National Energy & Gas Transmission
National Energy Power Company, LLC

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BUREAU OF AIR REGULATION

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October 22, 2004

Florida Department of Environmental Protection
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Attention: Ms. Trina Vielhauer, Chief, Bureau of Air Regulation

RE: Cedar Bay Cogeneration Facility Facility ID. No. 0310337
PSD-FL-137 and DEP File No. PA 88-24
0310337-004-AC

Dear Ms. Vielhauer:

Cedar Bay Generating Company, L.P. (Cedar Bay) is seeking approval to test burn tire derived fuel (TDF) in one of the CFB boilers (Boiler C) at the Cedar Bay Cogeneration Plant. A 30-day test burn is desired to determine the environmental and operational performance of co-firing about 5 percent TDF (feed rate of 5 tons/hr) with 95 percent coal. The actual test burn may be longer than 30-days to accommodate time for the various tests as well as operational considerations. Duration of 60 days should be sufficient to characterize both the performance and environmental conditions of co-firing TDF with coal. Cedar Bay desires to initiate testing on about January 10, 2005. A test burn protocol is attached.

Table 1 presents a comparison of the chemical properties of the coal used at Cedar Bay and TDF as well as emission characteristics between coal and TDF. The characteristics between coal and TDF indicate that ash is substantially lower than coal, while sulfur content of TDF is slightly higher than coal. The heat content of TDF is higher than coal resulting in less TDF for the same heat input. The higher volatile content of TDF suggests that complete combustion can be accomplished. The only air pollutant that would have the potential to increase during a test burn is sulfur dioxide since TDF has slightly higher sulfur content than coal. However, the increase is extremely small compared to the amount of TDF being co-fired with coal (i.e., 5 percent). In addition, the use of CFB technology has the capability of reducing potential emissions of SO_2 to current actual emission levels when firing coal. Table 1 includes a "worst-case" estimate of the increased potential emissions of sulfur dioxide assuming the same SO_2 removal efficiency in the CFB process that would achieve 0.2 lb/MMBtu as required by permit when firing only coal. Table 1 was prepared to illustrate the comparison of the sulfur dioxide emissions of coal only and co-firing TDF and coal for a 30-day (full power) test burn period. The table was prepared based on 5 percent TDF by weight, which is conservative on a heat input basis (about 6 percent). As shown in Table 1, the theoretical increase in SO_2 emissions are about 2.6 tons for the 30-day test period assuming the same removal SO_2 efficiency. This amount of emissions is numerically equivalent to the FDEP criteria for a generic exemption in Rule 62-210.300(3)(b) F.A.C. In reality, Cedar Bay expects no increase in SO_2 emissions given the relatively small amount of TDF that will be co-fired with coal.

Please call Jeff Walker, Cedar Bays Environmental Manager (904) 696-1547 or Ken Kosky, P.E. of Golder Associates (352) 336-5600 for any technical questions regarding this request. The Department's consideration in this matter is appreciated.

Sincerely,

Martin Kreft

Martin Kreft
General Manager

Cc: Hamilton S. Oven, P.E., FDEP Siting Coordination Office
M. Halpin
C. Holladay
R. Robinson, Duval Co.
C. Kirts, NED
G. Worley, EPA
D. Bunyak, NPS

Table 1. COMPARATIVE CHEMICAL AND EMISSIONS CHARACTERISTICS FOR COAL AND TDF

Characteristic	Cedar Bay Coal	TDF	Combination
<u>Proximate Analysis (% as received)</u>	2003 annual average		
Moisture	6.49	0.62	6.20
Ash	10.89	4.78	10.59
Volatile	33.21	66.64	34.87
Fixed Carbon	49.35	27.96	48.29
<u>Ultimate Analysis (% as received)</u>			
Carbon	68.85	83.27	69.56
Hydrogen	4.35	7.09	4.49
Nitrogen	1.32	0.24	1.27
Sulfur	0.96	1.83	1.00
Ash	11.14	4.78	10.83
Moisture	7.05	0.62	6.73
Oxygen	6.41	2.17	6.20
CFB-C Performance			
Heat Content (Btu/lb)	12,000	14,700	12,135
Mass Percentage	95.05%	4.95%	100.00%
Heat Input by Fuel (tons/hr)	41.63	2.17	43.80
Percentage by Heat Input	94%	6%	100%
Heat Input by Fuel (MMBtu/hr)	999.2	63.8	1,063.0
Unit heat Input (MMBtu/hr) - permitted	1,063		
Sulfur Dioxide Emissions			
Sulfur dioxide (uncontrolled; lb/hr with TDF)	1,598.8	158.8	1,757.6
Sulfur dioxide Uncontrolled Emission Rate (lb/MMBtu)	1.6	2.5	1.7
Sulfur dioxide (uncontrolled; lb/hr coal only)	1,700.8	0.0	1,700.8
Difference (lb/hr)			56.8
Sulfur dioxide Emission Rate (lb/MMBtu)	0.2	0.2	0.2
Removal Efficiency	87.50%	91.97%	87.90%
Theoretical Increase (lb/hr)			6.86
Theoretical Increase (tons/test)			2.47

CEDAR BAY COGENERATING PLANT
TIRE DERIVED FUEL TEST BURN PROTOCOL

PURPOSE

Cedar Bay's Circulating Fluidized Bed boilers represent one of the newer systems designed to minimize environmental impact from use of a variety of solid fuels, including Tire-Derived Fuel (TDF). High turbulence and uniform heat distribution allow fluidized beds to operate at lower temperatures to minimize NOx formation. Ammonium Hydroxide is also used to supplement NOx reduction. Limestone is used as the circulating bed media providing efficient Sox control through integral mixing with combustion gases. Baghouses provide efficient particulate removal.

Cedar Bay proposes to perform a performance test burn of tire-derived fuel in one boiler (Boiler C) in order to evaluate its use as a supplemental fuel. The 30-day test burn of tire-derived fuel is designed to ascertain whether the circulating fluidized bed boiler can burn the TDF as supplemental fuel without exceeding permitted limitations on emissions, fuel usage or other environmental conditions and without causing any operational conditions which would affect reliable operation. This plan is intended to be used for submission to FDEP and RESD and as a guide for the plant to complete the performance test burn.

TDF DESCRIPTION

Tire-Derived Fuel (TDF) refers to the use of processed scrap tires as a substitute for fossil fuel. TDF is a hydrocarbon-based material derived from oil and gas. The TDF has a heat content in the range of 14,000 – 15,500 Btu/pound as compared to Cedar Bay's coal heat content of 11,500 – 12,500 Btu/pound. With a lower moisture content than coal, there is a higher energy utilization efficiency and TDF's higher volatile-to-fixed carbon ratio provides rapid and complete combustion.

TDF COMBUSTION PROCESS & EQUIPMENT

The TDF will be delivered to Cedar Bay in trucks. The TDF will be stored in the existing limestone storage area. Cedar Bay will utilize a temporary conveyor equipped with a dedicated hopper and metering device to feed the TDF on a conveyor after the coal crusher to enable the feed of the desired ratio of TDF to coal in Boiler C's coal silos.

The TDF metering unit is approximately 20'long, 8' wide and 11' high. The metering bin has sloped sides that angle down., with two screw augers in the bottom of the unit that are variable speed controlled. The system is designed to discharge onto a belt transfer conveyor. The system instrumentation is in a waterproof enclosure that will enable the plant to interlock the unit with the existing fuel handling system.

The TDF will provide less than 5% of the heat input to C boiler when the TDF feed rate is 5 tons/hr and the boiler is at full load.

SCOPE OF TEST BURN

Operational Feasibility: In order to confirm that co-firing of TDF is feasible without adverse impact to operations the following will be monitored using the dedicated operational performance monitoring software:

- Boiler Operations – facility personnel will monitor boiler performance during the 30-day test burn to determine the impact of TDF combustion on performance and operations. Key parameters that will be continuously monitored are as follows:
    1. Coal flow (KLBS/HR)
    2. Coal Master Demand (%)
    3. Main Steam Flow (KLBS/HR)
    4. Main Steam Temperature (DEG F)
    5. Main Steam Pressure (PSIG)
    6. Reheat Flow (KLBS/HR)
    7. Reheat Temperature (DEG F)
    8. Reheat Pressure (PSIG)
    9. Reheat Attemperator Water Flow (KLBS/HR)
    10. Primary Air Grid Nozzle Flow (KLBS/HR)
    11. Primary Air Temperature (DEG F)
    12. Secondary Air Flow (KLBS/HR)
    13. Secondary Temperature (DEG F)
    14. Bed Temperature (DEG F)
    15. Cyclone Outlet Temperature (DEG F)
    16. Combustor Lower Temperature (DEG F)
    17. Combustor Middle Temperature (DEG F)
    18. Combustor Upper Temperature (DEG F)
    19. ReheatII Outlet Gas Temperature (DEG F)
    20. Economizer Inlet Gas Temperature (DEG F)
    21. Economizer Outlet Gas Temperature (DEG F)
    22. Primary Air Air Heater Cold End Temperature (DEG F)
    23. Secondary Air Air Heater Cold End Temperature (DEG F)

- Ash Handling/Air Pollution Control Equipment – facility personnel will monitor the performance of the ash transport system and emission control equipment to ensure proper operation. Parameters that will be continuously monitored:
    1. Baghouse DP "Average" (PSIG)
    2. Baghouse Inlet Temperature (DEG F)
    3. Opacity (%)
    4. Ammonia Flow (ACFM)

Environmental Compliance: facility personnel will monitor the applicable parameters during the test burn to ensure compliance with all permit conditions:

- The amount of TDF burned will be monitored and recorded
- CEM Monitoring – the CEM system will be used throughout the 30-day test period to confirm compliance with CO, NOx, SOx, Opacity and heat input limitations.
- Limestone Flow (KLBS/HR)
- Stack Testing for Particulate Matter, Particulate Matter less than 10 microns, Lead, Mercury, and Beryllium, Sulfuric Acid Mist and Volatile Organics will be completed during the 30-day test burn to confirm compliance with these limitations. The tests will be conducted by a qualified test firm.

The following test methods and procedures will be used during the test burn:

Purpose / Substance	Test Method
Selection of sample site and sample traverse	EPA Method 1
Determination of stack gas flow	EPA Method 2
Gas analysis for calculation of percent O2 and CO2	EPA Method 3 or 3A
Determining stack gas moisture content to convert the flow rate from actual standard cubic feet (ascf) to dry standard cubic feet (dscf)	EPA Method 4
PM	EPA Method 5, 17, or 29
PM10	EPA Method 201 or 201A
VE	EPA Method 9
Pb	EPA Method 12 or 29
Hg	EPA Method 101A or 29
Be	EPA Method 104 or 29
Sulfuric Acid Mist	EPA Method 8
VOCs	EPA Method 18 or 25

TESTING PROCEDURE

The plant should be operating in a steady state while maintaining as close to the following parameters as possible:

Main steam temp 1000 deg F +/- 10 deg F
Reheat steam temp 1000 deg F +/- 10 deg F
Main steam pressure 2410 +/- 100 psia
Boiler Blowdown in normal operation
Condenser level in auto
Deaerator level in auto
Steam drum level in auto
Plant in stable condition (no plugged fuel feeders etc) with no major maintenance occurring
Bottom ash screw coolers in steady state operation.

The outside emission testing company should have their equipment in place and ready to collect data from the exit ductwork on Boiler C.

At the point the silo level reaches 0% indication on the DCS or the fuel level reaches the pant leg of the silo the blended test fuel can be fed to the fuel silo. Past experience indicates that it will take about 3 hours for the test burn material to reach the boiler.

Normal automatic operations should be maintained. Boiler operation will be at steady state full load operation at least one hour prior to commencing stack test achieving a minimum 704 Klbs/hr steam flow and 956.7 lbs/mmBtu heat input during emission testing.

Fuel Sampling and Analytical Methodology

One (1) as-fired fuel sample (blend of coal and TDF) will be collected each day from the coal conveyor belt prior to bunkering into the silo and composited into a weekly sample for analysis. This sampling schedule will be followed throughout the blended test burn period. The weekly composite sample will be analyzed for the constituents listed in the following "Metals Table" below.

Metals Table

Fuel samples will be analyzed using the SW-846 Method 3050 (Metals Digestion Procedure).

A. Arsenic	Method 7060	F. Lead	Method 7421
B. Beryllium	Method 6010	G. Mercury	Method 7471
C. Cadmium	Method 6010	H. Selenium	Method 7740
D. Chromium	Method 6010	I Silver	Method 6010.
E. Copper	Method 6010	J. Zinc	Method 6010

Daily TDF/coal samples will be collected for proximate analyses. (% moisture,% ash,% volatile,% fixed carbon, % sulfur and BTU/lb determination

Ash Sampling and Analytical Methodology

Ash sample collection should be conducted in conjunction with the fuel samples for metals analysis. Flyash will be collected below the bottom dump gates of the flyash separator while the bottom ash will be off the sample port on the drag chain.

One (1) sample of fly ash and one (1) sample of bed ash will be collected each day at the sample points and composited into weekly bed and fly ash samples for analysis. The weekly composite sample will be analyzed for the constituents listed in the "Metals Table" below.

Metals Table

Fuel samples will be analyzed using the SW-846 Method 3050 (Metals Digestion Procedure).

F. Arsenic	Method 7060	F. Lead	Method 7421
G. Beryllium	Method 6010	G. Mercury	Method 7471
H. Cadmium	Method 6010	H. Selenium	Method 7740
I. Chromium	Method 6010	I Silver	Method 6010.
J. Copper	Method 6010	J. Zinc	Method 6010

The constituents in the "Metals Table" will be also analyzed using the Toxic Characteristic Leaching Procedure (TCLP, Method 1311 of SW-846).

DATA COLLECTION

The plant data collection system has been programmed to collect pertinent data points.

CALCULATIONS AND REPORT

To be provided at the conclusion of the test burn