



Lawton Chiles
Governor

Florida Department of Environmental Protection

FILE
COPY

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

Virginia B. Wetherell
Secretary

December 14, 1994

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Patrick Ho, P.E.
Manager of Environmental Planning
Tampa Electric Company
P.O. Box 111
Tampa, Florida 33601-0111

Dear Mr. Ho:

Re: Request for an Amendment for an Extension of Time to Complete Tests for Pollutant Emissions While Firing a Blend of Petroleum Coke and Coal in Tampa Electric Company's (TEC) Big Bend Unit #4, Site Certification No. PA 79-12; and, Amendment to PSD-FL-040(Aa)

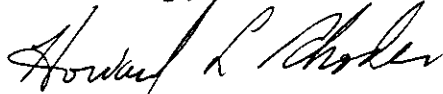
The Department has reviewed the request and supplementary information that you provided on December 12 and 13, 1994, respectively (attached), which requested an amendment to allow some additional time to complete some testing, specifically for carbon monoxide. Based on the amendment PSD-FL-040(A), which authorized the original testing project, and Condition #10 of the amendment, which provided for an authorization of additional time to conduct tests under certain conditions, the Department finds the request acceptable. Therefore, the Department authorizes an additional 72 hours of time during the month of December to complete the tests that were to be conducted in the original testing project. In addition, the Department concurs with the statement that the test results of the total project shall be due within 45-days of the last test run for which this additional time is being granted. Also, all terms of the referenced amendment of authorization [PSD-FL-040(A)] to conduct tests shall remain in effect.

- o Attachments to be incorporated:
 - o TEC's letter received December 12, 1994.
 - o TEC's letter received December 13, 1994, via FAX.

Mr. Patrick Ho
TEC: Letter Amendment Regarding an Extension of Time to Complete
Tests
PSD-FL-040(Aa)
December 14, 1994
Page 2

The above referenced amendment [PSD-FL-040(Aa)] changes and attachments shall be made to the federal permit, No. PSD-FL-040(A), and shall become a part of the permit.

Sincerely,



Howard L. Rhodes, P.E.
Director
Division of Air Resources
Management

HLR/CHF/rbm

Attachments

cc: Jerry Campbell, EPCHC
Jewell Harper, EPA/Region IV
John Bunyak, NPS
Doug Beason, Esq., DEP

Memorandum

Florida Department of
Environmental Protection

TO: Howard L. Rhodes

FROM: *John Brown*
Clair Fancy

DATE: December 14, 1994

SUBJECT: Request for an Amendment to Allow Additional Time to
Complete the Testing Project
Tampa Electric Company (TEC): Big Bend Unit #4
PSD-FL-040(Aa)

TEC was granted authorization to conduct various tests for pollutants while burning petro coke and coal combinations and 100% coal (baseline) in Big Bend Unit #4. TEC has requested additional time to complete the tests authorized for the project, specifically to conduct the final tests for carbon monoxide. Condition #10 gave the Department the ability to authorize additional time to complete testing, if justified. The Department received correspondence on December 12 and 13 that gave us the assurance that some additional time is approvable.

I recommend that this amendment be approved and authorized by signature.

HLR/CF/rbm

MESSAGE CONFIRMATION

DEC-15-'94 THU 13:58

TERM ID:

P-9999

TEL NO:

NO.	DATE	ST. TIME	TOTAL TIME	ID	DEPT CODE	OK	NG
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Post-it* Fax Note 7671

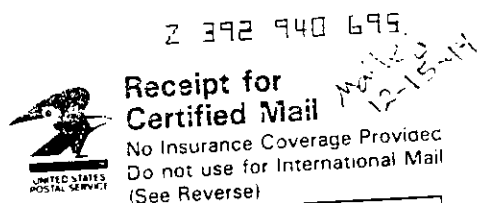
Date	12-15-94	# of pages	2
To	Fanica Taylor	From	Bruce Mitchell
Co./Dept.	TEC	Co.	FDEP/BAS
Phone #	8	Phone #	904-488-1344
Fax #	813-228-4881	Fax #	904-922-6979

Merry Xmas & Happy New Year!

Is your RETURN ADDRESS completed on the reverse side?

SENDER: <ul style="list-style-type: none"> • Complete items 1 and/or 2 for additional services. • Complete items 3, and 4a & b. • Print your name and address on the reverse of this form so that we can return this card to you. • Attach this form to the front of the mailpiece, or on the back if space does not permit. • Write "Return Receipt Requested" on the mailpiece below the article number. • The Return Receipt will show to whom the article was delivered and the date delivered. 		I also wish to receive the following services (for an extra fee): 1. <input type="checkbox"/> Addressee's Address 2. <input type="checkbox"/> Restricted Delivery Consult postmaster for fee.	
3. Article Addressed to: ? Patrick Ho Tampa Electric Co. PO Box 111 Tampa, FL 33601-0111		4a. Article Number Z 392 940 695	
		4b. Service Type <input type="checkbox"/> Registered <input type="checkbox"/> Insured <input checked="" type="checkbox"/> Certified <input type="checkbox"/> COD <input type="checkbox"/> Express Mail <input type="checkbox"/> Return Receipt for Merchandise	
		7. Date of Delivery DEC 9 1994	
5. Signature (Addressee)		8. Addressee's Address (Only if requested and fee is paid)	
6. Signature (Agent) <i>L. Williams</i>			

Thank you for using Return Receipt Service.



PS Form 3800, March 1993

Sender	Patrick Ho
Street and No.	Tampa Electric
P.O. State and ZIP Code	PO Box 111
Postage	Tampa FL 33601-0111
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	

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DEC 16 1994



Bureau of
Air Regulation

December 13, 1994

Mr. Bruce Mitchell
Bureau of Air Regulation
Florida Department of Environmental Protection
2600 Blairstone Blvd
Tallahassee, Fl. 32399-2400

Facsimile and Certified Mail #P 278 133 760
Return Receipt Requested

Re: Tampa Electric Company
Big Bend Station
Unit 4 Test Burn

Dear Mr. Mitchell:

As discussed with you today, TEC has completed stack testing for particulate matter and sulfuric acid mist. TEC has also recorded the sulfur dioxide, nitrogen oxides and opacity emissions data using the continuous emissions monitors. TEC has completed three (3) test runs of the carbon monoxide stack testing and needs to complete three (3) additional runs of carbon monoxide stack testing pursuant to Specific Condition #2 of Department's letter of authorization of October 5, 1994.

An extension to this test burn was requested in a letter to Department on November 30, 1994. TEC will submit the test result report within forty-five (45) days of completion of the last carbon monoxide test run.

If you have further questions feel free to call me at (813) 228-4839. Thank-you for your assistance.

Sincerely,

A handwritten signature in black ink, appearing to read 'Janice K. Taylor'.

Janice K. Taylor
Senior Engineer
Environmental Planning

c: Mr. Clair Fancy FDEP - Tallahassee
Mr. Buck Oven FDEP - Tallahassee



Post-it* Fax Note 7671		Date 12/13	# of pages 1
To BRUCE MITCHELL	From JANICE TAYLOR		
Co./Dept. DEP	Co. TEC		
Phone #	Phone #		
Fax #	Fax #		

December 13, 1994

Mr. Bruce Mitchell
Bureau of Air Regulation
Florida Department of Environmental Protection
2600 Blainstone Blvd
Tallahassee, Fl. 32399-2400

Facsimile and Certified Mail #P 278 133 760
Return Receipt Requested

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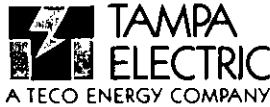
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Sincerely,

Janice K. Taylor
Senior Engineer
Environmental Planning

c: Mr. Clair Fancy FDEP - Tallahassee
Mr. Buck Oven FDEP - Tallahassee



RECEIVED
DEC 12 1994
Bureau of
Air Regulation

December 8, 1994

Mr. Clair Fancy
Chief - Air Programs
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

VIA FACSIMILE and

CERTIFIED MAIL # P 278 134 366
RETURN RECEIPT REQUESTED

Re: Tampa Electric Company - Big Bend Station
Unit 4 Petroleum Coke Test Burn

Dear Mr. Fancy:

Pursuant to my telephone conversation with Mr. Bruce Mitchell on December 7, 1994, TEC would like to clarify our request to extend our test burn. Please be advised that TEC proposes to deplete the petroleum coke inventory as well as continue the collection of continuous emissions monitors data for sulfur dioxide, nitrogen oxides and opacity. In addition, TEC will monitor the LOI's (loss on ignition) in flyash.

Please feel free to call me at (813) 228 4839 should you have any questions. Thank you for your assistance.

Sincerely,

Janice K. Taylor
Senior Engineer
Environmental Planning

c: H.S. Oven, FDEP
B. Mitchell, FDEP

COMMISSION
PHYLIS BUSANSKY
JOE CHILLURA
LYDIA MILLER
JIM NORMAN
JAN KAMINIS PLATT
ED TURANCHIK
SANDRA WILSON



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WASTE MANAGEMENT DIVISION
TELEPHONE (813) 272-5788

ECOSYSTEMS MANAGEMENT DIVISION
TELEPHONE (813) 272-7104

FAX (813) 272-5157

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DEC 13 1994

December 7, 1994

Bureau of
Air Regulation

Mr. Clair Fancy, Bureau Chief
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: Tampa Electric Company
Big Bend Station, Unit 3 & 4 FGD Integration

Dear Mr. Fancy:

The Environmental Protection Commission (EPC) of Hillsborough County has reviewed the material dated November 8, 1994, supplied by Tampa Electric Company (TEC) involving the Unit 3 and 4 FGD Integration Project. The EPC was not a party to the August 8, 1994, and October 17, 1994, meetings that were referenced in TEC's November 8, 1994, permit amendment request. Therefore, the following comments are strictly based on the project description that was submitted as part of the November 8, 1994, request.

1. According to the project description the NOx analyzer associated with the current Unit 3 continuous emissions monitoring system (CEMS) is being removed and a new dilution gas probe is being installed between the Unit 3 upper ESP exit and the Unit 3 stack. The new probe will be used to collect flue gas samples to be monitored for NOx among other things. Pursuant to 40 CFR 75.20(b) the proposed change in the NOx emissions monitoring system requires recertification of the CEM for Unit 3. Change in the sampling probe location or site for measuring NOx emissions triggers the need for recertification. TEC will need to complete a recertification application and submit to EPA, FDEP, and EPC. The proposed project description did not discuss the possible need for recertification.
2. In the proposed project description TEC acknowledges that during integration the emissions reduction efficiency across the FGD required by NSPS 40 CFR 60 Subpart Da will be met. However, there is no indication that the emissions limit for

Mr. Clair Fancy, Bureau Chief
December 7, 1994
Page 2

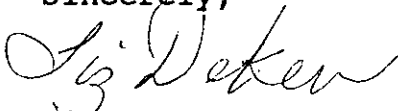
Unit 4 at the stack outlet will have to be met during integration for both the Unit 3 and 4 stacks. The PSD-FL-040 permit on Unit 4 has emission limits of 0.82 lb/MMBTU SO₂ (30 day rolling average), 0.6 lb/MMBTU NO_x (30 day rolling average), 0.03 lb/MMBTU PM (continuous limit), 0.014 lb/MMBTU CO (continuous limit) and 20% opacity. During integration since emissions from Unit 3 and 4 will be mixed the more restrictive emissions limitation will have to be met by both emission points (Stacks 3 and 4). It is also our understanding from discussions with EPA during the integration operating mode the Unit 3 stack emissions will be subject to NSPS 40 CFR 60 Subpart Da requirements. The more restrictive emission limits applicable during integration need to be reflected in the permit for Unit 3.

3. The SO₂ emission limitations currently applicable to Unit 3 are tied to emissions from Units 1, 2, and 3 in combination. TEC needs to submit a compliance plan for determining compliance for Unit 3 for both integration and nonintegration modes of operation. The plan should reflect that during integration mode the more restrictive emissions limitations as outlined in item 2 above as well as the emission limit which is tied to Units 1, 2 and 3 apply.
4. A more detailed description of the operation of the isolation dampers is required. How are they monitored? Are they opened and closed manually or electronically? How will the regulatory agencies be able to verify the operating status when conducting on-site inspections? A more detailed description of the operation is required to provide reasonable assurance that Unit 4 emissions are not vented through the Unit 3 stack during the nonintegration operating mode.
5. When Unit 4 was first put into operation there were some initial problems with high opacity which were attributed to some condensible material in the flue gas. Will the proposed removal of the Reheat system have any effect on the opacity from Unit 4? What has changed in the operation which allows them to shutdown the Reheat system?

Mr. Clair Fancy, Bureau Chief
December 7, 1994
Page 3

If any material was presented to the Department during the August and October meetings with TEC which would provide any additional information regarding the above items, please forward a copy of the material to me. Should you have any questions or require additional information regarding these comments please contact Jerry Campbell or myself at SUNCOM 543-5530.

Sincerely,



Liz Deken
Engineer

cag

cc: Hamilton S. Oven, Jr., FDEP
William Thomas, FDEP, Tampa
Patrick A. Ho, P.E., TEC

BIG BEND UNITS 3 & 4 FGD INTEGRATION PROJECT

INTRODUCTION

Tampa Electric is proposing a full Flue Gas Desulfurization (FGD) integration project at the Big Bend Station (see Figure 1 and 2) which will result in significant reductions of Sulfur Dioxide emissions. This reduction will be accomplished by directing the Unit 3 untreated flue gas through the Unit 4 FGD system. This change can be implemented without affecting the Unit 4 flue gas stream due to capacity currently existing in the Unit 4 FGD system.

This Integration Project has become possible through increased understanding and technological advances in FGD systems. As a result of FGD mitigation work, Tampa Electric patented FGD modifications were installed and resulted in significant improvements in the Unit 4 FGD SO₂ removal process. In addition to Tampa Electric's own work, the Electric Power Research Institute (EPRI) has developed analytical tools to predict FGD performance which has also resulted in improved operations. EPRI and the United States Department of Energy (DOE) have conducted testing of advanced technology at Big Bend Station as part of a Clean Coal Technology demonstration project. The testing involved the use of performance enhancing additives to improve FGD process performance (capacity). As a result of Tampa Electric's own research and that of EPRI and DOE, the performance of the Unit 4 FGD system has improved significantly. The improvements allow Unit 4 to achieve its emission requirements with a reduced number of Absorber Towers (increased capacity). This increased capacity has made the Integration Project possible.

PROJECT DESCRIPTION

The Integration will consist of the addition of ductwork connecting the upper and lower Unit 3 Electrostatic Precipitator (ESP) flue gas streams at a point just prior to their respective entrances to the Unit 3 chimney (refer to drawing B4277 SK-001). The Unit 3 flue gas stream will be combined with the Unit 4 flue gas stream and processed in the Unit 4 FGD system. The treated flue gas stream will be split and directed to both the Unit 3, via a new duct and chimney penetration, and Unit 4 chimneys.

Isolation dampers will be installed at the existing upper and lower entrances to the Unit 3 chimney. These dampers will be closed to direct the untreated Unit 3 flue gas to the Unit 4 FGD system when the integration process is being utilized. A new opening will be added to the Unit 3 chimney to facilitate the discharge of a portion of the treated flue gas from the Unit 4 FGD system. The remainder of the treated flue gas will exit the Unit 4 chimney. An isolation damper will be installed at the new Unit 3 chimney opening to prevent the mixing of the Unit 4 treated flue gas and Unit 3 untreated flue gas when integration is not being utilized.

With implementation of the integration project, the Unit 4 FGD Reheat system will be eliminated such that there will be no reheating of the flue gas streams to either the Unit 3 or Unit 4 chimneys based on recent EPRI technology research. This reduces costs to Tampa Electric's customers.

The integration will also include the installation of a Dibasic Acid (DBA) addition system. The DBA

addition system will include a 15,000 gallon aboveground storage tank and associated truck unloading facility, pump and piping system to inject the DBA into the FGD system. The DBA will be utilized to enhance the FGD chemical process performance and will be consumed in the FGD process. The associated tank will be registered per F.S. 376.303 (1c).

PROJECT SCHEDULE

Construction of the necessary modifications is scheduled to begin in early January 1995. This construction schedule is closely tied to the Unit 4 and 3 major maintenance outages, February 1995 and April 1995 respectively. Construction completion is expected on May 16, 1995 (end of the Unit 3 outage). Scheduling is critical as the ductwork modifications can only be accomplished during the Unit's major outages. The next major outages which could accommodate the integration modifications for these Units are scheduled in 3 years (1998). Therefore, the FGD integration project must be implemented within the 1995 major outage schedules for timely environmental benefits. It is proposed that Unit 3 will return to service in the integrated operating mode.

UNUSUAL OPERATION MEASURES

When Unit 3 is operating in the Integration mode, untreated flue gas from Unit 3 and Unit 4 will be processed in the FGD system. Should a process upset occur while operating in integrated mode, and the FGD system becomes unable to process all of the untreated flue gas, flue gas flow shall be reduced into the FGD system, through load reductions, to match its reduced capability.

Example

Unit 3 and 4 are operating in the Integrated mode and both Units are operating at full load (near maximum flue gas flow capability). A process upset occurs reducing FGD performance such as loss of an absorber. One or both Units will reduce load until the FGD system is capable of processing all of the flue gas. At all times, Unit 4 will have preference over the FGD system to comply with all Unit 4 emission requirements.

EMISSION MONITORING

Modifications to the existing continuous emissions monitoring system (CEMS) for Unit 3 include the following:

1. Installation of a dilution gas probe between the Unit 3 upper ESP exit and the Unit 3 stack at a point where it will be capable of collecting a representative sample of the Unit 3 flue gas during both integrated and non-integrated scenarios. This probe will be used to monitor SO₂, NO_x and CO₂. The new analyzers will share the existing Unit 4 Data Acquisition System (DAS).
2. Removal of the NO_x analyzer associated with the existing dilution probe sample train

on the Unit 3 stack and transferring the remaining Unit 3 stack CEM system (SO₂, CO₂, and flow) to the Unit 4 shelter so that it shares the existing Unit 4 DAS.

The current CEMS sample probe and analyzer configuration for Unit 4 will remain unchanged and includes SO₂, NO_x, and CO₂ monitoring between the Unit 4 ESP and FGD system as well as SO₂, CO₂, and flow monitoring on the Unit 4 stack. Changes to the current Unit 4 DAS to incorporate Unit 3 systems will be made as necessary. Opacity monitoring will not be affected by the project.

The justification for monitoring Unit 3 boiler gas concentrations from only the upper ESP exit ductwork is based on EPA's conclusion that the products of combustion are significantly mixed such that a representative emission rate can be obtained by measuring at a single point in any of the exhaust streams. This conclusion is documented in EPA's Acid Rain CEM (Part 75) Policy Manual - Update #3 dated July 21, 1994.

AIR EMISSIONS MONITORING STRATEGY

During times when there is no integration of Unit 3 gas in the Unit 4 FGD system, the only change to the current methods of emissions monitoring will be that the new NO_x/CO₂ system at the outlet of the Unit 3 ESP will be used to demonstrate NO_x (lb/MMBtu) emission requirements for both the Acid Rain Program and the existing Unit 3 30-day rolling average permit limit instead of the current system located on the Unit 3 stack.

During times when the Unit 3 gas is being integrated with the Unit 4 gas and processed through the FGD system, the following monitoring procedures will be used:

SO₂ Monitoring during Integration

In order to demonstrate compliance with Unit 4's permitted SO₂ requirements, a hourly SO₂ lb/MMBtu value will be obtained from both Unit 3 and Unit 4 at the CEMS location prior to the FGD system. These two values will be weight averaged based on the individual unit megawatt loads. This averaged value will be used as the FGD inlet value. Similarly, a SO₂ lb/MMBtu value will be obtained from both the Unit 3 stack and Unit 4 stack CEMS location and a weight averaged value will be calculated based on each stack's flow. This averaged value will be used as the FGD outlet value. The FGD inlet and FGD outlet values will be used to calculate the removal efficiency across the FGD system. The same target removal efficiency across the FGD system will be met during periods of integration as is required currently for Unit 4 independently under the requirements of 40 CFR 60 Subpart Da. In addition, the weight averaged SO₂ lb/MMBtu value calculated from the CEMS on the stacks during integration will meet the independent SO₂ emission limitations established for Unit 4.

All Acid Rain Program related SO₂ and CO₂ emissions monitoring requirements for both Unit 3 and Unit 4 will continue to be monitored through the use of the CEMS on the stacks.

NO_x Monitoring during Integration

Since the reconfigured CEM system design allows both Unit 3 and Unit 4 to be monitored independently prior to any mixing of the gases from the two units, no special requirements are necessary for monitoring NO_x during periods of integration.

Particulate Matter and Opacity Monitoring during Integration

Compliance with each unit's Particulate Matter (PM) emissions limit is currently demonstrated through individual annual stack testing. This method will continue to be used to demonstrate compliance for PM. Each unit will be individually tested on an annual basis for PM during a period when no integration is taking place.

Opacity monitoring is conducted prior to any mixing of the gases from the two units, therefore no special requirements are necessary during periods of integration.

WATER MANAGEMENT ISSUES

The project is expected to have a minimal impact on the water system at Big Bend Station. In fact, the addition of Unit 3 gases to the FGD system will improve the station water balance by allowing greater use of recycle water at the plant. Big Bend Station, within the past year, has implemented many water conservation and recycle projects, including the use of recycle water in the FGD process. Although there will be an increased opportunity to reuse wastewater in the FGD system, thus reducing disposal of wastewater, additional secondary effluent water will be required for some FGD operations. Any impact the Chloride Bleed may have on the freshwater treatment/disposal system at Big Bend will be addressed in the Wastewater Management Plan required under Temporary Operating Permit No. IT29-212613.

BYPRODUCT MANAGEMENT ISSUES

The integration project will involve additional Gypsum byproduct production. Current plans are to avoid storage of these gypsum byproducts in the gypsum storage area by marketing their reuse. Potential reuse applications include building products and agriculture. Currently, all gypsum byproducts produced by Unit 4 are sold. All gypsum byproducts produced as a result of Unit 3 integration operation are expected to be sold and will be handled in accordance with the Big Bend Unit 4 Byproducts Handling Manual.

ATTACHMENTS

Drawings

Figure 1	Plant location
Figure 2	Plan View of the FGD Integration Area
B4277-SK-001	Flow Diagram of the FGD Integration
MS-01 Rev.	General Arrangements FGD Integration Project

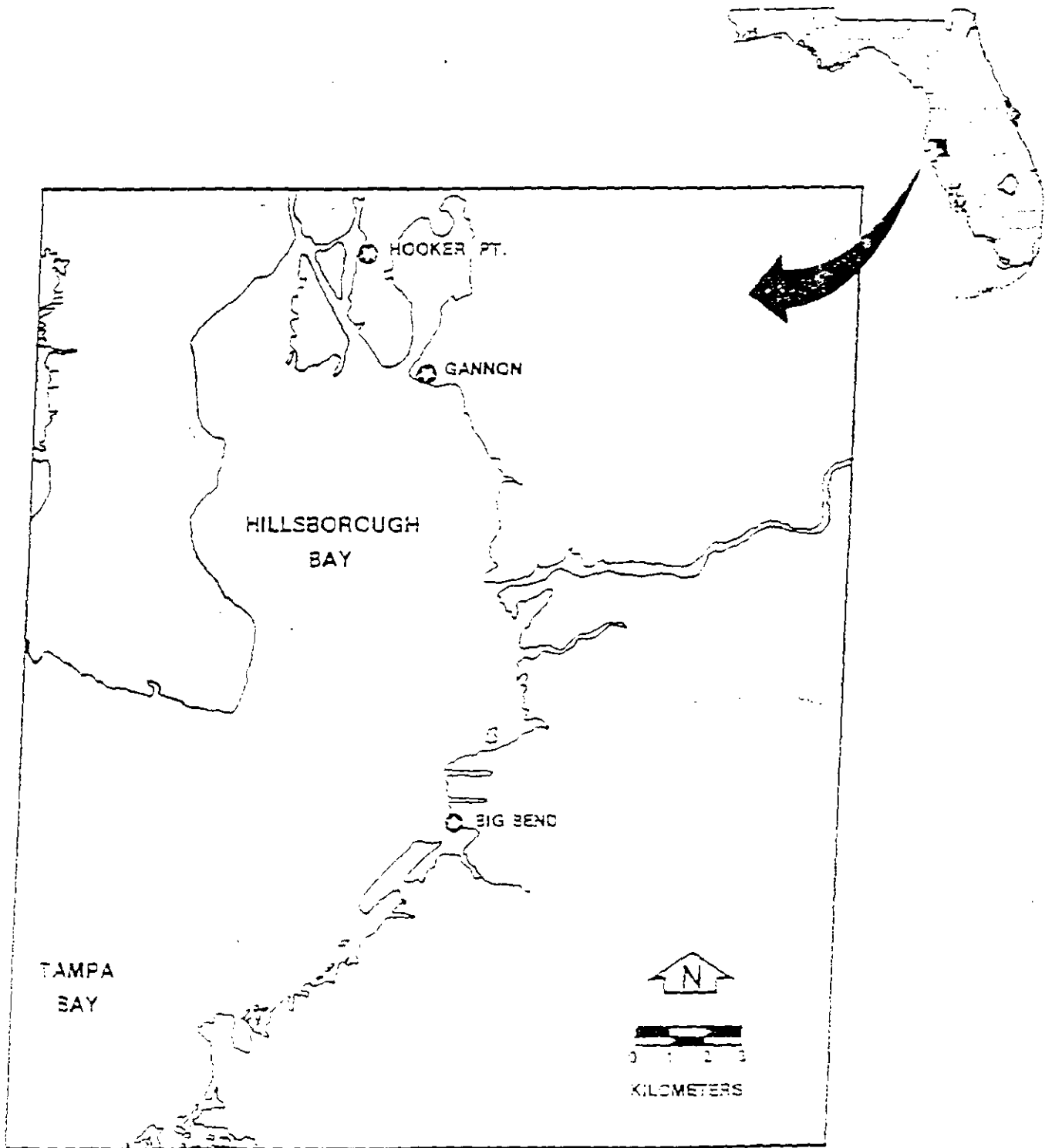
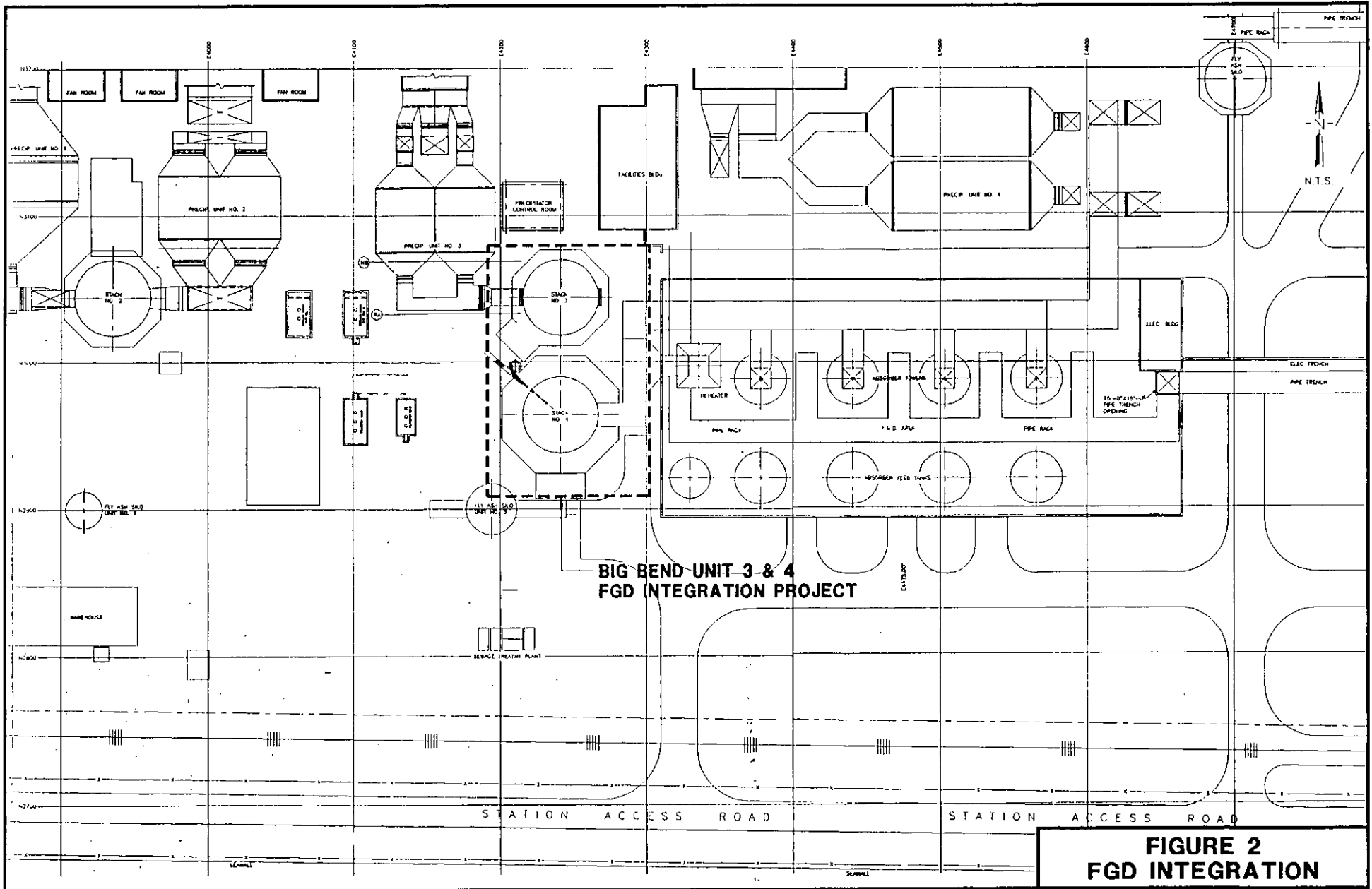
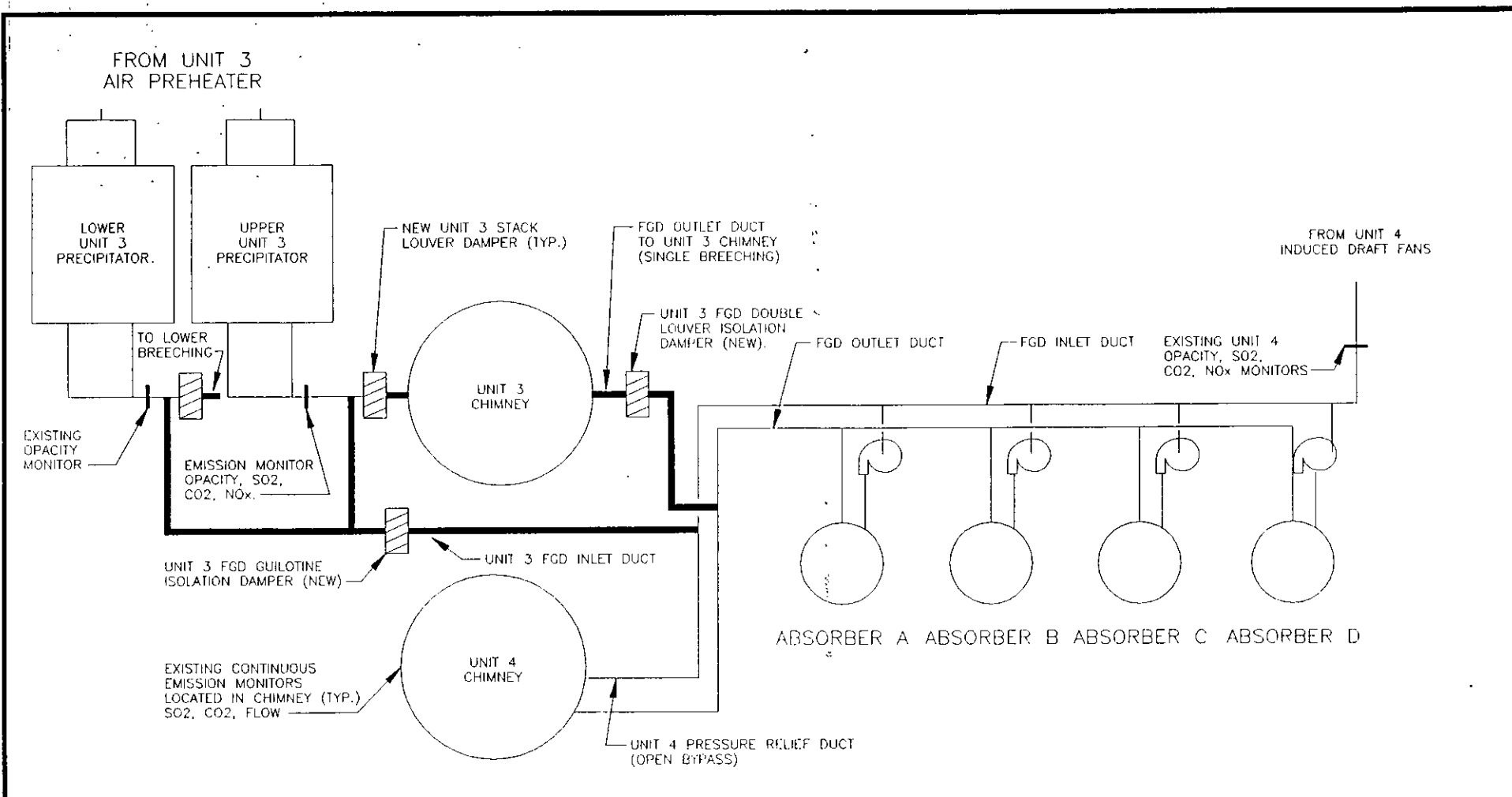


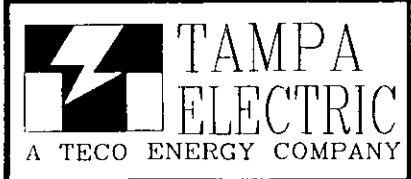
FIGURE 1 PLANT SITE LOCATION MAP





- NOTE: 1) THE EXISTING UNIT 3 OPACITY MONITORS WILL REMAIN AT THEIR CURRENT LOCATION.
- 2) THE EXISTING CONTINUOUS EMISSION MONITORS FOR UNIT 3 AND UNIT 4 WILL REMAIN AT THEIR CURRENT LOCATION WITH THE EXCEPTION OF UNIT 3 NO_x WHICH WILL BE RELOCATED TO THE UPPER UNIT 3 PRECIPITATOR OUTLET DUCT.

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BIG BEND UNIT 3 & 4 FGD INTIGRATION IMPLEMENTATION CONFIGURATION

DRAWN BY: REL 10/14/94

DWG. NO. B4277-SK-001