

Jeb Bush
Governor

Department of Environmental Protection

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

David B. Struhs
Secretary

November 1, 2000

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Armando Rodriguez, Director
Environmental Affairs Division
Walt Disney World Co.
Post Office Box 10000
Buena Vista, Florida 32830

Re: DEP File No. 0950111-018-AV
Power Turbine Replacement

Dear Mr. Rodriguez:

We received your letter dated October 20, 2000 advising that the power turbine that is aerodynamically driven by the LM5000 combustion turbine will be replaced. The Department has preliminarily concluded that the procedure of comparing future representative actual annual emissions to past actual emissions to determine whether a modification has occurred is not applicable to the situation described.

Our understanding is that the combustion turbine is aerodynamically coupled to the power turbine that mechanically drives a 32-megawatt (MW) electrical generator. Waste heat from the combustion turbine is used to raise steam in the supplementally-fired heat recovery steam generator. That steam drives a separate steam turbine-electrical generator capable of generating another 5 to 10 MW.

An electrical utility steam generating unit is defined as: "Any steam electric generating unit that is constructed for the purpose of supplying more than one-third of its potential electric output capacity and more than 25 MW electrical output to any utility power distribution system for sale. Any steam supplied to a steam distribution system for the purpose of providing steam to a steam-electric generator that would produce electrical energy for sale is also considered in determining the electrical energy output capacity of the unit." [Rule 62-210.200(109), F.A.C.]

It appears therefore, that the electricity generated from the power turbine-electrical generator would not be considered in determining of steam turbine-electrical generation capacity, which is less than 25 MW. Consequently the correct procedure for estimating future emissions is as follows:

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“For any emissions unit (other than an electric utility steam generating unit specified in subparagraph (d) of this definition) which has not begun normal operations on a particular date, actual emissions shall equal the potential emissions of the emissions unit on that date.”
[Rule 62-210.200(12)(c), F.A.C.]

We can discuss further the information required to determine whether the repair or replacement of the power turbine qualifies as routine repair replacement or repair. We can also discuss possible options to avoid PSD applicability by limiting future emissions to past actual emissions.

If you have any question regarding this matter, please call A. A. Linero, at 850/921-9523.

Sincerely,



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

CHF/al

Cc: Len Kozlov, DEP CD
Gregg Worley, EPA
Rich Bumar, WDW
Lee Schmudde, WDW
Elaine Potusky, WDW



WALT DISNEY World Co.

October 20, 2000

Mr. Clair H. Fancy, P.E., Chief
Bureau of Air Regulation
Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

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OCT 23 2000

BUREAU OF AIR REGULATION

RE: FDEP Permit 0950111-018-AV
Walt Disney World Co.
Gas Turbine Generator and Heat Recovery Steam Generator with Duct Burner

Dear Mr. Fancy:

The purpose of this correspondence is to provide notification that Reedy Creek Energy Services (RCES), on behalf of Reedy Creek Improvement District (RCID), will be replacing the power turbine component of the subject source over the course of the next three weeks. Replacement is necessitated by mechanical failure of the power turbine. While RCID and RCES believe that this component replacement may be "routine", we have concluded that, in any event, it does not constitute a "modification" since the replacement will not result in a net increase of actual emissions. Within this submittal is a discussion of the process equipment, the function of the power turbine in the process, the reasons for replacement of the power turbine, and emissions calculations.

Process Equipment

This unit is a combined cycle power plant consisting of an aero-derivative gas generator (jet engine), a free power turbine, a heat recovery steam generator, and a steam turbine generator plus supporting auxiliaries, with a combined nameplate capacity of 38 MW. The gas generator is a General Electric LM5000, which is derived from the GE CF6-50 turbofan aircraft engine. This gas generator exhausts into a free power turbine, which is also a General Electric product. The power turbine is connected to the electrical generator by shaft but not to the gas generator. The power turbine aerothermodynamically converts the available energy in the hot exhaust of the gas generator into rotational energy to drive the electrical generator.

The power turbine is composed of three stages of nozzles and blades with shaft bearings and seals. As such it does not consume fuel, nor create any emissions in and of itself. The gas generator and the power turbine share a lubricating oil system.



Power Turbine Replacement

In May, 2000, the shared gas generator and power turbine synthetic oil lubricating system began exhibiting signs of contamination (resulting from exposure to high temperatures) and higher oil consumption. Since the lubrication systems are combined, a determination of the source of the problem could not be readily accomplished without isolating each component. There were no other signs of problems observed, such as bearing material in the chip detectors, high vibration, abnormal temperatures, etc., which could have led to the conclusion that the power turbine was malfunctioning. It was decided to continue to operate normally until such time as the lubrication systems could be appropriately separated to isolate the source of the problem. The lubrication systems were separated in September, 2000 and it was immediately discovered that the entire source of the oil contamination was the power turbine. Also at that time, the rate of oil consumption and contamination increased significantly and bearing material began appearing in the chip detectors. It was decided that the power turbine was no longer fit for further safe operation. At no time in the power turbine's life up to the time of removal from service was there any indication that the power turbine had impaired efficiency or reduced capacity of the plant.

Expected Power Turbine Life

Free power turbines can be expected to have a service life before major overhaul or replacement of between 50,000 and 100,000 hours. This power turbine has approximately 73,000 hours of service. Major power turbine overhauls can be expected to be required several times over the expected lifetime of a power plant of this type.

Decision to Repair or Replace

The decision to replace rather than overhaul the power turbine was due to the long overhaul time which would have effectively shut down this plant's electrical production for six to nine months, compared to a three-week time frame for the replacement.

Effect on Emissions

Replacement of the power turbine will have no effect upon annual emissions, hourly mass emissions, or concentrations of emissions of any of the regulated pollutants (i.e., NO_x, SO₂, PM, VOC, CO). As previously stated, the power turbine burns no fuel, and its replacement does not constitute an extension of its expected lifetime, will not operate more efficiently than the original, will not cause more hours of operation per year, nor in any other way result in more emissions than past actual levels.



"Past-Actual" Calculation

Plant Emissions Summary 1995 - 1999

Year	Pollutant- Tons Per Year					Hours	Fuel	
	CO	NOx	PM/PM10	SO2	VOC		NG MMft ³	#2FO Kgal
1995	17.3	230.5	2.1	0.3	0.0	7656	2090.2	0.0
1996	11.2	135.1	1.4	1.2	0.0	5022	1344.8	0.0
1997	5.7	81.0	0.7	0.6	0.0	2546	795.5	0.0
1998	5.1	232.4	2.7	2.1	0.0	6695	2129.7	154.3
1999	4.2	217.7	2.5	0.4	0.0	6472	1973.3	0.1

The average of the two highest consecutive years, 1998 and 1999 are:

	CO	NOx	PM/PM10	SO2	VOC
AVG	5.2	225.0	2.6	1.2	0.0

Based on our consideration of all relevant engineering and operational factors, we have concluded that the power turbine replacement will not result in an increase in short-term emission rates or an increase in annual emissions based on a comparison of past actual emissions and representative actual annual emissions. As an existing electric utility steam generating unit, we will submit to the Department information demonstrating that the power turbine replacement did not result in an emissions increase in accordance with Rule 62-210.200(12)(d), F.A.C. It is projected that any future increase in utilization of the unit could have been accommodated during the baseline period. Also, such increases would be unrelated to the power turbine replacement, and would be attributable to other factors, such as the rate of electricity demand growth for the system.

If you have any comments or questions regarding any of the information contained herein, please call Rich Bumar at (407) 939-4683 or Elaine Potusky at (407) 560-7119.

Sincerely,

Armando Rodriguez
 Director, Environmental Affairs Division

cc: Rich Bumar, WDW Co.
 Jeff Koerner, FDEP
 Leonard Kozlov, FDEP
 Elaine Potusky, WDW Co.
 Lee Schumde, WDW Co.

U.S. Postal Service

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Buena Vista, FL 32830

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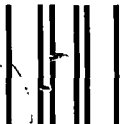
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Department of Environmental Protection
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2600 Blair Stone Road, MS 5505
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