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REEDY CREEK IMPROVEMENT DISTRICT

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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

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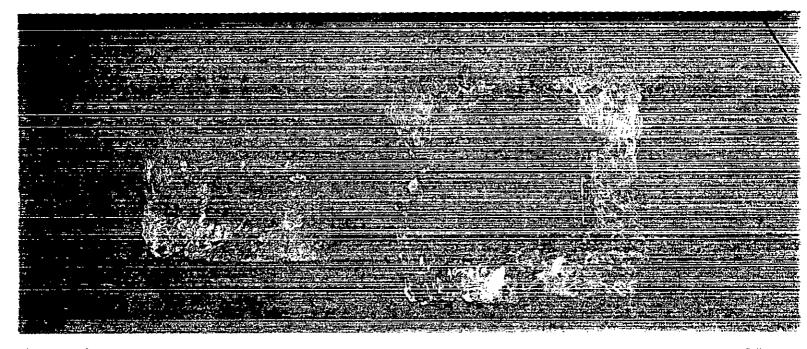
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FL DEPT OF ENVIRONMENTAL PROTECTION
2600 BLAIR STONE ROAD
TALLAHASSEE, FL
32399-2400

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DISTRICT ADMINISTRATOR
Thomas M. Moses

October 8, 1993

DER THAIL ROOM

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

662222

Recid 10/11/93 KKW

reverse sk	SENDER: Complete items 3, and 4a & b. Print your name and address on the reverse of this form so that the complete items 3, and 4a & b. Print your name and address on the reverse of this form so that the condition of the services of this form so the return this card to you. Attach this form to the front of the mailpiece, or on the back if does not permit. Write "Return Receipt Requested" on the mailpiece below the article. The Return Receipt will show to whom the article was delivered as	f spece cle number.	
ADDRESS completed on	delivered. 3. Article Addressed to: Mr. Thomas M. Moses District Administrator Reedy Creek Improvement District Post Office Box 10170 Lake Buena Vista, FL 32830	P 4b. Ser □ Regi □ XCerti □ Expr	Consult postmaster for fee. icle Number 230 524 309 vice Type stered
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Receipt for Certified Mail

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Florida Department of Environmental Protection

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

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,

for C. H. Fancy, P.E.

Chief

Bureau of Air Regulation

CHF/pa

cc: Teresa Heron



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

Division of Air Resources Management

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.

Mr. C.H. Fancy, P.E. 29 September, 1992 Page 2

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.

Sircerely,
Mina MMh

Thomas M. Moses
District Administrator

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

Elaine Potusky

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Florida Department of Environmental Regulation

Twin Towers Office Bldg. ● 2600 Blair Stone Road ● Tallahassee, Florida 32399-2400 Lawton Chiles, Governor Carol M. Browner, Secretary

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.

Specific Condition No. 2

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.



Mr. Thomas M. Moses Reedy Creek Improvement District Page 2

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, 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							
То	Location:						
To	Location:						
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From	Date:						

Interoffice Memorandum

TO:

Howard Rhodes

FROM:

Clair Fancy (TV)

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

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 DER - MAIL ROOM 1992 DCT 13 MIII: 19

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

District Administrator

Enclosure

00/03/

EG/TMM/jm

cc: Edward Godwin, P.E., Reedy Creek Energy Services, Inc.
Kennard F. Kosky, P.E., KBN Engineering & Applied Sciences
The Party G. Recomplete

A. Zahm, Clost

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 BERTHAIL ROOM
1992 OCT 13 MIN: 19

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 00 21 57 05

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TWO HUNDRED FIFTY DOLLARS NO CENTS

PAY TO THE ORDER OF

DEPT OF ENVIR REGULATION 2600 BLAIR STONE RD TALLAHASSEE ,FL 32399 DATE

CHECK AMOUNT

10-08-92

******250.00

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REEDY CREEK IMPROVEMENT DISTRICT

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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,

M. C. H. Fancy, P.E.

Chief

Bureau of Air Regulation

CHF/pa

cc: Mirza Baiq

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September 22, 1992

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SEP 25 1992

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

Division of Air Resources Management

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

Mr. C. H. Fancy, P.E. September 22, 1992 Page 2

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

Mr. C. H. Fancy, P.E. September 22, 1992 Page 3

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

<u>Specific Condition 2</u>--"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."

<u>Specific Condition 5</u>--"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

Bole Kohl

Hmos Miller)

SENDER: Complete Items 1	and 2 when additional	services are desired, and complete items 3
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Florida Department of Environmental Regulation

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

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?
- 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.

Mr. H. Robert Kohl Page 2 of 2

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

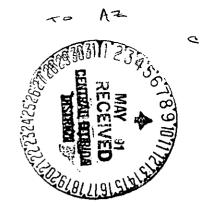
Bureau of Air Regulation

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 2,3
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.

(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

DEPARTMENT OF ENVIRONMENTAL REGULATION

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Bureau of Air Regulatio	h	İ	Date		
Department of Environmental Regulation			Initial		
Twin Towers Office Building		Ī	Date		
4. 2600 Blair Stone Road			Initial		
Tallahassee, FL 32399-2400			Date		
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		~ ~	DE 1202		



Mr. Alex Alexander May 3, 1991 Page 2

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, 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 Air Regulation staff in Tallahassee for their Bureau of 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.

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

Sincerely,

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

2 May 91

AA/jtt

cc: Barry Andrews

RECEIVED

March 1, 1991

MAR 0 5 1991

DER - BAQM

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 SO₂ 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 SO₂ 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).

FDER Permit AC48-170280 March 1, 1991 Page 2

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 In order to assure that future compliance requested. 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 (345x10₆ Btu/hr x cf/1,024 Btu x 1.2 gr sulfur (S)/100 cf x lb/7,000 qr 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 SO2 emissions from both natural gas and oil firing would be 25.1 TPY with this requested permit change. should be noted that oil firing is limited to no more than 14 days per year. The annual permit limit for SO2 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)	${ m SO}_2$ Emission Factor (${ m 1b}/{ m 10^6}$ Btu)	SO ₂ Emission Factor (lb/10 ⁸ cf
	0.20	1 021	0.00083	0.857
2/6/90	0.30	1,031	0.00083 0.00014	0.837
2/13/90	0.05	1,028		1.000
2/20/90	0.35	1,025	0.00098	
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
	0.55	1,022	0.00153	1.571
9/4/90	0.40	1,025	0.00111	1.143
9/11/90	0.45	1,026	0.00111	1.286
9/18/90			0.00123	1.143
9/25/90	0.40	1,026		1.286
10/2/90	0.45	1,029	0.00125	
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.

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