Farzie Shelton, ChE; REM

Associate GM Technical Support

CERTIFIED MAIL & VIA E-MAIL

March 28, 2011

Mr. Jonathan Holtom, P.E.
Title V Program Administrator
Bureau of Air Regulation
Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Rd.
Tallahassee, FL 32399-2400
(submitted via Jonathan.Holtom@dep.state.fl.us)

RE: C.D. McIntosh, Jr. Power Plant – DEP File No. 1050004-023-AV Unit 3 Application of Fuel Additive – RAI 1 Response

Dear Mr. Holtom,

Lakeland Electric is considering the utilization of two fuel additives for use in Unit 3 in order to minimize fouling from deposits formed in the combustion process. In a letter dated March 22, 2011, Lakeland Electric described the function of the additives and provided the material data safety sheets for each of the coal additives. In a correspondences from the Department on March 25, Department personnel requested potential emissions calculations resulting from the utilization of the additives. Therefore, attached to this cover letter you will find the potential emissions of particulate matter (PM) calculated from this project. These calculations does not take into consideration Unit 3's wet scrubber or the selective catalytic reduction (SCR) system, both of which contribute to reduced PM emissions, and therefore, these calculations show a PM emissions value greater than would be expected.

Based on this information, Lakeland Electric believes that this operation is exempt from permitting per F.A.C. 62-210.300(3), and has prepared to purchase the above stated fuel additives by April 5, 2011 for initial use in April of 2011. Therefore, if the Department has any concern over the use of the additives, Lakeland Electric requests that the Department states such in writing before April 5. If Lakeland does not hear from the Department within that time, we will consider that the Department does not have any objections with this application. Lakeland Electric appreciates the Department's prompt consideration in this matter.

In addition, we are providing you with our Responsible Official certification page, and a Professional Engineer certification page for the project. If you should have any questions please do not hesitate to contact me.

Sincerely,

Farzie Shelton

Enclosure: Engineering calculations; R.O. cert. page (T. Candales); P.E. cert. page (R. Kremann); E-mail from J. Holtom (3/25/11)

cc: Ms. Danielle Henry (sent certified & electronic)
Compliance Supervisor
Air Compliance Section
FL Department of Environmental Protection
13051 North Telecom Parkway
Temple Terrace, FL 33637-0926

Mr. David McNeal (sent certified & electronic)
US EPA, Region IV
Air, Pesticides & Toxics Management Division
Sam Nunn Federal Center
61 Forsyth Street
Atlanta, Georgia 30303-8960

Responsible Official Certification

1. Responsible Official Name :

   Tony Candales, Assistant General Manager of Production

2. Responsible Official Mailing Address...
   Organization/Firm: **Lakeland Electric**
   Street Address: **501 E. Lemon St.**
   City: **Lakeland** State: **FL** Zip Code: **33801-5079**

3. Owner/Authorized Representative Telephone Numbers...
   Telephone: **(863) 834-6559** ext. Fax: **(863) 834-6362**

4. Responsible Official Email Address: **TONY.CANDALES@LAKELANDELECTRIC.COM**

5. Responsible Official Statement:

   I, the undersigned, am a responsible official of the Title V source addressed in this submittal. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this submission are true, accurate and complete. The air pollutant emissions units and air pollution control equipment described in this submittal 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 submittal to which the Title V source is subject. 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 any compliance plan(s) previously submitted.

   RE: C.D. McIntosh, Jr. Power Plant – DEP File No. 1050004-023-AV Unit 3
   Application of Fuel Additive – RAI 1 Response

   Signature

   3/29/11
   Date

Professional Engineer Certification

1. Professional Engineer Name: **Ronald Kremann**
   Registration Number:
2. Professional Engineer Mailing Address...
   Organization/Firm: **City of Lakeland – Lakeland Electric**
   Street Address: **3030 E. Lake Parker Dr.**
   City: **Lakeland** State: **FL** Zip Code: **33805**
3. Professional Engineer Telephone Numbers...
   Telephone: **(863) 834-6684** ext. Fax: **(863) 834-5670**
4. Professional Engineer Email Address: **ron.kremann@lakelandelectric.com**
5. Professional Engineer Statement:

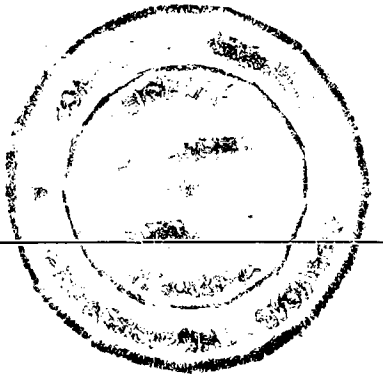
I, the undersigned, hereby certify that to the best of my knowledge, based on the information and belief formed after reasonable inquiry, that the statements made and data contained in this document are true, accurate and complete.

RE: C.D. McIntosh, Jr. Power Plant – DEP File No. 1050004-023-AV Unit 3
Application of Fuel Additive - RAI 1 Response

Signature

3-28-2011
Date

(seal)



Ms. Farzie Shelton
Assistant General Manager of Technical Support
501 E. Lemon Street
Lakeland, FL 33801

Dear Farzie,

RE: DEP File No. 1050004-023-AV
City of Lakeland, C.D. McIntosh, Jr. Power Plant
Unit 3 Fuel Additive

Dear Ms. Shelton,

This correspondence provides emissions and permitting implication regarding the use of two (2) fuel additives for Unit 3 to minimize fouling from deposits formed in the combustion process. The emissions and regulatory information are based on the manufacturer supplied MSDS sheets and literature on usage.

The additives being considered are manufactured by General Electric Co. The first additive is called FUELSOLV FMG2970 and is a water based solution containing copper which promotes crystallization at the surface of the ash thus allowing for increased slag porosity and therefore a more friable ash deposit. The second additive is called FUELSOLV FMG2301 and is a water based solution containing magnesium oxide which alters the fusion temperature of the slag, and when combined with the copper solution, works in tandem to increase the friability of the slag resulting in less slag buildup in the boiler. The maximum firing rate of Unit 3 is 150 tons of coal per hour based off of Unit 3's coal heating value and the title V operating permit heat input limit.

Calculations

The additives are both slurries, so assuming the highest potential emissions, we can assume the weight% of the solids in each additive transfers 100% into particulate matter. It should be noted however that FUELSOLV FMG2301 and FMG2970, respectively are chemically reacting with the coal to elevate ash fusion temperatures and disrupt the crystals to create porosity in the coal so assuming 100% transfer to particulate matter emissions is an overestimation. It is much more likely a large percentage of these additives will find their way into the bottom ash.

FMG2301 is composed 25% as Mg, at 1.5 lbs product per ton of coal = 0.375 lbs Mg per ton of coal. The water and hydroxide portion of the additive boils off in the boiler.

FMG2970 is composed 40% as CuX, 0.25 lbs product per ton of coal = 0.1 lbs metal oxide per ton of coal. Again, the water in the additive will boil off in the boiler.

25 % as Mg at a feed rate of 1.5 lbs product per ton coal calculates as follows:

$$0.25\ Mg * 1.5 \frac{Lb}{Ton\ Coal} = 0.375\ \frac{Lb\ Mg}{Ton\ Coal}$$

40 % as CuX at a feed rate of O.25 lbs per ton of coal calculates as follows:

$$0.4\ CuX * .25 \frac{lbs}{Ton\ Coal} = 0.1 \frac{Lb\ \ CuX}{Ton\ Coal}$$

Assuming a heating value of 12067 Btu per pound of coal the following emissions are possible:

$$\frac{0.375 \frac{Lb\ Mg}{Ton\ Coal} * \frac{1\ Ton\ Coal}{2000\ Lb\ Coal}}{12067\ \frac{Btu}{Lb\ Coal}} * \frac{1{,}000{,}000\ Btu}{1\ mmBtu} = 0.015538 \frac{Lb\ Mg}{mmBtu}$$

$$\frac{0.100 \frac{Lb\ CuX}{Ton\ Coal} * \frac{1\ Ton\ Coal}{2000\ Lb\ Coal}}{12067\ \frac{Btu}{Lb\ Coal}} * \frac{1{,}000{,}000\ Btu}{1\ mmBtu} = 0.004144 \frac{Lb\ Mg}{mmBtu}$$

Summing for total possible PM of 0.0197 Lb solids / mmBtu.

Using the manufacturer's stated control efficiency of 99.56% (see attached manufacturer data sheet p. 7) and ignoring any potential removal in the wet scrubber, the possible emissions increase is calculated as follows:

$$0.0197\ \frac{Lb\ PM}{mmBtu} * (1 - 99.56\%) = \ 0.0000866\ \frac{Lb\ PM}{mmBtu}$$

$$0.0000866\ \frac{Lb\ PM}{mmBtu} * 3640\ \frac{mmBtu}{hr} * 8760\ \frac{hr}{yr} * \frac{1\ Ton}{2000\ Lb} = \ 1.38068\ \frac{Ton\ PM}{yr}$$

Please feel free to contact me if you have any additional questions.

Regards,

Ronald Kremann, P.E.

Galbraith, Bret

From: Holtom, Jonathan [Jonathan.Holtom@dep.state.fl.us]
Sent: Friday, March 25, 2011 5:53 PM
To: Galbraith, Bret
Cc: Koerner, Jeff; Bass, Andrew
Subject: FW: Lakeland Electric - Fuel Additive Application - ORIS 0676 Facility ID 1050004
Attachments: LE_Fuel Additive.pdf

Hi Bret,

This additive is probably fine and will most likely qualify as an insignificant activity under the provisions of Title V. However, in addition to your claim that it qualifies as an insignificant activity, I will need for you to provide the calculations to verify your claim. Based on how much of the different materials you are requesting to inject, please provide the calculations showing that the injection of these materials will not increase the emissions of any pollutants above the insignificant threshold levels listed in Rule 62-213.430(6), F.A.C. If all calculations check out, we can simply add this activity to your Title V permit the next time it is opened.

If you have any questions, please do not hesitate to contact me.

Jon Holtom, P.E., CPM
Title V Program Administrator
Bureau of Air Regulation
(850) 717-9079
FAX: (850) 717-9097

From: Koerner, Jeff
Sent: Tuesday, March 22, 2011 6:09 PM
To: Holtom, Jonathan
Cc: Vielhauer, Trina; Walker, Elizabeth (AIR)
Subject: FW: Lakeland Electric - Fuel Additive Application - ORIS 0676 Facility ID 1050004

Jon,

Brett Galbraith sent me the attached letter addressed to Trina, which references the Title V permit. I skimmed briefly for the project scope.

They plan to try two fuel additives and state that the emissions constitute an insignificant activity under Rule 62-213.430(6), F.A.C.

Based on our conversation this afternoon, it doesn't look like they will need an AC permit and this activity will be picked up when the Title V permit is next re-opened for some other cause.

Thanks!

Jeff

P.S. Elizabeth, they are also sending in a hard copy.

From: Galbraith, Bret [mailto:Bret.Galbraith@lakelandelectric.com]
Sent: Tuesday, March 22, 2011 3:42 PM
To: Koerner, Jeff
Cc: Henry, Danielle D.; 'mcneal.dave@epa.gov'; Shelton, Farzie; Doerr, Doug
Subject: Lakeland Electric - Fuel Additive Application - ORIS 0676 Facility ID 1050004

Good afternoon Mr. Koerner,

Lakeland Electric is considering the utilization of two fuel additives for use in Unit 3 in order to minimize fouling from deposits formed in the combustion process. The additives being considered are manufactured by General Electric Co. (GE). The first additive is called FUELSOLV FMG2970 and is a water based solution containing copper which promotes crystallization at the surface of the ash thus allowing for increased slag porosity and therefore a more friable ash deposit. The second additive is called FUELSOLV FMG2301 and is a water based solution containing magnesium oxide which alters the fusion temperature of the slag, and when combined with the copper solution, works in tandem to increase the friability of the slag resulting in less slag buildup in the boiler. These two fuel additives will enhance the combustion process, and therefore, will reduce the inefficiency caused by boiler slagging and inefficient heat transfer.

Attached you will find a copy of the letter that was sent to your office today, the local FDEP compliance office, and EPA Region IV's office. Attached to that letter is our R.O. certification page, P.E. certification page, and the MSDS sheets for both additives. If you have any questions regarding the application of these additives please feel free to contact me. Thank you.

Bret Galbraith, E.I.
Permitting Engineer | Environmental Permitting | Lakeland Electric
501 E. Lemon Street, LE-ENVIR, Lakeland, FL 33801
O: (863) 834-8180 | Fax (863) 834-8187 | C: 813.351.0149
bret.galbraith@lakelandelectric.com

Elect. Dept

Instructions

for the

Care and Operation

of

Babcock & Wilcox Equipment

furnished on Contract

REF-23

for

City of Lakeland, Florida

C.D. McIntosh Plant

Unit 3

HOPPERS VIBRATORS

Manufacturer	Syntron
Type	V-85
Control	Adjustable Amplitude
Number/Hopper	1
Power Supply - Volt/Ph	120/1

HOPPER LEVEL DETECTORS

Approximate Storage Time First Field - hr	12
Manufacturer	Texas Nuclear
Type	Single & Dual Beam
Number/Hopper	1
Power Supply - Volt/Ph	120/1

T-R REMOVAL SYSTEM

Manufacturer	Eaton-Yale
Hoist Capacity - lb	6000
Model No.	DEW 3-106 GT 4552

	Hoist	Trolley
Motor hp	10	Hand
Motor Voltage/Phase	460/3	
Motor Full Load Current - amp	12	

PRECIPITATOR PERFORMANCE SUMMARY

Gas Flow - ACFM	1,199,000
Gas Temperature - F	282°
Inlet Dust Loading - GR/ACF	4.66
Collection Efficiency - %	99.56
Outlet Dust Loading - lbs/10^6 Btu	.064
Opacity	20%

**For outlet loading values at operating conditions other than indicated here, refer to correction curves included in the contract document.*

REF-23 Mar 81