

21 West Church Street  
Jacksonville, Florida 32202-3139

August 22, 2014



Mr. David Read, P.E. Administrator  
Air Permitting Section  
Florida Department of Environmental Protection  
2600 Blair Stone Road  
Tallahassee, FL 32399

E L E C T R I C

**RE:   NORTHSIDE GENERATING STATION (NGS)  
      TITLE V PERMIT 0310045-039-AV  
      REQUEST FOR BY-PRODUCT REUSE IN NGS BOILERS 1 & 2**

W A T E R

Dear Mr. Read:

S E W E R

Please find enclosed an abbreviated air construction permit application for the reuse of bottom ash and/or fly ash in the two Circulating Fluidized Bed (CFB) boilers at NGS.

**BACKGROUND**

NGS Units 1 & 2 are two CFB boilers permitted to burn coal, coal with latex, petroleum coke, biomass, natural gas and landfill gas. Each boiler is rated nominally at 2,764 million British thermal unit per hour (MMBtu/hr) of heat input and can produce 297.5 megawatts (MW) of power. In addition, JEA is allowed, by permit, to utilize fuel additives such as the naturally occurring clays containing kaolinite or montmorillonite, along with olivine, bauxite or granite in the form of a raw material and/or as a component of coal bottom ash to prevent agglomeration of the bed material in the boilers.

Limestone is used in the boilers for the control of sulfur dioxide (SO<sub>2</sub>) and acid gases, as well as for bed development. The boilers are also equipped with Selective Noncatalytic Reduction (SNCR) for the control of nitrogen oxides (NO<sub>x</sub>), Spray Dryer Absorber (SDA) for addition control of residual SO<sub>2</sub> and acid gases, and a baghouse (fabric filters) for the control of particulate matter (PM) including inorganic hazardous air pollutants (HAP).

Pursuant to telephone conversations with you, JEA understands that Florida Department of Environmental Protection (FDEP) concurred with us that reintroduction bottom ash (a.k.a. bed ash) alone into the boilers would not require an air construction permit. This concurrence was based on the fact that the use of bottom ash is already allowed by Condition G.3 in the current Title V permit, and that JEA will assure the boilers' continued compliance with the current SO<sub>2</sub> emission limits, as monitored by its Continuous Emissions Monitoring System (CEMS). However, FDEP stipulated that a construction permit would be required to

reintroduce fly ash (from the baghouse) back into the boiler, by itself or in combination with bed ash.

### **DESCRIPTION OF THE PROPOSED PROJECT**

JEA wishes to reintroduce a mixture of fly ash and bed ash into the CFB boilers. NGS Units 1 & 2 byproduct materials are placed in the Byproduct Storage Area (BSA) for staging, on the EZBase Production Facility (EPF) for processing, or sent off-site for beneficial reuse or disposition. The EZBase byproduct is a JEA trademarked material composed of a mixture of NGS byproducts (bed ash and fly ash) and at times combined with limestone. It is also approved by FDEP for off-site beneficial reuse. The mixture to be reintroduced into the boilers will be obtained from the on-site EPF and BSA, which will consist of approximately 60% fly ash and 40% hydrated bed ash.

Laboratory analyses of these byproduct samples in April and May 2014 showed that they have available lime index or ALI of 40 to 50% in bed ash, 20 to 30% in hydrated bed ash, and 4 to 20% in fly ash. As such, reintroduction of these materials should assist in CFB operation and in controlling SO<sub>2</sub> emissions. It is also expected that this project will result in additional cost savings to the customers, since limestone usage will be reduced.

JEA requests a construction permit for a period of nine (9) months to reuse the existing bed ash and fly ash mixture in the two CFB boilers at NGS (EU026 and EU027). This will allow us a test period of six (6) months and additional three (3) months to prepare a Title V revision permit application during which the reuse of byproducts can continue under the construction permit. This is based on JEA being able to demonstrate compliance with the construction permit requirements.

### **MERCURY TEST PLAN**

JEA understands that the primary concern for the reintroduction of fly ash containing byproducts back into the boilers is the potential increase of mercury (Hg) in the exhaust gases. To demonstrate that Hg emissions will not increase significantly, JEA plans to conduct three (3) Hg stack tests during the 6-month test period. The tests will be conducted using EPA Reference Method 30B (Determination of Total Vapor Phase Mercury Emissions From Coal-Fired Combustion Sources Using Carbon Sorbent Traps) at approximately one-, three-, and six- month intervals from the initial reintroduction. JEA understands that if the results show that any increase in Hg emissions, averaged over the duration of the test, are insignificant, i.e., no more than 75% of the current permit limit of 0.03 pounds per hour (lb/hr) or the applicable Mercury Air Toxics Standard (MATS) of 1.2 pounds per trillion British thermal unit (lb/TBtu), FDEP can continue to process the construction permit application as expeditiously as possible, so that the byproduct reintroduction can continue with minimal downtime.

Mr. David Read  
Byproduct Reuse Application  
August 22, 2014

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Prior to expiration of the construction permit, JEA will submit an application to incorporate the construction permit into the current Title V permit. With this application, JEA plans to request that the current Hg permit limit of 0.03 pounds per hour (lb/hr) be eliminated, since the MATS Hg limit of 1.2 lb/TBtu is more stringent and is believed to be the current Maximum Achievable Control Technology for solid fuel-fired boilers. The current permit limit of 0.03 lb/hr was considered Best Available Control Technology (BACT) at that time of the New Source Review (NSR) in 1999, but is now obsolete. Please note that JEA plans to have certified Hg Sorbent Trap systems (one for each unit) before the MATS compliance date of April 16, 2015, to demonstrate continuous compliance with the MATS Hg limits.

The existing byproduct materials to be reintroduced into the CFB boilers are from combustion of petroleum coke, which generally contains much less Hg than coal. Please find attached a table summarizing results of laboratory analyses showing Hg content of petroleum coke as well as coal for various shipments received by NGS. In the future, JEA may wish to reintroduce byproduct materials produced from combustion of low sulfur coal. It is anticipated that such reuse of coal-based byproducts be included as an alternative operating scenario in the revised Title V permit, provided that Hg emissions continue to comply with the MATS limits.

Please call if there are any questions.

Sincerely,



Daniel N. Hlaing, P.E.  
Environmental Engineer

Enclosures: Completed DEP Form No. 62-210.900(1), Section I  
Mercury Contents of Petroleum Coke and Coal

cc: J. Worley, JEA  
J. Phillips, FDEP NE District



# 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: <b>JEA</b>	
2. Site Name: <b>Northside Generating Station (NGS)</b>	
3. Facility Identification Number: <b>0310045</b>	
4. Facility Location... Street Address or Other Locator: <b>4377 Heckscher Drive</b> City: <b>Jacksonville</b> County: <b>Duval</b> Zip Code: <b>32226</b>	
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: <b>Jay Worley</b>	
2. Application Contact Mailing Address... Organization/Firm: <b>JEA</b> Street Address: <b>21 West Church St., T-8</b> City: <b>Jacksonville</b> State: <b>FL</b> Zip Code: <b>32202</b>	
3. Application Contact Telephone Numbers... Telephone: <b>(904) 665-8729</b> ext. Fax: <b>(904) 665-7376</b>	
4. Application Contact E-mail Address: <b>WORLJA@JEA.COM</b>	

#### 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

The purpose of this application is to request permission to reuse existing by-product materials (i.e., approximately 40/60 mixture of hydrated bed/bottom ash and fly ash) in the two existing Circulating Fluidized Bed (CFB) boilers. The materials are currently accumulated at the onsite By-product Storage Area (BSA). The use of bottom ash is already allowed per Permit Condition G.3 of Title V Permit No. 0310045-039-AV. Upon approval of this application, JEA will implement a stack testing program to determine and demonstrate that the mercury (Hg) emissions resulting from reuse of the existing by-product materials will not be significant [i.e., the Hg emissions will be in compliance with the permitted limit of 0.03 lb/hr (6-hour average) as well as with the MATS limit of 1.2 lb Hg/TBtu].



**APPLICATION INFORMATION**

**Scope of Application**

<b>Emissions Unit ID Number</b>	<b>Description of Emissions Unit</b>	<b>Air Permit Type</b>	<b>Air Permit Processing Fee</b>
EU026/027	Circulating Fluidized Bed Boilers 1 & 2	ACM1	N/A


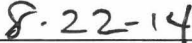
**Application Processing Fee**

**Check one:**  Attached - Amount: \$ \_\_\_\_\_  Not Applicable

APPLICATION INFORMATION

**Owner/Authorized Representative Statement**

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

1. Owner/Authorized Representative Name : <b>Michael J. Brost, V.P. Electric Systems</b>
2. Owner/Authorized Representative Mailing Address... Organization/Firm: <b>JEA</b> Street Address: <b>21 West Church Street, T-16</b> City: <b>Jacksonville</b> State: <b>FL</b> Zip Code: <b>32202</b>
3. Owner/Authorized Representative Telephone Numbers... Telephone: <b>(904) 665-7547</b> ext. Fax: ( ) -
4. Owner/Authorized Representative E-mail Address: <b><u>BROSMJ@JEA.COM</u></b>
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   Date

## APPLICATION INFORMATION

### 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:



## APPLICATION INFORMATION

### 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

**APPLICATION INFORMATION**

**Professional Engineer Certification**

1. Professional Engineer Name: <b>Daniel N. Hlaing, P.E.</b> Registration Number: <b>45058</b>
2. Professional Engineer Mailing Address... Organization/Firm: <b>JEA</b> Street Address: <b>21 West Church Street, T-8</b> City: <b>Jacksonville</b> State: <b>FL</b> Zip Code: <b>32202</b>
3. Professional Engineer Telephone Numbers... Telephone: <b>(904) 665-6247</b> ext. Fax: <b>(904) 665-7376</b>
4. Professional Engineer E-mail Address: <b>HLAIDN@JEA.COM</b>
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 <u>8/22/2014</u>

\* Attach any exceptions to certification statement.

**Mercury Analysis Data of Petcoke and Coal Used at JEA's Northside Generating Station**

COLLECT_DATE	UNIT	SAMPLE_TYPE	DOME	ADDITIONAL_INFO	MATRIX	CMP_DESC	RESULT	UNITS	METHOD	LAB_ID	LAB_SAMP_ID
05-May-14	Northside Unit 1 & 2	Pet Coke (High Sulfur)	N/A	5.4 PetCoke MISSISSIPPI ENTERPRISE SHIP	Solid Fuel	Mercury	0.012	mg/kg	SW846 7473	14-0462	F140505NGPCK0462
07-May-14	Northside Unit 1 & 2	Coal (Low Sulfur)	N/A	MU Pretty Team SHIP	Solid Fuel	Mercury	0.0613	mg/kg	SW846 7473	14-0483	F140507NGKOL0483
10-May-14	Other - N/A	Pet Coke (High Sulfur)	N/A	SHIP COMPOSITE MARY ANN HUDSON	Solid Fuel	Mercury	0.00951	mg/kg	SW846 7473	14-0496	F140510NGPCK0496
21-May-14	Ship Delivery	Pet Coke (High Sulfur)	N/A	SHIP Mary Ann Hudson 100% PETCOKE	Solid Fuel	Mercury	0.00516	mg/kg	SW846 7473	14-0544	F140521NGPCK0544
06-Jun-14	Ship Delivery	Coal (Low Sulfur)	N/A	MV Indigo Silva Coal	Solid Fuel	Mercury	0.0421	mg/kg	SW846 7473	14-0593	F140606NGKOL0593
10-Jun-14	Ship Delivery	Pet Coke (High Sulfur)	N/A	Mary Ann Hudson Composite	Solid Fuel	Mercury	0.0118	mg/kg	SW846 7473	14-0605	F140610NGPCK0605
23-Jun-14	Ship Delivery	Coal (Low Sulfur)	N/A	MV Mari Christina Coal Ship	Solid Fuel	Mercury	0.0391	mg/kg	SW846 7473	14-0740	F140623NGKOL0740
01-Jul-14	Other - N/A	Coal (Low Sulfur)	N/A	100% COAL M.V. GENCO RHONE	Solid Fuel	Mercury	0.048	mg/kg	SW846 7473	14-0767	F140701NGKOL0767
13-Jul-14	Ship Delivery	Coal (Low Sulfur)	N/A	MV MARICHRISTINA 100% COAL	Solid Fuel	Mercury	0.0718	mg/kg	SW846 7473	14-0812	F140713NGKOL0812
31-Jul-14	Ship Delivery	Coal (Low Sulfur)	N/A	100% COAL SHIP Genco Lorraine	Solid Fuel	Mercury	0.0138	mg/kg	SW846 7473	14-0863	F140731NGKOL0863