TAMPA ELECTRIC

September 9, 2011

Jeffrey F. Koerner, Program Administrator
Florida Department of Environmental Protection
Division of Air Resource Management
Office of Air Permitting and Compliance
2600 Blair Stone Road, M.S. 5505
Tallahassee, Florida 32399-2400

Via FedEx
Airbill No. 7974 9889 5048

Re: Tampa Electric Company - Big Bend Power Station
Title V Permit Number 0570039-045-AV
Amendment to (EPSAP) Permit Application No. 2982-1
Facility No. 0570039

Dear Mr. Koerner:

Tampa Electric Company (TEC) is submitting a request to the Florida Department of Environmental Protection (FDEP) to amend the air permit application No. 2982-1. TEC requests the following previously submitted items be included in the application and Title V air permit:

Date Submitted	Permit Request
10/06/2005	Notification of Insignificant Emissions and Request for Generic Exemption-Fluxing (See Attached)
07/02/2007	Notification of Change Without Permit Revision - Reinjection of Unit 4 Fly Ash in Units 1, 2, and/or 3 (See Attached)
05/04/2010	Notification of Insignificant Emissions and Request for Generic Exemption -Transport coal via truck to Big Bend Station (See Attached)
06/18/2010	Notification of Change without Permit Revision Fuel Additive - MgO Injection (See Attached)
08/10/2011	Cooling Tower Permit Correction and Notification (See Attached)
08/12/2011	SCCT Permit Limit Correction (EUs-041,-042) (See Attached)

TAMPA ELECTRIC COMPANY
P. O. BOX 111 TAMPA, FL 33601-0111

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In addition, TEC is requesting the following modifications to the Title V permit:

- The startup period in Condition O.15a and O.15b should be revised from 10 minutes to 15 minutes. There have been several incidents where the SCCT units could not be started up in the allotted 10 minute period due to unforeseen conditions, which required the units to be shutdown and restarted one or more times. This actually creates more CO and NO_x emissions even though startup and shutdown are allowed in the current permit. TEC believes this revision will minimize startup and shutdown periods and reduce unnecessary emissions to the environment.

- The pressure monitoring in Condition L.13 should be changed to quarterly monitoring consistent with Conditions E.3 and F.17.

TEC requests these aforementioned changes to the air permit application No. 2982-1. Please contact me at (813) 228-1282 or Robert Velasco at (813) 228-4232, if you have any questions regarding this request.

Sincerely,

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

EHS/rlk/RAV112

Enclosure

c/enc: Cindy Zhang-Torres, DEP SW District
Diana Lee, EPCHC

Tampa Electric Company
Big Bend Station

Amendment (EPSAP) Permit Application No. 2982-1

Professional Engineer Certification

1. Professional Engineer Name: Robert A. Velasco, P.E.
   Registration Number: 57190
2. Professional Engineer Address...
   Organization/Firm: Tampa Electric Company
   Street Address: P.O. Box 111
   City: Tampa State: FL Zip Code: 33601
3. Professional Engineer Telephone Numbers...
   Telephone: (813) 228 - 4232 Fax: (813) 228 - 1308
4. Professional Engineer E-mail Address: ravelasco@tecoenergy.com
5. Professional Engineer Statement:
   (1) Engineering opinion and information included herein provides reasonable assurance of meeting the requirements of the air construction permit and a Title V air operation permit revision;
   (2) Title V permit revisions are based on the best available information at the time of this application;
   (3) Information included herein is believed to be correct to the best of the Engineer's knowledge;
   (4) Emission information is based on acceptable techniques available for calculating emissions or estimating emissions from designated emission sources; and
   (5) Seal does not certify or attest to the accuracy of work or information prepared by others who are qualified to perform such services. This includes, but not limited to drawings, specifications, vendor information, engineering test data, correspondences, personnel communication etc.

Signature/Date

(seal)

TAMPA ELECTRIC

October 6, 2005

Mr. Al Linero, P.E.
Florida Department of Environmental Protection
Division of Air Resource Management
111 South Magnolia, Suite 4
Tallahassee, FL 32301

Via FedEx
Airbill No. 7901 7884 7225

Re: Tampa Electric Company (TEC)
Big Bend Station
Title V Permit Number 0570039-023-AV
Notification of Insignificant Emissions and
Request for Generic Exemption-Fluxing

Dear Mr. Linero,

The purpose of this correspondence is to notify the Florida Department of Environmental Protection (Department) that Tampa Electric Company (TEC) intends to introduce fluxing material, specifically iron ore, in the combustion process. TEC intends to store the fluxing material in the former residual fuel building at Big Bend Station.

TEC's Big Bend Station is subject to the provisions of a Consent Decree entered in the United States of America v. Tampa Electric Company, Civil Action Number 99-2524 CIV-T-23F. Paragraphs 29 and 30 of the Consent Decree authorize operation of Units 1, 2 and 3 during outages of the Flue Gas Desulfurization ("FGD") systems serving those units, but requires that an alternative low sulfur coal be utilized during those outages. The use of the alternative low sulfur coal results in several operational and safety changes due to the potential of trapping combustible gases within the slag tank. Big Bend Station Units 1 through 3 are Riley-Stoker Turbo® furnace wet-bottom boilers. Proper operation of these boilers requires an ash fusion temperature of the coal such that the ash will stay in a molten state and tap out of the bottom of the boiler. If the ash does not stay in a molten state, then the tap will close trapping combustible gases within the slag tank. The use of iron ore will assist in lowering the ash fusion temperature of this alternative low sulfur coal. Although, iron ore is a material that is known to lower fusion temperature, the extent to which the temperature will be lowered is unknown with this fuel and in the Big Bend Station boilers. If the iron ore is successful in mitigating the current situation with alternative coal, we will be able to maintain reliable operations.

TEC intends to use the building formerly used to store residual fuel at the Big Bend Station to store the iron ore that will be used for fluxing. The iron ore will be brought in by truck at infrequent intervals and stored in the former residual fuel building pending an FGD outage.

When the iron ore is required, Big Bend Station will transfer the iron ore using the existing hopper and conveyor system in the former residual fuel building or loaded directly onto the K conveyors. This activity will occur only on an infrequent basis, and it is estimated that the maximum amount of iron ore handled in the former residual fuel building will be no more than 5,000 tons per year. The former residual fuel building is enclosed on three sides ensuring that the iron ore will have minimal dust potential.

The iron ore will be emptied into the former residual fuel building from a nominal 24.5 ton dump truck and a bulldozer will either push the material into the dozer trap in the rear of the building onto the BF conveyor or load onto the K conveyors. The conveyors are fully enclosed to prevent fugitive emissions.

TEC requests that the Department confirm that this operation qualifies for a generic exemption from permitting requirements pursuant to the provisions of Rule 62-210.300(3)(b), Florida Administrative Code (F.A.C.). The activity is not subject to any unit specific applicable requirement. The activity will not result in the emission of lead or any hazardous air pollutants, and the activity will fall well below the 5 ton per year threshold for fugitive emissions of particulate matter. Emissions from this activity, in combination with the emissions of other units and activities of the facility, will not cause the facility to exceed any major source threshold either alone, or in combination with emissions from all other insignificant sources. This activity does not constitute a modification of any emissions unit at Big Bend Station.

TEC believes the activity also qualifies as an insignificant emissions activity pursuant to Rule 62-213.430(6), F.A.C. As noted above, the activity is not subject to any unit specific applicable requirement, no lead or hazardous air pollutants are emitted, and the activity will not exceed any major source thresholds, by itself or in combination with emissions from all other insignificant sources. The emissions will fall well below the 5 ton per year threshold for fugitive emissions. We understand that the activity, if determined insignificant, will be incorporated into the Title V permit at its next renewal, assuming that the generic exemption is approved.

Based on the foregoing, TEC believes that the operation is exempt from permitting under Rule 62-210.300(3)(b), and constitutes an insignificant pollutant emitting activity under Rule 62-213.430(6), F.A.C. Enclosed are the emissions calculations and professional engineer's certification. TEC would appreciate the Department providing written concurrence regarding this matter. Thank you for your prompt consideration.

If you have any questions or need additional information, please contact Shelly Castro or me at (813) 228-4408.

Sincerely,

Byron T. Burrows, P.E.
Manager - Air Programs
Environmental, Health & Safety

EHS/rlk/SSC229

Enclosures

c/enc: Mr. David Lloyd, EPA Region IV
Mr. Jason Waters, FDEP SW
Ms. Trina Vielhauer, FDEP
Ms. Alice Harman, EPCHC

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TAMPA ELECTRIC COMPANY
BIG BEND STATION
HANDLING OF IRON ORE FLUX

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 storage and handling of iron ore flux 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.

Thomas Dr. Davis — 10/6/05

Signature — Date

(seal)

* Certification is applicable to the Tampa Electric Company generic permit exemption notification to the Department regarding the handling of iron ore flux at its Big Bend Station.

EMISSION INVENTORY WORKSHEET

Tampa Electric Company - Big Bend Station

Iron Ore Handling

EMISSION SOURCE TYPE

FUGITIVE PM - MATERIAL TRANSFER (DROPS) — Figure:

FACILITY AND SOURCE DESCRIPTION

Emission Source Description:	Fugitive PM - Truck Unloading of Iron Ore Flux
Emission Control Method(s)/ID No.(s):	Moist material
Emission Point ID:	IOT-001

EMISSION ESTIMATION EQUATIONS

PM Emission (lb/hr) = 0.74 x 0.0032 x [(Wind Speed/5)$^{1.3}$ / (Material Moisture Content/2)$^{1.4}$] x Material Handled (ton/hr)

PM Emission (ton/yr) = 0.74 x 0.0032 x [(Wind Speed/5)$^{1.3}$ / (Material Moisture Content/2)$^{1.4}$] x Material Handled (ton/yr) x (1 ton/2,000 lb)

Source: Section 13.2.4, AP-42, January 1995.

INPUT DATA AND EMISSIONS CALCULATIONS

Mean Wind Speed: 8.8 mph — Material Moisture Content: 10.0 weight %

Material Transfer Point	Source ID	Material Transfer Rates (ton/hr)	Material Transfer Rates (ton/yr)	Uncontrolled Emission Factor (lb PM/ton)	Control Efficiency (%)	Controlled Emission Factor (lb PM/ton)	Potential PM Emission Rates (lb/hr)	Potential PM Emission Rates (ton/yr)
Truck Unloading to Storage Building	IOT-001A	73.5	5,000	0.000504	25.0	0.000378	0.0278	0.0009
Transfer to "K" Conveyors	IOT-001B	73.5	5,000	0.000504	0.0	0.000504	0.0370	0.0013
						Totals	0.0648	0.0022

SOURCES OF INPUT DATA

Parameter	Data Source
Mean Wind Speed, mph	Climate of the States (Tampa, FL), Third Edition, 1985.
Material Moisture Content	TEC, 2005.
Material Transfer Point Identification	TEC, 2005.
Material Transfer Rates	TEC, 2005.
Control Efficiency	Table 3.2.17-2, Workbook on Estimation and Dispersion Modeling for Fugitive Particulate Sources, UARG, September 1981.

NOTES AND OBSERVATIONS

1 Control Efficiency: Side Enclosure (25%)

DATA CONTROL

Data Collected by:	S. Castro	Date:	10/05
Evaluated by:	T. Davis	Date:	10/05
Data Entered by:	T. Davis	Date:	10/05

EMISSION INVENTORY WORKSHEET

Tampa Electric Company - Big Bend Station

Iron Ore Handling

EMISSION SOURCE TYPE

FUGITIVE PM_{10} - MATERIAL TRANSFER (DROPS) Figure:

FACILITY AND SOURCE DESCRIPTION

Emission Source Description:	Fugitive PM_{10} - Truck Unloading of Iron Ore Flux
Emission Control Method(s)/ID No.(s):	Moist material
Emission Point ID:	IOT-001

EMISSION ESTIMATION EQUATIONS

PM_{10} Emission (lb/hr) = 0.35 x 0.0032 x [(Wind Speed/5)$^{1.3}$ / (Material Moisture Content/2)$^{1.4}$] x Material Handled (ton/hr)

PM_{10} Emission (ton/yr) = 0.35 x 0.0032 x [(Wind Speed/5)$^{1.3}$ / (Material Moisture Content/2)$^{1.4}$] x Material Handled (ton/yr) x (1 ton/2,000 lb)

Source: Section 13.2.4, AP-42, January 1995.

INPUT DATA AND EMISSIONS CALCULATIONS

Mean Wind Speed: 8.6 mph Material Moisture Content: 10.0 weight %

Material Transfer Point	Source ID	Material Transfer Rates (ton/hr)	Material Transfer Rates (ton/yr)	Uncontrolled Emission Factor (lb PM/ton)	Control Efficiency (%)	Controlled Emission Factor (lb PM/ton)	Potential PM_{10} Emission Rates (lb/hr)	Potential PM_{10} Emission Rates (ton/yr)
Truck Unloading to Storage Building	IOT-001A	73.5	5,000	0.000238	25.0	0.000179	0.0131	0.0004
Transfer to "K" Conveyors	IOT-001B	73.5	5,000	0.000238	0.0	0.000238	0.0175	0.0006
						Totals	0.0306	0.0010

SOURCES OF INPUT DATA

Parameter	Data Source
Mean Wind Speed, mph	Climate of the States (Tampa, FL), Third Edition, 1985.
Material Moisture Content	TEC, 2005.
Material Transfer Point Identification	TEC, 2005.
Material Transfer Rates	TEC, 2005.
Control Efficiency	Table 3.2.17-2, Workbook on Estimation and Dispersion Modeling for Fugitive Particulate Sources, UARG, September 1981.

NOTES AND OBSERVATIONS

1 Control Efficiency: Side Enclosure (25%)

DATA CONTROL

Data Collected by:	S. Castro	Date:	10/05
Evaluated by:	T. Davis	Date:	10/05
Data Entered by:	T. Davis	Date:	10/05

EMISSION INVENTORY WORKSHEET

Tampa Electric Company - Big Bend Station

Truck Traffic (Paved Roads)

EMISSION SOURCE TYPE

FUGITIVE PM - TRUCK TRAFFIC ON PAVED ROADS

FACILITY AND SOURCE DESCRIPTION

Emission Source Description:	Fugitive PM - Iron Ore Flux Truck Traffic on Paved Roads
Emission Control Method(s)/ID No.(s):	Watering, As Necessary
Emission Point ID:	IOT-002

EMISSION ESTIMATION EQUATIONS

PM Emission (lb/hr) = ((0.082 x [(Silt Loading Factor/2)$^{0.65}$] x [(Truck Weight/3)$^{1.50}$ - 0.00047) x (1 - ("Wet" Days/1,460)) x Vehicle Miles Traveled (VMT)/hr x (1 - (Control Eff. / 100))

PM Emission (ton/yr) = ((0.082 x [(Silt Loading Factor/2)$^{0.65}$] x [(Truck Weight/3)$^{1.50}$ - 0.00047) x (1-("Wet" Days/1,460)) x Vehicle Miles Traveled (VMT)/yr x (1 ton/2,000 lb) x (1 - (Control Eff. / 100))

Source: Section 13.2.1, AP-42, December 2003.

INPUT DATA AND EMISSIONS CALCULATIONS

Uncontrolled Silt Loading Factor:	70.0	g/m^2	Mean Annual Number of "Wet" Days:	100	
Operating Hours:	1	hr/dy	75 dy/yr	75	hr/yr
Iron Ore Received by Truck:	5,000	ton/yr	Truck Travel Distance (one way):	4,300	ft
Hourly Truck Count:	2	trucks/hr	Annual Truck Count:	204	trucks/yr

Truck Traffic Type	Source ID	Vehicle Miles Traveled (VMT/hr)	Vehicle Miles Traveled (VMT/yr)	Vehicle Weight (ton)	Control Efficiency (%)	Potential PM Emission Rates (lb/hr)	Potential PM Emission Rates (ton/yr)
Iron Ore Trucks (Empty)	IOT-002a	1.629	166	16.0	90.0	1.546	0.079
Iron Ore Trucks (Full)	IOT-002b	1.629	166	40.5	90.0	6.223	0.318
					Totals	7.77	0.396

SOURCES OF INPUT DATA

Parameter	Data Source
Uncontrolled Silt Loading Factor	Based on factor for sand and gravel processing. Suggested by FDEP, 2005.
Mean Annual Number of "Wet" Days	Figure 13.2.1-2, Section 13.2.1, AP-42, November 2003.
Vehicle Miles Traveled, VMT	TEC, 2005.
Truck Weights, ton	TEC, 2005.
Control Efficiency	Estimated, ECT 2005.

NOTES AND OBSERVATIONS

DATA CONTROL

Data Collected by:	S. Castro	**Date:**	10/05
Evaluated by:	T. Davis	**Date:**	10/05
Data Entered by:	T. Davis	**Date:**	10/05

TAMPA ELECTRIC

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;

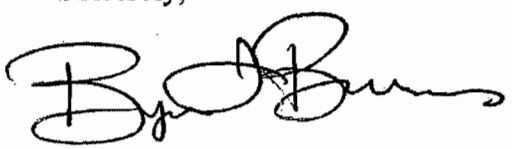
(2) Emissions from the pollutant-emitting activity, in combination with other units and activities proposed as insignificant, would not cause the facility to exceed any major source threshold(s) as defined in subparagraphs 62-213.420(3)(c)1., F.A.C., unless it is unless it is acknowledged in the permit 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/BTB 114

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.

TAMPA ELECTRIC

FACSIMILE COVER SHEET

TO: **Ms. Trina Vilhauer**
Mr. Al Linero
COMPANY: **FDEP**
FAX NO: **(850) 922-6979**

FROM: Byron Burrows E-mail:btburrows@tecoenergy.com
PHONE NO.: 813.228.1282
FAX NO.: 813.228.1308

DATE: July 3, 2007

SUBJECT: Notification of Change Without permit Revision for Reinjection of fly ash

NO. OF PAGES (INCLUDING THIS COVER): 7

PLEASE DELIVER TO RECIPIENT AS SOON AS POSSIBLE

MESSAGE:

Attached is a notification of change without permit revision related to reinjection of ammoniated fly ash at Big Bend Station. We have had discussions regarding this project with Al and Tom Cascio. Please call me if you have any questions.

Thank you,

Byron

********** -IND. XMT JOURNAL- ********** DATE JUL-03-2007 ***** TIME 16:36 ********

DATE/TIME = JUL-03-2007 16:06

JOURNAL No. = 25

COMM. RESULT = OK

PAGE(S) = 007

DURATION = 00:03:32

FILE No. = 382

MODE = MEMORY TRANSMISSION

DESTINATION = 918509226979

RECEIVED ID = / 8509226979

RESOLUTION = STD

********** - ***** - **********

EMISSION INVENTORY WORKSHEET

Tampa Electric Company - Big Bend Station

Truck Traffic (Paved Roads)

EMISSION SOURCE TYPE

FUGITIVE PM_{10} - TRUCK TRAFFIC ON PAVED ROADS

FACILITY AND SOURCE DESCRIPTION

Emission Source Description:	Fugitive PM_{10} - Iron Ore Flux Truck Traffic on Paved Roads
Emission Control Method(s)/ID No.(s):	Watering, As Necessary
Emission Point ID:	IOT-002

EMISSION ESTIMATION EQUATIONS

PM_{10} Emission (lb/hr) = ((0.016 x [(Silt Loading Factor/2)$^{0.65}$] x [(Truck Weight/3)$^{1.5}$] - 0.00047) x (1 - ("Wet" Days/1,460)) x Vehicle Miles Traveled (VMT)/hr x (1 - (Control Eff. / 100))

PM_{10} Emission (ton/yr) = ((0.016 x [(Silt Loading Factor/2)$^{0.65}$] x [(Truck Weight/3)$^{1.5}$] - 0.00047) x (1 - ("Wet" Days/1,460)) x Vehicle Miles Traveled (VMT)/yr x (1 ton/2,000 lb) x (1 - (Control Eff. / 100))

Source: Section 13.2.1, AP-42, December 2003.

INPUT DATA AND EMISSIONS CALCULATIONS

Uncontrolled Silt Loading Factor:	70.0	g/m^2	Mean Annual Number of "Wet" Days:	100	
Operating Hours:	8	hr/dy	75 dy/yr	600	hr/yr
Iron Ore Received by Truck:	5,000	ton/yr	Truck Travel Distance (one way):	4,300	ft
Hourly Truck Count:	2	trucks/hr	Annual Truck Count:	204	trucks/yr

Truck Traffic Type	Source ID	Vehicle Miles Traveled (VMT/hr)	Vehicle Miles Traveled (VMT/yr)	Vehicle Weight (ton)	Control Efficiency (%)	Potential PM_{10} Emission Rates (lb/hr)	Potential PM_{10} Emission Rates (ton/yr)
Iron Ore Trucks (Empty)	IOT-002a	1.629	166	16.0	90.0	0.301	0.015
Iron Ore Trucks (Full)	IOT-002b	1.629	166	40.5	90.0	1.214	0.062
					Totals	1.52	0.077

SOURCES OF INPUT DATA

Parameter	Data Source
Uncontrolled Silt Loading Factor	Based on factor for sand and gravel processing, Suggested by FDEP, 2005.
Mean Annual Number of "Wet" Days	Figure 13.2.1-2, Section 13.2.1, AP-42, November 2003.
Vehicle Miles Traveled, VMT	TEC, 2005.
Truck Weights, ton	TEC, 2005.
Control Efficiency	Estimated, ECT 2005.

NOTES AND OBSERVATIONS

DATA CONTROL

Data Collected by:	S. Castro	**Date:**	10/05
Evaluated by:	T. Davis	**Date:**	10/05
Data Entered by:	T. Davis	**Date:**	10/05

TAMPA ELECTRIC

May 4, 2010

Ms. Trina Vielhauer
Florida Department of Environmental Protection
Division of Air Resource Management
111 South Magnolia, Suite 4
Tallahassee, FL 32301

Via FedEx
Airbill No. 7986 3210 1775

Re: Tampa Electric Company (TEC)
Big Bend Station
Title V Permit Number 0570039-039-AV
Notification of Insignificant Emissions and
Request for Generic Exemption

Dear Ms. Vielhauer,

The purpose of this correspondence is to notify the Florida Department of Environmental Protection (Department) that Tampa Electric Company (TEC) intends to transport coal via truck to Big Bend Station beginning tomorrow, May 5, 2010.

Up to 5,000 tons of coal will be brought in by truck at frequent intervals and stored in the fuel yard. Big Bend Station will blend and transfer the coal using the normal processes as needed. This operation will not cause exceedance of any throughput limits. Particulate matter is the only affected pollutant. The additional truck traffic and truck unloading activity were evaluated to demonstrate that the project qualifies for a generic exemption and as an insignificant activity. The results of the emission calculations (attached) show that the emissions will be less than 0.1 tons. No permit conditions become applicable or not applicable as a result of this operation change.

TEC submits that this operation qualifies for a generic exemption from permitting requirements pursuant to the provisions of Rule 62-210.300(3)(b) F.A.C., Florida Administrative Code (F.A.C.). The activity is not subject to any unit specific applicable requirement. The activity will not result in the emission of lead or any hazardous air pollutants, and the activity will fall well below the 5 ton per year threshold for fugitive emissions of particulate matter. Emissions from this activity, in combination with the emissions of other units and activities of the facility, will not cause the facility to exceed any major source threshold either alone, or in combination with emissions from all other insignificant sources. This activity does not constitute a modification of any emissions unit at Big Bend Station.

Enclosed are the emissions calculations and professional engineer's certification.

If you have any questions or need additional information, please contact Julie Ward or me at (813) 228-4740.

Sincerely,

Byron T. Burrows, P.E.
Manager - Air Programs
Environmental, Health & Safety

EHS/rlk/BTB129

Enclosures

c/enc: Mr. Syed Arif, P.E., FDEP SW
Mr. Jeff Koerner, P.E., FDEP SW
Mr. Jason Waters, P.E. , EPCHC

TAMPA ELECTRIC COMPANY
BIG BEND STATION

COAL TRUCK UNLOADING

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 transport, storage and handling of coal 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

5/4/10
Date

(seal)

* Certification is applicable to the Tampa Electric Company notification of generic exemption to the Department regarding the truck unloading of coal at its Big Bend Station.

TAMPA ELECTRIC COMPANY
BIG BEND STATION

Emission Estimation Algorithm

$$E_A = k \times 0.0032 \times [(U/5)^{1.3} / (M/2)^{1.4}] \times TR \times [(1 - (CE/100)] \times (1\ ton / 2{,}000\ lb)$$

$$E_H = k \times 0.0032 \times [(U/5)^{1.3} / (M/2)^{1.4}] \times TR \times [(1 - (CE/100)]$$

E_A = PM/PM_{10} emission rate; tons per year (tpy)
E_H = PM/PM_{10} emission rate; tons per hour (tph)
k = particle size multiplier; dimensionless
U = mean wind speed, miles per hour (mph)
M = fuel moisture content; weight percent (%)
TR = transfer rate; tons per year (tpy)
CE = control efficiency; percent (%)

Source: Section 13.2.4.3, Eqn. (1), AP-42, November 2006.

Input data			
Variable	*Value*		*Source*
k (PM)	0.74		AP-42
k (PM_{10})	0.35		AP-42
U	6.89	mph	Climate of the States (Tampa, FL), Third Edition, 1985.
M	9.40	%	TEC data-Average of 2009 Weekly Fuel Composites
TR (tpy)	5,000	tpy	TEC data
TR (tph)			TEC data (Max 8 trucks/hr * 25 tons/truck)
CE	90	%	TEC data

Transfer Point	Emission Point ID	Control Efficiency (%)	Throughput (tpy)	Emission Rate PM (tpy)	Emission Rate PM_{10} (tpy)
Non-TEC Fuel Truck Loading or Unloading	FH-068	90	5,000	0.00010	0.000049
			Totals	0.00010	0.000049

Transfer Point	Emission Point ID	Control Efficiency (%)	Maximum Throughput (tph)	Emission Rate PM (lb/hr)	Emission Rate PM_{10} (lb/hr)
Non-TEC Fuel Truck Loading or Unloading	FH-068	90	200	0.00824	0.003896
			Totals	0.0082	0.0039

TAMPA ELECTRIC COMPANY
BIG BEND STATION
TRUCK TRAFFIC EMISSIONS

Emission Estimation Algorithm

$$E = k \times (s / 12)^a \times (W / 3)^b \times [(365-P)/365] \text{ VMT} \times [(1 - (CE / 100)] \times (1 \text{ ton} / 2{,}000 \text{ lb})$$

E = PM/PM_{10} emission rate; tons per year (tpy)
k = empirical constant; dimensionless
s = surface material silt content; percent (%)
a = empirical constant; dimensionless
W = mean vehicle weight; tons
b = empirical constant; dimensionless
M = surface material moisture content; weight percent (%)
c = empirical constant; dimensionless
P = days of rain >0.01 in. during year
VMT = vehicle miles traveled; miles/year (mi/yr)
CE = control efficiency; percent

Source: Section 13.2.2.2, Eqn. (1a), AP-42, November 2006.

2009 Data		
k (PM)	10.0	
k (PM_{10})	2.6	
s	2.8	%
a (PM)	0.8	
a (PM_{10})	0.8	
W (full)	38.0	tons
W (empty)	13.0	tons
b (PM)	0.5	
b (PM_{10})	0.4	
P	107.0	
CE	80.0	%

	Emission Point ID	VMT (mi/yr)	2009 Emissions PM (ton/yr)	2009 Emissions PM_{10} (ton/yr)
Coal Trucks, Full	FH-072	61	0.0470	0.0095
Coal Trucks, Empty	FH-073	61	0.0470	0.0095
		Totals	0.094	0.019

FedEx® Shipment Receipt

Address Information

Ship to:	Ship from:
Ms. Trina Vielhauer	Rebecka Kelleher
FDEP	teco
111 S MAGNOLIA DR STE 4	702 N. Franklin St
DIVISION OF AIR RESOURCE MANAGEMENT	
TALLAHASSEE, FL	Tampa, FL
323012956	33602
US	US
8504881344	8132281933

Shipping Information
Tracking number: 798632101775
Ship date: 05/04/2010
Estimated shipping charges:

Package Information
Service type: Standard Overnight
Package type: FedEx Envelope
Number of packages: 1
Total weight: 0.3LBS
Declared value: 0.00USD
Special Services: Residential Delivery
Pickup/Drop-off: Use an already scheduled pickup at my location

Billing Information
Bill transportation to: Sender
Your reference: 984-50649-18-820
P.O. no.:
Invoice no.:
Department no.: TECCC001

Thank you for shipping online with Fedex ShipManager at fedex.com.

Please Note

AP1.2

TECO SM
TAMPA ELECTRIC

June 18, 2010

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. 7936 5215 8010

Re: Tampa Electric Company - Big Bend Station
Title V Permit Number 0570039-039-AV
Notification of Change without Permit Revision
Fuel Additive - MgO Injection

Dear Ms. Vielhauer:

The purpose of this correspondence is to notify the Florida Department of Environmental Protection (Department) that Tampa Electric Company (TEC) intends to introduce a fuel additive, specifically magnesium oxide at Big Bend Station and serves as a Change without Permit Revision request, pursuant to 62-213.420 FAC.

Tampa Electric's Big Bend Station is planning the use of a liquid fuel additive, magnesium oxide. Magnesium oxide has the potential to reduce upper furnace pluggage by favorably changing the dewpoint in the duct work.

The planned injection has no effect on regulated pollutants. The operation is exempt from permitting under Rule 62-210.300(3)(b) F.A.C., meets the requirements of Appendix I of the above stated permit, and constitutes an insignificant pollutant emitting activity under Rule 62-213.430(6), F.A.C. As noted above, the activity is not subject to any unit specific applicable requirement, no hazardous air pollutants are emitted, and the activity will not exceed any major source thresholds, by itself or in combination with emissions from all other insignificant sources. This activity does not constitute a modification of any emissions unit at Big Bend Station. Therefore, this notice fulfills the requirements of 62-213.410, F.A.C. *Changes Without Permit Revision.*

Based on this information, TEC believes that this operation is exempt from permitting per F.A.C. 62-210.300(3) and requests written concurrence from the Department. TEC appreciates the Department's prompt consideration in this matter.

TAMPA ELECTRIC COMPANY
P.O. BOX 111 TAMPA, FL 33601-0111

(813) 228-4111

AN EQUAL OPPORTUNITY COMPANY
HTTP://WWW.TAMPAELECTRIC.COM

CUSTOMER SERVICE:
HILLSBOROUGH COUNTY (813) 223-0800
OUTSIDE HILLSBOROUGH COUNTY 1 (888) 223-0800

Please contact Julie Ward at (813) 228-4740 if you have any questions or comments regarding this administrative amendment.

Sincerely,

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

EHS/rlk/JMW251

cc: Ms. Mara Grace Nasca, FDEP SW
Mr. Al Linero, FDEP
Mr. Jason Waters, EPCHC

FedEx Shipment Receipt

Address Information

Ship to:	**Ship from:**
Ms. Trina Vielhauer	Rebecka Kelleher
FDEP	teco
111 S MAGNOLIA DR STE 4	702 N. Franklin St
DIVISION OF AIR RESOURCE MANAGEMENT	
TALLAHASSEE, FL	Tampa, FL
323012956	33602
US	US
8504881344	8132281933

Shipping Information
Tracking number: 793652158010
Ship date: 06/18/2010
Estimated shipping charges:

Package Information
Service type: Standard Overnight
Package type: FedEx Envelope
Number of packages: 1
Total weight: 0.2LBS
Declared value: 0.00USD
Special Services: Residential Delivery
Pickup/Drop-off: Use an already scheduled pickup at my location

Billing Information
Bill transportation to: Sender
Your reference: 984-50649-18-820
P.O. no.:
Invoice no.:
Department no.: TECCC001

Thank you for shipping online with Fedex ShipManager at fedex.com.

Please Note

TECO SM
TAMPA ELECTRIC

August 10, 2011

Jeffery F. Koerner, Program Administrator
Florida Department of Environmental Protection
Division of Air Resource Management
Office of Air Permitting and Compliance
2600 Blair Stone Road, M.S. 5505
Tallahassee, Florida 32399-2400

Via FedEx
Airbill No. 7973 9598 6423

Re: Tampa Electric Company - Big Bend Station
Title V Permit Number 0570039-045-AV
Cooling Tower Permit Correction and Notification

Dear Mr. Koerner:

This correspondence requests an administrative correction to permit no. 0570039-045-AV pursuant to Rule 62-210.360 F.A.C. A recent review of the existing permit shows there are no references to five (5) existing cooling towers currently in operation at Big Bend Power Station. A historical review of previous air permits did not reveal any references to these cooling towers. It is believed these cooling towers were considered insignificant emission sources at the time of construction and were inadvertently omitted from the air operating permit and subsequent Title V permit revisions. Table 1 shows a description and purpose of each cooling tower.

Table 1 – Description and Purpose of the Existing Cooling Towers.

Location	Installation Date	Description	Purpose
Unit 1	1970	Induced Draft Cooling Tower	Cool mechanical equipment
Unit 2	1973	Induced Draft Cooling Tower	Cool mechanical equipment
Unit 3	1976	Induced Draft Cooling Tower	Cool mechanical equipment
Unit 4	1985	Induced Draft Cooling Tower	Cool mechanical equipment
FGD area	1985	Induced Draft Cooling Tower	Cool HVAC equipment

TEC conducted calculations to estimate PM/PM_{10} emissions from each cooling tower. The AP-42 procedure (Chapter 13.4 Wet Cooling Towers, latest Ed.) was used to calculate the particulate matter (PM) emissions for each cooling tower. The revised procedure by Reisman and Frisbie (2001)[1] was used to calculate PM_{10} emissions for each cooling tower.

[1] Reisman, J. and Frisbie, G., *Calculating Realistic PM_{10} Emissions from Cooling Towers*, Technical Proceedings, Air Waste Management Association, June 2001.

Table 1 shows the PM emissions for each cooling tower was less than the 5.0 tons per year threshold. The PM and PM_{10} emissions from the unit cooling towers were calculated to be 1.5 and 0.93 tons per year, respectively. PM and PM_{10} emissions from the FGD cooling tower were estimated at 0.047 and 0.029 tons per year, respectively. Consequently, each cooling tower is considered an insignificant source of emissions and exempt from air permitting requirements pursuant to Rule 62-210.300(3)(b)1., F.A.C., *Generic Emission Unit or Activity Exemption.*

Table 2 – PM/PM_{10} Emission Summary of Existing Cooling Towers.

	PM Emission Rate		PM_{10} Emission Rate	
Location	(lb/hr)	(tons/year)	(lb/hr)	(tons/year)
Unit 1 Cooling Tower	0.32	1.4	0.20	0.86
Unit 2 Cooling Tower	0.32	1.4	0.20	0.86
Unit 3 Cooling Tower	0.35	1.5	0.21	0.93
Unit 4 Cooling Tower	0.35	1.5	0.21	0.93
FGD HVAC Cooling Tower	0.011	0.047	0.0066	0.029

This correspondence also serves as a courtesy notification for the replacement all unit cooling towers at Big Bend Power Station. Unit 2 cooling tower will be replaced in-kind in October 2011 with fiber-glass construction. The unit will be designed to withstand the latest wind loading requirements of the Florida Building Code. This replacement is not expected to change the aforementioned emissions. In fact, the replacement is expected to decrease the emission rate with the new mist eliminators. Units 3, 4 and 1 cooling towers are tentatively scheduled for replacement in 2013, 2014, and 2015, respectively. Similarly, these future replacements are expected to decrease emissions.

TEC requests the Title V permit be revised to include the aforementioned cooling towers as insignificant emission units pursuant to Rule 62-210.360 F.A.C. Please contact me at (813) 228-4232 or Byron Burrows at (813) 228-1282, if you have any questions or comments.

Sincerely,

Robert A. Velasco, P.E., BCEE, QEP
Air Programs
Environmental, Health & Safety

EHS/rlk/RAV106

Enclosure

c/enc: Cindy Zhang-Torres, DEP SW District
Diana Lee, EPCHC

Tampa Electric Company
Big Bend Station

Cooling Tower Permit Correction and Notification

Professional Engineer Certification

1. Professional Engineer Name: Robert A. Velasco, P.E.
   Registration Number: 57190
2. Professional Engineer Address...
   Organization/Firm: Tampa Electric Company
   Street Address: P.O. Box 111
   City: Tampa State: FL Zip Code: 33601
3. Professional Engineer Telephone Numbers...
   Telephone: (813) 228 - 4232 Fax: (813) 228 - 1308
4. Professional Engineer E-mail Address: ravelasco@tecoenergy.com
5. Professional Engineer Statement:

   (1) Engineering opinion and information included herein provides reasonable assurance of meeting the requirements of the Title V permit and Chapter 62-210.300(3)(b)1., F.A.C., Generic Emission Unit or Activity Exemption;

   (2) Title V permit correction is based on information best available information at the time and is believed to be correct to the best of the Engineer's knowledge;

   (3)Emission information is based on acceptable techniques available for calculating emissions or estimating emissions of insignificant emission units from materials, information and calculations contained in this certification; and

   (4)Seal does not certify or attest to the accuracy of work or information prepared by others who are qualified to perform such services. This includes, but not limited to drawings, specifications, correspondences, personnel communication etc.

Signature/Date

(seal)

Emission Inventory Work Sheet

PM EMISSIONS - WET COOLING TOWERS
Big Bend Power Station
Tampa Electric Company
Facility ID No. 0570039

INPUT DATA AND EMISSION CALCULATIONS

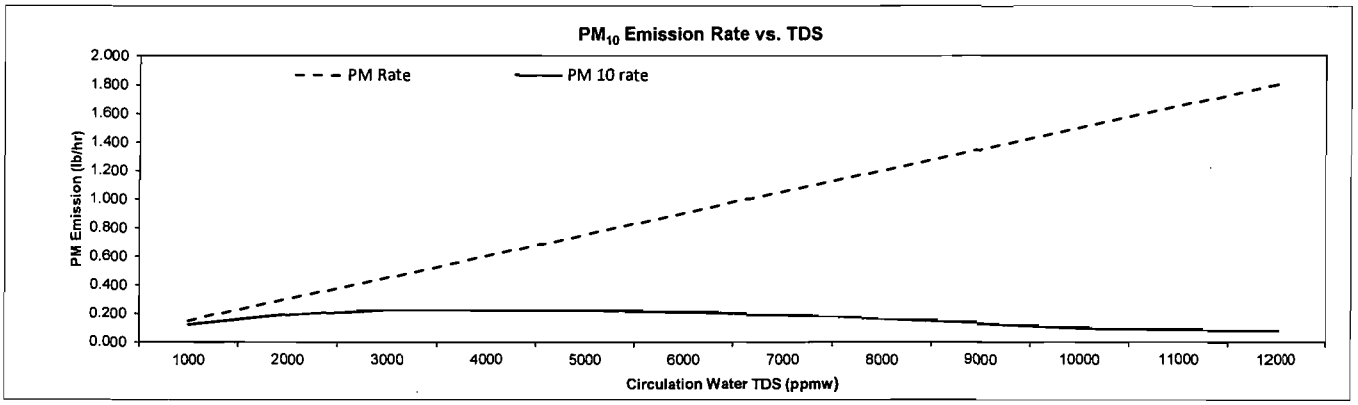
Emission Source Description:	Unit 1 wet cooling tower
Emission Control Methods:	Drift eliminators
Emission Points:	Cooling drift

INPUT DATA AND EMISSION CALCULATIONS

Water droplet density	1	g/cm^3
Solid particle density	2.2	g/cm^3
TDS	2,150	ppmw
Drift rate	0.005	%
Water circulation rate	6,000	gpm
PM emission rate	0.32	lb/hr
	1.414	ton/yr
PM_{10} emission rate	0.1967	lb/hr
	0.862	ton/yr

Solids Particle Size Distribution

EPRI Droplet Diameter (μm)	Droplet Volume (μm^3) [2]	Droplet Mass (μg) [3]	Particle Mass Solids (μg) [4]	Solid Particle Volume (μm^3)	Solid Particle Diameter (μm) [7]	EPRI % Mass Smaller
10	524	5.24E-04	1.13E-06	0.51	0.992	0.000
20	4189	4.19E-03	9.01E-06	4.09	1.985	0.196
30	14137	1.41E-02	3.04E-05	13.82	2.977	0.226
40	33510	3.35E-02	7.20E-05	32.75	3.969	0.514
50	65450	6.54E-02	1.41E-04	63.96	4.962	1.816
60	113097	1.13E-01	2.43E-04	110.53	5.954	5.702
70	179594	1.80E-01	3.86E-04	175.51	6.947	21.348
90	381704	3.82E-01	8.21E-04	373.03	8.931	49.812
110	696910	6.97E-01	1.50E-03	681.07	10.916	70.509
130	1150347	1.15E+00	2.47E-03	1124.20	12.901	82.023
150	1767146	1.77E+00	3.80E-03	1726.98	14.885	88.012
180	3053628	3.05E+00	6.57E-03	2984.23	17.863	91.032
210	4849048	4.85E+00	1.04E-02	4738.84	20.840	92.468
240	7238229	7.24E+00	1.56E-02	7073.72	23.817	94.091
270	10305995	1.03E+01	2.22E-02	10071.77	26.794	94.689
300	14137167	1.41E+01	3.04E-02	13815.87	29.771	96.288
350	22449298	2.24E+01	4.83E-02	21939.09	34.733	97.011
400	33510322	3.35E+01	7.20E-02	32748.72	39.695	98.340
450	47712938	4.77E+01	1.03E-01	46628.55	44.656	99.071
500	65449847	6.54E+01	1.41E-01	63962.35	49.618	99.071
600	113097336	1.13E+02	2.43E-01	110526.94	59.542	100.000



EMISSION EQUATIONS

[2] Volume of drift droplet	$V = 4/3\ \pi(D_p/2)^3$
[3] Mass of solids in drift droplet	TDS X ρ_w X V
[4] Mass of solids	ρ_{TDS} X V
[7] Diameter of drift droplet	$D_d[(TDS)(\rho_w/\rho_{TDS})]^{1/3}$

SOURCES OF INPUT DATA

Circulation Rate	Design Specifications
Drift Rate %	Marley Rep - RME Associates, Inc.
PM Calculation	EPA AP 42 Chapter 13.4 Wet Cooling Towers (latest Ed.)
PM_{10} Calculation	Reisman, J. and Frisbie, G. , Calculating Realistic PM_{10} Emissions from Cooling Towers, Technical Proceedings Air Waste Management Association, June 2001.

NOTES AND OBSERVATIONS
PM_{10}/PM ratio based on a conservative 0.0006% drift rate

Emission Inventory Work Sheet

PM EMISSIONS - WET COOLING TOWERS
Big Bend Power Station
Tampa Electric Company
Facility ID No. 0570039

INPUT DATA AND EMISSION CALCULATIONS

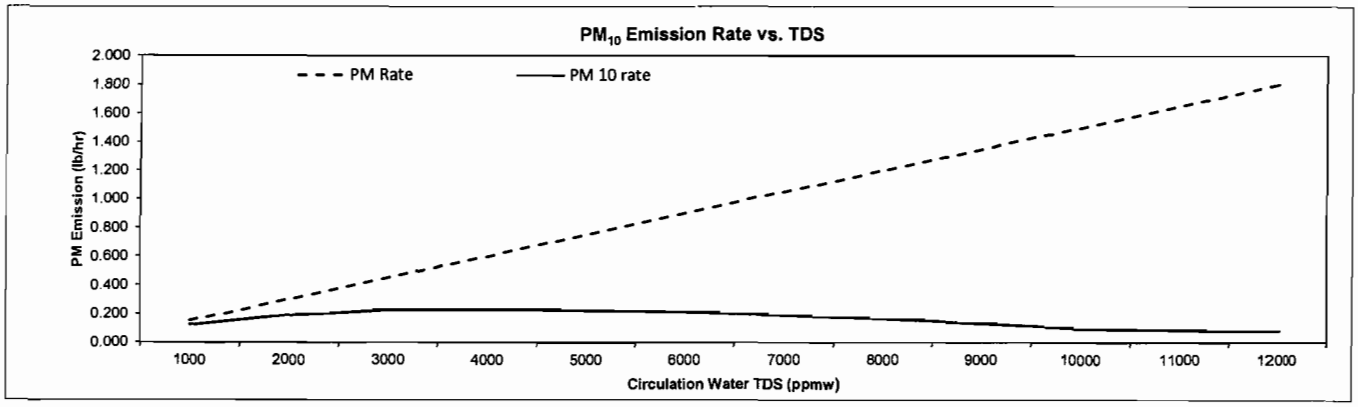
Emission Source Description:	Unit 2 wet cooling tower project
Emission Control Methods:	Drift eliminators
Emission Points:	Cooling drift

INPUT DATA AND EMISSION CALCULATIONS

Water droplet density	1	g/cm^3
Solid particle density	2.2	g/cm^3
TDS	2,150	ppmw
Drift rate	0.005	%
Water circulation rate	6,000	gpm
PM emission rate	0.32	lb/hr
	1.414	ton/yr
PM_{10} emission rate	0.1967	lb/hr
	0.862	ton/yr

Solids Particle Size Distribution

EPRI Droplet Diameter (μm)	Droplet Volume (μm^3) [2]	Droplet Mass (μg) [3]	Particle Mass Solids (μg) [4]	Solid Particle Volume (μm^3)	Solid Particle Diameter (μm) [7]	EPRI % Mass Smaller
10	524	5.24E-04	1.13E-06	0.51	0.992	0.000
20	4189	4.19E-03	9.01E-06	4.09	1.985	0.196
30	14137	1.41E-02	3.04E-05	13.82	2.977	0.226
40	33510	3.35E-02	7.20E-05	32.75	3.969	0.514
50	65450	6.54E-02	1.41E-04	63.96	4.962	1.816
60	113097	1.13E-01	2.43E-04	110.53	5.954	5.702
70	179594	1.80E-01	3.86E-04	175.51	6.947	21.348
90	381704	3.82E-01	8.21E-04	373.03	8.931	49.812
110	696910	6.97E-01	1.50E-03	681.07	10.916	70.509
130	1150347	1.15E+00	2.47E-03	1124.20	12.901	82.023
150	1767146	1.77E+00	3.80E-03	1726.98	14.885	88.012
180	3053628	3.05E+00	6.57E-03	2984.23	17.863	91.032
210	4849048	4.85E+00	1.04E-02	4738.84	20.840	92.468
240	7238229	7.24E+00	1.56E-02	7073.72	23.817	94.091
270	10305995	1.03E+01	2.22E-02	10071.77	26.794	94.689
300	14137167	1.41E+01	3.04E-02	13815.87	29.771	96.288
350	22449298	2.24E+01	4.83E-02	21939.09	34.733	97.011
400	33510322	3.35E+01	7.20E-02	32748.72	39.695	98.340
450	47712938	4.77E+01	1.03E-01	46628.55	44.656	99.071
500	65449847	6.54E+01	1.41E-01	63962.35	49.618	99.071
600	113097336	1.13E+02	2.43E-01	110526.94	59.542	100.000



EMISSION EQUATIONS

[2] Volume of drift droplet	$V = 4/3\ \pi(D_p/2)^3$
[3] Mass of solids in drift droplet	TDS X ρ_w X V
[4] Mass of solids	ρ_{TDS} X V
[7] Diameter of drift droplet	$D_d[(TDS)(\rho_w/\rho_{TDS})]^{1/3}$

SOURCES OF INPUT DATA

Circulation Rate	Design Specifications
Drift Rate	Marley Rep - RME Associates, Inc.
PM Calculation	EPA AP 42 Chapter 13.4 Wet Cooling Towers (latest Ed.)
PM_{10} Calculation	Reisman, J. and Frisbie, G. , Calculating Realistic PM_{10} Emissions from Cooling Towers, Technical Proceedings Air Waste Management Association, June 2001.

NOTES AND OBSERVATIONS
PM_{10}/PM ratio based on a conservative 0.0006% drift rate

Emission Inventory Work Sheet

PM EMISSIONS - WET COOLING TOWERS
Big Bend Power Station
Tampa Electric Company
Facility ID No. 0570039

INPUT DATA AND EMISSION CALCULATIONS

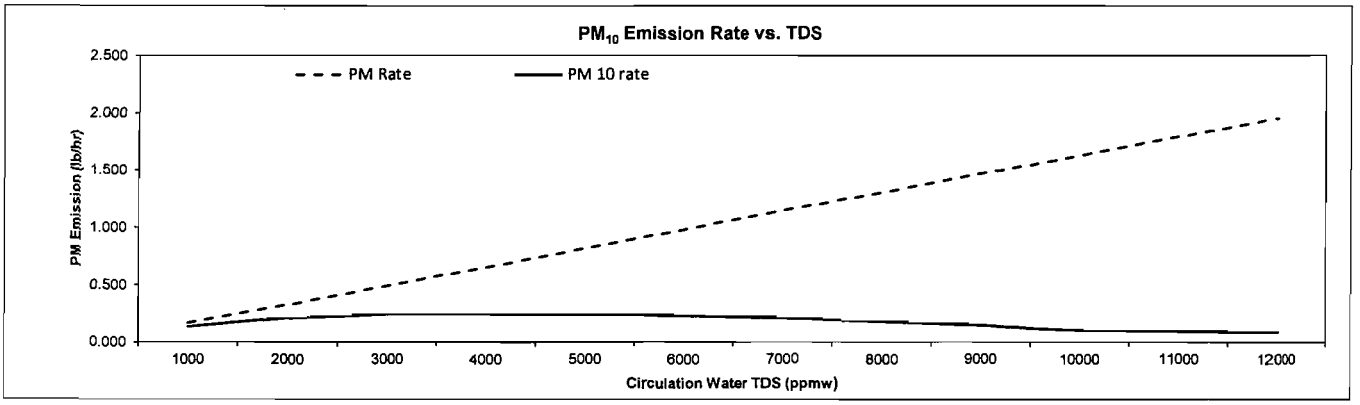
Emission Source Description:	Unit 3 wet cooling tower
Emission Control Methods:	Drift eliminators
Emission Points:	Cooling drift

INPUT DATA AND EMISSION CALCULATIONS

Water droplet density	1	g/cm^3
Solid particle density	2.2	g/cm^3
TDS	2,150	ppmw
Drift rate	0.005	%
Water circulation rate	6,500	gpm
PM emission rate	0.35	lb/hr
	1.531	ton/yr
PM_{10} emission rate	0.2131	lb/hr
	0.934	ton/yr

Solids Particle Size Distribution

EPRI Droplet Diameter (μm)	Droplet Volume (μm^3) [2]	Droplet Mass (μg) [3]	Particle Mass Solids (μg) [4]	Solid Particle Volume (μm^3)	Solid Particle Diameter (μm) [7]	EPRI % Mass Smaller
10	524	5.24E-04	1.13E-06	0.51	0.992	0.000
20	4189	4.19E-03	9.01E-06	4.09	1.985	0.196
30	14137	1.41E-02	3.04E-05	13.82	2.977	0.226
40	33510	3.35E-02	7.20E-05	32.75	3.969	0.514
50	65450	6.54E-02	1.41E-04	63.96	4.962	1.816
60	113097	1.13E-01	2.43E-04	110.53	5.954	5.702
70	179594	1.80E-01	3.86E-04	175.51	6.947	21.348
90	381704	3.82E-01	8.21E-04	373.03	8.931	49.812
110	696910	6.97E-01	1.50E-03	681.07	10.916	70.509
130	1150347	1.15E+00	2.47E-03	1124.20	12.901	82.023
150	1767146	1.77E+00	3.80E-03	1726.98	14.885	88.012
180	3053628	3.05E+00	6.57E-03	2984.23	17.863	91.032
210	4849048	4.85E+00	1.04E-02	4738.84	20.840	92.468
240	7238229	7.24E+00	1.56E-02	7073.72	23.817	94.091
270	10305995	1.03E+01	2.22E-02	10071.77	26.794	94.689
300	14137167	1.41E+01	3.04E-02	13815.87	29.771	96.288
350	22449298	2.24E+01	4.83E-02	21939.09	34.733	97.011
400	33510322	3.35E+01	7.20E-02	32748.72	39.695	98.340
450	47712938	4.77E+01	1.03E-01	46628.55	44.656	99.071
500	65449847	6.54E+01	1.41E-01	63962.35	49.618	99.071
600	113097336	1.13E+02	2.43E-01	110526.94	59.542	100.000



EMISSION EQUATIONS

[2] Volume of drift droplet	$V = 4/3\ \pi(D_p/2)^3$
[3] Mass of solids in drift droplet	$TDS \times \rho_w \times V$
[4] Mass of solids	$\rho_{TDS} \times V$
[7] Diameter of drift droplet	$D_d[(TDS)(\rho_w/\rho_{TDS})]^{1/3}$

SOURCES OF INPUT DATA

Circulation Rate	Design Specifications
Drift Rate	Marley Rep - RME Associates, Inc.
PM Calculation	EPA AP 42 Chapter 13.4 Wet Cooling Towers (latest Ed.)
PM_{10} Calculation	Reisman, J. and Frisbie, G. , Calculating Realistic PM_{10} Emissions from Cooling Towers, Technical Proceedings Air Waste Management Association, June 2001.

NOTES AND OBSERVATIONS
PM_{10}/PM ratio based on a conservative 0.0006% drift rate

Emission Inventory Work Sheet

PM EMISSIONS - WET COOLING TOWERS
Big Bend Power Station
Tampa Electric Company
Facility ID No. 0570039

INPUT DATA AND EMISSION CALCULATIONS

Emission Source Description:	Unit 4 wet cooling tower
Emission Control Methods:	Drift eliminators
Emission Points:	Cooling drift

INPUT DATA AND EMISSION CALCULATIONS

Water droplet density	1	g/cm^3
Solid particle density	2.2	g/cm^3
TDS	2,150	ppmw
Drift rate	0.005	%
Water circulation rate	6,500	gpm
PM emission rate	0.35	lb/hr
	1.531	ton/yr
PM_{10} emission rate	0.2131	lb/hr
	0.934	ton/yr

Solids Particle Size Distribution

EPRI Droplet Diameter (μm)	Droplet Volume (μm^3) [2]	Droplet Mass (μg) [3]	Particle Mass Solids (μg) [4]	Solid Particle Volume (μm^3)	Solid Particle Diameter (μm) [7]	EPRI % Mass Smaller
10	524	5.24E-04	1.13E-06	0.51	0.992	0.000
20	4189	4.19E-03	9.01E-06	4.09	1.985	0.196
30	14137	1.41E-02	3.04E-05	13.82	2.977	0.226
40	33510	3.35E-02	7.20E-05	32.75	3.969	0.514
50	65450	6.54E-02	1.41E-04	63.96	4.962	1.816
60	113097	1.13E-01	2.43E-04	110.53	5.954	5.702
70	179594	1.80E-01	3.86E-04	175.51	6.947	21.348
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110	696910	6.97E-01	1.50E-03	681.07	10.916	70.509
130	1150347	1.15E+00	2.47E-03	1124.20	12.901	82.023
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180	3053628	3.05E+00	6.57E-03	2984.23	17.863	91.032
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350	22449298	2.24E+01	4.83E-02	21939.09	34.733	97.011
400	33510322	3.35E+01	7.20E-02	32748.72	39.695	98.340
450	47712938	4.77E+01	1.03E-01	46628.55	44.656	99.071
500	65449847	6.54E+01	1.41E-01	63962.35	49.618	99.071
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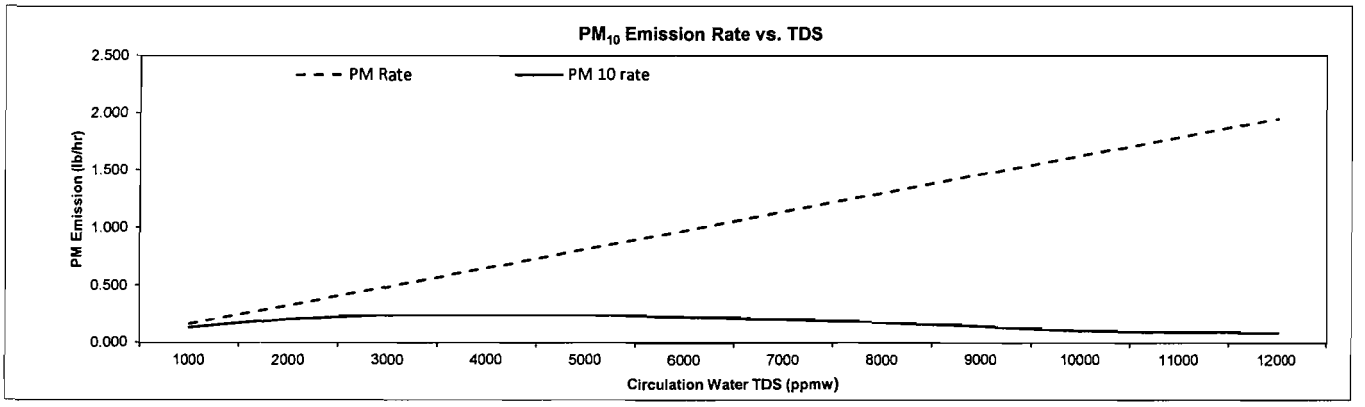

EMISSION EQUATIONS

[2] Volume of drift droplet	$V = 4/3\ \pi(D_p/2)^3$
[3] Mass of solids in drift droplet	TDS X ρ_w X V
[4] Mass of solids	ρ_{TDS} X V
[7] Diameter of drift droplet	$D_d[(TDS)(\rho_w/\rho_{TDS})]^{1/3}$

SOURCES OF INPUT DATA

Circulation Rate	Design Specifications
Drift Rate	Marley Rep - RME Associates, Inc.
PM Calculation	EPA AP 42 Chapter 13.4 Wet Cooling Towers (latest Ed.)
PM_{10} Calculation	Reisman, J. and Frisbie, G. , Calculating Realistic PM_{10} Emissions from Cooling Towers, Technical Proceedings Air Waste Management Association, June 2001.

NOTES AND OBSERVATIONS
PM_{10}/PM ratio based on a conservative 0.0006% drift rate

Emission Inventory Work Sheet

PM EMISSIONS - WET COOLING TOWERS
Big Bend Power Station
Tampa Electric Company
Facility ID No. 0570039

INPUT DATA AND EMISSION CALCULATIONS

Emission Source Description:	FGD HVAC wet cooling tower
Emission Control Methods:	Drift eliminators
Emission Points:	Cooling drift

INPUT DATA AND EMISSION CALCULATIONS

Water droplet density	1	g/cm^3
Solid particle density	2.2	g/cm^3
TDS	2,150	ppmw
Drift rate	0.005	%
Water circulation rate	200	gpm
PM emission rate	0.011	lb/hr
	0.047	ton/yr
PM_{10} emission rate	0.0066	lb/hr
	0.029	ton/yr

Solids Particle Size Distribution

EPRI Droplet Diameter (μm)	Droplet Volume (μm^3) [2]	Droplet Mass (μg) [3]	Particle Mass Solids (μg) [4]	Solid Particle Volume (μm^3)	Solid Particle Diameter (μm) [7]	EPRI % Mass Smaller
10	524	5.24E-04	1.13E-06	0.51	0.992	0.000
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40	33510	3.35E-02	7.20E-05	32.75	3.969	0.514
50	65450	6.54E-02	1.41E-04	63.96	4.962	1.816
60	113097	1.13E-01	2.43E-04	110.53	5.954	5.702
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110	696910	6.97E-01	1.50E-03	681.07	10.916	70.509
130	1150347	1.15E+00	2.47E-03	1124.20	12.901	82.023
150	1767146	1.77E+00	3.80E-03	1726.98	14.885	88.012
180	3053628	3.05E+00	6.57E-03	2984.23	17.863	91.032
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350	22449298	2.24E+01	4.83E-02	21939.09	34.733	97.011
400	33510322	3.35E+01	7.20E-02	32748.72	39.695	98.340
450	47712938	4.77E+01	1.03E-01	46628.55	44.656	99.071
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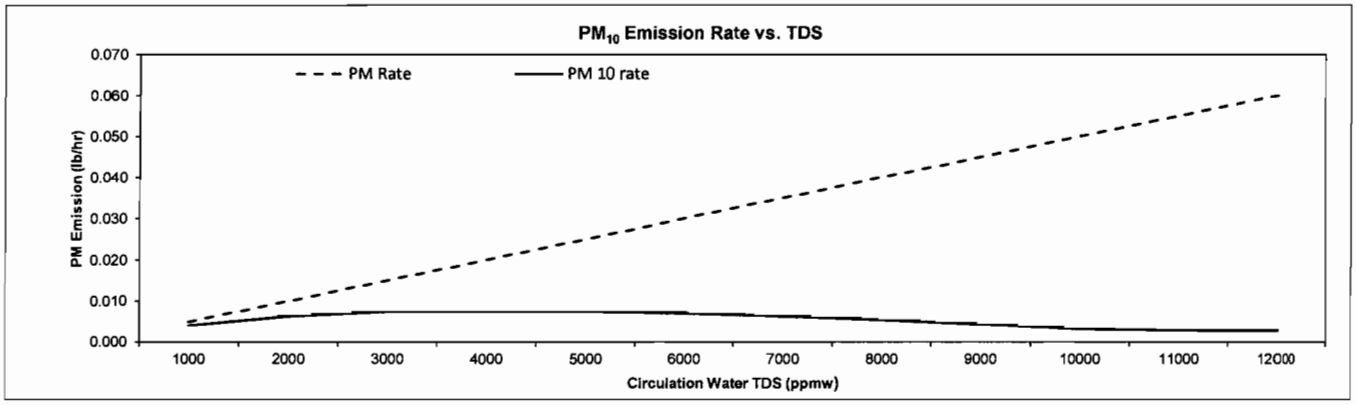

EMISSION EQUATIONS

[2] Volume of drift droplet	$V = 4/3\ \pi(D_p/2)^3$
[3] Mass of solids in drift droplet	TDS X ρ_w X V
[4] Mass of solids	ρ_{TDS} X V
[7] Diameter of drift droplet	$D_d[(TDS)(\rho_w/\rho_{TDS})]^{1/3}$

SOURCES OF INPUT DATA

Circulation Rate	Baltimore Aircoil Company
Drift Rate	Baltimore Aircoil Company
PM Calculation	EPA AP 42 Chapter 13.4 Wet Cooling Towers (latest Ed.)
PM_{10} Calculation	Reisman, J. and Frisbie, G. , Calculating Realistic PM_{10} Emissions from Cooling Towers, Technical Proceedings Air Waste Management Association, June 2001.

NOTES AND OBSERVATIONS
PM_{10}/PM ratio based on a conservative 0.0006% drift rate

FedEx.

Shipment Receipt
Address Information

Ship to:	**Ship from:**
Mr. Jeffery F. Koerner	Rebecka Kelleher
FDEP-Division of Air Resource Mang	teco
2600 BLAIRSTONE RD # MS5505	702 N. Franklin St
OFFICE OF AIR PERMITTING AND COMPLI	
TALLAHASSEE, FL	Tampa, FL
32399-2400	33602
US	US
8504881344	8132281933

Shipping Information
Tracking number: 797395986423
Ship date: 08/10/2011
Estimated shipping charges:

Package Information
Service type: Standard Overnight
Package type: FedEx Envelope
Number of packages: 1
Total weight: 0.50LBS
Declared value: 0.00USD
Special Services:
Pickup/Drop-off: Use an already scheduled pickup at my location

Billing Information
Bill transportation to: Teco Energy-029
Your reference: 984-54970-18-840
P.O. no.:
Invoice no.:
Department no.: TECCC001

Thank you for shipping online with Fedex ShipManager at fedex.com.

Please Note

FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is $500, e.g., jewelry, precious metals, negotiable instruments and other items listed in our Service Guide. Written claims must be filed within strict time limits; Consult the applicable FedEx Service Guide for details.
The estimated shipping charge may be different than the actual charges for your shipment. Differences may occur based on actual weight, dimensions, and other factors. Consult the applicable FedEx Service Guide or the FedEx Rate Sheets for details on how shipping charges are calculated.

TAMPA ELECTRIC

August 12, 2011

Jeffery F. Koerner, Program Administrator
Florida Department of Environmental Protection
Division of Air Resource Management
Office of Air Permitting and Compliance
2600 Blair Stone Road, M.S. 5505
Tallahassee, Florida 32399-2400

Via FedEx
Airbill No. 7974 0820 0889

Re: Tampa Electric Company - Big Bend Station
Title V Permit Number 0570039-045-AV
SCCT Permit Limit Correction (EUs-041,-042)

Dear Mr. Koerner:

This correspondence requests an administrative correction to permit no. 0570039-045-AV pursuant to Rule 62-210.360 F.A.C. A recent review of the permit shows discrepancies between the permitted NO_x and 40 CFR 63 Subpart KKKK, Standards of Performance for Stationary Combustion Turbines. A discrepancy is also noted between the permitted CO limit and original permit application/vendor supplied data.

Subpart KKKK and permit application reports the NO_x limits (natural gas and fuel oil) to 2 significant figures (e.g. 25 ppm). The permit application also reports the CO limits (natural gas and fuel oil) to 2 significant figures (e.g. 42 ppm). In contrast, the current permit reports NO_x limit (e.g. 25.0 ppm) and CO limit (42.0 ppm) to 3 significant figures. This discrepancy is significant, because it unnecessarily imposes a higher degree of precision. Therefore, the Title V permit limits should be appropriately rounded to match the federal and permit application limits. A summary of the discrepancies is shown in Table 1.

Table 1 – Summary of Subpart KKKK/SIP and Permitted Limits.

Parameter	SIP/Federal Threshold	Reference	Permitted Threshold	Reference
NO_x	25 ppmdv @15% O_2	Subpart KKKK	25.0 ppmdv @15% O_2	Condition O.8a(1)
	42 ppmdv @15% O_2	Subpart KKKK	42.0 ppmdv @15% O_2	Condition O.8b(1)
	74 ppmdv @15% O_2	Subpart KKKK	74.0 ppmdv @15% O_2	Condition O.8b(2)
	32 lb/hr	AC application	32.0 lb/hr	Condition O.8a(2)
	51 lb/hr	AC application	51.3 lb/hr	Condition O.8b(3)
CO	21 ppmdv @15% O_2	AC application	21.0 ppmdv @15% O_2	Condition O.9a(1)

EPA has published documentation in support of the proposed corrections. EPA (2009)[1] published documentation on the rounding and significant figures for emissions reporting. For example, if the emission standard is 90, 90.357 would be rounded to 90, 90.639 would be rounded to 91, 90.500 would be rounded down to 90 since 90 is even, and 91.500 would be rounded to up to 92 since 91 is odd. EPA (1990)[2] also indicates a permit limit of 2 significant figures should be reported to 2 significant figures.

TEC requests the permit limits be revised in Condition O.7 and O.8 in Section III, Subpart O pursuant to Rule 62-210.360 F.A.C. The proposed additions are shown in highlighted italics, while deletions are shown as strikethrough as follows:

O.7. Nitrogen Oxide (NO_X). NO_X emissions from each unit shall not exceed the following:
- a. When Firing Natural Gas.
  - (1) *25* ~~25.0~~ ppmvd @ 15% oxygen (O_2) (NSPS) or,
  - (2) *32* ~~32.0~~ lb/hr/SCCT (SIP).
- b. When Firing Ultra Low Sulfur Diesel.
  - (1) *42* ~~42.0~~ ppmvd @ 15% O_2 (SIP) or,
  - (2) *74* ~~74.0~~ ppmvd @ 15% O_2 (NSPS) or,
  - (3) *51* ~~51.3~~ lb/hr/SSCT (SIP).

O.8. Carbon Monoxide (CO). CO emissions from each unit shall not exceed the following:
- a. When Firing Natural Gas.
  - (1) *21* ~~21.0~~ ppmvd @ 15% O_2 (SIP) or,
  - (2) 9.1 lb/hr/SCCT (SIP).
- b. When Firing Ultra Low Sulfur Diesel.
  - (1) 5.1 ppmvd @ 15% O_2 (SIP) or,
  - (2) 2.1 lb/hr/SCCT (SIP).

Please contact me at (813) 228-4232 or Byron Burrows at (813) 228-1282, if you have any questions regarding this request.

Sincerely,

Robert A. Velasco, P.E., BCEE, QEP
Air Programs
Environmental, Health & Safety

EHS/rlk/RAV107

cc: Cindy Zhang-Torres, DEP SW District
Diana Lee, EPCHC

[1] EPA Office of Enforcement and Compliance Assurance (2009). Memorandum: Issuance of the Clean Air Act National Stack Testing Guidance. Washington, DC: U.S. Government Printing Office.

[2] EPA Office of Air Quality Planning Standards (1990). Memorandum: Performance Test Calculation Guidelines. Research Triangle Park, North Carolina: U.S. Government Printing Office

FedEx.

Shipment Receipt
Address Information

Ship to:	**Ship from:**
Mr. Jeffery F. Koerner	Rebecka Kelleher
FDEP-Division of Air Resource Mang	teco
2600 BLAIRSTONE RD # MS5505	702 N. Franklin St
OFFICE OF AIR PERMITTING AND COMPLI	
TALLAHASSEE, FL	Tampa, FL
323992400	33602
US	US
8504881344	8132281933

Shipping Information
Tracking number: 797408200889
Ship date: 08/12/2011
Estimated shipping charges:

Package Information
Service type: Standard Overnight
Package type: FedEx Envelope
Number of packages: 1
Total weight: 1LBS
Declared value: 0.00USD
Special Services:
Pickup/Drop-off: Use an already scheduled pickup at my location

Billing Information
Bill transportation to: Teco Energy-029
Your reference: 984-54970-18-840
P.O. no.:
Invoice no.:
Department no.: TECCC001

Thank you for shipping online with Fedex ShipManager at fedex.com.

Please Note