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BUREAU OF AIR REGULATION

December 22, 2008

Mr. David Read, Engineering Specialist II
Special Projects Section
Bureau of Air Regulation
Division of Air Resource Management
2600 Blair Stone Road MS 5500
Tallahassee, Florida 32399-2400

Re: Response to Request for Additional Information (RAI)
DEP File No. 1030011-011-AC (PSD-FL-381)
Bio-fuel Test Burn at P.L. Bartow Plant
Pinellas County, Florida

Dear Mr. Read:

On March 24, 2008, the Department of Environmental Protection (Department) was in receipt of Progress Energy Florida's (PEF) air permit application to allow the test burning of an E-grass based bio-fuel in steam units (SU) and combustion turbines (CT) at the referenced facility. At the request of PEF, various extensions of time to process the permit application were granted by the Department to allow PEF to finalize various aspects of the project.

Additionally, on November 10, 2008, the Department received supplemental information to the original permit application to allow the test burning of another bio-fuel in the SU and CT units at the Bartow facility.

After review of the supplemental information that PEF provided to the Department and reviewing the project overall in its increased scope, the Department, Pursuant to Rules 62-4.055, and 62-4.070 F.A.C., Permit Processing, submitted a request for additional information (RAI), dated December 10, 2008.

Upon review of the Department's RAI, PEF contacted IEG to obtain information to address several of the RAI questions regarding their E-grass product. After some discussion, it was determined that sufficient information to respond to the RAI questions regarding the E-grass product could not be provided by IEG in time to conduct a test burn before the currently scheduled shutdown of the Bartow steam units. Therefore, in an effort to simplify the review of information submitted by PEF as a response to the RAI and facilitate the issuance of the test burn permit, PEF requests the withdrawal of the IEG E-grass bio-oil product from the test burn permit application. As a result, the additional requested information pertaining to only the NGB bio-fuel is addressed below in the order in which it was received.

1. On page one of the Application Report (paragraph 4) it is stated that “no plant changes to existing process equipment are necessary to test burn the proposed bio-fuels.” However it has been indicated to the Department via phone conversations with the representative of PEF and in the supplemental application that an ethanol purging system along with a fuel skid will be required to test the bio-fuels in the SU and CT units at the facility. Please explain this discrepancy, because use of a purging system (including ethanol) and a fuel skid with the ability to heat the bio-fuels appears to constitute a change to the existing process equipment. [Rule 62-4.070, F.A.C. Reasonable Assurance]

Response: The combustion of bio-fuel will require transportation to the facility by tanker truck. In order to simplify the operation, storage of the bio-fuel will remain in the tanker and a fuel delivery skid will be hooked up to the tanker and piped to the burner lances in the boiler. The tanker/fuel delivery skid/burner lances will be a closed-loop system. In addition, the NGB Classic product does not require heating to facilitate delivery to the burner lances, therefore, no heaters will be employed in the test burn.

*The ethanol purge and heating was to be an integral component of the fuel handling for the combustion of the IEG E-grass product; however, PEF has **withdrawn the combustion of this material from the test burn permit application.***

2. Are the material properties for the E-grass bio-fuel that were provided in the original application (dated March 24, 2008) still accurate or has the fuel properties changed over time? If the E-grass bio-fuel properties have changed, please provide the new material property values to the Department. [Rule 62-4.070, F.A.C. Reasonable Assurance] T

Response: PEF has withdrawn the combustion of the E-grass bio-fuel from the test burn permit application.

3. Since the date of the original application, has any emissions data become available with regard to the burning of the E-grass bio-fuel in SU or CT units? If so, please provide the data to the Department. [Rule 62-4.070, F.A.C. Reasonable Assurance]

Response: PEF has withdrawn the combustion of the E-grass bio-fuel from the test burn permit application.

4. Is any emissions test data available comparing emissions from SU and CT units firing the NGB and/or the E-grass based bio-fuels to the similar units burning biodiesel meeting the ASTM 6751 international biodiesel specification? If any test results are available, please provide them to the Department. [Rule 62-4.070, F.A.C. Reasonable Assurance]

Response: Please see Attachment A for data collected during the combustion of NGB's Super Classic product and compared to No. 2 distillate. Please note that, although the heat input listed is similar for both the bio-fuel and the No. 2 distillate oil, the quantity of bio-fuel introduced into the turbine for combustion is roughly 60% greater to reach equivalent heat input from No. 2 oil.

As for emission data associated with the E-grass based bio-fuel, PEF has withdrawn the combustion of this bio-fuel from the test burn permit application.

5. The lower heating value (LHV) energy contents of the E-grass bio-fuel (81,232 Btu/gal) and NGB bio-fuel (93,741 Btu/gal average, assuming LHV energy content is provided in the supplemental application) are significantly less than the typical LHV energy content of No. 2 distillate fuel oil (132,000 Btu/gal). Since the throughput of either bio-fuel must be greater than No. 2 fuel oil to maintain the same energy rating for the SU and CT units, explain how this will affect air missions. It does not appear this factor was taken into consideration in either application when estimating the effects on pollutant emissions when burning the bio-fuels in the SU and CT units. [Rule 62-4.070, F.A.C. Reasonable Assurance].

Response: It's recognized that the heating value of the proposed bio-fuels are different (lower) than the heating value of the distillate and residual fuel oils that are typically fired at the facility. That's why the attached table (See Attachment B) was developed and included in the supplemental information package. The table's intent was to estimate the estimated quantities of bio-fuels that could be fired, in the proposed ratios, with existing fuels, and still not exceed the currently permitted heat input rates. PEF cannot fire a greater quantity of fuel than the current maximum fuel flow capacity of the units. Therefore, PEF acknowledges that the unit which fires the bio-fuel will be derated during the firing.

6. What bio-fuel property testing procedures will be utilized by PEF to ensure that the specifications of the delivered bio-fuels meet the specifications of the bio-fuels provided in the air permit applications (original and supplemental)? Will vendor certification be used or will PEF conduct their own testing on the delivered bio-fuels? [Rule 62-4.070, F.A.C. Reasonable Assurance]

Response: An analysis of the bio-fuel will be provided by the vendor (NGB), which will be composed of the parameters and methods of analysis specified by the Department in the test burn permit. For purposes of fuel specification verification, the bio-fuel will be tested prior to shipment and a Certificate of Analysis will be provided to PEF at least seven (7) days before delivery.

7. On page 5 of the Application Report, the effects on pollutant emissions that are anticipated by PEF while burning the bio-fuels are provided. Please provide a more detailed rationale behind each of the anticipated pollutant emissions effects. Include in this rationale, the anticipated effect on pollutant emissions of blends of the bio-fuels with No. 2 fuel oil, including the effect of the lower energy content of the bio-fuels. [Rule 62-4.070, F.A.C. Reasonable Assurance]

Response: As was previously stated in the application submitted, very little emission test data exists for the combustion of the proposed bio-fuel. In fact, the stated purpose of the requested test firing program is to collect such data. Based on the test data collected and subsequent evaluations, PEF will make more informed decisions on the future use of this fuel, as well as other potential bio-fuels. As the Department has stated above, PEF provided a characterization of proposed emissions (page 5 of the application report), based on engineering judgment. In addition, Attachment A (see response to question 4 above) has now been provided, which provides additional information on anticipated emissions.

8. As per phone conversations with the PEF representative and the supplemental permit application, please describe the systems and procedures (pumping, injection, blending and purging) that will be required when burning the bio-fuels in the SU and CT units. [Rule 62-4.070, F.A.C. Reasonable Assurance]

Response: Please see Attachment C for process flow diagrams (PFD) of the fuel delivery skid. The skid will be coupled to a tanker truck employed to transport the bio-fuel to the site. The tanker will be positioned within a temporary containment system and the bio-fuel will be pumped to the burner lances in the boiler. No heating will be required to facilitate the pumping and delivery of the NGB product and the system will be closed-looped. There will not be any actual blending of the bio-fuel and other liquid fuels.

9. Please provide any drawings or schematics of the pumping, injection, blending and purging systems indicated in Question No. 8. This information should include the fuel skid that will be required to inject the bio-fuels into the SU and CT units. According to the supplemental application, it appears that the skid will also have the ability to heat the bio-fuels prior to injection into the SU and CT units. Please provide to the department any drawings or schematics of the heating units. [Rule 62-4.070, F.A.C. Reasonable Assurance]

Response: Please see Attachment C for process flow diagrams (PFD) of the fuel delivery skid. Although this PFD depicts three (3) tanker trucks, the current plan is to have only one (1) tanker truck on site at any one time.

10. Please provide to the Department information on how the bio-fuels and ethanol will be delivered to the site, stored on site and, if necessary, disposed of after testing is completed. [Rule 62-4.070, F.A.C. Reasonable Assurance]

Response: Currently, it is planned to have the bio-fuels delivered to the site via semi-tractor tanker. The bio-fuels will be stored in the tanker and pumped to the boiler directly from the tanker. The ability exists to drain all equipment and hoses once test burn is completed. Any remaining bio-fuel will be drained to a tote and then pumped from the tote back into the tanker. If a draining is not adequate, an alternative is to utilize nitrogen to purge the lines and push any remaining bio-fuel into the tote or tanker. The tanker will then transport any uncombusted bio-fuel back to the NGB's production facility for re-use.

11. Please provide to the Department a test matrix and schedule for the proposed bio-fuels test burn project. The matrix and schedule can be preliminary in nature, but should at a minimum indicate the number of blends (bio-fuels and No. 2 fuel oil mixtures by percent) that will be tested and the schedule associate with the testing of each blend. For example, will the initial testing take place with 100% bio-fuels or will blends initially be used. Also, how long is it expected to take to test each bio-fuel blend. [Rule 62-4.070, F.A.C. Reasonable Assurance]

Response: Please reference Phases I, II and III described in Test Burn Plan (See Attachment D).

12. Please provide estimates of the pollutant emissions from the bio-fuel and ethanol storage tanks and the associated transportations systems to the SU and CT units. Also provide to the Department information on how the bio-fuels will be heated (steam, heated coils, etc.) and what will be the pollutant emissions associated with the heating process. [Rule 62-4.070, F.A.C. Reasonable Assurance]

Response: Regarding estimates of emissions from storage tanks containing the NGB Classic product, calculations were performed assuming the emissions were equal to No. 2 fuel and employing TANKS 4.09D. Emissions from a 7,000 gallon tank were determined to be 0.004 tons of VOCs per year. Please see Attachment E for TANKS 4.09D assumptions and calculations.

As for heating of the bio-fuels and ethanol storage, only the IEG E-grass product required heating to facilitate pumping and ethanol for purging of the fuel lines. As previously stated, PEF has withdrawn the inclusion of E-Grass from this test burn permit application. As a result of the withdrawal of the IEG product from the application, there will be no pollutants associated with heating of bio-fuels. In addition, the transport and delivery of the bio-fuel to the boiler is a closed-loop system and no significant emissions are expected from the transport and delivery of the NGB product to the boiler.

If you should have any questions, please don't hesitate to contact Scott Osbourn, P.E. at (813) 287-1717 or Chris Bradley at (727) 820-5962. Thank you in advance for you timely consideration of the attached information.

Sincerely,



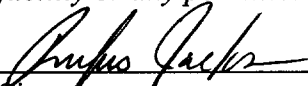
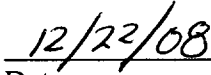
Rufus Jackson, Plant Manager
Responsible Official
P.L. Bartow Power Plant

Cc: Scott Osbourn, P.E., Golder Associates
Terese Sanchez, P. L. Bartow Plant

APPLICATION INFORMATION

Owner/Authorized Representative Statement

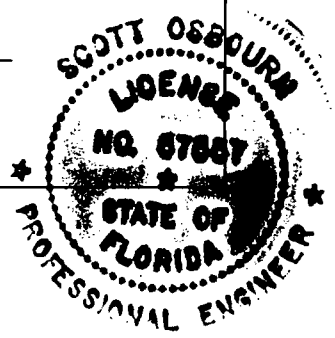
Complete if applying for an air construction permit or an initial FESOP.

1. Owner/Authorized Representative Name : RUFUS JACKSON, PLANT MANAGER
2. Owner/Authorized Representative Mailing Address... Organization/Firm: PROGRESS ENERGY Street Address: 1601 WEEDON ISLAND DR. City: ST PETERSBURG State: FLORIDA Zip Code: 33702
3. Owner/Authorized Representative Telephone Numbers... Telephone: (727) 827-6111 ext. Fax: (727) 827-6102
4. Owner/Authorized Representative Email Address: TOM.LAWERY@PGNMAIL.COM
5. Owner/Authorized Representative Statement: <i>I, the undersigned, am the owner or authorized representative of the facility addressed in this air permit application. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other requirements identified in this application to which the facility is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit.</i>  Signature  Date

APPLICATION INFORMATION

Professional Engineer Certification

1. Professional Engineer Name: SCOTT OSBOURN Registration Number: 57557
2. Professional Engineer Mailing Address... Organization/Firm: GOLDER ASSOCIATES, INC.** Street Address: 5100 WEST LEMON ST., SUITE 114 City: TAMPA State: FL Zip Code: 33609
3. Professional Engineer Telephone Numbers... Telephone: (813) 287-1717 ext.211 Fax: (813) 287-1716
4. Professional Engineer Email Address: SOSBOURN@GOLDER.COM
5. Professional Engineer Statement: <i>I, the undersigned, hereby certify, except as particularly noted herein*, that:</i> (1) <i>To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this application for air permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and</i> (2) <i>To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.</i> (3) <i>If the purpose of this application is to obtain a Title V air operation permit (check here <input type="checkbox"/>, if so), I further certify that each emissions unit described in this application for air permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance plan and schedule is submitted with this application.</i> (4) <i>If the purpose of this application is to obtain an air construction permit (check here <input checked="" type="checkbox"/>, if so) or concurrently process and obtain an air construction permit and a Title V air operation permit revision or renewal for one or more proposed new or modified emissions units (check here <input type="checkbox"/>, if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.</i> (5) <i>If the purpose of this application is to obtain an initial air operation permit or operation permit revision or renewal for one or more newly constructed or modified emissions units (check here <input type="checkbox"/>, if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.</i> _____ Signature (seal) _____ Date <i>12/22/08</i>



* Attach any exception to certification statement.

** Board of Professional Engineers Certificate of Authorization #00001670

ATTACHMENT A

New Generation Bio-fuels

***Super Classic* Formulation**

Emission Performance Report

Conducted for

**FirstEnergy Corporation
General Electric, Frame 5
25 MW**

Conducted on December 11, 2008



New Generation
BIOFUELS

www.newgenerationbiofuels.com

Emissions Performance Report

Customer Name: FirstEnergy Corporation
Location: Edgewater, Ohio
Date of Test(s): April 21-22, 2008
Test Burn Reference: Edgewater Station
Test Application Description:
 Make: General Electric
 Model: Frame 5, designated "Unit B"
 Nominal Rating: 25MW
Report Revision: 1
Report Date: December 11, 2008

1.0 TEST BURN OVERVIEW

The purpose of this test was to compare the engine performance and emissions characteristics of the GE Frame 5 engine when running on high-sulfur #2 diesel fuel (distillate) and biofuel produced by New Generation Biofuels. A baseline test on distillate was performed on April 21, 2008. On April 22, 2008, a test was performed using biofuel, which in this case was "Super-Classic" formulation made from Recycled Vegetable Oil (RVO).

Prepared By

Document Owner(s)	
C. D. Wright VP, Product Development	<i>C. David Wright</i>

2.0 ENVIRONMENTAL TESTING PROGRAM

Test Program	Describe
Stack Testing Protocol	
Stack volume flow	EPA Methods 1 and 2
SO ₂	EPA Method 6C - abbreviated
Aromatics / VOC	EPA Method 25A - abbreviated
O ₂	EPA Method 3A - abbreviated
CO	EPA Method 10 - abbreviated
CO ₂	EPA Method 3A - abbreviated
NO _x	EPA Method 7E – abbreviated
Test Lab	Grace Consulting, Inc.

3.0 TESTED FUELS

	Baseline	NGBF
Date	4/21/08	4/22/08
Fuel Type	High-Sulfur #2 Diesel	Super Classic/ RVO
HHV, BTU/lb	19,452	11,842
Specific Gravity	0.8520	0.9105
Pour Point, °C	N/A	-9
Flash Point, °F	N/A	115
Sulfur, ppm	2600	0
Vanadium, ppm	N/A*	<0.1
Sodium, ppm	N/A	0.303
Potassium, ppm	N/A	<0.1
Lead, ppm	N/A	<0.1
Copper, ppm	N/a	0.199
Calcium, ppm	N/A	9.5
Phosphorus, ppm	N/A	0.391
Ash, %	N/A	<0.001

*N/A – Not Available

4.0 TEST PERFORMANCE

4.1 Summary of Test Performance

This test was intended to evaluate the engine and emissions performance of New Generation Biofuels' Super-Classic formulation as compared to #2 distillate. Overall performance was very satisfactory, with significant improvement in both NO_x and SO₂ emissions.

Output and unit heat rate while burning the biofuel were substantially similar to distillate firing. Combustion was stable, with no extraordinary events to suggest any performance issues.

NO_x emissions performance was substantially improved. Demonstrated emission rates, expressed in lb/mmBtu, were **reduced by approximately 75%**.

SO₂ emissions performance was dramatically improved. Demonstrated emission rates, expressed in lb/mmBtu, were **94-98% less** than those of distillate when using the biofuel.

CO emissions performance was relatively similar to that on distillate, with the biofuel outperforming distillate at high load.

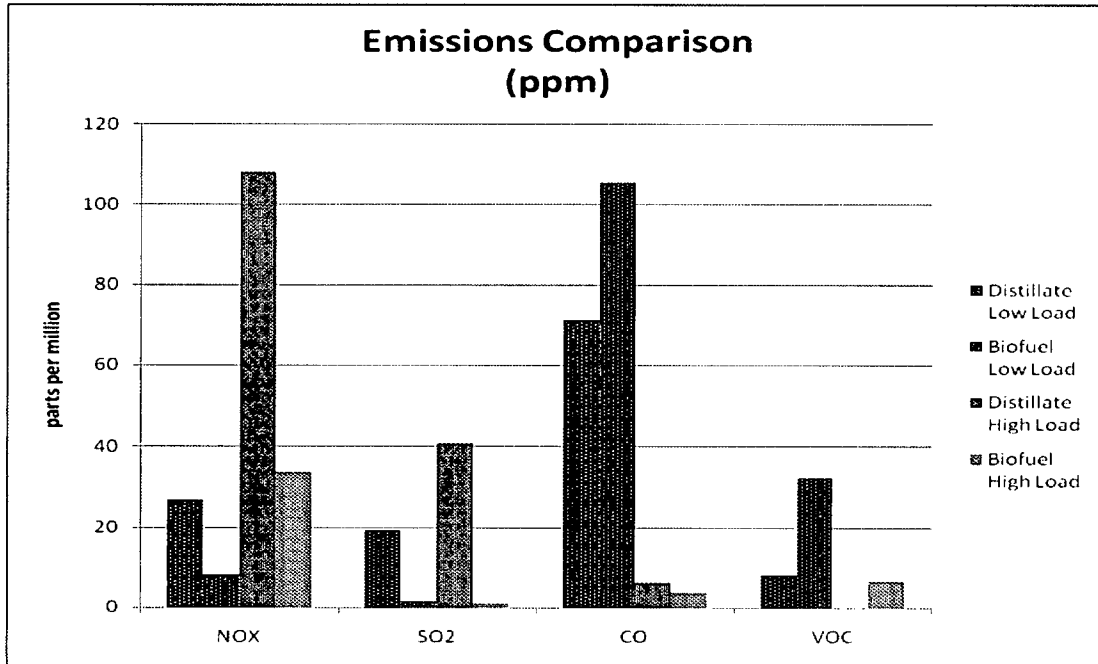
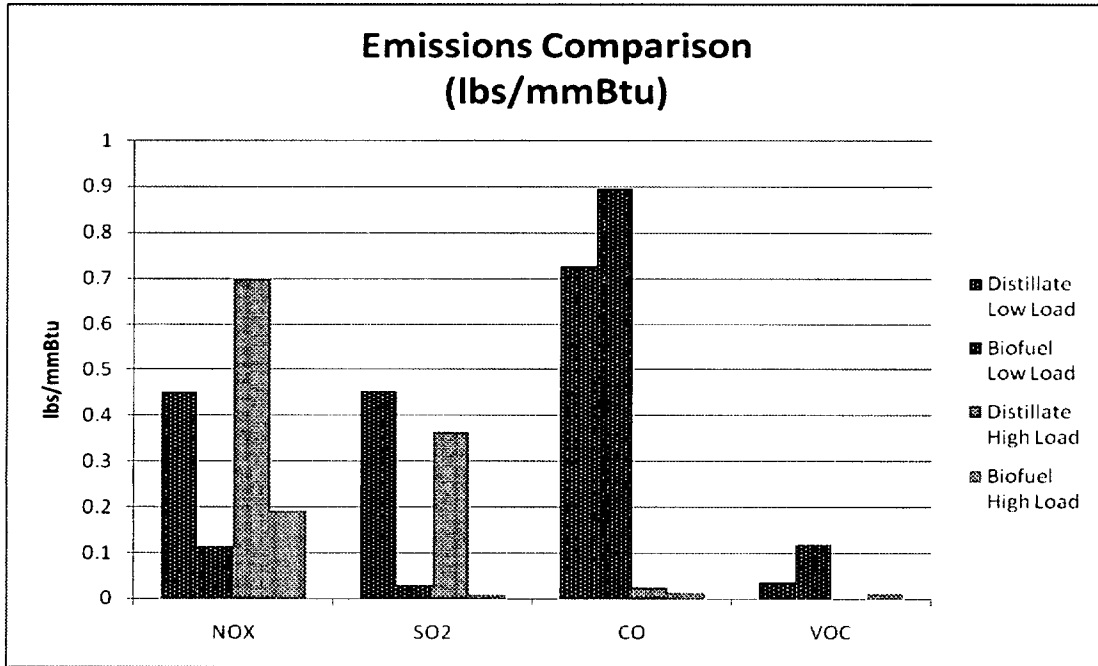
Tabulated and graphical summaries of the emissions results follow.

4.2 Test Data

	Baseline Fuel Low Load	NGBF Low Load	Baseline Fuel High Load	NGBF High Load
Fuel	#2 Distillate	SC/RVO	#2 Distillate	SC/RVO
Test Date	4/21/08	4/22/08	4/21/08	4/22/08
Load, Mw	3	3.2	18.6	15.1
Heat Rate mmBtu/Mwh	43.9	42.3	15.7	17.3
Fuel Flow, GPH	954	1554	2112	3006
NO_x, ppm corrected	26.82	8.09	108.1	33.66
NO_x, lb/mmBtu	0.450	0.113	0.699	0.192
SO₂, ppm corrected	19.28	1.42	40.71	1.05
SO₂, lb/mmBtu	0.452	0.028	0.363	0.008
CO, ppm corrected	71.05	105.4	6.16	3.68
CO, lb/mmBtu	0.726	0.896	0.024	0.013
VOC, ppm corrected	8.06	32.34	0.41	6.51
VOC, lb/mmBtu	0.036	0.118	0.000	0.010
CO₂, % corrected	1.28	1.56	3.07	3.19
O₂, % corrected	19.54	19.26	17.35	16.88

SC/RVO = NGB's SuperClassic Formula using Recycle Vegetable Oil (RVO)

4.3 Graphical Data



ATTACHMENT B

Bartow Generating Units

Permitted Firing Rates

&

Firing Rates with Bio-Fuels

P.L. Bartow Plant

BARTOW GENERATING UNITS- PERMITTED FIRING RATES AND RATES WITH BIO-FUELS

Emission Unit	Permitted Firing Rate		LEG Bio-Oil		NGB Bio-Oil	
	Heat Input (MMBtu/hr)	Fuel Flow (gal/hr)	Fuel Flow (gal/hr)	Heat Input (MMBtu/hr)	Fuel Flow (gal/hr)	Heat Input (MMBtu/hr)
Steam Unit 1 ^a	1,220	8,026	80	1,214	122	1,171
Steam Unit 2 ^a	1,317	8,665	87	1,311	132	1,265
Steam Unit 3 ^a	2,266	14,908	149	2,255	227	2,176
CT 1	714	5,174	5,174	420	5,174	473
CT 2	714	5,174	5,174	420	5,174	473
CT 3	714	5,174	5,174	420	5,174	473
CT 4	714	5,174	5,174	420	5,174	473

^a Steam unit "permitted" firing rate based on No. 6 oil with a heating value of 152,000 Btu/gal and density of 8.33 lb/gal

^b CT "permitted" firing rate based on No. 2 fuel oil with a heating value of 138,000 Btu/gal and a density of 7.0 lb/gal

^c LEG firing rate based on bio-oil with a heating value of ~81,232 Btu/gal and a density of 9.84 lb/gal

Assume 1% co-firing in the steam units and 100% firing in the CTs

^d NGB firing rate based on bio-fuel with a heating value of ~91,425 (avg) Btu/gal and a density of 7.69 lb/gal

Assume 10% co-firing in the steam units and 100% firing in the CTs

ATTACHMENT C

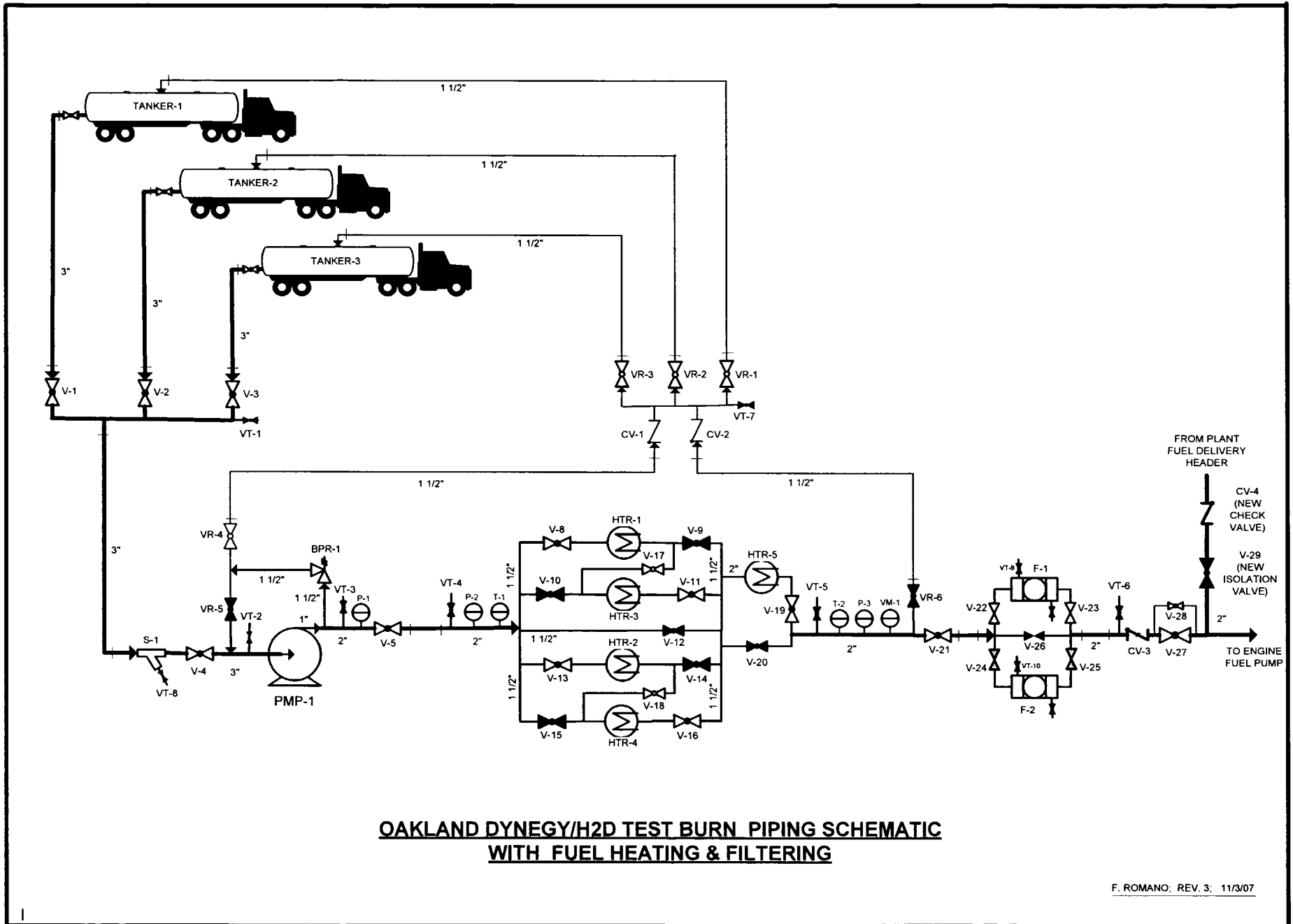
Process Flow Diagram

for

New Generation Bio-fuels

Bio-Fuels Test Burn

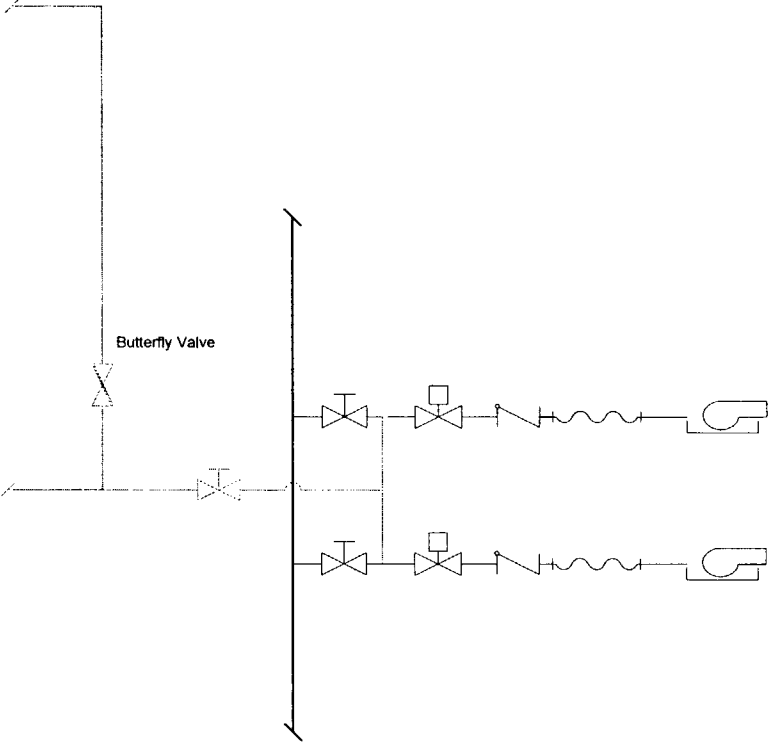
P.L. Bartow Plant



**OAKLAND DYNEGY/H2D TEST BURN PIPING SCHEMATIC
WITH FUEL HEATING & FILTERING**

F. ROMANO; REV. 3; 11/3/07

Plant Side Fuel Delivery



———— Existing Equipment

----- Auxiliary Equipment

ATTACHMENT D

Test Burn Plan

For

New Generation Bio-fuels

P.L. Bartow Plant

New Generation Biofuels Test Plan

Bartow Plant

In early 2009, Progress Energy Florida will perform a biofuel trial burn on unit #1 at Bartow plant. The purpose of the trial is to evaluate the biofuel for long term use as a "drop-in" replacement for #2 diesels. New Generation Biofuels (NGB) will provide fuel for the trial burn. The NGB fuel is emulsified oil derived from various feedstock oils. The feedstocks to be delivered for this application are palm oil, canola oil, and recycled vegetable oil.

The trial burn will consist of three separate phases designed to successively increase confidence that the biofuel could potentially become a direct replacement for #2 fuel oil in a coal or oil fired boiler as an igniter fuel or support fuel.

Phase I

Two ignitor lances located on the 2nd burner level will be utilized to inject NGB into the furnace. The unit will be brought up to load using conventional light-off procedures. Once the #6 burner levels are operating at stable condition, the NGB fuel system will be valved in and fuel will be injected into the existing #6 flame. A visual inspection will be made to ensure the biofuel is fully combusting.
Trial phase duration: 4 hours (1200 gallons)

Phase II

Contingent on success of Phase I, the secondary phase objective is to determine if the NGB fuel will ignite using the pilot spark designed to light #2 fuel oil. Lower burners will be in service during this test. NGB fuel will be introduced to the furnace while the pilot spark operates. A successful burn will be one that lights the fuel and maintains stable flame conditions. Visual flame inspection will be performed and existing flame detection equipment will be used to determine if flame profile is detected.

Phase III

Upon successful completion of phase II, the third phase of the trial will attempt at igniting the #6 oil burner using NGB fuel as the ignition fuel. The furnace will be brought to load using conventional methods with the exception of the two 2nd level burners, which utilize NGB fuel injected through the ignitor lance as its ignition source. Stable main burner (#6 F.O.) flame will determine success of trial phase. Upon main burner ignition, NGB fuel injection can be discontinued and the unit can operate as needed.

Ignitor nozzle tip inspections should be performed at the end of each phase trial to ensure no coking occurred during trial burns. A visual inspection of the furnace walls should also be performed to verify that no visual residues remain in the furnace. Continuous Emission Monitoring (CEMs) equipment will be monitored during the trial to avoid any environmental excursions.

Evaluation of the results of all three phases will further the technical appraisal of NGB as a potential renewable drop-in fuel replacement for #2 as an ignition fuel or furnace support fuel. The knowledge learned from these tests can be directly applied towards a long term trial at another facility such as Crystal River units 1 and 2.

ATTACHMENT E

Volatile Organic Compound (VOC) Emissions

United States Environmental Protection Agency (USEPA)

TANKS 4.09D Report

P.L. Bartow Plant

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Identification and Physical Characteristics

Identification

User Identification:	NGB Test Burn at Bartow
City:	Tampa
State:	Florida
Company:	Progress Energy
Type of Tank:	Horizontal Tank
Description:	

Tank Dimensions

Shell Length (ft):		45.00
Diameter (ft):		8.00
Volume (gallons):		8,000.00
Turnovers:		16.25
Net Throughput(gal/yr):		130,000.00
Is Tank Heated (y/n):	N	
Is Tank Underground (y/n):	N	

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meteorological Data used in Emissions Calculations: Tampa, Florida (Avg Atmospheric Pressure = 14.76 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

NGB Test Burn at Bartow - Horizontal Tank
Tampa, Florida

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Distillate fuel oil no. 2	All	74.39	69.20	79.58	72.33	0.0103	0.0088	0.0119	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

NGB Test Burn at Bartow - Horizontal Tank
Tampa, Florida

Annual Emission Calculations

Standing Losses (lb):	4.2997
Vapor Space Volume (cu ft):	1,440.7304
Vapor Density (lb/cu ft):	0.0002
Vapor Space Expansion Factor:	0.0350
Vented Vapor Saturation Factor:	0.9978
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	1,440.7304
Tank Diameter (ft):	8.0000
Effective Diameter (ft):	21.4149
Vapor Space Outage (ft):	4.0000
Tank Shell Length (ft):	45.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0002
Vapor Molecular Weight (lb/lb-mole):	130.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0103
Daily Avg. Liquid Surface Temp. (deg. R):	534.0608
Daily Average Ambient Temp. (deg. F):	72.3125
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	532.0025
Tank Paint Solar Absorptance (Shell):	0.1700
Daily Total Solar Insulation Factor (Blusqft day):	1,539.1561
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0350
Daily Vapor Temperature Range (deg. R):	20.7604
Daily Vapor Pressure Range (psia):	0.0031
Breather Vent Press. Setting Range (psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0103
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.0088
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.0119
Daily Avg. Liquid Surface Temp. (deg R):	534.0608
Daily Min. Liquid Surface Temp. (deg R):	528.8707
Daily Max. Liquid Surface Temp. (deg R):	539.2509
Daily Ambient Temp. Range (deg. R):	18.6583
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9978
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0103
Vapor Space Outage (ft):	4.0000
Working Losses (lb):	4.1515
Vapor Molecular Weight (lb/lb-mole):	130.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0103
Annual Net Throughput (gal/Yr.):	130,000.0000
Annual Turnovers:	16.2500
Turnover Factor:	1.0000
Tank Diameter (ft):	8.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	8.4512

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

NGB Test Burn at Bartow - Horizontal Tank
Tampa, Florida

Components	Losses(lbs)		
	Working Loss	Breathing Loss	Total Emissions
Distillate fuel oil no. 2	4.15	4.30	8.45

APPLICATION INFORMATION

Owner/Authorized Representative Statement

Complete if applying for an air construction permit or an initial FESOP.

1. Owner/Authorized Representative Name : RUFUS JACKSON, PLANT MANAGER
2. Owner/Authorized Representative Mailing Address... Organization/Firm: PROGRESS ENERGY Street Address: 1601 WEEDON ISLAND DR. City: ST PETERSBURG State: FLORIDA Zip Code: 33702
3. Owner/Authorized Representative Telephone Numbers... Telephone: (727) 827-6111 ext. Fax: (727) 827-6102
4. Owner/Authorized Representative Email Address: TOM.LAWERY@PGNMAIL.COM
5. Owner/Authorized Representative Statement: <i>I, the undersigned, am the owner or authorized representative of the facility addressed in this air permit application. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other requirements identified in this application to which the facility is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit.</i> _____ Signature _____ Date