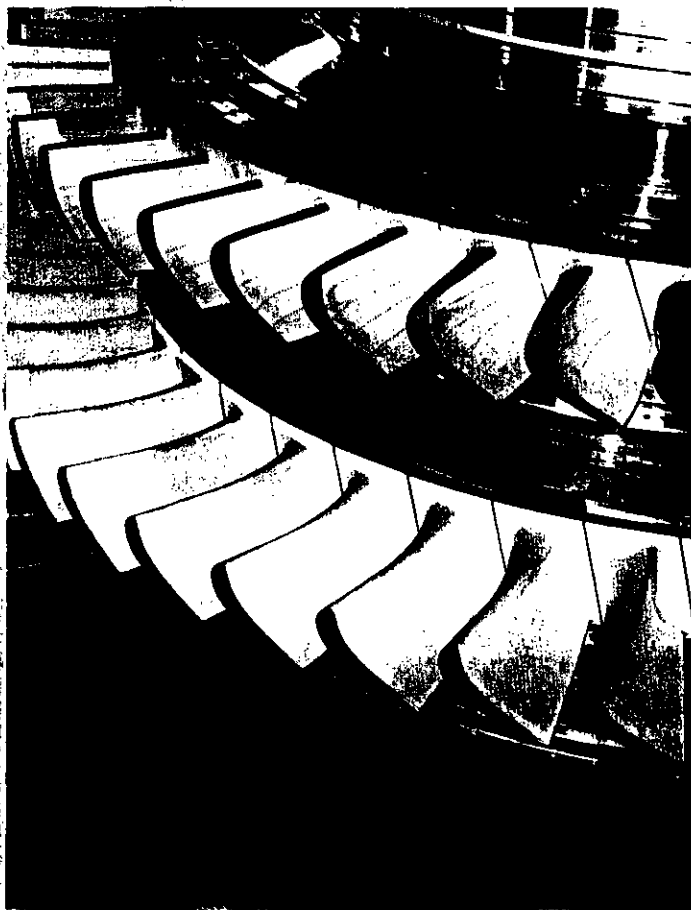


**MITSUBISHI GAS TURBINE**  
**M501F/M701F**



# ***GAS TURBINE M501G/M7***



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BUREAU OF AIR REGULATION

5-17-01

Putting  
These pamphlets were part of  
EPA's "additional info." for  
the Fort Pierce Reservoir  
Project. They really don't  
include any technical info. and  
I don't think we need to  
forward re EPA, NPS, SED.  
JEF

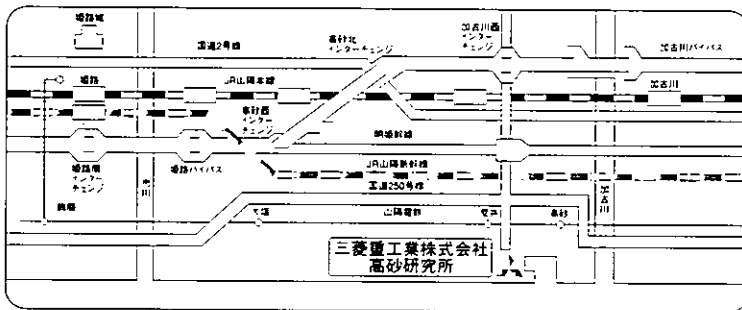
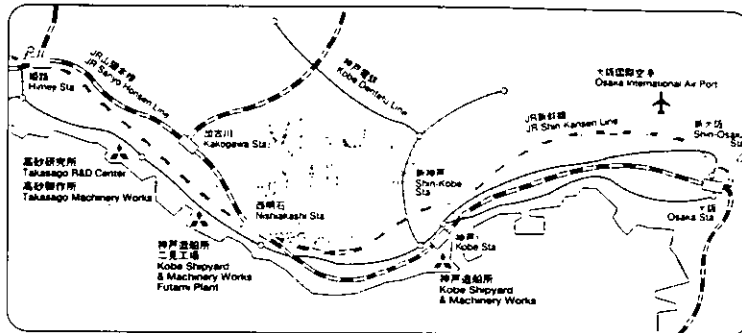
# TAKASAGO

## RESEARCH & DEVELOPMENT CENTER

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- 交通案内
- JR姫路駅下車(新幹線側).....約30分(車)
  - JR加古川駅下車.....約20分(車)
  - 山陽電鉄高砂駅下車.....約5分(車)
  - 山陽電鉄荒井駅下車.....徒歩約25分

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Phone: (052)412-0199

5-17-01  
 2. Why  
 The 2. Why analysis was done  
 to find out the root cause of  
 the problem. The results are  
 attached for your information.  
 I hope you will find it  
 helpful. Thank you for your  
 cooperation.



**Enron North America Corp.**

P.O. Box 1188  
Houston, TX 77251-1188

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BUREAU OF AIR REGULATION

**Via Federal Express Tracking Number 8268 2312 2631**

May 15, 2001

Mr. Jeffery Koerner  
Florida Department of Environmental Protection  
Division of Air Resources Management  
2600 Blair Stone Road  
MS #5505  
Tallahassee, FL 32399-2400

Re: **Response to Request for Additional Information, dated May 4, 2001**  
Project No. 1110102-001-AC (PSD-FL-320)  
Fort Pierce Re-Powering Project, LLC  
St. Lucie County

Dear Mr. Koerner:

Fort Pierce Repowering Project, L.L.C. ("FPRP") has received and reviewed your above referenced information request. Please consider this letter as FPRP's response.

FPRP also requests that the Florida Department of Environmental Protection ("FDEP") consider the following change to the proposed operational configuration. In the permit application for this facility, FPRP requested the ability to operate in two modes, "steam sales" and "simple cycle." FPRP wishes to formally rescind the request to operate in simple cycle mode. The operation of this facility will only occur with the CTG exit gasses traveling through the HRSG and SCR modules. An additional steam condenser will be installed at the facility should a situation arise that would require the facility to operate at a time when FPUA is unable to accept steam. Therefore, in all cases, the emission rates will not exceed those represented in the permit application for "steam sales" mode of operation. No additional operational configurations are being requested at this time. The operation of the steam condenser will not result in any release of emissions and does not require any permitting. However, it is currently uncertain whether additional cooling tower capacity will be needed. Should additional cooling capacity be required, an appropriate permitting request will be made.

Listed below are your numbered information requests, followed by the FPRP response.

1. Commencement of Construction: The application indicates that Enron anticipates commencement of construction by July of 2001. The Department notes that it has

ninety days to take final agency action. This period may become much longer depending on the applicant's initial requests, the information submitted, and additional information needed to complete the application. If the Department intends to issue a draft PSD permit, the applicant must publish a Notice of Intent in a newspaper of general circulation with a 30-day comment period. Please plan accordingly.

**Response:** *FPRP acknowledges that a July 1<sup>st</sup> issuance date may not be feasible.*

2. Overall Project: Enron proposes to install a Model M501F gas turbine manufactured by Mitsubishi Heavy Industries (MHI) adjacent to the H.D. King Electric Generating Plant. Steam produced in the combined cycle mode will be sold to the H.D. King Plant to "re-power" two existing steam turbine generators. Please provide reasonable assurance that the two plants will remain under separate control and therefore separate facilities. If it is determined that the proposed plant is a separate facility, the Department can give little weight to such "re-powering" aspects. Please provide documentation of Fort Pierce Utilities Authority's (FPUA) obligations for purchasing steam from the proposed project for use at the existing H.D. King Plant. FPUA should recognize that reduced operation of existing units at the H.D. King Plant could affect a PSD netting analysis for any future projects involving the addition of new units as well as the replacement or modification of existing units.

**Response:** *FPRP is currently negotiating a final Participation Agreement ("PA") and Tolling Agreement ("TA") with the Fort Pierce Utility Authority ("FPUA"), which provides the commitment for FPUA to purchase steam from the proposed FPRP facility. Additionally, under the terms of these agreements, this facility will remain under the ownership of FPRP. Furthermore, FPUA will have no ownership interest in the proposed facility.*

3. Project Costs: What are the estimated individual equipment costs of the gas turbine and heat recovery steam generator (HRSG)?

**Response:** *The approximate individual equipment costs are as follows:*

<i>Turbine:</i>	<i>\$47,967,731</i>
<i>HRSG:</i>	<i>\$12,338,956</i>

4. Emission Rates: Appendix C provides pollutant emission rates as a function of compressor inlet air temperature, load, fuel type, and duct firing. Please provide the supporting documentation from MHI upon which these emission estimates were based. Please provide written documentation from MHI verifying that the CO and NOx emission rates stated in the application are currently the lowest achievable CO and NOx emission rates for the MHI Model M501F gas turbine. For all mode of operation, what are the estimated particulate matter emission rates excluding the condensables (back-half analysis)?

5. Performance Data: Please provide documentation from MHI to support the technical information (fuel flows, power production, heat input rates, exhaust flow rates, temperatures, exhaust gas oxygen contents, etc.) presented by ECT in Appendix C.

**Response:** *FPRP is currently negotiating with MHI for final guaranteed emission rates. Attached to this letter is a summary spreadsheet received from Mitsubishi Heavy Industries ("MHI") of "expected" emissions numbers from the 501F machine without any post-combustion NOx or CO emission control devices. This spreadsheet also contains other expected technical information such as flow rates, temperatures, and oxygen content.*

*Please note that the "MHI" oil-fired particulate emissions numbers are higher than what is represented in the permit application. The basis of these MHI numbers is the World Bank Standard for which this machine was initially contracted, while firing with a different oil specification. The actual particulate emissions while firing with the oil specification provided in the permit application are expected to be significantly lower and consistent with what was provided in Appendix C. Please also note that the emission numbers while in "steam sales mode", that were provided in Appendix C, represent design specifications for the HRSG with NOx and CO catalysts. The HRSG with catalysts will not be provided by MHI.*

6. Heat Input Rates: Please explain the "5% margin" for heat inputs as identified in Note #1 of Tables C-7A and C-7B. Also, please clarify the slight differences in the maximum heat input rates (mmBTU per hour) listed these tables between simple cycle operation and combined cycle operation (both gas and oil firing).

**Response:** *The 5% heat input margin, as noted in the footnotes to Table C-7A and Table C-7B, was primarily included to account for combustion turbine heat rate degradation over time.*

*Heat input rates for simple cycle and combined cycle modes were provided as lower heating values (LHV) and higher heating values (HHV), respectively. Conversion between the two forms of heat input (i.e., net and gross) were made using approximate HHV/LHV ratios of 1.10 and 1.06 for natural gas and distillate fuel oil, respectively. Use of approximate HHV/LHV ratios resulted in slight differences (approximately one percent or less) in heat inputs between simple and combined cycle modes of operation. Table C-7A, Table C-7B, and Table C-7C have been revised using HHV/LHV ratios of 1.10830 and 1.07216 for natural gas and distillate fuel oil, respectively, to provide better agreement between the tables; revised tables are attached. A revised typical No. 2 fuel oil analysis is also provided with this response.*

7. CEMS: Are the proposed CO and NOx CEM systems capable of monitoring emissions from the simple cycle stack as well as the combined cycle stack?

**Response:** *As previously noted, FPRP is formally requesting that simple cycle configuration be removed from consideration from this permit application.*

8. **Control Equipment:** Enron proposes to install MHI's Model 501F gas turbine with dry low-NOx combustion (gas firing), a heat recovery steam generator (HRSG) with duct firing, a wet injection system to control NOx emissions (oil firing), a conventional selective catalytic reduction (SCR) system to control NOx emissions, and an oxidation catalyst system to control CO emissions.
- a. It appears that the SCR control efficiency is approximately 85% when firing natural gas, but drops to about 70% when firing oil. Please explain the drop in control efficiency and provide supporting documentation. Note that the Department has specified maximum ammonia slip levels of 5 ppm for several recent projects. Please provide information describing MHI's experience with employing high-temperature SCR on gas turbines and boilers. Please detail MHI's experience and success with installing conventional SCR systems on oil-fired gas turbines and boilers in Japan.

***Response: The SCR is designed to provide control of NOx emissions to a rate of 3.5 ppm while firing natural gas. The NOx emission control efficiency is anticipated to be less while firing oil. However, the expected emissions while oil firing was selected as a minimum criteria for the catalyst design and was based upon air permit applications previously approved by the FDEP.***

***As noted above, the MHI CT will not operate in simple cycle mode and therefore high-temperature SCR is no longer a consideration for this project. The HRSG vendor (CMI) will be supplying the conventional SCR control system for steam sales mode operation; i.e., MHI will not be supplying the SCR control system. The MHI machine is not anticipated to vary significantly from other turbine manufacturers of similar sized machines in terms of turbine function and SCR performance. Accordingly, the SCR system should also perform consistently with similar SCR systems employed with these other machines.***

- b. Please provide information from MHI describing their dry low NOx combustion technology including such process details as air/fuel staging, diffusion firing, premix, lean premix, flame stability, etc. Please have MHI describe the current status, future goal, and proposed implementation schedule for lowering NOx emissions with their dry low NOx combustion technology. When does MHI plan to offer dry low-NOx combustors capable of achieving NOx emissions of 15 ppmvd @ 15% oxygen or less? When does MHI plan to offer dry low-NOx combustors capable of achieving NOx emissions of 9 ppmvd @ 15% oxygen or less?

***Response: Additional commercial information is included with this package. However, the MHI burner technology is proprietary in nature. Additionally, FPRP cannot comment on the development status of future MHI burner technology. However, a request has been made to MHI to provide the information requested by DEP. Any additional information regarding this matter received from MHI will be forwarded to DEP.***



- c. Please describe MHI's wet injection system for reducing NOx emissions when firing oil. Is this system capable of achieving NOx emissions lower than 42 ppmvd @ 15% oxygen? What is the feasibility of employing wet injection techniques to further reduce NOx emissions when firing natural gas? What emission levels could be achieved? Does MHI offer other techniques that can reduce NOx emissions below 15 ppmvd @ 15% oxygen when firing natural gas?

**Response:** *The 501F's expected NOx emission rate while firing oil is 42 ppmvd @ 15% oxygen. MHI is not expecting nor guaranteeing any lower NOx emission rates for this machine. Additionally, the MHI 501F expected NOx emissions rate while firing natural gas is 25 ppmvd @ 15% oxygen. These emission rates are being represented by MHI as the best technology currently available for this machine. In addition, there are currently no other techniques identified by MHI, including water injection, which can provide lower emission rates.*

- d. Because the SCONOX™ control system also controls CO emissions, please evaluate the cost effectiveness (dollars per tons of pollutants removed) considering the combined pollutant reduction of both NOx and CO emissions.

**Response:** *A summary table of joint NOx/CO emission, economic, energy, and environmental impacts is attached; reference Table 5-24A. This table provides joint NOx/CO impact estimates for both SCONOX™ and the SCR/oxidation catalyst control systems proposed for the Fort Pierce Repowering Project.*

*The joint NOx/CO average cost effectiveness for SCONOX™ is estimated to be approximately three times higher than the joint NOx/CO average cost effectiveness for SCR and oxidation catalyst controls. In addition, the joint NOx/CO incremental cost effectiveness for SCONOX™ compared to SCR/oxidation catalyst controls is over \$45,000 per ton.*

*Due to the high control costs and unproven performance on large, "F" Class combustion turbines, SCONOX™ is not considered to represent BACT for the Fort Pierce Repowering Project. The SCR and oxidation control technologies proposed for the Fort Pierce Repowering Project represent demonstrated control systems that are consistent with prior Department BACT determinations for combustion turbine projects.*

9. Supplemental Simple Cycle Request: Enron requests 2000 hours per year of simple cycle operation for this project and indicates that such operation is necessary for the following reasons.

- a. The gas turbine will be installed and ready for operation by June of 2002. However, due to HRSG availability, scheduling, and installation concerns, it is anticipated that the combined cycle stage (HRSG, SCR, and oxidation catalyst systems) would not be complete until the end of the third quarter in 2002. Enron requests 2000 hours per year of simple cycle operation to allow the new unit to respond to summer peaking demands.

- b. After completing combined cycle installation, Enron believes that there is some risk that both steam turbine generators could go down at the existing H.D. King Plant, which would prevent combined cycle operation. Enron requests 2000 hours per year of simple cycle operation to reduce this risk.

Enron proposes to install a combined cycle unit with advanced pollution control equipment and yet requests a substantial amount of simple cycle operation that completely circumvents these controls. Further, the proposed gas turbine will have NOx emissions of 25 ppmvd at 15% oxygen when firing gas based on MHI's dry low-NOx combustion technology. The Department notes that annual NOx emissions for the proposed 2000 hours of simple cycle operation are more than 2 ½ times the annual NOx emissions for the remaining 6760 hours of combined cycle operation. These levels do not reflect the most recent determinations of Best Available Control Technology (BACT) for similarly sized units. As discussed in the application, the Department's record for NOx BACT determinations on simple cycle gas turbines is fairly clear: units that can achieve 9 ppmvd @ 15% oxygen have been allowed some backup oil firing (if requested) and units that can achieve only 15 ppmvd @ 15% oxygen have been allowed no oil firing.

Please provide information from MHI indicating the lowest NOx emissions achievable in simple cycle mode for the Model 501F gas turbine while employing dry-low NOx combustion technology, wet injection techniques for oil and gas firing, and any other emission reduction techniques or combination of methods. Also, please evaluate the cost effectiveness of a high-temperature SCR system (installed prior to the HRSG) for 2000 hours per year of simple cycle operation and 6760 hours per year of combined cycle operation. From a preliminary review, a high-temperature SCR system may be cost-effective and would allow Enron the requested flexibility in operation.

***Response: As previously stated, FPRP is requesting that the simple cycle operation configuration be removed from consideration from this permit application.***

10. Startups/Shutdowns: Enron requests up to 4 hours of excess emissions due to a cold startup to combined cycle operation and 3 hours of excess emissions due to shutdowns from combined cycle operation. A cold startup is defined as a startup to combined cycle operation following a complete shutdown lasting at least 48 hours. Please provide documentation such as performance curves (emissions vs. load during startup/shutdown) to support this request.

***Response: The requested start-up and shut-down emissions time frames were based on conditions previously granted by FDEP for similar systems. There are no start-up and shut-down guarantees provided for the MHI machine. However, the MHI machine is anticipated to perform similar to other "F-class" machines in this regard.***

11. Air Quality Analysis: The Department will provide any questions and comments related to the air quality analysis within the 30-day period allowed by rule.

12. EPA/NPS Comments: We will forward any comments received from the National Park Service and the EPA Region 4 Office as soon as they are available.

***No Response***

Finally, also enclosed with this response is an updated distillate fuel specification that corrects a minor typographical error. Should you have any additional questions or require any additional information, please do not hesitate to contact me at 713/345-4623.

Respectfully Submitted,



Scott Churbock  
Environmental Manager

Enclosures

cc: J. Boldman, SED  
B. Worley, EPA  
Q. Gumpel, NPS

MHI 501F EXPECTED EMISSIONS\*\* BASED ON WORLD BANK STANDARDS

Units	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC
<b>EMISSIONS CASE</b>																								
Mode	-	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	Dist	Dist	Dist	Dist	Dist	Dist	Dist	Dist	Dist	Dist	Dist
Fuel	100	100	100	100	75	75	75	75	50	50	50	50	Max	Max	none	none	none	none	none	none	none	none	none	none
Load Level	%	Max	Max	none	none	none	none	none	none	32	59	74	95	32	59,74,95	95	95	95	95	95	95	95	95	95
Duct Fire	deg F	32	59,74,95	32	59,74,95	32	59	74	95	32	59	74	95	32	59,74,95	95	95	95	95	95	95	95	95	95
Ambient Temperature	deg F	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65
Ambient Relative Humidity	%	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65
<b>CTQ DATA</b>																								
Load Condition																								
Exhaust Pressure Loss	inches Water	14.09	13.36	12.2	12.2	7.9	7.7	7.4	7.0	6.3	5.9	5.7	5.3	15.24	14.53	12.8	12.2	8.3	7.6	7.2	6.6	6.6	6.0	5.9
CTQ conditioned inlet air temp	Deg F	32	45	32	45	32	45	32	45	32	45	32	45	32	45	32	45	32	45	32	45	32	45	32
CTQ conditioned inlet air RH	%	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65
Fuel Type		Brooker	Gasbrooker	Gasbrooker	Gasbrooker	Gasbrooker	Gasbrooker	Gasbrooker	Gasbrooker	Gasbrooker	Gasbrooker	Gasbrooker	Gasbrooker	Gas	Dist	Dist	Dist	Dist	Dist	Dist	Dist	Dist	Dist	Dist
Fuel LHV	Btu/lb	20885	20885	20885	20885	20885	20885	20885	20885	20885	20885	20885	20885	18180	18180	18180	18180	18180	18180	18180	18180	18180	18180	18180
Fuel Temperature (site boundary)	Deg F	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77
Liquid Fuel H/C Ratio		-	-	185,130	183900	138,620	131640	124940	115880	92,110	87610	83140	77100	-	-	165020	159140	124200	112490	106250	97790	82380	74570	70410
Net Output	kW	-	-	9277	9343	9654	9980	10154	10449	11074	11316	11580	12014	-	-	9773	9874	10493	10882	11142	11557	12002	12626	12909
Net Heat Rate (LHV)	Btu/kWh	-	-	1717	1718	1366	1314	1269	1211	1020	991	963	926	-	-	1623	1571	1303	1224	1184	1130	989	942	909
Heat Cons. (LHV) X 10 <sup>6</sup>	Btu/h	-	-	3743	3730	2983	2945	2893	2818	2809	2700	2637	2542	-	-	3868	3761	3044	2896	2815	2692	2633	2660	2563
Exhaust Flow X 10 <sup>6</sup>	lb/h	-	-	1112	1124	1148	1148	1148	1148	984	1023	1036	1055	-	-	1006	1014	1064	1086	1099	1121	937	993	971
Exhaust Temp	Deg F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Exhaust Heat (LHV) X 10 <sup>6</sup>	Btu/h	-	-	0	0	0	0	0	0	0	0	0	0	-	-	31100	30100	25000	23500	22700	21700	19000	18100	17500
Water Flow	lb/h	-	-	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-
<b>EMISSIONS</b>																								
NOx @ 15%O <sub>2</sub>	ppmv @ 15%O <sub>2</sub>	-	-	25	25	27	25	25	25	50	45	45	45	-	-	42	42	42	42	42	42	42	42	42
NOx AS NO <sub>2</sub>	lb/hr	-	-	173	173	148	132	128	122	205	180	174	168	-	-	281	272	226	212	205	196	171	163	158
CO @ 15%O <sub>2</sub>	ppmv @ 15%O <sub>2</sub>	-	-	11	10	16	15	15	15	80	70	70	70	-	-	50	50	50	50	50	50	1000	1000	1000
CO	lb/hr	-	-	47	42	54	49	47	45	200	170	165	159	-	-	204	197	164	154	149	142	2,478	2,358	2,280
UHC @ 15%O <sub>2</sub>	ppmv @ 15%O <sub>2</sub>	-	-	5	5	10	5	5	9	175	150	150	150	-	-	75	75	75	75	75	75	300	300	300
UHC	lb/hr	-	-	12	12	20	10	9	9	250	208	202	184	-	-	175	169	140	132	128	122	425	405	391
UHC (as CH <sub>4</sub> )	lb/hr	-	-	1	1	2	1	1	1	35	30	30	30	-	-	35	34	28	27	26	25	85	81	79
VOC (as 20% of UHC)	ppmv @ 15%O <sub>2</sub>	-	-	3	3	4	2	2	2	50	42	41	39	-	-	50	50	50	50	50	50	50	50	50
VOC (as CH <sub>4</sub> )	lb/hr	-	-	3	3	4	2	2	2	5	5	5	5	-	-	50	50	50	50	50	50	50	50	50
PM10	mg / Nm <sup>3</sup>	-	-	5	5	5	5	5	5	5	5	5	5	-	-	142	138	112	106	103	97	105	98	98
PM10 (PM10 Front-half, Filterable Only)	lb/hr	-	-	14	14	11	11	11	11	11	10	10	10	-	-	-	-	-	-	-	-	-	-	-
<b>EXHAUST ANALYSIS % WT</b>																								
Argon	%	-	-	73.63	73.35	73.64	73.36	73.03	72.23	73.96	73.63	73.28	72.46	-	-	72.95	72.68	72.89	72.59	72.28	71.45	73.34	72.64	72.71
Nitrogen	%	-	-	14.09	13.97	14.11	14.24	14.29	14.21	15.97	15.8	15.73	15.49	-	-	14.73	14.69	14.57	14.58	14.51	14.26	16.14	15.84	16.08
Oxygen	%	-	-	5.99	6.01	5.97	5.82	5.72	5.6	4.74	4.79	4.77	4.75	-	-	7.29	7.25	7.44	7.35	7.31	7.3	6.07	6.15	5.94
Carbon Dioxide	%	-	-	4.97	5.36	4.96	5.27	5.65	6.67	3.99	4.46	4.91	6	-	-	3.72	4.08	3.79	4.18	4.61	5.7	3.14	4.07	3.97
Water	lb / lb - mol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

NOTE

1. Output is limited by generator capacity at 32F.
2. Duct firing is not our scope of supply, then all data when duct firing is blank.
3. Power output and heat rate are NET values.
4. NOx and PM10 @ 100% load when oil firing are guarantee values. The others are expected only.
5. Fuel Bound Nitrogen (FBN) is none
6. Sulfur in fuel gas is 3.536 ppmv. (Brooker gas) Sulfur in fuel oil is 0.05 wt %.
7. Fuel conditions will be satisfied with MHI's requirements.

### Typical No. 2 Fuel Oil Analysis

Parameter	Value
API gravity @ 60°F (maximum)	32.1
Viscosity, saybolt (SUS) @ 100°F	
Minimum	40.2 32.6
Maximum	32.6 40.2
Flash point, °F (minimum)	100
Pour point, °F (minimum)	0
Heating value, Btu/lb	
LHV	18,180 17,460
HHV	19,271 18,720
Water and sediment, percent by volume (maximum)	0.05
Ash, percent by weight (maximum)	0.01
Sulfur, percent by weight (maximum)	0.05
Fuel-bound nitrogen, percent by weight (maximum)	0.015
Trace constituents, ppm (maximum)	
Lead	1.0
Sodium	1.0
Vanadium	0.5

Note: SUS = Saybolt Universal Seconds.  
 Btu/gal = British thermal units per gallon.  
 LHV = lower heating value.  
 HHV = higher heating value.

Source: ECT, 2001.  
 FPRP, 2001.

**Table C-7A. Ft. Pierce Utilities Authority H.D. King Plant Repowering Project  
Fuel Flow Data - MHI 501 F CTG; Simple-Cycle**

**A. Natural Gas-Firing**

Case	100 % Load				75 % Load			
	32 °F SC 3	59 °F SC 4	74 °F SC 4	95 °F SC 4	32 °F SC 5	59 °F SC 6	74 °F SC 7	95 °F SC 8
Heat Input - LHV <sup>1</sup> (MMBtu/hr)	1,802.9	1,803.9	1,803.9	1,803.9	1,434.3	1,379.7	1,332.5	1,271.6
Heat Input - HHV <sup>2</sup> (MMBtu/hr)	1,998.1	1,999.3	1,999.3	1,999.3	1,589.6	1,529.1	1,476.8	1,409.3
Fuel Rate (lb/hr)	86,282	86,333	86,333	86,333	68,644	66,031	63,770	60,855
Fuel Rate <sup>3</sup> (10 <sup>6</sup> ft <sup>3</sup> /hr)	1.907	1.908	1.908	1.908	1.517	1.460	1.410	1.345
Fuel Rate (lb/sec)	23.967	23.981	23.981	23.981	19.068	18.342	17.714	16.904

**B. Distillate Fuel Oil-Firing**

Case	100 % Load				75 % Load			
	32 °F SC 15	59 °F SC 16	74 °F SC 16	95 °F SC 16	32 °F SC 17	59 °F SC 18	74 °F SC 19	95 °F SC 20
Heat Input - LHV <sup>2</sup> (MMBtu/hr)	1,704.2	1,649.6	1,649.6	1,649.6	1,368.2	1,285.2	1,243.2	1,186.5
Heat Input - HHV <sup>5</sup> (MMBtu/hr)	1,827.1	1,768.6	1,768.6	1,768.6	1,466.9	1,377.9	1,332.9	1,272.1
Fuel Rate <sup>6</sup> (lb/hr)	97,603	94,476	94,476	94,476	78,359	73,608	71,203	67,955
Fuel Rate <sup>7</sup> (10 <sup>3</sup> gal/hr)	13.556	13.122	13.122	13.122	10.883	10.223	9.889	9.438
Fuel Rate (lb/sec)	27.112	26.243	26.243	26.243	21.766	20.447	19.779	18.876

<sup>1</sup> Natural gas HHV/LHV ratio of 1.10830.

<sup>2</sup> Includes 5% margin.

<sup>3</sup> Natural gas heat content of 23,158 Btu/lb (HHV).

<sup>4</sup> Natural gas density of 0.0452 lb/ft<sup>3</sup>.

<sup>5</sup> Distillate fuel oil HHV/LHV ratio of 1.07216.

<sup>6</sup> Distillate fuel oil heat content of 18,720 Btu/lb (HHV).

<sup>7</sup> Distillate fuel oil density of 7.20 lb/gal.

Sources: ECT, 2001.

FPRP, 2001.

**Table C-7B. Ft. Pierce Utilities Authority H.D. King Plant Repowering Project  
Fuel Flow Data - MHI 501 F CTG; Steam Sales**

**A. Natural Gas-Firing**

Case	100% Load								75% Load			
	32°F	32°F	59°F	59°F	74°F	74°F	95°F	95°F	32°F	59°F	74°F	95°F
	SS:3	SS:1	SS:4	SS:2	SS:4	SS:2	SS:4	SS:2	SS:5	SS:6	SS:7	SS:8
Heat Input - LHV <sup>1</sup> (MMBtu/hr)	1,802.9	1,802.9	1,803.8	1,803.8	1,803.8	1,803.8	1,803.8	1,803.8	1,433.4	1,379.4	1,332.0	1,271.4
Heat Input - HHV <sup>2</sup> (MMBtu/hr)	1,998.2	1,998.2	1,999.2	1,999.2	1,999.2	1,999.2	1,999.2	1,999.2	1,588.7	1,528.8	1,476.3	1,409.1
Fuel Rate <sup>3</sup> (lb/hr)	86,285	86,285	86,330	86,330	86,330	86,330	86,330	86,330	68,602	66,017	63,750	60,848
Fuel Rate <sup>4</sup> (10 <sup>6</sup> ft <sup>3</sup> /hr)	1.907	1.907	1.908	1.908	1.908	1.908	1.908	1.908	1.516	1.459	1.409	1.345
Fuel Rate (lb/sec)	23.968	23.968	23.981	23.981	23.981	23.981	23.981	23.981	19.056	18.338	17.708	16.902

**B. Distillate Fuel Oil-Firing**

Case	100% Load								75% Load			
	32°F	32°F	59°F	59°F	74°F	74°F	95°F	95°F	32°F	59°F	74°F	95°F
	SS:15	SS:13	SS:16	SS:14	SS:16	SS:14	SS:16	SS:14	SS:17	SS:18	SS:19	SS:20
Heat Input - LHV <sup>2</sup> (MMBtu/hr)	1,698.2	1,698.2	1,645.3	1,645.3	1,645.3	1,645.3	1,645.3	1,645.3	1,364.2	1,281.9	1,239.8	1,183.0
Heat Input - HHV <sup>5</sup> (MMBtu/hr)	1,820.7	1,820.7	1,764.0	1,764.0	1,764.0	1,764.0	1,764.0	1,764.0	1,462.7	1,374.5	1,329.3	1,268.4
Fuel Rate <sup>6</sup> (lb/hr)	97,260	97,260	94,231	94,231	94,231	94,231	94,231	94,231	78,133	73,421	71,010	67,756
Fuel Rate <sup>7</sup> (10 <sup>3</sup> gal/hr)	13.508	13.508	13.088	13.088	13.088	13.088	13.088	13.088	10.852	10.197	9.862	9.411
Fuel Rate (lb/sec)	27.017	27.017	26.175	26.175	26.175	26.175	26.175	26.175	21.704	20.395	19.725	18.821

<sup>1</sup> Natural gas HHV/LHV ratio of 1.10830.

<sup>2</sup> Includes 5% margin.

<sup>3</sup> Natural gas heat content of 23,158 Btu/lb (HHV).

<sup>4</sup> Natural gas density of 0.0452 lb/ft<sup>3</sup>.

<sup>5</sup> Distillate fuel oil HHV/LHV ratio of 1.07216.

<sup>6</sup> Distillate fuel oil heat content of 18,720 Btu/lb (HHV).

<sup>7</sup> Distillate fuel oil density of 7.20 lb/gal.

Sources: ECT, 2001.  
FPRP, 2001.

**Table C-7C. Ft. Pierce Utilities Authority H.D. King Plant Repowering Project  
Fuel Flow Data - Duct Burner**

**Natural Gas-Firing**

Case	100% Load							
	32 °F 3/15	32 °F 1/13	59 °F 4/16	59 °F 2/14	74 °F 4/16	74 °F 2/14	95 °F 4/16	95 °F 2/14
Heat Input - LHV <sup>1</sup> (MMBtu/hr)		346.5		346.5		346.5		346.5
Heat Input - HHV <sup>2</sup> (MMBtu/hr)		384.0		384.0		384.0		384.0
Fuel Rate <sup>3</sup> (lb/hr)		16,582		16,582		16,582		16,582
Fuel Rate (lb/sec)		4.606		4.606		4.606		4.606
Fuel Rate <sup>4</sup> (10 <sup>6</sup> ft <sup>3</sup> /hr)		0.367		0.367		0.367		0.367

<sup>1</sup> Includes 4% margin.

<sup>2</sup> Natural gas HHV/LHV ratio of 1.10830.

<sup>3</sup> Natural gas heat content of 23,158 Btu/lb (HHV).

<sup>4</sup> Natural gas density of 0.0452 lb/ft<sup>3</sup>.

Sources: ECT, 2001.  
FPRP, 2001.



Table 5-24A. Summary of NO<sub>x</sub>/CO BACT Analysis - FPRP CTG-1, SS Mode

Control Option	Emission Impacts			Economic Impacts			Energy Impacts	Environmental Impacts		
	Emission Rates		Total Reduction	Installed Capital Cost	Total Annualized Cost	Average Cost Effectiveness	Incremental Cost Effectiveness	Increase Over Baseline	Toxic Impact	Adverse Envir. Impact
	(lb/hr)	(tpy)	(tpy)	(\$)	(\$/yr)	(\$/ton)	(\$/ton)	(MMBtu/yr)	(Y/N)	(Y/N)
SCONO <sub>x</sub>	20.0	87.6	942.5	12,092,710	7,427,631	7,881	46,618	53,803	N	N
	[NO <sub>x</sub> - 2.0 ppmvd (gas) and 3.4 ppmvd (oil) at 15% O <sub>2</sub> ] [CO - 1.0 ppmvd (gas) and 5.0 ppmvd (oil) at 15% O <sub>2</sub> ]									
SCR + Oxidation Catalyst	46.5	203.5	826.7	5,082,177	2,027,582	2,453	N/A	30,129	N	N
	[NO <sub>x</sub> - 3.5 ppmvd (gas) and 12.0 ppmvd (oil) at 15% O <sub>2</sub> ] [CO - 3.5 ppmvd (gas) and 10.0 ppmvd (oil) at 15% O <sub>2</sub> ]									
Base Case	235.2	1,030.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	[NO <sub>x</sub> - 25.0 ppmvd (gas) and 42.0 ppmvd (oil) at 15% O <sub>2</sub> ] [CO - 10.0 ppmvd (gas) and 50.0 ppmvd (oil) at 15% O <sub>2</sub> ]									

Basis: One, MHI M501F CTG/HRSG unit - 7,760 hr/yr (gas) and 1,000 hr/yr (oil).

Sources: ECT, 2001.  
FPRP, 2001.  
MHI, 2001.  
ABB Alstom, 2001.

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> <li>Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.</li> <li>Print your name and address on the reverse so that we can return the card to you.</li> <li>Attach this card to the back of the mailpiece, or on the front if space permits.</li> </ul>	<p>A. Received by (Please Print Clearly) <i>[Signature]</i> B. Date of Delivery <i>5-7-01</i></p> <p>C. Signature <i>[Signature]</i> <input type="checkbox"/> Agent  <input type="checkbox"/> Addressee</p>
<p>1. Article Addressed to:</p> <p>Mr. Ben Jacoby  Fort Pierce Re-Powering  Project, L.L.C.  1400 Smith Street  Houston, TX 77002-7361</p>	<p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes  If YES, enter delivery address below: <input type="checkbox"/> No</p> <p>3. Service Type  <input type="checkbox"/> Certified Mail <input type="checkbox"/> Express Mail  <input type="checkbox"/> Registered <input type="checkbox"/> Return Receipt for Merchandise  <input type="checkbox"/> Insured Mail <input type="checkbox"/> C.O.D.</p> <p>4. Restricted Delivery? (Extra Fee) <input type="checkbox"/> Yes</p>
<p>2. Article Number (Copy from service label)  7000 0600 0026 4129 9457</p>	

PS Form 3811, July 1999

Domestic Return Receipt

102595-99-M-1789

**U.S. Postal Service**  
**CERTIFIED MAIL RECEIPT**  
*(Domestic Mail Only; No Insurance Coverage Provided)*

---

Mr. Ben Jacoby

Postage	\$	Postmark Here
Certified Fee		
Return Receipt Fee (Enorsement Required)		
Restricted Delivery Fee (Enorsement Required)		
<b>Total Postage &amp; Fees</b>	<b>\$</b>	

*Recipient's Name (Please Print Clearly) (to be completed by mailer)*  
**Fort Pierce Re-Powering Project**

*Street, Apt. No., or PO Box No.*  
**1400 Smith Street**

*City, State, ZIP*  
**Houston, TX 77002-7361**

7000 0600 0026 4129 9457

PS Form 3800, February 2000

See Reverse for Instructions



Jeb Bush  
Governor

# Department of Environmental Protection

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

David B. Struhs  
Secretary

May 4, 2001

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Ben Jacoby  
Fort Pierce Re-Powering Project, LLC  
1400 Smith Street  
Houston, TX 77002-7361

Re: **Request for Additional Information**  
Project No. 1110102-001-AC (PSD-FL-320)  
Fort Pierce Re-Powering Project, LLC  
St. Lucie County

Dear Mr. Jacoby:

On April 19, 2001, the Department received your application and sufficient fee for an air construction permit to construct a combined cycle gas turbine adjacent to the H.D. King Electric Generating Plant located at 1311 North Indian River Drive in Fort Pierce, Florida. The application is incomplete. In order to continue processing your application, the Department will need the additional information requested below. Should your response to any of the items below require new calculations, please submit the new calculations, assumptions, reference material and appropriate revised pages of the application form.

1. Commencement of Construction: The application indicates that Enron anticipates commencement of construction by July of 2001. The Department notes that it has ninety days to take final agency action. This period may become much longer depending on the applicant's initial requests, the information submitted, and additional information needed to complete the application. If the Department intends to issue a draft PSD permit, the applicant must publish a Notice of Intent in a newspaper of general circulation with a 30-day comment period. Please plan accordingly.
2. Overall Project: Enron proposes to install a Model M501F gas turbine manufactured by Mitsubishi Heavy Industries (MHI) adjacent to the H.D. King Electric Generating Plant. Steam produced in the combined cycle mode will be sold to the H.D. King Plant to "re-power" two existing steam turbine generators. Please provide reasonable assurance that the two plants will remain under separate control and therefore separate facilities. If it is determined that the proposed plant is a separate facility, the Department can give little weight to such "re-powering" aspects. Please provide documentation of Fort Pierce Utilities Authority's (FPUA) obligations for purchasing steam from the proposed project for use at the existing H.D. King Plant. FPUA should recognize that reduced operation of existing units at the H.D. King Plant could affect a PSD netting analysis for any future projects involving the addition of new units as well as the replacement or modification of existing units.

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3. Project Costs: What are the estimated individual equipment costs of the gas turbine and heat recovery steam generator (HRSG)?
4. Emission Rates: Appendix C provides pollutant emission rates as a function of compressor inlet air temperature, load, fuel type, and duct firing. Please provide the supporting documentation from MHI upon which these emission estimates were based. Please provide written documentation from MHI verifying that the CO and NO<sub>x</sub> emission rates stated in the application are currently the lowest achievable CO and NO<sub>x</sub> emission rates for the MHI Model M501F gas turbine. For all mode of operation, what are the estimated particulate matter emission rates excluding the condensables (back-half analysis)?
5. Performance Data: Please provide documentation from MHI to support the technical information (fuel flows, power production, heat input rates, exhaust flow rates, temperatures, exhaust gas oxygen contents, etc.) presented by ECT in Appendix C.
6. Heat Input Rates: Please explain the "5% margin" for heat inputs as identified in Note #1 of Tables C-7A and C-7B. Also, please clarify the slight differences in the maximum heat input rates (mmBTU per hour) listed these tables between simple cycle operation and combined cycle operation (both gas and oil firing).
7. CEMS: Are the proposed CO and NO<sub>x</sub> CEM systems capable of monitoring emissions from the simple cycle stack as well as the combined cycle stack?
8. Control Equipment: Enron proposes to install MHI's Model 501F gas turbine with dry low-NO<sub>x</sub> combustion (gas firing), a heat recovery steam generator (HRSG) with duct firing, a wet injection system to control NO<sub>x</sub> emissions (oil firing), a conventional selective catalytic reduction (SCR) system to control NO<sub>x</sub> emissions, and an oxidation catalyst system to control CO emissions.
  - a. It appears that the SCR control efficiency is approximately 85% when firing natural gas, but drops to about 70% when firing oil. Please explain the drop in control efficiency and provide supporting documentation. Note that the Department has specified maximum ammonia slip levels of 5 ppm for several recent projects. Please provide information describing MHI's experience with employing high-temperature SCR on gas turbines and boilers. Please detail MHI's experience and success with installing conventional SCR systems on oil-fired gas turbines and boilers in Japan.
  - b. Please provide information from MHI describing their dry low NO<sub>x</sub> combustion technology including such process details as air/fuel staging, diffusion firing, premix, lean premix, flame stability, etc. Please have MHI describe the current status, future goal, and proposed implementation schedule for lowering NO<sub>x</sub> emissions with their dry low NO<sub>x</sub> combustion technology. When does MHI plan to offer dry low-NO<sub>x</sub> combustors capable of achieving NO<sub>x</sub> emissions of 15 ppmvd @ 15% oxygen or less? When does MHI plan to offer dry low-NO<sub>x</sub> combustors capable of achieving NO<sub>x</sub> emissions of 9 ppmvd @ 15% oxygen or less?
  - c. Please describe MHI's wet injection system for reducing NO<sub>x</sub> emissions when firing oil. Is this system capable of achieving NO<sub>x</sub> emissions lower than 42 ppmvd @ 15% oxygen? What is the feasibility of employing wet injection techniques to further reduce NO<sub>x</sub> emissions when firing natural gas? What emission levels could be achieved? Does MHI offer other techniques that can reduce NO<sub>x</sub> emissions below 15 ppmvd @ 15% oxygen when firing natural gas?

d. Because the SCONOX™ control system also controls CO emissions, please evaluate the cost effectiveness (dollars per tons of pollutants removed) considering the combined pollutant reduction of both NOx and CO emissions.

9. Supplemental Simple Cycle Request: Enron requests 2000 hours per year of simple cycle operation for this project and indicates that such operation is necessary for the following reasons.

a. The gas turbine will be installed and ready for operation by June of 2002. However, due to HRSG availability, scheduling, and installation concerns, it is anticipated that the combined cycle stage (HRSG, SCR, and oxidation catalyst systems) would not be complete until the end of the third quarter in 2002. Enron requests 2000 hours per year of simple cycle operation to allow the new unit to respond to summer peaking demands.

b. After completing combined cycle installation, Enron believes that there is some risk that both steam turbine generators could go down at the existing H.D. King Plant, which would prevent combined cycle operation. Enron requests 2000 hours per year of simple cycle operation to reduce this risk.

Enron proposes to install a combined cycle unit with advanced pollution control equipment and yet requests a substantial amount of simple cycle operation that completely circumvents these controls. Further, the proposed gas turbine will have NOx emissions of 25 ppmvd at 15% oxygen when firing gas based on MHI's dry low-NOx combustion technology. The Department notes that annual NOx emissions for the proposed 2000 hours of simple cycle operation are more than 2 ½ times the annual NOx emissions for the remaining 6760 hours of combined cycle operation. These levels do not reflect the most recent determinations of Best Available Control Technology (BACT) for similarly sized units. As discussed in the application, the Department's record for NOx BACT determinations on simple cycle gas turbines is fairly clear: units that can achieve 9 ppmvd @ 15% oxygen have been allowed some backup oil firing (if requested) and units that can achieve only 15 ppmvd @ 15% oxygen have been allowed no oil firing.

Please provide information from MHI indicating the lowest NOx emissions achievable in simple cycle mode for the Model 501F gas turbine while employing dry-low NOx combustion technology, wet injection techniques for oil and gas firing, and any other emission reduction techniques or combination of methods. Also, please evaluate the cost effectiveness of a high-temperature SCR system (installed prior to the HRSG) for 2000 hours per year of simple cycle operation and 6760 hours per year of combined cycle operation. From a preliminary review, a high-temperature SCR system may be cost-effective and would allow Enron the requested flexibility in operation.

10. Startups/Shutdowns: Enron requests up to 4 hours of excess emissions due to a cold startup to combined cycle operation and 3 hours of excess emissions due to shutdowns from combined cycle operation. A cold startup is defined as a startup to combined cycle operation following a complete shutdown lasting at least 48 hours. Please provide documentation such as performance curves (emissions vs. load during startup/shutdown) to support this request.

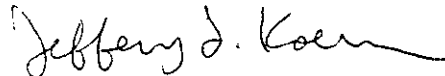
11. Air Quality Analysis: The Department will provide any questions and comments related to the air quality analysis within the 30-day period allowed by rule.

12. EPA/NPS Comments: We will forward any comments received from the National Park Service and the EPA Region 4 Office as soon as they are available.

The Department will resume processing your application after receipt of the requested information. Rule 62-4.050(3), F.A.C. requires that all applications for a Department construction 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. For any material changes to the application, please include a new certification statement by the authorized representative or responsible official. You are reminded that Rule 62-4.055(1), F.A.C. now requires applicants to respond to requests for information within 90 days or provide a written request for an additional period of time to submit the information.

If you have any questions regarding this matter, please call me at 850/921-9536.

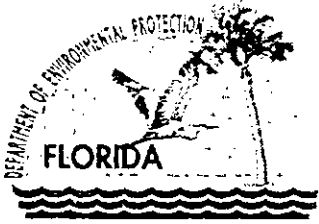
Sincerely,



Jeffery F. Koerner, Project Engineer  
New Source Review Section

AAL/jfk

cc: Mr. Scott Churbock, Enron North America  
Mr. Thomas Richard, Fort Pierce Utilities Authority  
Mr. Tom Davis, ECT  
Mr. Isidore Goldman, SED  
Mr. Gregg Worley, EPA Region 4  
Mr. John Bunyak, NPS



Jeb Bush  
Governor

# Department of Environmental Protection

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

David B. Struhs  
Secretary

April 25, 2001

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

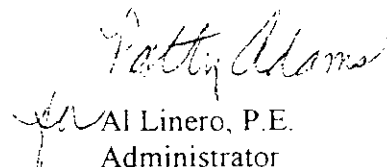
RE: Facility ID No. 1110102-001-AC, PSD-FL-320  
Fort Pierce H.D. King Plant Repowering Project  
St. Lucie County

Dear Mr. Bunyak:

Enclosed for your review and comment is an application for Fort Pierce  
Repowering Project, L.L.C., to construct and operate a new electric power generating  
facility to be located at the existing Fort Pierce Utilities Authority's H.D. King Electric  
Generating Plant in Fort Pierce, St. Lucie County, Florida.

Your comments may be forwarded to my attention at the letterhead address or  
faxed to the Bureau of Air Regulation at 850/922-6979. If you have any questions,  
please contact Jeff Koerner, review engineer, at 850/921-9529.

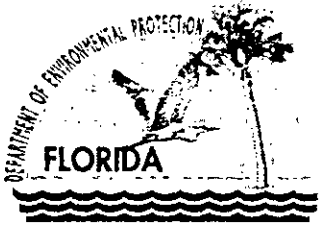
Sincerely,

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

AAL/pa

Enclosure

cc: Jeff Koerner



Jeb Bush  
Governor

# Department of Environmental Protection

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

David B. Struhs  
Secretary

April 25, 2001

Mr. Gregg Worley, Chief  
Air, Radiation Technology Branch  
Preconstruction/HAP Section  
U.S. EPA, Region 4  
61 Forsyth Street  
Atlanta, Georgia 30303

Attention: Jim Little

RE: Facility ID No. 1110102-001-AC, PSD-FL-320  
Fort Pierce H.D. King Plant Repowering Project  
St. Lucie County

Dear Mr. Worley:

Enclosed for your review and comment is an application for Fort Pierce Repowering Project, L.L.C., to construct and operate a new electric power generating facility to be located at the existing Fort Pierce Utilities Authority's H.D. King Electric Generating Plant in Fort Pierce, St. Lucie County, Florida.

Your comments may be forwarded to my attention at the letterhead address or faxed to the Bureau of Air Regulation at 850/922-6979. If you have any questions, please contact Jeff Koerner, review engineer, at 850/921-9529.

Sincerely,

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

AAL/pa  
Enclosure  
cc: Jeff Koerner

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**Environmental Consulting & Technology, Inc.**

April 18, 2001

Mr. A. A. Linero, P.E.  
Administrator, New Source Review Section  
Division of Air Resources Management  
Florida Department of Environmental Protection  
2600 Blair Stone Road, MS # 5505  
Tallahassee, Florida 32399-2400

**RECEIVED**

APR 20 2001

19

BUREAU OF AIR REGULATION

**Re: Fort Pierce Repowering Project  
Air Construction Permit Application**

Dear Mr. Linero:

Fort Pierce Repowering Project, LLC (FPRP) is planning to construct, own, and operate a new electric power generating facility to be located at the existing Fort Pierce Utilities Authority's (FPUA) H.D. King Electric Generating Plant in Fort Pierce, St. Lucie County, Florida. The new electric generating facility is designated as FPRP CTG-1.

The new generating facility will consist of one nominal 180-megawatt (MW) Mitsubishi Heavy Industries (MHI) M501F combustion turbine generator (CTG) and one fired heat recovery steam generator (HRSG). The CTG will include provisions for inlet air chilling. The HRSG will include a 381.1 million British thermal unit (MMBtu) heat input natural gas-fired duct burner. The CTG/HRSG unit will include a HRSG by-pass stack to allow the CTG to operate in simple cycle (SC) mode. In steam sales (SS) mode of operation, steam generated by the HRSG will be sold to FPUA for use in the existing H.D. King Plant steam turbines. FPRP CTG-1 will be fired primarily with pipeline quality natural gas. Low sulfur distillate fuel oil will serve as a backup fuel source. The new CTG/HRSG unit will utilize the existing H.D. King Electric Generating Plant infrastructure with respect to fuel oil storage and cooling towers.

Seven copies of an Application for Air Permit - Title V Source, together with a check in the amount of \$7,500 as payment of the required permit processing fee, are enclosed for your review. Note that three of the applications include a CD-ROM containing the dispersion modeling files. Your expeditious processing of the FPRP air permit application will be appreciated. Please contact Mr. Scott Churbock at 713/345-4623 if there are any questions regarding this application.

Sincerely,

**ENVIRONMENTAL CONSULTING & TECHNOLOGY, INC.**

Thomas W. Davis, P.E.  
Principal Engineer

cc: Mr. Scott Churbock

Enclosures

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