

Jeb Bush  
Governor

# Department of Environmental Protection

Marjory Stoneman Douglas Building  
3900 Commonwealth Boulevard  
Tallahassee, Florida 32399-3000

David B. Struhs  
Secretary

May 2, 2002

Ms. Laura R. Crouch  
Manager – Air Programs  
Environmental Affairs  
Tampa Electric Company  
P.O. Box 111  
Tampa, Florida 33601-0111

Re: Request for Administrative Amendment to Big Bend Station's Title V Permit

Dear Ms. Crouch:

The Department received your letter dated December 20, 2001 requesting an administrative amendment to the Big Bend Title V permit to incorporate the Corrective Action Plan (CAP) addressing the reduction and maintenance of NO<sub>x</sub> emissions from Unit 3. However, incorporating your CAP will require a revision, not an administrative amendment, to your Title V permit. Please submit a Title V permit application to revise your permit.

Sincerely,

Scott M. Sheplak, P.E. Administrator  
Title V Section

c: Kay Strother, EPCHC



Jeb Bush  
Governor

# Department of Environmental Protection

Twin Towers Office Building  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

David B. Struhs  
Secretary

December 18, 2002

Ms. Laura R. Crouch  
Manager – Air Programs  
Environmental Affairs  
Tampa Electric Company  
P.O. Box 111  
Tampa, FL 33601-0111

Re: Tampa Electric Company  
Big Bend Station, Units 1-4  
Application No. 0570039-013-AV  
Request for Additional Information

Dear Ms. Crouch:

The Department has reviewed your November 19<sup>th</sup> request for additional time in which to submit additional information for the continued processing of the Title V permit revision for Big Bend Station.

Pursuant to Rule 62-213.420(1)(b)6., F.A.C., the Department hereby grants your request for an extension of time until May 31, 2003 to allow for additional testing in order to continue evaluating the impact of coal residual combustion on nitrogen oxides and carbon monoxide emissions.

Sincerely,

Trina Vielhauer  
Chief  
Bureau of Air Regulation

c: Cindy Phillips, FDEP  
Rob Kalch, EPCHC

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BUREAU OF AIR REGULATION

October 21, 2002

Mr. Scott M. Sheplak, P.E.  
Administrator, Title V Section  
Florida Department of Environmental Protection  
111 South Magnolia Avenue, Suite 4  
Tallahassee, Florida 32301

Via FedEx  
Airbill No. 7927 6027 6336

**Re: Tampa Electric Company  
Big Bend Station  
FDEP File No. 0570039-010-AV  
Request for Additional Information  
Use of Nalcoal 7899® Binder as a Coal Dust Suppressant**

Dear Mr. Sheplak:

Tampa Electric Company (TEC) has received your letter dated September 6, 2002 requesting additional information with regards to the use of Nalcoal® 7899 coal dust suppressant binder. This correspondence is intended to provide a response to each specific issue raised by the Department. For your convenience, TEC has restated each point and provided a response below each specific issue.

**FDEP Item 1**

**It is your intent to use this product in addition to those binders previously approved on February 15 and September 16, 2002, or instead of?**

**TEC Response**

TEC plans to use the Nalcoal 7899® binder in addition to the previously approved binders.

**FDEP Item 2**

**Please provide a detailed evaluation of the effects of combustion of this polymerized hydrocarbon-based material, comparing future potential emissions to the past actual emissions from these boilers. Include a description of the type(s) of control device(s), their efficiencies, and the means of disposal of the collected ash.**

**TEC Response**

As previously advised, the "as-received" Nalcoal 7899® binder is a light blue liquid comprised primarily of a high molecular weight vinyl acetate/ethylene copolymer (organic solids) and water. "As-received" refers to the liquid binder that is applied by the coal supplier. TEC plans to receive coal that has been previously treated with the Nalcoal® 7899 binder (i.e., on a dry basis following curing of the liquid binder). The high combustion temperatures and residence times occurring in the Big Bend Station coal-fired furnaces would be expected to result in essentially complete oxidation of the Nalcoal 7899® copolymer organic solids to carbon dioxide (CO<sub>2</sub>) and water (H<sub>2</sub>O).

The Nalcoal® 7899 binder contains 0.2 weight percent ash and 0.02 weight percent sulfur on a cured (i.e., dry) basis. These ash and sulfur levels are well below the levels found in the parent (i.e., untreated)

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OUTSIDE HILLSBOROUGH COUNTY 1 (888) 223-0800

coal. The dosage rate of the Nalcoal® 7899 binder is approximately 4 to 8 pounds of as-received liquid binder per ton of coal. Following curing, each ton of treated coal will contain approximately 2 to 4 pounds of binder copolymer solids. The Nalcoal® 7899 binder therefore represents a very small portion of the treated coal (i.e., from 0.1 to 0.2 weight percent on a dry binder basis).

In 2001, a total of 4,104,033 tons of coal was burned at the Big Bend Station. Assuming that all of the coal burned at the Big Bend Station is treated with the Nalcoal® 7899 binder (a conservative, unrealistic premise), up to 8,208 tons of binder copolymer solids will be used in a year based on the 2001 coal consumption rate. Uncontrolled PM and SO<sub>2</sub> emissions (i.e., upstream of the existing air pollution control systems) resulting from the combustion of these binder copolymer solids, based on binder copolymer ash and sulfur contents of 0.2 and 0.02 weight percent, respectively, are calculated to be 16.4 and 3.3 tons per year respectively. The Big Bend Station boilers are all equipped with electrostatic precipitators (ESPs) for PM control and wet flue gas desulfurization (FGD) technology for abatement of SO<sub>2</sub> emissions. Assuming conservative control efficiencies of 99.0 and 90.0 percent for the ESP and FGD control systems, respectively, controlled PM and SO<sub>2</sub> emissions (i.e., downstream of the existing air pollution control systems) resulting from the combustion of these binder copolymer solids are calculated to be only 0.16 and 0.33 tons per year, respectively. These very low emission estimates are conservative (i.e., over-estimations) since not all of the Big Bend Station coal will be treated with the Nalcoal® 7899 binder and since actual ESP and FGD control efficiencies are higher than the assumed levels. As stated in TEC's August 6, 2001 request to the Department, no changes in emissions rates of pollutants that are primarily affected by combustion process conditions (i.e., NO<sub>x</sub>, CO, and VOCs) are expected since boiler operating conditions will not change due to use of the Nalcoal® 7899 binder treated coal.

The emission estimates provided above are also conservative in that the estimates are based on the premise that the Nalcoal® 7899 binder copolymer solids will not displace any coal; i.e., emissions resulting from binder copolymer combustion were assumed to be additive to coal combustion emissions. The higher heating value (HHV) of the binder copolymer solids (based on an ultimate dry binder analysis of 59.76% carbon, 6.46% hydrogen, 0.18% nitrogen, 33.38% oxygen, and 0.02% sulfur) is 12,370 Btu/lb. The average heat content of coal combusted at the Big Bend Station is approximately 12,000 Btu/lb, HHV. Accordingly, the Nalcoal® 7899 binder copolymer solids will completely displace coal on a mass basis. Since the Nalcoal® 7899 binder copolymer solids contain significantly less ash and sulfur than coal, displacement of coal by the Nalcoal® 7899 binder will result in lower potential PM and SO<sub>2</sub> emissions. Due to the small concentration of applied Nalcoal® 7899 binder, these emission decreases will be insignificant.

In summary, coal and coal treated with a small amount of the Nalcoal® 7899 binder (i.e., from 0.1 to 0.2 weight percent on a dry binder basis) will have essentially the same characteristics and emission rates.

Fly ash collected by the ESPs at the Big Bend Station is transferred pneumatically to storage silos and then transported by truck for off-site use.

### **FDEP Item 3**

**The Material Safety Data Sheet lists several hazardous air pollutants (HAPs) as constituents of this product. Please address the potential increase in hazardous air pollutant (HAP) emissions, as well as all criteria pollutant emissions, as a result of the combustion of this polymerized hydrocarbon-based material.**

**TEC Response**

Please see the response to FDEP Item 2 above. Due to the small concentration of Nalcoal® 7899 binder in the treated coal (i.e., from 0.1 to 0.2 weight percent on a dry binder basis), the displacement of coal by the Nalcoal® 7899 binder, essentially complete oxidation of the binder material in the Big Bend Station coal-fired furnaces, and removal of air pollutants by the existing ESP and FGD control systems, any

change in HAP or criteria pollutant emission rates due to the combustion of Nalcoal® 7899 binder treated coal at the Big Bend Station will be negligible.

It is noted that the Nalcoal® 7899 binder Material Safety Data Sheet (MSDS) lists one HAP (glycol ethers) in Section 15., Regulatory Information. Since TEC plans to receive coal that has been previously treated with the Nalcoal® 7899 binder (i.e., on a dry basis following curing of the binder), the treated coal would not be expected to contain any volatile materials (i.e., water or glycol ethers) that were initially present in the as-received liquid binder.

**FDEP Item 4**

**The Material Safety Data Sheet lists several hazardous/heavy metals as constituents of this product. Please address the potential increase in emissions of heavy metals as a result of the combustion of this polymerized hydrocarbon-based material.**

**TEC Response**

Please see the response to FDEP Item 2 above. Due to the small concentration of Nalcoal® 7899 binder in the treated coal (i.e., from 0.1 to 0.2 weight percent on a dry binder basis), the displacement of coal by the Nalcoal® 7899 binder, essentially complete oxidation of the binder material in the Big Bend Station coal-fired furnaces, and removal of PM by the existing ESP and FGD control systems, any change in heavy metal emission rates due to the combustion of Nalcoal® 7899 binder treated coal at the Big Bend Station will be negligible.

For example, the Nalcoal® 7899 Product Information Bulletin indicates that the as-received liquid binder contains lead in a concentration of 0.86 parts per million by weight (ppmw). The concentrations of other heavy metals of concern are all much lower; e.g., arsenic concentration is 0.32 ppmw. Assuming that all of the coal burned at the Big Bend Station is treated with the Nalcoal® 7899 binder, up to 16,416 tons of as-received liquid binder will be used in a year based on the 2001 coal consumption rate. This amount of as-received liquid binder will contain 0.014 tons of lead based on a concentration of 0.86 parts per million by weight (ppmw). Lead contained in the Nalcoal® 7899 binder would be expected to be emitted in the solid phase (i.e., as a lead oxide particulate) following combustion. Assuming all lead is emitted as fly ash, uncontrolled lead emissions (i.e., upstream of the existing air pollution control systems) resulting from the combustion of the Nalcoal® 7899 binder are 0.014 tons per year (as Pb). Assuming a conservative 99.0 percent ESP lead removal efficiency, controlled lead emissions are estimated to be only 0.00014 tons per year.

This estimate conservatively assumes no displacement of coal by the Nalcoal® 7899 binder. Since the Nalcoal® 7899 binder contains significantly lower concentrations of heavy metals than coal, displacement of coal by the Nalcoal® 7899 binder will result in lower potential heavy metal emissions. Due to the small amount of applied Nalcoal® 7899 binder, these emission decreases will be insignificant. In summary, coal and coal treated with a small concentration of the Nalcoal® 7899 binder (i.e., from 0.1

to 0.2 weight percent on a cured binder basis) will have essentially the same characteristics and heavy metal emission rates.

**FDEP Item 5**

**The Material Safety Data Sheet lists several halogens as constituents of this product. Please address the potential increase in emissions of individual (particularly fluoride) and total halogens as a result of the combustion of this polymerized hydrocarbon-based material.**

**TEC Response**

Please see the response to FDEP Item 2 above. Due to the small concentration of Nalcoal® 7899 binder in the treated coal (i.e., from 0.1 to 0.2 weight percent on a dry binder basis), the displacement of coal by the Nalcoal® 7899 binder, essentially complete oxidation of the binder material in the Big Bend Station coal-fired furnaces, and removal of air pollutants by the existing ESP and FGD control systems, any change in halogen emission rates due to the combustion of Nalcoal® 7899 binder treated coal at the Big Bend Station will be negligible.

For example, the Nalcoal® 7899 Product Information Bulletin indicates that the as-received liquid binder contains fluorine in a concentration of 22 parts per million by weight (ppmw). Assuming that all of the coal burned at the Big Bend Station is treated with the Nalcoal® 7899 binder, up to 16,416 tons of as-received binder will be used in a year based on the 2001 coal consumption rate. This amount of as-received liquid binder will contain 0.36 tons of fluorine based on a concentration of 22 parts per million by weight (ppmw). Fluorine contained in the Nalcoal® 7899 binder would be expected to be emitted in the gaseous phase (i.e., as hydrogen fluoride [HF]) following combustion. The uncontrolled HF emission rate (i.e., upstream of the existing air pollution control systems) resulting from the combustion of the Nalcoal 7899® binder is estimated at 0.38 tons per year. Assuming a 34.0 percent FGD HF removal efficiency, controlled HF emissions are estimated to be only 0.25 tons per year.

This estimate conservatively assumes no displacement of coal by the Nalcoal® 7899 binder. Since the Nalcoal® 7899 binder contains significantly lower concentrations of halogens than coal, displacement of coal by the Nalcoal® 7899 binder will result in lower potential halogen emissions. Due to the small amount of applied Nalcoal® 7899 binder, these emission decreases will be insignificant. In summary, coal and coal treated with a small concentration of the Nalcoal® 7899 binder (i.e., from 0.1 to 0.2 weight percent on a cured binder basis) will have essentially the same characteristics and halogen emission rates.

**FDEP Item 6**

**Please provide information regarding the “volatile matter” which comprises 53-56% of the as-received material. What is the volatile matter if it is not VOC? Does “as-received” indicate the liquid phase that is received at the coal supplier or the solid phase that is received with your coal?**

**TEC Response**

The “as-received” Nalcoal® 7899 binder is a liquid copolymer that consists of: (a) 52.5 weight percent proprietary emulsion of high molecular weight vinyl acetate/ethylene copolymer (organic solids), (b) 1.0 percent by weight diethylene glycol (aqueous diethylene glycol solution contains approximately 20 percent by weight diethylene glycol and 80 percent by weight water), and (c) 46.5 weight percent water. Range of binder organic solids is 52 to 55 weight percent and range of water content is 45 to 48 weight percent. Accordingly, the majority (i.e., 97.8%) of the Nalcoal® 7899 binder volatile material is water with the balance (i.e., 2.2%) diethylene glycol.

Mr. Scott Sheplak  
October 21, 2002  
Page 5 of 5

“As-received” refers to the liquid Nalcoal® 7899 binder that is applied by the coal supplier. Since TEC plans to receive coal that has been previously treated with the Nalcoal® 7899 binder (i.e., on a dry basis following curing of the binder), the treated coal would not be expected to contain any volatile materials (i.e., water or glycol ethers) that were initially present in the as-received liquid binder.

**FDEP Issue 7**

**Please provide information on the percentage, by weight, that this material will comprise in the coal, as it is being combusted.**

**TEC Response**

The treated coal will contain from 0.1 to 0.2 weight percent Nalcoal® 7899 binder on a cured binder basis (i.e., on a dry basis).

**FDEP Issue 8**

**What is the Btu value of the dried remainder of this product that is bound to your coal?**

**TEC Response**

The higher heating value (HHV) of the dry, binder copolymer solids (based on an ultimate binder analysis of 59.76% carbon, 6.46% hydrogen, 0.18% nitrogen, 33.38% oxygen, and 0.02% sulfur) is 12,370 Btu/lb.

As noted above, the treated coal will contain from 0.1 to 0.2 weight percent Nalcoal® 7899 binder on a dry binder basis. The average heat content of coal combusted at the Big Bend Station is approximately 12,000 Btu/lb, HHV. The treated coal will therefore have an average heat content of 12,001 Btu/lb. Accordingly, there will no significant difference in the heat content of coal and the Nalcoal® 7899 binder treated coal.

TEC understands that with the submission of this additional information, the Department will continue processing our request to combust Nalcoal® 7899 binder treated coal at the Big Bend Station. If you have any further questions regarding this matter, please contact me at (813) 641-5033.

Sincerely,

*Dr. Hatchman  
for*

Shelly Castro  
Associate Engineer  
Environmental Affairs

EA/bmr/SSC136

Enclosure

c/enc: Mr. Jerry Campbell, EPCHC  
**Mr. Jonathan Holtom, FDEP**  
Mr. Jerry Kissel, FDEP-SW District

# **Attachment**



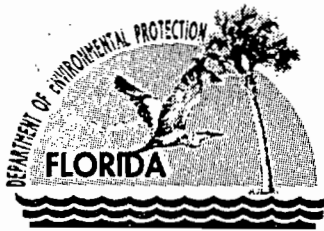
**Big Bend Synthetic Fuel  
Nalcoal 7899 Binder**

**A. Heat Content**

Substance	Ultimate Analysis		LHV (Btu/lb)	HHV (Btu/lb)	Heat Content (LHV)		Heat Content (HHV)	
	As-Received Wt %	Dry Wt %			As-Received (Btu/lb)	Dry (Btu/lb)	As-Received (Btu/lb)	Dry (Btu/lb)
Carbon	33.12	59.76	14,093	14,093	4,668	8,422	4,668	8,422
Hydrogen	3.58	6.46	51,623	61,100	1,848	3,335	2,187	3,947
Nitrogen	0.10	0.18	0	0	0	0	0	0
Oxygen	18.50	33.38	0	0	0	0	0	0
Sulfur	0.01	0.02	3,983	3,983	0	1	0	1
Water	44.69		0	0	0	0	0	0
Totals	100.00	99.80			6,516	11,758	6,855	12,370

**B. PM, Pb, HF, HCl and SO<sub>2</sub> Emissions**

2001 Coal Use:	4,104,033	ton/yr
Binder Ash:	0.20	weight %
Binder S:	0.02	weight %
Binder Pb:	0.86	ppmw (wet)
Binder F:	22.00	ppmw (wet)
Binder Cl:	170.00	ppmw (wet)
Binder Rate (dry):	4.00	lb / ton coal
Binder Rate (wet):	8.00	lb / ton coal
ESP PM/Pb Efficiency	99.00	percent
FGD SO <sub>2</sub> Efficiency	90.00	percent
FGD HF Efficiency	34.00	percent
FGD HCl Efficiency	94.00	percent
Binder Use (dry):	8,208	ton/yr
Binder Use (wet):	16,416	ton/yr
PM (uncontrolled)	16.4	ton/yr
PM (controlled)	0.16	ton/yr
SO <sub>2</sub> (uncontrolled)	3.3	ton/yr
SO <sub>2</sub> (controlled)	0.33	ton/yr
Pb (uncontrolled)	0.014	ton/yr
Pb (controlled)	0.00014	ton/yr
HF (uncontrolled)	0.38	ton/yr
HF (controlled)	0.25	ton/yr
HCl (uncontrolled)	2.9	ton/yr
HCl (controlled)	0.17	ton/yr
Btu (coal, HHV):	12,000	Btu/lb
Btu (dry binder, HHV):	12,370	Btu/lb
Btu (treated coal, HHV)	12,001	Btu/lb



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Governor

# Department of Environmental Protection

Twin Towers Office Building  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

David B. Struhs  
Secretary

September 6, 2002

Ms. Shelly Castro  
Associate Engineer, Environmental Affairs  
Tampa Electric Company  
P.O. Box 111  
Tampa, Florida 33601-0111

Re: Request For Use Of polymerized hydrocarbon-based Binder As A Coal Dust Suppressant  
Big Bend Station, Facility ID #: 0570039

Dear Ms. Castro:

We have received your request, dated August 6, for concurrence that the use of a polymerized hydrocarbon-based binder (NALCOAL® 7899 made by ONDEO Nalco Company) on your coal will not result in an adverse environmental impact. We have also received a letter from your Professional Engineer outlining the environmental effects resulting from the use of this product. Before concurrence can be granted, please provide the following information:

1. Is it your intent to use this product in addition to those binders previously approved on February 15 and September 16, 2002, or instead of?
2. Please provide a detailed evaluation of the effects of combustion of this polymerized hydrocarbon-based material, comparing future potential emissions to the past actual emissions from these boilers. Include a description of the type(s) of control device(s), their efficiencies, and the means of disposal of the collected ash.
3. The Material Safety Data Sheet lists several hazardous air pollutants (HAPs) as constituents of this product. Please address the potential increase in hazardous air pollutant (HAP) emissions, as well as all criteria pollutant emissions, as a result of the combustion of this polymerized hydrocarbon-based material.
4. The Material Safety Data Sheet lists several hazardous/heavy metals as constituents of this product. Please address the potential increase in emissions of heavy metals as a result of the combustion of this polymerized hydrocarbon-based material.
5. The Material Safety Data Sheet lists several halogens as constituents of this product. Please address the potential increase in emissions of individual (particularly Fluoride) and total halogens as a result of the combustion of this polymerized hydrocarbon-based material.
6. Please provide information regarding the "volatile matter" which comprises 53-56% of the as-received material. What is the volatile matter if it is not VOC? Does "as-received" indicate the liquid phase that is received at the coal supplier or the solid phase that is received with your coal?
7. Please provide information on the percentage, by weight, which this material will comprise in the coal, as it is being combusted.
8. What is the Btu value of the dried remainder of this product that is bound to your coal?

The above information is necessary because the use of this material, with all of its various constituents, could potentially be considered a change in the currently permitted method of operation. If it were determined to be a change in the method of operation, a construction permit would be required prior to using this binder.

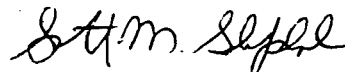
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Ms. Shelly Castro  
September 6, 2002  
Page 2 of 2

Should you have any questions regarding this matter, please contact Jonathan Holtom, P.E., at (850) 921-9531, or write to me at the above letter head address.

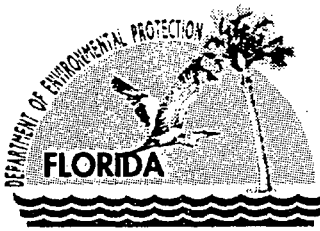
Sincerely,



Scott M. Sheplak, P.E.  
Administrator  
Title V Section

CHF/sms/jh

cc: Mr. Thomas W. Davis, P.E., ECT  
Mr. Buck Oven, P.E., DEP-SCO  
Mr. Jerry Kissel, P.E., DEP-SWD  
Mr. Jerry Campbell, P.E., EPCHC



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# Department of Environmental Protection

Twin Towers Office Building  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

David B. Struhs  
Secretary

May 15, 2002

Ms. Shelly Castro  
Associate Engineer, Environmental Affairs  
Tampa Electric Company  
P.O. Box 111  
Tampa, Florida 33601-0111

Re: Recognition of Latex Binders as Dust Suppressants

Dear Ms. Castro:


We have received your request to begin using two different latex binders on your coal as a means of suppressing fugitive dust (COVOL 298 and COVOL 298-1, made by DOW Chemical Company). We have also received a certification from your Professional Engineer detailing the lack of detrimental environmental effects resulting from the use of this product.

It is our opinion that these particular materials falls within the classification of "chemical dust suppressant" that is authorized by your Title V permit (see Appendix TV-3, condition 57.). For inspection purposes, please retain on-site a copy of the material safety data sheets (MSDS), a copy of your contract with the coal supplier(s) specifying the material that will be applied to your coal, and a certification from the supplier(s) accompanying each delivery that attests that this is the only material that has been applied to your coal. If TECO or the supplier desires to use a different material, you must inform the Department and receive concurrence prior to combusting the new product.

Under the provisions of Rule 62-297.310(7)(b), F.A.C., if, at any time, the Department has good reason to believe that any of your emission limits are not being met (i.e. increased particulate matter, etc.), it shall require the owner or operator of the emissions unit to conduct compliance tests which identify the nature and quantity of pollutant emissions from the emissions unit and to provide a report on the results of said tests to the Department.

Should you have any questions regarding this matter, please contact Jonathan Holtom, P.E., at (850) 921-9531, or write to me at the above letter head address.

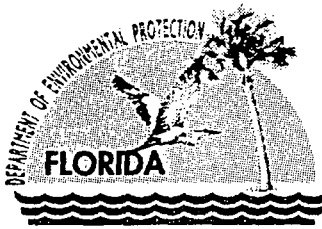
Sincerely,

  
C.H. Fancy, P.E.  
Chief  
Bureau of Air Regulation

CHF/jh

cc: Mr. Thomas W. Davis, P.E., ECT  
Mr. Buck Oven, P.E., DEP  
Mr. Jerry Kissel, P.E., DEP-SWD  
Mr. Jerry Campbell, P.E., EPCHC

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Governor

# Department of Environmental Protection

Twin Towers Office Building  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

David B. Struhs  
Secretary

May 3, 2002

Ms. Shelly Castro  
Associate Engineer, Environmental Affairs  
Tampa Electric Company  
P.O. Box 111  
Tampa, Florida 33601-0111

Re: Request For Use Of An Asphalt-Based Binder As A Coal Dust Suppressant  
Big Bend Station, Facility ID #: 0570039

Dear Ms. Castro:

We have reviewed your request (dated September 19, 2001) and additional information (received April 23, 2002) to use an asphalt-based binder on your coal as a means of suppressing fugitive dust.

It has been determined that the use of this material has the potential to increase emissions of regulated air pollutants and the allowable heat input limit. From the information provided, we do not have the required reasonable assurance that a significant increase in emissions above your current actual emission levels will not occur. Any increases in actual emissions resulting from a change in a federally enforceable method of operation is defined as a modification. In order to authorize the use of this synthetic fuel, the magnitude of the increase in actual emissions as a result of the change needs to be reviewed for PSD applicability. If you wish to conduct a test burn using this material (for a specified period of time) that will demonstrate actual emissions before and after the addition of the asphalt-based binder, the PSD determination can be temporarily postponed through the issuance of a construction permit authorizing the test burn. If the tests demonstrate that there is not a significant increase in emissions of any regulated air pollutant or allowable heat input, then the operation permit will need to be revised to include this new method of operation. However, if the tests indicate that there is a significant increase in emissions of any regulated air pollutant, then an application for a PSD New Source Review, including a Best Available Control Technology (BACT) determination, pursuant to Rule 62-212.400(5), F.A.C., must be made in order to obtain authorization to continue using the new synthetic fuel.

Should you have any questions regarding this response, please contact Jonathan Holtom, P.E., at (850) 921-9531, or write to me at the above letterhead address.

Sincerely,

Scott M. Sheplak, P.E.  
Title V Section Administrator  
Bureau of Air Regulation

SMS/jh

cc: Mr. Thomas W. Davis, P.E., ECT  
Mr. Buck Oven, P.E., DEP  
Mr. Jerry Kissel, P.E., DEP-SWD  
Mr. Jerry Campbell, P.E., EPCHC

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**TAMPA ELECTRIC**

February 12, 2002

Mr. Clair Fancy  
Florida Department of Environmental Protection  
2600 Blair Stone Road  
Twin Towers Office Building  
Tallahassee, Florida 32399-2400

Mr. Jerry Campbell, Director  
Air Management Division  
Environmental Protection Commission  
of Hillsborough County  
1410 N. 21<sup>st</sup> Street  
Tampa, FL 33605

**Re: Tampa Electric Company (TEC)  
Big Bend Station  
Combustion of Polk Power Station Residual Fuel  
FDEP File No. 0570039-012-AC**

RECEIVED

FEB 13 2002

BUREAU OF AIR REGULATION

**Via FedEx  
Airbill No. 7927 0195 2692**

**Via FedEx  
Airbill No. 7903 0585 8954**

Dear Messrs. Fancy and Campbell:

Tampa Electric Company is required by specific condition III.10 of the above referenced permit to provide design details of the storage facility and conveyor transfer system that will be used to handle the Polk Power Station residual fuel that will be fired at Big Bend Station. Please find enclosed the final drawing depicting the building and conveyor system. The process description submitted on November 12, 2001 has not changed since the original submittal.

If you have any questions, please feel free to call Dru Latchman or me at (813) 641-5034.

Sincerely,

Laura R. Crouch  
Manager - Air Programs  
Environmental Affairs

EA/bmr/DNL112

Enclosures

c/enc: Ms. Alice Harman, EPCHC  
Mr. Jerry Kissel, FDEP SW  
Ms. Cindy Phillips, FDEP

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

(813) 228-4111

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### **Building Design**

The 70' by 70' building will include an apron on the front of the building large enough to allow a 25-ton dump truck to raise its load and dump into the building under cover. The apron will slope back to the building and a trench will catch rainwater and any dust control run-off water from the material inside the building. The floor of the building will slope towards the front and a sump will redistribute the water onto the pile inside the building. The roof of the building will overhang the sides enough to prevent any rain from getting inside. In the rear of the building there will be a hopper, or dozer trap. Operation of the dozer trap will be discussed in the next paragraph.

### **Process Description**

A nominal 25-ton dump truck will empty a load of material into the building, and a bulldozer will either push the material into a vacant area of the building, or it will push the material directly into the dozer trap. The dozer trap is a hopper that is partially below grade, and it will be used to feed the conveyor, which is capable of transferring up to 200 tons of material per hour. The conveyor will be fully enclosed to prevent fugitive dust emissions, and to also prevent wetting of the material. Material inside the building will be periodically sprayed with water in an effort to minimize dust within the building.



RECEIVED

DEC 21 2001

BUREAU OF AIR REGULATION

December 20, 2001

Mr. Scott M. Sheplak, P.E.  
Bureau of Air Regulation  
Florida Department of Environmental Protection  
111 South Magnolia Avenue, Suite 4  
Tallahassee, FL 32301

Via FedEx  
Airbill No. 7917 3807 3447

**Re: Tampa Electric Company  
Big Bend Station  
Consent Order  
Unit 3 NO<sub>x</sub> Exceedance  
EPC Case #: 00-1223CCG0039**

Dear Mr. Sheplak:

Between December 23, 2000 and December 31, 2000, NO<sub>x</sub> emissions from Big Bend Unit 3 exceeded the 30 day rolling average limit of 0.70 lb/MMBtu. Upon discovery, Tampa Electric Company (TEC) took immediate action to reduce Unit 3 NO<sub>x</sub> emissions and reported this exceedance to the Environmental Protection Commission of Hillsborough County (EPCHC). On October 15, 2001, TEC entered into a Consent Order, EPC Case number 00-1223CCG0039, with EPCHC which required TEC to develop a Corrective Action Plan (CAP) addressing the reduction and maintenance of NO<sub>x</sub> emissions from Unit 3. On November 15, 2001, TEC submitted the CAP to EPCHC and it was subsequently approved on December 14, 2001. The CAP essentially details the immediate actions that were taken to return Unit 3 NO<sub>x</sub> emissions to below permitted levels. Also, it describes future projects that will be completed to further reduce Unit 3 NO<sub>x</sub> emissions as required by Consent Decree Civil Action number 99-2524 CIV-T-23F entered between TEC and the United States Environmental Protection Agency (USEPA) on October 4, 2000.

Specific condition 6 of the above referenced Consent Order requires TEC to submit the CAP to the Department and request that it be incorporated into the Big Bend Title V permit. As such, TEC hereby requests that the Department modify the permit by including the CAP in Subsection C, which lists relevant documents associated with the permit. TEC understands that this will constitute an administrative amendment, and that compliance with the Department of Environmental Protection (DEP) Consent Final Judgment, and the USEPA Consent Decree will ensure compliance with the corrective action plan. Compliance with both agreements is required in specific condition 11 of the Title V permit (FDEP file no. 0570039-010-AV).

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

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Mr. Scott Sheplak  
December 20, 2001  
Page 2 of 2

TEC understands that the submittal of this request satisfies condition 6 of the above referenced Consent Order, and appreciates the support of the Department in this matter. If you have any questions, please feel free to call Shelly Castro or me at (813) 641-5033.

Sincerely,



Laura R. Crouch  
Manager-Air Programs  
Environmental Affairs

Enclosure

EA/bmr/SSC106

1/2/02 cc: Cindy Phillips  
Scott Sheplak

-512-



TAMPA ELECTRIC

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DEC 14 2001

BUREAU OF AIR REGULATION

December 13, 2001

Mr. Clair Fancy  
Florida Department of Environmental  
Protection  
2600 Blair Stone Road  
Twin Towers Office Building  
Tallahassee, Florida 32399-2400

**Via Fed Ex**  
**Airbill No. 7917 3062 1960**

**Re: Tampa Electric Company (TEC)**  
**Big Bend Station**  
**Coal Residual Fuel**  
**Proposed Initial NO<sub>x</sub> and CO Compliance Testing Protocol**  
**FDEP Permit No. 0570039-012-AC**

Dear Mr. Fancy:

Please find enclosed the oxides of nitrogen (NO<sub>x</sub>) and carbon monoxide (CO) emissions test as required by condition III.4 of the above referenced permit.

If you have any questions, please feel free to contact Shannon Todd or me at (813) 641-5125.

Sincerely,

Laura R. Crouch  
Manager - Air Programs  
Environmental Affairs

EA\bm\SKT298

Enclosure

c/enc: Ms. Cindy Phillips, FDEP  
Mr. Jerry Kissel - FDEP SW  
Mr. Jerry Campbell- EPCHC

**Emission Test Protocol  
For  
Firing Coal Residual Fuel  
At**

**Big Bend Station**

**Apollo Beach, Florida**

**Prepared for  
Tampa Electric Company  
By  
Environmental Affairs  
Of  
Tampa Electric Company**

**December 13, 2001**

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## 1.0 INTRODUCTION

Tampa Electric Company's Big Bend Station (ORIS Code No. 00645) has requested the authorization to burn coal residual fuel in each of its four steam generator units. Coal residual fuel is fuel that is produced as a by-product of the Polk Power Station Unit 1 coal gasification system. This authorization was granted by Florida Department of Environmental Protection (FDEP) and an air construction permit (permit no. 0570039-012-AC) was issued under the provisions of Chapter 403 of the Florida Statutes and Chapter 62 of the Florida Administrative Code.

The purpose of this performance testing is to determine if firing coal residual fuel will have any effect on NOx and CO emissions from Units 1 through 4. The tests for CO will be conducted using USEPA reference method 10 for "Carbon Monoxide Emissions in Stationary Sources" and tests for NOx will be conducted using data from the plant CEMS. The testing for CO will be conducted on boiler numbers two, three and four at the outlet of each electrostatic precipitator and inlet to each FGD scrubber. Testing will be performed by Tampa Electric Company's internal testing department.

During the tests, emissions from each boiler will be evaluated while firing a blend of coal and petroleum coke for a baseline result, and then fired with a coal, petroleum coke and residual fuel for a blend result. The quantity of petroleum coke shall be no more than 20 percent as limited by the Title V operating permit.

## **2.0 FACILITY DESCRIPTION**

### **2.1 Facility Location and Description**

Tampa Electric Company's Big Bend Station is located in Apollo Beach, Hillsborough County, Florida. Big Bend Station consists of four steam boilers (Units 1 through 4). Units 1, 2, 3, and 4 have a nominal maximum heat input of 4,037, 3,996, 4,115, and 4,330 million Btu/hour, respectively. These units are fired with either bituminous coal or with a petcoke/coal mixture up to 20 percent petcoke and 80 percent coal (by weight).

### **2.2 Reference Methods Sampling Location**

The emission sampling location on the inlet to the scrubber for each unit consists of multiple ports accessed by an outside testing platform located on either the top or the side of the ductwork. All reference method sampling ports are standard 6-inch flanges equally spaced from one another. The emission sampling location on the outlets downstream from the FGD scrubber for each unit consists of four (4) ports spaced 90 degrees apart. Unit 1 and 2 share a common stack with an outside test platform located at the 450' level. Units 3 and 4 also share common stacks with test platforms located inside a stack annulus at the 250' level on each stack. All of the sampling port locations meet EPA Reference Method 1 testing criteria.

### **3.0 REFERENCE METHOD TESTING**

Carbon Monoxide will be sampled and analyzed using USEPA test method 10 (40CFR60, Appendix A). Oxides of Nitrogen will be monitored using the installed Continuous Emissions Monitoring system (CEMs). The CEMs will also supply Carbon Dioxide data for use in calculating the Carbon Monoxide emission rate in lbs/MMBtu.

In order to verify the various process conditions during testing, the following parameters will be measured, documented, and recorded:

- Output megawatts
- Heat Input (from fuel analysis)
- Fuel Consumption
- Fuel sample taken in composite form during fuel bunkering
- Short "prox" coal analysis
- Applicable boiler operating data
- ESP operating data
- FGD operating data
- NOx CEM data during the test period

### **3.1 QA/QC Operations**

#### Gaseous Emission Test Matrix & Gas Sample Strategy:

Three test runs will be performed with the unit operating at base load. The average of the three runs will be used for reporting purposes. The unit will be operated at the normal maximum load available on the day of the test. Gaseous emission test runs will be a minimum of 1 hour in duration.

#### Unit Exhaust Gas Measurements:

A transportable laboratory grade analyzer system (TCEMS) will be used with continuous monitors capable of measuring CO and O<sub>2</sub>. Each analyzer will be calibrated in the field and QA/QC procedures will be performed as required by each USEPA test method. Following initial calibrations of the equipment, a sample of exhaust gas will be continuously extracted from the exhaust stack and delivered to each individual analyzer at the same flow rate as used for instrument calibration. The results of these measurements will be recorded on a portable personal computer to document the sample analysis, calibrations and quality assurance activities conducted during the tests. All results are stored on the hard drive and printed on a dot matrix printer.

### **3.2 Instrumental Reference Methods- O<sub>2</sub>, CO<sub>2</sub> and CO**

#### USEPA Method 10 for CO:

CO will be measured using a Thermo Environmental Instruments model 48 CO analyzer that uses the measurement technique of NDIR. The CO concentration is

also measured on a dry basis. Interference traps will be in-line with the sample gas in columns to remove any excess CO<sub>2</sub> or H<sub>2</sub>S in the flue gas stream. Once this has been performed, the traps will be removed to display the measurements without interference traps. If there is no significant difference between the two measurements, testing will continue without interference traps, due to the excessive loading in these absorbent reagents.

To ensure accuracy of the method 10 test standards, a three-point (zero, mid and high scale) analyzer calibration error check will be conducted on each of the two analyzers prior to initiating the performance testing. For the mid-scale calibration, the gas range is required to be 40-60 % of span, while the high-scale calibration gas is required to be 80-100 % of span. This check is conducted by sequentially injecting the zero and span calibration gases directly into the analyzers, recording the responses, and comparing these responses to the actual tag values of the calibration gas cylinders. The reference method calibration gases used during this test program will be certified following USEPA Protocol analysis procedures. Acceptable system performance checks dictate that the difference between the analyzer responses and the respective cylinder tag values will not exceed 2% of span.

Zero and upscale system calibration checks (system bias calibrations) will be performed both before and after each test run in order to quantify reference measurement system sampling system bias and calibration drift. Upscale is either the mid or high range gas, whichever most closely approximates the flue gas level. Acceptable system performance checks dictate that system bias calibration checks shall not exceed 5% of span or, for drift checks, 3% of span. Table 1 summarizes the anticipated analyzer spans and calibration gas values to be used during the test program.

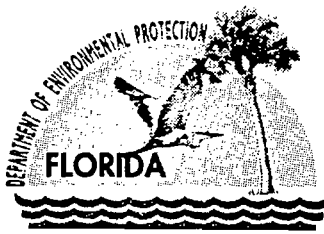
**Table 1. Anticipated Analyzer Spans and Calibration Gas Values**

<i>Analyzer</i>	<i>Span</i>	<i>Mid-Scale (40-60% of span)</i>	<i>High-Scale (80-100% of span)</i>
Carbon Monoxide	0-500 ppm	200-300 ppm	400-500 ppm



#### 4.0 PROPOSED TESTING SCHEDULE

The baseline testing is tentatively scheduled to begin in January 2002 and the blend testing schedule is subject to the availability of residual fuel. Testing is planned for completion by October of 2002.



Jeb Bush  
Governor

# Department of Environmental Protection

Twin Towers Office Building  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

David B. Struhs  
Secretary

September 26, 2001

Ms. Shelly Castro  
Associate Engineer, Environmental Affairs  
Tampa Electric Company  
P.O. Box 111  
Tampa, Florida 33601-0111

Re: Request For Use Of An Asphalt-Based Binder As A Coal Dust Suppressant  
Big Bend Station, Facility ID #: 0570039

Dear Ms. Castro:

We have received your request, dated September 19, for concurrence that the use of an asphalt-based binder on your coal will not result in an adverse environmental impact. It is our understanding that this material will be used interchangeably with the Midwest Terminals MTT-180 Chemical Change Reagent that was previously approved on February 15, 2001. We have also received a letter from your Professional Engineer outlining the environmental effects resulting from the use of this product.

In order to provide the requested concurrence, the following information is needed:

1. Please provide the Manufacturers Safety Data Sheet for the proposed material.
2. Please provide a detailed evaluation of the effects of combustion of this asphalt-based material, comparing future potential emissions to the past actual emissions from these boilers.
3. Please address the potential increase in hazardous air pollutant (HAP) emissions, as well as all criteria pollutant emissions, as a result of the combustion of this asphalt-based material.
4. Please address the potential increase in emissions of heavy metals as a result of the combustion of this asphalt-based material.
5. Please provide information on the heat content of this material and compare it to the heat content of the coal that it will be applied to.
6. Please provide information on the sulfur content of this material and compare it to the sulfur content of the coal that it will be applied to.
7. Please provide information on the percentage, by weight, that this material will comprise in the coal, as it is being combusted.

Should you have any questions regarding this matter, please contact Jonathan Holtom, P.E., at (850) 921-9531, or write to me at the above letter head address.

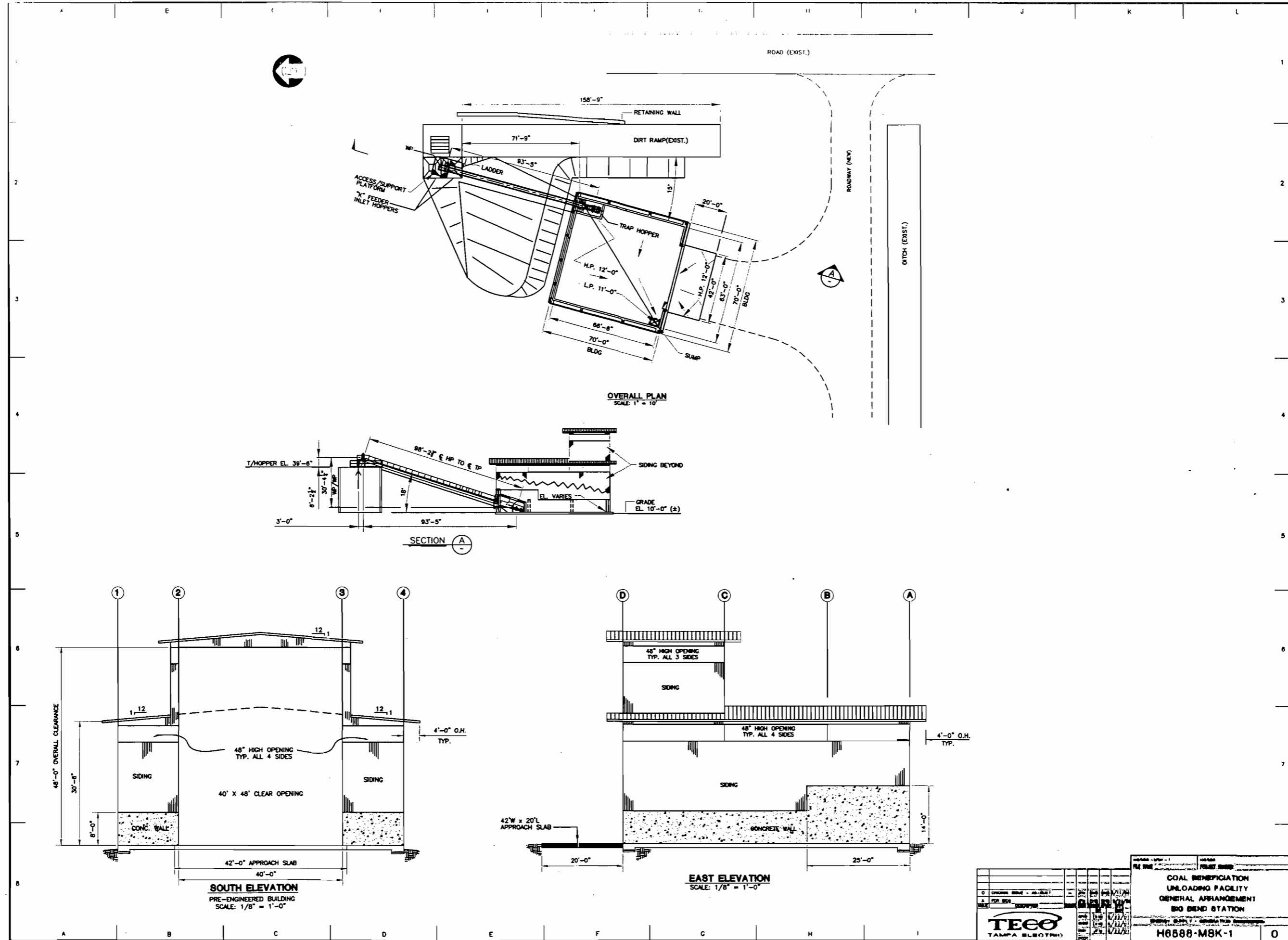
Sincerely,

C.H. Fancy, P.E.  
Chief  
Bureau of Air Regulation

CHF/sms/jh

cc: Mr. Thomas W. Davis, P.E., ECT  
Mr. Buck Oven, P.E., DEP-SCO  
Mr. Jerry Kissel, P.E., DEP-SWD  
Mr. Jerry Campbell, P.E., EPCHC

"More Protection, Less Process"



DATE	DESCRIPTION	BY	CHECKED
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1	FOR REV	TECO	TECO
2	FOR REV	TECO	TECO
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**TECO**  
 TAMPA (FLORIDA)

**COAL BENEFICIATION UNLOADING FACILITY GENERAL ARRANGEMENT BIG BEND STATION**  
**H8588-MSK-1**