592

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City HOUSTON State TX ZIP 77034

2 Your Internal Billing Reference Information 102431;532010

3 To

Recipient's Name Mr. Al Linero, P.E. Phone ( )

New Source Review Section

Company Florida Department of Environmental Protection

Address 2600 Blair Stone Road

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3. Article Addressed to:

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

4a. Article Number: Z 031 392 004

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PSD-FL-273

PS Form 3800, April 1995

Reliant Energy

October 28, 1999

Mr. Michael P. Halpin, P.E.
New Source Review Section
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
Mail Stop 5505

Subject: Submittal of Revised Ambient Air Quality Analysis
Reliant Energy Osceola

Dear Mr. Halpin:

Reliant Energy Osceola, L.L.C. recently submitted a Prevention of Significant Deterioration (PSD) Air Permit Application for the Osceola Power Project, to be located near Holopaw, Florida. As we discussed by telephone recently, the air quality impact analysis (AQIA) for Osceola has been modified to account for changes made to the proposed site layout. These changes include: addition of a small natural gas-fired pipeline heater; the reduction of proposed oil-firing hours to 750 hours/year/unit; and the movement of the plant island approximately 1,500 feet south of the original location.

The enclosed report discusses the results of the revised AQIA, and the enclosed compact disk includes the electronic files used in the revised analysis. The results of this revised analysis are consistent with the original analysis and indicate that emissions from the proposed Osceola facility will not exceed the applicable PSD significant impact levels for any regulated pollutant.

Please contact me at 713-945-7167 if you have any questions concerning this permit application.

Sincerely,

Jason M. Goodwin, P.E.
Senior Engineer, Air Resources Division
Environmental Department
Wholesale Group

JMG:\Power Projects\Osceola\Revised Model Trans.doc
Encl.

c: Al Linero – Florida DEP – Tallahassee, FL

cc: C. Carlson
L. Kozlov
NPS
EPA

Reliant Energy Osceola, L.L.C.

Revised Air Dispersion Modeling Analysis

Recent changes to the proposed Reliant Energy Osceola facility have prompted additional air dispersion modeling to be performed for the proposed facility. These changes include modifications in the locations of on-site structures, fencelines and fenceline receptors, as well as the addition of a 9.8 MBtu/hr natural gas fired fuel-gas heater. The changes, and their associated impacts were assessed with the Industrial Source Complex (ISCST3) air dispersion model. The methodology of this air dispersion modeling, including specific air dispersion model defaults, terrain, and meteorological data, remain unchanged from the air dispersion modeling submitted in the original Construction Permit Application of July 30, 1999.

Due to recent engineering changes to the proposed project, the facility was relocated approximately 1,500 feet south of the originally proposed site, near the southeast corner of the property. Figure 1 illustrates the revised nested rectangular grid, fence line receptors, and the relative location of the emission sources and downwash structures, including the addition of the fuel-gas heater. It may be noted that this site arrangement is also rotated approximately 15-degrees to the left compared to the original site arrangement. The fuel gas heater is located in the northwest corner of the proposed site. Although the enclosed plot plan indicates the presence of six combustion turbines, the proposed Osceola facility will include only the three units located on the east side of the facility. All air quality impact analyses and other representations have been based on these three units only.

Performance and emissions data for the fuel gas heater were developed from similar projects and include low-NO_X burners to minimize emissions from this source. Stack parameters and emission rates for this fuel-gas heater are included in Table 1. Potential-to-emit calculations for the fuel-gas heater are included in Table 2. Emissions data for the proposed CTs was modified to reflect a change from the originally proposed 2,000 hours per CT per year of fuel oil firing to the currently proposed 750 hours per CT per

year. This change was considered in evaluating annualized emissions and resulting impacts. Short-term emissions data was not changed from the original evaluation.

All sources, including the additional fuel gas heater, and operating scenarios modeled in the originally submitted air dispersion modeling analysis were again modeled in this new arrangement. Maximum model predicted concentrations for each pollutant and applicable averaging period are presented in Table 3. This table also provides the PSD Class II significant impact levels and required preconstruction monitoring levels. As the table indicates, the Project's maximum predicted concentrations for all pollutants from all sources and modeled operating scenarios are still less than the PSD Class II Significant Impact Level (SIL) for each pollutant and applicable averaging period. These results are similar to those found in the original air dispersion modeling analysis, where the maximum predicted modeled impacts also were less than the PSD SIL for all pollutants and applicable averaging periods. The changes to the proposed project will have an insignificant impact on the environment, and under the PSD program, no further air quality impact analyses are required. In addition, because the revised maximum predicted concentrations are all less than the PSD SILs for each pollutant and applicable averaging period, and are not significantly greater than the original predicted maximum concentrations, the originally submitted Additional Impacts Analysis and Class I Area Impact Analysis were not updated. Therefore, the original analysis and conclusions are valid.

A copy of the revised input (*.DAT) files and the output (*.LST) files from this updated analysis are included as an attachment.

Table 1
Stack Parameters and Pollutant Emissions for the Fuel Gas Heater*

Operating Scenario/Fuel	ISCST3 Source ID	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temp (K)	Pollutant Emission Rate (g/s)			
						NO_x	SO_2	CO	PM/PM_{10}
Natural Gas Fuel Gas Heater	FUELHEAT	4.57	0.51	4.57	505	0.046	0.035	0.093	0.006

*Representative of a 9.8 MBtu/hr gas heater.

Table 2
Pollutant Emissions for the Fuel Gas Heater

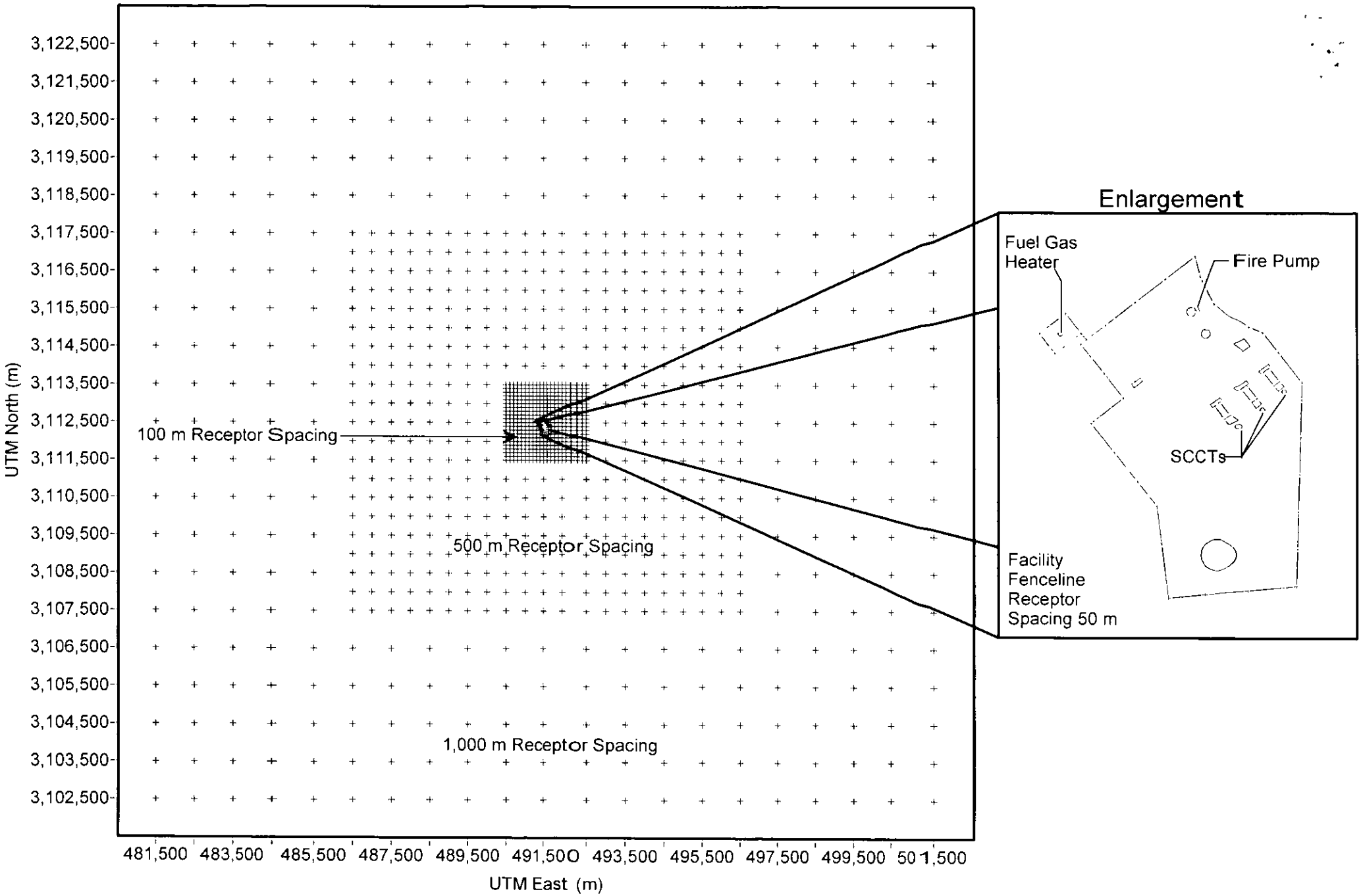
NO_x		SO_2		CO		PM/PM_{10}	
lb/hr	ton/yr*	lb/hr	ton/yr*	lb/hr	ton/yr*	lb/hr	ton/yr*
0.365	1.60	0.278	1.22	0.738	2.23	0.048	0.21

*8760 hours of operation per year

Table 3
Comparison of Maximum Predicted Impacts with the PSD Class II Significant Impact Levels and the PSD De Minimus Monitoring Levels

Pollutant	Averaging Period	Maximum Predicted Impact ($\mu g/m^3$)	PSD Class II Significant Impact Level	PSD De Minimus Monitoring Level
NOx	Annual	0.69	1	14
SO2	Annual	0.33	1	-
	3-Hour	11.70	25	-
	24-Hour	4.64	5	13
CO	1-Hour	44.89	2,000	-
	8-Hour	20.36	500	575
PM/PM10	Annual	0.06	1	-
	24-Hour	1.99	5	10

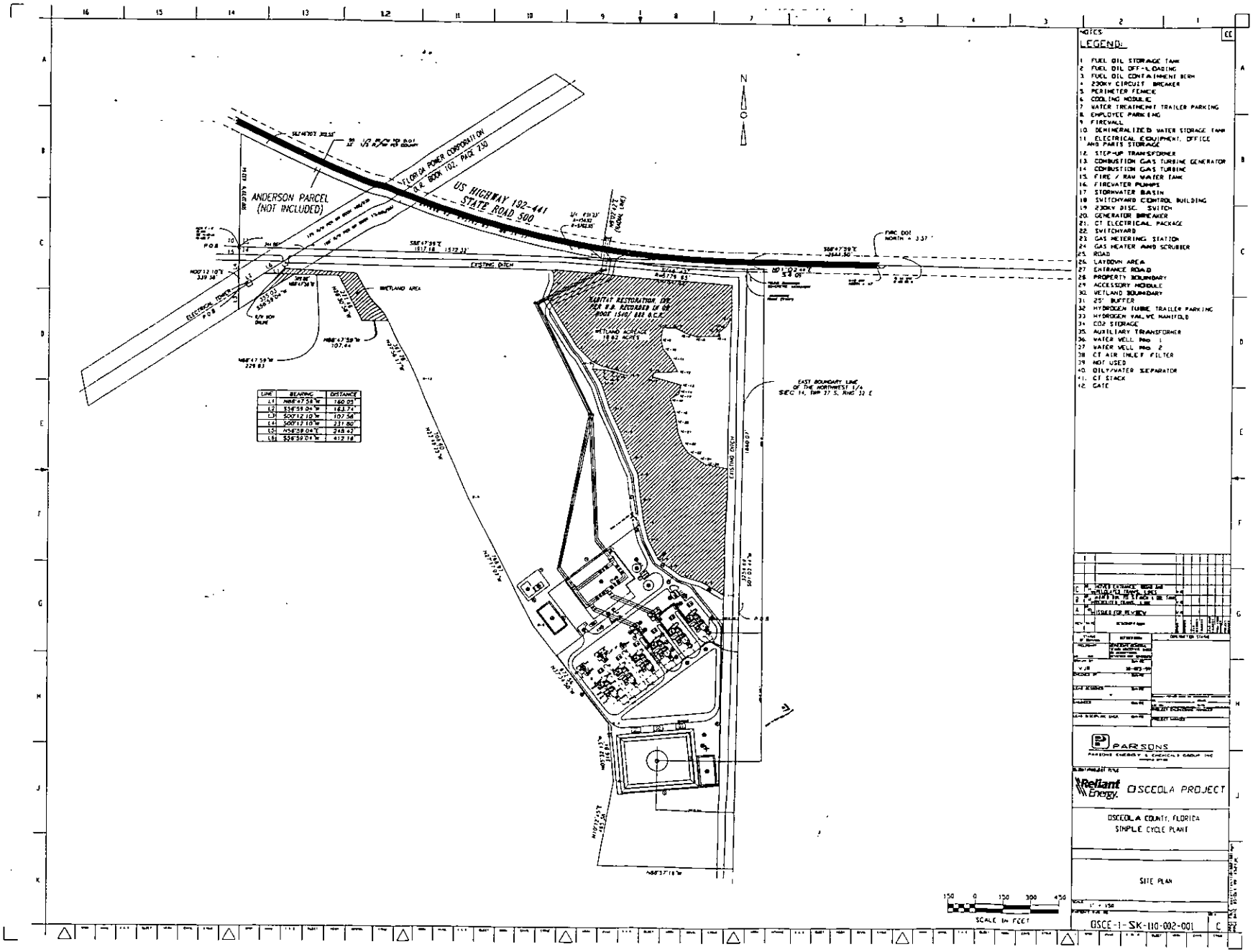
Figure 1
Receptor Locations and Facility Layout



Site_Grid.srf

Receptor Grid and Facility Layout

Figure 1



LINE	BEARING	DISTANCE
L1	N66°47'59"W	160.00'
L2	S56°59'04"W	183.71'
L3	S00°12'10"W	107.56'
L4	S00°12'10"W	271.80'
L5	N56°59'04"E	248.42'
L6	S56°59'04"W	412.18'

NOTES:

LEGEND:

1. FUEL OIL STORAGE TANK
2. FUEL OIL OFF-LOADING
3. FUEL OIL CONTAINMENT BERM
4. 230KV CIRCUIT BREAKER
5. PERIMETER FENCE
6. COOLING MODULE
7. WATER TREATMENT TRAILER PARKING
8. EMPLOYEE PARKING
9. FIREWALL
10. DEMINERALIZED WATER STORAGE TANK
11. ELECTRICAL EQUIPMENT, OFFICE AND PARTS STORAGE
12. STEP-UP TRANSFORMER
13. COMBUSTION GAS TURBINE GENERATOR
14. COMBUSTION GAS TURBINE
15. FIRE / RAW WATER TANK
16. FIREWATER PUMPS
17. STORMWATER BASIN
18. SWITCHYARD CONTROL BUILDING
19. 230KV DISC. SWITCH
20. GENERATOR BREAKER
21. CT ELECTRICAL PACKAGE
22. SWITCHYARD
23. GAS METERING STATION
24. GAS HEATER AMD SCRUBBER
25. ROAD
26. LAYDOWN AREA
27. ENTRANCE ROAD
28. PROPERTY BOUNDARY
29. ACCESSORY MODULE
30. WETLAND BOUNDARY
31. 25' BUFFER
32. HYDROGEN TUBE TRAILER PARKING
33. HYDROGEN VALVE MANIFOLD
34. CO2 STORAGE
35. AUXILIARY TRANSFORMER
36. WATER WELL NO. 1
37. WATER WELL NO. 2
38. CT AIR INLET FILTER
39. NOT USED
40. OIL/WATER SEPARATOR
41. CT STACK
42. GATE

PARSONS

Reliant Energy. OSCEOLA PROJECT

OSCEOLA COUNTY, FLORIDA
SIMPLE CYCLE PLANT

SITE PLAN

OSCE-1-SK-110-002-001 C

Reliant Energy

RECEIVED
OCT 07 1999
BUREAU OF AIR REGULATION

October 6, 1999

Mr. Michael P. Halpin, P.E.
Division of Air Resources Management
Florida Department of Environmental Protection
2600 Blair Stone Road, MS #5505
Tallahassee, Florida 32399-2400

Subject: Response to Request for Additional Information
Reliant Energy Osceola, L.L.C. – PSD Permit Application

Dear Mr. Halpin:

On August 30, 1999, Reliant Energy Osceola, L.L.C. (Reliant Energy) received your letter requesting additional information in support of an air permit application that was submitted to the Florida Department of Environmental Protection (DEP) on July 30, 1999. This permit application was submitted for the Reliant Energy Osceola project, a three-unit simple-cycle combustion turbine electric generating facility that is proposed to be constructed near Holopaw, Florida. In response to your request, Reliant Energy is providing the following information under seal of a Florida registered professional engineer.

BACT for NO_x Emissions

As noted in the August 25, 1999 Request for Information, DEP requested cost information on obtaining a guaranteed NO_x emission rate of 9 ppm for the proposed F-class combustion turbines (CTs) while firing natural gas. In addition, a letter from the U.S. Department of the Interior to DEP dated September 15, 1999 suggests that other simple-cycle combustion turbine facilities have been issued permits that limit NO_x emissions to 9 ppm, and that Reliant Energy Osceola should meet the same limit. Reliant Energy's proposed CTs have a vendor guarantee from General Electric for NO_x emissions at 9 ppm between 60 and 100 percent of base load. However, it is important to note that this guarantee must be demonstrated by a single test (e.g. the "new and clean" test) conducted during the initial commissioning of the CTs, and there is no guarantee that NO_x emissions will remain below the 9 ppm level at all times over the operational lifetime of the units. Consequently, Reliant Energy has proposed a NO_x emission limit of 10.5 ppm to provide a margin for compliance that should allow for operational variability that may result in NO_x emissions in excess of the 9 ppm level.

Delivery of Fuel Oil

Although Reliant Energy plans to construct a pipeline that will deliver natural gas fuel to the proposed Osceola facility, there will be no fuel oil pipeline constructed to deliver fuel oil. In fact, there are no fuel oil transmission pipelines in the vicinity of the proposed Osceola site, and this option is not practically available. Fuel oil that will be delivered to the Osceola facility will be delivered via tank trucks with an estimated delivery schedule of one truck every 12 minutes on average during periods that the units are firing fuel oil. However, this estimate assumes that all

three units will be firing fuel oil at the same time and does not include consideration of the on-site oil storage capacity. Furthermore, Reliant Energy intends to fire natural gas in lieu of fuel oil when available and economically attractive.

Justification of Proposed Hours of Fuel Oil Firing

As mentioned in the original permit application, Reliant Energy has proposed fuel oil firing at the Osceola facility of up to 2,000 hours/year per unit to provide assurance that a dependable and economical supply of fuel is available at the site. Natural gas is the preferred fuel when available and economically attractive. However, given the possibility of interruption of the natural gas supply in Florida, such as through supply curtailments or limited availability due to high demand, a realistic potential exists for the need to fire fuel oil on an extended basis. Fuel supply is a critical issue when considering the nature of the Osceola facility, which is designed to provide electrical power during periods of peak demand.

Reliant Energy has provided an analysis below demonstrating that, based on fuel cost and emission reductions, the proposed 2,000 hours/year per unit of oil firing is justified. The result of this analysis is expressed as a cost of reduction per ton of NO_x emissions reduced ($/ton). Recent pricing data for natural gas and transportation grade No. 2 fuel oil shows that fuel oil is more expensive than natural gas when compared on the basis of "delivered" cost, which includes the cost of the fuel and transportation costs. This cost differential, which was obtained from data taken during the 1994 through 1999 period (Attachment A), indicates a differential delivered cost of 1.33 $/mmBtu for fuel oil over natural gas.

However, natural gas becomes significantly more expensive than oil when the cost of "firming," or guaranteeing, the ability to transport gas to the facility is factored into the analysis. This cost is determined by dividing 0.80 $/mcf, which is the cost of firming gas transmission capacity from Florida Gas Transmission, by the effective capacity factor of one generating unit and the heat content of the gas. As a clarification, the cost of firming the transportation costs is adjusted to reflect the capacity factor of the plant because the overall cost basis of 0.80 $/mcf is assessed as a "take-or-pay" contract – the facility would be required to pay for the firm transportation cost of the gas regardless of whether gas is fired. On the basis of firming gas transmission costs for the 2,000 hours/year of operation in question and a natural gas heat content of 1,040 Btu/scf, the cost of firming the natural gas supply for Osceola would be 3.37 $/mmBtu. The overall cost differential associated with firing natural gas in lieu of fuel oil can be calculated by calculating the total cost of firm transportation over the 2,000 hour period and subtracting the differential cost savings of firing fuel oil instead of natural gas for the same period. A summary of calculations also is provided under Attachment A.

NO_x emissions during periods of natural gas firing are significantly less than during operation of the units on fuel oil. Emissions of NO_x during natural gas firing will be limited to 10.5 ppm, while the NO_x emission limit while firing fuel oil is 42 ppm. Given the 2,000 hour period of proposed oil firing and assuming an ambient temperature of 59 °F, operation of the combustion turbines while firing natural gas would result in per-unit emissions of 68.9 tons/year, and fuel oil firing over the same period would result in 314.6 tons/year of NO_x. The differential emissions reduction of 245.7 tons/year per unit, combined with the differential annual cost of $5,447,246 per year per unit, results in an additional cost of $22,170 per ton when natural gas is fired in lieu of fuel oil. Considering the high cost associated with substitution of natural gas for fuel oil over the proposed 2,000 hour period, Reliant Energy submits that the effective cost per ton of NO_x emissions reduced supports the proposed number of up to 2,000 hours/year per unit on fuel oil.

Moreover, the FGT pipeline is currently fully subscribed, meaning that there is no transmission capacity available on the pipeline. Natural gas transmission capacity for this facility must be acquired through the capacity released market, which includes segments of gas transmission capacity that have been relinquished by customers that have firm transmission capacity under contract. Reliant Energy will be required to purchase available relinquished capacity to satisfy the needs of the Osceola facility, the cost of which is approximately equal to the cost required to purchase available firm transmission capacity directly from the pipeline. In addition, the Osceola facility will be competing with other nearby peaking facilities that will use natural gas fuel, such as the Oleander facility in Brevard County and a facility proposed by Dynegy to be located in eastern Osceola County, for the same opportunities to acquire relinquished gas transmission capacity. Given this additional fuel supply constraint, fuel oil-firing capability becomes even more critical for the Reliant Energy Osceola facility.

Reliant Energy believes that the proposed 2,000 hours/year of fuel oil firing requested is reasonable. As demonstrated by the air quality impact analysis, the proposed amount of fuel oil firing will not result in ambient impacts in excess of the significant impact levels for the National Ambient Air Quality Standards (NAAQS). Also, the Osceola facility has been demonstrated to meet the requirements of best available control technology for simple-cycle combustion turbines that fire natural gas and fuel oil. Furthermore, the proposed number of fuel oil-firing hours also is consistent with a recently issued air permit to the Oleander Power Project, L.P. in which up to 5,000 hours per year of fuel oil firing was authorized for the facility. Given the information discussed above, Reliant Energy believes that considerations of fuel supply reliability and cost support our request for up to 2,000 hours/year per unit of operation while firing fuel oil.

Guarantee of Emission Control for SCR on Fuel Oil

Reliant Energy reviewed all available information during the preparation of the Best Available Control Technology (BACT) analysis that was submitted with the original permit application. This included conversations with several equipment vendors, including Mr. Fred Booth at Engelhard Corporation, as well as a review of the BACT/RACT/LAER clearinghouse for available information on existing simple-cycle combustion turbine installations firing oil and equipped with SCR. The Cambalache Plant in Puerto Rico, which is the facility noted in the Engelhard proposal that you referred to, was the only facility identified as having this configuration.

Mr. Booth was contacted concerning the performance of the facility but was unable to provide us with information on the long-term performance of the SCR components. In an attempt to obtain additional information, we also contacted Mr. Harish Patel at U.S. EPA Region 2 headquarters in New York (212-637-4046) who was able to provide the following information:

- The Cambalache facility was permitted for a NO_X emission rate of 10 ppm with ammonia slip at 10 ppm. Water injection is being used in conjunction with SCR to control NO_x emissions, and the facility is experiencing problems meeting their permit emission limit.

- Because of the high exhaust temperatures on the simple cycle turbines, a zeolite catalyst is required for the SCR at this facility. The zeolite catalyst has not performed as well in actual field conditions as it did in the laboratory.

- The facility is now increasing the amount of ammonia injected into the SCR system to minimize NO_X emissions. Although this approach results in decreased NO_X emissions, it also results in increased emissions of ammonia slip. Continued increasing use of ammonia is only a short-term solution because the ammonia delivery system is limited in the amount of ammonia that can be injected into their system.

- After several months of operation, the NO_X emission rate is increasing despite efforts to control NO_x emissions. The current NO_X emissions rate is approximately 20 to 25 ppm, and ammonia slip emissions also have increased to about 30 to 40 ppm.

- When the water injection/SCR system first went into operation, NO_X emissions were at approximately 10 ppm. However, NO_x emissions are expected to increase steadily to approximately 42 ppm due to increasingly ineffective performance by the SCR catalyst. This is equivalent to the emissions rate resulting from water injection only.

In our review of the recently submitted Engelhard cost proposal, we also noted that proposal indicates that the system design basis specifies "limited" oil firing. This is language typical of a facility using this fuel for emergency backup fuel only. Moreover, the performance warranty appears to reflect 9,000 hours of operation on gas firing only as oil firing is limited/emergency use only. In addition, the proposed cost of the installed system appears to be very high when considering the limited Scope of Supply. These caveats indicate that the performance specifications provided in the referenced proposal for a high-temperature SCR system are inconsistent with the proposed Osceola facility.

Reliant Energy reasserts that the conclusion reached in our original BACT analysis is valid. Experience with SCR on simple-cycle combustion turbine applications is very limited and results are poor. There is little to no successful operating experience with these systems when firing fuel oil, and the overall economics and long-term system performance data are unfavorable. In addition, the potential for additional negative environmental impacts from increased emissions of particulate matter (PM_{10}) resulting from increased oxidation of SO_2 to SO_3, as well as from the formation of ammonium bisulfate, indicate that this technology is not appropriate for the proposed Osceola facility. Based on these factors, Reliant Energy believes that the use of dry low-NO_x combustion technology for gas firing and water injection for oil firing represents BACT for NO_x emissions from the proposed facility.

Start-up Emission Rates

Reliant Energy has provided emission vs. load tables under Attachment B that indicate NO_x emissions during partial load operation. General Electric has stated that the approximate elapsed time required for the Frame 7FA combustion turbine to reach synchronization with the electric grid and full load is 6 minutes 45 seconds and 12 minutes, respectively, from initial firing of the turbine. Also, depending on ambient temperature, the 7FA turbine is able to achieve compliance with the NO_x emissions guarantee of 9 ppm after approximately 8 minutes of operation. It is important to note that periods of excess emissions are inherent to dry low-NO_x combustors as their operation requires a transitional period of operation from primary mode, through lean-lean mode, and finally to the premix mode seen in normal operation.

Because unit efficiency is much lower and emissions are much higher during these periods when compared with normal operation, it is the interests of Reliant Energy to minimize operation of the

CTs in startup or shutdown modes. These periods of partial load operation are minimized to the extent possible due to the low efficiency of operation that is experienced at low loads. Also, the nature of this generating facility requires the combustion turbine units to achieve full load with very short notice, which also serves to minimize the amount of time spent with the units operating at low loads. Furthermore, other emission control technologies and methods, such as selective catalytic reduction, also would not be effective because there is insufficient time for the catalyst material to reach the proper temperature required for conversion of NO_x emissions. Even if SCR systems were installed on the proposed units, the higher NO_x emissions experienced during start-up would still occur because of the low catalyst temperature. Accordingly, Reliant Energy believes that the excess emissions that are experienced during partial load operation are reasonable and that the current emissions control scheme of dry low-NO_x combustion for gas firing and water injection for oil firing represents BACT.

Submittal of New Source Information and Revised Modeling Analysis

Although not discussed in the original July 30 permit application submittal, Reliant Energy plans to construct a small natural gas-fired heater at the Osceola project site. This heater will be constructed adjacent to the facility's natural gas supply pipeline and is intended to remove moisture from the gas through heating, and the pipeline heater will have a heat input capacity of no more than 9.8 mmBtu/hour. Reliant Energy is in the process of performing an air quality impact analysis on the proposed Osceola facility that includes emissions from the pipeline heater, the results of which will be forwarded to DEP upon completion of the analysis. Initial results from the modeling analysis indicate that the new configuration of the facility, including the pipeline heater, will not result in ambient impacts in excess of the applicable significant impact levels for any pollutant analyzed.

Please contact me at 713-945-7167 if you have any questions or require additional information.

Sincerely,

Jason M. Goodwin, P.E.
Senior Engineer, Air Resources Division
Environmental Department
Wholesale Group

JMG:\Power Projects\Osceola\Response to RAI.doc
Attachments

c: Al Linero – Florida DEP – Tallahassee, FL
Joe Welborn – Seminole Electric Cooperative – Tampa, FL*
(* - w/ attachments)

Cc: CD
EPA
NPS
File

4. Professional Engineer Statement:

I, the undersigned, hereby certify, except as particularly noted herein, that:*

(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this Application for Air Permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.

If the purpose of this application is to obtain a Title V source air operation permit (check here [ ], if so), I further certify that each emissions unit described in this Application for Air Permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance schedule is submitted with this application.

If the purpose of this application is to obtain an air construction permit for one or more proposed new or modified emissions units (check here [ ], if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

If the purpose of this application is to obtain an initial air operation permit or operation permit revision for one or more newly constructed or modified emissions units (check here [ ], if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

D D Schultz — Signature

October 5, 1999 — Date

(seal)

* Attach any exception to certification statement.

Attachment A

Assumptions:

Cost of firm transportation:	0.80 $/mcf
Heat content of natural gas:	1,040 Btu/scf
Annual operation on fuel oil:	2,000 hours/year
Unit generating capacity @ 59°F while firing:	
- natural gas:	171,200 kW
- fuel oil:	181,800 kW
Unit heat rate @ 59°F while firing:	
- natural gas:	10,389 Btu/kWh
- fuel oil:	11,056 Btu/kWh
Delivered fuel cost:	
- natural gas:	2.60 $/mmBtu
- fuel oil:	3.93 $/mmBtu

Calculations:

Natural gas firm transportation cost (per unit of fuel):

= (0.80 $/mcf)(1 mcf/1,000 cf)(1 cf/1,040 Btu)(10^6 Btu/1 mmBtu)
= 0.77 $/mmBtu

= (0.77 $/mmBtu)/(2,000 hours/8,760 hours)
= 3.37 $/mmBtu

Natural gas total transportation cost (per year per unit):

= (2,000 hours/year)(171,200 kW)(10,389 Btu/kWh)(1 mmBtu /10^6 Btu)
= 3,557,194 mmBtu/year

= (3.37 $/mmBtu)(3,557,194 mmBtu/year)
= $ 11,996,992 per year

Natural gas fuel cost (per year per unit):

= (2,000 hours/year)(171,200 kW)(10,389 Btu/kWh)(1 mmBtu /10^6 Btu)
= 3,557,194 mmBtu/year

= (2.60 $/mmBtu)(3,557,194 mmBtu/year)
= $ 9,248,703 per year

Total natural gas fuel cost (per year per unit):

= ($ 9,248,703 per year)+($ 11,996,992 per year)
= $ 21,245,695 per year

Total fuel oil cost (per year per unit):

= (2,000 hours/year)(181,800 kW)(11,056 Btu/kWh)(1 mmBtu /10^6 Btu)
= 4,019,962 mmBtu/year

= (3.93 $/mmBtu)(4,019,962 mmBtu/year)
= $ 15,798,449 per year

Total net fuel cost (per year per unit):

= ($ 21,245,695) – ($15,798,449)
= **$ 5,447,246 per year**

Assumptions:

Annual operation on fuel oil:	2,000 hours/year
Unit heat input rate @ 59°F while firing:	
- natural gas:	1,779 mmBtu/hour
- fuel oil:	1,930 mmBtu/hour
NO_x emission rate while firing:	
- natural gas:	0.0387 lb/mmBtu (10.5 ppm @ 15% O_2)
- fuel oil:	0.163 lb/mmBtu (42 ppm @ 15% O_2)

Calculations:

NO_x emissions while firing natural gas:

= (0.0387 lb/mmBtu)(1,779 mmBtu/hour)(2,000 hours/year)(1 ton/2,000 lb)
= 68.85 tons/year

NO_x emissions while firing fuel oil:

= (0.163 lb/mmBtu)(1,779 mmBtu/hour)(2,000 hours/year)(1 ton/2,000 lb)
= 314.6 tons/year

Differential NO_x emissions:

= (314.6 tons/year) – (68.85 tons/year)
= **245.7 tons/year**

United States Department of the Interior

FISH AND WILDLIFE SERVICE
1875 Century Boulevard
Atlanta, Georgia 30345

IN REPLY REFER TO:

September 15, 1999

Re: PSD-FL-273

RECEIVED
SEP 21 1999
BUREAU OF AIR REGULATION

Mr. C. H. Fancy
Chief, Bureau of Air Regulation
Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road, MS 48
Tallahassee, Florida 32399-2400

Dear Mr. Fancy: Reliant Energy, Osceola

Our Air Quality Branch has reviewed the Prevention of Significant Deterioration Application for the Osceola Power Project (Osceola), a 510 MW power production facility in Osceola County, Florida. The facility would be located 155 km southeast of Chassahowitzka Wilderness, a Class I area administered by the Fish and Wildlife Service.

The technical review comments from our Air Quality Branch are enclosed. Specifically, we recommend that your Department require Osceola to meet lower limits than proposed for nitrogen oxides emissions.

Thank you for giving us the opportunity to comment on this permit application. We appreciate your cooperation in notifying us of proposed projects with the potential to impact the air quality and related resources of our Class I air quality areas. If you have any questions, please contact Ms. Ellen Porter of our Air Quality Branch in Denver at (303) 969-2617.

Sincerely yours,

Sam D. Hamilton
Regional Director

Enclosures

cc: M. Halpin, BAR
C. Holladay, BAR
EPA
CD
J. Goodwin, P.E.

Department of
Environmental Protection

Jeb Bush
Governor

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

David B. Struhs
Secretary

August 25, 1999

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. James M. Goodwin, P.E.
Reliant Energy Wholesale Group
12301 Kurland, P.O. Box 4455
Houston, TX 77034

Re: Request for Additional Information
DEP File No. 0970071-001-AC (PSD-FL-273)
Osceola Power Project - Three 170 MW Combustion Turbines

Dear Mr. Goodwin:

On August 3, the Department received your application and complete fee for an air construction/operation permit for three 170-MW dual fuel, proposed 'F' class combustion turbines for the Osceola Power Project in Osceola County. The application is incomplete. In order to continue processing your application, the Department will need the additional information below. Should your response to any of the below items require new calculations, please submit the new calculations, assumptions, reference material and appropriate revised pages of the application form.

1. A recent BACT determination of General Electric simple cycle CT's for the Oleander Project resulted in NO_X emissions of 9 ppm while firing natural gas. Please provide specific information on what costs are required in order to obtain a guarantee of 9 ppm as was provided for in that application.
2. How will the liquid fuel be delivered to the site, e.g. pipeline or trucks? If by truck, please estimate the average number of daily deliveries.
3. Please re-examine the requested 2000 hours per CT per year usage of 0.05% sulfur No. 2 fuel oil. Provide the Department with a cost evaluation of utilizing differing (superior) types of liquid fuels so as to minimize associated pollutant emissions. The Department will consider fuel quality and quantity in making its determination of BACT.
4. SCR information recently supplied to the Department by Engelhard Corporation differs from Osceola's BACT submittal. Specifically, Engelhard indicates that they will guarantee performance on a GE 7FA machine firing oil in simple cycle mode, as well as only 5 ppm ammonia slip (versus 10 ppm) and 2.5" of pressure drop (versus 3.15"). The Department intends to analyze the use of SCR during oil firing as part of its BACT Determination and suggests that the applicant consider revising the related submittal.
5. Provide the worst case start-up and shutdown emissions characteristics for the units under consideration including start-up curves and duration of excess emissions. The Department plans to address excess emissions in its BACT determination.

We are awaiting comments from the EPA and the National Park Service. We will forward them to you when received and they will comprise part of this completeness review.

Rule 62-4.050(3), F.A.C. requires that all applications for a Department permit must be certified by a professional engineer registered in the State of Florida. This requirement also applies to responses to Department requests for additional information of an engineering nature. Please note that per Rule 62-4.055(1): *"The applicant shall have ninety days after the Department mails a timely request for additional information to submit that information to the Department..... Failure of an applicant to provide the timely requested information by the applicable date shall result in denial of the application."*

If you have any questions, please call Michael P. Halpin, P.E. at 850/921-9530. Matters regarding review of the modeling should be directed to Cleveland Holladay (meteorologist) at 850/921-8986.

Sincerely,

8/25

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

AAL/mph

cc: Gregg Worley, EPA
Mr. John Bunyak, NPS
Len Kozlov, DEP-CD
Donald Schultz, P.E., Black & Veatch

Reliant Energy

October 20, 1999

Mr. Michael P. Halpin, P.E.
Division of Air Resources Management
Florida Department of Environmental Protection
2600 Blair Stone Road, MS #5505
Tallahassee, Florida 32399-2400

Subject: Reliant Energy Osceola, L.L.C. – PSD Permit Application
Revision to Proposed Hours of Operation on Fuel Oil

Dear Mr. Halpin:

On October 6, 1999, Reliant Energy Osceola, L.L.C. (Reliant Energy) submitted information to the Florida Department of Environmental Protection (DEP) in response to a request for information that was received by Reliant Energy on August 30, 1999. Included in this response was a justification for the proposed operational limit of 2,000 hours per year per unit while firing fuel oil. Since this letter was submitted to FDEP, Reliant Energy has chosen to revise its proposal for the number of fuel oil firing hours at Osceola. As we discussed in a telephone conversation on October 19, Reliant Energy is now proposing to revise the operational limit for each combustion turbine unit to no more than 3,000 hours per year in total and no more than 750 hours per year of operation on fuel oil. The proposed emission limits for NO_x while firing natural gas and fuel oil remain at 10.5 ppm and 42 ppm, respectively.

Reliant Energy is currently in the process of preparing a revised air quality impact analysis that includes the revisions discussed above. As mentioned in our October 6 response to FDEP, Reliant Energy plans to construct a small natural gas-fired heater at the Osceola project site. This heater will be constructed adjacent to the facility's natural gas supply pipeline and is intended to remove moisture from the gas through heating, and the pipeline heater will have a heat input capacity of no more than 9.8 mmBtu/hour. The results of this revised air quality impact analysis, which includes emissions from the pipeline heater, will be forwarded to FDEP upon completion of the analysis. Initial results from the modeling analysis indicate that the new configuration of the facility, including the pipeline heater, will not result in ambient impacts in excess of the applicable significant impact levels for any pollutant analyzed.

Please contact me at 713-945-7167 if you have any questions or require additional information.

Sincerely,

Jason M. Goodwin, P.E.
Senior Engineer, Air Resources Division
Environmental Department
Wholesale Group

JMG:\Power Projects\Osceola\Revised Oil Hours.doc

c: Al Linero – Florida DEP – Tallahassee, FL

cc: L. Kozlov, CD
NPS
EPA

Price Comparison of Natural Gas to No. 2 Oil Delivered to Florida

	GAS	NO. 2 OIL	+ NO. 2 OIL HIGHER THAN GAS ( ) NO. 2 OIL LESS THAN GAS
Jan-94	2.506	3.583	1.077
Feb-94	2.608	3.602	0.994
Mar-94	2.359	3.313	0.954
Apr-94	2.361	3.450	1.089
May-94	2.187	3.528	1.341
Jun-94	2.330	3.629	1.299
Jul-94	2.225	3.698	1.472
Aug-94	1.944	3.661	1.717
Sep-94	1.867	3.567	1.700
Oct-94	1.972	3.588	1.616
Nov-94	2.031	3.671	1.640
Dec-94	1.945	3.562	1.617
Jan-95	1.677	3.534	1.857
Feb-95	1.688	3.523	1.835
Mar-95	1.784	3.391	1.607
Apr-95	1.908	3.689	1.781
May-95	1.960	3.782	1.822
Jun-95	1.884	3.548	1.664
Jul-95	1.745	3.464	1.719
Aug-95	1.808	3.653	1.846
Sep-95	1.928	3.716	1.788
Oct-95	2.040	3.608	1.568
Nov-95	2.225	3.816	1.591
Dec-95	2.706	4.101	1.395
Jan-96	2.753	3.944	1.191
Feb-96	2.708	4.126	1.418
Mar-96	2.603	4.260	1.656
Apr-96	2.561	4.411	1.851
May-96	2.537	4.099	1.562
Jun-96	2.795	3.835	1.040
Jul-96	2.800	4.111	1.312
Aug-96	2.300	4.452	2.152
Sep-96	2.183	4.950	2.767
Oct-96	2.731	5.252	2.521
Nov-96	3.319	5.093	1.775
Dec-96	3.912	5.072	1.161

Florida Gas Transmission Co.	06880	1998	11	36371000	30	1,212,367	1,410,000	197,633	86.0%
Florida Gas Transmission Co.	06880	1998	12	37522000	31	1,210,387	1,410,000	199,613	85.8%
Florida Gas Transmission Co.	06880	1999	1	35904000	31	1,158,194	1,410,000	251,806	82.1%
Florida Gas Transmission Co.	06880	1999	2	32820000	28	1,172,143	1,410,000	237,857	83.1%
Florida Gas Transmission Co.	06880	1999	3	40772000	31	1,315,226	1,410,000	94,774	93.3%
					30				
					31				
					30				
					31				
					31				
					30				
					31				
					30				
					31				

Reliant Energy/Osceola Project

ESTIMATED PERFORMANCE PG7241(FA)

Load Condition		BASE	50%	45%	40%	35%	30%	25%	20%	10%	FSNL
Ambient Temp.	Deg F.	94.	94.	94.	94.	94.	94.	94.	94.	94.	94.
Fuel Type		Methane	Methane	Methane	Methane	Methane	Methane	Methane	Methane	Methane	Methane
Fuel LHV	Btu/lb	21,515	21,515	21,515	21,515	21,515	21,515	21,515	21,515	21,515	21,515
Fuel Temperature	Deg F	130	130	130	130	130	130	130	130	130	130
Output	kW	148,800.	74,400.	67,000.	59,500.	52, 100.	44,600.	37,200.	29,800.	14,900.	0.
Heat Rate (LHV)	Btu/kWh	9,720.	12,940.	13,610.	14,430.	15,420.	16,610.	18,310.	20,900.	34,990.	0.
Heat Cons. (LHV) X 10^6	Btu/h	1,446.3	962.7	911.9	858.6	803.4	740.8	681.1	622.8	521.4	387.6
Exhaust Flow X 10^3	lb/h	3235.	2287.	2201.	2112.	2049.	2047.	2046.	2044.	2041.	2039.
Exhaust Temp.	Deg F.	1151.	1200.	1200.	1200.	1182.	1124.	1068.	1014.	909.	811.
Exhaust Heat (LHV) X 10^6	Btu/h	885.7	672.1	648.0	622.0	593.8	558.7	526.1	494.8	447.0	N/A

EMISSIONS

NOx	ppmvd @ 15% O2	9.	9.	84.	79.	72.	63.	69.	59.	69.	62.
NOx AS NO2	lb/h	54.	35.	308.	272.	231.	186.	187.	146.	138.	97.
CO	ppmvd	9.	9.	490.	530.	612.	810.	44.	154.	102.	102.
CO	lb/h	26.	19.	971.	1010.	1134.	1500.	82.	289.	192.	193.
UHC	ppmvw	7.	7.	64.	80.	123.	277.	20.	70.	26.	77.
UHC	lb/h	13.	9.	79.	96.	142.	320.	23.	80.	30.	88.
VOC	ppmvw	1.4	1.4	12.8	16.	24.6	55.4	4.	14.	5.2	15.4
VOC	lb/h	2.6	1.8	15.8	19.2	28.4	64.	4.6	16.	6.	17.6
Particulates	lb/h	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0

EXHAUST ANALYSIS % VOL.

Argon	0.87	0.88	0.88	0.87	0.89	0.88	0.89	0.89	0.90	0.90
Nitrogen	73.39	73.60	73.65	73.70	73.79	73.98	74.17	74.35	74.69	75.02
Oxygen	12.21	12.83	12.97	13.12	13.39	13.93	14.46	14.98	15.99	16.95
Carbon Dioxide	3.77	3.49	3.42	3.36	3.23	2.99	2.74	2.51	2.05	1.62
Water	9.76	9.21	9.08	8.95	8.70	8.22	7.74	7.28	6.38	5.52

SITE CONDITIONS

Elevation	ft.	91.0
Site Pressure	psia	14.65
Inlet Loss	in Water	4.0
Exhaust Loss	in Water	5.0
Relative Humidity	%	44
Application		
Combustion System		9/42 DLN Combustor

Emission information based on GE recommended measurement methods. NOx emissions are corrected to 15% O2 without heat rate correction and are not corrected to ISO reference condition per 40CFR 60.335(c)(1). NOx levels shown will be controlled by algorithms within the SPEEDTRONIC control system.

IPS- version code- 1 . 5 . 1 Opt: N 72411298
SANDERJO 9/14/99 13:29 ReliantOsceola.dat

Reliant Energy/Osceola Project

ESTIMATED PERFORMANCE PG7241(FA)

Load Condition		BASE	50%	45%	40%	35%	30%	25%	20%	10%	FSNL
Ambient Temp.	Deg F.	73.	73.	73.	73.	73.	73.	73.	73.	73.	73.
Fuel Type		Methane	Methane	Methane	Methane	Methane	Methane	Methane	Methane	Methane	Methane
Fuel LHV	Btu/lb	21,515	21,515	21,515	21,515	21,515	21,515	21,515	21,515	21,515	21,515
Fuel Temperature	Deg F	130	130	130	130	130	130	130	130	130	130
Output	kW	162,200.	81,100.	73,000.	64,900.	56,800.	48,700.	40,500.	32,400.	16,200.	0.
Heat Rate (LHV)	Btu/kWh	9,480.	12,510.	13,140.	13,910.	14,800.	15,900.	17,460.	19,850.	32,120.	0.
Heat Cons. (LHV) X 10^6	Btu/h	1,537.7	1,014.6	959.2	902.8	840.6	774.3	707.1	643.1	520.3	391.7
Exhaust Flow X 10^3	lb/h	3412.	2347.	2255.	2161.	2104.	2102.	2100.	2098.	2094.	2090.
Exhaust Temp.	Deg F.	1131.	1200.	1200.	1200.	1174.	1113.	1054.	997.	888.	785.
Exhaust Heat (LHV) X 10^6	Btu/h	928.1	699.4	673.4	646.4	613.8	577.2	540.1	505.7	441.7	N/A

EMISSIONS

NOx	ppmvd @ 15% O2	9.	9.	9.	88.	80.	69.	76.	64.	73.	65.
NOx AS NO2	lb/h	57.	37.	35.	318.	269.	213.	214.	164.	150.	103.
CO	ppmvd	9.	9.	9.	498.	593.	797.	44.	165.	102.	102.
CO	lb/h	28.	19.	18.	973	1132.	1521.	84.	317.	198.	199.
UHC	ppmvw	7.	7.	7.	67.	112.	264.	20.	74.	29.	89.
UHC	lb/h	14.	9.	9.	82.	133.	312.	24.	87.	34.	105.
VOC	ppmvw	1.4	1.4	1.4	13.4	22.4	52.8	4.	14.8	5.8	17.8
VOC	lb/h	2.8	1.8	1.8	16.4	26.6	62.4	4.8	17.4	6.8	21.
Particulates	lb/h	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0

EXHAUST ANALYSIS % VOL.

Argon	0.88	0.89	0.89	0.88	0.89	0.90	0.90	0.90	0.90	0.91
Nitrogen	73.90	74.07	74.12	74.18	74.29	74.49	74.69	74.88	75.25	75.60
Oxygen	12.27	12.76	12.90	13.05	13.39	13.96	14.52	15.07	16.13	17.14
Carbon Dioxide	3.81	3.59	3.52	3.45	3.30	3.04	2.79	2.54	2.06	1.60
Water	9.14	8.70	8.57	8.44	8.13	7.62	7.11	6.62	5.67	4.76

SITE CONDITIONS

Elevation	ft.	91.0
Site Pressure	psia	14.65
Inlet Loss	in Water	4.0
Exhaust Loss	in Water	5.0
Relative Humidity	%	60
Application		
Combustion System		9/42 DLN Combustor

Emission information based on GE recommended measurement methods. NOx emissions are corrected to 15% O2 without heat rate correction and are not corrected to ISO reference condition per 40CFR 60.335(c)(1). NOx levels shown will be controlled by algorithms within the SPEEDTRONIC control system.

IPS- version code- 1.5.1 Opt: N 72411298
SANDERJO 9/14/99 13:22 ReliantOsceola.dat

Reliant Energy/Osceola Project

ESTIMATED PERFORMANCE PG7241(FA)

Load Condition		BASE	50%	45%	40%	35%	30%	25%	20%	10%	FSNL
Ambient Temp.	Deg F.	19.	19.	19.	19.	19.	19.	19.	19.	19.	19.
Fuel Type		Methane	Methane	Methane	Methane	Methane	Methane	Methane	Methane	Methane	Methane
Fuel LHV	Btu/lb	21,515	21,515	21,515	21,515	21,515	21,515	21,515	21,515	21,515	21,515
Fuel Temperature	Deg F	130	130	130	130	130	130	130	130	130	130
Output	kW	187,000.	93,500.	84,200.	74,800.	65,500.	56,100.	46,800.	37,400.	18,700.	0.
Heat Rate (LHV)	Btu/kWh	9,140.	11,880.	12,470.	13,160.	13,870.	14,850.	16,250.	18,390.	29,420.	0.
Heat Cons. (LHV) X 10^6	Btu/h	1,709.2	1,110.8	1,050.	984.4	908.5	833.1	760.5	687.8	550.2	407.4
Exhaust Flow X 10^3	lb/h	3791.	2486.	2368.	2270.	2267.	2265.	2262.	2260.	2255.	2251.
Exhaust Temp.	Deg F.	1071.	1174.	1185.	1181.	1117.	1054.	994.	934.	823.	719.
Exhaust Heat (LHV) X 10^6	Btu/h	1008.8	750. 1	723.0	691.6	649.8	608.9	570.3	531.9	462.1	N/A

EMISSIONS

NOx	ppmvd @ 15% O2	9.	9.	9.	9.	90.	101.	84.	71.	79.	70.
NOx AS NO2	lb/h	63.	40.	38.	36.	327.	336.	254.	194.	171.	115.
CO	ppmvd	9.	9.	9.	9.	643.	18.	73.	295.	102.	102.
CO	lb/h	31.	20.	19.	19.	1335.	37.	152.	619.	215.	216.
UHC	ppmvw	7.	7.	7.	7.	142.	8.	33.	132.	39.	129.
UHC	lb/h	15.	10.	9.	9.	180.	10.	42.	167.	49.	162.
VOC	ppmvw	1.4	1.4	1.4	1.4	28.4	1.6	6.6	26.4	7.8	25.8
VOC	lb/h	3.	2.	1.8	1.8	36.	2.	8.4	33.4	9.8	32.4
Particulates	lb/h	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0

EXHAUST ANALYSIS % VOL.

Argon	0.91	0.89	0.90	0.90	0.89	0.91	0.91	0.92	0.91	0.91
Nitrogen	74.97	75.06	75.08	75.15	75.37	75.58	75.78	75.99	76.38	76.75
Oxygen	12.51	12.75	12.83	13.02	13.63	14.22	14.81	15.38	16.49	17.54
Carbon Dioxide	3.83	3.72	3.69	3.60	3.33	3.06	2.79	2.53	2.03	1.56
Water	7.79	7.58	7.51	7.33	6.78	6.24	5.71	5.19	4.20	3.25

SITE CONDITIONS

Elevation	ft.	91.0
Site Pressure	psia	14.65
Inlet Loss	in Water	4.0
Exhaust Loss	in Water	5.0
Relative Humidity	%	60
Application		
Combustion System		9/42 DLN Combustor

Emission information based on GE recommended measurement methods. NOx emissions are corrected to 15% O2 without heat rate correction and are not corrected to ISO reference condition per 40CFR 60.335(c)(1). NOx levels shown will be controlled by algorithms within the SPEEDTRONIC control system.

IPS- version code- 1 . 5 . 1 Opt: N 72411298
SANDERJO 9/14/99 13:18 ReliantOsceola.dat

Reliant Energy/Osceola Project

ESTIMATED PERFORMANCE PG7241(FA)

Load Condition		BASE	50%	45%	40%	35%	30%	25%	20%	10%	FSNL
Ambient Temp.	Deg F.	94.	94.	94.	94.	94.	94.	94.	94.	94.	94.
Fuel Type		Dist.	Dist.	Dist.	Dist.	Dist.	Dist.	Dist.	Dist.	Dist.	Dist.
Fuel LHV	Btu/lb	18,300	18,300	18,300	18,300	18,300	18,300	18,300	18,300	18,300	18,300
Fuel Temperature	Deg F	80	80	80	80	80	80	80	80	80	80
Liquid Fuel H/C Ratio		1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Output	kW	161,700.	80,900.	72,800.	64,700.	56,600.	48,500.	40,400.	32,300.	16,200.	0.
Heat Rate (LHV)	Btu/kWh	10,230.	13,310.	13,950.	14,740.	15,670.	16,760.	17,790.	20,220.	32,610.	0.
Heat Cons. (LHV) X 10^6	Btu/h	1,654.2	1,076.8	1,015.6	953.7	886.9	812.9	718.7	653.1	528.3	390.3
Exhaust Flow X 10^3	lb/h	3359.	2344.	2255.	2163.	2095.	2086.	2052.	2050.	2046.	2042.
Exhaust Temp.	Deg F.	1139.	1200.	1200.	1200.	1183.	1129.	1106.	1044.	928.	819.
Exhaust Heat (LHV) X 10^6	Btu/h	935.2	705.8	679.2	651.8	620.5	583.3	551.6	515.6	449.4	N/A
Water Flow	lb/h	102,750.	51,710.	46,890.	42,100.	36,670.	30,160.	0.	0.	0.	0.

EMISSIONS

NOx	ppmvd @ 15% O2	42.	42.	42.	42.	42.	42.	127.	108.	79.	64.
NOx AS NO2	lb/h	292.	186.	175.	164.	152.	139.	372.	286.	168.	104.
CO	ppmvd	20.	38.	45.	53.	71.	125.	161.	262.	432.	708.
CO	lb/h	59.	80.	89.	101.	132.	234.	303.	495.	820.	1349.
UHC	ppmvw	7.	7.	8.	8.	10.	14.	16.	24.	53.	113.
UHC	lb/h	13.	9.	10.	10.	12.	16.	19.	28.	60.	129.
VOC	ppmvw	3.5	3.5	4.	4.	5.	7.	8.	12.	26.5	56.5
VOC	lb/h	6.5	4.5	5.	5.	6.	8.	9.5	14.	30.	64.5
Particulates	lb/h	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0

EXHAUST ANALYSIS % VOL.

Argon	0.85	0.87	0.87	0.86	0.87	0.87	0.90	0.90	0.89	0.90
Nitrogen	70.63	71.80	71.99	72.19	72.49	72.99	74.89	75.02	75.26	75.48
Oxygen	10.88	11.86	12.06	12.28	12.65	13.32	14.42	14.98	16.05	17.06
Carbon Dioxide	5.59	5.13	5.03	4.92	4.72	4.35	3.94	3.58	2.89	2.23
Water	12.06	10.35	10.06	9.76	9.28	8.48	5.85	5.53	4.91	4.33

SITE CONDITIONS

Elevation	ft.	91.0
Site Pressure	psia	14.65
Inlet Loss	in Water	4.0
Exhaust Loss	in Water	5.0
Relative Humidity	%	44
Application		
Combustion System		9/42 DLN Combustor

Emission information based on GE recommended measurement methods. NOx emissions are corrected to 15% O2 without heat rate correction and are not corrected to ISO reference condition per 40CFR 60.335(c)(1). NOx levels shown will be controlled by algorithms within the SPEEDTRONIC control system.

Distillate Fuel is Assumed to have 0.015% Fuel-Bound Nitrogen, or less.
FBN Amounts Greater Than 0.015% Will Add to the Reported NOx Value.

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Reliant Energy/Osceola Project

ESTIMATED PERFORMANCE PG7241(FA)

Load Condition		BASE	50%	45%	40%	35%	30%	25%	20%	10%	FSNL
Ambient Temp.	Deg F.	73.	73.	73.	73.	73.	73.	73.	73.	73.	73.
Fuel Type		Dist.	Dist.	Dist.	Dist.	Dist.	Dist.	Dist.	Dist.	Dist.	Dist.
Fuel LHV	Btu/lb	18,300	18,300	18,300	18,300	18,300	18,300	18,300	18,300	18,300	18,300
Fuel Temperature	Deg F	80	80	80	80	80	80	80	80	80	80
Liquid Fuel H/C Ratio		1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Output	kW	175,900.	88,000.	79,200.	70,400.	61,600.	52,800.	44,000.	35,200.	17,600.	0.
Heat Rate (LHV)	Btu/kWh	10,040.	12,950.	13,550.	14,280.	15,100.	16,110.	17,000.	19,240.	30,740.	0.
Heat Cons. (LHV) X 10^6	Btu/h	1,766.	1,139.6	1,073.2	1,005.3	930.2	850.6	748.	677.2	541.	394.7
Exhaust Flow X 10^3	lb/h	3550.	2402.	2308.	2211.	2156.	2146.	2107.	2104.	2099.	2094.
Exhaust Temp.	Deg F.	1117.	1200.	1200.	1200.	1171.	1115.	1092.	1028.	906.	793.
Exhaust Heat (LHV) X 10^6	Btu/h	983.1	735.5	706.8	676.8	641.0	601.6	567.7	529.1	457.0	N/A
Water Flow	lb/h	114,710.	58,740.	53,260.	47,810.	41,160.	33,840.	0.	0.	0.	0.

EMISSIONS

NOx	ppmvd @ 15% O2	42	42.	42.	42.	42.	42.	138.	117	84.	67.
NOx AS NO2	lb/h	312.	197.	185.	173.	160.	146.	420.	321.	183.	110.
CO	ppmvd	20.	34.	40.	47.	69.	124.	159.	265.	448.	756.
CO	lb/h	62.	72.	81.	92.	133.	240.	309	515.	877.	1480.
UHC	ppmvw	7.	7.	7.	8.	10.	14.	16.	24.	56.	125
UHC	lb/h	14.	9.	9.	10.	12.	17.	19.	29.	65.	145.
VOC	ppmvw	3.5	3.5	3.5	4.	5.	7.	8.	12	28.	62.5
VOC	lb/h	7.	4.5	4.5	5.	6.	8.5	9.5	14.5	32.5	72.5
Particulates	lb/h	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0

EXHAUST ANALYSIS % VOL.

Argon	0.85	0.85	0.87	0.87	0.87	0.87	0.90	0.91	0.91	0.93
Nitrogen	70.92	71.98	72.19	72.40	72.80	73.34	75.43	75.56	75.82	76.05
Oxygen	10.87	11.66	11.88	12.10	12.59	13.30	14.48	15.06	16.19	17.25
Carbon Dioxide	5.65	5.31	5.19	5.08	4.82	4.43	4.00	3.62	2.89	2.20
Water	11.71	10.20	9.88	9.55	8.93	8.06	5.19	4.85	4.20	3.58

SITE CONDITIONS

Elevation	ft.	91.0
Site Pressure	psia	14.65
Inlet Loss	in Water	4.0
Exhaust Loss	in Water	5.0
Relative Humidity	%	60
Application		
Combustion System		9/42 DLN Combustor

Emission information based on GE recommended measurement methods. NOx emissions are corrected to 15% O2 without heat rate correction and are not corrected to ISO reference condition per 40CFR 60.335(c)(1). NOx levels shown will be controlled by algorithms within the SPEEDTRONIC control system.

Distillate Fuel is Assumed to have 0.015% Fuel-Bound Nitrogen, or less.
FBN Amounts Greater Than 0.015% Will Add to the Reported NOx Value.

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Reliant Energy/Osceola Project

ESTIMATED PERFORMANCE PG7241(FA)

Load Condition		BASE	50%	45%	40%	35%	30%	25%	20%	10%	FSNL
Ambient Temp.	Deg F.	19.	19.	19.	19.	19.	19.	19.	19.	19.	19.
Fuel Type		Dist.	Dist.	Dist.	Dist.	Dist.	Dist.	Dist.	Dist.	Dist.	Dist.
Fuel LHV	Btu/lb	18,300	18,300	18,300	18,300	18,300	18,300	18,300	18,300	18,300	18,300
Fuel Temperature	Deg F	80	80	80	80	80	80	80	80	80	80
Liquid Fuel H/C Ratio		1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Output	kW	196,400.	98,200.	88,400.	78,600.	68,700.	58,900.	49,100.	39,300.	19,600.	0.
Heat Rate (LHV)	Btu/kWh	9,830.	12,530.	13,120.	13,710.	14,380.	15,310.	16,090.	18,170.	28,870.	0.
Heat Cons. (LHV) X 10^6	Btu/h	1,930.6	1,230.4	1,159.8	1,077.6	987.9	901.8	790.	714.1	565.9	410.7
Exhaust Flow X 10^3	lb/h	3948.	2511.	2391.	2338.	2325.	2313.	2269.	2266.	2260.	2255.
Exhaust Temp.	Deg F.	1047.	1174.	1185.	1155.	1099.	1044.	1021.	957.	837.	727.
Exhaust Heat (LHV) X 10^6	Btu/h	1058.9	779.2	750.1	712.3	668.3	626.7	591.0	550.8	474.2	N/A
Water Flow	lb/h	130,080.	69,100.	63,360.	55,230.	46,340.	38,210.	0.	0.	0.	0.

EMISSIONS

NOx	ppmvd @ 15% O2	42.	42.	42.	42.	42.	42.	150	127.	91.	72.
NOx AS NO2	lb/h	341.	213.	200.	185.	170.	155.	482.	368.	208.	123.
CO	ppmvd	20.	34.	37.	54	98.	178.	228.	304.	520.	884.
CO	lb/h	70.	76.	78.	114.	205.	374.	482	644.	1106.	1879.
UHC	ppmvw	7.	7.	7.	9.	12.	17.	20.	30.	70.	159.
UHC	lb/h	16.	10.	9.	11.	16.	22.	25.	38.	88.	198.
VOC	ppmvw	3.5	3.5	3.5	4.5	6.	8.5	10.	15.	35.	79.5
VOC	lb/h	8.	5.	4.5	5.5	8.	11.	12.5	19	44.	99.
Particulates	lb/h	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0

EXHAUST ANALYSIS % VOL.

Argon	0.85	0.87	0.86	0.88	0.89	0.90	0.91	0.92	0.92	0.91
Nitrogen	71.89	72.58	72.73	73.18	73.77	74.33	76.56	76.70	76.95	77.20
Oxygen	11.24	11.54	11.67	12.18	12.92	13.63	14.87	15.45	16.58	17.65
Carbon Dioxide	5.58	5.50	5.44	5.16	4.77	4.38	3.94	3.56	2.83	2.14
Water	10.44	9.52	9.30	8.60	7.66	6.77	3.72	3.37	2.72	2.10

SITE CONDITIONS

Elevation	ft.	91.0
Site Pressure	psia	14.65
Inlet Loss	in Water	4.0
Exhaust Loss	in Water	5.0
Relative Humidity	%	60
Application		
Combustion System		9/42 DLN Combustor

Emission information based on GE recommended measurement methods. NOx emissions are corrected to 15% O2 without heat rate correction and are not corrected to ISO reference condition per 40CFR 60.335(e)(1). NOx levels shown will be controlled by algorithms within the SPEEDTRONIC control system.

Distillate Fuel is Assumed to have 0.015% Fuel-Bound Nitrogen, or less.
FBN Amounts Greater Than 0.015% Will Add to the Reported NOx Value.

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Jan-97	3.319	4.953	1.634
Feb-97	2.311	4.427	2.116
Mar-97	2.151	4.033	1.882
Apr-97	2.256	4.019	1.763
May-97	2.489	4.104	1.615
Jun-97	2.412	3.872	1.460
Jul-97	2.383	3.928	1.545
Aug-97	2.716	4.022	1.305
Sep-97	3.123	3.964	0.841
Oct-97	3.494	4.282	0.788
Nov-97	3.291	4.131	0.840
Dec-97	2.649	3.717	1.068
Jan-98	2.355	3.439	1.084
Feb-98	2.511	3.310	0.800
Mar-98	2.504	3.122	0.618
Apr-98	2.724	3.195	0.471
May-98	2.405	3.070	0.666
Jun-98	2.419	2.917	0.498
Jul-98	2.411	2.821	0.410
Aug-98	2.106	2.649	0.543
Sep-98	2.279	3.080	0.801
Oct-98	2.464	2.992	0.528
Nov-98	2.560	2.652	0.092
Dec-98	2.176	2.355	0.179
Jan-99	2.080	2.476	0.396
Feb-99	2.013	2.282	0.269
Mar-99	2.051	2.850	0.799
Apr-99	2.406	3.173	0.767
May-99	2.526	3.097	0.571
Jun-99	2.596	3.222	0.625

Pipeline Co Name	Pipeline Co ID	Year	Month	Trans. Quantity MDth	Days	Dth/d	Capacity	Avail	LF
Florida Gas Transmission Co.	06880	1996	1	37236000	31	1,201,161	1,410,000	208,839	85.2%
Florida Gas Transmission Co.	06880	1996	2	31451000	28	1,123,250	1,410,000	286,750	79.7%
Florida Gas Transmission Co.	06880	1996	3	34377000	31	1,108,935	1,410,000	301,065	78.6%
Florida Gas Transmission Co.	06880	1996	4	38143000	30	1,271,433	1,410,000	138,567	90.2%
Florida Gas Transmission Co.	06880	1996	5	47231000	31	1,523,581	1,410,000	-113,581	108.1%
Florida Gas Transmission Co.	06880	1996	6	41394000	30	1,379,800	1,410,000	30,200	97.9%
Florida Gas Transmission Co.	06880	1996	7	43846000	31	1,414,387	1,410,000	-4,387	100.3%
Florida Gas Transmission Co.	06880	1996	8	47123000	31	1,520,097	1,410,000	-110,097	107.8%
Florida Gas Transmission Co.	06880	1996	9	46517000	30	1,550,567	1,410,000	-140,567	110.0%
Florida Gas Transmission Co.	06880	1996	10	42568000	31	1,373,161	1,410,000	36,839	97.4%
Florida Gas Transmission Co.	06880	1996	11	34557000	30	1,151,900	1,410,000	258,100	81.7%
Florida Gas Transmission Co.	06880	1996	12	30559000	31	985,774	1,410,000	424,226	69.9%
Florida Gas Transmission Co.	06880	1997	1	30530000	31	984,839	1,410,000	425,161	69.8%
Florida Gas Transmission Co.	06880	1997	2	33931000	28	1,211,821	1,410,000	198,179	85.9%
Florida Gas Transmission Co.	06880	1997	3	45104000	31	1,454,968	1,410,000	-44,968	103.2%
Florida Gas Transmission Co.	06880	1997	4	44382000	30	1,479,400	1,410,000	-69,400	104.9%
Florida Gas Transmission Co.	06880	1997	5	45194000	31	1,457,871	1,410,000	-47,871	103.4%
Florida Gas Transmission Co.	06880	1997	6	45462000	30	1,515,400	1,410,000	-105,400	107.5%
Florida Gas Transmission Co.	06880	1997	7	49512000	31	1,597,161	1,410,000	-187,161	113.3%
Florida Gas Transmission Co.	06880	1997	8	44734000	31	1,443,032	1,410,000	-33,032	102.3%
Florida Gas Transmission Co.	06880	1997	9	40331000	30	1,344,367	1,410,000	65,633	95.3%
Florida Gas Transmission Co.	06880	1997	10	36259000	31	1,169,645	1,410,000	240,355	83.0%
Florida Gas Transmission Co.	06880	1997	11	35265000	30	1,175,500	1,410,000	234,500	83.4%
Florida Gas Transmission Co.	06880	1997	12	39296000	31	1,267,613	1,410,000	142,387	89.9%
Florida Gas Transmission Co.	06880	1998	1	37046000	31	1,195,032	1,410,000	214,968	84.8%
Florida Gas Transmission Co.	06880	1998	2	32217000	28	1,150,607	1,410,000	259,393	81.6%
Florida Gas Transmission Co.	06880	1998	3	37139000	31	1,198,032	1,410,000	211,968	85.0%
Florida Gas Transmission Co.	06880	1998	4	32839000	30	1,087,967	1,410,000	322,033	77.2%
Florida Gas Transmission Co.	06880	1998	5	41418000	31	1,336,065	1,410,000	73,935	94.8%
Florida Gas Transmission Co.	06880	1998	6	47818000	30	1,593,933	1,410,000	-183,933	113.0%
Florida Gas Transmission Co.	06880	1998	7	47774000	31	1,541,097	1,410,000	-131,097	109.3%
Florida Gas Transmission Co.	06880	1998	8	44600000	31	1,438,710	1,410,000	-28,710	102.0%
Florida Gas Transmission Co.	06880	1998	9	42900000	30	1,430,000	1,410,000	-20,000	101.4%
Florida Gas Transmission Co.	06880	1998	10	45582000	31	1,470,387	1,410,000	-60,387	104.3%

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

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
James M. Goodwin, PE
Reliant Energy W. H.
PO Box 4455
Houston, TX 77034

4a. Article Number
Z 333 618 129

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

7. Date of Delivery
AUG 30 1999

5. Received By: *(Print Name)*

6. Signature: *(Addressee or Agent)*
X

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

Is your RETURN ADDRESS completed on the reverse side?

Thank you for using Return Receipt Service.

PS Form **3811**, December 1994 102595-98-B-0229 Domestic Return Receipt

Z 333 618 129

US Postal Service
Receipt for Certified Mail
No Insurance Coverage Provided.
Do not use for International Mail *(See reverse)*

Sent to James Goodwin	
Street & Number Reliant Energy	
Post Office, State, & ZIP Code Houston TX	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date 8-25-99	

PS Form **3800**, April 1995

970071-001-AC
PSD-FI-273

Technical Review of Prevention of Significant Deterioration Permit Application
For the Construction of a 510 MW Power Production Facility
Osceola Power Project
Osceola County, Florida
PSD-FL-273

by

Air Quality Branch, Fish and Wildlife Service – Denver
August 31, 1999

Reliant Energy Osceola, L.L.C. (Osceola) proposes to construct a 510 MW power production facility, composed of three 170 MW General Electric GE PG7241 (FA) simple cycle gas/oil turbines. The facility would be located in Osceola County, Florida, 155 km southeast of Chassahowitzka Wilderness, a Class I area administered by the U.S. Fish and Wildlife Service (FWS).

This project will result in PSD-significant increases in emissions of nitrogen oxides (NO_X), sulfur dioxide (SO_2), sulfuric acid mist (SAM), particulate matter (PM-10), and carbon monoxide (CO). Emissions (in tons per year – TPY) are summarized below.

POLLUTANT	EMISSIONS INCREASE (TPY)
NO_X	1,074
SO_2	297
SAM	46
PM-10	129
CO	246

Best Available Control Technology (BACT) Analysis

Only NO_x emissions are of concern from a control technology standpoint for this type of application because NO_x emissions are highly dependent upon the combustor type and any add-on controls. Emissions of other pollutants depend primarily on good combustion techniques. (Although CO emissions will also be controlled, they have no effect beyond the immediate vicinity.)

Osceola has proposed to meet NO_x limits of 10.5 parts per million by volume on a dry basis (ppmvd) corrected to 15% oxygen by use of Dry Low-NO_x (DLN) combustors while burning natural gas. When burning oil, Osceola proposes to limit NO_x to 42 ppm through the use of water injection.

While we agree with the control technologies proposed by Osceola, we also believe that it can better utilize these technologies to achieve lower NO_x emissions. For example, table 1.d (enclosed) indicates that emissions in the 9-ppm range are readily achievable and feasible on the overwhelming majority of newer simple-cycle units with DLN. For example, a permit issued recently by the Virginia department of Environmental Quality for identical GE PG7241 (FA) simple cycle combustion turbines in Fauquier County, Virginia limited NO_x emissions to 9 ppm as a one-hour average.

Contact: Ellen Porter, Air Quality Branch (303) 969-2617.

Table 1.a Gas Turbine Limits from RBLC

	Project Description					Power				Permit	NOx Emission Limits			
											Dry Lox-NOx Comb.		SCR	
Facility Name	Simple Cycle	Combined Cycle	Peak Base	Turbine Type	Duct Burner	MW	mmBtu/hr	HP	Permit #	Issue Date	Gas (ppm)	Oil (ppm)	Gas (ppm)	Oil (ppm)
Alabama Power Company		Y			Y	100	353	10566	AL-0115	Dec-97	15.0			
American Cogen Tech.										Sep-85			17.0	
Arrowhead Cogen										Dec-89			9.0	
Auburndale Power Part.						356	1214	36298	FL-0080	Dec-92	15.0	25.0		
Baf Energy										Jul-87			9.0	
Baltimore Gas & Electric						140	495	14792	MD-0019		15.0			
Bear Island Paper		Y			Y	139	474	14172	VA-0190	Oct-92			9.0	15.0
Berkshire, MA		Y				272							3.5	9.0
Bermuda Hundred										Mar-92			9.0	15.0
Blue Mtn. Pwr.					Y	153	541	16166	PA-0148	Jul-96	Y	Y	4.0	8.4
Brooklyn Navy Yard Cogen		Y				240	848	25358	NY-0044	Jun-95			3.5	10.0
Cimarron Chemical						0			CO-0020	Mar-91				
Cogen Technologies										Jun-87			9.6	
Doswell Ltd.										May-90			9.0	
Ecoelectrica		Y				461	1629	48709	PR-0004	Oct-96			7.0	9.0
Fleetwood Cogeneration					Y	105	360	10764	PA-0099	Apr-94			15.0	
Florida Power--Polk		Y					1510		FL-0082	Feb-94	12.0	42.0		
Formosa Plastics		Y				132	450	13455	LA-0093	Mar-97	9.0			
Formosa Plastics		Y				132	450	13455	LA-0089	Mar-95	9.0			
Gainesville Regional Utilities	Y					74	262	7819	FL-0092	Apr-95	15.0			
Goal Line						113	386	11541	CA-0544	Nov-92			5.0	
Gordonsville Energy					Y	445	1520	45433	VA-0189	Sep-92			9.0	
Granite Road Limited						135	461	13781	CA-0441	May-92			3.5	
Grays Ferry		Y			Y	337	1150	34384	PA-0098	Nov-92	9.0			
Hermiston Generating		Y				497	1696	50709	OR-0011	Apr-94			4.5	
Kalamazoo Power						529	1806	53995	MI-0206	Dec-91	15.0			
Kamine/Besicorp						190	650	19434	NY-0049	Nov-92	9.0		9.0	
Kamine/Besicorp						191	653	19524	NY-0048	Nov-92	9.0		9.0	
Kingsburg Energy					Y	35	122	3645	CA-0347	Sep-89			6.0	
Kissimmee Utility Authority						255	869	25982	FL-0078	Apr-93	15.0			
Lakewood Cogen										Apr-91			9.0	
Lakewood Cogeneration						56	190	5681	NJ-0013	Apr-91			9.0	
Las Vegas Cogen										Oct-90			10.0	
Linden Cogeneration		Y				165	583	17434	NJ-0011	Aug-91				
Lordsburg						100	353	10566	NM-0031	Jun-97	15.0			
Lsp-Cottage Grove						577	1970	58901	MN-0022	Mar-95			4.5	
Mid-Ga Cogen						116	410	12257	GA-0063	Apr-96			9.0	20.0
Milagro, Williams Field Ser.						10983	37500	1121220	NM-0024					
Narragansett Electric					Y	398	1360	40663	RI-0010	Jun-96			9.0	
Newark Bay Cogen						171	585	17491	NJ-0009	Nov-90			8.3	
Newark Bay Cogen						181	617	18448	NJ-0017	Jun-93			8.3	16.0
Ocean State Power										Dec-88			9.0	
Ois Energy										Jan-86			9.0	
Orange Cogen						108	368	11012	FL-0068	Dec-93	15.0			
Panda-Kathleen		Y				75	265	7925	FL-0102	Jun-95	15.0			
Pasny/Holtsville		Y				336	1146	34264	NY-0047	Sep-92	9.0			
Pawtucket Power										Jan-89			9.0	
Pedricktown Cogen						293	1000	29899	NJ-0010	Feb-90			9.0	

Table 1.a Gas Turbine Limits from RBLC

	Project Description					Power				Permit	NOx Emission Limits			
											Dry Lox-NOx Comb.		SCR	
Facility Name/Location	Simple Cycle	Combined Cycle	Peak Base	Turbine Type	Duct Burner	MW	mmBtu/hr	HP	Permit #	Issue Date	Gas (ppm)	Oil (ppm)	Gas (ppm)	Oil (ppm)
Phoenix Power Part						0				May-93	22.0			
Pilgrim Energy Center					Y	410	1400	41859	NY-0075	Apr-95			4.5	
Portland General Elec						504	1720	51427	OR-0010	May-94			4.5	
Puerto Rico Electric Power	Y					248	876	26204	PR-0002	Jul-95			10.0	42.0
Richmond Power Enterprise										Dec-89			8.2	
Saguaro Power Company						35	122	3645	NV-0015	Jun-91			9.0	
Saranac Energy Company					Y	329	1123	33577	NY-0046	Jul-92			9.0	
Selkirk Cogen					Y	344	1173	35072	NY-0045	Jun-92			9.0	
Seminole Fertilizer										Mar-91			9.0	
Seminole Fertilizer Corp						26	92	2747	FL-0059	Mar-91			9.0	
Seminole Hardee Unit 3		Y				2 x 244	981	29331	FL-0104	Jan-96	15.0		12.0	
Sithe/Independence		Y				625	2133	63775		Nov-92			4.5	
So. Cal. Gas										Oct-91			8.0	
Southern CA Gas						0			CA-0418	Oct-91			8.0	
Southern CA Gas						54	184	5500	CA-0463	Oct-91			8.0	
Sumas Energy										Jun-91			8.0	
Sumas Energy										Dec-90			9.0	
Sumas Energy Inc						88	311	9298	WA-0027	Dec-92			6.0	
Sunlaw										Jun-85			9.0	
SW PSCo						100	353	10566	NM-0028	Nov-96	15.0			
SW PSCo						100	353	10566	NM-0029	Feb-97	?			
Talahassee		Y				260					12.0	42.0		
Tenaska WA Partners		Y			Y	1	2	55	WA-0275	May-92			7.0	
Tiger Bay						473	1615	48281	FL-0072	May-92	15.0			
Union Oil										Mar-86			2.5	
Unocal						0			CA-0613	Jul-89			9.0	
Western Power Sys										Mar-86			9.0	
Willamette Ind.										Apr-85			15.0	

Table 1.b Permits Pending or Not Yet in RBLC

	Project Description					Power				Permit	NOx Emission Limits			
											Dry Lox-NOx Comb.		SCR	
	Simple	Combined	Peak	Turbine	Duct					Issue	Gas	Oil	Gas	Oil
Facility Name/Location	Cycle	Cycle	Base	Type	Burner	MW	mmBtu/hr	HP	Permit #	Date	(ppm)	(ppm)	(ppm)	(ppm)
AES--Red Oak		Y		GE 7241 (FA)		3 x186	3 x 1748		NJ					
Alabama Pwr--Theodore		Y			Y	210			AL				3 5	
Androscoggin Energy		Y			Y	3 x 50	3 x 619		ME				6 0	42 0
ARCO Watson Project						45			CA	Oct-97			5 0	
Black Hills Pwr-Niel Simpson #2	Y		Peak	GE LM6000 aero		2 x 40			WY		25.0			
Black Hills Power--Rapid City	Y		Peak	aerodenvative		3x40			SD		25.0			
Bridgeport Energy Project													6.0	
Brush	Y		Peak			2 x 25			CO		42 (1)			
Calpine--South Point		Y			Y	500			AZ		Y		3.0	
Casco Bay Energy		Y				520	1838	54943	ME				5.0	
Cogen Tech. Linden Venture		Y				581	1983	59275	NJ				3.5	
Col. Springs--Nixon	Y		Peak	GE Frame 6		2 x 33			CO		25.0			
Desert Basin Gen		Y					2 x 1940		AZ				4.5	
Dighton, MA									MA				3.5	
Duke Energy--New Smyrna		Y		GE PG7241FA		2 x 165			FL		12.0			
Enron (LAER)									CA				2.5	
FPC--Hines		Y		W 501Frame		2 x 165			FL				6.0	
FPC--Polk		Y				2x235			FL					
Ft. Lupton	Y		Peak			4 x 40			CO		22 (1)			
Frontera Power		Y				330			TX		15.0			
Griffith Energy		Y			Y	650			AZ				3.0	
HDPP (LAER)									CA				3.0	
Hermiston Generating		Y							CA	Dec-95			4.5	
High Desert Power		Y							CA		9.0		2 5	
Intercession City	Y					3x			FL		9.0	42.0		
JEA--Brandy Branch	Y			GE PG7241 (FA)		3x170			FL		12.0	42 0		
Kissimmee Utility--Cane Is. #1	Y					40			FL		15.0			
Kissimmee Utility--Cane Is. #3		Y		GE Frame 7A	Y	167			FL		12.0	42.0	6.0	15.0
Lakeland McIntosh CCT		Y				350			FL				7.5	15.0
Lakeland McIntosh SCT	Y					250	883	26415	FL		9.0	42 0		
Lake Worth Gen.		Y		GE Frame 7FA		170			FL		9.0			
LaPoloma Generating		Y				262 x 4			CA				3.0	
Manchief Elec Gen	Y		Base			142 x 2			CO		25/15			
Mississippi Pwr--Daniels		Y				170			MI		Y		3.5	
Northwest Regional Power		Y		GE Frame 7FA		4 x 210	1530	45746	WA		9.0			
Oleander Power	Y		Peak	GE Frame 7A		5 x 190			FL		9.0	42.0		
Orange Generation--Bartow		Y				2 x 41			FL		15 0			
PSCoNM--Afton	Y			GE Frame 7		140	1470		NM		15 0			
Rotterdam, N.Y.									NY				4 5	
Sacramento Power						115			CA	Dec-94			3 0	
Sumas		Y				2 x 350			WA		9.0		4 5	
Sutter						170					Y		3 5	
TECO--Hardee	Y		Peak	GE PG7241 (FA)		2 x 165	2x1947		FL		9.0	42.0		
Tampa Electnc--Polk County	Y		Peak	GE PG7241 (FA)		2 x 165	2x1947		FL		10.5	42.0		
TVA--Gallatin	Y					4 x 85			TN		15.0			
TVA--Johnsonville	Y					4 x 85			TN		15 0			
TX-NM Pwr--Lordsburg		Y		aero		2 x 40			NM		15.0	25 0		
Theodore Co-Gen		Y			Y								3.5	
Three Mountain Power		Y				500			CA				2.5	
Va Power--Faquier Co	Y		Peak	GE PG7241 (FA)		5 x 150	5x1910		VA	Jun-99	9.0	42.0		
Tiverton, RI									RI				3.5	

(1) does not use dry low-NOx combustor technology

Department of Environmental Protection

Jeb Bush
Governor

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

David B. Struhs
Secretary

August 4, 1999

Mr. John Bunyak, Chief
Policy, Planning & Permit Review Branch
NPS-Air Quality Division
Post Office Box 25287
Denver, CO 80225

Re: Reliant Energy Osceola, L.L.C. – Osceola Power Project PSD-FL-273

Dear Mr. Bunyak:

Enclosed for your review and comment is an application for the above-mentioned project. It consists of a new facility to be located in Osceola County, near Holopaw. The new units are proposed to be three nominal 170 MW GE combustion turbines and a fuel oil storage tank.

Your comments can be forwarded to my attention at the letterhead address or faxed to the Bureau at (850) 922-6979. If you have any questions, please contact Mike Halpin at (850) 921-9530.

Sincerely,

8/4

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

AAL/mph

Enclosures

cc: Mike Halpin, BAR

Department of Environmental Protection

Jeb Bush
Governor

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

David B. Struhs
Secretary

August 4, 1999

Mr. Gregg Worley, Chief
Air, Radiation Technology Branch
Preconstruction/HAP Section
U.S. EPA – Region IV
61 Forsyth Street
Atlanta, Georgia 30303

Re: Reliant Energy Osceola, L.L.C. – Osceola Power Project PSD-FL-273

Dear Mr. Worley:

Enclosed for your review and comment is an application for the above-mentioned project. It is a new facility planned to be in Osceola County, near Holopaw. This facility will be comprised of three nominal 170 MW GE Frame 7FA combustion turbines operating in simple cycle mode with one fuel oil storage tank. The proposed project requests that the CT's be fired for up to 3000 hours with pipeline quality natural gas, of which up to 2000 hours may be fired with 0.05% sulfur (No.2) oil.

The applicant proposes NO_X emissions at 10.5 ppmvd on natural gas and 42 ppmvd on fuel oil with annual emissions as per the table below:

Pollutant	Proposed Facility emissions (TPY)
NO_X	1074
SO_2	297
CO	246
PM/PM_{10}	129
VOC	26.7

Your comments can be forwarded to my attention at the letterhead address or faxed to me at (850) 922-6979. If you have any questions, please contact Mike Halpin at (850) 921-9530.

Sincerely,

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

AAL/mph

Enclosures

cc: Mike Halpin, BAR