



Jeb Bush
Governor

Department of Environmental Protection

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
September 20, 1999

David B. Struhs
Secretary

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. R. Douglas Neeley, Chief
Air, Radiation Technology Branch
US EPA Region IV
61 Forsyth Street
Atlanta, GA 30303

Re: Revised PSD Review and Custom Fuel Monitoring Schedule
Lake Worth Generation, L.L.C.
Revised Draft Permit No. 0990568-001-AC (PSD-FL-266)

Dear Mr. Neeley:

Enclosed is a copy of the Department's revised Draft Permit to construct a 186 MW combustion turbine at the new Lake Worth Generation site in Palm Beach County, Florida. This revised package replaces the previous one issued on July 9, 1999. The revised Intent to Issue package was also mailed to Mr. Greg Worley of Region 4.

This project consists of installing one General Electric Model No.7FA dual-fuel combined cycle combustion turbine with electrical generator set having a nominal power production of 186 MW. In combined cycle mode, the heat recovery steam generator with duct burners will generate steam to produce an additional 74 MW of power. Dry low-NOx (DLN) combustion technology will be used to control NOx emissions to less than 9 ppmvd @ 15% O₂ when firing the primary fuel of pipeline natural gas. Water injection will be used to control NOx emissions to 42 ppmvd @ 15% O₂ when firing low sulfur distillate oil as a backup fuel. Combustion design and clean fuels will be used to minimize emissions of carbon monoxide, particulate matter, sulfuric acid mist, sulfur dioxide, and volatile organic compounds. The project is not subject to the Florida's Power Plant Siting procedure. This revision includes the following changes:

1. Reduction of oil firing from 750 to 650 hours per consecutive 12 months
2. Increase in distillate oil sulfur content from 0.04% to 0.05% sulfur by weight
3. Decrease in CO emissions from 12 to 9 ppmvd @ 15% O₂ during standard gas firing
4. Approval of any combination of duct firing and/or steam injection (power augmentation) for up to 2000 hours per consecutive 12 months, defined as "alternate methods of operation"
5. Addition of a requirement for establishing a maximum steam injection rate for power augmentation
6. Addition of short-term CO and NOx standards during alternate methods of operation:
 - CO: 20 ppmvd @ 15% O₂, 3-hour rolling average
 - NOx: 12 ppmvd @ 15% O₂, 3-hour rolling average
7. Slight increase in long-term CO and NOx standards during alternate methods of operation:

- CO: 15 ppmvd @ 15% O₂, 24-hour rolling average
- NO_x: 9.4 ppmvd @ 15% O₂, 3-hour rolling average

8. Addition of CO continuous emissions monitor to determine compliance

Please send your written comments on or approval of the applicant's proposed custom fuel monitoring schedule. The plan is based on the letter dated January 16, 1996 from Region V to Dayton Power and Light. The Subpart GG limit on SO₂ emissions is 150 ppmvd @ 15% O₂ or a fuel sulfur limit of 0.8% sulfur by weight. Neither of these limits could conceivably be violated by the use of pipeline-quality natural gas, which has a maximum SO₂ emission rate of 0.0006 lb/MMBtu (40 CFR 75 Appendix D Section 2.3.1.4). The sulfur content of pipeline quality natural gas in Florida has been estimated at a maximum of 0.003 % sulfur by weight. Distillate oil containing maximum of 0.05% sulfur by weight will be used as a backup fuel. The requirements have been incorporated into the enclosed draft permit as Specific Conditions #33 and #34 and read as follows:

33. Fuel Records

- (a) Natural Gas: The permittee shall demonstrate compliance with the fuel sulfur limit for natural gas specified in this permit by maintaining records of the sulfur content of the natural gas being supplied for each month of operation. Methods for determining the sulfur content of the natural gas shall be ASTM methods D4084-82, D3246-81 or equivalent methods. These methods shall be used to determine the sulfur content of the natural gas fired in accordance with any EPA-approved custom fuel monitoring schedule (see Alternate Monitoring Plan) or natural gas supplier data or the natural gas sulfur content referenced in 40 CFR 75 Appendix D. The analysis may be performed by the owner or operator, a service contractor retained by the owner or operator, the fuel vendor, or any other qualified agency pursuant to 40 CFR 60.335(e). However, the permittee is responsible for ensuring that the procedures in 40 CFR 60.335 or 40 CFR 75 are used to determine the fuel sulfur content for compliance with the 40 CFR 60.333 SO₂ standard.
- (b) Low Sulfur Distillate Oil: For all bulk shipments of low sulfur distillate oil received at this facility, the permittee shall obtain from the fuel vendor an analysis identifying the sulfur content. Methods for determining the sulfur content of the distillate oil shall be ASTM D129-91, D2622-94, or D4294-90 or equivalent methods. Records shall specify the test method used and shall comply with the requirements of 40 CFR 60.335(d).

[Rules 62-4.070(3) and 62-4.160(15), F.A.C.]

34. Alternate Monitoring Plan: Subject to EPA approval, the following alternate monitoring may be used to demonstrate compliance.

- (a) The NO_x CEM data may be used in lieu of the monitoring system for water-to-fuel ratio and the reporting of excess emissions in accordance with 40 CFR 60.334(c)(1), Subpart GG. Subject to EPA approval, the calibration of the water-to-fuel ratio-monitoring device required in 40 CFR 60.335(c)(2) will be replaced by the 40 CFR 75 certification tests of the NO_x CEMS.
- (b) The NO_x CEM data shall be used in lieu of the requirement for reporting excess emissions in accordance with 40 CFR 60.334(c)(1), Subpart GG.

- (c) When requested by the Department, the CEMS emission rates for NO_x on this unit shall be corrected to ISO conditions to demonstrate compliance with the NO_x standard established in 40 CFR 60.332.
- (d) A *custom fuel monitoring schedule* pursuant to 40 CFR 75 Appendix D for natural gas may be used in lieu of the daily sampling requirements of 40 CFR 60.334 (b)(2) provided the following conditions are met.
 - (1) The permittee shall apply for an Acid Rain permit within the deadlines specified in 40 CFR 72.30.
 - (2) The permittee shall submit a monitoring plan, certified by signature of the Authorized Representative, that commits to using a primary fuel of pipeline supplied natural gas containing no more than 2 grains of sulfur per 100 SCF of gas pursuant to 40 CFR 75.11(d)(2);
 - (3) Each unit shall be monitored for SO₂ emissions using methods consistent with the requirements of 40 CFR 75 and certified by the USEPA.


This custom fuel-monitoring schedule will only be valid when pipeline natural gas is used as a primary fuel. If the primary fuel for these units is changed to a higher sulfur fuel, SO₂ emissions must be accounted for as required pursuant to 40 CFR 75.11(d).

[40 CFR 60, Subpart GG, Applicant Request]

Also, please comment on Specific Condition #32, which allows the use of the acid rain NO_x CEMS for demonstrating compliance as well as reporting excess emissions. Typically, NO_x emissions will be less than 9 ppmvd @ 15% O₂ (gas), which is less than one-tenth of the applicable Subpart GG limit based on the efficiency of the unit. A CEMS requirement is stricter and more accurate than any Subpart GG requirement for determining excess emissions.

The Department recommends your approval of the custom fuel monitoring schedules and these NO_x monitoring provisions. We also request your comments on the Intent to Issue. If you have any questions on these matters please contact Jeff Koerner at 850/414-7268.

Sincerely,


A. A. Linero, P.E., Administrator
New Source Review Section

AAL/jfk

Enclosures

Z 333 618 144

US Postal Service

Receipt for Certified Mail

No Insurance Coverage Provided.

Do not use for International Mail (See reverse)

PS Form 3800, April 1995

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| Postage | \$ |
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| Postmark or Date <i>Revised 9-20-99</i> <i>LAKE WORTH 930-FI-266</i> <i>0990568-001-AC</i> | |

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3. Article Addressed to:

Mr. Doug Neeley, Section Chief
Air, Radiation Technology Branch
Preconstruction/HAP Section
U.S. EPA - Region IV
61 Forsyth Street
Atlanta, GA 30303

4a. Article Number

Z 333 618 144

4b. Service Type

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

Thank you for using Return Receipt Service.

INTEROFFICE MEMORANDUM

Date: 10-Sep-1999 11:20am
From: McCann, Bob
BMcCann@GOLDER.com
Dept:
Tel No:

To: 'Jeff Koerner (E-mail)' (Jeff.Koerner@dep.state.fl.us)

Subject: Lakeworth Modeling

Jeff

based on question regarding modeling with distillate fuel, the air impacts were based on fuel oil firing for the entire year for each of the 5 years considered in the analysis even though fuel oil will be limited in hours.

air modeling files were provided to Cleve Holladay on our ftp site.

if you have any questions, please call me at (352)336-5600 x 546

Bob

INTEROFFICE MEMORANDUM

Sensitivity: COMPANY CONFIDENTIAL

Date: 03-Sep-1999 09:42am

From: Kosky, Ken
KKosky@GOLDER.com

Dept:
Tel No:

To: Jeff Koerner TAL 850/414-7268 GIC 0 (Jeff.Koerner@dep.state.fl.us)
CC: McCann, Bob (BMcCann@GOLDER.com)

Subject: Re: LWG Questions

Jeff: This addresses, in part, your e-mail. The remainder will come on Tuesday.

1. The worst case impact is on distillate oil for all pollutant by a considerable margin (factor of ten or so). Therefore, the slightly higher emissions will still not be as great as oil. We modeled oil as if it were being burned 8,760 hrs/yr for 5 years so the impacts are conservative. Anyway, I'll have Bob McCann look at it and send you some information by Tuesday afternoon.
2. We would still request a 0.08 lb/mmBtu as a maximum stand-alone limit for the duct burner for NSPS purposes. Since the duct burner cannot operate without the CT, a BACT limit based on both seems appropriate.
3. The design temperature and pressure of the HRSG is 900 degree F and 865 psig. This will fluctuate slightly during operation.
4. This is perfectly fine since we have confirmed this with Buck Oven. Units 1 and 2 definitely will be retired and the total steam generating capacity will be 74 MW or less.
5. This is acceptable as long as there is some provisions for start-up and shut down as we previously indicated in our comment letter. This will only occur during startup, shutdown or malfunction of the CT/HRSG system.
6. Removing the options for SCR and oxidation catalyst in the permit would be fine.
7. The VOC emissions in the application are very conservative and we feel more monitoring is not required. This is consistent with other projects where VOC is monitored initially and then additional monitoring is based on CO. I now have the latest GE guarantee for VOCs for the project; it is 1.4 ppmvw for gas firing and 3.5 ppmvd for distillate oil firing.

We will get back to you on Tuesday. E-mail or call if you have additional questions. Have a good Labor Day weekend. Regards, Ken

-----Original Message-----

From: Jeff Koerner TAL 850/414-7268 GIC 069
[mailto:Jeff.Koerner@dep.state.fl.us]
Sent: Thursday, September 02, 1999 7:46 AM
To: Ken Kosky
Subject: LWG Questions

Sensitivity: Confidential

Ken,

I am rewriting the Draft Permit and have a few questions.

1. I need some kind of screening analysis to show that the revised short-term limits for natural gas firing and PA/DF at the corresponding stack conditions (temp., etc.) will not affect the original air quality impact analysis.
2. Is the applicant requesting a revised NOx limit of 0.05 lb/mmBTU for the duct burner? Or is it still 0.08 lb/mmBTU?
3. As you mentioned previously, the maximum continuous steam rate is 720,000 pounds of steam per hour. What is the nominal temperature (°F) and pressure (psia) of the steam?
4. I intend to mention that this permit is granted in consideration of the City of Lake Worth's retiring Units 1 and 2 totaling 15 MW of capacity. With the other proposed changes, remaining non-PPS capacity will be 74 MW or less.
5. The Draft Permit will allow power augmentation and duct firing contingent upon a revised Title V permit for the T.G. Smith Plant. The Title V permit must include a condition to not fire the boiler for Unit S-3 if steam is available from LWG.
6. Palm Beach County requested lower NOx rates for the optional SCR because costs aren't being considered and LAER is lower. Actually, this is a fairly reasonable argument. Can we get rid of the Optional SCR and oxidation catalyst?
7. Palm Beach County requested much more monitoring for VOC because it was just below the significant emission rate and could easily go over considering startup and shutdown emissions. Procedurally, this is probably correct. Please consider a revised BACT determination for VOC. Due to the very low levels, BACT would most likely be proper operation and maintenance of the combustion turbine. It could be the same limits, initial testing, testing prior to operation permit renewal, and compliance with the CO limit since you have a CEM.

As I mentioned before, we probably won't be able to get this out until next Wednesday at the earliest.

Thanks.

Jeff

INTEROFFICE MEMORANDUM

Sensitivity: COMPANY CONFIDENTIAL

Date: 20-Aug-1999 03:25pm
From: Darrel_Graziani
Darrel_Graziani@doh.state.fl.us

Dept:
Tel No:

To: KOERNER_J (KOERNER_J@dep.state.fl.us)

Subject: LWG Comments

Jeff,

Attached are my initial comments in final version which ignore the 8/6 comments from the applicant. I have also included my comments on their comments.

Darrel

<<PBCHD Applicant Comments.doc>> <<PBCHD Permit Package Comments.doc>>



Jeb Bush, Governor

Robert G. Brooks, M.D., Secretary

August 20, 1999

Mr. Jeff Koerner, P.E., Air Permit Engineer
New Source Review Section
Bureau of Air Regulation
Florida Department of Environmental Protection
2600 Blair Stone Road, Mail Station #5505
Tallahassee, Florida, 32399-2400

**SUBJECT: Lake Worth Generating (LWG), LLC
FDEP File No. PSD-FL-266
Palm Beach County Health Department Comments**

Dear Jeff,

Please be advised that the Palm Beach County Health Department (Health Department) has completed its review of the August 6, 1999 comments from the applicant's engineer for the above project. Based on the review, the Health Department would like to offer the following comments.

Comment 1 - Please note that the City of Lake Worth has not approached the Health Department to make federally enforceable the permanent shutdown of steam generating Units 1 or 4, nor tie the operating of steam generating Unit 3 to the availability of steam from the Lake Worth Generation unit. Without an official request from the City of Lake Worth to make these commitments enforceable, the applicant's comments related to this are inappropriate and should be ignored.

Comment 2 - The potential reductions in allowable and actual NO_x emissions discussed by the applicant's engineer are not, as of this point, federally enforceable nor binding upon the City. In addition, the potential offsets are not significant enough to avoid BACT for NO_x emissions and as such the Department should not consider them when evaluating BACT and setting the emission limit.

Comment 3 - The applicant proposed BACT at 9 ppmvd @ 15% O₂ for the combustion turbine within the initial application. In response to the draft permit package, the applicant proposed separate NO_x emission limits based on a 3-hour averaging period for the combustion turbine and duct burner of 12 ppmvd @ 15% O₂ and 0.08 lb/mmBtu, respectively. It is agreed that separate emission limits are appropriate, however the requested 12 ppmvd for the combustion turbine is *not* representative of BACT. The Department in the past has determined BACT at levels higher than those proposed by an applicant based on a belief that the available combustion turbine technology would not achieve a 9 ppmvd limit. The technology is now available from specific vendors. The choice of vendor and costs associated with a 9 ppmvd unit versus a 12 ppmvd unit plays a significant role in the overall BACT evaluation. If the applicant now wants a 12 ppmvd unit, the economic analysis for SCR as well as the cost differences between the 12 and 9 ppmvd units needs to be evaluated.

Comment 4- The requested change related to the inlet air cooling system is vague and would allow use of technologies which could result in higher emissions (Cooling Tower Drift Loss) or the handling and storage of hazardous materials (Ammonia Chiller). The applicant reasoned that an "evaporative cooling

system” might be used instead of an absorption system. Assuming the applicant is referring to a new cooling tower, information related to drift losses and particulate matter emissions and impacts should have been included within their comment package. This information should be requested and evaluated prior to issuance of the construction permit.

Comment 5 – The applicant noted that appendices E and F “summarized” the NSPS requirements. It is recommended that the permit conditions state that the appendices “contain” the applicable NSPS requirements. Comment 6 – Since the PSD Class I Area impacts are temperature sensitive, it is requested that the Department establish a minimum stack gas temperature of 275 °F when firing distillate oil. The minimum temperature should also be made enforceable within a specific permit condition.

Comment 7 – The applicant’s comment on ammonia slip is correct with typical ammonia slips of 10 ppmvd for permit allowables and actuals of 6 ppmvd or less. As a cost item, the applicant will maintain ammonia slip to a minimum.

Comment 8 – The applicant’s comments related to the BACT economics and ambient air impacts are correct. For compliance purposes, it is suggested that the Department require a CEMS for carbon monoxide. It is also suggested that the Department include short-term (1-hour averaging period, excluding start-ups, shutdowns, and malfunctions) mass emission limits based on the proposed BACT. The mass emission rates for natural gas and distillate oil firing should be based on the manufacturer’s performance curves. The emission limit for natural gas firing can include an allowance for power augmentation based on percent steam injection (Vendor data) and an allowance of 0.1 lb/mmBtu for duct firing. An annual (12-month rolling average) cap should be set based on the applicant’s initial BACT evaluation and include emissions associated with start-ups, shutdowns, and malfunctions.

Comment 9 – The Department has required a CEMS for NO_x emissions. Similar to CO, it is suggested that the Department include short-term (1-hour averaging period, excluding start-ups, shutdowns, and malfunctions) mass emission limits based on the proposed BACT. The mass emission rates for natural gas and distillate oil firing should be based on the manufacturer’s performance curves. The emission limit for natural gas firing can include an allowance for power augmentation based on percent steam injection (Vendor data) and an allowance of 0.05 lb/mmBtu for duct firing. An annual (12-month rolling average) cap should be set based on the applicant’s initial BACT evaluation and include emissions associated with start-ups, shutdowns, and malfunctions.

Comment 10 – As suggested in the comments on the draft permit package, it is recommended that the source be required to meet LAER which is currently at 2.5 ppmvd @15% O₂ and not a 4.5 ppmvd limit as suggested by the applicant.

Comment 11 – Excess emission should be limited based on best operating practices. Inclusion of excess emissions within the annual emission caps will ensure excess emissions are minimized.

Comment 12 – The last sentence of the applicant’s suggested language in the Public Notice of Intent to Issue PSD Permit is miss leading in that the shut down of the boilers is not enforceable under this permit.

Comment 13 – If power augmentation and duct firing are allowed, it is suggested that the increased emissions be treated as allowances for short-term emissions and limited by the annual emissions cap.

Comment 14 – The applicants suggested language to the TE/PD, beginning with the second sentence, is misleading and not enforceable through the permit. Establishing the relationship between the applicant and the City has already been completed and it was determined that the two are separate sources. The Department should note that “Repowering” is defined in 40 CFR 52.21 and that under the definition the proposed project is not considered a repowering project.

Comment 15 – The TE/PD as written is correct. BACT is 9 ppmvd not 12 ppmvd as now being requested by the applicant.

Should you have any questions please feel free to contact me at the numbers below.

Sincerely,
For the Division Director
Environmental Health and Engineering

Darrel J. Graziani, PE
Air Pollution Control Section
Phone: (561) 355-3136 FAX: (561) 355-2442

cc: Isidore Goldman, P.E., SE District Office – FDEP



Jeb Bush, Governor

Robert G. Brooks, M.D., Secretary

August 20, 1999

Mr. Jeff Koerner, P.E., Air Permit Engineer
New Source Review Section
Bureau of Air Regulation
Florida Department of Environmental Protection
2600 Blair Stone Road, Mail Station #5505
Tallahassee, Florida, 32399-2400

**SUBJECT: Lake Worth Generating (LWG), LLC
FDEP File No. PSD-FL-266
Palm Beach County Health Department Comments**

Dear Jeff,

Please be advised that the Palm Beach County Health Department (Health Department) has completed its review of the application, the associated materials, and the draft permit package for the above project. Based on the review, the Health Department would like to offer the following comments.

APPLICATION PACKAGE

Cover Letter

The cover letter identifies a 260 megawatt combined cycle combustion turbine project. It is suggested that the project be referenced as a 186 megawatt Combined Cycle Combustion Turbine Project. This request is based on the project's classification as a new major source separate from the collocated Tom G. Smith Power Plant. The distinction is necessary since the Florida Department of Environmental Protection (Department) is involved in the agreements between the applicant and the City of Lake Worth.

Intent to Issue PSD Permit

Based on the above comment, it is requested that the second paragraph of the Intent be revised as follows:

The applicant, Lake Worth Generating, LLC, applied on March 15, 1999 to the Department for a PSD permit to construct a ~~260~~ 186 megawatt combined cycle unit consisting of: a maximum 186 MW combustion turbine-electric generator; supplementally-fired heat recovery steam generator (~~74 MW~~ 175 mmBtu/hr of natural gas firing duct burners) with a maximum continuous rating (MCR) of x pounds per hour of steam at y psia and z degrees F; an absorption chiller, and two stacks. The new plant will be located at ~~at~~ 117 College Street in Lake Worth, Florida.

For compliance purposes, it is necessary to define the maximum continuous rate (MCR) of the HRSG since it will supply steam to the collocated power plant. The maximum rate and quality of steam available to the existing power plant should be set at a level that will ensure compliance with Florida's Power Plant Siting Act.

Public Notice of Intent to Issue PSD Permit

Based on the above comments, it is requested that the Department identify the project as a 186 MW Combined Cycle Combustion Turbine in the Title Block and Paragraph 1, Sentence 2. Within Paragraph 2,

Sentence 1, it is also requested that the Department replace "...in simple cycle mode or 250 MW in combined cycle mode" with "and a HRSG with a MCR of x pounds per hour of steam at y psia and z degrees F." The requested changes will more accurately reflect operation of the facility.

Technical Evaluation & Preliminary Determination

On the cover page, please change the project title to 186 Megawatt Combined Cycle Combustion Turbine Unit as noted in the earlier comments.

Page TE-2, Subsection 2.1 Facility Location

It is suggested that the location be described as: "The new 186 MW combined cycle combustion turbine will be located at 117 College Street in Lake Worth, Florida 33461, within the existing boundaries of the Tom G. Smith Power Plant. The site is..."

Page TE-2, Subsection 2.3 Facility Category

It is suggested that Paragraph 1 be revised as follows: The Department has determined that this project represents a new major source of air pollution and can be classified as an electric generating power plant that will be collocated within the existing City of Lake Worth's Tom G. Smith Power Plant. The new power plant will provide a maximum of x pounds per hour of steam at y psia and z F to the existing power plant.

Attachment PBCHD-01 contains the U.S. Environmental Protection Agency's policy regarding combined cycle combustion turbines. Under this policy the proposed project [Fossil fuel boilers (or combinations thereof) totaling more than 250 million Btu/hr heat input] is included within the 28 Major Facility Categories setting the major source threshold at 100 tons per year.

Page TE-3, Subsection 2.3 Facility Category, Table 2.3-1

Based on the 100 ton per year major source threshold, the Table needs to be revised to reflect the source as major for CO.

For the pollutant VOC, it is requested that a Table Note "c" be added and state the following:

c – Synthetic Minor Source (VOC emissions include excess emissions associated with startup and shut down.)

Page TE-3, Section 3, Project Description

Emissions Unit 002 – It is suggested that the HRSG be described as follows:

The heat recovery steam generator (HRSG) converts waste heat from the combustion turbine into steam at a maximum continuous rate of x lb/hr at z psia and zF during the combined cycle mode. Supplemental low-NOx duct burners may be fired with natural gas to provide an additional maximum heat input of **175 mmBtu/hr** to the HRSG.

Page TE-4, Section 3, Project Description

Paragraph 1 - The Department has determined that the project is a new source separate from the City of Lake Worth's existing power plant. Based on this determination it is suggested that the paragraph be deleted since it causes confusion and raises unnecessary questions.

Paragraph 2 – The description of the combustion turbine addresses the dry low NOx control system when firing natural gas and is silent on distillate oil firing. It is suggested that the paragraph be expanded to include wet injection during periods of distillate oil firing.

Paragraph 4 – It is suggested that the paragraph be revised as follows:

In combined cycle mode, the combustion turbine generates direct electrical power and steam. Steam is generated by use of a HRSG that reclaims useful energy from the hot exhaust gases produced by the combustion turbine. The HRSG is capable of generating steam at a maximum continuous rate of x lb/hr at y psia and z F. In addition to the hot exhaust gases from the combustion turbine, the HRSG is equipped with **175 mmBtu/hr** of natural gas fired duct burners. Steam generated from by the HRSG can be provided to the collocated Tom G. Smith Power Plant at a maximum rate of X lb/hr at Y psia and ZF

(Note: The maximum rate supplied to the power plant should be less than the MCR of the HRSG.). The cooled combustion gases exhaust at a temperature of approximately 220F through the HRSG stack which is 18 feet in diameter and 150 feet high.

Page TE-6, Section 5 Rule Applicability

Subsection 5.1 State Regulations – It is suggested that Rule 62-296.406, *Fossil Fuel Steam Generators with less than 250 Million Btu per Hour Heat Input, New and Existing Emissions Units* be added since it represents more stringent emission limitations (BACT) for sulfur dioxide and particulate matter than 40 CFR Part 60 Subpart Db.

Page TE-6, Section 6, Source Impact Analysis

Subsection 6.1 Emission Limitations – The section references a table summarizing the annual emissions used in the impact analyses. The subsection doesn't contain any such table. It is suggested that the table, when added, be expanded to include short term and operating scenario for each pollutant. The format of the table can include the following:

| Pollutant | Modeled Emission Rates | | | |
|--|------------------------|--------------------|--------------|--------------------|
| | Short-Term | | Annual | |
| | Grams/second | Operating Scenario | Grams/second | Operating Scenario |
| Nitrogen Oxides | | | | |
| Carbon Monoxide | | | | |
| Sulfur Dioxide | | | | |
| Sulfuric Acid Mist | | | | |
| Particulate Matter | | | | |
| Notes: Operating Scenario #1 – Fuel Type, Ambient Temperature, & Load Operating Scenario #2 – Fuel Type, Ambient Temperature, & Load Operating Scenario #3 – Fuel Type, Ambient Temperature, & Load Operating Scenario #4 – Fuel Type, Ambient Temperature, & Load | | | | |

Page TE-7, Section 6, Source Impact Analysis

Subsection 6.3 Control Technology – Since potential ambient impacts associated with the optional controls were not modeled it is suggested that the discussion related to their use be removed from this section of the TE. In its place, you could include a description of the GEP stack height analysis and why the existing nearby structures were not required to be included within the analysis.

Subsection 6.4 Air Quality Analysis - Impact on Visibility, the TE reports that a Regional Haze analysis was performed. Review of the initial application and the May 4, 1999 response package does not include the results of any analysis nor any discussion of it.

Draft Permit – Appendix C, Best Available Control Technology

Section 1.0 Project Description – See the above comments regarding the description.

Section 3.0 PSD Applicability Review

Page C-2, Paragraph 1, Sentence 2 – It should read "...more than 100 tons of NOx and CO per year" to reflect the combined cycle's designation on the Major Source Categories list.

Page C-2, Emissions Table – Same comment as for Page TE-3, Subsection 2.3 Facility Category, Table 2.3-1.

Section 5.0 BACT Analyses and Determinations

Page C-4, Subsection 5.1.1 Range of BACT Limits – For BACT determinations, the top-down

procedure begins with the identification of the most stringent control technology and the most stringent emission limitation. For combined cycle combustion turbines the most stringent control technology or strategy is a combination of combustion controls (wet injection or dry low NO_x combustors) and SCR. The most stringent emission limitations are 2.5 and 10 ppmvd for gas and oil firing respectively. These numbers form the ceiling for the BACT analysis and the applicant was required to reject the limits based on technical feasibility or impacts associated with energy, environmental, or economic requirements. For this project, the following options should have been reviewed:

| Option | Control Strategy | Emission Limits |
|---|--|-----------------------------------|
| 1 – SCR Sized for Gas and Oil Reduction Requirements | Dry Low NO _x & SCR Wet Injection & SCR | 2.5 ppmvd – Gas 10 ppmvd – Oil |
| 2– SCR Sized for Gas Reduction Requirement | Dry Low NO _x & SCR Wet Injection & SCR | 2.5 ppmvd – Gas X ppmvd – Oil |
| Base Case – Set by Applicant | Dry Low NO _x Wet Injection | 9.0 ppmvd – Gas 42 ppmvd – Oil |
| NSPS | N/A | ~110 ppmvd |
| Note: Option 1 represents the highest capital and operating costs. Option 2 represents lower capital and operating costs and accounts for limited oil firing. Base Case – Determined by the applicant during the initial phases of the project. | | |

It is suggested that the above Table be presented within the section in lieu of paragraph 2 and that the terms “most stringent control technology” and the “most stringent emission limitation” be introduced into the first paragraph. This will define the requirements for future BACT evaluations that are conducted by permit applicants.

It is also suggested that a new Paragraph 2 be added which discusses the applicant’s option to use the “most stringent control technology” and/or meet the “most stringent emission limitation” avoiding the BACT analysis (technical feasibility, energy, environmental, or economic impacts). The new paragraph could also include a discussion on the operational limits that the applicant has accepted to reduce emissions.

Pages C-9 and C-10, Subsection 5.1.4, Department’s NO_x BACT Determination – The Department re-evaluated the economics of the project based on comments received from the NPS. The BACT determination provides a brief description of the differences and estimated costs developed by the Department. Since most applicants follow the OAQPS Cost Control Manual as the “Official Guide,” it would be appropriate for Department to show its formal calculations and references. By showing the calculations, future applicants would have an additional reference that goes beyond the current EPA guidance and avoid future conflicts.

Pages C-11, Subsection 5.1.4, Department’s NO_x BACT Determination – The Department’s BACT for oil is set at 42.0 ppmvd @15% O₂ on a 3-hour average. Because NO_x emissions are significantly higher when firing distillate oil, it is suggested that the BACT limit include the operational limits used as part of the BACT analysis and ambient impact assessments. In addition, it is recommended that distillate oil be designated as a backup fuel only and limited to 500 hours per year or 7.2 million gallons of oil whichever is greater. Should an event (i.e., hurricane, fire, pipeline rupture) occur which requires additional oil firing the applicant can request temporary relief from the limitation in accordance with Rule 62-4.130, F.A.C., Plant Operation – Problems.

Page C-14 Subsection 5.4, Volatile Organic Compounds – The proposed project will emit less than 40 tons per year of VOC and thus avoids PSD review based on the requested emission levels. Because the emissions are capped just below the significant emission rate, it is requested that the

emission limitations be expressed only in units of pounds per hour and apply at all times including startup and shutdown.

Page C-14, Subsection 5.5, HRSG Duct Burner and Power Augmentation – Review of the applicant's request and the Department's summary noted that the applicant proposed to "offset" increased emissions by reducing allowable hours of distillate oil firing. The Health Department strongly disagrees with the applicant's approach in this matter since distillate oil is proposed as the backup fuel. The approach assumes actual distillate oil firing of 2,000 hours of per year. Since it is reasonable to expect periods with no distillate oil fired, "actual" offsets will not be available and the approach fails to accomplish the emission reductions proposed. It is suggested that the Subsection 5.5, paragraph 2 include the following statement:

The Department has reviewed the applicant's approach and disagrees with the conclusion. The Department believes that the actual use of distillate oil will be significantly less than 2,000 hours per year and that the approach would result in offsetting actual emissions with potential emissions. As such the approach provides no environmental benefit.

By including the above statement, the Department will be sending a strong message that this type of approach will not be acceptable.

Page C-15, Subsection 5.5.2 Department's BACT Determination

General Comment – The Department is referring to power augmentation as an "alternate mode of operation" which has a distinct meaning as described in the *Instructions for DEP Form No. 62-210.900(1) Application for Air Permit – Long Form*. During past projects the Department has rejected the use of power augmentation as an *alternate method of operation*. In rejecting its use, the Department viewed water injection on a dry low NOx combustion turbine as "circumvention" of the control system that would result in higher emissions. The listing of power augmentation as an alternate mode of operation (*Note: Alternate Method of Operation would be the more appropriate designation*) is a significant change from past Department determinations. However, if the Department now wants to view power augmentation as an alternate method of operation than the applicant should have presented a revised impact assessment and BACT evaluation addressing technical feasibility and the impacts of SCR under the following scenario:

Distillate Oil Firing (2,000 hr/yr)
Natural Gas Firing with Power Augmentation (2,000 hr/yr)
Supplemental Heat Firing (2,000 hr/yr)
Natural Gas Firing (4,760 hr/yr)

Based on the information presented by the applicant emissions of NOx and CO will be higher during power augmentation operations. Because of this, the Health Department suggests that the Department deny the request based on previous determinations, Rule 62-210.650, F.A.C., Circumvention and the applicant's failure to provide reasonable assurances that the unit can meet the proposed BACT limits for NOx and CO. Please be advised that Westinghouse recently guaranteed NOx emissions at 9 ppmvd on the Smarr Project in Georgia during DLN and DLN/Power Augmentation operation with CO emissions increasing slightly.

General Comment – The Department identified use of the duct burners as an alternate mode of operation, which is consistent with the description within the instructions and previous BACT determinations. However, inclusion of the emissions within the combustion turbine BACT limits is not. In most cases, excluding SCR applications, the duct burner emissions are in addition to those of the combustion turbine (Total = CT + DB). For this project, the Department has set NOx BACT at 0.08 lb/mmBtu of heat input for the duct burners. At this level, NOx emissions represent approximately 17% of the potential hourly emissions. It is suggested that the BACT limitations remain separate since the combustion turbine and duct burners are separate emissions units. Separation of the limits is believed to be more stringent than a combined limit of 9 ppmvd as

presented in Specific Condition No. 15 of the draft permit. For this project, the combustion turbine proposed is a GE Frame 7FA that is reportedly achieving levels of 6 ppmvd. This level is 33% lower than the proposed BACT limit of 9 ppmvd and would allow duct burner emissions nearly 2 times the proposed 0.08 lb/mmBtu level before a violation is noticeable.

General Comment – In authorizing the use of the optional control strategies (SCR & OC), the Department has ignored the procedures for establishing BACT which includes analyses of environmental, energy, and economic impacts. Since the Department is offering optional control strategies, regardless of these impacts it is suggested that the emission limitations be set at LAER.

Based on the above comments it is suggested that, as proposed, the Department reject the applicant's BACT based on the following reasons:

- | | |
|--|-------------------|
| 1. | Power augmentat |
| turbine resulting in higher emissions. | |
| 1. | The applicant has |
| that during power augmentation the combustion turbine can comply with the | |
| BACT limits. In fact, the applicant has reported that NOx, CO and VOC | |
| emissions will increase during power augmentation. | |
| 1. | Rule 62-210.650, |
| circumventing any air pollution control device. | |
| 1. | The applicant has |
| emission limitation of 0.08 lb/mmBtu of heat input was neither technically | |
| feasible nor unacceptable based on energy, environmental, or economic impacts. | |

The Department should conclude that, as proposed by the applicant, the request for power augmentation is a violation of Department rules and thus denied.

Section 6.0 Summary of Department's BACT Determination

As noted above, it is suggested that the optional control strategies be required to meet LAER. In addition it is suggested that VOC emissions be limited by lb/hr and tons/year, only.

Draft Permit

Page 2 of 18, Facility Description

Fourth Sentence – It is suggested that the words “may have significant” be changed to “will be capable of” to avoid quantifying simple cycle operating times.

Emissions Unit Description, EU002 – As noted in earlier comments, change 74 MW to the maximum continuous rating of the HRSG.

Page 2 of 18, Regulatory Classification

Second Sentence – The facility is included and NOx and CO emissions are greater than 100 TPY.

Last Sentence – Calculations of the total steam generating capacity at the existing power plant includes the following:

- Unit 1 Steam Turbine/Generator 7.5 MW
- Unit 2 Steam Turbine/Generator 7.5 MW
- Unit 3 Steam Turbine/Generator 26.5 MW
- Unit 4 Steam Turbine/Generator 33 MW (upgraded to 47.4 MW)
- Unit 5 Steam Turbine/Generator 10 MW (certified unit)

The steam generating capacity of the existing power plant is 84.5 MW which will be upgraded to 99 MW. Excluding the 10 MW that has already been certified, the facility will have a total steam generating capacity of 89 MW. Without firm commitments from the City of Lake Worth, the Department lacks reasonable assurances that the project will not violate the Power Plant Siting Act.

Page 5 of 18, Emission Standards

Condition 15(a) – Please include an inspection frequency (daily, weekly, monthly, quarterly or annual) and methodology including leak definition (i.e., visible leaks, 10,000 ppmv, etc..) or delete the requirement.

Page 8 of 18, Emissions Unit Descriptions

Emissions Unit 002 – It is suggested that the MCR of the HRSG be specified and that the maximum rate and quality of steam provided to the existing power plant be specified.

Page 9 of 18, NSPS General Provisions

The referenced appendices E and F should contain the applicable requirements versus summarizing them to ensure enforceability.

Page 10 of 18, Performance Restrictions

Condition 3(b) – Replace the 74 MW with the MCR of the HRSG and maximum rate to the existing power plant. The steam generating capacity is the City's concern.

Condition 4 – Delete references to power augmentation based on the recommendation to deny the applicant's request. It is also suggested that the condition be titled "Alternate Methods/Modes of Operation."

Condition 6(a) – As noted above, limit annual distillate oil usage to 7.2 million gallons or 500 hours of operation which ever is greater.

Page 11 of 18, Performance Restrictions

Condition 8 – Remove references to power augmentation.

New Condition – Limit operation to loads greater than 50% to reflect GE data sheets. Operations below 50% will require compliance demonstration.

Page 12 of 18, Emissions Standards

CO & NOx Emission Standards – Change the Optional Control Technologies to LAER Levels.

VOC Emission Standards – Delete the ppmvw limits and specify hourly and the annual cap of 39.4 tons per year. Add a footnote that the limits include startup and shutdown.

Footnote b – Remove reference to power augmentation.

Footnote c – Revise the note to reflect separate emission limits.

Note – Remove the note or revise it to reflect separate standards for the turbine and duct burners.

Page 13 of 18, Emissions Standards

Condition 16(c) – Revise the optional controls to reflect LAER.

Condition 17(c) – Revise the optional controls to reflect LAER.

Condition 17 – Remove reference to power augmentation.

Page 14 of 18, Emissions Standards

Condition 19 – Revise emission limits to reflect lb/hr and tons per year. Include language that limits apply during startup and shutdown.

Page 15 of 18, Compliance Monitoring and Record Keeping Requirements

Condition 23 – Include initial testing at various loads between 50 and 100% in accordance with NSPS for NOx, Co and VOC.

Page 16 of 18, Compliance Monitoring and Record Keeping Requirements

Conditions 25 and 29(b) – Remove references to power augmentation.

Page 18 of 18, Compliance Monitoring and Record Keeping Requirements

Condition 33 – Remove references to power augmentation.

The above comments reflect the findings of the review of the application, additional information provided and the draft permit package. If you should have any questions or comments please free to contact me at the numbers below.

Sincerely,
For the Division Director
Environmental Health and Engineering

Darrel J. Graziani, PE
Air Pollution Control Section
Phone: (561) 355-3136 FAX: (561) 355-2442

Attachment - PBCHD01

cc: Isidore Goldman, P.E., SE District Office – FDEP

INTEROFFICE MEMORANDUM

Date: 20-Aug-1999 09:31am
From: Little.James
Little.James@epamail.epa.gov
Dept:
Tel No:

To: Jeff.Koerner (Jeff.Koerner@dep.state.fl.us)

Subject: Re: Question Regarding BACT Limits and Concessions for "Repo

Jeff -

I'll call you on this as early as I can next week.

Jim

Reply Separator

Subject: Question Regarding BACT Limits and Concessions for "Repoweri
Author: Jeff.Koerner@dep.state.fl.us at IN
Date: 8/18/99 4:23 PM

Jim,

I have a combustion turbine project that involves a separate controlling entity (owner) installing a GE 7EA to be collocated at an existing power plant. The CT will operate in combined cycle mode to:

- * directly produce electricity for sale to the grid
- * provide steam to an existing, repowered steam turbine (ST-4) leased from the existing power plant to produce additional electricity belonging to the new plant, and
- * provide steam to an existing steam turbine (ST-3) at the existing power plant to produce additional electricity belonging to the existing power plant.

The draft permit has been issued with BACT emission limits of 9.0 ppmvd for NOx and 12.0 ppmvd for CO.

The applicant has requested changes to the draft permit to allow 2000 hours of duct firing and power augmentation in consideration for the "repowering" nature of this project. The existing plant has committed to retiring two existing, gas/oil fired steam generators and conditioning their current Title V permit such that the remaining gas/oil fired steam generator (for ST-3) may only be fired when steam is not available from the new plant. The primary changes requested resulting from duct firing and power augmentation (DF/PA) are:

NOx Limit for Standard Operation:
9.0 ppmvd for 3-hr test avg
9.0 ppmvd for 24-hr CEM avg

NOx Limit for DF/PA:

12.0 ppmvd for 3-hr test avg

9.4 ppmvd for 24-hr CEM avg

CO Limit for Standard Operation:

9.0 ppmvd for 3-hr test avg (lower than original 12.0 ppmvd)

CO Limit for DF/PA:

20.5 ppmvd for 3-hr test avg

I realize this is a lot of background, but here's the question (finally):

Can the Department consider the "repowering" nature of this project combined with federally enforceable limits in the existing plant's Title V permit to establish a slightly higher BACT limit? Could this be justified, on a case-by-case basis, as part of the consideration of the energy, environmental, economic, and other costs associated with the project as a whole including the shut down of the existing plant's emissions units? In other words, can the past actual emissions of the shut down units at the existing plant be used to offset the slight increases requested by the new plant?

I am not requesting a formal EPA determination on this project. I merely would like to know your opinion by e-mail or phone call. I appreciate any insight you could provide.

Thanks.

Jeff

INTEROFFICE MEMORANDUM

Sensitivity: COMPANY CONFIDENTIAL

Date: 16-Aug-1999 01:29pm

From: Kosky, Ken
KKosky@GOLDER.com

Dept:

Tel No:

To: Jeff Koerner TAL 850/414-7268 GIC 0 (Jeff.Koerner@dep.state.fl.us)

Subject: Re: Lake Worth Generation - Preliminary Comments form Palm Beach County

Jeff: This issue has already been addressed with Buck concerning the existing steam electric capacities of S-1 through S-4 as of October 1, 1973 when the PPSA was first applicable (see 403.506 F.S.). This date defined "existing" in terms of capacities. The total capacity of S-1 through S-4 is 74.5 MW. After repowering, the total capacity will be 74 MW or less.

It looks like I'm not going to Pensacola on Wednesday and will not be able to drop by. In any event I'd like your observations on the comments I sent. I'll call tomorrow A.M.

Regards, Ken

-----Original Message-----

From: Jeff Koerner TAL 850/414-7268 GIC 069

[mailto:Jeff.Koerner@dep.state.fl.us]

Sent: Friday, August 13, 1999 12:10 PM

To: Ken Kosky

Subject: Lake Worth Generation - Preliminary Comments form Palm Beach County

Sensitivity: Confidential

Ken,

I wanted to pass along these comments I received from Darrel Graziani on the proposed changes. He recently performed a site inspection at Lake Worth and reported the following capacities:

- ST1 - 7.5 MW
- ST2 - 7.5 MW (Turbine/Generator is still on site)
- ST3 - 26.5 MW
- ST4 - 33 MW
- ST5 - 10 MW (Certified Unit)

Total SGC = 84.5 MW

The proposed "upgrade" to the existing S-4 turbine/generator from 33 MW to 47.5

MW will result in an increase in steam generating capacity of nearly 14.5 MW.

We need to address this issue with regard to PPSA. It was my understanding that the City was not to increase steam generating capabilities. Let me know what you think.

INTEROFFICE MEMORANDUM

Sensitivity: COMPANY CONFIDENTIAL

Date: 13-Aug-1999 10:04am
From: Darrel_Graziani
Darrel_Graziani@doh.state.fl.us

Dept:
Tel No:

To: Jeff.Koerner (Jeff.Koerner@dep.state.fl.us)
CC: oven_h (oven_h@dep.state.fl.us)
CC: Jim_Stormer (Jim_Stormer@doh.state.fl.us)

Subject: Re: LWG Comments to Draft Permit Package

Jeff,

I started reviewing the response package from K. Koskey. It looks like my visit to Lake Worth paid off. Their revised public notice addresses the "upgrading" of the S-4 Turbine/generator from 33 MW to 47.5 MW. This was not mentioned in the earlier application and appears to be circumventing the Power Plant Siting Act. I'm forwarding a copy of the response to Buck for his review and comment. Based on my inspection, the Lake Worth Facility has the following steam generating capabilities:

- ST1 - 7.5 MW
- ST2 - 7.5 MW (Turbine/Generator is still on site)
- ST3 - 26.5 MW
- ST4 - 33 MW
- ST5 - 10 MW (Certified Unit)

Total SGC = 84.5 MW

The upgrade will increase SGC by nearly 14.5 MW. Looks like an end run to circumvent PPSA. My understanding was that they were not to increase steam generating capabilities.

Darrel

-----Original Message-----

From: Jeff Koerner TAL 850/414-7268 GIC 069
[mailto:Jeff.Koerner@dep.state.fl.us]
Sent: Thursday, August 12, 1999 1:27 PM
To: Darrel Graziani
Subject: FWD: LWG Comments to Draft Permit Package
Sensitivity: Confidential

Darrel,

Here's LWG's requested changes to the Draft. I haven't read them yet, but expect to discuss with Ken Kosky next week. Let me know how bad it is ...

Jeff

P.S. Have you mind-melded with the Health Dept., yet? Have you been assimilated in the the Borg? Or do you need more "training"? (These are vague Star Trek references ...)

Golder Associates Inc.

6241 NW 23rd Street, Suite 500
Gainesville, FL 32653-1500
Telephone (352) 336-5600
Fax (352) 336-6603



August 6, 1999

9839537

Mr. Jeffery F. Koerner, P.E.
Bureau of Air Regulation
New Source Review Section
Florida Department of Environmental Protection
Mail Station #5505
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

RECEIVED

AUG 09 1999

BUREAU OF AIR REGULATION

Subject: DEP File No. 099- 0568-001-AC/PSD-FL-266
Lake Worth Generation, L.L.C. Combined Cycle Project
Comments to Draft Permit

Dear Jeff:

This correspondence is submitted on behalf of Lake Worth Generation, L.L.C. (LWG) to provide comments to the Draft PSD Permit, Technical Evaluation and Preliminary Determination, and Draft BACT Determination for the LWG combined cycle project. These comments reflect much of the discussion held on July 28, 1999, and the commitment by the City of Lake Worth to federally enforce the retirement of Units S-1 and S-4, and tie the operation of Unit S-3 to the availability of steam from the LWG unit. These commitments clearly reflect the "repowering" nature of the project and decreases in both potential and actual emissions as a direct result of the project. It also demonstrates the unique nature of the project relative to recent projects where the Department has proposed BACT limits that included provisions for duct firing where no actual benefits would accrue.

Attached Table 1, which was presented at the July 28, 1999 meeting shows the potential emissions that would be eliminated by the LWG project. In addition, greater than 50 tons per year of actual NO_x emissions will be offset based on the current operation of Unit S-3. These facts should be considered in the BACT Determination and the ultimate emission limits established as BACT for the LWG Project.

Based on these benefits, for which no other BACT applicable projects have demonstrated, LWG is proposing a limit of 9.4 ppmvd at 15 percent oxygen (24-hour block average) while in power augmentation/duct firing mode. This limit was based on 0.4 lb/MW-hr, which was recently determined to be BACT for the Santa Rosa and KUA projects by the Department. Indeed, these projects do not have the benefits of the LWG project. Separate 3-hour average emission limits of 12 ppmvd corrected to 15 percent oxygen and 0.08 lb/mmBtu have been proposed for the combustion turbine (power augmentation) and the duct burners, respectively.

Please feel free to call if you have questions. Your expeditious review of these comments is appreciated.

Sincerely,



Kennard F. Kosky, P.E.
Principal

cc: Paul Doherty, LWG
Brian Chatlosh, LWG
Leonard Shaperio, Energy Resources Group, Inc.
Joseph A. McGlothlin, McWirtter, Reeves, McGlothlin, Davidson, Rief and Bakas, P.A.
A.A. Linero, FDEP Tallahassee

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cc: J. Koerner, BAR
EPA
NPS
SED
PB Co.

Table 1. Comparison of LWG Project and Existing Lake Worth Units.

| Unit(s) | Scenario | Units | Pollutant | | | Total |
|------------------------|------------------------------------|----------------------|-----------|-----------------|-----------------|------------|
| | | | PM | SO ₂ | NO _x | |
| Units S-1, S-3 and S-4 | Maximum Permitted | tons/year | 468.22 | 9,210.92 | 1,872.89 | 11,552.03 |
| LWG Project | Maximum Permitted | tons/year | 43.42 | 70.25 | 438.05 | 551.72 |
| | Difference: | tons/year | -424.80 | -9,140.67 | -1,434.84 | -11,000.31 |
| Units S-1, S-3 and S-4 | Gas Firing | lb/MW-hr | 0.02 | 0.04 | 3.50 | |
| LWG Project | Gas Firing | lb/MW-hr | 0.04 | 0.02 | 0.26 | |
| Units S-1, S-3 and S-4 | Gas Firing | tons/yr ^a | 7.71 | 11.59 | 1,135.68 | 1,154.98 |
| LWG Project | Gas Firing | tons/yr ^a | 11.96 | 6.51 | 85.15 | 103.61 |
| | Difference: | | | | | -1,051.36 |
| Units S-1, S-3 and S-4 | Oil Firing | lb/MW-hr | 1.60 | 31.39 | 6.38 | |
| LWG Project | Oil Firing | lb/MW-hr | 0.07 | 0.40 | 1.45 | |
| Units S-1, S-3 and S-4 | Oil Firing | tons/yr ^a | 468.22 | 9,210.92 | 1,872.89 | 11,552.03 |
| LWG Project | Oil Firing | tons/yr ^a | 22.58 | 131.24 | 468.65 | 622.47 |
| | | | | | | -10,929.56 |
| LWG Project | Power Augmentation and Duct Firing | lb/MW-hr | | | 0.39 | |
| | | tons/yr ^a | | | 125.60 | |

^a assumes an equivalent to 74 MW supplied for the entire year.

**Comments to Draft PSD Permit PSD-FL-266/099-0568-001-AC
Lake Worth Generation, L.L.C.**

Page 1 of 18, Project and Location, Line 1: ...Lake Worth Generation, L.L.C. ...

Page 2 of 18, Regulatory Classification, Last Sentence: ..be ~~less than~~ 74 MW or less.

Page 8 of 18, Emission Unit Description, ARMS 001, First Paragraph, Line 12: Suggested Change: ~~An absorption chilling~~ A turbine air inlet cooling system will cool the turbine inlet air to a nominal 55 °F producing ...Reason: An evaporative cooling system may be used instead of an absorption system. The suggested change would describe either alternative.

Page 8 of 18, Emission Unit Description, ARMS 001, Second Paragraph, Line 9: Suggested Change: ~~chilled~~ turbine inlet air... Reason: See above.

Page 8 of 18, Emission Unit Description, ARMS 002, First Paragraph, Line 5: Suggested Change: ..175 mmBtu/hr and will not be fired when the CT is firing No. 2 distillate oil. Reason: Provides information that oil will not be used in the duct burners.

Page 8 of 18, Emission Unit Description, ARMS 002, Second Paragraph, Line 5: Suggested Change: ..temperature of ~~220~~ 275 °F with a ... Reason: The current design when firing distillate is to maintain the exhaust temperature above the dew point of sulfuric mist to inhibit any corrosion when firing oil.

Page 8 of 18, Emission Unit Description, ARMS 002, Second Paragraph, Line 7: Suggested Change: ~~chilled~~ turbine inlet air... Reason: See above.

Page 9 of 18, Specific Condition 2.(b), NSPS Provisions, Line 4: Suggested Change: ...summarizes, for information purposes, the applicable requirements. Reason: It is clear that the Subpart GG NSPS apply. However, the wording in the NSPS should take precedence over any conflict in any wording contained in Appendix F.

Page 9 of 18, Specific Condition 2.(c), NSPS provisions, Line 5: Suggested Change: ...summarizes, for information purposes, the applicable requirements. Reason: It is clear that the Subpart Db NSPS apply. However, the wording in the NSPS should take precedence over any conflict in any wording contained in Appendix F.

Page 9 of 18, Specific Condition 3.(a), Permitted Capacities, Line 4: Suggested Change: ...an inlet ~~supply~~ air ~~cooled~~ to 45 °F, and .. Reason: Even with an evaporative cooler the temperature would not be as low as 45 °F. This is the typical low for the area but historical temperatures are as low as 31 °F. As required in the second paragraph, LWG will provide the manufacturers performance curves over the entire working range of the unit.

Page 9 of 18, Specific Condition 3.(a), Permitted Capacities: Suggested Change: LWG requests that an allowance for the increase in heat input for power augmentation be authorized. The maximum increase in heat input would be 226 mmBtu/hr. This could be added as: 3.(a)(3) The heat input when under power augmentation mode (natural gas firing only) shall not exceed 2,043 mmBtu/hr @ 74 °F, 70% relative humidity. Reason: Power augmentation decreases the heat rate slightly and increases the power output resulting in

slightly higher heat input. An increased heat input of 226 mmBtu/hr reflects guaranteed values from GE.

Page 9 of 18, Specific Condition 3.(a), Permitted Capacities, Second Paragraph, Line 2: Suggested Change: Manufacturer's performance curves (new/guaranteed and degraded), corrected... Reason: GE will supply both new and degraded condition curves. As the turbine approaches 10,000 operating hours, the performance is slightly degraded from a "new" guaranteed condition. Typically, as plants operate, these curves are developed from actual data. GE can supply performance curves of this degradation in performance (e.g., heat input and heat rate as a function of turbine inlet temperature) that would be useful in evaluating compliance.

Page 10 of 18, Specific Condition 4, Allowable Fuels, Line 4: Suggested Change: .. no more than ~~0.04%~~ 0.05% sulfur by weight. Reason: As discussed at the July 26, 1999 meeting and provided in additional modeling provided to the Department, the impact for the current facility design when firing 0.05% sulfur distillate oil will be less than the PSD Class II Significant Impact Levels (SILs) for all averaging times. The reason is the increase in design exhaust when firing from 220 to 275°F. This reduces the maximum impact from $5 \mu\text{g}/\text{m}^3$ to less than $5 \mu\text{g}/\text{m}^3$ for the 24-hour averaging time. In addition, this sulfur content is readily available for the project as with other similar combustion turbines recently permitted by the Department.

Page 10 of 18, Specific Condition 4, Fuel Consumption Limits, (a) Combustion Turbine: Suggested Change: No more than ~~10,800,000 gallons~~ 1,473,750 million Btu of low sulfur... Reason: Since the heat content of low sulfur fuel can vary, a rate in mmBtu is preferred. The calculation is: $1,965 \text{ mmBtu/hr} \times 750 \text{ hours/year} = 1,473,750 \text{ mmBtu/year}$.

Page 11 of 18, Specific Condition 14, Optional Controls Line 6: Suggested Change: ...no more than ~~5-10 ppmvd~~ corrected to 15% O_2 . Reason: Catalyst vendors' guarantee SCR systems based on 10 ppmvd corrected to 15% O_2 as shown in the material provided to the Department. Under these design conditions the actual slip is less than 5 ppm. As the catalyst wears, the ammonia slip would increase which is dependent upon operational conditions, catalyst wear and the amount of ammonia required to obtain the emission limit. Designing to 5 ppm unnecessarily increases catalyst cost considerably (i.e., 20 to 30%). Moreover, ammonia is not a PSD pollutant and its impacts would not cause or contribute to any standard adopted by the Department in its air rules. Indeed, this has been demonstrated in the visibility analysis provided to the Department and the National Park Service. Finally, the recent Alabama Power Projects in Region IV do not have any ammonia slip limit and the EPA Region IV did not comment on requiring a limit in these cases.

Page 12 of 18, Specific Condition 15, Emission Standards, Pollutant CO, Simple or Combined Cycle/DLN (Gas): Suggested Change: LWG requests an alternative emission strategy for CO that is consistent with the vendor guarantees and would assist in the financing the project be considered. The proposed strategy would lower the total CO emissions. First, LWG proposes to lower the DLN (Gas) CO emission limit from 12 ppmvd @ 15% O_2 and 43.2

pounds per hour to 9 ppmvd and 32.4 pounds per hour. GE is willing to guarantee these values. Second, LWG request that the Department add a separate power augmentation/duct firing CO emission limit based on the 15 ppmvd guarantee for power augmentation from the turbine and 0.1 lb/mmBtu from the duct burner. The combined emission rate is 71.5 lb/hr (54 lb/hr from the CT and 17.5 lb/hr from the duct burner) and 20.5 ppmvd. Reason: The lower emission for DLN and the separate emission limit for power augmentation/duct firing will result in equivalent potential CO emissions. The emissions under the draft permit would allow 200.7 tons/year (after adjusting for lower oil usage, i.e., 750 hours/year). The LWG proposal would result in a total of 196.6 tons/year (142.0 tons/year for DLN at 9 ppmvd, an additional 21.7 tons/year from power augmentation at 15 ppmvd, 17.5 tons/year for the duct burners and 27.5 tons/year for oil firing). This strategy would not affect the BACT or environmental impact analyses performed; for the former the BACT evaluated higher initial tons/year and for the latter the maximum emissions are still for oil firing at 73.4 lb/hr. The proposed emission limits would provide operational flexibility while operating under power augmentation/duct firing. Similar limits of this type have been provided for other projects.

Page 12 of 18, Specific Condition 15, Emission Standards, Pollutant NO_x, Simple or Combined Cycle/DLN (Gas): Suggested Change: LWG requests that an emission limit for power augmentation and duct firing be added to the Emission Standard column for the Combined Cycle/DLN (Gas) mode of operation. A limit of 9.4 ppmvd @ 15% O₂ and 74.65 lb/hr is requested as the 24-hour block average for continuous compliance anytime power augmentation/duct firing is performed. Reason: The emission limit proposed by LWG is based the permit limits given by the Department to the Santa Rosa and the Kissimmee Utility Authority projects. In these permits, the Department gave an emission limit of 0.4 lb/MW-hr for duct firing. For the LWG project, the net heat rate of the project is 8,280 Btu/kW-hr (HHV) based on, 164 MW from the turbine, 14.9 MW from power augmentation, 74 MW from the steam cycle, 1,919 mmBtu/hr (HHV) for the turbine and 175 mmBtu/hr (HHV) of duct firing $[(1,919 \text{ mmBtu/hr} + 175 \text{ mmBtu/hr}) \times 10^6 / (164 \text{ MW} + 14.9 \text{ MW} + 74 \text{ MW}) / 1,000 \text{ kW/MW} = 8,280 \text{ Btu/kW-hr}]$. The proposed emissions rate for the duct burners would be 0.0483 lb/mmBtu/hr $(0.4 \text{ lb/MW-hr} / 8,280 \text{ Btu/kW-hr} \times \text{MW} / 1,000 \text{ kW} \times 10^6 / \text{mm} = 0.0483 \text{ lb/mmBtu})$. The maximum duct burner emissions would be 8.45 lb/hr $(175 \text{ mmBtu/hr} \times 0.0483 \text{ lb/hr} = 8.45 \text{ lb/hr})$. When combined with the emissions from the combustion turbine the emissions are 9.4 ppmvd @ 15% O₂ and 74.65 lb/hr. The proposed emission limit would only increase annual emissions by 8.45 tons/year $(8.45 \text{ lb/hr} \times 2,000 \text{ hours/year} \times \text{ton} / 2,000 \text{ hours})$. As discussed at the July 28, 1999 meeting, the City of Lake Worth would request a federally enforceable permit condition that would restrict the operation of Unit S-3 to only those periods when steam was unavailable from the LWG Project and those periods necessary for startup and shut down periods. In 1997 and 1998, Unit S-3 had actual NO_x emissions of 67.3 tons/year, which more than offsets any increase associated with power augmentation/duct firing. These actual emissions were determined from CEM data for Unit 3 and can be found in EPA's Acid Rain database (www.epa.gov/docs/acidrain).

Page 12 of 18, Specific Condition 15, Emission Standards, Pollutant NO_x, Combined Cycle/SCR Option (Gas): Suggested Change: In the column Emission Standard- 3.5 ppmvd @ 15% O₂, 25.8 pounds per hour; 4.5 ppmvd @ 15% O₂, 33.2 pounds per hour Reason: The

Department allowed SCR emissions limits for the Santa Rosa, KUA and Duke projects in the 4.5 ppmvd (corrected) range. As noted above, none of these projects have actual emission tradeoffs nor have the repowering benefits of the LWG project. These benefits of the LWG project should be considered when establishing an SCR limit. In this case, LWG only requests the same limits provided to these projects.

Page 12 of 18, Specific Condition 15, Emission Standards; Pollutant-SO₂, All modes: Suggested Change: than ~~0.04%~~ 0.05% sulfur by weight. Reason: As noted above, the maximum impacts are well below the PSD Class II SILs.

Page 12 of 18, Specific Condition 15, Emission Standards, Footnote b: Suggested Change: Delete the sentence ~~Limits for combined....power augmentation~~. Reason: A specific alternate emission limit is proposed for power augmentation/duct firing.

Page 12 of 18, Specific Condition 16, Carbon Monoxide (CO), (a) Dry-Low NO_x Controls, Line: Suggested Change: ...shall not exceed 32.4 pounds per hour or 9 ppmvd . Reason: See above comment.

Page 13 of 18, Specific Condition 16, Carbon Monoxide (CO): Add an emissions of 71.5 lb/hr and 20.5 ppmvd for power augmentation, as described above. The proposed conditions is (b) Dry-Low NO_x Controls with Power Augmentation/Duct Firing: During combined cycle operation when firing natural gas, NO_x emissions shall not exceed 20.5 ppmvd from the combustion turbine or 71.5 lb/hr from the HRSG stack based on a 3-hour test average . Reason: See above rationale.

Page 13 of 18, Specific Condition 17, Nitrogen Oxides (NO_x): Suggested Change: An additional condition for power augmentation/duct firing is proposed. The proposed conditions is (b) Dry-Low NO_x Controls with Power Augmentation/Duct Firing: During combined cycle operation when firing natural gas, NO_x emissions shall not exceed 12 ppmvd @ 15% O₂ from the combustion turbine or 102.3 lb/hr from the HRSG stack based on a 3-hour test average and 9.4 ppmvd @ 15% O₂ and 74.65 lb/hr for a 24-hr block average from the HRSG stack. Reason: The proposed emission limit for the HRSG stack 3-hour test is based on 88.3 lb/hr from the turbine at 12 ppmvd @ 15% O₂ and 14 lb/hr from the duct burner (0.08 lb/mmBtu x 175 mmBtu/hr). See above for rationale.

Page 13 of 18, Specific Condition 17, Nitrogen Oxides (NO_x), First Paragraph: Suggested Change: Delete the sentence ~~The above emission limits...firing~~. Reason: With the addition of a specific condition for the combination of power augmentation/duct firing this sentence is not needed.

Page 14 of 18, Specific Condition 18, Particulate Matter (PM/PM₁₀), Sulfuric Acid Mist (SAM) and Sulfur Dioxide (SO₂), Paragraph (a), Line 6: Suggested Change: ..than ~~0.04%~~ 0.05% sulfur by weight... Reason: As noted above, the maximum impacts are well below the PSD Class II SILs.

Page 14 of 18, Specific Condition 20, Excess Emissions Prohibited, Line 4: Suggested Change:

Delete the sentence- ~~Excess emissions resulting...shall be prohibited.~~ Reason: Rule 62-210.700 F.A.C. allows excess emission resulting from startup, shutdown and malfunction. Moreover, the NSPS Subpart Db allows excess emissions under similar conditions. Since duct firing would only be operated when the turbine is at load, some provision for startup, shut down or malfunction is needed.

Page 14 of 18, Specific Condition 21, Excess Emissions Allowed, (a) Warm Startup, Line 3: Suggested Change: ...following a ~~steam~~ the combustion turbine shutdown... Reason: The HRSG and the two steam turbines are the limiting factors. Using the combustion turbine as the criteria encompasses the entire project.

Page 15 of 18, Specific Condition 21, Excess Emissions Allowed, (b) Cold Startup, Line 3: Suggested Change: ...following a ~~steam~~ the combustion turbine shutdown... Reason: The HRSG and the two steam turbines are the limiting factors. Using the combustion turbine as the criteria encompasses the entire project.

Page 16 of 18, Specific Condition 25, Initial Tests Required, Line 3: Suggested Change: of the emission units on each fuel or mode of operation: ~~Initial compliance with the allowable emission limitingalternate modes of operation:~~ firing..or both. Reason: The initial testing for the alternate modes of operation, such as duct firing, should be afforded the same time limits. The NSPS apply to the duct firing and the same 60 and 180 days time limits for testing apply, rather than the 45 days indicated in the sentence.. For example, additional time may be required to fine-tune the duct firing system after combustion turbine is completely operational.

Page 18 of 18, Specific Condition 33, Daily Operations Log, Line 5: Suggested Change: ..MW; ~~highest level of ammonia slip in ppm;~~ and the average... Reason: Ammonia slip can only be determined using a in accurate mass balance using an assumed inlet NO_x concentration, the CEM NO_x concentration and the amount of ammonia used. This calculation would be highly inaccurate and this requirement should be deleted.

Comments to Intent to Issue PSD Permit (PSD-FL-266/099-0568-001-AC)
Lake Worth Generation, L.L.C.

Page 1, Second Paragraph, Line 1: ...Lake Worth Generating ~~ion~~, L.L.C. ...

Page 1, Second Paragraph, Line 3: Suggested Change: ..(74MW); ~~an absorption chiller,~~
turbine inlet air cooling, and two stacks.

**Comments to Public Notice of Intent to Issue
PSD Permit (PSD-FL-266/099-0568-001-AC)
Lake Worth Generation, L.L.C.**

Page 1, Title: Lake Worth Generation, L.L.C.

Page 1, First Paragraph, Line 2: ...Lake Worth Generation, L.L.C.

Page 1, First Paragraph, End of Line 5: Suggested Change: Add sentences- The project will supply steam to the existing steam generating Units S-3 and repowered S-4 at the City of Lake Worth's Tom G. Smith Generating Plant. These units will have a combined capacity of 74 MW . The boilers for existing Units S-1 and S-4 will be retired. Reason: These additions better reflect the actual conditions of the project.

Page 1, Second Paragraph, Line 2: Suggested Change: ..mode or ~~250~~ 260 MW... Reason: Consistent with first paragraph.

Page 1, Second Paragraph, Line 4: Suggested Change: ..than ~~0.04%~~ 0.05% sulfur by weight. Reason: As noted in the comments to the Specific Conditions to the PSD Permit, the maximum impacts are well below the PSD Class II SILs.

Page 1, Second Paragraph, Lines 7-9: Suggested Change: Delete sentence- ~~Because these modes...conditions.~~ Replace with: The draft permit also authorizes up to 2,000 hours of operation using power augmentation/duct firing mode(s) at an emission limit of 9.4 ppmvd at 15 percent oxygen (24-hour block average). Reason: If agreed to by the Department.

**Comments to Technical Evaluation and Preliminary Determination for
PSD Permit (PSD-FL-266/099-0568-001-AC)
Lake Worth Generation, L.L.C.**

Page TE-4, First Paragraph, Line 6: Suggested Change: ..amount of time in the simple combined cycle mode with the capability to operate in simple cycle mode if required.
Reason: The main operating mode will be combined cycle. Simple cycle operation will only be operated for periods where the steam cycle is not available or for unique peaking requirements.

Page TE-4, First Paragraph, Line 6: Suggested Change: Delete remainder of paragraph: When requested by...generating facility. Replace with: The City of Lake Worth will be provided steam for the operation of the existing Unit S-3; an existing 26.5 MW steam generating firing natural gas and No. 6 fuel oil. LWG will operate under a lease from the City of Lake Worth existing Unit S-4 which will be upgraded to 47.5 MW. Existing Unit S-3 boiler will only be used when steam is not available and during start up and shut down periods. Existing Unit S-1, a 7.5 MW steam generating unit firing natural gas and No. 6 fuel oil, will be retired when the LWG Project becomes operational. The total steam capacity for the repowered Units S-3 and 4 will be 74 MW. Although the City of Lake Worth and LWG will have independent ownership, the City of Lake Worth will relinquish the permits for existing Units S-1 and S-4. The City of Lake Worth has committed to request a revision to the existing federal operating permit for Unit S-3 to condition its operation based on the availability of steam and start up and shut down periods. The result of these commitments by the City of Lake Worth will reduce potential emissions by 11,000 tons/year or a 95 % reduction over what is currently authorized for existing generating Unit S-1, S-3 and S-4. This reduction in potential emission includes the full operation of the LWG Project.
Reason: The revised wording clarifies the relationship between LWG and the City of Lake Worth, between which a contract has been executed to implement many of the commitments that will ultimately be included in the Lake Worth Title V permit for emission units S-1, S-2 and S-4. This also clarifies the "repowering" nature of the project.

Page TE-4, Second Paragraph, Line 2: Suggested Change: ~~An absorption chiller....to a nominal 55°F~~ A turbine inlet air cooling system will be installed to cool the inlet air prior to the compressor, which will increase the mass...power output.
Reason: An evaporative cooling system may be used instead of an absorption system. The suggested change would allow either alternative.

Page TE-4, Second Paragraph, Line 7: Suggested Change: ...generator with natural gas duct firing.
Reason: Make clear that only natural gas would be used in the duct burner.

Page TE-4, Third Paragraph, Line 1: Suggested Change: At 45 °F conditions ~~F~~the new unit will...fuel
Reason: The data supplied in the application indicate that the net power at a turbine 45 °F is 176 MW.

Page TE-4, Fourth Paragraph, Line 4: Suggested Change: If necessary, a ~~200~~ 175 mmBtu per hour...
Reason: The maximum heat input for the duct burner being requested by LWG is 175 mmBtu/hr.

Page TE-4, Fourth Paragraph, Line 10: Suggested Change: ~~220~~ 275 °F. Reason: The current design when firing distillate is to maintain the exhaust temperature above the dew point of sulfuric mist to inhibit any corrosion when firing oil.

Page TE-5, Second-Full Paragraph, Line 5: Suggested Change: over ~~55%~~ 47% . Reason: Reflects the LWG project.

Page TE-5, Third-Full Paragraph, Line 3: Suggested Change: steam ~~from the City of Lake Worth~~. Reason: The HRSG will supply steam for both the City of Lake Worth Unit S-3 and repowered Unit S-4.

Page TE-5, Third-Full Paragraph, Line 4: Suggested Change: operating in ~~combined~~ simple cycle modes offer efficiencies of approximately ~~55%~~ 32%. Reason: Suggested wording better reflects the discussion in the paragraph.

Page TE-5, Fourth-Full Paragraph, Line 3: Suggested Change: ~~..an absorption chiller a turbine inlet air cooling system may be installed...inlet. The absorption chillers....55 °F.~~ Reason: An evaporative cooling system may be used instead of an absorption system. The suggested change would describe either alternative.

Page TE-7, 6.3 Control Technology, First-Full Paragraph, Line 9: Suggested Change: Because both these options ~~tend to defeat the control capabilities of DLN and~~ may result in higher emissions, the ... Reason: While emissions may increase with power augmentation and duct firing, the DLN system will be effective for several reasons. First, if emissions are 12 ppmvd when under power augmentation the DLN system is still quite effective. At this concentration emissions will be less than 0.05 lb/mmBtu, which is still quite low. Second, duct firing is separate emission unit than the combustion turbine.

Page TE-9, First-Full Paragraph, Line 1: Suggested Change: Delete first and second sentences - Initial modeling..significant impacts. Reason: As noted in the comments to the Specific Conditions to the PSD Permit, the maximum impacts are well below the PSD Class II SILs.

**Comments to Best Available Control Technology (BACT) Determination for
PSD Permit (PSD-FL-266/099-0568-001-AC)
Lake Worth Generation, L.L.C.**

Page C-1, First Paragraph, Line 7: Suggested Change: ..amount of time in the simple combined cycle mode with the capability to operate in simple cycle mode if required.
Reason: The main operating mode will be combined cycle. Simple cycle operation will only be operated for periods where the steam cycle is not available or for unique peaking requirements.

Page C-1, First Paragraph, Line 6: Suggested Change: Delete remainder of paragraph: When requested by...sufficient demand. Replace with: The City of Lake Worth will be provided steam for the operation of the existing Unit S-3; an existing 26.5 MW steam generating firing natural gas and No. 6 fuel oil. LWG will operate under a lease from the City of Lake Worth existing Unit S-4 which will be upgraded to 47.5 MW. Existing Unit S-3 boiler will only be used when steam is not available and during start up and shut down periods. Existing Unit S-1, a 7.5 MW steam generating unit firing natural gas and No. 6 fuel oil, will be retired when the LWG Project becomes operational. The total steam capacity for the repowered Units S-3 and 4 will be 74 MW. Although the City of Lake Worth and LWG will have independent ownership, the City of Lake Worth will relinquish the permits for existing Units S-1 and S-4. The City of Lake Worth has committed to request a revision to the existing federal operating permit for Unit S-3 to condition its operation based on the availability of steam and start up and shut down periods. The result of these commitments by the City of Lake Worth will reduce potential emissions by 11,000 tons/year or a 95 % reduction over what is currently authorized for existing generating Unit S-1, S-3 and S-4. This reduction in potential emission includes the full operation of the LWG Project. Reason: The revised wording clarifies the relationship between LWG and the City of Lake Worth, between which a contract has been executed to implement many of the commitments that will ultimately be included in the Lake Worth Title V permit for emission units S-1, S-2 and S-4. This also clarifies the "repowering" nature of the project.

Page C-1, Second Paragraph, Line 2: Suggested Change: ~~An absorption chiller....to a nominal 55°F~~ A turbine inlet air cooling system will be installed to cool the inlet air prior to the compressor, which will increase the mass...power output. Reason: An evaporative cooling system may be used instead of an absorption system. The suggested change would allow either alternative.

Page C-6: Lake Worth Generating ion

Page C-15, 5.5.2 Department's BACT Determination, First Paragraph: This paragraph does not accurately reflect the development of the project as discussed at the July 28, 1999 meeting. As the project progressed, power augmentation/duct firing was added to reflect the repowering nature of the design and to enhance the viability of the project given the condition of the existing equipment. This includes the steam cycle for the project, which will be designed for 74 MW. If the Department accepts the 9.4 ppm request, this paragraph should be modified to reflect that decision. Moreover, the benefits of the project as noted above should be mentioned. The use of oil will be required to finance the project to assure backup fuel in power purchase contracts for capacity and energy.

Page C-15, 5.5.2 Department's BACT Determination, Second Paragraph: As discussed at the July 28, 1999 meeting, the City of Lake Worth would request a federally enforceable permit condition that would restrict the operation of Unit S-3 to only those periods when steam was unavailable from the LWG Project and those periods necessary for startup and shut down periods. In 1997 and 1998, Unit S-3 had actual NO_x emissions of 67.3 tons/year, which more than offsets any increase associated with power augmentation/duct firing. The proposed limits of 9.4 ppmvd @ 15% O₂ and 74.65 lb/hr, requested as the 24-hour block average for continuous compliance, are consistent with other permits approved by the Department without any offsets in "actual emissions". Moreover, there is an 11,000 ton/year decrease in potential emissions by eliminating Unit S-1 and S-4 and tying the operation of Unit S-3 to the availability of steam from the HRSG. LWG requests that this paragraph be revised to reflect the "repowering" nature of the project.

Page C-15, 5.5.2 Department's BACT Determination, Third Paragraph, Line 3: Suggested Change: Delete sentence- ~~In other words,emissions are allowed.~~ Reason: This is an obvious requirement of permit conditions and appears inconsistent with the wording of the paragraph.

Page C-16, Emission Standards, Pollutant CO, Simple or Combined Cycle/DLN (Gas): Suggested Change: LWG requests that the emissions limit be either the concentration or lb/hr limit, whichever is less stringent. Reason: The proposed emission limits, as expressed in the draft permit, would provide operational flexibility while operating under power augmentation/duct firing. Similar limits of this type have been provided for other projects.

Page C-16, 6.1 BACT Emission Limits, Pollutant NO_x, Simple or Combined Cycle/DLN (Gas): Suggested Change: LWG requests that an emission limit for power augmentation and duct firing be added to the Emission Standard column for the Simple Cycle or Combined Cycle/DLN (Gas) mode of operation. A limit of 9.4 ppmvd @ 15% O₂ and 74.65 lb/hr is requested as the 24-hour block average for continuous compliance anytime power augmentation/duct firing is performed. Reason: See previous rationale.

Page C-17, Excess Emissions Allowed, (a) Cold Startup, Line 3: Suggested Change: ~~...following a steam~~ the combustion turbine shutdown... Reason: The HRSG and the two steam turbines are the limiting factors. Using the combustion turbine as the criteria encompasses the entire project.

Page C-17, Excess Emissions Allowed, (b) Warm Startup, Line 3: Suggested Change: ~~...following a steam~~ the combustion turbine shutdown... Reason: The HRSG and the two steam turbines are the limiting factors. Using the combustion turbine as the criteria encompasses the entire project.



CITY OF LAKE WORTH

1900 2ND AVENUE NORTH
LAKE WORTH, FLORIDA 33461-4298

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UTILITIES
ADMINISTRATION

BUREAU OF AIR REGULATION

(561) 586-1666
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July 28, 1999

Mr. R. Douglas Neeley
Chief, Air and Radiation Technology Branch
Air, Pesticides and Toxic Management Division
United States Environmental Protection Agency
Region 4, Atlanta Federal Center
61 Forsyth Street
Atlanta, GA 30303-8960

Re: **Draft PSD Permit for Lake Worth Generation (LWG), L.L.C.,
Tom G. Smith Power Plant, Lake Worth, Florida PSD-FL-266**

Dear Mr. Neeley:

This correspondence is being provided to the United States Environmental Protection Agency as information regarding the draft PSD-FL-266 permit. The City of Lake Worth (the City) and LWG have entered into a contract to effectively re-power the current fossil fuel fired steam generators identified as Unit S-1, Unit S-3 and Unit S-4. Units S-1, S-3 and S-4 are emission units that are listed in the Title V Permit issued by the Florida Department of Environmental Protection (Final Permit No.: 0990045-002AV). The steam generated by the LWG project (General Electric Frame 7F/HSRG) will be used in the steam electric system for Unit S-4 that will be leased to LWG, and in the existing steam electric system Unit S-3 and S-4 will remain at 74 MW, which is within the total capacity of Units S-1 through S-4. Once the LWG Project is operational, the City will relinquish those portions of the existing Title V permit dealing with the steam generators for Units S-1 and S-4. The steam generator for Unit S-3 will be kept primarily as backup to steam that will normally be supplied by LWG under the terms of the contract.

The City has concerns regarding the requirement for selective catalytic reduction (SCR) using ammonia injection in addition to the DLN (dry low NOx) combustion technology proposed in PSD-FL-266 for NOx control while firing natural gas fuel. The concerns involve site-specific conditions unique to the City of Lake Worth, abutting property of one school, residential homes, playgrounds, major interstate highway as well as being centrally located in a densely populated urban area.

While the City considers the negative effects of SCR, (increased particulate, ammonia emissions, bulk ammonia storage, energy decline) to be problematic, it sees the impact of DLN combustion technology for replacement steam generation as an environmentally realistic alternative to the existing dry bottom, wall fired steam generators.

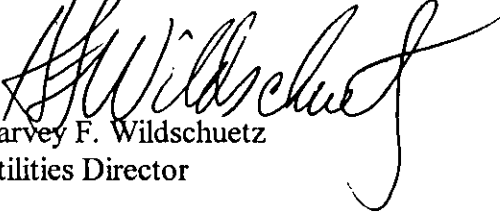
Although the proposed project has the potential to emit significant emissions, the local environmental benefits from removing emission potential from two dry bottom, wall fired units from service and rendering the third unit as a reserve steam generator is apparent.

The LWG Project is a vital part of the City of Lake Worth's future electric generation program. The repowering of the City of Lake Worth's Tom G. Smith Power Plant utilizing dry low NOx technology should receive consideration in the air permit issued.

We appreciate the opportunity to provide this and any additional information regarding this project.

Sincerely,

CITY OF LAKE WORTH UTILITIES



Harvey F. Wildschuetz
Utilities Director

HFW/pb

cc: Paul Doherty, LWG
Brian Chatlosh, LWG
Leonard Shaperio, Energy Resources Group, Inc.
Joseph A. McGlothlin, McWirtter, Reeves, McGlothlin, Davidson, Rief and Bakas, P.A.
Jeff Koerner, P.E., FDEP Tallahassee
Kennard F. Kosky, Golder Associates

cc: File
EPA
NPS
SED
Palm Bch Co.



CITY OF LAKE WORTH

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ADMINISTRATION**

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July 23, 1999

Mr. Jeffery F. Koerner, P.E.
Bureau of Air Regulation
New Source Review Section
Florida Department of Environmental Protection
Mail Station #5505
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Re: **DEP File No. 099-0569-001-AC (PSD) Permit Application
Relationship Between LWG Combined Cycle Project and
City of Lake Worth, Tom G. Power Plant**

Dear Mr. Koerner:

This correspondence is being provided to the Department of Environmental Protection as information regarding the relationship between Lake Worth Generation, LLC (LWG) and the City of Lake Worth. The City of Lake Worth and LWG have entered into a contract that would effectively re-power the current fossil fuel fired steam electric units identified as Unit S-1, Unit S-2, Unit S-3 and Unit S-4. Units S-1, S-3 and S-4 are existing emission units that are listed in the Title V Permit issued by the Department (Final Permit No. 0990045-002-AV). The Steam generated by the LWG project will be used in the re-powered steam electric system for Unit S-4 that will be leased to LWG and in the existing steam generator Unit S-3 that will remain owned by the City of Lake Worth. The total capacity for Units S-3 and S-4 will remain at 74 MW, which is within the total capacity of Units S-1 through S-4.

Once the LWG Project is operational, the City will relinquish those portions of the existing Title V permit dealing with the steam generators for Unit S-1 and S-4. These steam generators will no longer be used. The steam generator for Unit S-3 will be kept primarily as backup to steam that will normally be supplied by LWG under the terms of the contract.

The LWG Project is an important part of the City of Lake Worth's future electric generation program. The re-powering aspect of LWG Project should receive consideration in the final air permit issued by the Department.

We appreciate the opportunity to provide this information.

Sincerely,

CITY OF LAKE WORTH UTILITIES



Harvey F. Wildschuetz
Utilities Director

HFW/jsm

cc: Paul Doherty, LWG
Brian Chatlosh, LWG
Leonard Shaperio, Energy Resources Group, Inc.
Joseph A. McGlothlin, McWirtter, Reeves, McGlothlin, Davidson, Rief and Bakas, P.A.
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