

# Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Bob Martinez, Governor

Dale Twachtmann, Secretary

John Shearer, Assistant Secretary

*Need to model emergency fuel*

September 28, 1990

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Harry Schindehette, P.E.  
Director of Utilities  
City of Ft. Pierce  
P. O. Box 3191  
Ft. Pierce, FL 34948

RE: AC 56-185836 - Ft. Pierce Utilities Authority - H. D. King  
Unit 9

Dear Mr. Schindehette:

We have reviewed your application for the above referenced permit and find it to be incomplete. You will need to show all calculations, state and justify all assumptions, identify the sources of any emission factors, and provide copies of references where the emission factors or other information were obtained from sources other than AP-42. In responding to those questions that request information concerning air pollutant emissions, please provide the emissions for each fuel that the affected sources are authorized to burn. Processing of your application will resume upon receipt of the following information:

- Please provide a completed State of Florida permit application form [DER Form 17-1.202(1)] that is signed by the owner or the owner's authorized agent. The permit application form is also to be signed and sealed with a metallic impression-type seal by a professional engineer registered in Florida.
- Provide the present actual emissions of each pollutant listed in Table 500-2 of F.A.C. Rule 17-2.500 in units of the applicable emission limiting standard, lbs./hr., and tons/year for each affected source [Unit 6, Unit 7, Unit 8, and Unit 9]. The present actual emissions are to be determined on the basis of the most recent source emission test wherever possible. Where emission tests are used, copies of the cover page and summary sheet are to be included.

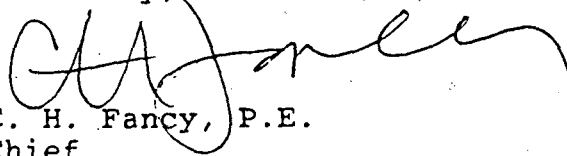
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- Provide the maximum proposed emissions of each pollutant listed in Table 500-2 of F.A.C. Rule 17-2.500 in units of the applicable emission limiting standard, lbs./hr., and tons/year to be emitted by each affected source [Unit 6, Unit 7, Unit 8, and Unit 9].
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• Explain why the previous application for a construction permit projected carbon monoxide emissions of 110 tons/year from Unit 9 while the present permit application indicates projected CO emissions of 41 tons/year from Unit 9. The previous application also included total contemporaneous emission reductions of about 99.3 tons/year from Units 6, 7, and 8. It appears that you may be required to determine downwind concentrations of CO using EPA approved models and perform a best available control technology (BACT) analysis for CO.
  - ISO standard day conditions for gas turbines are defined as 288°K (59°F), 101.3 KPa (29.92 in. Hg.), and 60% relative humidity. The concentration standard for gas turbines is expressed at dry ISO conditions. Some of your gas turbine emission calculations involving standard conditions did not appear to be based on dry ISO conditions. Please make necessary corrections. For other air pollutant emission sources state and federal regulations define standard temperature and pressure to be 68°F and 29.92 in. Hg.
  - Provide the present actual and proposed stack parameters for each of the affected sources [Unit 6, Unit 7, Unit 8, and Unit 9]. The parameters are to include stack height, stack exit diameter, stack exit volume (ACFM and DSCFM), stack velocity, stack exit temperature, stack moisture (% by volume), and stack oxygen (% by volume). Also, provide the present actual and the proposed annual hours of operation for each of the affected sources [Unit 6, Unit 7, Unit 8, and Unit 9].
  - Considering the geography and climatology of Ft. Pierce, we question the use of an ambient temperature of 20°F [Table 5-1] in the modeling parameters. Please explain. Additional modeling may be required.
  - Provide the maximum quantities of NO<sub>x</sub>, ammonia, and each amine compound (ppmv @ dry conditions, lbs./hr., and tons/year) that would be emitted if Unit 9 were equipped with steam injection and selective catalytic reduction. Please identify each of the amine compounds that would be expected. Please provide the stack parameters for Unit 9 based on the installation of steam injection and selective catalytic reduction.

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- Provide the 1-hour, 8-hour, 24-hour, and annual concentrations of  $\text{NO}_x$ , ammonia, and each of the identified amine compounds that would result if Unit 9 were equipped with steam injection and catalytic reduction.
- Explain how the costs on page 4-5 were derived, what is included in each of the listed categories (contingency, escalation, indirects, maintenance, energy, lost generation, etc.), the terms "energy" and "lost generation", and how the various percentages were arrived at. Since BACT is being evaluated using "today's" cost guidelines the economic analysis for selective catalytic reduction should be based on the present cost instead of the 1993 projections.
- On page 4-6, you state that the addition of a selective catalytic reduction system to meet 9 ppmv @ 15%  $\text{O}_2$  will add \$1.1 million dollars to the levelized annual project cost. What is the present levelized annual cost for Unit 9? What is the present levelized annual cost for each of the other generating units at H. D. King generating station? Would the selective catalytic reduction system in your analysis achieve an  $\text{NO}_x$  concentration of 25ppmv @ 15%  $\text{O}_2$  when oil is burned? Fully explain your answer.
- Please provide a copy of each construction permit that has been issued for the construction of Unit 6, Unit 7, and Unit 8. Provide the initial date of construction and completion for each of these air pollution sources.
- Describe the bypass stack in terms of the circumstances and frequency of use, location within the facility, geometry [height and diameter], flue gas parameters [volume (ACFM and DSCFM), exit velocity (fpm), exit temperature ( $^{\circ}\text{F}$ ), moisture (% by volume), and oxygen (% by volume)], and the maximum hourly and annual emissions of each pollutant listed Table 500-2 of F.A.C. Chapter 17-2.
- Please note that we have not received a BACT application for Unit 6 as was requested by the Southeast District.

If you have any questions or wish to meet with us, please write to me at the address above or call Barry Andrews at (904) 488-1344.

Sincerely,



C. H. Fancy, P.E.  
Chief  
Bureau of Air Regulation

cc: S. Day  
J. Miller

H. Lamb  
I. Goldman