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature – Addressee
X

6. Signature – Agent
X

7. Date of Delivery 11-28-87

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

DOMESTIC RETURN RECEIPT

P 274 007 647

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

Sent to Thomas M. Moses, Dir.
~~Reedy Creek Improvement Dist.~~
Street and No. 1675 Buena Vista Drive, St. 265
~~P.O. Box 36~~
P.O. State and ZIP Code Lake Buena Vista, FL 32830

Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$

Postmark or Date
Mailed: 11/23/87
Permit: AC 48-137740
Federal: PSD-FL-123

☆ U.S.G.P.O. 1985-480-794
PS Form 3800, June 1985

BEFORE THE STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

In the Matter of
Application for Permit by:

Reedy Creek Improvement District
Post Office Box 40
Lake Buena Vista, Florida 32830

DER File No. AC 48-137740
Fed. Permit: PSD-FL-123

INTENT TO ISSUE

The Department of Environmental Regulation hereby gives notice of its intent to issue a permit (copy attached) to construct a 38 MW natural gas fired turbine generator with a heat recovery system, with a total heat input of 445.2 MMBtu/hr, at the Central Energy Plant, Bay Lake location, near Lake Buena Vista, Orange County, Florida. The proposed project will emit the pollutants nitrogen oxides (NOx), sulfur dioxide (SO_2), particulate matter (PM), carbon monoxide (CO), and volatile organic compounds (VOCs). The Department is issuing this Intent to Issue for the reasons stated in the attached Technical Evaluation and Preliminary Determination.

The applicant, Reedy Creek Inprovement District, applied on August 6, 1987, to the Department of Environmental Regulation for a construction permit.

The Department has permitting jurisdiction under Chapter 403, Florida Statutes (F.S.), and Florida Administrative Code (FAC) Rules 17-2 and 17-4. The project is not exempt from permitting procedures. The Department has determined that an air construction permit was needed for the proposed work.

Pursuant to Section 403.815, F.S., and FAC Rule 17-103.150, you (the applicant) are required to publish at your own expense the enclosed Notice of Proposed Agency Action on permit application. The notice must be published one time only in a section of a major local newspaper of general circulation in the county in which the project is located and within thirty (30) days from receipt of this intent. Proof of publication must be provided to the Department within seven days of publication of

the notice. 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 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, F.S. Petitions must comply with the requirement of FAC Rules 17-103.155 and 28-5.201 (copies enclosed) and be filed with (received by) the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Petitions filed by the permit applicant must be filed within fourteen (14) days of receipt of this intent. Petitions filed by other persons must be filed within fourteen (14) days of publication of the public notice or within fourteen (14) days of receipt of this intent, whichever first occurs. 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., concerning the subject permit application. Petitions which are not filed in accordance with the above provisions will be dismissed.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

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

Copies furnished to:

T. Sawicki, CF Dist.
H. Culp, P.E.
W. Aronson, EPA
M. Flores, NPS

AC 48-137740
PSD-FL-123

No PM Dt. on envelop

Ltr Copy

United States Department of the Interior
FISH AND WILDLIFE SERVICE

TAKE PRIDE IN AMERICA

MAILING ADDRESS:
Post Office Box 25486
Denver Federal Center
Denver, Colorado 80225

STREET LOCATION:
134 Union Blvd.
Lakewood, Colorado 80228

IN REPLY REFER TO:
RW ADQ
MAIL STOP 60130

SEP 2 8 1987

DER
OCT 1 2 1987
BAQM

Ms. Margaret V. Janes
Bureau of Air Quality Management
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dear Ms. Janes:

We have reviewed the information you sent to us regarding the Reedy Creek Improvement District's proposed cogeneration project near Lake Buena Vista, Florida. This location is approximately 100 km southeast of the Chassahowitzka National Wildlife Refuge, a class I air quality area administered by the Fish and Wildlife Service. We appreciate your continued early notification of permitting activities that have the potential to impact the air quality or air quality related values of class I areas in Florida.

The proposed project includes replacing two existing gas turbines with one larger gas turbine, resulting in a 318 ton per year net increase in nitrogen oxide emissions. We agree with the Reedy Creek Improvement District that water injection is the best control technology available to minimize nitrogen oxide emissions from the proposed turbine. Based on the information provided, the proposed project will increase ambient nitrogen dioxide concentrations by a maximum of 0.32 micrograms per cubic meter. This maximum concentration is expected to occur at a distance of 1.4 km from the proposed project. Because the expected nitrogen dioxide concentrations will decrease as the distance from the project site increases, impacts on the Chassahowitzka National Wildlife Refuge, located 100 km from the project site, should be insignificant. Therefore, we do not expect the proposed Reedy Creek turbine project to significantly impact the air quality or air quality related values of the refuge.

If you have any questions regarding this matter, please contact John Bunyak at (303) 969-2072.

Sincerely,

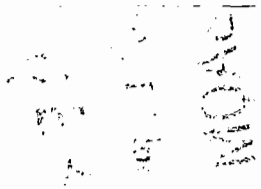
Deputy Regional Director
Region 6

Copied: CHF/BT
Pradeep Raval
Max Finn
10/13/mm

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
POST OFFICE BOX 25486
DENVER FEDERAL CENTER
DENVER, COLORADO 80225

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

42



POSTAGE AND FEES PAID
U.S. DEPARTMENT OF
THE INTERIOR
INT-423

Ms. Margaret Jones
Bureau of Air Quality Mgmt
Florida Dept of Env. Regulation
Twin Towers Office Bldg
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Federal Express
488854435
9/22/87

File Copy

REEDY CREEK IMPROVEMENT DISTRICT

DIRECTOR/GENERAL MANAGER
Thomas M. Moses

DER
SEP 23 1987
BAQM

September 18, 1987

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

Re: Gas Fired Turbine
Generator Permit
Application
AC48-137740
PSD-FL-123

Dear Mr. Fancy:

Pursuant to your letter of September 4, 1987 informing us that our submittal of August 6, 1987 was considered incomplete, please consider the following information and attachments our reply.

Item 1

Acknowledging that a NOx continuous emission monitor is not required, you have asked that we submit details of the methods and devices we intend to employ to provide a continuous means of verifying NOx emissions compliance.

Attachment I is a background document paper authorized by GE outlining the methods and results of abating LM5000 turbine emissions through the use of water injection. Our proposed 32 MW, 42 to 44.7 M HP unit falls adjacent to the contained curves for a 33.3 MW and 41.5 HP machine, and the graphed abscissas are marked indicating our projected water use rates. These values are consistent with those contained in those data forwarded with our original application.

Attachment II contains a description of our water injection ratio control facility along with a simplified flow interface schematic and relevant manufacturer's literature. After start-up calibration and verification

4 71598M

F

30

FEDERAL EXPRESS

QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL NUMBER 4888544835

DATE 9-23-87

DER

SEP 23 1987

AIRBILL NUMBER 4888544835

1 From (Your Name): THomas C. ...

Your Phone Number (Very Important): (305) ...

Company: REEDY CREEK IMPROVEMENT DIST

Department/Floor No.

Street Address: 1675 BUENA VISTA DR STE 245

City: LAKE BUENA VISTA State: FL

ZIP Required For Correct Invoicing: 32830

2 To (Recipient's Name): BAQM

Recipient's Phone Number (Very Important): ( )

Company

Department/Floor No.

Exact Street Address (*Use of P.O. Boxes or P.O. ® Zip Codes Will Delay Delivery And Result in Extra Charge.*)

City State

ZIP Street Address Zip Required

3 **YOUR BILLING REFERENCE INFORMATION (FIRST 24 CHARACTERS WILL APPEAR ON INVOICE.)**

PAYMENT [X] Bill Sender [ ] Bill Recipient's FedEx Acct. No. [ ] Bill 3rd Party FedEx Acct. No. [ ] Bill Credit Card [ ] Cash

H **HOLD FOR PICK-UP AT THIS FEDERAL EXPRESS LOCATION:** Street Address (See Service Guide or Call 800-238-5355)

City State

ZIP ® Zip Code of Street Address Required

4 **SERVICES CHECK ONLY ONE BOX**

1 [X] **PRIORITY 1** Overnight Delivery Using Your Packaging
6 [ ] **OVERNIGHT LETTER*** (Our Packaging) 9½"x12½"

OVERNIGHT DELIVERY USING OUR PACKAGING

2 [ ] Courier-Pak Overnight Envelope* 12"x 15½"
3 [ ] Overnight Box 12½"x 17½"x 3" A [ ]
4 [ ] Overnight Tube 38"x 6"x 6"x 6" B [ ]

*Declared Value Limit $100.

STANDARD AIR
5 [ ] Delivery not later than second business day

SERVICE COMMITMENT

PRIORITY 1 - Delivery is scheduled early next business morning in most locations. It may take two or more business ... destination is outside our prim...
STANDARD AIR - Delivery is ... later than second business day ... days if the destination is outsid...

DELIVERY AND SPECIAL HANDLING CHECK SERVICES REQUIRED

1 [ ] **HOLD FOR PICK-UP** (Fill in Section H at right)
2 [X] **DELIVER WEEKDAY**
3 **DELIVER SATURDAY** (Extra charge) [ ]
4 [ ] **DANGEROUS GOODS** (P-1 and Standard Air Packages only. Extra charge)
5 [ ] **CONSTANT SURVEILLANCE SERVICE (CSS)** (Extra charge) (Do Not Complete Section 5)
6 [ ] **DRY ICE** ______ Lbs.
7 [ ] **OTHER SPECIAL SERVICE** ______
8 [ ]

PACKAGES	WEIGHT	YOUR DECLARED VALUE	OVER SIZE
1	2 LBS		
	LBS		
	LBS		
	LBS		
Total 1	Total 2	Total	

Received At
1 [ ] Regular Stop 2 [ ] On-Call Stop
3 [X] Drop Box 4 [ ] B.S.C. 5 [ ] Station

Federal Express Corp. Employee No. 25 ...

Date/Time For Federal Express Use 9/2 1634

5 Sender authorizes F... and hold harmless F... ...nd shall indemnify
Release Signature:

Emp. No. Date
[ ] Cash Received
[ ] Return Shipment
[ ] Third Party [ ] Chg. To Del. [ ] Chg. To Hold
Street Address
City State Zip
Received By:
X
Date/Time Received FedEx Employee Number

Federal Express Use
Base Charges
Declared Value Charge
Origin Agent Charge
Other
Total Charges

PART #106001 FEC-S-751-1000 REVISION DATE 10/86 PRINTED U.S.A. GBFE

RECIPIENT'S COPY

9/25/87

CHF: ~~BE~~ FYI

Please return. Thanks

Thank you for providing us with the opportunity to comment. If you have any questions, please contact me or Mr. Gary Ng of my staff at (404) 347-2864.

Sincerely yours,

Bruce P. Miller

Bruce P. Miller, Chief
Air Programs Branch
Air, Pesticides, and Toxics
Management Division

Enclosure

Copied: CHF/BT
Barry Andrews
Bradley Raval
Max Hinn
Tom Sawicki - Central FL Dist.
M. Flores - NPS

9/9/87

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET
ATLANTA, GEORGIA 30365

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

AIR-4

U.S. OFFICIAL MAIL
ATLANTA SEP - 3'87 GA.
PENALTY FOR PRIVATE USE $300
P.B. METER 6250486
U.S.POSTAGE 0.22

Ms. Margaret V. Janes
Bureau of Air Quality Management
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

20

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:
Thomas M. Moses
Reedy Creek Improvement District
Post Office Box 40
Lake Buena Vista, FL 32830

4. Type of Service:	Article Number
☐ Registered ☐ Insured ☒ Certified ☐ COD ☐ Express Mail	P 274 007 700

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature – Addressee
X

6. Signature – Agent
X

7. Date of Delivery
9-F-D

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

DOMESTIC RETURN RECEIPT

P 274 007 700

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

Sent to Thomas M. Moses ~~Reedy Ck. Improvement Dist.~~	
Street and No. P.O. Box 40	
P.O., State and ZIP Code Lake Buena Vista, FL 32830	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date Mailed: 09/04/87 Permit: AC 48-137740 Federal: PSD-FL-123	

PS Form 3800, June 1985 ★ U.S.G.P.O. 1985-480-794