Department of Environmental Protection

Jeb Bush
Governor

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

David B. Struhs
Secretary

February 14, 2003

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Ms. Farzie Shelton, Manager
Environmental Affairs
Lakeland Electric
501 E. Lemon Street
Lakeland, Florida 33801-5079

Re: DEP File No. PSD-FL-166(C) and 1050003-007-AC
City of Lakeland, Department of Electric Utilities - Charles Larsen Memorial Power Plant
Increase of Heat Input Rate and Evaluation of the Peak Mode Operation

Dear Ms. Shelton:

The Department acknowledges receipt of your letter dated February 7, 2003 to follow-up the January 23rd meeting concerning Unit 8. We appreciate your summary of the issues covered on this meeting. However, the Department will not act on these issues until it receives an air construction application, signed and sealed by a professional engineer registered in Florida. We will likely need more information than was provided in your letter. We will contact you soon regarding the possibility of visiting the facility to gain a better understanding of the situation.

If you have any questions regarding this matter, please call Teresa Heron (Review Engineer) at (850) 921-9529.

Sincerely,

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

AL/th

SENDER: COMPLETE THIS SECTION

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- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Ms. Farzie Shelton
Manager, Environmental Affairs
Lakeland Electric
501 E. Lemon Street
Lakeland, FL 33801-5079

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X Bonnie Brenner ☐ Agent ☐ Addressee

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C. Date of Delivery 1-19-02

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Street, Apt. No.; or PO Box No.: 501 E. Lemon Street
City, State, ZIP+4: Lakeland, FL 33801-5079

PS Form 3800, January 2001 See Reverse for Instructions

7001 0320 0001 3692 6945

Farzie Shelton, chE; REM

Manager of Environmental Affairs

February 7, 2003

Ms. Trina Vielhauer, Chief
Bureau of Air Regulation
Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Fl 32399-2400

Attention: Mr. A. A. Linero, P.E., Administrator New Source Review

RE: Combined Cycle Unit 8 – Peak Operation and Turbine Upgrades
City of Lakeland, Larsen Power Plant
DEP File No. 105003-007-AC (PSD-FL-116C) 105 0003- 012-AC

Dear Al:

This correspondence is a follow-up of our January 23rd meeting regarding Larsen Unit 8. As we discussed, the original permitting and subsequent heat input curve submitted with the Title V application did not reflect the Unit's ability to run in Peak Mode. Peak Mode operation was included in the original design of Unit 8 and allows the unit to run at higher power and heat input. The increase is about 8.7 percent at ISO conditions. It does not change the heat rate of the unit or the emission rates authorized in the original PSD permit. Compliance testing was originally performed for this mode of operation and the water injection rate was established for Peak Mode operation to assure compliance. While this mode of operation is normally operated less than 500 hours per year, even if operated 8,760 hours per year the difference in potential emissions between Base Load and Peak Load is small. Tables 1, 2 and 3 show the maximum increase in hourly and annual emissions over Base Load assuming Peak Load operation for 8,760 hours per year, i.e., 7,760 hours per year for gas firing and 1,000 hours per year of oil firing. As shown, the maximum annual emissions are very low even if compared to the PSD thresholds.

Peak mode operation is neither a physical change nor a change in the method of operation for the unit. Rather it was an oversight in the original permitting as in late 1980 and early 1990 all the combustion turbines were permitted by DER for name plate capability which corresponded to the Base Load. Therefore, the basis of the potential to emit in the original PSD Permit Application was at a turbine inlet of 59 degrees F and Base Load, which provides a conservative estimate of annual emissions. Peak Mode operation would not have affected the annual emission rates or any of the emission rates established as BACT. The BACT emission limits were established as concentrations (ppmvd), emission rates (lb/MMBtu) or fuel limits (natural gas or 0.2 percent sulfur distillate oil). Recognizing Peak Mode operation in the PSD Permit would not affect the established limits.

February 6, 2003

February 6, 2003

Ms. Trina Vielhauer, Chief
Bureau of Air Regulation
Florida Department of Environmental Protection

Based on the above, Lakeland Electric requests that the PSD Permit be changed to include Peak Mode operation. The maximum heat input rates at 25 degrees F are 1,147 MMBtu/hr (LHV) and 1,135 MMBtu/hr (LHV) for gas and oil firing, respectively. These heat inputs reflect an 8.7 percent increase as provided by GE for Peak Mode operation. The heat input curve for Base Load and Peak Load is also attached

Regarding the turbine upgrades, a minor source permit application will be submitted to reflect a minor increase in heat input.

Please call if you have any questions.

Sincerely,

Farzie Shelton

Enclosures

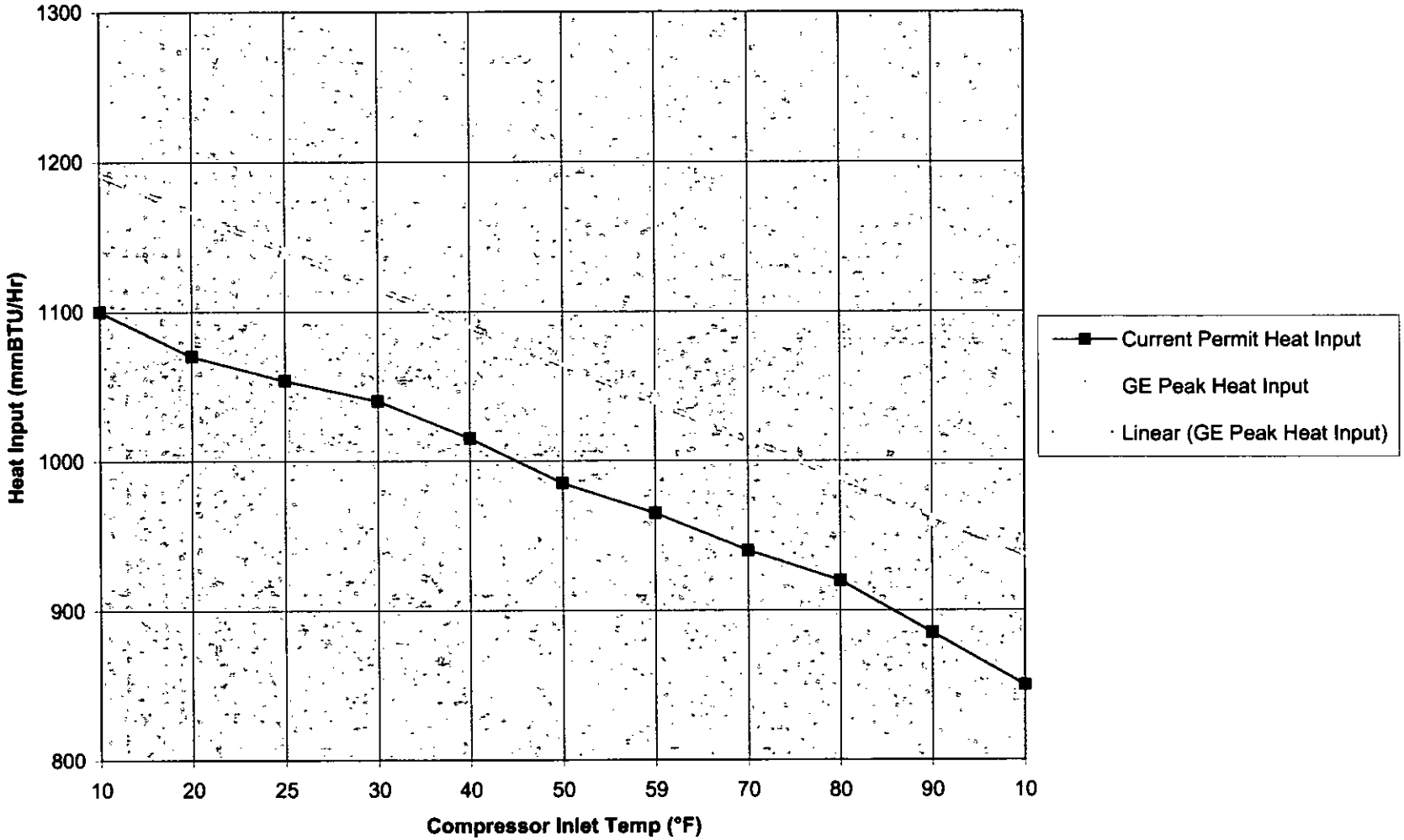
cc: Ken Kosky P.E.

City of Lakeland • Department of Electric Utilities

501 East Lemon Street • Lakeland, Fl 33801-5050 • (863) 834-6603 • Fax (863) 834-8187 • Message System 834-6592

farzie.shelton@lakelandgov.net

Heat Input vs Compressor Inlet Temp



0237637/4/4.5/Chart 1/Chart1
2/6/2003

Table 1 Emission Estimates of the City of Lakeland Larsen Plant Unit 8 - Combustion Turbine Base - Peak Load
(Natural Gas Firing - 500 hours/year).

Performance Basis			
Heat Input	mmBtu (1)	959.6	GE Data for Frame 7EA
Power Increase		8.69%	GE Data for Frame 7EA
Heat Rate Decrease		0.00%	GE Data for Frame 7EA
Heat Input Increase		8.70%	GE Data for Frame 7EA
Heat Input Change	mmBtu	83.5	GE Data for Frame 7EA
Hours/year		8,760 (2)	

Pollutants	Units	Emissions	Comments
PM	lb/MMBtu	0.0060	from Title V Application(3)
	TPY	2.19	
NO_x	lb/MMBtu	0.0995	from Title V Application(3)
	TPY	36.40	
SO_2	lb/MMBtu	0.0028	from Title V Application(3)
	TPY	1.04	
CO	lb/MMBtu	0.0550	from Title V Application(3)
	TPY	20.11	
VOC	lb/MMBtu	0.0018	from Title V Application(3)
	TPY	0.66	

Legend - TPY: tons per year

(1) Heat input for 59 degrees F compresor inlet temperature. This results in a conservative annual average emission.

(2) Hours of operation based on estimate of 8,760 hours per year.

(3) Emission factor references - Title V Permit Application and Permit based on maximum hourly emissions and 25 °F turbine inlet conditions.

Table 2 Emission Estimates of the City of Lakeland Larsen Plant Unit 8 - Combustion Turbine Base - Peak Load
(Distillate Oil Firing - 1,000 hours/year).

Performance Basis			
Heat Input Change	mmBtu (1)	959.6	GE Data for Frame 7EA
Power Increase		8.69%	GE Data for Frame 7EA
Heat Rate Decrease		0.00%	GE Data for Frame 7EA
Heat Input Increase		8.70%	GE Data for Frame 7EA
Heat Input Change	mmBtu	83.5	GE Data for Frame 7EA
Hours/year		1,000 (2)	

Pollutants	Units	Emissions	Comments
PM	lb/MMBtu	0.0250	from Title V Application(3)
	TPY	1.04	
NO_x	lb/MMBtu	0.1692	from Title V Application(3)
	TPY	7.07	
SO_2	lb/MMBtu	0.2029	from Title V Application(3)
	TPY	8.47	
CO	lb/MMBtu	0.0567	from Title V Application(3)
	TPY	2.37	
VOC	lb/MMBtu	0.0087	from Title V Application(3)
	TPY	0.36	

Legend - TPY: tons per year

(1) Heat input for 59 degrees F compresor inlet temperature for gas firing used to develop conservative emissions. Actual heat input for oil firing is slightly less than gas firing.

(2) Hours of operation based on 1,000 hours per year.

(3) Emission factor references - Title V Permit Application and Permit based on maximum hourly emissions and 25 °F turbine inlet conditions.

Table 3 Maximum Annual Emissions of the City of Lakeland Larsen Plant Unit 8 - Combustion Turbine Base - Peak Load
(Natural Gas Firing - 7,760 hours/year and Oil Firing 1,000 hours/year).

	Annual Emissions (tons/year)			PSD SERs[1]
Pollutants	Gas Firing	Oil-Firing	Total	(tons/year)
PM	1.94	1.04	2.99	15 & 25[2]
NO_x	32.24	7.07	39.31	40
SO_2	0.92	8.47	9.39	40
CO	17.81	2.37	20.18	100
VOC	0.58	0.36	0.94	40

(1) PSD = Prevention of Significant Deterioration; SERs - Significant Emission Rates; Rule 62-212.400(2)(e)2.
(2) 15 tons/year is for PM10 and 25 tons/year is for PM.