



REPORT

MINOR SOURCE AIR CONSTRUCTION PERMIT APPLICATION

Request for Air Pollution Controls
Crystal River Power Plant Units 1 and 2
Facility ID No. 0170004

Submitted To: Air Quality Division
Department of Environmental Protection
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MS 5000
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Golder Associates Inc.

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PART II—FDEP APPLICATION FOR AIR PERMIT



1.0 INTRODUCTION

Crystal River Units 1 and 2 fire pulverized coal in Combustion Engineering controlled circulation, tangentially-fired, drum-type, balanced draft, dry bottom boilers to generate superheated steam at 2,520 psig and 1,000 F. The steam output of the boilers drive steam turbine-generators which are currently rated to produce 370 MW and 499 MW net, respectively, in the summer months. The units have both been fitted with low NO_x burners and close-coupled over-fire air systems to decrease nitrogen oxide emissions and the units operate with electrostatic precipitators (ESPs) to reduce particulate emissions. At the present time, these units are utilizing Central Appalachian (CAPP) bituminous coal received by rail.

Duke Energy Florida, Inc. (DEF) has prepared this application for a minor source air construction permit for Units 1 and 2 at the Crystal River Energy Complex (CREC). Specifically, this application is for a minor source air construction permit for the permanent installation and operation of a hydrated lime injection and activated carbon injection system for use on Units 1 and 2. Similar systems were previously authorized for a test burn program under Permit No. 0170004-040-AC. Importantly, after the work discussed below is completed, emissions of all relevant pollutants will be decreased.

DEF is also continuing to evaluate the performance of its ESPs on Units 1 and 2, when operating with compliance coals and the new sorbent injection systems, and intends to undertake work to enhance this performance. The ESP optimization work may also require further adjustments to reagent injection levels and boiler operating parameters to ensure optimal operation in a compliant manner.

This air permit application consists of the appropriate application form required by FDEP Form 62-210.900(1), effective 3/11/2010 (see Part II of this application package). This air application report is divided into the following major sections:

- Section 1.0 provides the Project introduction;
- Section 2.0 provides the Project description;
- Section 3.0 provides a characterization of emissions from the Project; and
- Section 4.0 provides a review of the applicable air regulatory requirements.

In addition, Appendix A provides the site layout and process schematics for the proposed add-on controls (i.e., the hydrated lime injection and activated carbon injection systems).



2.0 PROJECT DESCRIPTION

This application for a minor source air construction permit serves to request the permanent installation and operation of a hydrated lime injection and activated carbon injection system for use on Units 1 and 2. This application also discusses ESP optimization work to ensure an adequate margin of compliance with the new PM limits under the MATS rule. DEF will continue to evaluate the performance of its ESPs on Units 1 and 2, and additional ESP optimization work may require further adjustments to reagent injection levels and boiler operating parameters to ensure optimal operation in a compliant manner.

The Department previously granted authorization for a test burn at Units 1 and 2 under Permit No. 0170004-040-AC, issued on July 8, 2013. The test burn program involved the temporary installation, testing, and operation of new coal blends (with lower sulfur, mercury and chloride levels), equipment, and processes. This authorization was only for a test lasting no more than ninety days in duration to determine whether alternative fuels, along with post-combustion controls could reduce the emissions to levels necessary to comply with the MATS rule. DEF focused on HCl emissions for acid gases, along with mercury and PM emissions to assess and determine expected performance requirements for the site.

The test-burn authorization included coal blends up to 40 percent PRB coal with 60 percent Western Bituminous (WB) and additional temporary post combustion controls, including hydrated lime injection and activated carbon injection systems located upstream of the ESP, pneumatic conveying systems, sorbent silos, fabric filters, injection systems and rotary valves and blowers. In addition, DEF was authorized to make changes and improvements to the coal and ash handling equipment to facilitate the use of lower sulfur coal blends and facilitate removal of dry reaction products.

Units 1 and 2 burned WB coal during the trial burn and intend to burn this type of coal for future compliance with the MATS rule. No coal blends with PRB coal were used. Additionally, hydrated lime injection and activated carbon injection are intended to be utilized upstream of the ESP, similar to operations during the test burn program. Additional detail on the project (i.e., equipment specifications, site layout, process flow diagrams, etc.) is presented in Appendix A. The following paragraphs provide additional background on the characteristics of the coal used during the trial burn, and the hydrated lime and activated carbon injection systems.

2.1 Coal Characteristics

The coal currently being burned at Crystal River Units 1 and 2 has the following characteristics.

■ Ash Content:	11.15 percent
■ Sulfur Content:	1.02 percent
■ Nitrogen Content:	1.35 percent
■ Moisture Content:	5.98 percent



- Heating value: 11,700 Btu per pound
- Hardgrove Grindability Index: 44

DEF burned WB coal in Units 1 and 2 during the test burn program. The properties (as received) are as follows:

West Elk (W. Bituminous)

- Ash Content: 8.47 percent
- Sulfur Content: 0.41 percent
- Nitrogen Content: 1.55 percent (dry basis)
- Moisture Content: 10.68 percent
- Heating Value: 11,391 Btu per pound
- Hardgrove Grindability Index: 50

2.2 Hydrated Lime Injection System

Proposed to become permanent, and similar to the configuration during the test burn, the hydrated lime sorbent will be transported from a sorbent silo to the injection point(s) in the flue gas stream via a pneumatic conveying system. The location of the hydrated lime injection points will be prior to the ESP. The hydrated lime injection rates will vary based on emission control levels and operational parameters. The sorbent will react with the acidic compounds in the flue gas stream to form particulate matter that will be removed in the ESP. Appendix A- Figure 1 provides a site layout that depicts the current location of the add-on control systems. Appendix A- Figure 2 presents an overview of the hydrated lime storage and pneumatic conveying equipment associated with the proposed permanent injection system. This single system will service both units.

As shown in Appendix A- Figure 2, there is one new air emission source associated with the hydrated lime storage and injection system. This new source is related to potential emissions that occur when displaced air entrains dust particles as the sorbent storage vessel is filled. To minimize these emissions, the exhaust from the storage vessels and the pneumatic conveyor are routed through a fabric filter prior to exhausting to the ambient air. As demonstrated in Section 3.0 (Characterization of Emissions), the estimated hydrated lime injection rate at full load can be as much as 1,500 pounds of hydrated lime per hour in each unit (lb/hr/unit). The sorbent storage system has a proposed flow rate of 2,000 acfm through the dust collection system during loading operations, which are estimated to occur for six hours per day. Section 3.2 discusses emission estimates for material storage and handling from the proposed sorbent storage and transfer system.

2.3 Activated Carbon Injection System

DEF anticipates that mercury concentrations as a result of burning the WB coal will be below levels required for MATS compliance. However, to ensure an adequate margin of compliance under varying



operational scenarios, DEF is requesting the option to utilize activated carbon injection (ACI) as a means to achieve lower mercury emission levels, if deemed necessary.

Proposed to become permanent, and similar to the configuration during the test burn, the ACI sorbent will be transported from a sorbent silo to the injection point(s) in the flue gas stream via a pneumatic conveying system. The location of the ACI injection points will be prior to the ESP. The activated carbon injection rates will vary based on emission control levels and operational parameters. The activated carbon will react with mercury in the flue gas stream to form particulate matter that will be removed in the ESP. The activated carbon storage and pneumatic conveying equipment associated with the proposed injection system will be similar to the hydrated lime injection system.

As shown in Appendix A- Figure 3, there is one new air emission source associated with the activated carbon storage and injection system. This new source is related to potential emissions that occur when displaced air entrains dust particles as the sorbent storage vessel is filled. To minimize these emissions, the exhaust from the storage vessel and the pneumatic conveyor are routed through a fabric filter prior to exhausting to the ambient air.

Crystal River Units 1 and 2 may require injection rates up to 400 pounds of activated carbon per hour in each unit (lb/hr/unit). The activated carbon storage system has a proposed flow rate of 2,000 acfm through the dust collection system during loading operations, which are estimated to occur for six hours per day. Section 3.2 discusses emission estimates for material storage and handling from the proposed sorbent storage and transfer system.

2.4 ESP Optimization Projects

DEF is continuing to evaluate the performance of its ESPs on Units 1 and 2 to assure compliance with the MATS emissions standards when operating with compliance coals and the sorbent injection systems. During the test burn, the PM and opacity levels rose as anticipated, in response to the increase in ash resistivity. There were some minor adjustments made on the ESP power settings and rapping programs to compensate, within the existing capability of the equipment. Once the trials were completed, the units returned to use of the normal CAPP coals, and DEF determined that additional ESP work is needed.

WB coal has a higher ash resistivity than CAPP coal, as a result of the lower sulfur content and reduced SO₃ generated in the combustion process. These characteristics reduce the particulate collection efficiency of the precipitators. Additionally, dry sorbent injection tends to increase opacity and particulate loading to the precipitators. Further, hydrated lime injection, which is used in this instance to reduce HCl emissions, will further reduce SO₃ levels and impact particulate collection efficiency. Accordingly, the ESP enhancements are intended to ensure an adequate margin of compliance after switching to WB coal and the installation of the DSI/ACI systems.



DEF analyzed the data to determine what ESP changes are needed to meet the compliance targets. The following specified projects are under consideration:

- Flue Gas Redistribution;
- High Frequency Power Supplies;
- Hopper High Level Indicators & Hopper Vibrators;
- High Voltage Rapper Connections Project;
- Rapper Testing, Adjustments and Optimization;
- Additional Flow Baffles; and
- Recommission of the Last 3 Fields of Unit 2 (Old A/B ESP).

DEF's precipitator work is scheduled during the outages for Unit 1 in spring 2014 (April) and spring 2015, and the outage for Unit 2 in fall 2014. DEF will continue to evaluate the performance of its ESPs following each of these outages, which may include engineering and performance testing. In addition, once the installation and commissioning for all of the work has been completed, DEF will conduct additional testing to confirm expected levels of performance and to demonstrate compliance. These final compliance tests are currently anticipated in January and February of 2016, but these schedules may shift as work progresses.

DEF anticipates that the improved performance of the precipitators and the installation of the reagent systems will allow Units 1 and 2 to achieve compliance at the desired output levels. If, however, the ongoing evaluations reveal that PM emissions are still above desired levels, this plan provides time to develop and implement additional projects. DEF's testing has already confirmed that the desired HCl and mercury emission performance levels can be achieved with the alternate coal and reagents. Furthermore, DEF's testing has confirmed that the desired PM emission performance levels can also be achieved, albeit at unit output levels that are lower than desired for reliability purposes. DEF's intention is that unit output levels of 700 MW or more for Units 1 and 2 will be achieved once all of this work is complete.

Regarding expected future opacity emissions, as noted above, opacity levels tend to vary based on fuel characteristics, unit load (higher opacity at higher loads) and ESP performance. The planned ESP enhancements will ensure that opacity levels remain within current permitted levels after switching to WB coal and installation of the proposed DSI/ACI systems.



3.0 CHARACTERIZATION OF EMISSIONS

In the application for test burn approval, DEP presented a comparison of the air emission constituents resulting from the use of lime and activated carbon injection and combustion of WB coal with the air emissions associated with the current fuel and method of operation. As summarized in Section 2.1, WB coal has much lower levels of sulfur, ash and mercury than CAPP coal. Further, as explained below, the lime and activated carbon injection systems effectively lower emissions. Accordingly, after this work is completed, emissions of all relevant pollutants will be less than past levels.

3.1 Test Burn Emissions – Units 1 and 2

On January 21, 2014, DEF submitted its Report from the test burn, as required under Air Permit No. 0170004-040-AC. The testing was conducted from September 16 through October 3, 2013 on Unit 1 and from November 4 through November 21, 2013 on Unit 2. The test results support the expectation that the units will be capable of meeting future compliance standards, once the required changes have been implemented, and are summarized in the attached Table 3-1. The following are some observations from the trial burn testing program:

- **HCl, Mercury and Reagents:** During the trials, hydrated lime and activated carbon injection reduced HCl and mercury, respectively, within the targeted range of emissions. Note that the HCl “Test Burn” data for Unit 2 reflects fluctuations in fuel chlorine content – i.e. the average chlorine content during the “With Injection” stack tests was three times greater than during the “No Injection” stack tests.
- **SO₂ Emissions:** Since SO₂ emissions are related to the sulfur content of the coal, SO₂ emissions were lower as a result of combustion of the WB coal, as well as the use of the hydrated lime injection system.
- **PM Emissions:** As expected, the PM levels increased during the testing, as a result of the increase in ash resistivity and sorbent injection. DEF is continuing to evaluate the performance of the ESPs, and has identified the work described above to improve the ESP performance to desired levels.
- **NO_x Emissions:** Shows a decrease with WB coal, regardless of injection.
- **CO and VOC Emissions:** Emissions of CO and VOC are related to combustion efficiency which, in turn, is related to the fineness of grinding that can be obtained. A comparison of the Hardgrove Grindability Index (HGI) indicates that WB has a higher HGI than CAPP, and thus should have better grindability and higher degree of fineness.

3.2 Material Handling and Storage Emissions

Material handling and storage emissions will result from the use of hydrated lime and ACI. The reagent injection systems for hydrated lime and activated carbon functioned as anticipated during the test burn program and there were no observable fugitive emissions or visible emissions from the storage and handling operations. Table 3-2 presents calculations on material handling emissions from the proposed permanent sorbent storage and transfer systems. Each of the sorbent storage systems has a proposed



flow rate of 2,000 acfm through the dust collection system during loading operations, which are estimated to occur for six hours per day. However, the emission estimates assume year-round operation and are therefore considered to be a conservative estimate of potential emissions. The potential emissions from the proposed permanent sorbent storage and injection systems for Units 1 and 2 at the Crystal River Energy Center are considered insignificant since the proposed activity emits less than 5 TPY of any criteria pollutant. Approximately 1.1 TPY of PM_{10} is estimated to be emitted from each system, for a total of 2.2 TPY. Emissions of $PM_{2.5}$ are conservatively assumed to equal the PM_{10} emission rate.



4.0 REGULATORY APPLICABILITY

As a result of the proposed Project discussed in the preceding sections, the regulations currently applicable to Units 1 and 2 will remain unchanged from those indicated in currently active Title V and air construction permits, including new BART provisions. The addition of the permanent sorbent injection systems will result in a slight increase in PM emissions due to the sorbent handling and storage, which have been factored into the projected actual emissions from this Project.

4.1 Prevention of Significant Deterioration

Crystal River is classified as an existing major facility. A modification to an existing major facility that results in a significant net emissions increase equal to or exceeding the significant emissions rates (SER) listed in Section 62-212.400, Table 212.400-2, F.A.C., is classified as a major modification and will be subject to the PSD New Source Review (NSR) preconstruction permitting program for those pollutants that exceed the PSD SERs. The procedures for determining applicability of the PSD NSR permitting program to this proposed project are specified in Rule 62-212.400(2)(d)4., F.A.C. The term “significant net emissions increase” is defined by Rule 62-212.400(2)(e), F.A.C. For each regulated pollutant, the net emissions increase for a modification project is equal to the sum of the increases in emissions associated with the proposed project minus all facility-wide creditable, contemporaneous emissions decreases. If this net change in emissions is equal to or greater than the applicable thresholds, then the net emissions increase is considered to be significant and the modification will be subject to PSD NSR for that particular regulated pollutant.

The primary goal of this project is to reduce overall emissions from Units 1 and 2. A summary of emissions impacts due to the proposed project was provided in Section 3.1. These test burn emission results, allowable emission levels, as well as other accepted emission factors were used to estimate projected actual emissions from the proposed project. Future capacity factors for Units 1 and 2 (through 2018) were estimated at a maximum of 26 percent and 35 percent, respectively, based on recent submittals to the Florida Public Service Commission.

Table 4-1 presents a comparison of the projected actual emissions after the proposed project to the past actual emissions baseline. The baseline numbers were developed from the last 5 years of actual operating data, as shown in Table 4-2. The Project totals include the additional 2.2 TPY PM/PM₁₀/PM_{2.5} emissions from sorbent handling and storage from Table 3-2. Importantly, the comparison demonstrates that emissions of all relevant PSD pollutants will be lower after this work is complete. Therefore, PSD review is not applicable for this project.

4.2 Control of Visible Emissions

Material handling and storage emissions will result from the use of hydrated lime and ACI and the vented emissions from the proposed dry sorbent storage systems will be subject to these standards. Visible



emissions from these sources will not be more than 5 percent opacity when averaged over a six-minute period. The bag filters in the design specification will ensure compliance with this standard. The reagent injection systems for hydrated lime and activated carbon functioned as anticipated during the test burn program and there were no observable visible emissions from the storage and handling operations.

4.3 Particulates from Fugitive Non-Process Dust Emission Sources

The facility will take reasonable precautions to prevent fugitive dust emissions and excess visible emissions beyond the property boundary, including maintaining haul roads and material handling operations in a manner that will minimize fugitive dust emissions. The reagent injection systems for hydrated lime and activated carbon functioned as anticipated during the test burn program and there were no observable fugitive emissions from the storage and handling operations.

TABLES

Table 3-1: Crystal River Units 1 and 2 Test Burn Summary

Unit 1 (92% Capacity or 363 MW)						Unit 2 (92% Capacity or 480 MW)					
Pollutant	Baseline (CAPP) (lb/MMBtu)		Test Burn (WB) (lb/MMBtu)		Worst Case (lb/MMBtu)	Pollutant	Baseline (CAPP) (lb/MMBtu)		Test Burn (WB) (lb/MMBtu)		Worst Case (lb/MMBtu)
	No Injection	With Injection	No Injection	With Injection			No Injection	With Injection	No Injection	With Injection	
NO _x	0.359	0.356	0.294	0.305	0.305	NO _x	0.352	-	0.257	0.281	0.281
SO ₂	1.591	1.619	0.786	0.701	0.786	SO ₂	1.793	-	0.737	0.775	0.775
HCL	-	0.086	0.004	0.003	0.004	HCl	0.085	-	0.003	0.006	0.006
PM	0.047	0.098	0.076	0.119	0.119	PM	0.014	-	0.028	0.055	0.055
VE ^a	17.4	18.6	22.1	25.6	25.6	VE ¹	5.6	-	9.6	12.6	12.6
Hg ^b	-	2.874	1.154	0.907	1.154	Hg ²	3.31	-	1.085	0.784	1.085

CAPP = Central Appalachian

WB = Western Bituminous

^a Emissions are in units of percent opacity (%)

^b Emissions are in units of pounds per trillion British thermal units (lb/TBtu)

Table 3-2. Sorbent Storage and Handling Emissions

Hydrated Lime Silo Bin Vent Filter PM Emissions Calculation -- Units 1&2				
Bin Vent Volumetric Flow (ACFM)⁽¹⁾	Vent Emission Rate PM₁₀/ACF)⁽²⁾ (gr	lb PM₁₀/gr PM₁₀	min/hr	hrs/yr
2,000	0.015	1.43E-04	60	8,760
PM₁₀ Emission Rate⁽³⁾ (lb/yr)	PM₁₀ Emission Rate⁽³⁾ (tpy)			
2,253	1.1			
Activated Carbon Silo Bin Vent Filter PM Emissions Calculation -- Units 1&2				
Bin Vent Volumetric Flow (ACFM)⁽¹⁾	Vent Emission Rate PM₁₀/ACF)⁽²⁾ (gr	lb PM₁₀/gr PM₁₀	min/hr	hrs/yr
2,000	0.015	1.43E-04	60	8,760
PM₁₀ Emission Rate⁽³⁾ (lb/yr)	PM₁₀ Emission Rate⁽³⁾ (tpy)			
2,253	1.1			

Notes:

(1): Specification from vendor (Bin Vent Filter Capacity)

(2): Contractor guarantee

(3) It is conservatively assumed that the PM_{2.5} emission rate equals the PM₁₀ emission rate

Table 4-1. Summary of Projected Actual to Past Actual Emissions Comparison

Pollutant	Test Burn Project ^a			Netting Calculations			
	Future Projected Actual Emissions (TPY)			Maximum 2-Year Average from Existing Units ^b (TPY)	Change (TPY)	PSD Significant Emission Rate (TPY)	PSD Review Required?
	Unit 1	Unit 2	TOTAL				
NO _x	1,304	2,068	3,372	7,492	-4,120	40	No
CO	94	161	255	452	-197	100	No
SO ₂	3,355	5,699	9,054	33,247	-24,194	40	No
VOC (as methane)	11	19	31	54	-24	40	No
PM	214	368	583	840	-257	25	No
PM ₁₀	143	246	392	563	-171	15	No
PM _{2.5}	62	107	171	236	-65	10	No
Sulfuric Acid Mist (SAM)	514	873	1,386	5,091	-3,705	7	No
Lead	0.08	0.14	0.21	0.38	-0.16	0.6	No
HCL	17	44	61	1,712	-1,651	--	--
Hg	0.005	0.008	0.013	0.049	-0.036	0.1	No
Greenhouse Gases (CO ₂ e) ^c	881,861	1,517,932	2,399,793	4,528,251	-2,128,457	75,000	No

^a Based on Crystal River Units 1 and 2 Test Burns, allowable emission levels, and projected capacity provided to the PSC.

^b Based on actual emissions from Annual Operating Reports from 2009-2013.

^c Based on AOR data and emission factors from Table C-2, Subpart C, 40 CFR 98.

Note: Neg.= negligible; NA= not applicable

Source: Golder, 2014.

Table 4-2. Annual Average Emissions for Units 1 and 2 for Each Consecutive Two-Year Period, 2009-2013

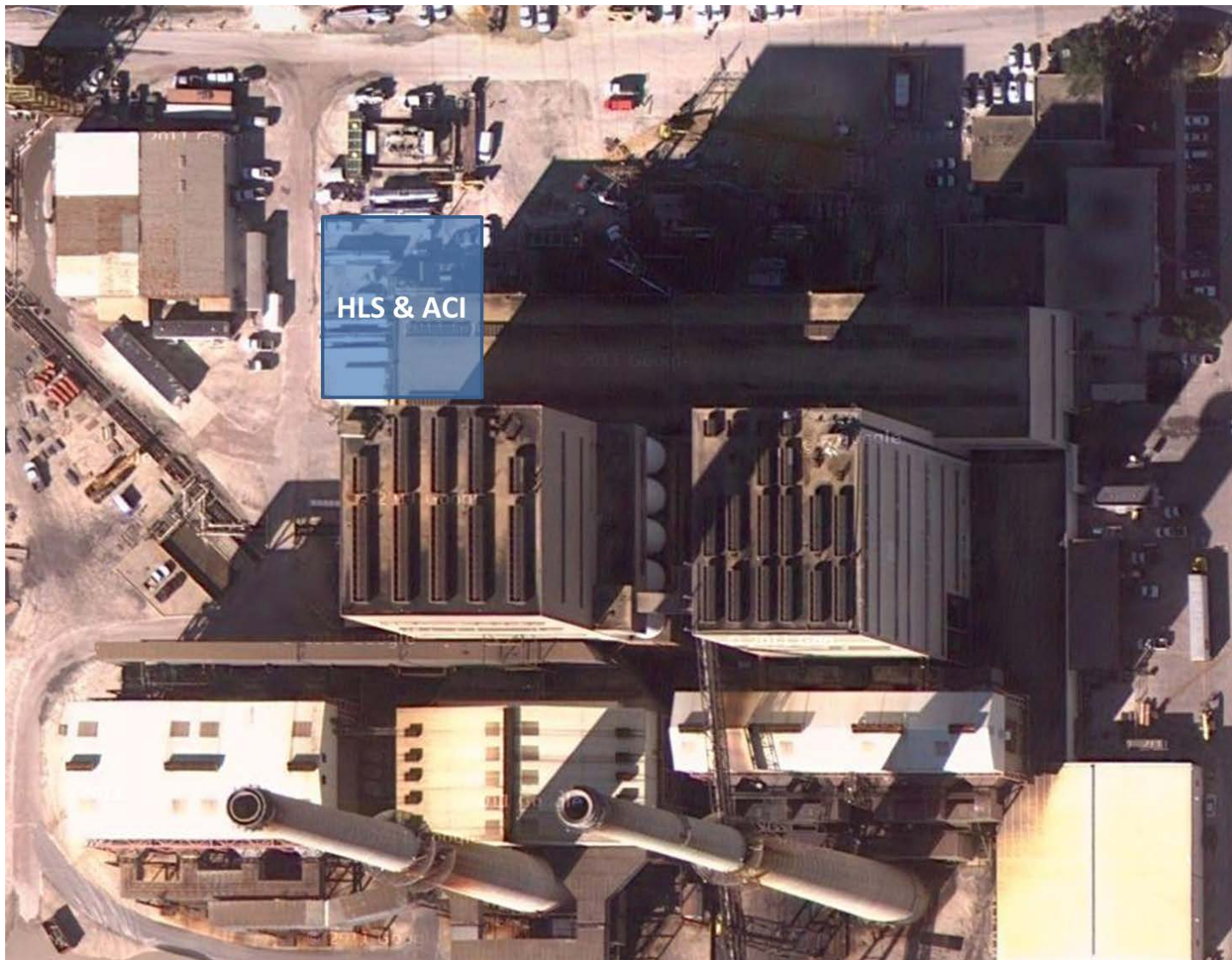
Pollutant	Annual Emissions for Units 1 & 2					Two-Year Average Emissions				Maximum 2-year Average (tons/yr)
	2013 (tons)	2012 (tons)	2011 (tons)	2010 (tons)	2009 (tons)	2013-2012 (tons)	2012-2011 (tons)	2011-2010 (tons)	2010-2009 (tons)	
NO _x	5,081	4,263	3,643	7,258	7,726	4,672	3,953	5,450	7,492	7,492
CO	321.9	273.5	288.8	436.6	466.8	297.7	281.1	362.7	451.7	451.7
SO ₂	24,027	21,183	20,959	33,050	33,444	22,605	21,071	27,005	33,247	33,247
VOC	38.5	32.7	34.5	52.3	55.9	35.6	33.6	43.4	54.1	54.1
PM	549.1	937.9	666.8	811.0	869.3	743.5	802.3	738.9	840.1	840.1
PM ₁₀	367.8	434.5	460.5	543.3	582.3	401.2	447.5	501.9	562.8	562.8
PM _{2.5}	159.2	188.0	157.6	227.9	243.6	173.6	172.8	192.8	235.7	235.7
SAM ^a	3,679	3,244	3,209	5,061	5,121	3,461	3,226	4,135	5,091	5,091
Pb	0.3	0.2	0.2	0.4	0.4	0.2	0.2	0.3	0.4	0.4
HCL	1,218	1,034	1,090	1,655	1,768	1,126	1,062	1,372	1,712	1,712
Greenhouse Gases (CO ₂ e) ^b	1,894,389	1,533,971	1,659,633	4,365,777	4,690,724	1,714,180	1,596,802	3,012,705	4,528,251	4,528,251

^a Not reported in AORs - based on assuming 10% of SO₂ converts to SO₃, all of which converts to SAM.

^b Based on AOR data and emission factors from Table C-2, Subpart C, 40 CFR 98.

Source: Annual Operating Report (AOR) for 2009 - 2013

**FIGURES
APPENDIX A**



HLS & ACI

CLIENT/PROJECT

Duke Energy Florida, Inc.

TAMPA, FLORIDA



TITLE:

FIGURE A-1 –SITE LAYOUT WITH
ADD ON CONTROLS

DRAWN BY:
JS

REVIEWED BY:
SO

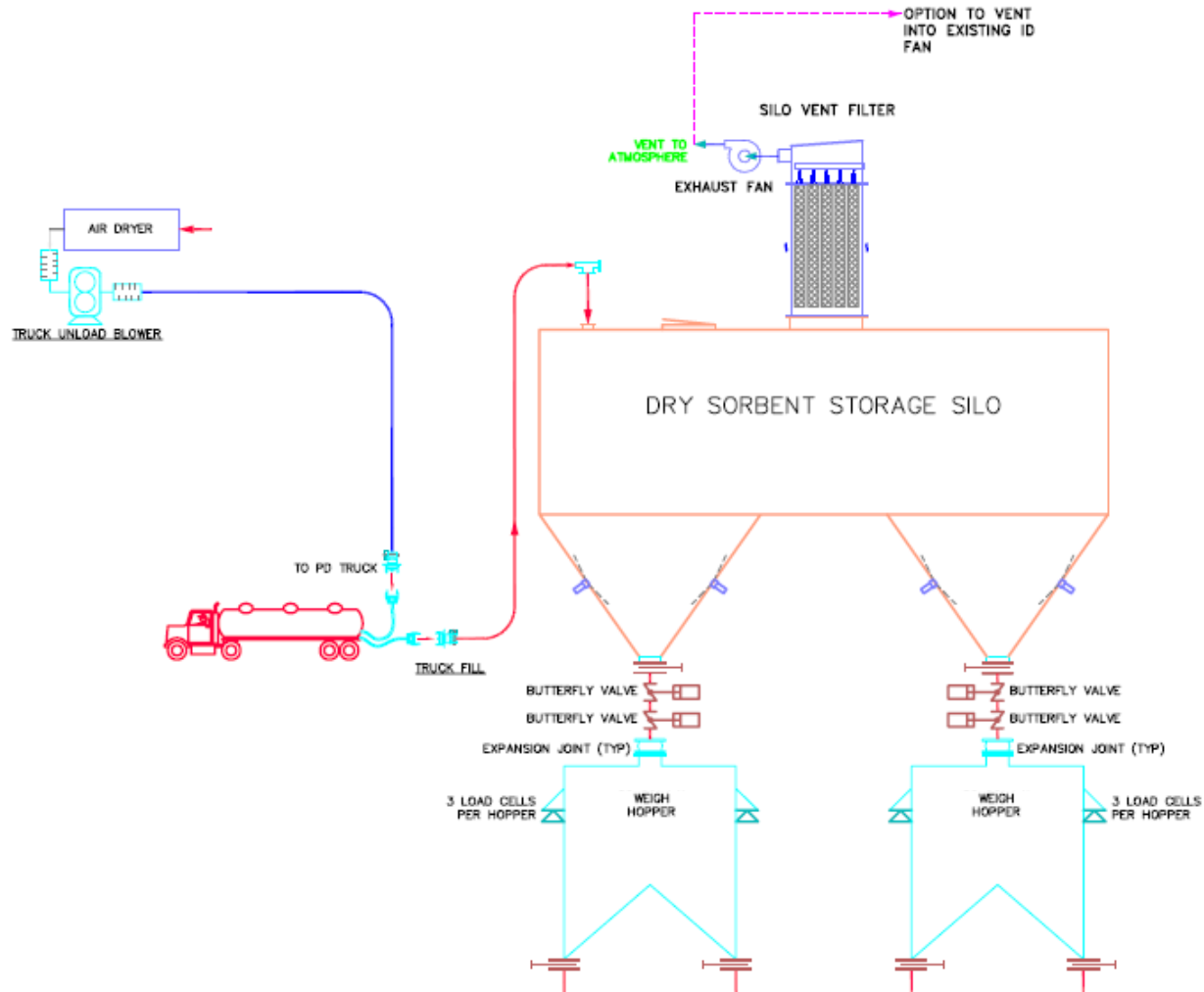
DATE:
1/30/14

NOT TO
SCALE

FILE NO.:

JOB NO.:
130-3016

REQUEST FOR CRYSTAL RIVER SOUTH AIR
CONSTRUCTION PERMIT APPLICATION



CLIENT/PROJECT

Duke Energy Florida, Inc.

TAMPA, FLORIDA



TITLE:

FIGURE A-2 –PROPOSED SORBENT INJECTION SYSTEM (HLS)

DRAWN BY:
JS

REVIEWED BY:
SO

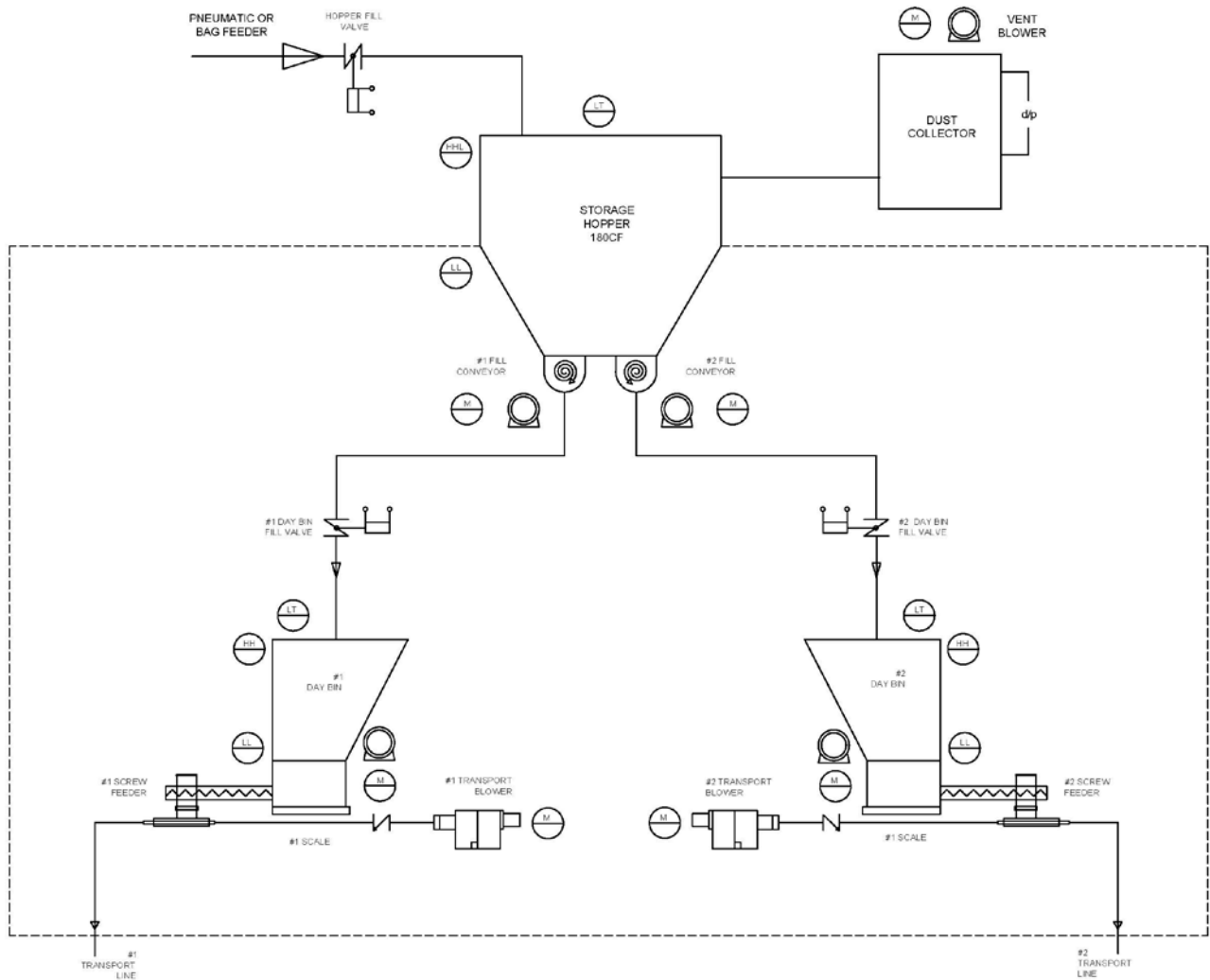
DATE:
1/29/14

NOT TO
SCALE

FILE NO.:

JOB NO.:
130-3016

REQUEST FOR CRYSTAL RIVER SOUTH AIR
CONSTRUCTION PERMIT APPLICATION



CLIENT/PROJECT

Duke Energy Florida, Inc.

TAMPA, FLORIDA



TITLE:
**FIGURE A-3 –PROPOSED ACTIVATED
 CARBON SORBENT INJECTION
 SYSTEM (ACI)**

DRAWN BY:
JS

REVIEWED BY:
SO

DATE:
1/30/14

NOT TO
SCALE

FILE NO.:

JOB NO.:
130-3016

REQUEST FOR CRYSTAL RIVER SOUTH AIR
 CONSTRUCTION PERMIT APPLICATION

PART II – FDEP APPLICATION FOR AIR PERMIT



Department of Environmental Protection

Division of Air Resource Management

APPLICATION FOR AIR PERMIT - LONG FORM

I. APPLICATION INFORMATION

Air Construction Permit – Use this form to apply for an air construction permit:

- For any required purpose at a facility operating under a federally enforceable state air operation permit (FESOP) or Title V air operation permit;
- For a proposed project subject to prevention of significant deterioration (PSD) review, nonattainment new source review, or maximum achievable control technology (MACT);
- To assume a restriction on the potential emissions of one or more pollutants to escape a requirement such as PSD review, nonattainment new source review, MACT, or Title V; or
- To establish, revise, or renew a plantwide applicability limit (PAL).

Air Operation Permit – Use this form to apply for:

- An initial federally enforceable state air operation permit (FESOP); or
- An initial, revised, or renewal Title V air operation permit.

To ensure accuracy, please see form instructions.

Identification of Facility

1. Facility Owner/Company Name: DUKE ENERGY FLORIDA , INC.	
2. Site Name: CRYSTAL RIVER POWER PLANT	
3. Facility Identification Number: 0170004	
4. Facility Location... Street Address or Other Locator: NORTH OF CRYSTAL RIVER, WEST OF U.S. 19 City: CRYSTAL RIVER County: CITRUS Zip Code: 34428	
5. Relocatable Facility? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6. Existing Title V Permitted Facility? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Application Contact

1. Application Contact Name: JAMIE HUNTER, LEAD ENVIRONMENTAL SPECIALIST	
2. Application Contact Mailing Address... Organization/Firm: DUKE ENERGY FLORIDA, INC. Street Address: 299 FIRST AVENUE, NORTH, FL 903 City: ST. PETERSBURG State: FL Zip Code: 33701	
3. Application Contact Telephone Numbers... Telephone: (727) 820-5764 ext. Fax: 727) 820-5229	
4. Application Contact E-mail Address: Jamie.Hunter@duke-energy.com	

Application Processing Information (DEP Use)

1. Date of Receipt of Application:	3. PSD Number (if applicable):
2. Project Number(s):	4. Siting Number (if applicable):

APPLICATION INFORMATION

Purpose of Application

This application for air permit is being submitted to obtain: (Check one)

Air Construction Permit

- Air construction permit.
- Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL).
- Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL), and separate air construction permit to authorize construction or modification of one or more emissions units covered by the PAL.

Air Operation Permit

- Initial Title V air operation permit.
- Title V air operation permit revision.
- Title V air operation permit renewal.
- Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is required.
- Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is not required.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit (Concurrent Processing)

- Air construction permit and Title V permit revision, incorporating the proposed project.
- Air construction permit and Title V permit renewal, incorporating the proposed project.

Note: By checking one of the above two boxes, you, the applicant, are requesting concurrent processing pursuant to Rule 62-213.405, F.A.C. In such case, you must also check the following box:

- I hereby request that the department waive the processing time requirements of the air construction permit to accommodate the processing time frames of the Title V air operation permit.

Application Comment

Duke Energy Florida, Inc. (DEF), is submitting this application for a minor source air construction permit for the Crystal River Energy Complex (CREC) for the permanent installation/operation of the hydrated lime injection and activated carbon injection systems that are currently in temporary use on Units 1 and 2.

Scope of Application


Emissions Unit ID Number	Description of Emissions Unit	Air Permit Type	Air Permit Processing Fee
001	Unit 1 Fossil Fuel Steam Generator	AC1F	NA
002	Unit 2 Fossil Fuel Steam Generator	AC1F	NA

Application Processing Fee

Check one: Attached - Amount: _____ Not Applicable

Owner/Authorized Representative Statement

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

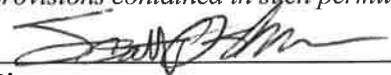
1. Owner/Authorized Representative Name : ROBBY ODOM, STATION MANAGER
2. Owner/Authorized Representative Mailing Address... Organization/Firm: DUKE ENERGY FLORIDA, INC. Street Address: 299 FIRST AVENUE, NORTH, CN77 City: ST PETERSBURG State: FLORIDA Zip Code: 33701
3. Owner/Authorized Representative Telephone Numbers... Telephone: (352) 501-5682 ext. Fax: (352) 501-5787
4. Owner/Authorized Representative E-mail Address: ROBBY.ODOM@DUKE-ENERGY.COM
5. Owner/Authorized Representative Statement: <i>I, the undersigned, am the owner or authorized representative of the corporation, partnership, or other legal entity submitting this air permit application. To the best of my knowledge, the statements made in this application are true, accurate and complete, and any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department.</i>  _____ Signature <u>3/26/14</u> _____ Date

Application Responsible Official Certification

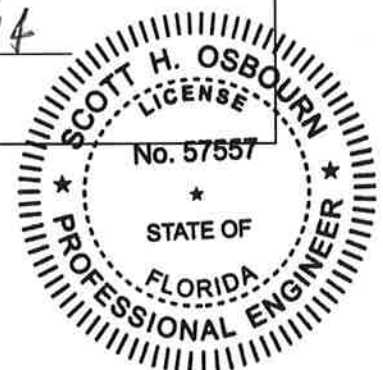
Complete if applying for an initial, revised, or renewal Title V air operation permit or concurrent processing of an air construction permit and revised or renewal Title V air operation permit. If there are multiple responsible officials, the “application responsible official” need not be the “primary responsible official.”

1. Application Responsible Official Name:
2. Application Responsible Official Qualification (Check one or more of the following options, as applicable): <input type="checkbox"/> For a corporation, the president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit under Chapter 62-213, F.A.C. <input type="checkbox"/> For a partnership or sole proprietorship, a general partner or the proprietor, respectively. <input type="checkbox"/> For a municipality, county, state, federal, or other public agency, either a principal executive officer or ranking elected official. <input type="checkbox"/> The designated representative at an Acid Rain source or CAIR source.
3. Application Responsible Official Mailing Address... Organization/Firm: Street Address: City: State: Zip Code:
4. Application Responsible Official Telephone Numbers... Telephone: ext. Fax:
5. Application Responsible Official E-mail Address:
6. Application Responsible Official Certification: I, the undersigned, am a responsible official of the Title V source 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 applicable requirements identified in this application to which the Title V source 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. Finally, I certify that the facility and each emissions unit are in compliance with all applicable requirements to which they are subject, except as identified in compliance plan(s) submitted with this application. _____ Signature _____ Date

Professional Engineer Certification

1. Professional Engineer Name: Scott H. Osbourn Registration Number: 57557
2. Professional Engineer Mailing Address... Organization/Firm: Golder Associates Inc.* Street Address: 5100 West Lemon St., Suite 208 City: Tampa State: FL Zip Code: 33609
3. Professional Engineer Telephone Numbers... Telephone: (813) 287-1717 ext. 53304 Fax: (813) 287-1716
4. Professional Engineer E-mail Address: sosbourn@golder.com
5. Professional Engineer Statement: <i>I, the undersigned, hereby certify, except as particularly noted herein*, that:</i> <p>(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></p> <p>(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></p> <p>(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></p> <p>(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></p> <p>(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></p> <p>Signature: <u></u> (seal)</p> <p>Date: <u>3/25/14</u></p>

* Board of Professional Engineers Certificate of Authorization # 00001670



II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates...		2. Facility Latitude/Longitude...	
Zone 17	East (km) 334.3	Latitude (DD/MM/SS) 28/57/34	Longitude (DD/MM/SS) 82/42/01
	North (km) 3204.5		
3. Governmental Facility Code:	4. Facility Status Code:	5. Facility Major Group SIC Code:	6. Facility SIC(s):
0	A	49	4911
7. Facility Comment :			

Facility Contact

1. Facility Contact Name: JAMIE HUNTER, LEAD ENVIRONMENTAL SPECIALIST
2. Facility Contact Mailing Address... Organization/Firm: DUKE ENERGY FLORIDA, INC. Street Address: 299 FIRST AVENUE, NORTH, FL 903 City: ST PETERSBURG State: FLORIDA Zip Code: 33701
3. Facility Contact Telephone Numbers: Telephone: (727) 820-5764 ext. Fax:
4. Facility Contact E-mail Address: Jamie.Hunter@duke-energy.com

Facility Primary Responsible Official

Complete if an “application responsible official” is identified in Section I that is not the facility “primary responsible official.”

1. Facility Primary Responsible Official Name:
2. Facility Primary Responsible Official Mailing Address... Organization/Firm: Street Address: City: State: Zip Code:
3. Facility Primary Responsible Official Telephone Numbers... Telephone: () - ext. Fax: () -
4. Facility Primary Responsible Official E-mail Address:

Facility Regulatory Classifications

Check all that would apply *following* completion of all projects and implementation of all other changes proposed in this application for air permit. Refer to instructions to distinguish between a “major source” and a “synthetic minor source.”

1. <input type="checkbox"/> Small Business Stationary Source	<input type="checkbox"/> Unknown
2. <input type="checkbox"/> Synthetic Non-Title V Source	
3. <input checked="" type="checkbox"/> Title V Source	
4. <input checked="" type="checkbox"/> Major Source of Air Pollutants, Other than Hazardous Air Pollutants (HAPs)	
5. <input type="checkbox"/> Synthetic Minor Source of Air Pollutants, Other than HAPs	
6. <input checked="" type="checkbox"/> Major Source of Hazardous Air Pollutants (HAPs)	
7. <input type="checkbox"/> Synthetic Minor Source of HAPs	
8. <input checked="" type="checkbox"/> One or More Emissions Units Subject to NSPS (40 CFR Part 60)	
9. <input checked="" type="checkbox"/> One or More Emissions Units Subject to Emission Guidelines (40 CFR Part 60)	
10. <input checked="" type="checkbox"/> One or More Emissions Units Subject to NESHAP (40 CFR Part 61 or Part 63)	
11. <input type="checkbox"/> Title V Source Solely by EPA Designation (40 CFR 70.3(a)(5))	
12. Facility Regulatory Classifications Comment:	

List of Pollutants Emitted by Facility

1. Pollutant Emitted	2. Pollutant Classification	3. Emissions Cap [Y or N]?
PM/PM₁₀/PM_{2.5}	A	N
CO	A	N
VOC	A	N
SO₂	A	N
NO_x	A	N
SAM	A	N

B. EMISSIONS CAPS

Facility-Wide or Multi-Unit Emissions Caps

1. Pollutant Subject to Emissions Cap	2. Facility-Wide Cap [Y or N]?(all units)	3. Emissions Unit ID's Under Cap (if not all units)	4. Hourly Cap (lb/hr)	5. Annual Cap (ton/yr)	6. Basis for Emissions Cap
7. Facility-Wide or Multi-Unit Emissions Cap Comment:					

C. FACILITY ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1.	Facility Plot Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date: May 20, 2009 _____
2.	Process Flow Diagram(s): (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date: May 20, 2009 _____
3.	Precautions to Prevent Emissions of Unconfined Particulate Matter: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date: May 20, 2009 _____

Additional Requirements for Air Construction Permit Applications

1.	Area Map Showing Facility Location: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable (existing permitted facility)
2.	Description of Proposed Construction, Modification, or Plantwide Applicability Limit (PAL): <input checked="" type="checkbox"/> Attached, Document ID: See Report
3.	Rule Applicability Analysis: <input checked="" type="checkbox"/> Attached, Document ID: See Report
4.	List of Exempt Emissions Units: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable (no exempt units at facility)
5.	Fugitive Emissions Identification: <input checked="" type="checkbox"/> Attached, Document ID: See Report <input type="checkbox"/> Not Applicable
6.	Air Quality Analysis (Rule 62-212.400(7), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
7.	Source Impact Analysis (Rule 62-212.400(5), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
8.	Air Quality Impact since 1977 (Rule 62-212.400(4)(e), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
9.	Additional Impact Analyses (Rules 62-212.400(8) and 62-212.500(4)(e), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
10.	Alternative Analysis Requirement (Rule 62-212.500(4)(g), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable

C. FACILITY ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for FESOP Applications -- NA

- | |
|---|
| 1. List of Exempt Emissions Units:
<input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Not Applicable (no exempt units at facility) |
|---|

Additional Requirements for Title V Air Operation Permit Applications

- | |
|--|
| 1. List of Insignificant Activities: (Required for initial/renewal applications only)
<input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable (revision application) |
|--|

- | |
|--|
| 2. Identification of Applicable Requirements: (Required for initial/renewal applications, and for revision applications if this information would be changed as a result of the revision being sought)
<input type="checkbox"/> Attached, Document ID: _____
<input checked="" type="checkbox"/> Not Applicable (revision application with no change in applicable requirements) |
|--|

- | |
|--|
| 3. Compliance Report and Plan: (Required for all initial/revision/renewal applications)
<input type="checkbox"/> Attached, Document ID: <u>NA</u>
Note: A compliance plan must be submitted for each emissions unit that is not in compliance with all applicable requirements at the time of application and/or at any time during application processing. The department must be notified of any changes in compliance status during application processing. |
|--|

- | |
|---|
| 4. List of Equipment/Activities Regulated under Title VI: (If applicable, required for initial/renewal applications only)
<input type="checkbox"/> Attached, Document ID: _____
<input type="checkbox"/> Equipment/Activities Onsite but Not Required to be Individually Listed
<input checked="" type="checkbox"/> Not Applicable |
|---|

- | |
|--|
| 5. Verification of Risk Management Plan Submission to EPA: (If applicable, required for initial/renewal applications only)
<input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
|--|

- | |
|---|
| 6. Requested Changes to Current Title V Air Operation Permit:
<input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable |
|---|

C. FACILITY ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for Facilities Subject to Acid Rain, CAIR, or Hg Budget Program

1. Acid Rain Program Forms:

Acid Rain Part Application (DEP Form No. 62-210.900(1)(a)):

Attached, Document ID: _____ Previously Submitted, Date: May 20, 2009

Not Applicable (not an Acid Rain source)

Phase II NO_x Averaging Plan (DEP Form No. 62-210.900(1)(a)1.):

Attached, Document ID: _____ Previously Submitted, Date: May 20, 2009

Not Applicable

New Unit Exemption (DEP Form No. 62-210.900(1)(a)2.):

Attached, Document ID: _____ Previously Submitted, Date: _____

Not Applicable

2. CAIR Part (DEP Form No. 62-210.900(1)(b)):

Attached, Document ID: _____ Previously Submitted, Date: May 20, 2009

Not Applicable (not a CAIR source)

Additional Requirements Comment

Established in 1960, Golder Associates is a global, employee-owned organization that helps clients find sustainable solutions to the challenges of finite resources, energy and water supply and management, waste management, urbanization, and climate change. We provide a wide range of independent consulting, design, and construction services in our specialist areas of earth, environment, and energy. By building strong relationships and meeting the needs of clients, our people have created one of the most trusted professional services organizations in the world.

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Engineering Earth's Development, Preserving Earth's Integrity

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