- file -

Sheplak, Scott

0570039- 028- AV

From: Sheplak, Scott
Sent: Friday, July 27, 2007 12:20 PM
To: Linero, Alvaro
Subject: RE: TECO-Big Bend Notifications

2. Injecting Unit 4 fly ash into Units 1, 2 and 3 for the period of 07/10/2007 - 11/2007. TECO request dated July 3, 2007.

Condition A.15. of the current TV permit recognizes flyash re-injection into Units 1-3.

In my opinion this also qualifies as an "insignificant activity" under Title V. This activity is to take place for approximately a 4 month period. This is an interim activity not permanent I understand. We can simply keep this on file {Also, see PAT item 13.}.

They allude to the option of being able to do this in the future in the event that other options for offsite beneficial use are not available. Sounds like they anticipate that this could occur frequently. Again, if they want this to be a permanent activity, I recommend permitting.

- file -

Sheplak, Scott

From: Lee, Diana [Lee@epchc.org]
Sent: Tuesday, July 10, 2007 3:33 PM
To: Linero, Alvaro; Sheplak, Scott
Cc: Woodard, Sterlin
Subject: Cooments on TECO's Ammoniated Fly Ash RE-Injection
Attachments: EPC Comments on TECO's Flyash Reinjection 7-07.doc

Al, Scott,

Attached are our comments for your consideration in the review of TECO's notification relating to the re-injection of ammoniated fly ash from Unit 4 into Units 1, 2 and 3 at TECO's Big Bend Station. If you have any questions, please let me know.

Thank you,

Diana M. Lee, P.E.
Chief, Air Permitting

MEMORANDUM

DATE: July 10, 2007

TO: Al Linero, P.E. - FDEP
Scott Sheplak, P.E.

FROM: Diana M. Lee, P.E.

SUBJECT: Tampa Electric Notification on the Re-injection of Unit 4 Fly Ash in Units 1, 2 and 3

Below are our questions and comments regarding Tampa Electric Company (TEC's) notification relating to the re-injection of ammoniated fly ash from Unit 4 into Units 1, 2, and 3 at the Big Bend facility as part of our review. This notification was received on the evening on July 3, 2007.

1. In accordance with TEC's notification, TEC wants the ability to re-inject up to 60 tons per hour of Unit 4 fly ash (20 tons each into Big Bend 1, 2 and/or 3). According to TEC, this re-injection will only be until the STI fly ash beneficiation facility starts operations, which is scheduled for November of 2007. They also state that no significant changes in emissions are expected due to the re-injection of Unit 4 fly ash. In order to demonstrate that there will no be changes in emissions, TEC conducted a demonstration test on June 4, 2007, in which they compared NOx emissions rates before, during and after the addition of ammonia to Unit 1 in order to simulate the effect of an additional ammonia source created by combustion of ammoniated ash. According to TEC, the ammonia supply was over three times the amount of ammoniated ash. No increase in NOx emissions were observed. The data provided in a table shown in Attachment A, shows a summary of a high, average and low value for the load (MWh), NOx (lb/mmBtu) and ammonia flow (lb/hr). In order to better evaluate the results of this demonstration test, CEM and COM data for June 4th, should be provided along with the hourly heat input rates and ammonia flow rates. Also, TEC should provide data showing the ammonia content range that is found in ammoniated fly ash and how it relates to pounds

of ammonia per ton of fly ash prior to being introduced in the boiler. Also, how does the SO3 mitigation system affect the NOx emissions?

2. In accordance with Condition A.15. of TV Permit No. 0570039-017-AV, compliance testing for particulate matter emissions may be conducted either without fly ash re-injection occurring or while fly ash collected by the ESP is being re-injected into the boiler at a rate which is representative of the maximum anticipated fly ash re-injection rate. The condition further states that if fly ash re-injection occurs for any reason other than a malfunction, then the results from a new particulate and visible emissions compliance tests, conducted while fly ash collected by the precipitator is being re-injected into the boiler at a rate which is representative of the maximum anticipated fly ash re-injection rate, shall be submitted to the EPCHC within 60 days of the date that such fly ash re-injection occurred. Review of the last three years of PM stack tests at Units 1, 2 and 3, does not show that testing has been conducted with fly ash re-injection on any of these units. Has TEC conducted PM and VE tests with fly ash re-injection on any of these units? If so, please submit these tests within 15 days of receipt of this memo. In addition, if TEC has operated any of these units with fly ash re-injection please provide the dates, with the fly ash re-injection rate, in which this occurred for each of these units since January of 2005. Furthermore, TEC should schedule a PM and VE test on each unit within 30 days of starting the re-injection of ammoniated fly ash after obtaining authorization from the FDEP.

3. According to the notification, currently, fly ash generated by Unit 4 is conveyed pneumatically to Fly Ash Silo No.3 and transferred to tanker trucks for off-site beneficial reuse. Since the fly ash generated by Unit 4 will contain ammonia, following use of the SCR system, will render the fly ash unusable for off-site reuse, the tanker trucks loaded at Fly Ash Silo No.3 will transfer Unit 4 fly ash to one of the other units for subsequent combustion. It is not clear how the fly ash will be transferred and re-injected into Units 1, 2 and 3 boilers. TEC should provide specific information as to how this fly ash transfer and subsequent re-injection into each unit's boiler will occur.

RECEIVED
JUL 05 2007
BUREAU OF AIR REGULATION

July 3, 2007

Ms. Trina Vielhauer
Chief, Bureau of Air Regulation
Florida Department of Environmental Protection
111 South Magnolia Avenue, Suite 4
Tallahassee, Florida 32301

Via FedEx
Airbill No. 7996 6885 5635

Re: Tampa Electric Company - Big Bend Station
Title V Permit Number 0570039-023-AV
Reinjection of Unit 4 Fly Ash in Units 1, 2, and/or 3
Notification of Change Without Permit Revision

Dear Ms. Vielhauer:

Tampa Electric Company (TEC) has completed the addition of the selective catalytic reduction (SCR) nitrogen oxides (NO_x) emission control system on Big Bend Station Unit 4 and an ammonia injection system for the mitigation of SO_3. The installation of these Unit 4 pollution control systems is authorized by Department Air Construction Permit No. 0570039-020-AC. Compliance with the new NOx emission limitations began on June 1, 2007. The purpose of this correspondence is to notify the Florida Department of Environmental Protection (Department) pursuant to 62-213.410 (2) F.A.C. that Tampa Electric Company (TEC) may need to reinject ammoniated fly ash generated by Unit 4 operation into Units 1, 2, and/or 3.

Associated with the TEC Big Bend Station SCR retrofit projects, Separation Technologies LLC (ST) is constructing a new fly ash handling, storage, beneficiation, and loadout facility at the Big Bend Station. The ST fly ash beneficiation process will remove residual carbon and ammonia from the Big Bend Station fly ash and produce a low carbon, low ammonia product fly ash (ProAsh®) that will be marketed to ready mix concrete producers as a cement substitute. High carbon by-product material from the ST fly ash beneficiation process will be utilized by area cement kilns as a fuel and mineral feed substitute. As a result of this project, most of the TEC fly ash will be utilized in concrete for a beneficial use, rather than sent to area landfills or cement kilns. An air construction permit for the ST fly ash beneficiation process has been issued by the Hillsborough County Environmental Protection Commission (HCEPC). Initial operation of the ST fly ash beneficiation process is scheduled for November 2007.

Currently, fly ash generated by Unit 4 is conveyed pneumatically to Fly Ash Silo No. 3 and transferred to tanker trucks for off-site beneficial reuse. Since the fly ash generated by Unit 4 following use of the SCR control and SO_3 mitigation systems will contain ammonia that may render it unusable for off-site reuse, the tanker trucks loaded at Fly Ash Silo No. 3 will transfer Unit 4 fly ash to one of the other units for subsequent combustion. Flue gas will continue to be treated by the existing electrostatic precipitator (ESP) and wet flue gas desulfurization (FGD) emission control systems. In the interim period prior to availability of the ST fly ash beneficiation process and beginning no earlier than July 10, 2007, TEC may need to reinject the fly ash generated by Unit 4 into Units 1, 2, and/or 3 in the unlikely event the other options for off-site beneficial reuse are not available.

Fly ash reinjection has already been identified in previous permit applications submitted by TEC as an operating scenario. Other than ammonia content, the characteristics of fly ash will be similar to the coal combusted in all of the units at Big Bend Station. The principal components of bituminous coal fly ash are silica, alumina, iron oxide, and calcium, with varying amounts of carbon, as measured by the loss on ignition (LOI). As a combustion byproduct, fly ash will have a lower sulfur and carbon content compared to unburned coal. The Big Bend Station boilers have been approved to burn a variety of solid fuels including coal and coal/petcoke blends. At a nominal coal heat content of 11,000 British thermal units per pound (Btu/lb), the units may each combust 150 to 200 tons per hour of coal. TEC would like the ability to reinject up to 60 tons per hour of Unit 4 fly ash (20 tons each into Big Bend 1, 2 and/or 3). No significant changes in emissions are expected due to the reinjection of Unit 4 fly ash. Each unit will continue to comply with all of its current emission limits as specified in Title V Permits 0570039-017-AV and 0570039-021-AV. The results of the evaluation conducted to demonstrate that there is no change in emissions due to this activity is provided in Attachment A. This demonstration compared NOx emission rates before, during and after the addition of ammonia to Unit 1 in order to simulate the affect of an additional ammonia source created by combustion of ammoniated ash. The ammonia supply was over three times the amount of ammonia estimated to be contained in the ash. Even though there is no pollution control equipment designed to reduce NOx emissions installed on Unit 1 at this time, no increase in NOx was observed.

Tampa Electric proposes to reinject the fly ash into the boilers by entraining the ash either into the air flow or coal feed. Another alternative available only on Unit 3 which has entry ports into the boiler, would be to feed the ash directly into the furnace. No permit conditions become applicable or not applicable as a result of this operation change.

Air Construction Permit Requirements

The reinjection of up to 20 tons per hour of Unit 4 fly ash into each of the other Big Bend boilers is considered exempt from permitting pursuant to Rule 62-210.300(3)(b)1., F.A.C., *Generic Emission Unit or Activity Exemption.* This rule contains the following five permit exemption criteria:

(1) The pollutant-emitting activity must not be subject to any unit-specific applicable requirement;

(2) Potential emissions from the pollutant-emitting activity must not equal nor exceed 500 pounds per year (lb/yr) of lead and lead compounds expressed as lead, 1,000 lb/yr of any hazardous air pollutant (HAP), 2,500 lb/yr of total HAPs, 5.0 tons per year (tpy) of any other regulated pollutant;

(3) Emissions from the pollutant-emitting activity, in combination with the emissions of other units and activities at the facility, would not cause the facility to emit or have the potential to emit any pollutant in such amount as to make the facility a Title V source;

(4) For a proposed new emission unit at an existing source, emissions of such unit, in combination with the emissions of any other proposed new or modified units and activities at the facility, would not result in a modification subject to the preconstruction review requirements of Rule 62-204.800(10)(d)2., 62-212.400 or 62-212.500, F.A.C.; and

(5) For a proposed new pollutant-emitting activity, such activity would not constitute a modification of any existing non-exempt emissions unit at a non-Title V source or any existing non-insignificant emissions unit at a Title V source.

The reinjection of Unit 4 fly ash will not be subject to any unit-specific applicable requirement. Potential changes in emissions will be below the emission thresholds listed above in permit exemption criteria (2) – as shown in the results of the evaluation conducted to demonstrate that there is no change in emissions due to the addition of another potential NH3 source to the boiler. Permit exemption criteria (3) above is not applicable since the Big Bend Station is presently a Title V source. Similarly, permit exemption criteria (4) above is not applicable since a new emission unit is not being proposed. Finally, permit exemption criteria (5) above is also not applicable since a new pollutant-emitting activity is not being proposed

Major Source Operation (Title V) Permit Requirements

Per Rule 62-213.430(6)(a), F.A.C.,:

> "Emissions units or activities which are added to a Title V source after issuance of a permit under this chapter shall be incorporated into the permit at its next renewal, provided such emissions units or activities have been exempted from the requirement to obtain an air construction permit and also qualify as insignificant pursuant to this rule."

Rule 62-213.430(6)(b), F.A.C., *Insignificant Emissions Units or Pollutant-Emitting Activities*, contains the following three criteria:

(1) The pollutant-emitting activity must not be subject to any unit-specific applicable requirement;

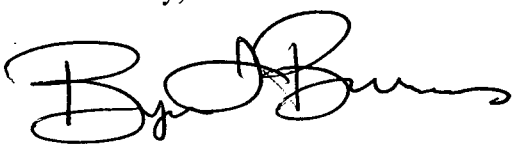
(2) Emissions from the pollutant-emitting activity, in combination with other units and activities proposed as insignificant, would not cause the facility to exceed any major source threshold(s) as defined in subparagraphs 62-213.420(3)(c)1., F.A.C., unless it is unless it is acknowledged in the permit application that such units or activities would cause the facility to exceed such threshold(s); and

(3) Potential emissions from the pollutant-emitting activity must not equal nor exceed 500 lb/yr of lead and lead compounds expressed as lead, 1,000 lb/yr of any HAP, 2,500 lb/yr of total HAPs, 5.0 tpy of any other regulated pollutant.

Criteria (1) and (3) above are identical to criteria contained in the *Generic Emissions Unit or Activity Exemption*; see Rule 62-210.300(3)(b)1a., F.A.C. and Rule 62-210.300(3)(b)1b., F.A.C. As noted previously, the reinjection of Unit 4 fly ash will not be subject to any unit-specific applicable requirement and potential emissions will be well below the emission thresholds listed above in criteria (3). Criteria (2) above is not applicable since the Big Bend Station presently exceeds major source thresholds as defined in subparagraphs 62-213.420(3)(c)1., F.A.C.

The foregoing evaluation demonstrates that the operation is exempt from permitting under Rule 62-210.300(3)(b) F.A.C., and constitutes an insignificant pollutant emitting activity under Rule 62-213.430(6), F.A.C. Therefore, this notice fulfills the requirements of 62-213.410 (2), F.A.C. Changes Without Permit Revision. We will attach a copy of this operation change to our Title V permit. Please contact me at (813) 228-1282 or Sharon Good at (813) 228-4654 if you have any questions or comments regarding this permitting applicability assessment.

Sincerely,



Byron Burrows, P.E. BCEE
Manager – Air Programs
Environmental, Health & Safety

EHS/rlk/BTB114

Enclosure

c/enc: Mr. David Lloyd, EPA Region IV
Ms. Mara Grace Nasca, FDEP SW
Mr. Al Linero, FDEP
Ms. Diana Lee , EPCHC

ATTACHMENT A

RESULTS OF DEMONSTRATION OF NO CHANGE IN EMISSIONS

Test data collected June 4, 2007 from 8am to 6pm.

		Pre test baseline data[1]	NH_3 Test[2]	Post test baseline data[3]
Load (MWh)	Hi	361	366	366
	Avg	360	364	365
	Lo	359	359	360
NOx (#/mmBtu)	Hi	0.62	0.61	0.61
	Avg	0.60	0.58	0.58
	Lo	0.58	0.55	0.57
#1 Ammonia Flow (lb/hr)	Hi	0	1328	0
	Avg	0	586	0
	Lo	0	495	0

[1] Pretest baseline data collected from 0800 to 1142
[2] Ammonia test data collected 1145 to 1443
[3] Post test baseline data collected from 1445 to 1800

TAMPA ELECTRIC COMPANY
BIG BEND STATION

AMMONIATED FLY ASH REINJECTION

Professional Engineer Certification

Professional Engineer Statement:

I, the undersigned, hereby certify, except as particularly noted herein, that:*

(1) To the best of my knowledge, the information presented by Tampa Electric Company (TEC) to the Department regarding the reinjection of fly ash at the TEC Big Bend Station is true, accurate, and complete based on my review of material provided by TEC engineering and environmental staff; and

(2) To the best of my knowledge, any emission estimates reported or relied on in this submittal are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of air pollutants not regulated for an emissions unit, based solely upon the materials, information and calculations provided with this certification.

Signature

7/3/07
Date

Seal

* Certification is applicable to the Tampa Electric Company notification of change without permit revision to the Department regarding the reinjection of ammoniated fly ash at its Big Bend Station.