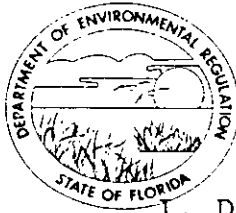


DEPARTMENT OF ENVIRONMENTAL REGULATION



ST. JOHNS RIVER DISTRICT

3319 MAGUIRE BOULEVARD  
SUITE 232  
ORLANDO, FLORIDA 32803-3767

BOB GRAHAM  
GOVERNOR

VICTORIA J. TSCHINKEL  
SECRETARY

A. ALEXANDER  
DISTRICT MANAGER

Permittee:  
James C. Welsh,  
Utilities Director  
Kissimmee Utilities  
Post Office Box 1608  
Kissimmee, Florida 32741

I. D. Number:  
Permit/Certification  
Number: AO49-093754  
Date of Issue:  
Expiration Date: 10-11-89  
County: Osceola  
Latitude/Longitude:  
28°17'20"N/81°24'20"W  
UTM: 17-460.1 East  
UTM: 3129.3 North  
Project: 49.9 MW Combined  
Cycle Gas Turbine

This permit is issued under the provisions of Chapter(s) 403, Florida Statutes, and Florida Administrative Code Rule(s) 17-2. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the department and made a part hereof and specifically described as follows:

The permittee can operate the 49.9 MW Combined Combustion Turbine and two (2) 9.5 MW steam turbines, which utilize superheated steam produced by recovering waste heat from the combustion turbine exhaust gases. NO<sub>x</sub> emissions are controlled by using low nitrogen content fuels and water injection.

This source is located at 112 Ruby Street Kissimmee, Florida.

General Conditions 1 through 15 are attached to be distributed to the permittee only.

DER

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BAQM

PERMITTEE:  
James C. Welsh  
Utilities Director

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SPECIFIC CONDITIONS:

1. No objectionable odors will be allowed, as per Rule 17-2.620(2), F.A.C.
2. There shall be no discharges of liquid effluents or contaminated runoff from the plant site without approval from this office.
3. All unconfined emissions of particulate matter generated at this site shall be adequately controlled. (Rule 17-2.610(3), F.A.C.)  
Area must be watered down should unconfined emissions occur.
4. This permit does not preclude compliance with any applicable local permitting requirements and regulations.
5. The maximum emission rates for the 49.9 MW combined cycle gas turbine shall not exceed the emission limits listed in Table 1.  
Allowable Emission Limits: (see attached)

TABLE 1  
ALLOWABLE EMISSION LIMITS  
49.9 MW Combined Cycle Combustion Turbine

Pollutant	Standard	Gas Turbine <sup>(a)</sup>	Boiler	Basis
NO <sub>x</sub> <sup>(a)</sup>	0.0075 $\frac{(14.4)}{Y}$ + F	79 PPM (gas) and 129 (oil) at 15 percent oxygen on a dry basis		NSPS, BACT
SO <sub>2</sub>	0.8 percent S by weight 0.015 percent by volume at 15 percent oxygen on a dry basis	0.5 percent S by weight and 255 lb/hr	0.5 percent S by weight	NSPS, BACT
Visible <sup>(b)</sup>	20% opacity	20% opacity or 22 lb/hr	20% opacity	BACT
VOC	-	19 lb/hr		BACT
CO	-	80 lb/hr		BACT
Mercury (Hg)	-	0.0004 lb/hr		Estimated by Applicant
Beryllium (Be)	-	0.00004 lb/hr		EPA 600/57-81-003b

(a) The allowable NO<sub>x</sub> emission rate for the gas turbine was determined by the following formula:

$$STD = 0.0075 \frac{(14.4)}{Y} + F \text{ where:}$$

STD = allowable NO<sub>x</sub> emissions (percent by volume at 15 percent oxygen and on a dry basis).

Y = manufacturer's rated heat rate at manufacturer's rated load (kilojoules per watt hour) or, actual measured heat rate based on lower heating value of fuel as measured at actual peak load for the facility. The value of Y shall not exceed 14.4 kilojoules per watt hour. The efficiency factor must be based on the gas turbine efficiency itself, not the overall efficiency of the gas turbine combined with other equipment.

NO<sub>x</sub> = 79 PPM when burning natural gas

NO<sub>x</sub> = 129 PPM when burning fuel oil No. 2

F = NO<sub>x</sub> emission allowance

for fuel-bound nitrogen as follows:

Fuel-bound nitrogen	F
(Percent by weight)	(NO <sub>x</sub> percent by volume)
N ≤ 0.015	0
0.015 < N ≤ 0.1	0.04(N)
0.1 < N ≤ 0.25	0.04 + 0.0067(N - 0.1)
N > 0.25	0.005

where:

N = the nitrogen content of the fuel (percent by weight)

N > 0.25 is proposed by the applicant

(b) Visible emissions: Not to exceed 20% opacity; 40% opacity is permitted for not more than two-minutes in any one hour.

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SPECIFIC CONDITIONS:

6. The plant shall be allowed to operate continuously (8760 hours per year).
7. The source shall be allowed to use either natural gas or No. 2 fuel oil.
8. Maximum sulfur (S) content in the oil shall not exceed 0.5 percent S by weight.
9. This source must be tested yearly from the date of July 9, 1984 for particulate matter, sulfur dioxide, visible emissions (VE), carbon monoxide and nitrogen oxides.

a. Compliance with Particulate Matter Standard must be demonstrated using Reference Method 5.

A visible emission test using Method 9 will be acceptable and stack testing for particulate matter is waived if the opacity is less than 10%.

b. Compliance with the sulfur dioxide emission limits will be determined by reference Method 20 or by calculations based on fuel analysis (ASTM D2880-77 and 010720-70) for sulfur content.

c. Compliance with carbon monoxide emission limits will be determined by reference Method 10.

d. Compliance with volatile organic compound emission limits will be assumed provided the CO allowable emission rate is achieved; specific VOC compliance testing is not required.

e. Compliance with the allowable emission limits for nitrogen oxides shall be conducted using EPA reference Method 20 Subpart GG Section 60.335. The sampling site shall be located between the gas turbine and the boiler.

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SPECIFIC CONDITIONS:

During performance tests to determine compliance with the proposed standard, measured NO<sub>x</sub> emission at 15 percent oxygen will be adjusted to ISO ambient atmospheric conditions by the following correction factor:

$$NO_x = (NO_x)_{obs} \left( \frac{P_{ref}}{P_{obs}} \right)^{0.5} e^{19(H_{obs} - 0.00633)} \left( \frac{288^\circ K}{T_{amb}} \right)^{1.53}$$

where:

NO<sub>x</sub> = Emissions of NO<sub>x</sub> at 15 percent oxygen and ISO standard ambient conditions.

NO<sub>x</sub><sub>obs</sub> = Measured NO<sub>x</sub> emission at 15 percent oxygen, ppmv.

P<sub>ref</sub> = Reference combustor inlet absolute pressure at 101.3 kilopascals (1 atmosphere ambient pressure).

P<sub>obs</sub> = Measured combustor inlet absolute pressure at test ambient pressure.

H<sub>obs</sub> = Specific humidity of ambient air at test.

e = Transcendental constant (2.718).

T<sub>amb</sub> = Temperature of ambient air at test.

Test results will be the average of 3 valid runs. The Department will be notified 30 days in advance of the compliance test. The test will be conducted at permitted capacity +10%.

10. A continuous monitoring system shall properly monitor and record the fuel consumption and the ratio of water to fuel being fired in the turbine.

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SPECIFIC CONDITIONS:

11. Sulfur and nitrogen content of the fuel being fired in the gas turbine shall be determined and recorded as specified in the NSPS for Gas Turbines 40 CFR 60, Subpart GG, Section 60.334.

Fuel oil usage records shall be kept by the company, and shall be available for regulatory agency's inspection for a two year period.

12. The applicant shall comply with all requirements of 40 CFR 60, Subpart GG., Standards of Performance for stationary gas turbines.

13. This office (Florida Department of Environmental Regulation, Air Permitting, Orlando) shall be notified at least ten (10) days in advance of the compliance tests so that we can witness them.

14. This plant is required to operate within 10 percent of permitted capacity during the compliance tests.

15. The maximum permitted capacity for this combined cycle power generating facility is 49.9 MW and the maximum permitted capacity for the combustion turbine is 30.9 MW.

16. Supplemental fuel firing may be used only if there is a deficiency in the superheated steam production meant for operating the two (2) 9.5 MW steam turbines.

17. A performance test report for this facility should be submitted to this office within 10 days after the actual changeover from Natural Gas to #2 fuel oil. The report should include the actual fuel rate and analysis; the operating capacity and efficiency of the combustion turbine; the actual and allowable emission rates for all the pollutants; and the net power output during the performance test.

18. Submit for this facility, each calendar year, on or before March 1, an Annual Operations Report for the preceding calendar year as per Rule 17-4.14, F.A.C.

19. Stack sampling facilities will include the eyebolt and angle described in Rule 17-2.700(4)(c), Florida Administrative Code.

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SPECIFIC CONDITIONS:

20. The stack test platform for this facility should meet all the applicable requirements of Rule 17-2.700(4)(c)2. F.A.C. Since yearly testing is required to determine the compliance status of this facility the referenced test platforms should be permanently installed.

21. You must apply for an operation permit renewal 60 days prior to the expiration date of this permit.

Issued this 16 day of oct  
1987

STATE OF FLORIDA DEPARTMENT OF  
ENVIRONMENTAL REGULATION

C.M.

A. Alexander  
DISTRICT MANAGER

A. Alexander, P.E.