



December 12, 1997

Mr. Scott Sheplak, Jr., P.E.
Administrator-Title V Section
Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

**Via Facsimile and
Certified Mail No. P 240 442 402
Return Receipt Requested**

**Re: Tampa Electric Company
Polk Power Station
Title V-FDEP File No. 0570039-002-AV
Waiver of 90 Day Time Limit**

Dear Mr. Sheplak:

Please find enclosed an executed waiver of time which will expire on January 31, 1998 for the above referenced permit application.

I look forward to working with you on completing this permit processing. Feel free to telephone me at (813) 641-5035, if you have any questions. Thank you for your assistance in this matter.

Sincerely,

Philip Matonte
Consulting Engineer
Environmental Planning

Enclosure

EPgm\PJM098

12/18/97 cc: Scott Sheplak
Ed Svec

TAMPA ELECTRIC COMPANY

P.O. BOX 111

TAMPA, FL 33601-0111

HILLSBOROUGH COUNTY 223-0800

OUTSIDE OF HILLSBOROUGH COUNTY 1-888-223-0800

[HTTP://WWW.TECOENERGY.COM](http://www.tecoenergy.com)

AN EQUAL OPPORTUNITY COMPANY

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DEC 18 1997

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AIR REGULATION

**WAIVER OF 90 DAY LIMIT
UNDER SECTIONS 120.60(2) AND 403.0876, FLORIDA STATUTES**

Permit Application No. 1050233.001-AV

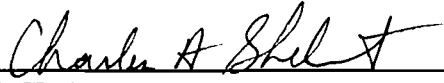
Applicant's Name: Polk Power Station - Tampa Electric Company

The undersigned has read Sections 120.60(2) and 403.0876, Florida Statutes, and fully understands the applicant's rights under that section.

With regard to the above referenced permit application, the applicant hereby with full knowledge and understanding of its rights under Sections 120.60(2) and 403.0876, Florida Statutes, waives the right under Sections 120.60(2) and 403.0876, Florida Statutes, to have the application approved or denied by the State of Florida Department of Environmental Regulation within the 90 day time period prescribed in Sections 120.60(2) and 403.0876, Florida Statutes. Said waiver is made freely and voluntarily by the applicant, is in its self-interest, and without any pressure or coercion by anyone employed by the State of Florida Department of Environmental Regulation.

This waiver shall expire on the 31st day of January, 1998.

The undersigned is authorized to make this waiver on behalf of the applicant.


SIGNATURE

Charles A. Shelnut
NAME (PLEASE TYPE OR PRINT)

General Manager - Polk Power Station



February 27, 1997

Mr. John C. Brown, Jr., P.E.
Administrator-Title V Section
Florida Department of Environmental Protection
111 South Magnolia Drive
Tallahassee, Florida 32301

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MAR 17 1997
BUREAU OF
AIR REGULATION

**Via Facsimile and
Certified Mail No. P 404 702 888
Return Receipt Requested**

**Re: Tampa Electric Company
Polk Power Station
File No. 1050233-001-AV
Request for Additional Time**

Dear Mr. Brown:

Tampa Electric Company (TEC) received the Florida Department of Environmental Protection's (FDEP) request for additional information for our Polk Power Station on December 4, 1996. Due to time constraints, TEC requests sixty (60) additional days to respond to the Department's additional information request for the above referenced facility. This request is in accordance with Rule 62-213.420(1)(b)6., F.A.C.

I understand, per my telephone conversation with Mr. Edward Svec, that the Department has no objection to this request. Please telephone me at (813) 641-5039 if you have any questions. Thank-you in advance for your consideration.

Sincerely,

Janice K. Taylor
Senior Engineer
Environmental Planning

EP\gm\JKT785

c: Mr. Edward Svec, FDEP - Tallahassee



CM File

Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

March 4, 1997

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Charles A. Shelnut
General Manager
Tampa Electric Company
P. O. Box 775
Mulberry, Florida 33860-0775

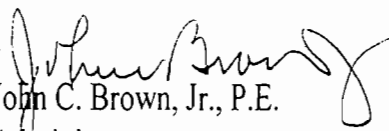
Re: Request for Additional Time to Respond to Information Request
File No. 1050233-001-AV
Polk Power Station, Polk County

Dear Mr. Shelnut:

The Department has received a facsimile request from Ms. Janice Taylor for an additional 60 days to respond to our request for additional information which was received by your office on December 5, 1996. The request was made in accordance with Rule 62-213.420(b)6.a., F.A.C., and requested an additional 60 days to respond. The Department acknowledges this request and grants the additional 60 days to respond in accordance with Rule 62-213.420(b)6.b., F.A.C.

Your response to the request for additional information is now due to the Department on May 4, 1997. Should you require additional time to respond to the request, you will need to "demonstrate good cause" for the additional extension of time in accordance with Rule 62-213.420(b)6.c., F.A.C. If you should have any questions, please call Edward Svec or me at 904/488-1344.

Sincerely,


John C. Brown, Jr., P.E.
Administrator
Title V Section

JCB/es

copy to:
Janice Taylor, TEC
Thomas W. Davis, P.E., ECT
Bill Thomas, P.E., FDEP, SWD
Thomas W. Reese, Esq.

PS Form 3800, March 1993

Sent to Charles A. Shelnut / Tampa Electric Co.	
Street and No. P.O. Box 775	
P.O., State and Zip Code Mulberry, FL 33860-0775	
Postage	\$
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 3-4-97	



Receipt for Certified Mail
No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Z 392 940 877

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SENDER:

- 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):

- ☐ Addressee's Address
- ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to: Mr. Charles A. Shelnut, General Manager Tampa Electric Company Post Office Box 775 Mulberry, Florida 33860-0775		4a. Article Number Z 392 940 877
5. Signature (Addressee)		4b. Service Type ☐ Registered ☐ Insured ☒ Certified ☐ COD ☐ Express Mail ☐ Return Receipt for Merchandise
6. Signature (Agent) 		7. Date of Delivery MAR 10 1997
		8. Addressee's Address (Only if requested and fee is paid)

Thank you for using Return Receipt Service.



Certified Mail File

Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

December 2, 1996

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Charles A. Shelnut
General Manager
Tampa Electric Company
P. O. Box 775
Mulberry, Florida 33860-0775

Re: Request for Additional Information Regarding Title V Permit Application.
File No. 1050233-001-AV
Polk Power Station, Polk County

Dear Mr. Shelnut:

Your Title V permit application for the Polk Power Station was "timely" for purposes of the initial Title V application submission (see Rule 62-213.420(1)(a)2., F.A.C.). However, in order to continue processing your application, the Department will need the below additional information pursuant to Rule 62-213.420(1)(b)4., F.A.C., and Rule 62-4.070(1), F.A.C. The additional information requested is organized by topic. Should your response to any of the below items require new calculations, please submit the new calculations, assumptions, reference material and appropriate revised pages of the application form.

Introduction

1. The last paragraph of the "Introduction" to the Title V permit application states "specific informational items presented in this application may change or will be finalized after commencement of commercial operations." Clarify which items or information that may change or be finalized after the commencement of commercial operations.

Emissions Unit 3 - Sulfuric Acid Plant

2. The application uses Emissions Unit Major Group SIC Code: 49, which is Electric, Gas and Sanitary Services. Is this the correct SIC code for the Sulfuric Acid Plant? If not, provide the correct code.

PS Form 3800, March 1993

Sent to Charles A. Shelnut Co.	
Street and No. P.O. Box 775	
P.O., State and ZIP Code Mulberry, FL 33860-0775	
Postage	\$
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	



Receipt for Certified Mail
No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Z 392 940 867

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SENDER:

- 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):

- ☐ Addressee's Address
- ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Mr. Charles A. Shelnut
General Manager
Tampa Electric Company
P.O. Box 775
Mulberry, Florida 33860-0775

4a. Article Number

Z 392 940 867

4b. Service Type

☐ Registered	☐ Insured
☒ Certified	☐ COD
☐ Express Mail	☐ Return Receipt for Merchandise

7. Date of Delivery

12 5-96

5. Signature (Addressee)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)

Charles A. Shelnut

PS Form 3811, December 1991

☆U.S. GPO: 1993-352-714

DOMESTIC RETURN RECEIPT

Thank you for using Return Receipt Service.

Mr. Charles A. Shelnut
December 2, 1996
Page 2 of 2

3. Provide a description of the sulfuric acid process which includes a plot plan, the location of all vents and stacks, all processes and all fuels. Provide completed section **E. EMISSION POINT (STACK/VENT) INFORMATION** pages for each stack or vent and completed section **F. SEGMENT (PROCESS/FUEL) INFORMATION** pages for each process or fuel.

Emissions Unit 4 - Solid Fuel Handling

4. The application states that this is an unregulated emissions unit. Provide the reasons why the provisions of 40 CFR 60.250, Subpart Y, Coal Preparation Plants, are not applicable. If the provisions of this subpart apply, provide all of the information required in the Title V application.

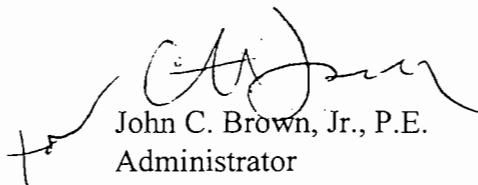
Compliance

5. Provide the dates and a synopsis of the results of all initial compliance tests required by the Power Plant Site Certification PA 92-32, as amended, and the Prevention of Significant Deterioration permit PSD-FL-194, as amended.

6. Provide the date that concludes the demonstration period.

The Department must receive a response from you within 90 (ninety) days of receipt of this letter, unless you (the applicant) request additional time under Rule 62-213.420(1)(b)6., F.A.C. If you should have any questions, please call Edward Svec or me at 904/488-1344.

Sincerely,


John C. Brown, Jr., P.E.
Administrator
Title V Section

JCB/es

copy to:
Janice Taylor, TEC
Thomas W. Davis, P.E., ECT
Bill Thomas, P.E., FDEP, SWD



Department of Environmental Protection

File Copy

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

May 24, 1996

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Ms. Janice K. Taylor
Senior Engineer
Environmental Planning
Tampa Electric Company
Post Office Box 111
Tampa, Florida 33601-0111

RE: Title V Source Application Due Date
Polk Power Station

Dear Ms. Taylor:

The Title V Section has reviewed your letter received May 8 regarding Title V source application due date. The application due date for the above referenced Title V source is 180 days after commencing operation, not after commencing commercial operation. The rationale for this due date is that the source is an Acid Rain Source and received an Electrical Power Plant Siting Certification, No. PA 92-32, on January 27, 1994. Rule 62-213.420(1)(a)2., Florida Administrative Code (F.A.C.), states that "...a source that has been issued an Electrical Power Plant Siting Certification prior to October 25, 1995, but has not commenced operation by that date, shall file an application for an operation permit under this chapter 180 days after **commencing operation.**"

Commencing operation is defined at Rule 62-210.200(76)(a) and (b), F.A.C., which states: (a) For purposes of the Acid Rain Program, to begin any mechanical, chemical, or electronic process, including start-up of an emissions control technology or emissions monitor or of an emissions unit's combustion chamber; and, (b) Otherwise, to set into operation any emissions unit for any purpose. Because the source is an Acid Rain Source, the appropriate rule part is "(a)", which defines day 1 of the clock as the first time that the combustion chamber is ignited and pollutants are emitted into the atmosphere, or the emissions control system is started-up, etc.

Commence commercial operation is defined at Rule 62-210.200(74), F.A.C., as "For purposes of the Acid Rain Program, to begin to generate electricity for sale, including the sale of electricity generated during testing."

PS Form 3800, April 1995

Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	5/24/96

US Postal Service
Receipt for Certified Mail
 No Insurance Coverage Provided.
 Do not use for International Mail (See reverse)
 Ms. Janice K Taylor
 Senior Engineer, Environmental Planning
 Tampa Electric Company
 Post Office Box 111
 Tampa, Florida 33601-0111

P 263 585 450

Is your RETURN ADDRESS completed on the reverse side?

SENDER:

- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- 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):

- ☐ Addressee's Address
- ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Ms. Janice K Taylor
 Senior Engineer, Environmental Planning
 Tampa Electric Company
 Post Office Box 111
 Tampa, Florida 33601-0111

4a. Article Number

P 263 585 450

4b. Service Type

☐ Registered	☒ Certified
☐ Express Mail	☐ Insured
☐ Return Receipt for Merchandise	☐ COD

7. Date of Delivery

MAY 28 1996

5. Received By: (Print Name)

6. Signature (Addressee or Agent)

X

8. Addressee's Address (Only if requested and fee is paid)

PS Form 3811, December 1994

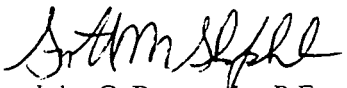
Domestic Return Receipt

Thank you for using Return Receipt Service.

Ms. Janice K. Taylor
Tampa Electric Company: Polk Power Plant
Letter: Title V Application Due Date
May 22, 1996
Page 2 of 2

In conclusion, the term "commence operation" is the term used in Rule 62-213.420(1)(a)2., F.A.C., not "commence commercial operation", for determining the applicable due date for the Title V operation permit. Therefore, the application is due 180 days after commencing operation, not after commencing commercial operation. If there are any questions, please contact Bruce Mitchell at 904/488-1344 or write to me at the letterhead address above.

Sincerely,


for John C. Brown, Jr., P.E.
Administrator
Title V Section

JCB/rbm/m

Enclosures

cc: B. Thomas, SWD
P. Comer, Esq., DEP
Reading File / Charles Logan



578 John
Pls prepare response
RECEIVED *Clan*
MAY 08 1996
BUREAU OF
AIR REGULATION

May 6, 1996

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

Certified Mail No. P 880 007 756
Return Receipt Requested

Re: Tampa Electric Company (TEC)
Polk Power Station
Title V Operating Permit Application

Dear Mr. Fancy:

As you know, the Polk Power Station is under construction pursuant to the site certification and the related permits issued under federally delegated programs by the State of Florida, Department of Environmental Protection (FDEP). Now that the Title V Operating Permit Program that has been adopted by FDEP has been conditionally approved by the Environmental Protection Agency (EPA), it will be necessary for the Polk Power Station to obtain a Title V Operating Permit.

TEC has reviewed the applicable regulations and as we understand it, the timing of submittal of the Title V application for this facility is governed by the provisions of Rule 62-213.420(1)(a)(2), Florida Administrative Code (F.A.C.). That section provides, in part, that a source certified under the Florida Electrical Power Plant Siting Act prior to January 2, 1995, that was not operating by that date must file the Title V permit application not later than 180 days after "commencing operation."

We have been unable to determine under the FDEP rules when the facility will be considered to have begun operations such that the 180-day period for filing the permit application will begin to run. The rules do not appear to provide the definition of commencing operations except for the definition of "commence commercial operation" that is included in Rule 62-214.200(21), F.A.C. This rule, of course, applies to acid rain sources, and is not, as we understand it, generally applicable to other types of permits.

As you are aware, this source is subject to standards of performance for new stationary sources (NSPS) which have been adopted by EPA and which are administered by FDEP, and as such, we would propose to utilize portions of the NSPS to govern the situation. In 40 Code of Federal Regulations (C.F.R.) §60.8(a), the source is required to conduct a compliance test either within 60 days of achieving the maximum production rate at which the affected facility will be operated,

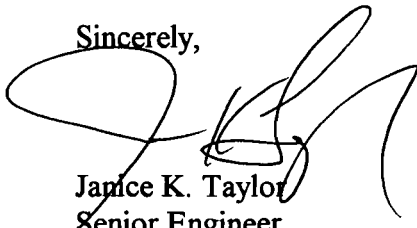
Mr. Clair Fancy
May 6, 1996
Page 2 of 2

or 180 days from the initial start-up. Since either of these dates is the date the facility must be in compliance with applicable NSPS, it seems appropriate to utilize the compliance date as the date on which the facility begins operations for purposes of the Title V rules promulgated by FDEP. Furthermore, based upon historical construction permit activities, operation permit applications are usually required within a certain timeline after commencement of commercial operations. Due to the ambiguity of the regulations in this matter, TEC requests the Title V permit application for the Polk Power Station be submitted 180 days after commencement of commercial operations.

We would appreciate it if you would confirm for us in writing that the Title V permit application for the Polk Power Station must be submitted within 180 days of the date commencing commercial operations. Thank you for your attention to this matter.

Please call me at (813) 228-4839 if you have any questions or need additional information.

Sincerely,



Janice K. Taylor
Senior Engineer
Environmental Planning

EP\gm\JKT738

c: Mr. John Brown, FDEP, Tallahassee

CHAPTER 62-213

OPERATION PERMITS FOR MAJOR SOURCES OF AIR POLLUTION

Effective 3-20-96

- 62-213.100 Purpose and Scope.
- 62-213.205 Annual Operation Licensing Fee.
- 62-213.300 Title V Air General Permits.
- 62-213.400 Permits and Permit Revisions Required.
- 62-213.410 Changes Without Permit Revision.
- 62-213.412 Immediate Implementation Pending Revision Process.
- 62-213.413 Fast-Track Revisions of Acid Rain Parts.
- 62-213.415 Trading of Emissions Within a Source.
- 62-213.420 Permit Applications.
- 62-213.430 Permit Issuance, Renewal, and Revision.
- 62-213.440 Permit Content.
- 62-213.450 Permit Review by EPA and Affected States.
- 62-213.460 Permit Shield.
- 62-213.900 Forms and Instructions.

62-213.100 Purpose and Scope. The Department of Environmental Protection adopts this chapter to provide a comprehensive operation permit system for permitting major sources of air pollution (Title V sources). Words and phrases used in this chapter, unless clearly indicated otherwise, are defined at Rule 62-210.200, F.A.C.

Specific Authority: 403.061, 403.0872, F.S.

Law Implemented: 403.061, 403.0872, F.S.

History: New 11-28-93, Formerly 17-213.010, Amended 3-13-96.

62-213.200 Definitions (Repealed).

Specific Authority: 403.061, 403.087, F.S.

Law Implemented: 403.021, 403.031, 403.087, 403.0872, 403.0873, F.S.

History: New 12-21-92; Amended 11-28-93, Formerly 17-213.100, Amended 11-23-94, 1-3-95, 4-18-95, 1-1-96, Repealed 3-13-96.

62-213.205 Annual Emissions Fee. Commencing in 1993, each Title V source permitted to operate in this state must pay between January 15 and March 1 of each year, upon written notice from the department, an annual emissions fee in an amount determined as follows:

(1) Each Title V source must calculate the annual fee, based upon the source's previous year's emissions, by multiplying the applicable annual emissions fee factor times the tons of each regulated air pollutant (except carbon monoxide) allowed to be emitted per hour by specific condition of the source's most recent certification, construction permit or operation permit, times the annual hours of operation allowed by specific condition; provided, however, that:

(a) For 1993 and 1994, the license fee factor is \$10. For 1995, the license fee factor is \$25. The license fee factor may be increased beyond \$25 in years succeeding 1995 only if the Secretary of the Department affirmatively finds that a shortage of revenue for support of the Title V source operation permit program will occur in the absence of a fee factor adjustment, otherwise the fee factor is \$25. The annual license fee factor may never exceed \$35 without legislative approval. The Department shall retain a nationally recognized accounting firm to conduct a study to determine the reasonable revenue requirements necessary to support the development and administration of the Title V source operation permit program as prescribed in Rule 62-213.205(2), F.A.C. The results of that determination must be considered in assessing whether a \$25-per-ton fee factor is sufficient to adequately fund the Title V source operation permit program. The results of the study must be presented to the Governor, the President of the Senate, the Speaker of the House of Representatives, and the Public Service Commission, including the Public Counsel's Office, by no later than October 31, 1994.

(b) Any source that operates for fewer hours during the calendar year than allowed under its permit, will

to document the quantity and sulfur content of the sulfur containing material, and the method assumes that all of the sulfur is converted to SO₂ and released to the atmosphere;

3. For pollutants other than sulfur dioxide and nitrogen oxides the Department shall not approve the trading of emissions unless the source demonstrates the capability of quantifying emissions and verifying that emissions do not exceed permitted allowable emissions for each unit involved;

4. The Department shall accept material balance, as described in Rule 62-213.205(1)(e), F.A.C., as a means of quantification of volatile organic compounds if no credit is taken for any incineration that takes place.

(d) Replicable procedures to demonstrate compliance with any trading provisions requested and with applicable requirements for each mode of operation. As a minimum, the source shall maintain source logs or records to verify the periods of operation within each mode of operation.

(3) The source shall provide written notice to the Department and EPA at least thirty days before implementation of each mode of operation. The notice shall identify the mode of operation, and the date upon which the change will occur.

Specific Authority: 403.061, 403.087, F.S.

Law Implemented: 403.031, 403.061, 403.087, 403.0872, F.S.

History: New 11-28-93; Amended 4-17-94; Formerly 17-213.415; Amended 11-23-94, 3-13-96.

62-213.420 Permit Applications.

(1) Duty to Apply. For each Title V source, the owner or operator shall submit a timely and complete permit application in compliance with the requirements of this section and Rules 62-4.050(1), (2) and 62-210.900, F.A.C.

(a) Timely Application.

1. For facilities that are Title V sources on or before October 25, 1995, and that have commenced operation on or before that date, a timely application under this chapter is one that is submitted as follows:

a. Acid Rain Sources will submit applications for the entire source by June 15, 1996.

b. Sources with one or more emissions units subject to Rule 62-204.800(8) or (9), F.A.C., will submit applications for the entire source by:

(i) July 1, 1996, if the facility is a Title V source solely because it is included in paragraph (f) of the definition of "Major Source of Air Pollution," in Rule 62-210.200, F.A.C.

(ii) June 15, 1996, otherwise.

c. All other sources subject to the permitting requirements of this chapter will submit applications by June 15, 1996.

2. Except as provided at Rule 62-213.420(1)(a)4., F.A.C., a facility that commences operation as a Title V source after October 25, 1995, or that otherwise becomes subject to the permitting requirements of Chapter 62-213, F.A.C., after October 25, 1995, must file an application for an operation permit under this chapter ninety days before expiration of the source's construction permit, but no later than 180 days after commencing operation, unless a different application due date is provided at Rule 62-204.800, F.A.C. Except as provided at Rule 62-213.420(1)(a)4., F.A.C., a source that has applied for a Electrical Power Plant Siting Certification prior to October 25, 1995, but has not been issued the certification as of that date, or a source that has been issued an Electrical Power Plant Siting Certification prior to October 25, 1995, but has not commenced operation by that date, shall file an application for an operation permit under this chapter 180 days after commencing operation. Sources subject to the FEPPSA that apply for Electrical Power Plant Siting Certification subsequent to January 1, 1996, may, at their option, apply for a permit under the provisions of this chapter

at the same time the Florida Power Plant Siting Certification application is submitted.

3. For purposes of permit renewal, a timely application is one that is submitted in accordance with 62-4.090, F.A.C.

4. The expiration dates of all air construction permits for Title V sources that expire between September 1, 1995, and November 1, 1996, are hereby extended to the later of November 1, 1996, or 240 days after commencing operation. Facilities with such air construction permits and which have not commenced operation on or before October 25, 1995, shall apply for a permit under the provisions of this chapter on the later of September 1, 1996, or 180 days after commencing operation.

5. A Title V source which commences operation on or before October 25, 1995, but which contains an emissions unit that commences operation after October 25, 1995, shall submit a revision to its Title V permit application or an application for a permit revision, as applicable, no later than 180 days after the emissions unit commences operation. If the draft Title V permit that was requested under the provisions of Rule 62-213.420(1)(a)1., F.A.C., has not been sent to the applicant for public notice, the revision for such emissions unit shall be processed as part of the initial Title V permit as if it had been received pursuant to that rule. Any source that contains an emissions unit that has not commenced operation by the time that the source submits its initial application for a Title V permit may include such emissions unit in the initial application, provided the requirements of Rule 62-213.420(3)(k), F.A.C., are met.

(b) Complete Application.

1. Any applicant for a Title V permit, permit revision or permit renewal must submit an application on form number 62-210.900(1), which must include all the information specified by Rule 62-213.420(3), F.A.C., except that an application for permit revision must contain only that information related to the proposed

change. The applicant shall include information concerning fugitive emissions and stack emissions in the application. Each application for permit, permit revision or permit renewal shall be certified by a responsible official in accordance with Rule 62-213.420(4), F.A.C.

2. For those applicants submitting initial permit applications pursuant to Rule 62-213.420(1)(a)1., F.A.C., a complete application shall be an application that substantially addresses all the information required by the application form number 62-210.900(1), and such applications shall be deemed complete within sixty days of receipt of a signed and certified application unless the Department notifies the applicant of incompleteness within that time. For all other applicants, the applications shall be deemed complete sixty days after receipt, unless the Department, within sixty days after receipt of a signed application for permit, permit revision or permit renewal, requests additional documentation or information needed to process the application. An applicant making timely and complete application for permit, or timely application for permit renewal as described by Rule 62-4.090(1), F.A.C., shall continue to operate the source under the authority and provisions of any existing valid permit or Florida Electrical Power Plant Siting Certification, provided the applicant complies with all the provisions of Rule 62-213.420(1)(b)3. and 4. F.A.C. Failure of the Department to request additional information within sixty days of receipt of a properly signed application shall not impair the Department's ability to request additional information pursuant to Rule 62-213.420(1)(b)3. and 4., F.A.C.

3. For those permit applications submitted pursuant to the provisions of Rule 62-213.420(1)(a)1., F.A.C., the Department shall notify the applicant if the Department becomes aware at any time during processing of the application that the application contains incorrect or incomplete information. The applicant shall submit the

CHAPTER 62-210
STATIONARY SOURCES - GENERAL REQUIREMENTS
Effective 5-13-96

TABLE OF CONTENTS

62-210.100	Purpose and Scope.
62-210.200	Definitions.
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62-210.370	Reports.
62-210.550	Stack Height Policy.
62-210.650	Circumvention.
62-210.700	Excess Emissions.
62-210.900	Forms and Instructions.
62-210.920	Notification Forms for Air General Permits

62-210.100 Purpose and Scope. The Department of Environmental Protection adopts this chapter to establish general requirements for stationary sources of air pollutant emissions. This chapter provides criteria for determining the need to obtain an air construction or air operation permit. It establishes public notice requirements, reporting requirements, and requirements relating to estimating emission rates and using air quality models. This chapter also sets forth special provisions related to compliance monitoring, stack heights, circumvention of pollution control equipment, and excess emissions.

Specific Authority: 403.061, F.S.

Law Implemented: 403.021, 403.031, 403.061, 403.087, F.S.

History: New 2-9-93, Formerly 17-210.100, Amended 11-23-94.

62-210.200 Definitions. The following words and phrases when used in this chapter and in Chapters 62-212, 62-213, 62-214, 62-296, and 62-297, F.A.C., shall, unless

content clearly indicates otherwise, have the following meanings:

(1) "Acid Mist" - Liquid drops of any size of any acid including sulfuric acid and sulfur trioxide, hydrochloric acid, and nitric acid as measured by test methods adopted by the Department.

(2) "Acid Rain Compliance Option" - A method of compliance available to an Acid Rain unit under the Federal Acid Rain Program.

(3) "Acid Rain Compliance Plan" - That portion of an Acid Rain Part application submitted by the designated representative of an Acid Rain source which specifies the methods, or compliance options, by which each Acid Rain unit at the source will meet the applicable Acid Rain emissions limitation and Acid Rain emissions reduction requirements.

(4) "Acid Rain Compliance Schedule" - An enforceable sequence of actions, measures, or operations designed to achieve or maintain compliance, or correct noncompliance, with an applicable requirement of the Acid Rain Program, including any applicable Acid Rain Part permit requirement.

(5) "Acid Rain Emissions Limitation" - The EPA-established sulfur dioxide and nitrogen oxides emissions limitations under the Federal Acid Rain Program.

(6) "Acid Rain Emissions Reduction Requirement" - Any EPA-established requirement to reduce the emissions of sulfur dioxide or nitrogen oxides from an Acid Rain unit to an EPA-specified level or by an EPA-specified percentage pursuant to the Federal Acid Rain Program.

(7) "Acid Rain Part" - That separate portion of the Title V source permit specifying the Federal Acid Rain Program requirements for an Acid Rain source, each Acid Rain unit at an Acid Rain source, and for the owners, operators and the designated representative of the Acid Rain source or the Acid Rain unit.

(8) "Acid Rain Program or Federal Acid Rain Program" - The national sulfur dioxide and nitrogen oxides air pollution control and emissions reduction

(66) "Coating" - The application of a protective, decorative, or functional film to a surface.

(67) "Coating Application System" - Any operations and equipment which apply, convey, and dry a surface coating, including spray booths, flow coaters, conveyors, flashoff areas, air dryers and ovens.

(68) "Coating Applicator" - An apparatus used to apply a surface coating to a surface.

(69) "Coating Line" - One or more apparatus or operations which include a coating applicator, flashoff area, and oven wherein a surface coating is applied, dried and/or cured.

(70) "Cogeneration Unit" - A unit having equipment used to produce, through the sequential use of energy, electric energy and forms of useful thermal energy for industrial, commercial, heating or cooling purposes.

(71) "Coil Coating" - The coating of any flat metal sheet or strip that comes in rolls or coils.

(72) "Cold Cleaning" - The batch process of cleaning and removing soils from metal surfaces by brushing, flushing or immersion while maintaining the solvent below its boiling point. Wipe cleaning is not included in this definition.

(73) "Cold Mixed Asphaltic Concrete Patching Material" - A mixture of asphalt cement, stone aggregate, and mineral filler blended together with a small amount of petroleum solvent (diluent). The diluent prevents the material from hardening after the heat of mixing has dissipated, thereby allowing stockpile storage of the material for use in pavement repairs when the use of hot asphaltic concrete is impractical.

(74) "Commence Commercial Operation" - For purposes of the Acid Rain Program, to begin to generate electricity for sale, including the sale of electricity generated during testing.

(75) "Commence Construction" - As applied to the construction or modification of a facility, means that the owner has all preconstruction permits and approvals required under federal air pollution control laws and

regulations and those air pollution control laws and regulations which are part of the State Implementation Plan (SIP) or which are part of Chapter 62-210 or 62-212, F.A.C. to the extent that the provisions of these laws and regulations specify conditions or requirements for obtaining a state construction permit for an emissions unit, and has:

(a) Begun, or caused to begin, a continuous program of actual on-site construction or physical modification of the facility, to be completed within a reasonable time; or

(b) Entered into binding agreements or contractual obligations, which cannot be cancelled or modified without substantial loss to the owner or operator, to undertake a program of actual construction or physical modification of the facility to be completed within a reasonable time; or

(c) Begun, or caused to begin, those on-site activities, other than preparatory activities, which mark the initiation of a change in the method of operation of the facility.

(76) "Commence Operation" -

(a) For purposes of the Acid Rain Program, to begin any mechanical, chemical, or electronic process, including start-up of an emissions control technology or emissions monitor or of an emissions unit's combustion chamber.

(b) Otherwise, to set into operation any emissions unit for any purpose.

(77) "Complete" - In reference to an application for a permit, means that the application contains all of the information necessary for processing the application, except as otherwise provided in Rule 62-213.420, F.A.C.

(78) "Compliance Subaccount" - The meaning as defined at 40 CFR 72.2, adopted and incorporated by reference in Rule 62-204.800, F.A.C.

(79) "Compliance Use Date" - The meaning as defined at 40 CFR 72.2, adopted and incorporated by reference in Rule 62-204.800, F.A.C.



November 19, 1996

RECEIVED

NOV 25 1996

BUREAU OF
AIR REGULATION

Mr. John C. Brown, P.E.
Administrator-Title V Programs
MS 5505
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Via FedEx Airbill No. 7748636276

**Re: Tampa Electric Company
Polk Power Station
AIRS No. 0530233
Title V Permit Application**

Dear Mr. Brown:

Tampa Electric Company (TEC) is in receipt of the Polk Power Station Title V applications your office returned. We have reviewed these applications and believe the latest version of ELSA (1.3.b) has been used. Therefore, enclosed please find the four (4) previously submitted copies of the electronic Title V permit application signed and sealed for the above referenced facility in accordance with 62-4.050 and 62-213.420, F.A.C. Also enclosed for your use, is one (1) hard copy of the Title V application for this source.

In addition, we spoke with Mr. Ed Svec of your office and have agreed the best course of action is to re-submit these applications. This will enable the Department and TEC to concurrently view these electronic forms to resolve any issues regarding the electronic submittal.

Please address any comments or concerns to me, as follows:

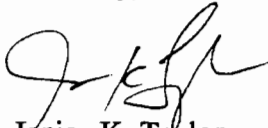
Tampa Electric Company
Janice K. Taylor
Senior Engineer
P.O. Box 111
Tampa, FL 33601-0111

Phone No. (813) 641-5039
Fax No. (813) 641-5081

Mr. John C. Brown, P.E.
November 19, 1996
Page 2 of 2

Thank you in advance for your consideration in this matter.

Sincerely,



Janice K. Taylor
Senior Engineer
Environmental Planning

Enclosures

c: Mr. Bruce Mitchell-FDEP
Mr. Ed Svec-FDEP

EP\gm\JKT777

12/4/96

cc: File
General/Fik



November 19, 1996

RECEIVED

NOV 20 1996

**BUREAU OF
AIR REGULATION**

Mr. John C. Brown, P.E.
Administrator-Title V Programs
MS 5505
Florida Department of Environmental Protection
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Tallahassee, FL 32399-2400

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Tampa Electric Company
Janice K. Taylor
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Phone No. (813) 641-5039
Fax No. (813) 641-5081

Mr. John C. Brown, P.E.
November 19, 1996
Page 2 of 2

Thank you in advance for your consideration in this matter.

Sincerely,

A handwritten signature in black ink, appearing to read 'J. K. Taylor', is written over the typed name.

Janice K. Taylor
Senior Engineer
Environmental Planning

Enclosures

c: Mr. Bruce Mitchell-FDEP
Mr. Ed Svec-FDEP

EPgm\JKT777



File

Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

October 31, 1996

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Charles A. Shelnut
General Manager
Tampa Electric Company
P. O. Box 775
Mulberry, Florida 33860-0775

Re: Title V Permit Application
File No. 1050233-001-AV
Tampa Electric Company Polk Power Station, Polk County

Dear Mr. Shelnut:

The Title V Section of the Bureau of Air Regulation received four sets of documents with diskettes on October 4, 1996. The documents were labeled as four copies of a Title V Operation Permit Application for the Polk Power Station. The diskettes were labeled as four copies of Electronic Submission of Application (ELSA) Version 1.3.1.

Rule 62-213.420(1)(b)1., F.A.C. states that any applicant for a Title V permit must submit an application on form number 62-210.900(1). This form is "Application for Air Permit - Long Form, Form and Instructions (Effective 3-21-96)". The instructions state: "The Department will also accept accurate hard-copy facsimiles of the Application for Air Permit or read-only data diskettes created by applicants or consultants; provided, however, that any diskette must be formatted in a manner prescribed by the Department and be accompanied by four hard copies of the Application Information Section of the form (Section I), including all signature pages." The current ELSA Version is 1.3.b and was released in June 1996.

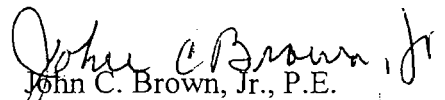
The diskettes submitted appear to be based on ELSA Version 1.2.1 and as such utilize a November 1994 version of the application form. The 1994 version of the application form does not address all of the requirements of the current form required by Rule 62-213.420(1)(b)1., F.A.C. and cannot be considered a submittal on form number 62-210.900(1).

Mr. Charles A. Shelnut
October 31, 1996
Page 2 of 2

For these reasons we are returning the submittal and request that it be resubmitted in the required format. For your convenience we have enclosed a copy of the current long form application, the instructions and a diskette with ELSA Version 1.3.b.

If you should have any questions, please call Bruce Mitchell or me at 904/488-1344.

Sincerely,


John C. Brown, Jr., P.E.
Administrator
Title V Section

JCB/es

copy to:
Thomas W. Davis, P.E., ECT
Bill Thomas, P.E., FDEP, SWD



RECEIVED

OCT 4 1996

BUREAU OF
AIR REGULATION

October 2, 1996

Mr. John C. Brown, P.E.
Administrator-Title V Programs
MS 5505
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Via FedEx Airbill No. 774863254

**Re: Tampa Electric Company
Polk Power Station
AIRS No. 0530233
Title V Permit Application**

Dear Mr. Brown:

Enclosed please find four (4) copies of the electronic Title V permit application signed and sealed for the above referenced facility in accordance with 62-4.050 and 62-213.420, F.A.C. Also enclosed for your use, is one (1) hard copy of the Title V application for this source.

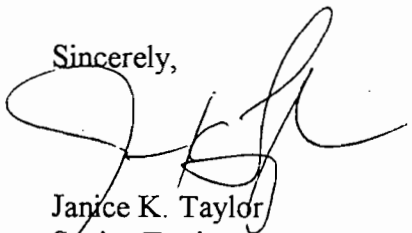
As indicated in the permit application, please address any comments or concerns to me, as follows:

Tampa Electric Company
Janice K. Taylor
Senior Engineer
P.O. Box 111
Tampa, FL 33601-0111

Phone No. (813) 228-4839
Fax No. (813) 228-4881

Thank you in advance for your consideration in this matter.

Sincerely,



Janice K. Taylor
Senior Engineer
Environmental Planning

Enclosures

EP\gm\JKT775

Appendix H-1, Permit History/ID Number Changes

Tampa Electric Company
Polk Power Station

[DRAFT/PROPOSED/FINAL]Permit No.: 1050233-001-AV
Facility ID No.: 1050233

Permit History (for tracking purposes):

E.U.

<u>ID No</u>	<u>Description</u>	<u>Permit No.</u>	<u>Issue Date</u>	<u>Expiration Date</u>	<u>Extended Date</u>	<u>Revised Date(s)</u>
-001	260 MW Coal Gasification Combined Cycle CT	PSD-FL-194 PA 92-32	02/28/94 1/27/94	6/1/96		2/22/95
-001	260 MW Coal Gasification Combined Cycle CT	PSD-FL- 194(A)	2/28/95	6/30/00		

(if applicable) ID Number Changes (for tracking purposes):

From: **Facility ID No.:** 40TPA050233

To: **Facility ID No.:** 1050233

Notes:

- 1 - AO permit(s) automatic extension(s) in Rule 62-210.300(2)(a)3.a., F.A.C., effective 03/21/96.
 - 2 - AC permit(s) automatic extension(s) in Rule 62-213.420(1)(a)4., F.A.C., effective 03/20/96.
- {Rule 62-213.420(1)(b)2., F.A.C., effective 03/20/96, allows Title V Sources to operate

STATE OF FLORIDA, DEP, BUREAU OF AIR REGULATION, TITLE V SECTION
TELEPHONE CONVERSATION RECORD

FUT.

Bryle ^{EP} Ed

TO: KL

FROM: SCOTT SHEPLAK

DATE: 07/09/97 TIME: ~4pm

WITH: Ms. Janice Taylor

REPRESENTING: TEC - Polk Power Partners

TELEPHONE NO.: 813/ 641-5039

SUBJECT:

TEC - Polk Power Partners

DRAFT Title V Permit No. : 10S0233-001-AV

SUMMARY: TEC - Polk Power Partners is considering whether or not they will submit a 90 day waiver for the subject permit.

The company's deadline to submit the Phase II acid rain application is 12/31/97. The subject facility was required to submit their Title V application because they are a 'new' Title V Source. If we were to issue the DRAFT Title V permit now the applicant would have to submit a revision later in the year for the Phase II acid rain cert.

Day 90 is August 3, 1997. The company plans to change the conditions of certification. The company plans to inform us of their decision by July 15.



Best Available Copy

TECO Polk Power Station

Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

February 28, 1995

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. G. F. Anderson
Tampa Electric Company
P. O. Box 111
Tampa, Florida 33601-0111

Dear Mr. Anderson:

RE: Amendment for a Modification to the Auxiliary Boiler
and Expiration Date Extension
PSD-FL-194 (A)

The Department received your requests of May 12 and June 9, 1994, to modify the auxiliary boiler by increasing the heat input rate, which will require changing some existing specific conditions, and to extend the expiration date of the PSD permit referenced below. The permit is amended as shown:

Permit No. PA-92-32, PSD-FL-194, Tampa Electric Company.

Current Expiration Date: June 1, 1996

New Expiration Date: June 30, 2000

The Department is also modifying the specific conditions as follows:

E. Auxiliary Boiler

The maximum heat input to the auxiliary boiler shall not exceed 49.5 120.0 MMBtu/hr when firing No. 2 fuel oil with 0.05 percent maximum sulfur content by weight. All fuel consumption must be continuously measured and recorded for the auxiliary boiler.

G. Fugitive Dust

Fugitive dust emissions during the construction period shall be minimized by covering or watering dust generation areas. Particulate matter emissions from the coal handling equipment shall be controlled by enclosing all coal storage, conveyors and conveyor

Mr. G. F. Anderson
February 28, 1995
Page 2 of 4

~~transfer points (except those directly associated with the coal stacker/reclaimer for which an enclosure is operationally infeasible).~~ Fugitive emissions shall be tested as specified in Condition No. J. ~~Inactive coal storage shall be shaped, compacted, and oriented to minimize wind erosion.~~ Water sprays or chemical wetting agents and stabilizers shall be applied to uncovered storage piles, roads, handling equipment, etc. during dry periods and, as necessary, to all facilities to maintain an opacity of less than or equal to five percent. ~~When adding, moving or removing coal from the coal pile, an opacity of 20 percent is allowed.~~

H. Emission Limits

1. The maximum allowable emissions from the IGCC combustion turbine, when firing syngas and low sulfur fuel oil, in accordance with the BACT determination, shall not exceed the following:

<u>Pollutant</u>	<u>Fuel</u>	<u>Basis</u>	<u>Emissions Limitations</u> 7F CT Postdemonstration <u>Period</u>	
			<u>lb/hr</u>	<u>tpv</u>
NO _x	Oil	42 ppmvd	311	N/A
	Syngas	25 ppmvd	222.5	17044
			220.25	1,032.9

I. Auxiliary Boiler Operation

Normal operation of the auxiliary boiler shall be limited to a maximum of 3,000 hours per year and only during periods of startup and shutdown of the IGCC unit, or when steam from the IGCC unit's heat recovery steam generator is unavailable. The auxiliary boiler may operate continuously (i.e. 8,760 hrs/yr) in the standby mode. The following emission limitations shall apply:

1. NO_x emissions shall not exceed 0.16 0.10 lbs/MMBtu for oil firing.
2. Sulfur dioxide emissions shall be limited by firing low sulfur oil with a maximum sulfur content of 0.05 percent by weight.
3. Visible emissions shall not exceed 20 percent opacity (6-minute average) (except for one six-minute period per hour during which opacity shall not exceed 27 percent), while burning low sulfur fuel oil.

L. Monitoring Requirements

1. IGCC Combustion Turbine

A continuous emission monitoring system (CEMS) shall be installed, operated and maintained in accordance with 40 CFR 60, Appendix F, for the combined cycle unit to monitor nitrogen oxides and a diluent gas (CO₂ or O₂). The applicant shall request that this condition of certification be amended to reflect the Federal Acid Rain Program requirements of 40 CFR 75, if applicable, when those requirements become effective within the state.

1- a Each CEMS shall meet the performance specifications of 40 CFR 60, Appendix B.

2- b CEMS data shall be recorded and reported in accordance with Rule Chapter 62-297.500, F.A.C.; 40 CFR 60; and, 40 CFR 75, if applicable. The record shall include periods of startup, shutdown, and malfunction.

3- c A malfunction means any sudden and unavoidable failure of air pollution control equipment or process equipment to operate in a normal or usual manner. Failures that are caused entirely or in part by poor maintenance, careless operation or any other preventable upset condition, or preventable equipment breakdown shall not be considered malfunctions.

4- d The procedures under 40 CFR 60.13 shall be followed for installation, evaluation, and operation of all CEMS.

5- e For purposes of the reports required under this permit, excess emissions are defined as any calculated average emission concentration, as determined pursuant to Condition No. H.4 herein, which exceeds the applicable emission limits in Condition No. H.1.

2. Auxiliary Boiler

A CEMS shall be installed, operated and maintained in accordance with 40 CFR 60, Appendix F, for the auxiliary boiler to monitor nitrogen oxides emissions and in accordance with 40 CFR 60.13 to monitor opacity.

a. The CEMS shall meet the performance specifications of 40 CFR 60, Appendix B.

Mr. G. F. Anderson
February 28, 1995
Page 4 of 4

b. CEMS data shall be recorded and reported in accordance with Rule 62-297.500, F.A.C., and 40 CFR 60. The record shall include periods of startup, shutdown and malfunction.

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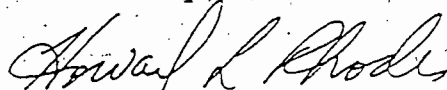
d. The procedures under 40 CFR 60.13 shall be followed for installation, evaluation, and operation of the CEMS.

N. Applicable Requirements

The project shall comply with all the applicable requirements of Chapters 62-212 and 62-4, F.A.C., and 40 CFR 60, Subparts A, Db and GG.

A copy of this letter shall be attached to the above mentioned permit, No. PSD-FL-194(A), and shall become a part of the permit.

Sincerely,



Howard L. Rhodes
Director
Division of Air Resources
Management

HLR/sa/b

cc: B. Thomas, SWD
J. Harper, EPA
J. Bunyak, NPS
H. Oven, PPS
T. Davis, P.E., ECT



Best Available Copy

Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

February 28, 1995

*Do you get the
idea I'm not
sure what is
the SOP for PSD's
KFW*

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

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Tampa Electric Company
P. O. Box 111
Tampa, Florida 33601-0111

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PSD-FL-194 (A)

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February 28, 1995
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<u>Pollutant</u>	<u>Fuel</u>	<u>Basis</u>	<u>Emissions Limitations</u> 7F CT Postdemonstration <u>Period</u>	
			<u>lb/hr</u>	<u>tpy</u>
NO _x	Oil	42 ppmvd	311	N/A
	Syngas	25 ppmvd	222.5	27044
			<u>220.25</u>	<u>1,032.9</u>

I. Auxiliary Boiler Operation

Normal operation of the auxiliary boiler shall be limited to a maximum of ~~2,000~~ 3,000 hours per year ~~and-only-during-periods-of startup-and-shutdown-of-the-IGCC-unit,-or-when-steam-from-the-IGCC unit's-heat-recovery-steam-generator-is-unavailable-~~ The auxiliary boiler may operate continuously (i.e. 8,760 hrs/yr) in the standby mode. The following emission limitations shall apply:

1. NO_x emissions shall not exceed ~~0.16~~ 0.10 lbs/MMBtu for oil firing.
2. Sulfur dioxide emissions shall be limited by firing low sulfur oil with a maximum sulfur content of 0.05 percent by weight.
3. Visible emissions shall not exceed 20 percent opacity (6-minute average) ~~(except for one six-minute period per hour during which opacity shall not exceed 27 percent),~~ while burning low sulfur fuel oil.

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1. IGCC Combustion Turbine

A continuous emission monitoring system (CEMS) shall be installed, operated and maintained in accordance with 40 CFR 60, Appendix F, for the combined cycle unit to monitor nitrogen oxides and a diluent gas (CO₂ or O₂). The applicant shall request that this condition of certification be amended to reflect the Federal Acid Rain Program requirements of 40 CFR 75, if applicable, when those requirements become effective within the state.

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3- c A malfunction means any sudden and unavoidable failure of air pollution control equipment or process equipment to operate in a normal or usual manner. Failures that are caused entirely or in part by poor maintenance, careless operation or any other preventable upset condition, or preventable equipment breakdown shall not be considered malfunctions.

4- d The procedures under 40 CFR 60.13 shall be followed for installation, evaluation, and operation of all CEMS.

5- e For purposes of the reports required under this permit, excess emissions are defined as any calculated average emission concentration, as determined pursuant to Condition No. H.4 herein, which exceeds the applicable emission limits in Condition No. H.1.

2. Auxiliary Boiler

A CEMS shall be installed, operated and maintained in accordance with 40 CFR 60, Appendix F, for the auxiliary boiler to monitor nitrogen oxides emissions and in accordance with 40 CFR 60.13 to monitor opacity.

a. The CEMS shall meet the performance specifications of 40 CFR 60, Appendix B.

Mr. G. F. Anderson
February 28, 1995
Page 4 of 4

b. CEMS data shall be recorded and reported in accordance with Rule 62-297.500, F.A.C., and 40 CFR 60. The record shall include periods of startup, shutdown and malfunction.

c. A malfunction means any sudden and unavoidable failure of air pollution control equipment or process equipment to operate in a normal or usual manner. Failures that are caused entirely or in part by poor maintenance, careless operation or any other preventable upset condition or preventable equipment breakdown shall not be considered malfunctions.

d. The procedures under 40 CFR 60.13 shall be followed for installation, evaluation, and operation of the CEMS.

N. Applicable Requirements

The project shall comply with all the applicable requirements of Chapters 62-212 and 62-4, F.A.C., and 40 CFR 60, Subparts A, Db and GG.

A copy of this letter shall be attached to the above mentioned permit, No. PSD-FL-194(A), and shall become a part of the permit.

Sincerely,



Howard L. Rhodes
Director
Division of Air Resources
Management

HLR/sa/b

cc: B. Thomas, SWD
J. Harper, EPA
J. Bunyak, NPS
H. Oven, PPS
T. Davis, P.E., ECT

Final Determination

The permit amendment to reflect modifications and extension of the expiration date for Tampa Electric Company's 260 MW integrated coal gasification combined cycle source, located in Polk county, Florida, was distributed on November 16, 1994. The Notice of Intent to Issue was published in the Lakeland Ledger on December 3, 1994. Copies of the amendment were available for public inspection at the Department offices in Tampa and Tallahassee.

No comments were submitted by the National Park Service, U.S. Environmental Protection Agency or the applicant.

The final action of the Department will be to issue the permit amendment as proposed.

Memorandum

Florida Department of
Environmental Protection

TO: Howard L. Rhodes
FROM: Al Linero *Al Linero 3/2*
DATE: March 2, 1995
SUBJECT: Modifications and Extension to TECO Polk Power
Station (PA92-32A)

Attached for your review and approval is an amendment modifying the subject PSD permit. A final order modifying the certification conditions for the TECO Polk Power Station was signed by the Secretary's office on February 20, 1995. Through the attached, we are modifying the PSD permit to reflect those changes.

The changes consist of a date extension to the year 2000, a larger auxiliary boiler, replacement of coal piles with silos, and slightly lower NOx emissions.

This project involves construction/operation of a 260 MW combined cycle power plant which is phase 1 on an ultimate 1150 MW integrated coal gasification combined cycle facility.

AL/t

Attachments

BEFORE THE STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

In Re: TAMPA ELECTRIC COMPANY	)	
POLK POWER STATION	)	
MODIFICATION OF CONDITIONS	)	
OF CERTIFICATION PA 92-32	)	DEP CASE NO. PA 92-32A
POLK COUNTY, FLORIDA	)	OGC CASE NO. 92-1399

FINAL ORDER MODIFYING CONDITIONS
OF CERTIFICATION

On January 26, 1994, the Governor and Cabinet, acting as the Siting Board, issued a final order approving certification for the Tampa Electric Company (TEC) Polk Power Station Project. That certification order approved the construction and operation of a 260 MW (net) first phase of an ultimate 1150 MW capacity, integrated coal gasification combined cycle (IGCC) facility and associated facilities to be located in Polk County, Florida.

On May 12, 1994 and September 9, 1994, TEC filed requests to modify the conditions of certification pursuant to section 403.516(1)(b), Florida Statutes (F.S.). TEC requested that the conditions be modified to approve changes to the plant design, layout, and operating conditions. The changes include increases in size and operating parameters for the auxiliary boiler, replacement of uncovered coal piles with coal silos, decreased NOx emission limits for the IGCC combustion turbine, revised monitoring requirements for the auxiliary boiler, and updating of applicable regulatory requirements.

Copies of TEC's request were distributed to all parties to the certification proceeding and made available for public review. On December 23, 1994, a Notice of Proposed Modification of Power Plant Certification regarding the proposed modifications was published in the Florida Administrative Weekly. TEC published notice of the proposed modification in the Tampa Tribune and Lakeland Ledger on December 3, 1994. The notice specified that a hearing would be held if requested on or before 45 days from receipt of the proposed modification by the parties or within 30 days of publication of the notice. No written objection to the proposed modification was received by the Department.

Accordingly, in the absence of any timely objection,

IT IS ORDERED:

The proposed changes to the TEC Polk Power Station , described in the May 12, and September 9, 1994 requests for modification, are **APPROVED**. Pursuant to Section 403.516(1)(b), F.S. the Department hereby **MODIFIES** the conditions of certification for the Polk Power Station as follows:

XIII. AIR

E. Auxiliary Boiler

The maximum heat input to the auxiliary boiler shall not exceed ~~49.5~~ 120.0 MMBtu/hr when firing No. 2 fuel oil with 0.05 percent maximum sulfur content by weight. All fuel consumption must be continuously measured and recorded for the auxiliary boiler.

G. Fugitive Dust

Fugitive dust emission during the construction period shall be minimized by covering or watering dust generation areas. Particulate matter emissions from the coal handling equipment shall be controlled by enclosing all coal storage, conveyors and conveyor transfer points ~~(except those directly associated with the coal stacker reclaimer for which an enclosure is operationally infeasible).~~ Fugitive emissions shall be tested as specified in Condition No. XIII.J. ~~Inactive coal storage shall be shaped, compacted, and oriented to minimize wind erosion. Water sprays or chemical wetting agents and stabilizers shall be applied to uncovered storage piles, roads, handling equipment, etc. during dry periods and, as necessary, to all facilities to maintain an opacity of less than or equal to five percent. When adding, moving or removing coal from the coal pile, an opacity of 20 percent is allowed.~~

H. Emission Limits

1. The maximum allowable emissions from the IGCC combustion turbine, when firing syngas and low sulfur fuel oil, in accordance with the BACT determination, shall not exceed the following:

Emission Limitations 7F CT Post demonstration <u>Period</u>				
<u>Pollutant</u>	<u>Fuel</u>	<u>Basis</u>	<u>lb/hr</u>	<u>tpy</u>
NOx	Oil	42 ppmvd	311	N/A
	Syngas	25 ppmvd	~~222.5~~	~~1,044~~
			<u>220.25</u>	<u>1,032.9</u>

I. Auxiliary Boiler Operation

Normal operation of the auxiliary boiler shall be limited to a maximum of ~~1,000~~ 3,000 hours per year ~~and only during periods of startup and shutdown of the IGCC unit, or when steam from the IGCC unit's heat recovery steam generator is unavailable.~~ The auxiliary boiler may operate continuously (i.e. 8,760 hrs/yr) in the standby mode. The following emission limitations shall apply:

1. NOx emissions shall not exceed ~~0.16~~ 0.10 lbs/MMBtu for oil firing.
2. Sulfur dioxide emissions shall be limited by firing low sulfur oil with a maximum sulfur content of 0.05 percent by weight.
3. Visible emissions shall not exceed 20 percent opacity (6-minute average) (except for one six-minute period per hour during which opacity shall not exceed 27 percent), while burning low sulfur fuel oil.

L. Monitoring Requirements

1. IGCC Combustion Turbine

A continuous emission monitoring system (CEMS) shall be installed, operated and maintained in accordance with 40 CFR 60, Appendix F, for the combined cycle unit to monitor nitrogen oxides and a diluent gas (CO₂ or O₂). The applicant shall request that this condition of certification be amended to reflect the Federal Acid Rain Program requirements of 40 CFR 75, if applicable, when these requirements become effective within the state.

~~4~~ a. Each CEMS shall meet the performance specifications of 40 CFR 60, Appendix B.

~~2~~ b. CEMS data shall be recorded and reported in accordance with Chapter 62-297.500, F.A.C., 40 CFR 60 and 40 CFR 75, if applicable. The record shall include periods of startup, shutdown, and malfunction.

~~3~~ c. A malfunction means any sudden and unavoidable failure of air pollution control equipment or process equipment to operate in a normal or usual manner. Failures that are caused entirely or in part by poor maintenance, careless operation or any other preventable upset condition or preventable equipment breakdown shall not be considered malfunctions.

~~4~~ d. The procedures under 40 CFR 60.13 shall be followed for installation, evaluation, and operation of all CEMS.

~~5~~ e. For purposes of the reports required under this certification, excess emissions are defined as any calculated average emission concentration, as determined pursuant to Condition No. XIII.H.4 herein, which exceeds the applicable emission limits in Condition No. XIII.H.1.

2. Auxiliary Boiler

A CEM shall be installed, operated and maintained in accordance with 40 CFR 60, Appendix F, for the auxiliary boiler to monitor nitrogen oxides emissions and in accordance with 40 CFR 60.13 to monitor opacity.

- a. The CEMS shall meet the performance specifications of 40 CFR 60, Appendix B.
- b. CEMS data shall be recorded and reported in accordance with Rule 62-297.500, F.A.C., and 40 CFR 60. The record shall include periods of startup, shutdown and malfunction.
- c. A malfunction means any sudden and unavoidable failure of air pollution control equipment or process equipment to operate in a normal or usual manner. Failures that are caused entirely or in part by poor maintenance, careless operation or any other preventable upset condition or preventable equipment breakdown shall not be considered malfunctions.
- d. The procedures under 40 CFR 60.13 shall be followed for installation, evaluation, and operation of the CEMS.

N. Applicable Requirements

The project shall comply with all the applicable requirements of Chapters 62-212 and 62-4, F.A.C., and 40 CFR 60, Subparts A, Db and GG.

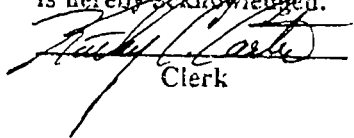
Any party to this Order has the right to seek judicial review of the Order pursuant to Section 120.68, Florida Statutes, by the filing of Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the clerk of the Department of Environmental Protection in the Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date that the Final Order is filed with the Department of Environmental Protection.

DONE AND ENTERED this 20th day of February, 1995 in Tallahassee, Florida.

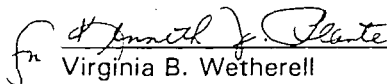
STATE OF FLORIDA, DEPARTMENT
OF ENVIRONMENTAL PROTECTION

FILING AND ACKNOWLEDGEMENT

FILED, on this date, pursuant to S120.52 Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.


Clerk

2-22-95
Date


Virginia B. Wetherell
Secretary
3900 Commonwealth Boulevard
Tallahassee, FL 32399-3000
Telephone: (904) 488-4805

CERTIFICATE OF SERVICE

I DO HEREBY certify that a true and correct copy of the foregoing has been sent by U.S. Mail to the following listed persons:

Lawrence N Curtin
Attorney at Law
Holland & Knight
P.O. Drawer 810
Tallahassee, FL 32302

Karen Brodeen
Assistant General Counsel
Dept. of Community Affairs ✓
2740 Centerview Drive
Tallahassee, FL 32399-0850

Michael Palecki, Chief ✓
Bureau of Electric & Gas
Florida Public Service Commission
101 East Gaines Street
Tallahassee, FL 32399-0850

Carolyn S. Holifield, Chief ✓
Dept. of Transportation
605 Suwannee Street, M.S. 58
Tallahassee, FL 32399-0458

Doug Leonard, Executive Director
Ralph Artigliere, Attorney at Law
Central Florida Regional Planning
Council
409 E. Davidson Street
P.O. Box 2089
Bartow, FL 33830

Julia Greene, Executive Director ✓
Tampa Bay Regional Planning
Council
9455 Koger Blvd.
St. Petersburg, FL 33702

John J. Dingfelder
Assistant County Attorney
Hillsborough County
P.O. Box 1110
Tampa, FL 33601-1110

Mark Carpanini
Attorney at Law
Office of County Attorney ✓
P.O. Box 60
Bartow, FL 33830-0060

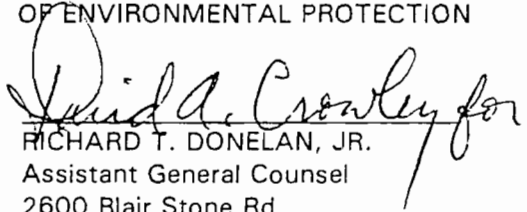
Martin D. Hernandez
Richard Tschantz
Assistant General Counsels
Southwest Florida Water Management
District
2370 Broad Street
Brooksville, FL 34609-6899

James Antista, General Counsel
Florida Game and Fresh Water Fish
Commission
Bryant Building
620 South Meridian Street
Tallahassee, FL 32399-1600

Sara M. Fotopulos
Chief Counsel
Environmental Protection Commission
of Hillsborough County
1900 Ninth Avenue
Tampa, FL 33605

this 22 day of February, 1995.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION


RICHARD T. DONELAN, JR.
Assistant General Counsel
2600 Blair Stone Rd.
Tallahassee, FL 32399-2400
(904) 488-9314

Law Offices

HOLLAND & KNIGHT

A Partnership Including Professional Corporations

315 South Calhoun Street
Suite 600
P.O. Drawer 810 (ZIP 32302-0810)
Tallahassee, Florida 32301

904-224-7000
FAX 904-224-8832

December 16, 1994

Atlanta	Orlando
Fort Lauderdale	St. Petersburg
Jacksonville	Tampa
Lakeland	Washington, D.C.
Miami	West Palm Beach

RECEIVED

DEC 19 1994

Mr. C. H. Fancy, P.E.
Chief, Bureau of Air Regulation
Department of Environmental
Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Bureau of
Air Regulation

Re: PSD-FL-194(A) Polk County -- Polk Power
Station

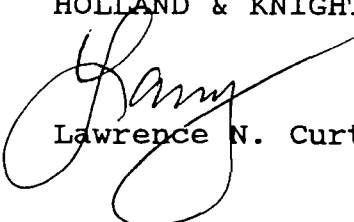
Dear Clair:

Attached for your files is the affidavit of publication of the Notice of Intent to Issue Permit Amendment for PSD-FL-194(A), concerning Tampa Electric Company's Polk Power Station. The Notice was published in the December 3, 1994, edition of The Lakeland Ledger.

Please let me know if you have any questions or require additional information.

Sincerely,

HOLLAND & KNIGHT


Lawrence N. Curtin

Attachment
cc w/o att:

Mr. Greg Nelson
Mr. Steve Jenkins

LNC/mrh
TAL-54885

S. Kirk
P. Allen
D. Hines
D. Hines
C. Smith

AFFIDAVIT OF PUBLICATION

THE LEDGER Lakeland, Polk County, Florida

Case No.

STATE OF FLORIDA)
COUNTY OF POLK)

Before the undersigned authority personally appeared Robert Lee, who on oath says that he is Classified Manager of The Ledger, a daily newspaper published in Polk County, Florida; that the attached copy of advertisement, being a

~~Notice of Intent to Issue Permit~~

in the matter of

PSD-FL-194 (A)

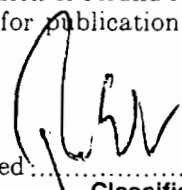
in the

Court, was published in said newspaper in the issues of

December 3;

1994

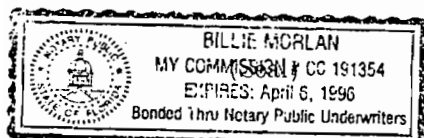
Affiant further says that said The Ledger is a newspaper published at Lakeland, in said Polk County, Florida, and that the said newspaper has heretofore been continuously published in said Polk County, Florida, daily, and has been entered as second class matter at the post office in Lakeland, in said Polk County, Florida, for a period of one year next preceding the first publication of the attached copy of advertisement; and affiant further says that he has neither paid nor promised any person, firm or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper.

Signed 
Classified Advertising Manager

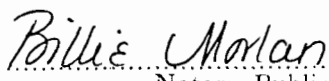
by Robert E. Lee who is
personally known to me

Sworn to and subscribed before me this 3rd

day of December A.D. 19 94



My Commission Expires
Holland & Knight
Acct. 12610


Notary Public

BILLIE MORLAN

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION NOTICE OF INTENT TO ISSUE PERMIT AMENDMENT PSD-FL-194(A)

The Department of Environmental Protection (Department) gives notice of its intent to issue a permit amendment to Tampa Electric Company, Post Office Box 1111, Tampa, Florida 33601-0111, to reflect modifications to the affected source and an extension of the expiration date. This facility consists of a 260 megawatt (net) integrated coal gasification combined cycle (IGCC) source located approximately 13 miles southwest of Bartow, Polk County, Florida. The modifications include the following: increasing the size and operating parameters of the auxiliary boiler; replacement of uncovered coal piles with coal silos; decreasing NOx emission limits for the IGCC combustion turbine; monitoring requirements for the auxiliary boiler; and, updating of applicable regulatory requirements. Modeling results show that increases in ground-level concentrations are less than Prevention of Significant Deterioration (PSD) significant impact levels. These emissions will not cause or contribute to a violation of any ambient air quality standards or PSD increment.

A person whose substantial interests are affected by the Department's proposed permitting decision (amendment) may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes (F.S.). The petition must contain the information set forth below and must be filed (received) in the office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within 14 days of publication of this notice. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, F.S.

The Petition shall contain the following information: (a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed; (b) a statement of how and when each petitioner received notice of the Department's action or proposed action; (c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action; (d) A statement of the material facts disputed by Petitioner, if any; (e) A statement of facts which petitioner contends warrants reversal or modification of the Department's action or proposed action; (f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and, (g) A statement of the relief sought by the petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this Notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the application/request have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, Florida Administrative Code.

The application/requests are available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays at:

Department of Environmental Protection
Bureau of Air Regulation
111 S. Magnolia Drive, Suite 4
Tallahassee, Florida 32301

Department of Environmental Protection
Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619-8218

Any person may send written comments on the proposed action to Mr. John Brown at the Department of Environmental Protection, Bureau of Air Regulation, Mail Station 5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. All comments received within 14 days of the publication of this notice will be considered in the Department's final determination.

K264-12-3: 1994

K264

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

CERTIFIED MAIL

In the Matter of an
Application for Permit Amendment:

DEP File No. PSD-FL-194(A)
Polk County

Mr. G. F. Anderson
Tampa Electric Company
Post Office Box 111
Tampa, Florida 33601-0111

INTENT TO ISSUE

The Department of Environmental Protection (Department) hereby gives notice of its intent to issue a permit amendment for a modification (copy attached) for the proposed project as detailed in the application/request specified, above, for the reasons stated in the application/request.

The applicant, Tampa Electric Company, applied on May 12 and June 9, 1994, to the Department for a permit amendment for a modification to the coal gasification combined cycle source's permit and to extend the expiration date. The facility is located in Polk County.

The Department has permitting jurisdiction under the provisions of Chapter 403, Florida Statutes (F.S.), and Chapters 62-212 and 62-4, Florida Administrative Code (F.A.C.). The project is not exempt from permitting procedures. The Department has determined that a permit amendment is required for the proposed work.

Pursuant to Section 403.815, F.S. and Rule 62-103.150, F.A.C., you (the applicant) are required to publish at your own expense the enclosed Notice of Intent to Issue Permit Amendment. The notice shall be published one time only within 30 days in the legal ad section of a newspaper of general circulation in the area affected. For the purpose of this rule, "publication in a newspaper of general circulation in the area affected" means publication in a newspaper meeting the requirements of Sections 50.011 and 50.031, F.S., in the county where the activity is to take place. The applicant shall provide proof of publication to the Department's Bureau of Air Regulation, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within seven days of publication. Failure to publish the notice and provide proof of publication within the allotted time may result in the denial of the permit amendment.

The Department will issue the permit amendment with the attached conditions unless a petition for an administrative proceeding (hearing) is filed pursuant to the provisions of Section 120.57, F.S.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Petitions filed by the permit amendment applicant and the parties listed below must be filed within 14 days of receipt of this intent. Petitions filed by other persons must be filed within 14 days of publication of the public notice or within 14 days of their receipt of this intent, whichever first occurs. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, F.S.

The Petition shall contain the following information;

(a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;

(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;

(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;

(d) A statement of the material facts disputed by Petitioner, if any;

(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;

(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and,

(g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this intent. Persons whose substantial interests will be affected by any decision of the Department with regard to the application/request have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of receipt

of this intent in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION


C. H. Fancy, P.E., Chief
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399
904-488-1344

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this INTENT TO ISSUE PERMIT AMENDMENT and all copies were mailed by certified mail before the close of business on 11-16-94 to the listed persons.

Clerk Stamp

FILING AND ACKNOWLEDGMENT
FILED, on this date, pursuant to §120.52(11), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.


Clerk

11-16-94
Date

Copies furnished to:

cc: B. Thomas, SWD
J. Harper, EPA
J. Bunyak, NPS
H. Oven, PPS
L. Novak, Polk County
T. Davis, P.E., ECT

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NOTICE OF INTENT TO ISSUE PERMIT AMENDMENT

PSD-FL-194(A)

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A person whose substantial interests are affected by the Department's proposed permitting decision (amendment) may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes (F.S.). The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within 14 days of publication of this notice. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, F.S.

The Petition shall contain the following information; (a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed; (b) A statement of how and when each petitioner received notice of the Department's action or proposed action; (c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action; (d) A statement of the material facts disputed by Petitioner, if any; (e) A statement of facts which petitioner

contends warrant reversal or modification of the Department's action or proposed action; (f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and, (g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this Notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the application/request have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, Florida Administrative Code.

The application/requests are available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Department of Environmental Protection
Bureau of Air Regulation
111 S. Magnolia Drive, Suite 4
Tallahassee, Florida 32301

Department of Environmental Protection
Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619-8218

Any person may send written comments on the proposed action to Mr. John Brown at the Department of Environmental Protection, Bureau of Air Regulation, Mail Station 5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. All comments received within 14 days of the publication of this notice will be considered in the Department's final determination.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NOTICE OF PERMIT

In the matter of an
Application for Permit by:

DEP File No. PSD-FL-194
Polk County

Mr. G. F. Anderson
Tampa Electric Company
P. O. Box 111
Tampa, FL 33601-0111

Enclosed is Permit Number PSD-FL-194 to construct a power plant facility at County Road 630 approximately 13 miles southwest of Bartow, Polk County, Florida, issued pursuant to Section (s) 403, Florida Statutes.

Any party to this Order (permit) has the right to seek judicial review of the permit pursuant to Section 120.68, Florida Statutes, by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date this Notice is filed with the Clerk of the Department.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

C. H. Fancy
C. H. Fancy, P.E., Chief
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400
904-488-1344

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this NOTICE OF PERMIT and all copies were mailed before the close of business on

2/23/94

to the listed persons.

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED,
on this date, pursuant to
§120.52(11), Florida Statutes,
with the designated Department
Clerk, receipt of which is hereby
acknowledged.

Cynthia A. Doyle 2/25/94
(Clerk) (Date)

Copies furnished to:

W. Thomas, SWD
D. Martin, Polk Co.
J. Harper, EPA
J. Bunyak, NPS
L. Curtin, Holland & Knight

The enclosed front of article RETURN RECEIPT
 is to be returned to the number.
 Delivery restricted to the addressee, or to an authorized agent of the addressee,

Final Determination

Tampa Electric Company
Polk County, Florida

260 MW INTEGRATED COAL GASIFICATION
COMBINED CYCLE UNIT

File No: PSD-FL-194
PA-92-32

Department of Environmental Protection
Division of Air Resources Management
Bureau of Air Regulation

February 17, 1994

Final Determination

The Technical Evaluation and Preliminary Determination for the permits to construct a 260 megawatt (MW) integrated coal gasification combined cycle (IGCC) combustion turbine, coal gasification facilities, an auxiliary boiler and a fuel oil storage tank at an electrical power plant site in Bartow, Polk County, Florida, was distributed on December 20, 1993. The Notice of Intent to Issue was published in the Tampa Tribune on December 27, 1993. Copies of the evaluation were available for public inspection at the Department offices in Tampa and Tallahassee.

No adverse comments on the evaluation and proposed permits were submitted by the National Park Service (NPS) and the U.S. Environmental Protection Agency (EPA) in their letters dated January 27 and January 26, 1994 respectively.

Tampa Electric Company submitted comments on the Technical Evaluation and Preliminary Determination for the Polk Power Station. The applicant noted that the fuel bound nitrogen adjustment should also apply to oil firing during the two year hot gas clean up demonstration period. The Department agrees with the applicant's comment, and includes the language in the permit to reflect that.

The final action of the Department will be to issue the PSD permit (PSD-FL-194) with the changes noted above.



Florida Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

PERMITTEE:
Tampa Electric Company
702 North Franklin Street
Tampa, Florida 33602

Permit Number: PA-92-32
PSD-FL-194
Expiration Date: June 1, 1996
County: Polk
Latitude/Longitude: 27°43'43"N
81°59'23"W
Project: 260 MW Integrated Coal
Gasification Combined
Cycle Combustion Turbine

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Chapters 17-212 and 17-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawings, plans, and other documents attached hereto or on file with the Department and specifically described as follows:

For one 260 MW integrated coal gasification combined cycle (IGCC) combustion turbine (GE 7F CT or equivalent) with maximum heat input at 59°F of 1,755 MMBtu/hr (syngas) and 1765 MMBtu/hr (oil) to be located at the Polk County site near Bowling Green, Florida. The coal gasification facility will consist of coal receiving, storage and process facilities, air separation unit, gasifier, product gas cleaning facilities, acid gas removal unit, and auxiliary equipment. The first phase will also include a 49.5 MMBtu/hr auxiliary boiler and a 71,450 barrel fuel oil storage tank.

The source shall be constructed in accordance with the permit application, plans, documents, amendments and drawings, except as otherwise noted in the General and Specific Conditions.

Attachments are listed below:

1. Tampa Electric Company (TECO) application received July 30, 1992.
2. Department's letter dated September 22, 1992.
3. TECO's letter dated April 12, 1993.

PERMITTEE:
Tampa Electric Company

Permit Number: PA-92-32
PSD-FL-194
Expiration Date: June 1, 1996

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.
2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.
3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.
4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgement of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.
5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.
6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

PERMITTEE:
Tampa Electric Company

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GENERAL CONDITIONS:

7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:

- a. Have access to and copy any records that must be kept under the conditions of the permit;
- b. Inspect the facility, equipment, practices, or operations regulated or required under this permit; and
- c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

- a. A description of and cause of non-compliance; and
- b. The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.73 and 403.111, Florida Statutes. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

PERMITTEE:
Tampa Electric Company

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GENERAL CONDITIONS:

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 17-4.120 and 17-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

12. This permit or a copy thereof shall be kept at the work site of the permitted activity.

13. This permit also constitutes:

- (X) Determination of Best Available Control Technology (BACT)
- (X) Determination of Prevention of Significant Deterioration (PSD)
- (X) Compliance with New Source Performance Standards (NSPS)

14. The permittee shall comply with the following:

- a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.
- b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.

PERMITTEE:
Tampa Electric Company

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GENERAL CONDITIONS:

c. Records of monitoring information shall include:

- the date, exact place, and time of sampling or measurements;
- the person responsible for performing the sampling or measurements;
- the dates analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and
- the results of such analyses.

15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

SPECIFIC CONDITIONS:

A. Operation and Construction

The construction and operation of Polk Power Station (Project) shall be in accordance with all applicable provisions of Chapter 17, F.A.C. The following emission limitations reflect final BACT determinations for Phase I (integrated gasification, combined cycle (IGCC) combustion turbine and auxiliary equipment) of the project fired with syngas or fuel oil. BACT determinations for the remaining phases will be made upon review of supplemental applications. In addition to the foregoing, the Project shall comply with the following conditions of certification as indicated.

B. Heat Input

The maximum heat input to the IGCC combustion turbine (CT) shall neither exceed 1,755 MMBtu/hr while firing syngas, nor 1765 MMBtu/hr while firing No. 2 fuel oil at an ambient temperature of 59° F. Heat input may vary depending on ambient conditions and the CT characteristics. Manufacturer's curves for the heat input correction to other temperatures shall be provided to DEP for review 120 days after the siting board approval of the site certification. Subject to approval by the Department, the manufacturer's curve may be used to establish heat input rates over a range of temperature for the purpose of compliance determination.

PERMITTEE:
Tampa Electric Company

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SPECIFIC CONDITIONS:

C. Hours of Operation

The IGCC unit in Phase I may operate continuously, i.e., 8,760 hrs/year.

D. Fuel

Only syngas and low sulfur fuel oil shall be fired in the IGCC combustion turbine. Only low sulfur fuel oil shall be fired in the auxiliary boiler. The maximum sulfur content of the low sulfur fuel oil shall not exceed 0.05 percent, by weight.

E. Auxiliary Boiler

The maximum heat input to the auxiliary boiler shall not exceed 49.5 MMBtu/hr when firing No. 2 fuel oil with 0.05 percent maximum sulfur content (by weight). All fuel consumption must be continuously measured and recorded for the auxiliary boiler.

F. Fuel Consumption

The maximum coal input to the coal gasification plant shall not exceed 2,325 tons per day, on a dry basis.

G. Fugitive Dust

Fugitive dust emissions during the construction period shall be minimized by covering or watering dust generation areas. Particulate emissions from the coal handling shall be controlled by enclosing all conveyors and conveyor transfer points (except those directly associated with the coal stacker/reclaimer for which an enclosure is operationally infeasible). Fugitive emissions shall be tested as specified in Specific Condition No. J. Inactive coal storage piles shall be shaped, compacted, and oriented to minimize wind erosion. Water sprays or chemical wetting agents and stabilizers shall be applied to uncovered storage piles, roads, handling equipment, etc. during dry periods and, as necessary, to all facilities to maintain an opacity of less than or equal to five percent. When adding, moving or removing coal from the coal pile, an opacity of 20 percent is allowed.

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Tampa Electric Company

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SPECIFIC CONDITIONS:

H. Emission Limits

1. The maximum allowable emissions from the IGCC combustion turbine, when firing syngas and low sulfur fuel oil, in accordance with the BACT determination, shall not exceed the following:

<u>POLLUTANT</u>		<u>EMISSIONS LIMITATIONS - 7F CT</u>		
		<u>Post Demonstration Period</u>		
	<u>FUEL</u>	<u>BASIS^a</u>	<u>LB/HR*</u>	<u>TPY^b</u>
NOx	Oil	42 ppmvd**	311	N/A
	Syngas	25 ppmvd	222.5	1,044
VOC ^c	Oil	0.028 lb/MMBtu	32	N/A
	Syngas	0.0017 lb/MMBtu	3	38.5
CO	Oil	40 ppmvd	99	N/A
	Syngas	25 ppmvd	98	430.1
PM/PM ₁₀ ^d	Oil	0.009 lb/MMBtu	17	N/A
	Syngas	0.013 lb/MMBtu	17	74.5
Pb	Oil	5.30E-5 lb/MMBtu	0.101	N/A
	Syngas	2.41E-6 lb/MMBtu	0.0035	0.067
SO ₂	Oil	0.048 lb/MMBtu	92.2	N/A
	Syngas	0.17 lb/MMBtu	357	1563.7
Visible Emissions		Syngas 10 percent opacity		
		Oil 20 percent opacity		

(*) Emission limitations in lbs/hr are 30-day rolling averages. "Pollutant emission rates may vary depending on ambient conditions and the CT characteristics. Manufacturer's curves for the emission rate correction to other temperatures at different loads shall be provided to DEP for review 120 days after the siting board approval of the site certification. Subject to approval by the Department, the manufacturer's curve may be used to establish pollutant emission rates over a range of temperature for the purpose of compliance determination."

(**) The emission limit for NO_x is adjusted as follows for higher fuel bound nitrogen contents up to a maximum of 0.030 percent by weight:

PERMITTEE:
Tampa Electric Company

Permit Number: PA-92-32
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Expiration Date: June 1, 1996

SPECIFIC CONDITIONS:

<u>FUEL BOUND NITROGEN</u> <u>(% by weight)</u>	<u>NO_x EMISSION LEVELS</u> <u>(ppmvd @ 15% O₂)</u>
0.015 or less	42
0.020	44
0.025	46
0.030	48

using the formula $STD = 0.0042 + F$ where:

STD = allowable NO_x emissions (% by volume at 15% O₂ and on a dry basis).

F = NO_x emission allowance for FBN defined by the following table:

<u>FUEL BOUND NITROGEN</u> <u>(% by weight)</u>	<u>F (NO_x % BY VOLUME)</u>
0 < N < 0.015	0
0.015 < N < 0.03	0.04 (N-0.015)

N = nitrogen content of the fuel (% by weight).

NO_x emissions are preliminary for the fuel oil specified in Specific Condition D of Conditions of Certification. The permittee shall submit fuel bound nitrogen content data for the low sulfur fuel oil prior to commercial operation to the Bureau of Air Regulation in Tallahassee, and on each occasion that fuel oil is transferred to the storage tanks from any other source to the Southwest District office in Tampa. The % FBN (Z) following each delivery of fuel shall be determined by the following equation:

$$x(Y) + m(n) = (x+m) (Z)$$

where x = amount fuel in storage tank
y = % FBN in storage tank
m = amount fuel added
n = % FBN of fuel added
Z = % FBN of composite

- (a) Syngas lb/MMBtu values based on heat input (HHV) to coal gasifier and includes emissions from H₂SO₄ plant thermal oxidizer. Pollutant concentrations in ppmvd are corrected to 15% oxygen.
- (b) Annual emission limits (TPY) based on 10 percent annual capacity factor firing fuel oil.

$$\frac{\text{Load (\%)}}{100} \times \text{hours of operation} \leq 876 \text{ for fuel oil.}$$

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SPECIFIC CONDITIONS:

- (c) Exclusive of background concentrations.
- (d) Excluding sulfuric acid mist.

2. The maximum allowable emissions from the IGCC combustion turbine, when firing syngas and No. 2 fuel oil during the two year demonstration period, shall not exceed the following:

<u>EMISSIONS LIMITATIONS</u>			
<u>POLLUTANT</u>	<u>FUEL</u>	<u>7FCT</u>	<u>TPY^a</u>
		<u>LB/HR*</u>	
NO _x	Oil**	311	N/A
	Syngas	664.2	2,908.3
VOC ^b	Oil	32	N/A
	Syngas	3	38.5
CO	Oil	99	N/A
	Syngas	99	430.1
PM/PM ₁₀ ^c	Oil	17	N/A
	Syngas	17	74.5
Pb	Oil	0.101	N/A
	Syngas	0.023	0.13
SO ₂	Oil	92.2	N/A
	Syngas	518	2,269
Visible Emissions		Syngas 10 percent opacity	
		Oil 20 percent opacity	

(*) Emission limitations in lbs/hr are 30-day rolling averages.

(**) Footnote ** as shown in Specific Condition H.1. for fuel bound nitrogen adjustment also applies to oil firing during the Demonstration Period.

(a) Annual emission limits (TPY) based on 10-percent annual capacity factor firing No. 2 fuel oil.

$$\frac{\text{Load (\%)}}{100} \times \text{hours of operation} \leq 876 \text{ for oil.}$$

- (b) Exclusive of background concentrations.
- (c) Excluding sulfuric acid mist.

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Tampa Electric Company

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SPECIFIC CONDITIONS:

3. The following allowable turbine emissions, were determined by BACT, and are also tabulated for PSD and inventory purposes:

ALLOWABLE EMISSIONS

<u>POLLUTANT</u>	<u>FUEL</u>	<u>IGCC</u>		<u>IGCC</u>	
		<u>POST DEMONSTRATION</u>		<u>2-YEAR DEMONSTRATION</u>	
		<u>LB/HR</u>	<u>TPY^a</u>	<u>LB/HR</u>	<u>TPY^b</u>
Sulfuric Acid ^c	Syngas	55	241	55	241
Inorganic Arsenic	Syngas	0.0006	0.019	0.08	0.35
Beryllium	Syngas	0.0001	0.0029	0.0001	0.0029
Mercury	Syngas	0.0034	0.017	0.025	0.11

- (a) Based on baseload operations firing syngas, with emission rates equivalent to 100 percent CGCU operations; up to 10 percent annual capacity factor firing fuel oil.
- (b) Based on baseload operations firing syngas, with a maximum of 8760 hrs/yr of HGCU operations; up to 10 percent annual capacity factor firing fuel oil.
- (c) Sulfuric acid mist emissions assume a maximum of 0.05 percent sulfur in the fuel oil.

4. Excess emissions from the turbine resulting from startup, shutdown, malfunction, or load change shall be acceptable providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess emissions shall be minimized but in no case exceed two hours in any 24-hour period unless specifically authorized by the Department for a longer duration. Best operating practices shall be documented in writing and a copy submitted to the Department along with the initial compliance test data. The document may be updated as needed with all updates submitted to the Department within thirty (30) days of implementation and shall include time limitations on excess emissions caused by turbine startup.

5. After the demonstration period, permittee shall operate the combustion turbine to achieve the lowest possible NO_x emission limit but shall not exceed 25 ppmvd corrected to 15% oxygen and ISO conditions.

PERMITTEE:
Tampa Electric Company

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6. The combustion turbine will be operated for 12-18 months after the demonstration period (estimated to be from Mid 1998 until December 31, 1999). During that period NO_x emission testing will be performed on the turbine at a regular interval of every 2 months. The Department shall be provided with a test protocol including a time schedule 15 days prior to the initial test. The permittee will provide the Department the emission test results 30 days after the test is performed. These results are not for compliance purposes. The Department shall be notified and the reasons provided if a scheduled test is delayed or canceled.

7. One month after the test period ends (estimated to be by February 2000), the permittee will submit to the Department a NO_x recommended BACT Determination as if it were a new source using the data gathered on this facility, other similar facilities and the manufacturer's research. The Department will make a determination on the BACT for NO_x only and adjust the NO_x emission limits accordingly.

I. Auxiliary Boiler Operation

Operation of the auxiliary boiler shall be limited to a maximum of 1,000 hours per year and only during periods of startup and shutdown of the IGCC unit, or when steam from the IGCC unit's heat recovery steam generator is unavailable. The following emission limitations shall apply:

1. NO_x emissions shall not exceed 0.16 lbs/MMBtu for oil firing.

2. Sulfur dioxide emissions shall be limited by firing low sulfur fuel oil with a maximum sulfur content of 0.05 percent by weight.

3. Visible emissions shall not exceed 20 percent opacity (except for one six-minute period per hour during which opacity shall not exceed 27 percent), while burning low sulfur fuel oil.

J. Performance Testing

Initial (I) compliance tests shall be performed on the turbine using both fuels and on the auxiliary boiler using fuel oil. The stack test for the turbine and the auxiliary boiler shall be performed with the sources operating at capacity (maximum heat rate input for the tested operating temperature). Capacity is defined as 90 - 100 percent of permitted capacity. If it is impracticable to test at capacity, then sources may be tested at less than capacity; in this case subsequent source operation is limited to 110 percent of the test load until a new test is conducted. Once the unit is so limited, then operation at higher capacities is allowed for no more than fifteen consecutive days for purposes of

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SPECIFIC CONDITIONS:

additional compliance testing to regain the rated capacity in the permit, with prior notification to the Department. Annual (A) compliance tests shall be performed on the turbine and the auxiliary boiler with the fuel(s) used for more than 400 hours in the preceding 12-month period. Tests for the applicable emission limitations shall be conducted using EPA reference methods in accordance with 40 CFR 60, Appendix A, as adopted by reference in Rule 17-297, F.A.C., and the requirements of 40 CFR 75:

1. Combustion Turbine

- a. Reference Method 5B for PM (I, A, for oil only).
- b. Reference Method 8 for sulfuric acid mist (I, for oil only).
- c. Reference Method 9 for VE (I, A).
- d. Reference Method 10 for CO (I, A).
- e. Reference Method 20 for NO_x (I, A).
- f. Reference Method 18 for VOC (I, A).
- g. Trace elements of Lead (Pb), Beryllium (Be) and Arsenic (As) shall be tested (I, for oil only) using Emission Measurement Technical Information Center (EMTIC) Interim Test Methods. As an alternative, Method 104 for Beryllium (Be) may be used; or Be and Pb may be determined from fuel analysis using either Method 7090 or 7091, and sample extraction using Method 3040 as described in the EPA solid waste regulations SW 846.
- h. ASTM D 2880-71 (or equivalent) for sulfur content of distillate oil (I,A).
- i. ASTM D 1072-80, D 3031-81, D 4084-82, or D 3246-81 for sulfur content of natural gas (I, and A if deemed necessary by DEP).
- j. Reference Method 22 for fugitive emissions (I,A).

2. Auxiliary Boiler

- a. Reference Method 9 of VE (I,A).
- b. ASTM D 2880-71 (or equivalent) for sulfur content of distillate oil (I,A).

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SPECIFIC CONDITIONS:

c. Reference Methods 7, 7A, 7C, 7D, or 7E for NO_x (I,A).

Other DEP approved methods may be used for compliance testing after prior departmental approval.

K. Sulfur Content of Fuel

The maximum sulfur content of the low sulfur fuel oil shall not exceed 0.05 percent by weight. Compliance shall be demonstrated in accordance with the requirements of 40 CFR 60.334 by testing for sulfur content of the fuel oil in the storage tanks once per day when firing oil. Testing for fuel oil heating value, shall also be conducted on the same schedule.

L. Monitoring Requirements

A continuous emission monitoring system (CEMS) shall be installed, operated, and maintained in accordance with 40 CFR 60, Appendix F, for the combined cycle unit to monitor nitrogen oxides and a diluent gas (CO₂ or O₂). The applicant shall request that this condition of certification be amended to reflect the Federal Acid Rain Program requirements of 40 CFR 75 when those requirements become effective within the state.

1. Each CEMS shall meet performance specifications of 40 CFR 60, Appendix B.

2. CEMS data shall be recorded and reported in accordance with Chapter 17-297.500, F.A.C., 40 CFR 60 and 40 CFR 75. The record shall include periods of startup, shutdown, and malfunction.

3. A malfunction means any sudden and unavoidable failure of air pollution control equipment or process equipment to operate in a normal or usual manner. Failures that are caused entirely or in part by poor maintenance, careless operation or any other preventable upset condition or preventable equipment breakdown shall not be considered malfunctions.

4. The procedures under 40 CFR 60.13 shall be followed for installation, evaluation, and operation of all CEMS.

5. For purposes of the reports required under this permit, excess emissions are defined as any calculated average emission concentration, as determined pursuant to Specific Condition No. H.4. herein, which exceeds the applicable emission limits in Condition No. H.1.

PERMITTEE:
Tampa Electric Company

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SPECIFIC CONDITIONS:

M. Notification, Reporting and Recordkeeping

To determine compliance with the syngas and fuel oil firing heat input limitation, the permittee shall maintain daily records of syngas and fuel oil consumption for the turbine and the heating value for each fuel. All records shall be maintained for a minimum of two years after the date of each record and shall be made available to representatives of the Department upon request.

N. Applicable Requirements

The project shall comply with all the applicable requirements of Chapters 17-209 through 17-297, F.A.C., and 40 CFR 60 Subparts A and GG. The requirements shall include:

1. 40 CFR 60.7(a)(1) - By postmarking or delivering notification of the start of construction no more than 30 days after such date.

2. 40 CFR 60.7(a)(2) - By postmarking or delivering notification of the anticipated date of the initial startup of each turbine and the auxiliary boiler not more than 60 days nor less than 30 days prior to such date.

3. 40 CFR 60.7(a)(3) - By postmarking or delivering notification of the actual startup of each turbine and the auxiliary boiler within 15 days of such date.

4. 40 CFR 60.7(a)(5) - By postmarking or delivering notification of the date for demonstrating the CEMSS performance, no less than 30 days prior to such date.

5. 40 CFR 60.7(a)(6) - By postmarking or delivering notification of the anticipated date for conducting the opacity observations no less than 30 days prior to such date.

6. 40 CFR 60.7(b) - By initiating a recordkeeping system to record the occurrence and duration of any startup, shutdown or malfunction of a turbine and the auxiliary boiler, of the air pollution control equipment, and when the CEMS is inoperable.

7. 40 CFR 60.7(c) - By postmarking or delivering a quarterly excess emissions and monitoring system performance report within 30 days of the end of each calendar quarter. This report shall contain the information specified in 40 CFR 60.7(c) and (d).

8. 40 CFR 60.8(a) - By conducting all performance tests within 60 days after achieving the maximum turbine and boiler firing rates, but not more than 180 days after the initial startup of each turbine and the auxiliary boiler.

PERMITTEE:
Tampa Electric Company

Permit Number: PA-92-32
PSD-FL-194
Expiration Date: June 1, 1996

SPECIFIC CONDITIONS:

9. 40 CFR 60.8(d) - By postmarking or delivering notification of the date of each performance test required by this permit at least 30 days prior to the test date; and,

10. 17-297.345 - By providing stack sampling facilities for the combustion turbine and the auxiliary boiler.

All notifications and reports required by this specific condition shall be submitted to the Department's Air Program, within the Southwest District office. Performance test results shall be submitted within 45 days of completion of such test.

O. Submission of Reports

The following information shall be submitted to the Department's Bureau of Air Regulation within 12 months of issuance of this permit:

1. Description of the final selection of the turbine and the auxiliary boiler to be installed at the facility. Descriptions shall include the specific make and model numbers, any changes in the proposed method of operation, fuels, emissions or equipment.

2. Description of the CEMS selected. Description shall include the type of sensors, the manufacturer and model number of the equipment.

3. If construction has not commenced within 18 months of issuance of this permit, then the permittee shall obtain from DEP a review and, if necessary, a modification of the BACT determination and allowable emissions for the unit(s) on which construction has not commenced [40 CFR 52.21(r)(2)]. Units to be constructed or modified in later phases of the project will be reviewed and limitations revisited under the supplementary review process of the Power Plant Siting Act.

P. Protocols

The following protocols shall be submitted to the Department's Air Program, within the Southwest District office, for approval:

1. CEMS Protocol - Within 60 days of selection of the CEMS, but prior to the initial startup, a CEMS protocol describing the system, its installation, operating and maintenance characteristics and requirements. The Department shall approve the protocol provided that the system and the protocol meet the requirements of 40 CFR 60.13, 60.334, Appendix B and Appendix F. This condition of certification shall be amended to reflect the Federal Acid Rain Program requirements of 40 CFR 75 when those requirements become effective within the State.

PERMITTEE:
Tampa Electric Company

Permit Number: PA-92-32
PSD-FL-194
Expiration Date: June 1, 1996

SPECIFIC CONDITIONS:

2. Performance Test Protocol - At least 90 days prior to conducting the initial performance tests required by this permit, the permittee shall submit to the Department's Air Program, within the Southwest District office, a protocol outlining the procedures to be followed, the test methods and any differences between the reference methods and the test methods proposed to be used to verify compliance with the conditions of this permit. The Department shall approve the testing protocol provided that it meets the requirements of this permit.

Q. Modifications

The permittee shall give written notification to the Department when there is any modification to this facility. This notice shall be submitted sufficiently in advance of any critical date involved to allow sufficient time for review, discussion, and revision of plans, if necessary. Such notice shall include, but not be limited to, information describing the precise nature of the change; modifications to any emission control system; production capacity of the facility before and after the change; and the anticipated completion date of the change.

Issued this 24th day
of February, 1994

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

Virginia B. Wetherell
Virginia B. Wetherell, Secretary

Best Available Control Technology (BACT) Determination
Tampa Electric Company

Polk County
PSD-FL-194
PA-92-32

The applicant is proposing to construct, in phases, a 1,150 MW power plant in Polk County. The proposed facilities will be known as the Tampa Electric Company Polk Power Station. The first phase will consist of an Integrated Coal Gasification Combined Cycle (IGCC) unit with heat recovery steam generator (HRSG) and steam turbine (ST) for a nominal net 260 MW IGCC unit. The coal-fueled advanced CT will be capable of baseload operations (i.e., 100 percent capacity factor) on syngas, while retaining the option to fire fuel oil as backup (maximum 10 percent capacity factor). Units proposed to be added at Polk Power Station include two combined cycle (CC) units totaling 440 MW (nominal) and six simple cycle (SC) CTs totaling 450 MW (nominal). All of these units will be fired with natural gas as the primary fuel and No. 2 fuel oil as backup. The phased schedule for construction and operation of the proposed generating units at the Polk Power Station is presented in Table 1.

Table 1

Proposed Schedule for Construction and Operation of Generating Units
for ultimate capacity at the Polk Power Station Site

Activity/Unit	Start Construction	Completion/ In-Service
Advanced CT, CG & HRSG/ST for 260-MW IGCC unit ^a	First Half 1994	July 1995
75-MW CT	April 1998	January 1999
75-MW CT	April 1999	January 2000
HRSG/ST for conversion of two 75-MW CTs for 220-MW CC unit	April 2000	January 2001
75-MW CT	April 2001	January 2002
220-MW CC	April 2001	January 2003
75-MW CT	April 2005	January 2006
75-MW CT	April 2006	January 2007
75-MW CT	April 2007	January 2008
75-MW CT	April 2008	January 2009
75-MW CT	April 2009	January 2010

^a - 220 MW when fired on fuel oil and operated in CC mode.

The IGCC unit will be supported in part through funding from the U.S. Department of Energy (DOE) under the Clean Coal Technology Demonstration Program. Under the program, the IGCC unit will be used to demonstrate the integration of coal gasification (CG) and CC technologies and to demonstrate a more efficient method for removal of sulfur from syngas. The new cleanup technology is called hot gas clean up (HGCU). Conventional methods for sulfur removal for IGCC units require that the gas be cooled prior to cleaning, called cold gas cleanup (CGCU), and then reheated. By comparison, the HGCU technology efficiently cleans the gas at high temperatures, thereby increasing the overall plant efficiency. Under the agreement with DOE, Tampa Electric Company will demonstrate the HGCU system for a 2-year period.

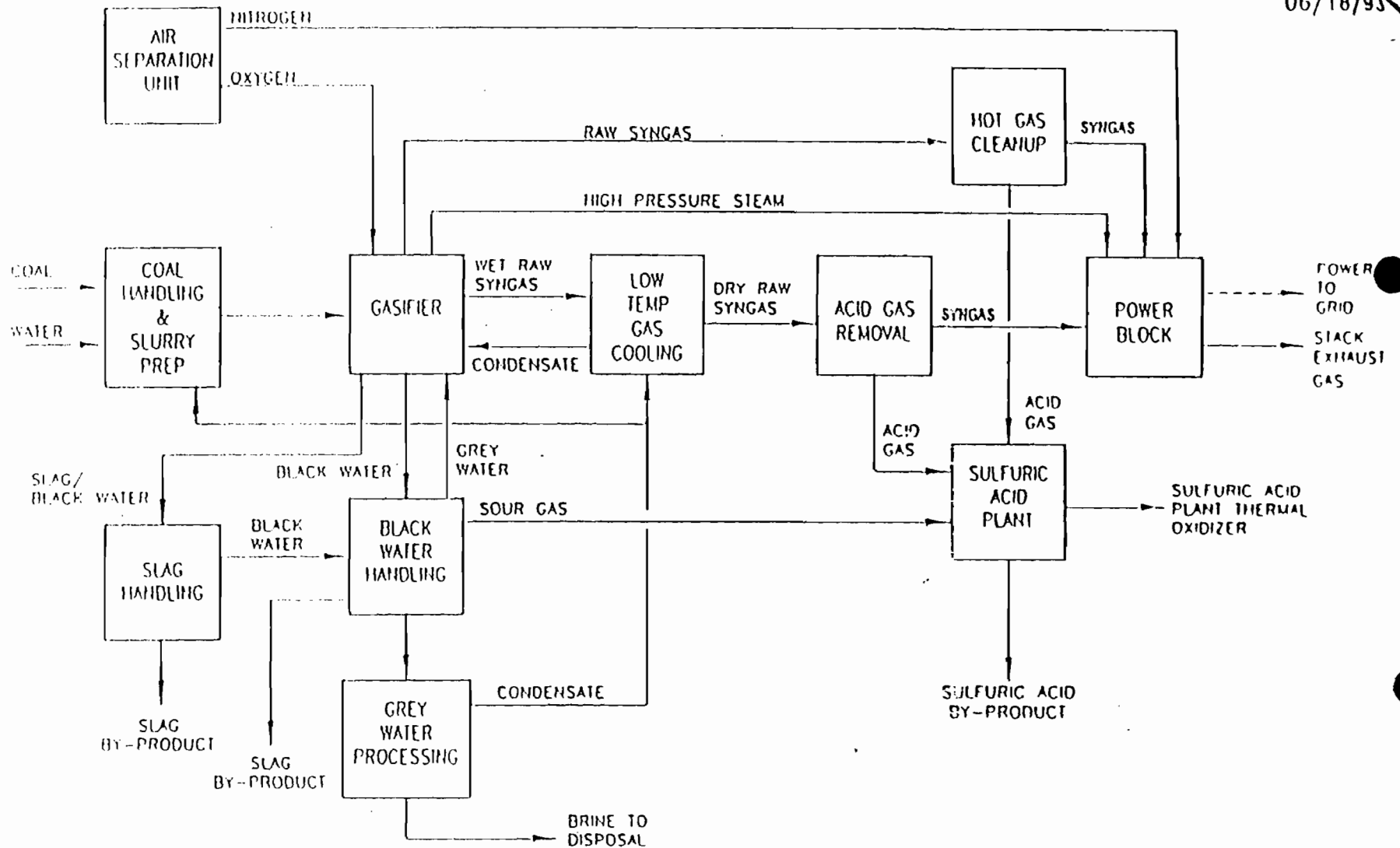
The projected maximum tonnage of regulated air pollutants emitted from the proposed facility based on a 100 percent capacity factor and 8,760 hours per year are shown in Table 2. A simplified flow chart for the operation of the IGCC systems at the site is attached (Figures 1 - 3).

Table 2

Projected Maximum Annual Emissions (tpy)
 for ultimate site capacity

Pollutant	IGCC ^a	+	CC ^b	+	SC ^c	=	Total	Significance Rate (tpy)
=====								
PM (TSP)	399		260		246		905	25
PM (PM ₁₀)	399		260		246		905	15
SO ₂	2469		720		654		3843	40
NO _x	2923		1308		1014		5245	40
CO	453		1092		978		2523	100
VOC	45		180		168		393	40
Pb	0.15		0.28		0.17		0.6	0.6
H ₂ SO ₄	241		80		72		393	7
Fluorides	0.92		0.17		0.10		1.2	3
Hg	0.12		0.21		0.19		0.5	0.1
Be	0.007		0.013		0.008		0.03	0.0004
Total reduced sulfur (including H ₂ S)	6.2		0		0		6.2	10

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06/18/93



2-8

FIGURE 2-2.

GENERALIZED FLOW DIAGRAM OF IGCC SYSTEMS AND PROCESS

Source: ECT, 1993.



POLK
POWER
STATION

FIGURE 2

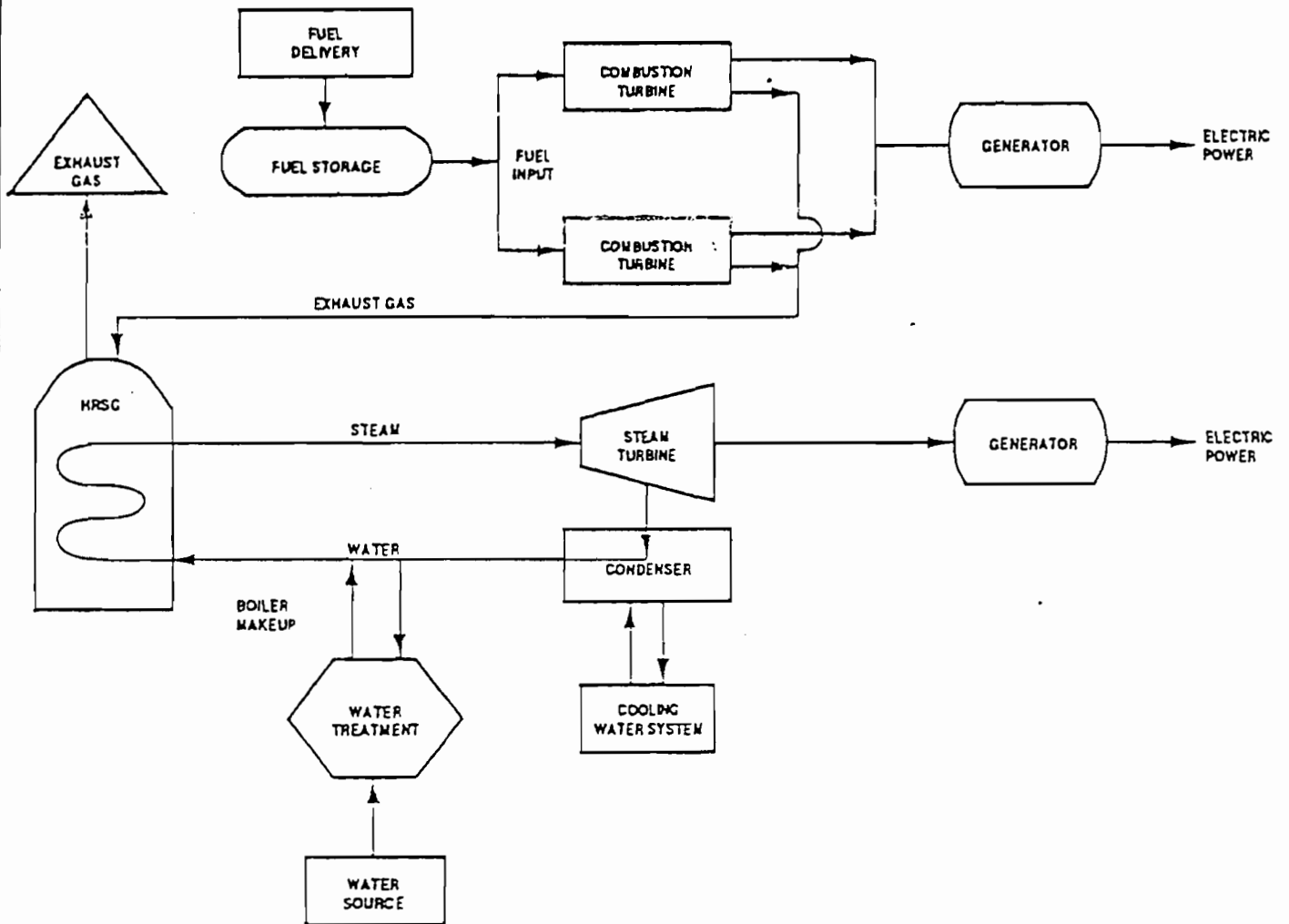


FIGURE 1.5.2-1.

SIMPLIFIED FLOW DIAGRAM OF COMBINED CYCLE POWER SYSTEM

Source: ECT, 1992.



POLK
POWER
STATION

FIGURE 3

1.5.3-4

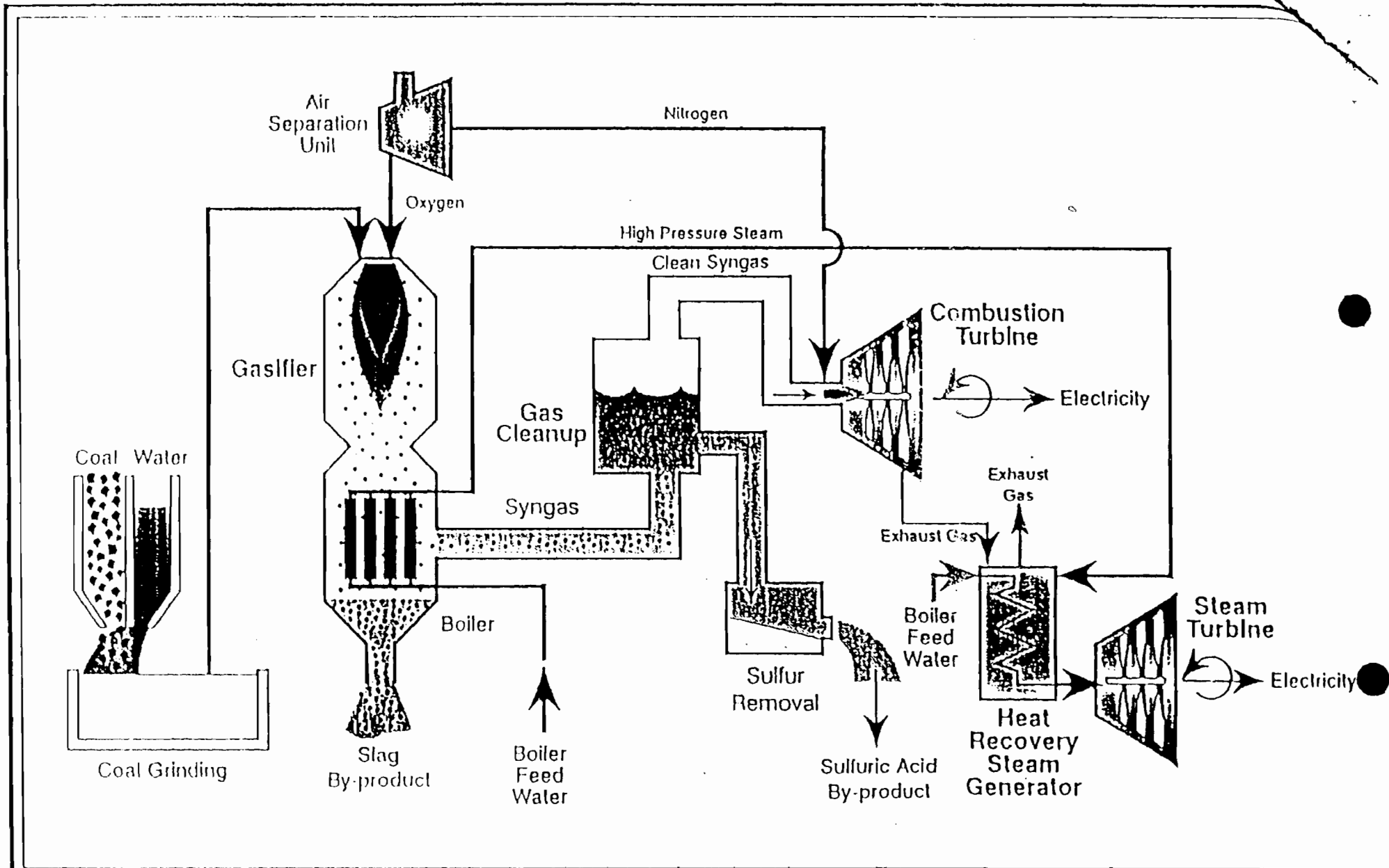


FIGURE 1.5.3-1.

SIMPLIFIED FLOW DIAGRAM OF INTEGRATED COAL GASIFICATION COMBINED CYCLE UNIT

Source: Texaco, 1992. Tampa Electric Company, 1992.



POLK
POWER
STATION

- a - IGCC emissions include the highest annual emissions estimates from the 7F CT (based on the larger of 100 percent CGCU or 50/50 CGCU/HGCU), plus related combustion emissions (e.g., thermal oxidizer), plus other associated process and fugitive emissions (PM, CO, VOC, and H₂S).
- b - CC emissions represent the totals for four stand-alone CTs in CC mode.
- c - SC emission represent the totals for six stand-alone CTs in simple cycle mode.

The proposed facility will also include one 49.5 MMBtu/hr auxiliary boiler fired with low sulfur (0.05% or less by weight) distillate fuel oil. The auxiliary boiler will operate only during startup and shutdown of the IGCC unit, or when steam from the IGCC unit's HRSG is unavailable. The auxiliary boiler will operate a maximum of 1,000 hours per year.

The coal gasification facility will serve as a source of medium Btu, low sulfur (0.07% or less, by weight, sulfur bearing compounds) coal-derived gas. The coal used in the gasification facility will have a maximum sulfur content of 3.05% and have a minimum heating value of approximately 11,035 Btu/lb. The coal gasification plant will consist of coal receiving, storage and process facilities, air separation unit, gasifier, product gas cleaning facilities, acid gas removal unit, and auxiliary equipment. The coal gasification unit will have two stacks, one flare stack used during startup, shutdown and emergency conditions and one thermal oxidation unit stack which will be used continuously.

The applicant has indicated the maximum tonnage of regulated air pollutants emitted from the IGCC unit CT during the initial phase, demonstration and post demonstration periods to be as shown in Table 3.

Table 3

Maximum Annual Emissions from IGCC Unit CT for Various Operating Configurations

Pollutant	Demonstration Period (tpy) ^a	Post-Demonstration Period (tpy) ^b
PM ^c	74.5	74.5
SO ₂	2,269	1,564
NO _x	2,908	1,044
CO	430	430
VOC	38.5	38.5

H ₂ SO ₄	241	241
Pb	0.13	0.067
Fluorides	0.92	0.92
Hg	0.11	0.017
Be	0.0029	0.0029

-
- a - Based on baseload operations firing syngas, with a maximum of 8,760 hr/yr utilization of H₂CU and up to 10 percent annual capacity factor firing fuel oil.
 - b - Based on baseload operations firing syngas, with emission rates equivalent to 100 percent CGCU operations; up to 10 percent annual capacity factor firing fuel oil.
 - c - Excluding sulfuric acid mist.

Florida Administrative Code Rule 17-212.400 requires a BACT review for all regulated pollutants emitted in an amount equal to or greater than the significant emission rates listed in Table 1.

Date of Receipt of A BACT Application

September 21, 1992

BACT Determination Requested by the Applicant

<u>Combined Cycle Units</u>	
<u>Pollutant</u>	<u>Determination</u>
NO _x	9 ppmvd (NG) 25 ppmvd (Syngas firing) 42 ppmvd (No. 2 fuel oil firing)
SO ₂	Firing of NG or Syngas Fuel oil with a maximum sulfur content of 0.05 % by weight, 0.048 lb/MMBtu
CO	Combustion control 25 ppmvd (NG) 40 ppmvd (No. 2 fuel oil firing) 25 ppmvd (Syngas firing)
VOC	Combustion control 7 ppmvd (NG) 7 ppmvd (No. 2 fuel oil firing) 1 ppmvd (Syngas firing)

Particulates	Good combustion, and type of fuels fired
Pb	Good combustion, and type of fuels fired
H ₂ SO ₄	Firing of NG, Syngas and No. 2 fuel oil
Be	Firing of NG, Syngas and No. 2 fuel oil
AS	Firing of NG, Syngas and No. 2 fuel oil

Coal Gasification Plant

Raw Product Gas

<u>Pollutant</u>	<u>Control Technology</u>
Sulfur	Acid Gas Removal (95.6%)
Particulates	Water scrubbing

The raw product gas is fired in the combined cycle combustion turbine units and emissions of product gas are included in the BACT determination for those units.

CG Emission (Thermal Oxidizer)

<u>Pollutant</u>	<u>Control Technology</u>
SO ₂	Fuel oil firing with a sulfur content not to exceed 0.05% by weight. (45.3 lb/hr)
NO _x	Combustion controls
CO	Combustion controls
Pb	Efficient Operation
H ₂ SO ₄	Efficient Operation
Mercury	Efficient Operation
Beryllium	Efficient Operation
Inorganic Arsenic	Efficient Operation

Materials Handling and Storage

Fugitive Dust Source

Control Technology

Coal Unloading

Enclosed - including a Collection System

Conveyers and Transfer Points
(Coal, Slag)

Transfer points enclosed with Collection System. Conveyers enclosed

Coal Storage and Reclaiming

Crusting Agent Application
Wet Suppression Systems or
Crusting Agents
Surfactant Application¹

Fuel Oil Storage

Bottom Loaded/Submerged Filling

Auxiliary Boiler

NO_x

Low NO_x Burners and Combustion Controls, limited operation²
(0.159 lb/MMBtu)

SO₂

Fuel oil firing with a sulfur content not to exceed 0.05 % by weight, and limited operation
(0.053 lb/MMBtu)

CO

Combustion Controls (0.087 lb/MMBtu)

VO_C

Combustion Controls (0.0485 lb/MMBtu)

Particulates

Combustion Controls (0.061 lb/MMBtu)

Pb

Combustion Controls

Mercury

Combustion Controls

Beryllium

Combustion Controls

Inorganic Arsenic

Combustion Controls

1 - Total Coal Handling Sources PM Emissions are 11.2 tpy

2 - Maximum of 1000 hours of operation per year

Annual pollutant emissions are shown in Table 2 for all sources. Pollutant emission rates are listed in the section entitled "BACT Determination by DEP".

Flare Stacks

This source did not propose a BACT since its operation is expected to be infrequent (startup and shutdown, and emergencies).

BACT Determination Procedure

In accordance with Florida Administrative Code Chapter 17-296, Stationary Sources - Emission Standards, this BACT determination is based on the maximum degree of reduction of each pollutant emitted which the Department, on a case-by-case basis, taking into account energy, environmental and economic impacts, and other costs, determines is achievable through application of production processes and available methods, systems, and techniques. In addition, the regulations state that in making the BACT determination the Department shall give consideration to:

- (a) Any Environmental Protection Agency determination of Best Available Control Technology pursuant to Section 169, and any emission limitation contained in 40 CFR Part 60 (Standards of Performance for New Stationary Sources) or 40 CFR Part 61 (National Emission Standards for Hazardous Air Pollutants).
- (b) All scientific, engineering, and technical material and other information available to the Department.
- (c) The emission limiting standards or BACT determinations of any other state.
- (d) The social and economic impact of the application of such technology.

The EPA currently stresses that BACT should be determined using the "top-down" approach. The first step in this approach is to determine for the emission source in question the most stringent control available for a similar or identical source or source category. If it is shown that this level of control is technically or economically infeasible for the source in question, then the next most stringent level of control is determined and similarly evaluated. This process continues until the BACT level under consideration cannot be eliminated by any substantial or unique technical, environmental, or economic objections.

The air pollutant emissions from combined cycle power plants and coal fired power plants can be grouped into categories based upon what control equipment and techniques are available to control emissions from these facilities. Using this approach, the emissions can be classified as follows:

- o Combustion Products (Particulates and Heavy Metals). Controlled generally by good combustion of clean fuels and/or fabric filters.
- o Products of Incomplete Combustion (CO, VOC, Toxic Organic Compounds). Control is largely achieved by proper combustion techniques.
- o Acid Gases (SO_x, NO_x, HCL, Fl). Controlled generally by gaseous control devices.

Grouping the pollutants in this manner facilitates the BACT analysis because it enables the equipment available to control the type or group of pollutants emitted and the corresponding energy, economic, and environmental impacts to be examined on a common basis. Although all of the pollutants addressed in the BACT analysis may be subject to a specific emission limiting standard as a result of PSD review, the control of "nonregulated" air pollutants is considered in imposing a more stringent BACT limit on a "regulated" pollutant (i.e., particulates, sulfur dioxide, fluorides, sulfuric acid mist, etc.), if a reduction in "nonregulated" air pollutants can be directly attributed to the control device selected as BACT for the abatement of the "regulated" pollutants.

Combustion Products

The IGCC facility's projected emissions for combustion products (Particulate Matter (PM) and trace heavy metals) exceed the significant emission rates given in Florida Administrative Code Rule 17-212.410, Table 212.400-2. A review of the BACT/LAER Clearinghouse indicates that the proposed PM/PM₁₀ emission level of 0.013 lbs/MMBtu (excluding H₂SO₄) for syngas for the IGCC unit is consistent with the particulate limit for recent determinations of coal fired boilers. The applicant proposed PM/PM₁₀ emission level of 0.009 lbs/MMBtu for No. 2 oil firing for the IGCC unit is consistent with previous BACT determinations in Florida.

In general, the BACT/LAER Clearinghouse does not contain specific emission limits for beryllium, mercury and arsenic from turbines. BACT for heavy metals is typically represented by the level of particulate control. The emission factors for PM/PM₁₀ when firing the IGCC with syngas and No. 2 fuel oil are judged to represent BACT for beryllium, arsenic and mercury.

PM/PM₁₀ emissions are controlled for the auxiliary boiler by firing with No. 2 fuel oil with a sulfur concentration not to exceed 0.05%, by weight. This fuel sulfur level is consistent with recent BACT determinations for similar facilities.

Products of Incomplete Combustion

The emissions of carbon monoxide, volatile organic compounds and other organics from combustion turbines are largely dependent upon the completeness of combustion and the type of fuel used. The applicant has indicated that the carbon monoxide emissions from the proposed turbines are based on exhaust concentrations of 25 ppmvd for syngas and 30 ppmvd for No. 2 fuel oil. Volatile organic compound emissions have been based on exhaust concentrations of 7 and 1 ppmvd for fuel oil firing and syngas, respectively.

A review of the BACT/LAER clearinghouse indicates that several of the largest combustion turbines (those with heat inputs greater than 1,000 MMBtu/hour) have been permitted with CO limitations which are similar to those proposed by the applicant. For VOC, the clearinghouse also indicates that the proposed emissions are consistent with that established for other turbines of similar size, thereby suggesting that the proposed emission levels for both CO and VOC are reasonable. Although the majority of BACT emissions limitations have been based on combustion controls for carbon monoxide and volatile organic compounds minimization, additional control is achievable through the use of catalytic oxidation.

Catalytic oxidation is a post-combustion control that has been employed in CO nonattainment areas where regulations have required CO emission levels to be less than those associated with wet injection for NO_x control. These installations have been required to utilize LAER technology, and typically have CO limits in the 10 ppm range (corrected to dry conditions).

In an oxidation catalyst control system, CO emissions are reduced by allowing unburned CO to react with oxygen at the surface of a precious metal catalyst such as platinum. Combustion of CO starts at about 300°F, with efficiencies above 90 percent occurring at temperatures above 600°F. Catalytic oxidation occurs at temperatures 50 percent lower than that of thermal oxidation, thereby reducing the amount of thermal energy required compared to thermal oxidation. For CC combustion turbines, the oxidation catalyst can be located directly after the CT or in the HRSG. Catalyst size depends upon the exhaust flow, temperature and desired efficiency. Most gas turbine applications have been limited to smaller cogeneration facilities burning natural gas in nonattainment areas.

The application of oxidation catalyst is not being required as BACT for the IGCC unit due to high content of sulfur in the fuel. Syngas fuel which will be utilized at 100 percent capacity factor contains up to 0.07% by weight sulfur content. These sulfur compounds are oxidized to SO_2 in the combustion process and will be further oxidized by the catalyst to sulfur trioxide (SO_3). SO_3 will, in turn, combine with moisture in the gas stream to form H_2SO_4 mist. Therefore, the use of an oxidation catalyst system for the IGCC unit is not BACT due to corrosion problems.

Acid Gases - Sulfur Dioxide

The emissions of sulfur dioxide, nitrogen oxides, fluorides, and sulfuric acid mist, as well as other acid gases which are not "regulated" under the PSD Rule, represent a significant proportion of the total emissions and need to be controlled if deemed appropriate. Sulfur dioxide emissions from combustion turbines are directly related to the sulfur content of the fuel being combusted.

The IGCC facility's projected emissions for SO_2 exceed the significant emission rates given in Florida Administrative Code Rule 17-212.410, Table 212.400-2. A review of the BACT/LAER Clearinghouse indicates that the proposed post-demonstration SO_2 emission level of 0.17 lbs/MMBtu for syngas is consistent with the SO_2 limit for recent determinations of coal fired boilers.

For the IGCC combustion turbine, the applicant has proposed the use of Syngas, No. 2 fuel oil with a maximum sulfur content of 0.05%, by weight, and coal gasification to control sulfur dioxide emissions. In accordance with the "top down" BACT review approach, only two alternatives exist that would result in more stringent SO_2 emissions. These include the use of a lower sulfur content syngas and fuel oil or the use of wet lime or limestone-based scrubbers, otherwise known as flue gas desulfurization (FGD).

In developing the NSPS for stationary gas turbines, EPA recognized that FGD technology was inappropriate to apply to these combustion units. EPA acknowledged in the preamble of the proposed NSPS that "Due to the high volumes of exhaust gases, the cost of flue gas desulfurization (FGD) to control SO_2 emissions from stationary gas turbines is considered unreasonable." EPA reinforced this point when, later on in the preamble, they stated that "FGD... would cost about two to three times as much as the gas turbine." The economic impact of applying FGD today would be no different.

Furthermore, the application of FGD would have negative environmental and energy impacts. Sludge would be generated that would have to be disposed of properly, and there would be increased utility (electricity and water) costs associated with the operation

of a FGD system. Finally, there is no information in the literature to indicate that FGD has ever been applied to stationary gas turbines burning distillate oil.

Coal gasification sulfur content is controlled through fuel-production process controls. Sulfur removal stages in the coal gasification process include acid gas removal, and sulfuric acid plant thermal oxidizer. Acid gas removal systems remove hydrogen sulfide, carbonyl sulfide and carbon dioxide from the fuel gas using an acid gas absorbent solution. The acid gases are stripped from the adsorbent solution and sent to the sulfuric acid plant for introduction into a thermal oxidizer, where the remaining sulfur compounds are converted to SO_2 , and finally converted to commercial grade liquid H_2SO_4 . The overall sulfur removal efficiency is 95.6%. The sulfur bearing compounds content of the syngas is reduced to 0.07% by weight, or less.

The elimination of flue gas control as a BACT option then leaves the use of NG, CG with the sulfur removal process or low sulfur coal as the options to be investigated. The applicant has proposed the use of syngas, CG with sulfur removal or No. 2 fuel oil (maximum of 876 hours per year per IGCC combustion turbine) with a maximum sulfur content of 0.05%, by weight, as BACT for this project.

Although the applicant's proposed coal gasification acid gas cleanup process is an existing technology, development is continuing on coal gasification systems. The data base to determine whether the proposed post-demonstration sulfur bearing compounds level of 0.07% by weight is reasonable for a coal gasification facility with resulting proposed emissions of 0.17 lbs/MMBtu is limited. A commercial scale demonstration of an IGCC 100 MW power plant has been conducted adjacent to Southern California Edison's Cool Water generating station. During the Cool Water demonstration project, high sulfur coals, Illinois #6 and Pittsburgh #8, with a sulfur content of about 3.1 percent were tested. The SO_2 emission rate was 0.11 lbs/MMBtu for the Pittsburgh #8 coal and was even lower for the Illinois #6 coal (Technical Brief, Cool Water Coal Gasification Program: Commercial Scale Demonstration of IGCC Technology Completed, Electric Power Research Institute). The Polk Power Station IGCC unit has been designed for a larger capacity and is expected to be capable of using coals from various sources not included in the Cool Water demonstration project tests. Although, emission rates from the Cool Water tests are representative of the SO_2 emission range that can be achieved using IGCC units, the study was conducted as a demonstration project and the unit was later converted to another fuel source.

The Polk Power Station IGCC coal gasification system includes an option for both cold gas and hot gas cleanup and emissions from the Cool Water demonstration project are not directly comparable to the hot gas cleanup system. However, an objective of the hot gas cleanup system test is to demonstrate the efficiency in decreasing sulfur emissions compared to cold gas cleanup system.

Acid Gases - Nitrogen Oxides

The applicant has stated that BACT for nitrogen oxides for the IGCC unit will be met by using nitrogen diluent injection to limit emissions to 25 ppmvd at 15% oxygen when burning syngas, and water injection to achieve 42 ppmvd at 15% oxygen when burning No. 2 fuel oil. The emission limit of 25 ppmvd when burning syngas is higher compared to 9 ppmvd when burning NG in a combustion turbine due to the difference in composition and heat content between the two fuels. In contrast to natural gas which is predominately methane, syngas is composed of a variety of constituents including CO, hydrogen, CO₂, nitrogen, and water. The combustible components of syngas are primarily CO and hydrogen instead of methane. CO and hydrogen burn at a higher adiabatic flame temperature than methane and therefore can produce approximately three times as much NO_x as natural gas.

A review of EPA's BACT/LAER Clearinghouse indicates that the lowest NO_x emission limit established to date for a combustion turbine is 4.5 ppmvd at 15 percent oxygen. This level of control was accomplished through the use of water injection and a selective catalytic reduction (SCR) system. The two 25 MW combustion turbines are located in Kern County, California and the degree of control at this facility exceeds BACT requirements.

Selective catalytic reduction is a post-combustion method for control of NO_x emissions. The SCR process combines vaporized ammonia with NO_x in the presence of a catalyst to form nitrogen and water. The vaporized ammonia is injected into the exhaust gases prior to passage through the catalyst bed.

The applicant has indicated that the cost effectiveness for the application of SCR technology to the Polk Power Station IGCC project was determined to be \$4,935 per ton of NO_x removed for a 50% reduction of NO_x concentration from 25 ppmvd to 12.5 ppmvd. The cost impact analysis was conducted using the OAQPS factors and project-specific economic factors. An assessment of economics impacts was performed by comparing control costs between a baseline case of advanced combustion and nitrogen injection and baseline technology with the addition of SCR controls. Baseline technology is expected to achieve NO_x exhaust concentrations of 25 and 42 ppmvd at 15% oxygen for syngas and oil-firing, respectively. Based

on Japanese experience, SCR technology was premised to achieve NO_x concentration of 12.5 and 21 ppmvd at 15% oxygen for syngas and oil-firing, respectively, representing a 50% NO_x removal efficiency.

Since SCR has been determined to be BACT for several combined cycle facilities firing natural gas, the EPA has clearly stated that there must be unique circumstances to consider the rejection of such control on the basis of economics. In a recent letter from EPA Region IV to the Department regarding the permitting of a combined cycle facility (Tropicana Products Inc.), the following statement is made:

"In order to reject a control option on the basis of economic considerations, the applicant must show why the costs associated with the control are significantly higher for this specific project than for other similar projects that have installed this control system or in general for controlling the pollutant."

The auxiliary boiler is expected to operate 1,000 hours per year or less. The applicant is proposing to control SO₂ and acid gas emissions by firing with No. 2 fuel oil with a sulfur content of 0.05% or less, by weight, and by using combustion controls. Therefore, limited operation and low sulfur distillate oil represents BACT for the auxiliary boiler.

H₂SO₄ Plant Thermal Oxidizer

The predominant emission from the thermal oxidizer is sulfur dioxide. The sulfur dioxide emissions proposed for the facility are based on the highest removal efficiency that is now being maintained at other coal gasification facilities. This is accomplished by using an acid gas removal system followed by a sulfuric plant thermal oxidizer. This process is capable of providing an overall sulfur removal rate of 95.6 percent.

Fugitive Sources

The applicant has indicated that fugitive particulate emissions may result from the storage and handling of coal, slag, and sulfur. BACT for controlling these activities is good engineering design and practices. Control measures shall include the following:

- Minimize number of material transfer points
- Apply crusting agent application to inactive storage areas
- Enclose conveyers and transfer points
- Provide induced collection systems for dust

- Provide wet suppression systems (surfactant)
- Cover by-product storage areas (upon completion of cell)
- Handle and store sulfur in a molten or continuous crystalline state

A review of the control strategy indicates that the applicant has proposed taking all reasonable measures to minimize fugitive particulate emissions.

Environmental Impact Analysis

The predominant environmental impacts associated with this proposal are related to the use of SCR for NO_x control. The use of SCR results in emissions of ammonia, which may increase with increasing levels of NO_x control. In addition, some catalysts may contain substances which are listed as hazardous waste, thereby creating an additional environmental burden. Although the use of SCR does have some environmental impacts, the disadvantages do not outweigh the benefit which would be provided by reducing nitrogen oxide emissions by 50 percent. The benefits of NO_x control by using SCR is substantiated by the fact that a number of BACT determinations have established SCR as the control measure for nitrogen oxides over the last five years for combustion turbines.

In addition to the criteria pollutants, the impacts of toxic pollutants associated with the combustion of syngas and No. 2 fuel oil have been evaluated. Beryllium and Mercury exceeds the PSD significant level. Other toxics are expected to be emitted in minimal amounts, with the total emissions combined to be less than one ton per year.

Although the emissions of the toxic pollutants could be controlled by particulate control devices such as a baghouse or scrubber, the amount of emission reductions would not warrant the added expense for firing with natural gas or fuel oil. Therefore, the Department does not believe that the BACT determination would be affected by the emissions of the toxic pollutants associated with the firing of syngas or No. 2 fuel oil.

Potentially Sensitive Concerns

With regard to controlling NO_x emissions from SCR the applicant has expressed concerns regarding SCR catalyst deactivation due to poisoning, oxidation of SO₂ to SO₃, formation of H₂SO₄, formation of ammonium bisulfate and ammonium sulfate, risk due to potential leaks from storage of NH₃ and disposal of spent catalyst which may be considered hazardous.

A review of permitting activities for combined cycle proposals across the nation indicates that SCR has been required or proposed for installations with a variety of operating conditions including firing with fuel oil. SCR also has been accepted as BACT for boilers fired with pulverized coal. Although the concerns expressed by the applicant were valid at one time, the most recent experiences indicate that these problems have been resolved through advances in catalysts and experiences gained in operation.

BACT Determination by DEP

1. Combustion Products - PM/PM₁₀ (excluding H₂SO₄)

During the two year demonstration period for the IGCC unit at the Polk Power Station, the applicant's proposed PM/PM₁₀ emission limit of 0.013 lb/MMBtu is accepted for IGCC hot cleanup testing conducted under the Cooperative agreement with the US DOE.

For IGCC operation following the 2-year demonstration period particulate emissions control for the IGCC unit will be limited to 0.013 lb/MMBtu.

2. Products of Incomplete Combustion - CO and VOC

The use of an oxidation catalyst system for the IGCC system is not found to be BACT due to the high sulfur content in the syngas and resulting corrosion problems. Emissions are to be controlled by good combustion practices during demonstration and post demonstration periods.

3. Acid Gases - Sulfur Dioxides

During the 2-year demonstration period for the IGCC unit at the Polk Power Station, the applicant's proposed SO₂ emissions limit of 0.247 lbs/MMBtu is accepted for IGCC demonstration testing conducted under the Cooperative Agreement with the US DOE. The proposed emissions limit will allow for testing of coals with a broad range of sulfur content and for evaluation of the IGCC unit design.

For IGCC operations following the demonstration period, SO₂ emissions shall not exceed the 0.17 lbs/MMBtu limit established in a recent BACT determination for the Indiantown Cogeneration facility.

The SO₂ emissions shall be limited to 0.17 lbs/MMBtu for the IGCC unit by the use of low sulfur coal and the integral IGCC sulfur removal and recovery processes.

Acid Gases - Nitrogen Oxides

The annualized cost per ton for NO_x removal of \$4,935 for the IGCC SCR estimated by the applicant exceeds recent estimates for other applications. Recent published estimates for a pulverized coal plant (Selective Catalytic Reduction for a 460 MW coal fueled unit: Overview of a NO_x Reduction System Selection, EPRI, 1993) with a NO_x reduction of 47 percent was \$3,265 per ton in 1997 dollars. Costs per ton in this range indicate SCR is a reasonable alternative. However, there are significant differences between a pulverized coal-fired power plant and an IGCC unit in the design and operation of SCR NO_x control systems.

Due to the uncertainty in actual system performance and high cost of a SCR control system, NO_x BACT for the IGCC CT will be determined following a data collection period. After the demonstration phase, NO_x emission testing will be conducted on the CT every two months over a 12 to 18 month period. Test results will be provided to the Department within thirty (30) days after each test is performed. During the test period, the CT shall be operated to achieve the lowest possible NO_x emission rate and shall not exceed 25 ppmvd NO_x corrected to 15 percent oxygen and ISO conditions. This concentration limitation, equivalent to an emission rate of 0.099 lb NO_x/MMBtu, is 42 percent lower than rates recently established as BACT for other pulverized coal-fired power plant applications. One month after the test period ends, the applicant will submit a recommended BACT determination for NO_x using the test results, data obtained from other similar facilities, and research conducted by the CT manufacturer. The Department will then make a BACT determination for NO_x only and adjust the NO_x emission limits as appropriate.

The emission limits for the IGCC unit for firing with syngas and No. 2 fuel oil for the Polk Power Station are thereby established as follows:

Emission Limitations - 7F CT

Pollutant	IGCC					IGCC			
	Fuel	Basis	Post Demonstration			2-year Demonstration			
			lb/hr	tpy ^a		Fuel	Basis	lb/hr	tpy ^b
NO _x	Oil	42 ppmvd ^f	311	N/A		Oil	42 ppmvd	311	N/A
	Syngas	25 ppmvd ^f	222.5	1,044		Syngas	81 ppmvd	664.2	2,908.3
VOC ^c	Oil	0.025 lb/MMBtu	32	N/A		Oil	0.028 lb/MMBtu	32	N/A
	Syngas	0.0017 lb/MMBtu	3	38.5		Syngas	0.0017 lb/MMBtu	3	38.5
CO	Oil	40 ppmvd	99	N/A		Oil	40 ppmvd	99	N/A
	Syngas	25 ppmvd	98	430.1		Syngas	25 ppmvd	99	430.1
PM/PM ₁₀ ^d	Oil	0.009 lb/MMBtu	17	N/A		Oil	0.009 lb/MMBtu	17	N/A
	Syngas	0.013 lb/MMBtu	17	74.5		Syngas	0.013 lb/MMBtu	17	74.5
Pb	Oil	5.30E-5 lb/MMBtu	0.101	N/A		Oil	5.30E-5 lb/MMBtu	0.101	N/A
	Syngas	2.41E-6 lb/MMBtu	0.0035	0.067		Syngas	1.10E-5 lb/MMBtu	0.023	0.13
SO ₂	Oil ^e	0.048 lb/MMBtu	92.2	N/A		Oil	0.048 lb/MMBtu	92.2	N/A
	Syngas	0.17 lb/MMBtu	357	1563.7		Syngas	0.247 lb/MMBtu	518	2,269

NOTES: a - Based on baseload operations firing syngas, with emission rates equivalent to 100 percent CGCU operations; up to 10 percent annual capacity factor firing fuel oil.

b - Based on baseload operations firing syngas, with a maximum of 8760 hrs/yr utilization of HGCU operations; up to 10 percent annual capacity factor firing fuel oil.

c - Exclusive of background concentrations.

d - Excluding sulfuric acid mist.

e - Sulfur dioxide emissions based on a maximum of 0.05 percent sulfur, by weight.

f - ppmvd at 15% O₂ and ISO conditions.

Auxiliary Boiler

For the auxiliary boiler, BACT will be represented by a limitation on hours of operation and the use of clean fuel (maximum 1,000 hours per year firing No. 2 fuel oil with 0.05% sulfur, by weight).

H₂SO₄ Plant Thermal Oxidizer

A review of the proposed emission rates for the thermal oxidizer indicates that equipment in and of itself represents BACT for these sources.

Fugitive Sources

A review of the control strategy indicates that the applicant has proposed taking all reasonable measures to minimize fugitive particulate emissions and is representative of BACT.

Details of the Analysis May be Obtained by Contacting:

Doug Outlaw, P.E., BACT Coordinator
Department of Environmental Protection
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Recommended by:

Approved by:

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

February 18 1994
Date

Virginia B. Wetherell
Virginia B. Wetherell, Secretary
Dept. of Environmental Protection

February 24 1994
Date

2. The Board APPROVES certification for the location,

construction and operation of 260 MW of integrated gasification combined cycle generating capacity at the the Tampa Electric Company Polk Power Station Site as proposed in the Site Certification Application, subject to the Conditions of Certification contained in Appendix A to Exhibit 1.

3. The Tampa Electric Company Polk Power Station Site is certified for an ultimate site capacity of 1150 MW fueled by coal gas and natural gas, subject to need determination by the Florida Public Service Commission as required by law, supplemental application review and approval by the Board pursuant to Section 403.517, Florida Statutes, and compliance with the Conditions of Certification contained in Appendix A to Exhibit 1.

4. The Board DELEGATES to the Department of Environmental Protection the authority to assure and enforce compliance by Tampa Electric Company and its agents with all of the Conditions of Certification imposed by this Order.

NOTICE OF RIGHTS

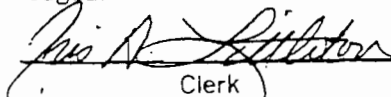
Any party to this certification proceeding has the right to seek judicial review of this Order under Section 120.68, Florida Statutes, by the filing of a notice of appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department of Environmental Protection, Office of General Counsel, 2600 Blair Stone Road, Tallahassee, FL 32399-2400; and by filing a copy with the appropriate District Court of Appeal.

The notice of appeal must be filed within 30 days from the date this Order is filed with the Clerk of the Siting Board.

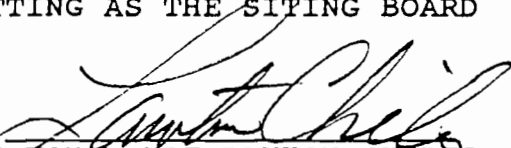
DONE and ORDERED this 27th day of January, 1994, at Tallahassee, Florida, pursuant to a vote of the Governor and Cabinet sitting as the Siting Board, at a duly-noticed and constituted Cabinet meeting on January 25, 1994.

FILING AND ACKNOWLEDGEMENT

FILED, on this date, pursuant to S120.52 Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

 Clerk 1/27/94 Date

THE GOVERNOR AND CABINET
SITTING AS THE SITING BOARD

BY: 
THE HONORABLE LAWTON CHILES

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the foregoing has been sent by U.S. Mail, to the following listed persons:

Hamilton S. Oven
Office of Siting Coordination
Department of Environmental
Protection
3900 Commonwealth Blvd Ste 953
Tallahassee FL 32399-3000

Michael Palecki, Esquire
Division of Legal Services
Public Service Commission
101 E Gaines St Rm 212
Tallahassee FL 32399-0850

R. Douglas Leonard
Executive Director
Central Florida Regional
Planning Council
409 E Davidson St
Bartow FL 33830

Mark Carpanini, Esquire
Office of County Attorney
Polk County
P O Box 60
Bartow FL 33830-0060

John J. Dingfelder, Esquire
Hillsborough County
P O Box 1110
Tampa FL 33601-1110

Karen Brodeen, Esq.
Assistant General Counsel
Department of Community
Affairs
2740 Centerview Dr Rm 138
Tallahassee FL 32399-0863

Carolyn S. Holifield, Esq.
Administrative Law Section
Department of Transportation
Haydon Burns Bldg
605 Suwannee St MS 58
Tallahassee FL 32399-0458

James Antista
General Counsel
Florida Game & Fresh Water
Fish Commission
Bryant Bldg
620 S Meridian St
Tallahassee FL 32399-1600

Julia Greene
Executive Director
Tampa Bay Regional
Planning Council
9455 Koger Blvd
St Petersburg FL 33702

Martin D. Hernandez, Esquire
Southwest Florida Water
Management District
2370 Broad St
Brooksville FL 34609-6899

Certificate of Service (continued)

Sara Fotopulos, Chief Counsel
EPC of Hillsborough County
1900 9th Ave
Tampa FL 33605

this 27th day of January, 1994.

Lawrence N. Curtin, Esq.
Holland and Knight
P.O. Drawer 810
Tallahassee, FL 32302

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION



RICHARD T. DONELAN, JR.
Assistant General Counsel

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee FL 32399-2400
Telephone: (904)488-9314

LAW OFFICES

HOLLAND & KNIGHT

315 SOUTH CALHOUN STREET
P.O. DRAWER 810 (ZIP 32302-0810)
TALLAHASSEE, FLORIDA 32301
(904) 224-7000
FAX (904) 224-8832

OFFICES:

FORT LAUDERDALE
JACKSONVILLE
LAKELAND
MIAMI
ORLANDO
ST. PETERSBURG
TALLAHASSEE
TAMPA
WEST PALM BEACH
WASHINGTON, D.C.

OF COUNSEL
MASTRY, MARGER, DAVIS
JOHNSON, BARTLETT & LYNN, P.A.
360 CENTRAL AVENUE
P.O. BOX 3542 (ZIP 33731)
ST. PETERSBURG, FL 33701
(813) 896-7171 FAX (813) 822-8048

SPECIAL COUNSEL
LITIGATION & BANKRUPTCY
SHAW, LICITRA, PARENTE
ESERNIO & SCHWARTZ, P.C.
1010 FRANKLIN AVENUE
GARDEN CITY, NY 11530
(516) 742-0610 FAX (516) 742-2670
300 EAST 42ND STREET
NEW YORK, NY 10017
(212) 338-0970

January 13, 1994

RECEIVED

JAN 13 1994

Bureau of
Air Regulation

VIA HAND DELIVERY

Mr. Clair Fancy
State of Florida Department
of Environmental Protection
111 South Magnolia Courtyard
Suite 4
Tallahassee, Florida 32399-2400

Re: Polk Power Station; Affidavits of Publication of
Notice of Intent to Issue PSD Permit (PSD-FL-194)

Dear Mr. Fancy

Attached are copies of the Affidavits of Publication from the
Lakeland Ledger, the Tampa Tribune, and the Mulberry Press relating
to the Department's Notice of Intent to Issue the above referenced
PSD permit to Tampa Electric Company.

Please give me a call if you have any questions.

Sincerely,

HOLLAND & KNIGHT


Samuel J. Morley

Attachments
SJM/mrh
TAL-38029

cc w/att:

Sayed Arif (via hand delivery)
Lawrence N. Curtin
Richard Donelan
Buck Oven
Tom Davis
Jewell Harper

*Thomas, sup list
G. B. [unclear]*

AFFIDAVIT OF PUBLICATION

THE LEDGER Lakeland, Polk County, Florida

Case No.

STATE OF FLORIDA)
COUNTY OF POLK)

Before the undersigned authority personally appeared Tharon Honeycutt, who on oath says that he is Controller of The Ledger, a daily newspaper published at Lakeland in Polk County, Florida; that the attached copy of advertisement, being a

Notice of intent to issue permit

in the matter of

PSD-FL-194

in the

Court, was published in said newspaper in the issues of

January 31

1994

Affiant further says that said The Ledger is a newspaper published at Lakeland, in said Polk County, Florida, and that the said newspaper has heretofore been continuously published in said Polk County, Florida, daily, and has been entered as second class matter at the post office in Lakeland, in said Polk County, Florida, for a period of one year next preceding the first publication of the attached copy of advertisement; and affiant further says that he has neither paid nor promised any person, firm or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper.

Signed

Controller

by Tharon Honeycutt who is personally known to me.

3rd

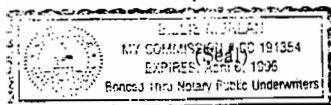
Sworn to and subscribed before me this

January

A.D. 19

1994

day of



Billie Morlan
Notary Public

BILLIE MORLAN

My Commission Expires
Holland & Knight
Acct #12610

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION NOTICE OF INTENT TO ISSUE PERMIT

The Department of Environmental Protection gives notice of its intent to issue a PSD permit (PSD-FL-194) to Tampa Electric Company, located 13 miles south of Barrow, Polk County, Florida, to construct a 260 MW integrated coal gasification combined cycle facility. A determination of Best Available Control Technology (BACT) was required. The total PSD increments consumed by all sources, including this facility, in the Class I and II areas are:

Class I Area Parameter	Averaging Period	Total PSD Impact From All Sources (ug/m3)	Class I PSD Increment (ug/m3)	Increment Consumed (%)
SO2	3-hour	12.9	25	52
	24-hour	3.8	5	76
	Annual	0.4	2	20
NO2	Annual	0.8	2.5	32
PM	24-hour	5.7	10	57
	Annual	1.1	5	22
Class II Area Parameter	Averaging Period	Total PSD Impact From All Sources (ug/m3)	Class I PSD Increment (ug/m3)	Increment Consumed (%)
SO2	3-hour	10.4	512	20
	24-hour	27	91	30
	Annual	0	20	0
NO2	Annual	3.3	25	13
PM	24-hour	31.8	37	86
	Annual	5.4	19	28

The Department is issuing this intent to issue for the reasons stated in the Technical Evaluation and Preliminary Determination.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within 14 days of publication of this notice. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

The Petition shall contain the following information: (a) The name, address, and telephone number of each petitioner; (b) The applicant's name and address; (c) The Department Permit File Number and the county in which the project is proposed; (d) A statement of how and when each petitioner received notice of the Department's action or proposed action; (e) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action; (f) A statement of the material facts disputed by petitioner, if any; (g) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action; (h) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and (i) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this Notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the Office of General Counsel of the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

The application is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at: Department of Environmental Protection, Bureau of Air Regulation, 111 S. Magnolia Park Court, Tallahassee, Florida 32301. Department of Environmental Protection, Southwest District, 3804 Coconut Palm Drive, Tampa, Florida 33619-8218.

Any person may send written comments on the proposed action to Mr. Preston Lewis of the Department's Tallahassee address. All comments received within 30 days of the publication of this notice will be considered in the Department's final determination.

Further, a public hearing can be requested by any person(s). Such requests must be submitted within 30 days of this notice (D-93 - 1-3: 1994).

THE TAMPA TRIBUNE
 Publish Daily
 Tampa, Hillsborough County, Florida

State of Florida
 County of Hillsborough } ss.

Before the undersigned authority personally appeared R. Putney, who on oath says that he is Accounting Manager of The Tampa Tribune, a daily newspaper published at Tampa in Hillsborough County, Florida; that the attached copy of advertisement being a

LEGAL NOTICE POLK

in the matter of _____

STATE OF FLORIDA

was published in said newspaper in the issues of _____

DECEMBER 27, 1993

Affiant further says that the said The Tampa Tribune is a newspaper published at Tampa in said Hillsborough County, Florida, and that the said newspaper has heretofore been continuously published in said Hillsborough County, Florida, each day and has been entered as second class mail matter at the post office in Tampa, in said Hillsborough County, Florida, for a period of one year next preceding the first publication of the attached copy of advertisement; and affiant further says that he has neither paid nor promised any person, firm, or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper.

Sworn to and subscribed before me, this 27 day
 of DECEMBER, A.D. 1991

Personally Known: _____ or Produced Identification _____
 Type of Identification Produced _____

(SEAL)

[Signature]

STATE OF FLORIDA

**DEPARTMENT OF ENVIRONMENTAL PROTECTION
 NOTICE OF INTENT TO ISSUE PERMIT**

The Department of Environmental Protection gives notice of its intent to issue a PSD permit (PSD-FL-194) to Tampa Electric Company, located 43 miles south of Orlando in Hillsborough County, Florida, to construct a 250 MW integrated coal gasification combined cycle facility. A determination of Best Available Control Technology (BACT) is required. The total PSD increments consumed by all sources, including this facility, in the Class I and II areas are:

Class I Area				
Parameter	Averaging Period	Total PSD Impact from All Sources (ug/m ³)	Class I PSD Increment (ug/m ³)	Increment Consumed (%)
SO ₂	3-hour	12.8	25	52
	24-hour	3.8	5	76
	Annual	0.4	2	20
NO _x	Annual	0.8	2.5	32
PM	24-hour	5.7	10	57
	Annual	1.1	5	22
Class II Area				
Parameter	Averaging Period	Total PSD Impact from All Sources (ug/m ³)	Class I PSD Increment (ug/m ³)	Increment Consumed (%)
SO ₂	3-hour	104	512	20
	24-hour	27	91	30
	Annual	6.5	20	0
NO _x	Annual	3.3	25	13
PM	24-hour	215	37	86
	Annual	6.1	19	28

The Department is issuing this intent to issue for the reasons stated in the Technical Evaluation and Preliminary Determination.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2800 Blair Stone Road, Tallahassee, Florida 32309-2400, within 14 days of publication of this notice. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

The Petition shall contain the following information: (a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed; (b) A statement of how and when each petitioner received notice of the Department's action or proposed action; (c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action; (d) A statement of the material facts disputed by Petitioner, if any; (e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action; (f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and (g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this Notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right to participate in the hearing under Section 120.57, F.S., and to participate as a party to the proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 20.500, F.A.C.

The application is available for public inspection during business normal hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Department of Environmental Protection
 Bureau of Air Regulation
 111 S. Magnolia Park Courtyard
 Tallahassee, Florida 32301

Department of Environmental Protection
 Southwest District
 3504 Coconut Palm Drive
 Tampa, Florida 33619-8218

Any person may send written comments on the proposed action to Mr. Preston Lewis at the Department's Tallahassee address. All comments received within 30 days of the publication of this notice will be considered in the Department's final determination. Further, a public hearing can be requested by any person(s). Such requests must be submitted within 30 days of this notice.

AFFIDAVIT OF PUBLICATION

MULBERRY PRESS

Area's legal newspaper since 1909
Phone 813-425-3411

Mulberry, Polk County, Florida
Published Every Thursday

Second Class U.S.
Postage Paid
at Mulberry, Florida

Press Building
1020 N. Church Ave.
(Hwy. 37-N)
Mulberry, Florida
33860-2040

Published Weekly

Mulberry, Polk County, Florida

Case No. Docket Page No.

STATE OF FLORIDA }
COUNTY OF POLK } as.

Before the undersigned authority personally appeared

William M. Histed, who on oath says that he is
Publisher of the Mulberry Press, a newspaper published at

Mulberry, in Polk County, Florida; that the attached copy of advertisement,
being a Public Legal Notice

in the matter of State of Florida Department of
Environmental Protection Gives notice of Intent

in the Court, was published in said newspaper in the
issues of December 30, 1993

Affiant further says that the MULBERRY PRESS is a newspaper published at Mulberry,
in said Polk County, Florida, and that said newspaper has heretofore been continuously
published in said Polk County, Florida, each Thursday, and has been entered as second class
matter at the post office in Mulberry, in said Polk County, Florida, for a period of one year
next preceding the first publication of the attached copy of advertisement, and affiant further
says that he as neither paid nor promised any person, firm, or corporation any discount,
rebate, commission, or refund for the purpose of securing this advertisement for publication
in said newspaper.

Signed William M. Histed
William M. Histed

Sworn to and subscribed before me this 4th day of Jan, 1994 by

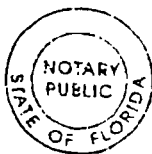
WILLIAM M. HISTED who is personally known to

me or who has produced as

identification.

Carole M. Histed
Carole M. Histed Notary Public

My commission Expires:



CAROL M. HISTED
My Comm Exp. 5/27/97
Bonded By Service Ins
No. 00274601

☐ Personally Known ☐ Other I. D.

LEGAL NOTICE

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL PROTECTION

NOTICE OF INTENT TO ISSUE PERMIT

The Department of Environmental Protection gives notice of its intent to issue a PSD permit (PSD-FL-194) to Tampa Electric Company, located 13 miles south of Bartow, Polk County, Florida, to construct a 260 MW integrated coal gasification combined cycle facility. A determination of Best Available Control Technology (BACT) was required. The total PSD increments consumed by all sources, including this facility, in the Class I and II areas are:

Class I Area

Parameter	Averaging Period	Total PSD Impact From All Sources ($\mu\text{g}/\text{m}^3$)	Class I PSD Increment ($\mu\text{g}/\text{m}^3$)	Increment Consumed (%)
SO ₂	3-hour	12.9	25	52
	24-hour	3.8	5	76
	Annual	0.4	2	20
NO ₂	Annual	0.8	2.5	32
PM	24-hour	5.7	10	57
	Annual	1.1	5	22

Class II Area

Parameter	Averaging Period	Total PSD Impact From All Sources ($\mu\text{g}/\text{m}^3$)	Class I PSD Increment ($\mu\text{g}/\text{m}^3$)	Increment Consumed (%)
SO ₂	3-hour	104	512	20
	24-hour	27	91	30
	Annual	0	20	0
NO ₂	Annual	3.3	25	13
PM	24-Hour	31.8	37	86
	Annual	5.4	19	28

Best Available Copy

The Department is issuing this Intent to Issue for the reasons stated in the Technical Evaluation and Preliminary Determination.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within 14 days of publication of this notice. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

The Petition shall contain the following information; (a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department permit File Number and the county in which the project is proposed; (b) A statement of how and when each petitioner received notice of the Department's action or proposed action; (c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action; (d) A statement of the material facts disputed by Petitioner, if any; (e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action; (f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and (g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this Notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

The application is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Department of Environmental Protection
Bureau of Air Regulation
111 S. Magnolia Park Courtyard
Tallahassee, Florida 32301

Department of Environmental Protection
Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619-8218

Any person may send written comments on the proposed action to Mr. Preston Lewis at the Department's Tallahassee address. All comments received within 30 days of the publication of this notice will be considered in the Department's final determination.

Further, a public hearing can be requested by any person(s). Such requests must be submitted within 30 days of this notice.

TAL-36986

Published Mulberry Press, Mulberry, Florida December 30, 1993

Best Available Control Technology (BACT) Determination
Central Florida Power, L.P.
Polk County
PSD-FL-190

The applicant proposes to construct a cogeneration facility near Ft. Meade, Polk County. This generator system will consist of a 184 MW General Electric PG7221FA combustion turbine generator (CT), equipped with a duct burner-fired heat recovery steam generator (HRSG), which will be used to power a nominal 74 MW steam turbine generator (ST).

The applicant has requested to burn natural gas for 8760 hours per year and distillate fuel oil, with a 0.05 percent sulfur content for a maximum 3,742,327 gallons per year. The applicant has indicated the maximum annual tonnage of regulated air pollutants emitted from the facility at base load, 27°F and type of fuel fired to be as follows:

Pollutant	Emissions (TPY)			Total	PSD Significant Emission Rate (TPY)
	Gas		Oil		
	PG7221FA (8460 hrs)	Duct Burner (8760 hrs)	PG7221FA (300 hrs)		
NO _x	684.7	43.8	48.9	777.4	40
SO ₂	20.5	1.3	15	36.8	40
PM/PM ₁₀	38.1	4.4	2.6	45.1	25/15
CO	206.5	43.8	14.8	265.1	100
VOC	11.80	12.7	1.1	25.6	40
H ₂ SO ₄	2.5	0.16	1.9	4.5	7
Be	nil	nil	6.94 x 10 ⁻⁴	6.94 x 10 ⁻⁴	0.0004
Hg	nil	nil	8.32 x 10 ⁻⁴	8.32 x 10 ⁻⁴	0.1
Pb	nil	nil	2.47 x 10 ⁻⁴	2.47 x 10 ⁻⁴	0.6
As	nil	nil	1.17 x 10 ⁻³	1.17 x 10 ⁻³	0

Florida Administrative Code (F.A.C.) Rule 17-212.400(2) (f) (3) requires a BACT review for all regulated pollutants emitted in an amount equal to or greater than the significant emission rates listed in the previous table.

Date of Receipt of a BACT Application

June 15, 1992

BACT Determination Requested by the Applicant

<u>Pollutant</u>	<u>Proposed Limits</u>
NO _x	~~25~~ ppmvd @ 15% O ₂ (natural gas burning) 42 ppmvd @ 15% O ₂ (for oil firing) Control Technology: Dry Low-NO _x Burners when firing natural gas and steam/water injection when firing distillate oil
SO ₂	0.05% sulfur by weight (fuel oil firing)
CO, VOC	Combustion Control
PM/PM ₁₀	Combustion Control

BACT Determination Procedure

In accordance with Florida Administrative Code Chapter 17-212, this BACT determination is based on the maximum degree of reduction of each pollutant emitted which the Department, on a case by case basis, taking into account energy, environmental and economic impacts, and other costs, determines is achievable through application of production processes and available methods, systems, and techniques. In addition, the regulations state that in making the BACT determination the Department shall give consideration to:

- (a) Any Environmental Protection Agency determination of Best Available Control Technology pursuant to Section 169, and any emission limitation contained in 40 CFR Part 60 (Standards of Performance for New Stationary Sources) or 40 CFR Part 61 (National Emission Standards for Hazardous Air Pollutants).
- (b) All scientific, engineering, and technical material and other information available to the Department.
- (c) The emission limiting standards or BACT determinations of any other state.
- (d) The social and economic impact of the application of such technology.

The EPA currently stresses that BACT should be determined using the "top-down" approach. The first step in this approach is to determine for the emission source in question the most stringent control available for a similar or identical source or source category. If it is shown that this level of control is technically or economically infeasible for the source in question, then the

next most stringent level of control is determined and similarly evaluated. This process continues until the BACT level under consideration cannot be eliminated by any substantial or unique technical, environmental, or economic objections.

The air pollutant emissions from combined cycle power plants can be grouped into categories based upon what control equipment and techniques are available to control emissions from these facilities. Using this approach, the emissions can be classified as follows:

- o Combustion Products (e.g., particulates). Controlled generally by good combustion of clean fuels.
- o Products of Incomplete Combustion (e.g., CO). Control is largely achieved by proper combustion techniques.
- o Acid Gases (e.g., NO_x). Controlled generally by gaseous control devices.

Grouping the pollutants in this manner facilitates the BACT analysis because it enables the equipment available to control the type or group of pollutants emitted and the corresponding energy, economic, and environmental impacts to be examined on a common basis. Although all of the pollutants addressed in the BACT analysis may be subject to a specific emission limiting standard as a result of PSD review, the control of "nonregulated" air pollutants is considered in imposing a more stringent BACT limit on a "regulated" pollutant (i.e., particulates, sulfur dioxide, fluorides, sulfuric acid mist, etc.), if a reduction in "nonregulated" air pollutants can be directly attributed to the control device selected as BACT for the abatement of the "regulated" pollutants.

BACT POLLUTANT ANALYSIS

COMBUSTION PRODUCTS

Particulate Matter (PM/PM₁₀)

The design of this system ensures that particulate emissions will be minimized by combustion control and the use of clean fuels. The particulate emissions from the combustion turbine when burning natural gas and fuel oil will not exceed 9 lbs/hr and 17 lbs/hr, respectively. The Department accepts the applicant's proposed control for particulate matter and heavy metals.

Lead, Mercury, Beryllium, Arsenic (Pb, Hg, Be, As)

The Department agrees with the applicant's rationale that there are no feasible methods to control lead, mercury, arsenic, and beryllium; except by limiting the inherent quality of the fuel.

Although the emissions of these toxic pollutants could be controlled by particulate control devices, such as a baghouse or scrubber, the amount of emission reductions would not warrant the added expense. As this is the case, the Department does not believe that the BACT determination for PM would be affected by the emissions of these pollutants.

PRODUCTS OF INCOMPLETE COMBUSTION

Carbon Monoxide (CO)

The emissions of carbon monoxide exceed the PSD significant emission rate of 100 TPY. The applicant has indicated that the carbon monoxide emissions from the proposed combined cycle turbine is on exhaust concentrations of 15 ppmv for natural gas firing and 30 ppmv for fuel oil firing.

The majority of BACT emissions limitations have been based on combustion controls for carbon monoxide and volatile organic compounds minimization, additional control is achievable through the use of catalytic oxidation. Catalytic oxidation is a postcombustion control that has been employed in CO nonattainment areas where regulations have required CO emission levels to be less than those associated with wet injection. These installations have been required to use LAER technology and typically have CO limits in the 10-ppm range (corrected to dry conditions).

In an oxidation catalyst control system, CO emissions are reduced by allowing unburned CO to react with oxygen at the surface of a precious metal catalyst such as platinum. Combustion of CO starts at about 300°F, with efficiencies above 90 percent occurring at temperatures above 600°F. Catalytic oxidation occurs at temperatures 50 percent lower than that of thermal oxidation, which reduces the amount of thermal energy required. For CT/HRSG combinations, the oxidation catalyst can be located directly after the CT or in the HRSG. Catalyst size depends upon the exhaust flow, temperature, and desired efficiency.

Due to the oxidation of sulfur compounds and excessive formation of H₂SO₄ mist emissions, oxidation catalyst are not considered to be technically feasible for gas turbines fired with fuel oil.

BACT-Central Florida Power, L.P.
PSD-FL-190
Page 5

Catalytic oxidation has not been demonstrated on a continuous basis when using fuel oil.

Use of oxidation catalyst technology would be technically feasible for this natural gas-fired unit; however, the cost of \$10,000 per ton for the PG7221FA of CO removed will have an adverse economic impact on this project.

The Department is in agreement with the applicant's proposal of combustor design and good operating practices as BACT for CO for this cogeneration project.

ACID GASES

Nitrogen Oxides (NO_x)

The emissions of nitrogen oxides represent a significant proportion of the total emissions generated by this project, and need to be controlled if deemed appropriate. As such, the applicant presented an extensive analysis of the different available technologies for NO_x control.

The applicant has stated that BACT for nitrogen oxides will be met by using water/steam injection (when firing distillate fuel oil) and advanced combustor design to limit emissions to 25 ppmvd (corrected to 15% O₂) when burning natural gas and 42 ppmvd (corrected to 15% O₂) when burning fuel oil.

A review of the EPA's BACT/LAER Clearinghouse indicates that the lowest NO_x emission limit established to date for a combustion turbine is .5 ppmvd at 15% oxygen. This level of control was accomplished through the use of water injection and a selective catalytic reduction (SCR) system.

Selective catalytic reduction is a post-combustion method for control of NO_x emissions. The SCR process combines vaporized ammonia with NO_x in the presence of a catalyst to form nitrogen and water. The vaporized ammonia is injected into the exhaust gases prior to passage through the catalyst bed. The SCR process can achieve up to 90% reduction of NO_x with a new catalyst. As the catalyst ages, the maximum NO_x reduction will decrease to approximately 86 percent.

The effect of exhaust gas temperature on NO_x reduction depends on the specific catalyst formulation and reactor design. Generally, SCR units can be designed to achieve effective NO_x control over a 100-300°F operating window within the bounds of 450-800°F, although recently developed zeolite-based catalysts are claimed to be capable of operating at temperatures as high as 950°.

BACT-Central Florida Power, L.P.
PSD-FL-190
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Increased water vapor content in the exhaust gas (as would result from water or steam injection in the gas turbine combustor) can shift the operating temperature window of the SCR reactor to slightly higher levels.

A concern associated with the use of SCR on combined cycle projects is the formation of ammonium bisulfate. For the SCR process, ammonium bisulfate can be formed due to the reaction of sulfur in the fuel and the ammonia injected. The ammonium bisulfate formed has a tendency to plug the tubes of the heat recovery steam generator leading to operational problems. As this is the case, SCR has been judged to be technically infeasible for oil firing in some previous BACT determinations.

The latest information available now indicates that SCR can be used for oil firing provided that adjustments are made in the ammonia to NO_x injection ratio. For natural gas firing operation, NO_x emissions can be controlled with up to a 90 percent efficiency using a 1 to 1 or greater ammonia injection ratio. By lowering the injection ratio for oil firing, testing has indicated that NO_x can be controlled with efficiencies ranging from 60 to 80 percent. When the injection ratio is lowered there is not a problem with ammonium bisulfate formation since essentially all of the ammonia is able to react with the nitrogen oxides present in the combustion gases. Based on this strategy SCR has been both proposed and established as BACT for oil fired combined cycle facilities with NO_x emission limits ranging from 11.7 to 25 ppmvd depending on the efficiency of control established.

The applicant has indicated that the total levelized annual operating cost to install SCR for this project at 100 percent capacity factor and burning natural gas is \$3,364,400 for the PG7221FA. Taking into consideration the total annual cost, a cost/benefit analysis of using SCR can now be developed.

For this project, based on the information supplied by the applicant, it is estimated that the maximum annual NO_x emissions using dry low- NO_x (natural gas) and water injection (oil firing) will be 702.1 tons/year (at 72°F). Assuming that SCR would reduce the NO_x emissions by 65%, about 245.7 TPY would be emitted annually. When this reduction (456.4 TPY) is taken into consideration with the total levelized annual operating cost of \$3,364,400; the cost per ton of controlling NO_x is \$7,400. This calculated cost is higher than has previously been approved as BACT.

A review of the latest DER BACT determinations show limits of 15 ppmvd (natural gas) using low- NO_x burn technology for combined cycle turbines. General Electric is currently developing programs using both steam/water injection and dry low NO_x combustor to achieve NO_x emission control level of 9 ppm when firing natural gas. Therefore, since this technology will likely be available by

BACT-Central Florida Power, L.P.
PSD-FL-190
Page 8

1997, the Department has accepted the water/steam injection (for distillate fuel oil firing), the dry low-NO_x burner design, and the 25 ppmvd (natural gas)/42 ppmvd (oil) at 15% O₂ as BACT for a limited time (up to 12/31/97).

BACT Determination by DER

NO_x Control

The information that the applicant presented and Department calculations indicates that the cost per ton of controlling NO_x for this turbine [\$7,400 per ton (natural gas)] is high compared to other BACT determinations which require SCR. Based on the information presented by the applicant, the Department believes that the use of SCR for NO_x control is not justifiable as BACT at this time.

A review of the permitting activities for combined cycle proposals across the nation indicates that SCR has been required and most recently proposed for installations with a variety of operating conditions (i.e., natural gas, fuel oil, and various capacity factors). Although, the cost and other concerns expressed by the applicant are valid, the Department, in this case, is willing to accept water/steam injection and low NO_x burner design as BACT for this project for a limited time (up to 12/31/97).

It is the Department's understanding that General Electric is developing programs for the PG7221FA using either steam/water injection or dry low NO_x combustor technology to achieve a NO_x emission control level of 9 ppm when firing natural gas.

Based on this, the Department has determined to revise and lower the allowable BACT limit for this project to 15 ppmvd at 15% O₂ no later than 12/31/97. For this turbine, an even lower NO_x emission level than 15 (gas)/42 (oil) ppmvd, corrected to 15% O₂, may become a condition of the permit pursuant to F.A.C. Rule 17-4.080.

CO Control

Combustion control will be considered as BACT for CO and VOC when firing natural gas.

Other Emissions Control

The emission limitations for PM and PM₁₀, Be, Pb, and Hg are based on previous BACT determinations for similar facilities.

The emission limits for the Central Florida Power, L.P. project are thereby established as follows:

- (a) Emissions calculated at base load and 27°F.
- (b) Fuel oil with a maximum of 0.05% sulfur by weight.
- (c) Natural gas (8760 hours per year), Fuel oil (3,742,327 gallons per calendar year).
- (d) Initial NO_x emission rates for natural gas firing shall not exceed 25 ppmvd at 15% oxygen on a dry basis. The permittee shall achieve NO_x emissions of 15 ppmvd at 15% oxygen at the earliest achievable date based on dry low NO_x combustor injection technology or any other combustion technology, but no later than 12/31/97.

Details of the Analysis May be Obtained by Contacting:

Preston Lewis, BACT Coordinator
Department of Environmental Regulation
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

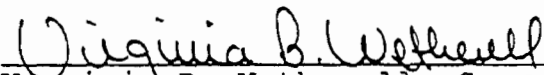
Recommended by:



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

May 4 1993
Date

Approved by:



Virginia B. Wetherell, Secretary
Dept. of Environmental Regulation

May 17 1993
Date

258 MW COMBINED CYCLE COMBUSTION TURBINE
100 MMBtu/hr Duct Burner

Pollutant	Emission Standards/Limitations(a)		Method of Control
	Oil(b)	Gas(c)	
NO _x (CT)	42 ppmvd at 15% O ₂ ; 362.2 lbs/hr	25 ppmvd at 15% O ₂ ; 161.9 lbs/hr 15 ppmvd at 15% O ₂ ; 97.2 lbs/hr	Water Injection/ Dry Low-NO _x Combustor Dry Low-NO _x Combustor or any other NO _x Control Technology
NO _x (DB)		0.1 lbs/MMBtu	
CO (CT)	98.4 lbs/hr	49 lbs/hr	Combustion
CO (DB)		10 lbs/hr	
PM/PM ₁₀ (CT)	17 lbs/hr	9 lbs/hr	Combustion
PM/PM ₁₀ (DB)		0.01 lbs/MMBtu	
SO ₂ (CT)	99.7 lbs/hr	4.9 lbs/hr	Distillate Fuel Oil (0.05% S)
SO ₂ (DB)		0.3 lbs/hr	
H ₂ SO ₄ (CT)	1.2 lbs/hr	5.95 x 10 ⁻¹ lbs/hr	Distillate Fuel Oil (0.05% S)
H ₂ SO ₄ (DB)		3.7 x 10 ⁻² lbs/hr	
VOC (CT)	7.5 lbs/hr	2.8 lbs/hr	Combustion
VOC (DB)		2.9 lbs/hr	
Hg	3.0 x 10 ⁻⁶ lbs/MMBtu (5.5 x 10 ⁻³ lbs/hr)		Fuel Quality
Pb	8.9 x 10 ⁻⁶ lbs/MMBtu (1.65 x 10 ⁻² lbs/hr)		Fuel Quality
Be	2.5 x 10 ⁻⁶ lbs/MMBtu (4.62 x 10 ⁻³ lbs/hr)		Fuel Quality
As	4.2 x 10 ⁻⁶ lbs/MMBtu (7.77 x 10 ⁻³ lbs/hr)		Fuel Quality

LAW OFFICES

HOLLAND & KNIGHT

OFFICES:

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(212) 338-0970

December 23, 1993

Mr. Clair Fancy, P.E.
Chief, Bureau of Air Regulation
State of Florida Department
of Environmental Protection
111 South Magnolia
Suite 4
Tallahassee, Florida 32399

RECEIVED

JAN 10 1994

Re: Polk Power Station; PSD Public Notice

Bureau of
Air Regulation

Dear Mr. Fancy:

Attached is a copy of the revised public Notice of Intent to Issue Permit which reflects minor revisions to the notice attached to your December 17, 1993 letter to Mr. Greg Nelson. These revisions were approved by Mr. Syed Arif with the Department. Specifically, these revisions include the following revised last sentence of the first paragraph. The additional language is underlined.

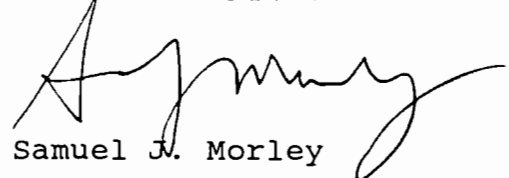
"The total PSD increments consumed by all sources, including this facility, in the Class I and II areas are:"

Also, the schedules set out in the notice have been clarified to include captions for each of the schedule columns.

If there are any questions or comments regarding the above, please call me or Mr. Tom Davis with Environmental Consulting & Technology, Inc. ((904) 332-0444).

Sincerely,

HOLLAND & KNIGHT


Samuel J. Morley

Mr. Clair Fancy, P.E.
December 23, 1993
Page 2

cc: Lawrence N. Curtin
Richard Donelan
Buck Oven
Tom Davis
Jewell Harper

SJM/mrh
TAL-37022

S. M. if

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NOTICE OF INTENT TO ISSUE PERMIT

The Department of Environmental Protection gives notice of its intent to issue a PSD permit (PSD-FL-194) to Tampa Electric Company, located 13 miles south of Bartow, Polk County, Florida, to construct a 260 MW integrated coal gasification combined cycle facility. A determination of Best Available Control Technology (BACT) was required. The total PSD increments consumed by all sources, including this facility, in the Class I and II areas are:

Class I Area

Parameter	Averaging Period	Total PSD Impact From All Sources ($\mu\text{g}/\text{m}^3$)	Class I PSD Increment ($\mu\text{g}/\text{m}^3$)	Increment Consumed (%)
SO ₂	3-hour	12.9	25	52
	24-hour	3.8	5	76
	Annual	0.4	2	20
NO ₂	Annual	0.8	2.5	32
PM	24-hour	5.7	10	57
	Annual	1.1	5	22

Class II Area

Parameter	Averaging Period	Total PSD Impact From All Sources ($\mu\text{g}/\text{m}^3$)	Class I PSD Increment ($\mu\text{g}/\text{m}^3$)	Increment Consumed (%)
SO ₂	3-hour	104	512	20
	24-hour	27	91	30
	Annual	0	20	0
NO ₂	Annual	3.3	25	13
PM	24-hour	31.8	37	86
	Annual	5.4	19	28

The Department is issuing this Intent to Issue for the reasons stated in the Technical Evaluation and Preliminary Determination.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within 14 days of publication of this notice. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period

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The application is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Department of Environmental Protection
Bureau of Air Regulation
111 S. Magnolia Park Courtyard
Tallahassee, Florida 32301

Department of Environmental Protection
Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619-8218

Any person may send written comments on the proposed action to Mr. Preston Lewis at the Department's Tallahassee address. All

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Further, a public hearing can be requested by any person(s). Such requests must be submitted within 30 days of this notice.

TAL-36986

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The Petition shall contain the following information; (a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed; (b) A statement of how and when each petitioner received notice of the Department's action or proposed action; (c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action; (d) A statement of the material facts disputed by Petitioner, if any; (e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action; (f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and (g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this Notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

The application is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Department of Environmental Protection
Bureau of Air Regulation
111 S. Magnolia Park Courtyard
Tallahassee, Florida 32301

Department of Environmental Protection
Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619-8218

Any person may send written comments on the proposed action to Mr. Preston Lewis at the Department's Tallahassee address. All



Lawton Chiles
Governor

Environmental Protection

BEST AVAILABLE COPY

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

Virginia H. Wetherell
Secretary

December 17, 1993

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Greg Nelson
Tampa Electric Company
Post Office Box 111
Tampa, Florida 33601-0111

Re: Polk Power Station
PSD Public Notice

Dear Mr. Nelson:

This letter is in reference to a requirement of 17-210.350 PSD permit public notice that was not fulfilled in the notice published for the certification hearing of the Polk Power Station.

The public notice requirements for sources subject to PSD or nonattainment area new source review is outlined in 17-210.350 and the portions of the item left out in the certification hearing public notice is the following:

"Specifying whether BACT or LAER has been determined and the degree of PSD increment consumption expected"

Attached is a revised public notice that should be published in the same newspaper as the certification hearing notice. A 30 day public comment period shall be provided by the notice. Simultaneously, we will be submitting the Technical Evaluation and Preliminary Determination to EPA for their 30 days comment period, along with a copy of this letter to provide assurance to EPA that proper public notice procedures were followed for a PSD permit.

If there are any questions or comments on the above, please call Syed Arif at (904) 488-1344.

Sincerely,

John E. Brown
C. H. Fancy, P.E.
Chief

Bureau of Air Regulation

cc: Richard Donelan
Buck Oven
Larry Curtin, Holland & Knight
Tom Davis, ECT
Jewell Harper, EPA

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NOTICE OF INTENT TO ISSUE PERMIT

The Department of Environmental Protection gives notice of its intent to issue a PSD permit (PSD-FL-194) to Tampa Electric Company, located 13 miles south of Bartow, Polk County, Florida, to construct a 260 MW integrated coal gasification combined cycle facility. A determination of Best Available Control Technology (BACT) was required. The PSD increments consumed by this facility in the Class I and II areas are:

<u>Class I</u>			<u>% of Increment</u>		
SO ₂	-	3-hour	12.9	25	52%
		24-hour	3.8	5	76%
		Annual	0.4	2	20%
NO ₂	-	Annual	0.8	2.5	32%
PM	-	24-hour	5.7	10	57%
		Annual	1.1	5	22%

<u>Class II</u>			<u>% of Increment</u>		
SO ₂	-	3-hour	104	512	20%
		24-hour	27	91	30%
		Annual	0	20	0%
NO ₂	-	Annual	3.3	25	13%
PM	-	24-hour	31.8	37	86%
		Annual	5.4	19	28%

The Department is issuing this Intent to Issue for the reasons stated in the Technical Evaluation and Preliminary Determination.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within 14 days of publication of this notice. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

The Petition shall contain the following information; (a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed; (b) A statement of how and when each petitioner received notice of the Department's action or proposed action; (c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action; (d) A statement of the material facts disputed by Petitioner, if any; (e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action; (f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and (g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this Notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

The application is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Department of Environmental Protection
Bureau of Air Regulation
111 S. Magnolia Park Courtyard
Tallahassee, Florida 32301

Department of Environmental Protection
Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619-8218

Any person may send written comments on the proposed action to Mr. Preston Lewis at the Department's Tallahassee address. All comments received within 30 days of the publication of this notice will be considered in the Department's final determination.

Further, a public hearing can be requested by any person(s). Such requests must be submitted within 30 days of this notice.

RECEIVED
DEC 01 1993

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
TAMPA ELECTRIC COMPANY
POLK POWER STATION
CASE NO. PA 92-32

11/29/93

CONDITIONS OF CERTIFICATION

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11/29/93

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
TAMPA ELECTRIC COMPANY
POLK POWER STATION
PA 92-32

CONDITIONS OF CERTIFICATION

I. GENERAL

A. Definitions

The meaning of the terms used herein shall be governed by the definitions contained in Chapters 403, 378, 373, 372, and 253, Florida Statutes (F.S.), and any regulation adopted pursuant thereto and the statutes and regulations of any agency. In the event of any dispute over the meaning of a term used in these conditions which is not defined in such statutes or regulations, such dispute shall be resolved by reference to the most relevant definitions contained in any other state or federal statute or regulation or, in the alternative, by the use of the commonly accepted meaning as determined by the Department. As used herein:

1. "Application" shall mean the Site Certification Application (SCA) for the Polk Power Station Project, as supplemented.

2. "DEP" shall mean the Florida Department of Environmental Protection, or Department.

3. "DHR" shall mean the Florida Department of State, Division of Historical Resources.

4. "Emergency conditions" shall mean urgent circumstances involving potential adverse consequences to human life or property as a result of weather conditions or other calamity, and necessitating new or replacement gas pipeline, transmission lines, or access facilities.

5. "Feasible" or "practicable" shall mean reasonably achievable considering a balance of land use impacts, environmental impacts, engineering constraints, and costs.

6. "GFWFC" shall mean the Florida Game and Fresh Water Fish Commission.

7. "Permittee" shall mean Tampa Electric Company (TEC).

8. "Power plant" shall mean the electric power generating equipment and appurtenances to be constructed on the Polk Power Station site in Polk County, as generally depicted in the Application.

9. "Project" shall mean the TEC Polk Power Station (PPS) and all associated facilities, including: the power plant, coal gasification plant, sulfuric acid plant and related facilities, and the cooling reservoir and related facilities.

10. "SWFWMD" shall mean the Southwest Florida Water Management District.

11. "ISO" shall mean International Organization for Standardization, ISO 3977-1978(E) standard conditions for gas turbines = 14.7 psia, 15°C, relative humidity 60 percent.

12. "ROW" shall mean the linear facility right-of-way to be selected within the certified corridors in accordance with the conditions of certification.

B. Applicable Rules

The construction and operation of the Power Plant Station shall be in accordance with all applicable provisions of at least the following regulations of DEP: Chapters 17-2, 17-814, 17-28, 17-256, 17-296, 17-297, 17-301, 17-302, 17-531, 17-532, 17-550, 17-555, 17-560, 17-650, 17-660, 17-701, 17-4, 17-25 and 17-610, Florida Administrative Code (F.A.C.), or their successors as they are renumbered.

II. CHANGE IN DISCHARGE

All discharges or emissions authorized herein shall be consistent with the terms and conditions of this certification. The discharge of any regulated pollutant not identified in the application, or more frequent than, or at a level in excess of that authorized herein, shall constitute a violation of the certification. Any anticipated facility expansions beyond the certified initial, nominal, net capacity of 260 MW, production increases, or process modifications which may result in new, different, or increased discharges of pollutants, change in type of fuel as described in XIII.D., or expansion in steam generation capacity shall be reported by submission of a supplemental application pursuant to Chapter 403, F.S.

III. GENERAL CONDITIONS

A. Facilities Operation

1. The Permittee shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems installed or used by the Permittee to achieve compliance with the terms and conditions of this certification. In the event of a malfunction of a electric generating unit's pollution control system, that unit's load shall be shifted to any or all of the remaining units having a properly functioning pollution control system, and the malfunctioning unit shall be promptly shut down.

2. In the event of a prolonged (thirty (30) days or more) equipment malfunction or shutdown of air pollution control equipment, operation may be allowed to resume and continue to take place under an appropriate Department order, provided that the Permittee demonstrates that such operation will be in compliance with all applicable ambient air quality standards and PSD increments, solid waste rules, domestic waste rules and industrial waste rules. During such malfunction or shutdown, the operation of the Polk Power Station shall comply with all other requirements of this certification and all applicable state and federal emission standards not affected by the malfunction or shutdown which is the subject of the Department's order. Operational stoppages exceeding two hours for air pollution control systems or four hours for other systems or operational malfunctions as defined in the operational contingency plans as specified in Condition XVI are to be reported as specified in Condition III.B. Identified operational malfunctions which do not stop operation but do compromise the integrity of the operation shall be reported to the Southwest District office as specified in Condition III.B.

3. TEC shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed and used by the TEC to achieve compliance with the conditions of this certification, and are required by department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the approval and when required by department rules.

b. Non-Compliance Notification

If, for any reason, the permittee (defined as the applicant or its successors and or assigns) does not comply with or will be unable to comply with any limitation specified in this certification, the permittee shall notify the Southwest District office of the DEP by telephone within a working day that said noncompliance occurs and shall confirm this in writing at 3804 Coconut Palm Drive, Tampa, Florida 33619-8318 within seventy-two (72) hours of becoming aware of such conditions, and shall supply the following information:

1. A description of the discharge and cause of noncompliance; and,

2. The period of non-compliance, including exact dates and times; or if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate and prevent recurrence of the noncomplying event.

3. The permittee shall report all critical (having potential to significantly pollute surface or ground waters)

spills of liquid or liquid-solid materials not confined to a building or similar containment structure to the Department by phone immediately after the discovery and submit a written report within forty-eight (48) hours, excluding weekends, from the original notification. The written report shall include, but not be limited to, a detailed description of how the spill occurred, the name and chemical make-up (include any MSDS sheets) of the substance, the amount spilled, the time and date of the spill, the name and title of the person who first reported the spill, the areal size of the spill and surface types (impervious, ground, waterbodies, etc.) it impacted, the cleanup procedures taken and status of completion, and include a map or aerial photograph showing the extent and paths of the material flow. Any deviation from this requirement must receive prior approval from the Department.

C. Safety

1. The overall design, layout, and operation of the facilities shall be such as to minimize hazards to humans and the environment. Security control measures shall be utilized to prevent exposure of the public to hazardous conditions. The Federal Occupational Safety and Health Standards will be complied with during construction and operation. The Safety Standards specified under Section 440.56, F.S., by the Industrial Safety Section of the Florida Department of Commerce will also be complied with.

2. The Permittee shall not discharge to surface waters wastes which are acutely toxic, or present in concentrations which are carcinogenic, mutagenic, or teratogenic to human beings or to significant locally occurring wildlife or aquatic species. The Permittee shall not discharge to ground waters wastes in concentrations which, alone or in combination with other substances, or components of discharges (whether thermal or non-thermal) are carcinogenic, mutagenic, teratogenic, or toxic to human beings (unless specific criteria are established for such components in Section 17-520.420, F.A.C.) or are acutely toxic to indigenous species of significance to the aquatic community within surface waters affected by the ground water at the point of contact with surface waters.

D. Enforcement

The Department may take any and all lawful actions as it deems appropriate to enforce any condition of this certification.⁹

E. Design and Performance Criteria

The power plant may be operated at up to 115 percent of the maximum electrical output at ISO conditions projected from design information without the need for modifying these conditions. Treatment or control facilities or systems

installed or used to achieve compliance with the terms and conditions of this certification are not to be bypassed without prior DEP approval. Moreover, the Permittee shall take all reasonable steps to minimize any adverse impacts resulting from noncompliance with any limitation specified in this certification, including, but not limited to, such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying event.

F. Certification

1. The terms, conditions, requirements, limitations and restrictions set forth in these conditions of certification are binding and enforceable pursuant to Sections 403.141, 403.161, 403.514, 403.727, and 403.859 through 403.861, F.S. TEC is placed on notice that the Department will review this approval periodically and may initiate enforcement action for any violation of these conditions.

2. This approval is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this approval may constitute grounds for revocation and enforcement action by the Department.

3. As provided in Subsections 403.087(6), 403.511, and 403.722(5), F.S., the issuance of this approval does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations. This approval is not a waiver of or approval of any other Department approval that may be required for other aspects of the total project under federally delegated programs which are not addressed in this certification.

4. This certification does not relieve the TEC from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this approved source, or from penalties therefore; nor does it allow the TEC to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

5. In accepting this certification, TEC understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this approved source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the approved source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.111 and 403.73, F.S. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

6. This certification is transferable only upon Department approval in accordance with Section 403.516, F.S., Rule 17-4.120 and 17-730.300, F.A.C., as applicable. TEC shall be liable for any noncompliance of the approved activity until the transfer is approved by the Department.

7. These conditions of certification or a copy thereof shall be kept at the work site of the approved activity.

8. TEC shall comply with the following:

a) Upon request, TEC shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.

b) TEC shall hold at the facility or other location designated by this approval records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the approval, copies of all reports required by this approval, and records of all data used to complete the application for this approval. These materials shall be retained at least three (3) years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.

c) Records of monitoring information shall include:

1. the date, exact place, and time of sampling or measurements;

2. the person responsible for performing the sampling or measurements;

3. the dates analyses were performed;

4. the person responsible for performing the analyses;

5. the analytical techniques or methods used;

6. the results of such analyses.

9. When requested by the Department, TEC shall within a reasonable time furnish any information required by law which is needed to determine compliance with the certification. If TEC becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

G. Laboratories and Quality Assurance

1. The Permittee shall ensure that all laboratory analytical data submitted to the Department, as required by this certification, must be from a laboratory which has a currently valid and Department approved comprehensive Quality Assurance Plan (QAP) [or a QAP pending approval] for all parameters being reported, as required by Chapter 17-160, F.A.C.

2. When a contract laboratory is used to analyze samples required pursuant to this certification, the Permittee is required to have the samples taken by qualified personnel following EPA and Department approved sampling procedures and chain-of-custody requirements in accordance with Rule 17-160, F.A.C.

3. When an in-house laboratory is used to analyze samples required pursuant to this permit, the Permittee is required to have the samples taken by a qualified technician following EPA and Department approved sampling procedures and chain-of-custody requirements. All chain-of-custody records must be retained on-site for at least three (3) years and made available to the Department immediately upon request.

H. Procedures for Post-Certification Submittals

1. Purpose of Submittals

Conditions of certification which provide for the post-certification submittal of information to DEP by TEC are for the purpose of facilitating DEP's monitoring of the effects arising from the location of the transmission line ROW and the construction and maintenance of the transmission line and the plant facilities. This monitoring is for DEP to assure, in consultation with other agencies with applicable regulatory jurisdiction, continued compliance with the conditions of certification, without any further agency action.

2. Filings

All post-certification submittals of information by TEC are to be filed with DEP. Copies of each submittal shall be simultaneously submitted to any other agency indicated in the specific conditions requiring the post-certification submittals.

3. Completeness

The DEP shall promptly review each post-certification submittal for completeness. This review shall include consultation with the other agencies receiving the post-certification submittal. For the purposes of this condition, completeness shall mean that the information submitted is both complete and sufficient. If found to be incomplete, TEC shall be so notified. Failure to issue such a notice within forty-five (45) days after filing of the submittal shall constitute a finding of completeness.

4. Interagency Meetings

Within sixty (60) days of the filing of a complete post-certification submittal, DEP may conduct an interagency meeting with other agencies which received copies of the submittal. The purpose of such an interagency meeting shall be for the agencies with regulatory jurisdiction over the matters addressed in the post-certification submittal to discuss whether reasonable assurance of compliance with the conditions of certification has been provided. Failure of any agency to attend an interagency meeting shall not be grounds for DEP to withhold a determination of compliance with these conditions nor to delay the time frames for review established by these conditions.

5. Reasonable Assurance of Compliance

Within ninety (90) days of the filing of a complete post-certification submittal, DEP shall give written notification to TEC and the agencies to which the post-certification information was submitted of its determination whether there is reasonable assurance of compliance with the conditions of certification. If it is determined that reasonable assurance has not been provided, TEC shall be notified with particularity and possible corrective measures suggested. Failure to notify TEC in writing within ninety (90) days of receipt of a complete post-certification submittal shall constitute a compliance determination.

6. Commencement of Construction

If DEP does not object within the time period specified in Condition III.H. above, TEC may begin construction pursuant to the terms of the conditions of certification and the subsequently submitted construction details.

IV. ADVERSE IMPACT

The Permittee shall take all reasonable steps to minimize any adverse impact resulting from noncompliance with any limitation specified in this certification, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

V. RIGHT OF ENTRY

The Permittee shall allow during normal operational or business hours the Secretary of the Florida Department of Environmental Protection and/or authorized representatives, including representatives of the SWFWMD and Polk County upon the presentation of credentials:

1. To enter upon the Permittee's premises where an effluent source is located or in which records are required to be kept under the terms and conditions of this certification;

2. To have access during normal business hours (Monday-Friday, 7:00 a.m. to 3:30 p.m.) to any records required to be kept under the conditions of this certification for examination and copying;

3. To inspect and test any monitoring equipment or monitoring method required in this certification and to sample any discharge or pollutants, or monitor any substances or parameters at any location reasonably necessary to assure compliance with this certification or Department rules; and,

4. To assess any damage to the environment or violation of ambient standards.

A reasonable time may depend on the nature of the concern being investigated.

VI. REVOCATION OR SUSPENSION

This certification may be suspended or revoked for violations of any of its conditions pursuant to Section 403.512, F.S.

VII. CIVIL AND CRIMINAL LIABILITY

This certification does not relieve the Permittee from civil or criminal penalties for noncompliance with any conditions of this certification, applicable rules or regulations of the Department or Chapter 403, F.S., or regulations thereunder.

Subject to Section 403.511, F.S., this certification shall not preclude the institution of any legal action or relieve the Permittee from any responsibilities or penalties established pursuant to any other applicable state statutes or regulations.

VIII. PROPERTY RIGHTS

The issuance of this certification does not convey any property rights in either real or personal property, nor any exclusive privileges, nor does it authorize any injury to public or private property or any invasion of personal rights nor any infringement of federal, state or local laws or regulations.

This certification conveys no title to land or water, does not constitute state recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the state. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.

IX. SEVERABILITY

The provisions of this certification are severable, and if any provision of this certification or the application of any provision of this certification to any circumstances, is held invalid, the application of such provisions to other circumstances and the remainder of the certification shall not be affected thereby.

X. REVIEW OF SITE CERTIFICATION

The certification shall be final unless revised, revoked, or suspended pursuant to law. At least every five (5) years from the date of issuance of certification the Department may review these conditions of certification and propose any needed changes.

XI. MODIFICATION OF CONDITIONS

Pursuant to Subsection 403.516(1), F.S., the Board hereby delegates the authority to the Secretary to modify any condition of this certification.

XII. CONSTRUCTION

A. Standards and Review of Plans

1. The facility shall be constructed pursuant to the design standards presented in the application and the standards or plans and drawings submitted and signed by an engineer registered in the state of Florida. The Applicant shall present specific facility plans, as developed, for review by the Southwest District office at least ninety (90) days prior to construction of those portions of the facility for which the plans are then being submitted, unless other time limits are specified in the following conditions herein. Specific Southwest District office acceptance of plans will be required based upon a determination of consistency with approved design concepts, regulations and these conditions prior to initiation of construction of the: industrial waste treatment facilities; domestic waste treatment facilities; potable water treatment and supply systems; ground water monitoring systems; off-site water and wastewater pipelines; transmission lines; storm water runoff systems; solid waste disposal areas; and hazardous or toxic handling facilities or areas. Review and approval or disapproval shall be accomplished in accordance with Chapter 120, F.S.

2. The Department must be notified in writing and prior written approval obtained for any changes, modification, or revision to be made to the project during construction. If there are any changes, modification, or revision made to a project approved by the Department without this prior written approval, the project will be considered to have been constructed without departmental approval, the construction will not be cleared for service, and the construction will be considered a violation of the conditions of certification.

3. Ninety (90) days prior to the anticipated date of first operation, TEC shall provide the Department with an itemized list of any changes made to the facility design and operation plans that would affect a change in discharge as referenced in Condition II. since the time of the approval of these conditions. This pre-operational review of the final design and operation shall demonstrate continued compliance with Department rules and standards.

B. Control Measures

1. Storm Water Runoff

To control runoff during construction which may reach and thereby pollute waters of the state, necessary measures shall be utilized to settle, filter, treat or absorb silt-containing or pollutant-laden storm water to ensure against spillage or discharge of excavated material that may cause turbidity in excess of 29 Nephelometric Turbidity Units above background in waters of the state. For the purposes of compliance, background turbidity shall be established by sampling the discharge from the reclaimed pond at the control structure CS-9 within one-half hour of detecting a discharge through OSN's 001 or 002. Control measures may consist of sediment traps, barriers, berms, and vegetation plantings. Exposed or disturbed soil shall be protected and stabilized as soon as possible to minimize silt and sediment-laden runoff. The pH of the runoff shall be kept within the range of 6.0 to 8.5. The Permittee shall comply with Chapters 17-25, and 40D-4, F.A.C. The Permittee shall complete the forms required by 40D-4, F.A.C., and submit those forms and the required information to the SWFWMD for any modifications that might occur.

2. Open Burning

Open burning in connection with initial land clearing shall be in accordance with Chapter 17-256, F.A.C., Chapter 5I-2, F.A.C., Uniform Fire Code Section 33.101 Addendum, and any other applicable county regulation.

Any burning of construction-generated material, after initial land clearing that is allowed to be burned in accordance with Chapter 17-256, F.A.C., shall be approved by the Southwest District office in conjunction with the Division of Forestry and any other county regulations that may apply. Burning shall not occur unless approved by the appropriate agency or if the Department or the Division of Forestry has issued a ban on burning due to fire safety conditions or due to air pollution conditions.

3. Sanitary Wastes

Disposal of sanitary wastes from construction toilet facilities shall be in accordance with applicable regulations of the appropriate local health agency.

4. Solid Wastes

Solid wastes resulting from construction shall be disposed of in accordance with the applicable regulations of Chapter 17-701, F.A.C.

5. Noise

Construction noise shall not exceed either local noise ordinance specifications, or those noise standards imposed by zoning.

6. Dust and Odors

The Permittee shall employ proper odor and dust control techniques to minimize odor and fugitive dust emissions. The applicant shall employ control techniques sufficient to prevent nuisance conditions on adjoining property.

7. Transmission Lines

The directly associated transmission lines from the Power Plant Station electric switchyard to the existing TEC transmission lines shall be cleared, maintained, and prepared in accordance with the application and the appropriate state and federal regulations concerning use of herbicides. TEC shall notify the Department of the type of herbicides to be used at least 60 days prior to its first use. Wetland mitigation shall be accomplished in accordance with Chapter 17-312, F.A.C., and Condition XXIII.

8. Protection of Vegetation

The Permittee shall develop the site so as to retain a buffer of trees or shall plant a buffer of trees sufficient to minimize the aesthetic and noise impacts of the facility. The buffer, as far as practicable, shall be of sufficient height and width suitable for the purpose of mitigating both construction and operational impacts of the facility.

9. Dewatering Operations

The dewatering operations during construction shall be carried out in such a manner that all water withdrawn will be retained on site. There shall be no discharge of water off site due to dewatering operations unless approved by the Department and SWFWMD, or unless such discharge occurs as a result of an extreme rainfall event such as a 24-hour, 10-year storm.

10. Historical or Archaeological Finds

If historical or archaeological artifacts, such as Indian canoes, are discovered at any time within the project site, the Permittee shall notify the DEP Southwest District office and the Bureau of Historic Preservation, Division of Archives, History and Records Management, R.A. Gray Building, Tallahassee, Florida 32399, telephone number (904) 487-2073.

C. Environmental Control Program

An environmental control program shall be established under the supervision of a Florida registered professional engineer to assure that all construction activities conform to applicable environmental regulations and the applicable conditions of certification. If a violation of standards, harmful effects or irreversible environmental damage not anticipated by the application or the evidence presented at the certification hearing are detected during construction, the Permittee shall notify the Southwest District office as required by Condition III.B.

D. Reporting

1. Notice of commencement of construction shall be submitted to the Siting Coordination Office and the Southwest District office within fifteen (15) days of initiation. Starting three (3) months after construction commences, a quarterly construction status report shall be submitted to the Southwest District office. The report shall be a short narrative describing the progress of construction.

2. Upon or immediately prior to completion of construction of the Power Plant Station or a phase thereof and upon or immediately prior to completion of all necessary preparation for the operation of the on-site potable water supply, domestic or industrial waste treatment facility, ground water monitoring system, brine storage area or slag storage area, the Southwest District office will be notified of certification of construction completion and a date on which a site or facility inspection can be performed in accordance with Condition V.

XIII. AIR

A. Operation and Construction

The construction and operation of Polk Power Station (Project) shall be in accordance with all applicable provisions of Chapter 17, F.A.C. The following emission limitations reflect final BACT determinations for Phase I (integrated gasification, combined cycle (IGCC) combustion turbine and auxiliary equipment) of the project fired with syngas or fuel oil. BACT determinations for the remaining phases will be made upon review of supplemental applications. In addition to the foregoing, the Project shall comply with the following conditions of certification as indicated.

B. Heat Input

The maximum heat input to the IGCC combustion turbine (CT) shall neither exceed 1,755 MMBtu/hr while firing syngas, nor 1,765 MMBtu/hr while firing No. 2 fuel oil at an ambient temperature of 59° F. Heat input may vary depending on ambient conditions and the CT characteristics. Manufacturer's curves for the heat input correction to other temperatures shall be provided to DEP for review 120 days after the Siting Board approval of the site certification. Subject to approval by the Department, the manufacturer's curves may be used to establish heat input rates over a range of temperatures for the purpose of compliance determination.

C. Hours of Operation

The IGCC unit in Phase I may operate continuously, i.e., 8,760 hrs/year.

D. Fuel

Only syngas and low sulfur fuel oil shall be fired in the IGCC combustion turbine. Only low sulfur fuel oil shall be fired in the auxiliary boiler. The maximum sulfur content of the low sulfur fuel oil shall not exceed 0.05 percent by weight.

E. Auxiliary Boiler

The maximum heat input to the auxiliary boiler shall not exceed 49.5 MMBtu/hr when firing No. 2 fuel oil with 0.05 percent maximum sulfur content by weight. All fuel consumption must be continuously measured and recorded for the auxiliary boiler.

F. Fuel Consumption

The maximum coal input to the coal gasification plant shall not exceed 2,325 tons per day, on a dry basis.

G. Fugitive Dust

Fugitive dust emissions during the construction period shall be minimized by covering or watering dust generation areas. Particulate emissions from the coal handling equipment shall be controlled by enclosing all conveyors and conveyor transfer points (except those directly associated with the coal stacker/reclaimer for which an enclosure is operationally infeasible). Fugitive emissions shall be tested as specified in Condition No. XIII.J. Inactive coal storage piles shall be shaped, compacted, and oriented to minimize wind erosion. Water sprays or chemical wetting agents and stabilizers shall be applied to uncovered storage piles, roads, handling equipment, etc. during dry periods and, as necessary, to all facilities to maintain an opacity of less than or equal to five percent. When adding, moving or removing coal from the coal pile, an opacity of 20 percent is allowed.

H. Emission Limits

1. The maximum allowable emissions from the IGCC combustion turbine, when firing syngas and low sulfur fuel oil, in accordance with the BACT determination, shall not exceed the following:

<u>EMISSIONS LIMITATIONS - 7F CT</u>					
<u>POST DEMONSTRATION PERIOD</u>					
<u>POLLUTANT</u>	<u>FUEL</u>	<u>BASIS_a</u>		<u>LB/HR*</u>	<u>TPY_b</u>
NO _x	Oil	42 ppmvd**		311	N/A
	Syngas	25 ppmvd		222.5	1,044
VOC ^c	Oil	0.028 lb/MMBtu		32	N/A
	Syngas	0.0017 lb/MMBtu		3	38.5
CO	Oil	40 ppmvd		99	N/A
	Syngas	25 ppmvd		98	430.1
PM/PM ₁₀ ^d	Oil	0.009 lb/MMBtu		17	N/A
	Syngas	0.013 lb/MMBtu		17	74.5
Pb	Oil	5.30E-5 lb/MMBtu		0.101	N/A
	Syngas	2.41E-6 lb/MMBtu		0.0035	0.067
SO ₂	Oil	0.048 lb/MMBtu		92.2	N/A
	Syngas	0.17 lb/MMBtu		357	1563.7
Visible Emissions	Syngas	10 percent opacity			
	Oil	20 percent opacity			

(*) Emission limitations in lbs/hr are 30-day rolling averages. Pollutant emission rates may vary depending on ambient conditions and the CT characteristics. Manufacturer's curves for the emission rate correction to other temperatures at different loads shall be provided to DEP for review 120 days after the Siting Board approval of the site certification. Subject to approval by the Department, the manufacturer's curves may be used to establish pollutant emission rates over a range of temperatures for the purpose of compliance determination.

(**) The emission limit for NO_x is adjusted as follows for higher fuel-bound nitrogen contents up to a maximum of 0.030 percent by weight:

<u>FUEL-BOUND NITROGEN</u> <u>(% by weight)</u>	<u>NO_x EMISSION LEVELS</u> <u>(ppmvd @ 15% O₂)</u>
0.015 or less	42
0.020	44
0.025	46
0.030	48

using the formula $STD = 0.0042 + F$ where:

STD = allowable NO_x emissions (% by volume at 15% O₂ and on a dry basis).

F = NO_x emission allowance for FBN defined by the following table:

<u>FUEL BOUND NITROGEN</u> <u>(% by weight)</u>	<u>F (NO_x % by volume)</u>
0 < N < 0.015	0
0.015 < N < 0.03	0.04 (N-0.015)

N = nitrogen content of the fuel (% by weight).

NO_x emissions are preliminary for the fuel oil specified in Condition XIII.C. The Permittee shall submit fuel bound nitrogen content data for the low sulfur fuel oil prior to commercial operation to the Bureau of Air Regulation in Tallahassee, and on each occasion that fuel oil is transferred to the storage tanks from any other source to the Southwest District office in Tampa. The percent FBN (Σ) following each delivery of fuel shall be determined by the following equation:

$$x(Y) + m(n) = (x+m) (\Sigma)$$

where x = amount fuel in storage tank
y = % FBN in storage tank
m = amount fuel added
n = % FBN of fuel added
Σ = % FBN of composite

(a) Syngas lb/MMBtu values based on heat input (HHV) to coal gasifier and includes emissions from H₂SO₄ plant thermal oxidizer. Pollutant concentrations in ppmvd are corrected to 15 percent oxygen.

(b) Annual emission limits (TPY) based on 10 percent annual capacity factor firing fuel oil.

Load (%) x hours of operation < 876 for fuel oil.
100

(c) Exclusive of background concentrations.

(d) Excluding sulfuric acid mist.

2. The maximum allowable emissions from the IGCC combustion turbine, when firing syngas and No. 2 fuel oil during the two year demonstration period, shall not exceed the following:

POLLUTANT	FUEL	EMISSIONS LIMITATIONS	
		7FCT	TPY ^a
NO _x	Oil**	311	N/A
	Syngas	664.2	2,908.3
VOC ^b	Oil	32	N/A
	Syngas	3	38.5
CO	Oil	99	N/A
	Syngas	99	430.1
PM/PM ₁₀ ^c	Oil	17	N/A
	Syngas	17	74.5
Pb	Oil	0.101	N/A
	Syngas	0.023	0.13
SO ₂	Oil	92.2	N/A
	Syngas	518	2,269
Visible Emissions		Syngas	10 percent opacity
		Oil	20 percent opacity

(*) Emission limitations in lbs/hr are 30-day rolling averages.

(**) See Fuel Bound Nitrogen adjustment in H.1. above.

(a) Annual emission limits (TPY) based on 10 percent annual capacity factor firing No. 2 fuel oil.

Load (%) x hours of operation < 876 for oil.
100

(b) Exclusive of background concentrations.

(c) Excluding sulfuric acid mist.

3. The following turbine emissions, determined by EACT, are tabulated for PSD and inventory purposes:

<u>POLLUTANT</u>	<u>FUEL</u>	<u>ALLOWABLE EMISSIONS</u>			
		<u>IGCC</u>		<u>IGCC</u>	
		<u>POST DEMONSTRATION</u>		<u>2-YEAR DEMONSTRATION</u>	
		<u>LB/HR</u>	<u>TPY^a</u>	<u>LB/HR</u>	<u>TPY^b</u>
Sulfuric Acid ^c	Syngas	55	241	55	241
Inorganic Arsenic	Syngas	0.0006	0.019	0.08	0.35
Beryllium	Syngas	0.0001	0.0029	0.0001	0.0029
Mercury	Syngas	0.0034	0.017	0.025	0.11

- (a) Based on baseload operations firing syngas, with emission rates equivalent to 100 percent CGCU operations; up to 10 percent annual capacity factor firing fuel oil.
- (b) Based on baseload operations firing syngas, with a maximum of 8,760 hrs/yr of HGPU operations; up to 10 percent annual capacity factor firing fuel oil.
- (c) Sulfuric acid mist emissions assume a maximum of 0.05 percent sulfur in the fuel oil.

4. Excess emissions from the turbine resulting from startup, shutdown, malfunction, or load change shall be acceptable providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess emissions shall be minimized but in no case exceed two hours in any 24-hour period unless specifically authorized by the Department for a longer duration. Best operating practices shall be documented in writing and a copy submitted to the Department along with the initial compliance test data. The document may be updated as needed with all updates submitted to the Department within thirty (30) days of implementation and shall include time limitations on excess emissions caused by turbine startup.

5. After the demonstration period, Permittee shall operate the combustion turbine to achieve the lowest possible NO_x emission limit but shall not exceed 25 ppmvd corrected to 15 percent oxygen and ISO conditions.

6. The combustion turbine will be operated for 12 to 18 months after the demonstration period (estimated to be from mid 1998 until December 31, 1999). During that period NO_x emission testing will be performed on the turbine at a regular interval of every 2 months. The Department shall be provided with a test protocol, including a time schedule, fifteen (15) days prior to the initial test. The Permittee will provide the Department the emission test results thirty (30) days after the test is performed. These results will not be used for compliance purposes. The Department shall be notified and the reasons provided if a scheduled test is delayed or canceled.

7. One month after the test period ends (estimated to be by February 2000), the Permittee will submit to the Department a NO_x recommended BACT Determination as if it were a new source using the data gathered on this facility, other similar facilities and the manufacturer's research. The Department will make a determination on the BACT for NO_x only and adjust the NO_x emission limits accordingly.

I. Auxiliary Boiler Operation

Operation of the auxiliary boiler shall be limited to a maximum of 1,000 hours per year and only during periods of startup and shutdown of the IGCC unit, or when steam from the IGCC unit's heat recovery steam generator is unavailable. The following emission limitations shall apply:

1. NO_x emissions shall not exceed 0.16 lbs/MMBtu for oil firing.

2. Sulfur dioxide emissions shall be limited by firing low sulfur fuel oil with a maximum sulfur content of 0.05 percent by weight.

3. Visible emissions shall not exceed 20 percent opacity (except for one six-minute period per hour during which opacity shall not exceed 27 percent), while burning low sulfur fuel oil.

J. Performance Testing

Initial (I) compliance tests shall be performed on the turbine using both fuels and on the auxiliary boiler using fuel oil. The stack test for the turbine and the auxiliary boiler shall be performed with the sources operating at capacity (maximum heat rate input for the tested operating temperature). Capacity is defined as 90 to 100 percent of rated capacity. If it is impracticable to test at capacity, sources may be tested at less than capacity; in this case subsequent source operation is limited to 110 percent of the test load until a new test is conducted. Once the unit is so limited, then operation at higher capacities is allowed for no more than fifteen (15) days

for purposes of additional compliance testing to regain the rated capacity in the permit, with prior notification to the Department. Annual (A) compliance tests shall be performed on the turbine and the auxiliary boiler with the fuel(s) used for more than 400 hours in the preceding 12-month period. Tests for the applicable emission limitations shall be conducted using EPA reference methods in accordance with 40 CFR 60, Appendix A, as adopted by reference in Rule 17-297, F.A.C., and the requirements of 40 CFR 75:

1. Combustion Turbine
 - a. Reference Method 5B for PM (I, A, for oil only).
 - b. Reference Method 8 for sulfuric acid mist (I, for oil only).
 - c. Reference Method 9 for VE (I, A).
 - d. Reference Method 10 for CO (I, A).
 - e. Reference Method 20 for NO_x (I, A).
 - f. Reference Method 18 for VOC (I, A).
 - g. Trace elements of Lead (Pb), Beryllium (Be) and Arsenic (As) shall be tested (I, for oil only) using Emission Measurement Technical Information Center (EMTIC) Interim Test Methods. Method 104 for Beryllium (Be) may be used, Be and Pb may be determined from fuel analysis using either Method 7090 or 7091, and sample extraction using Method 3040 as described in the EPA solid waste regulations SW 846.
 - h. ASTM D 2880-71 (or equivalent) for sulfur content of distillate oil (I,A).
 - i. ASTM D 1072-80, D 3031-81, D 4084-82, or D 3246-81 for sulfur content of natural gas (I, and A if deemed necessary by DEP).
 - j. Reference Method 22 for fugitive emissions (I,A).
2. Auxiliary Boiler
 - a. Reference Method 9 for VE (I,A).
 - b. ASTM D 2880-71 (or equivalent) for sulfur content of distillate oil (I,A).
 - c. Reference Methods 7, 7A, 7C, 7D, or 7E for NO_x (I,A).

Other DEP approved methods may be used for compliance testing after prior departmental approval.

K. Sulfur Content of Fuel

The maximum sulfur content of the low sulfur fuel oil shall not exceed 0.05 percent by weight. Compliance shall be demonstrated in accordance with the requirements of 40 CFR 60.334 by testing for sulfur content of the fuel oil in the storage tanks once per day when firing oil. Testing for fuel oil heating value shall also be conducted on the same schedule.

L. Monitoring Requirements

A continuous emission monitoring system (CEMS) shall be installed, operated, and maintained in accordance with 40 CFR 60, Appendix F, for the combined cycle unit to monitor nitrogen oxides and a diluent gas (CO₂ or O₂). The applicant shall request that this condition of certification be amended to reflect the Federal Acid Rain Program requirements of 40 CFR 75 when those requirements become effective within the state.

1. Each CEMS shall meet performance specifications of 40 CFR 60, Appendix B.

2. CEMS data shall be recorded and reported in accordance with Chapter 17-297.500, F.A.C., 40 CFR 60 and 40 CFR 75. The record shall include periods of startup, shutdown, and malfunction.

3. A malfunction means any sudden and unavoidable failure of air pollution control equipment or process equipment to operate in a normal or usual manner. Failures that are caused entirely or in part by poor maintenance, careless operation or any other preventable upset condition or preventable equipment breakdown shall not be considered malfunctions.

4. The procedures under 40 CFR 60.13 shall be followed for installation, evaluation, and operation of all CEMS.

5. For purposes of the reports required under this certification, excess emissions are defined as any calculated average emission concentration, as determined pursuant to Condition No. XIII.H.4. herein, which exceeds the applicable emission limits in Condition No. XIII.H.4.

M. Notification, Reporting and Recordkeeping

To determine compliance with the syngas and fuel oil firing heat input limitation, the Permittee shall maintain daily records of syngas and fuel oil consumption for the turbine and the heating value for each fuel. All records shall be maintained for a minimum of two (2) years after the date of each record and shall be made available to representatives of the Department upon request.

N. Applicable Requirements

The project shall comply with all the applicable requirements of Chapter 17, F.A.C., and 40 CFR 60 Subparts A and GG. The requirements shall include:

1. 40 CFR 60.7(a)(1) - By postmarking or delivering notification of the start of construction no more than thirty (30) days after such date.
2. 40 CFR 60.7(a)(2) - By postmarking or delivering notification of the anticipated date of the initial startup of each turbine and the auxiliary boiler no more than sixty (60) days nor less than thirty (30) days prior to such date.
3. 40 CFR 60.7(a)(3) - By postmarking or delivering notification of the actual startup of each turbine and the auxiliary boiler within fifteen (15) days of such date.
4. 40 CFR 60.7(a)(5) - By postmarking or delivering notification of the date for demonstrating the CEMS performance no less than thirty (30) days prior to such date.
5. 40 CFR 60.7(a)(6) - By postmarking or delivering notification of the anticipated date for conducting the opacity observations no less than thirty (30) days prior to such date.
6. 40 CFR 60.7(b) - By initiating a recordkeeping system to record the occurrence and duration of any startup, shutdown or malfunction of a turbine and the auxiliary boiler, of the air pollution control equipment, and when the CEMS is inoperable.
7. 40 CFR 60.7(c) - By postmarking or delivering a quarterly excess emissions and monitoring system performance report within thirty (30) days of the end of each calendar quarter. This report shall contain the information specified in 40 CFR 60.7(c) and (d).
8. 40 CFR 60.8(a) - By conducting all performance tests within sixty (60) days after achieving the maximum turbine and boiler firing rates, but not more than one hundred eighty (180) days after the initial startup of each turbine and the auxiliary boiler.
9. 40 CFR 60.8(d) - By postmarking or delivering notification of the date of each performance test required by this permit at least thirty (30) days prior to the test date; and,
10. 17-297.345, F.A.C. - By providing stack sampling facilities for the combustion turbine and the auxiliary boiler.

All notifications and reports required by this specific condition shall be submitted to the Department's Air Program, within the Southwest District office. Performance test results shall be submitted within forty-five (45) days of completion of such test.

O. Submission of Reports

The following information shall be submitted to the Department's Bureau of Air Regulation within twelve (12) months of issuance of this permit:

1. Description of the finally selected turbine and the auxiliary boiler to be installed at the facility. The description shall include the specific make and model numbers, and any changes in the proposed method of operation, fuels, emissions or equipment.

2. Description of the CEMS selected. Description shall include the type of sensors, the manufacturer, and model number of the equipment.

3. If construction has not commenced within eighteen (18) months of issuance of this certification, then the Permittee shall obtain from DEP a review and, if necessary, a modification of the BACT determination and allowable emissions for the unit(s) on which construction has not commenced [40 CFR 52.21(r)(2)]. Units to be constructed or modified in later phases of the project will be reviewed and limitations revisited under the supplementary review process of the Power Plant Siting Act.

P. Protocols

The following protocols shall be submitted to the Department's Air Program, within the Southwest District office, for approval:

1. CEMS Protocol - Within sixty (60) days of selection of the CEMS, but prior to the initial startup, a CEMS protocol describing the system, its installation, operating and maintenance characteristics and requirements. The Department shall approve the protocol provided that the system and the protocol meet the requirements of 40 CFR 60.13, 60.334, Appendix B and Appendix F. This condition of certification shall be amended to reflect the Federal Acid Rain Program requirements of 40 CFR 75 when those requirements become effective within the state.

2. Performance Test Protocol - At least ninety (90) days prior to conducting the initial performance tests required by this certification, the Permittee shall submit to the Department's Air Program, within the Southwest District office, a protocol outlining the procedures to be followed, the test

methods and any differences between the reference methods and the test methods proposed to be used to verify compliance with the conditions of this certification. The Department shall approve the testing protocol provided that it meets the requirements of this certification.

Q. Modifications

The Permittee shall give written notification to the Department when there is any modification to this facility. This notice shall be submitted sufficiently in advance of any critical date involved to allow sufficient time for review, discussion, and revision of plans, if necessary. Such notice shall include, but not be limited to, information describing the precise nature of the change; modifications to any emission control system; production capacity of the facility before and after the change; and the anticipated completion date of the change.

XIV. SURFACE WATER DISCHARGES

Discharges into surface waters of the state during construction and operation of the project shall be in accordance with applicable provisions of Chapters 17-3, 17-4, 17-25, 17-40, 17-160, 17-301, 17-302, 17-520, 17-522, 17-531, 17-532, 17-550, 17-551, 17-555, 17-560, 17-600, 17-601, 17-604, 17-640, 17-650, 17-660, 17-672, 17-699, and 17-701, F.A.C., and the following conditions of certification:

A. Plant Effluents and Receiving Body of Water

For discharges made from the Power Plant Station the following conditions shall apply:

1. Receiving Body of Water (RBW) - The receiving bodies of water have been determined by the DEP to be the reclaimed lake and subsequent down stream waters of Little Payne Creek.

2. Point of Discharge (POD) - The point of discharge has been determined by DEP to be where the effluent from Outfall Serial Number 001 (OSN-001) physically enters the waters of the state in the reclaimed lake and from storm water runoff collection systems at OSN 002 to the reclaimed lake.

3. From the date of plant startup, the effluent from OSN 001, shall not exceed the effluent limitations and shall be monitored by the Permittee as specified below; if there is no discharge during a sampling period, the sample shall be collected on the day of next discharge. OSN 001 wastewater samples shall be taken prior to actual discharging or mixing with the receiving waters. All samples shall be taken in strict accordance with the following table.

EFFLUENT LIMITATIONS/ WATER QUALITY STANDARDS

<u>EFFLUENT CHARACTERISTIC</u>	<u>DAILY MINIMUM</u>	<u>30-DAY AVERAGE</u>	<u>DAILY MAXIMUM</u>	<u>SAMPLING FREQUENCY/TYPE</u>
Flow (MGD)	N/A	Report	Report	Recorder/Calculation
Dissolved Oxygen (mg/l) ¹	5.0	Report	N/A	Daily/Grab
Total Ammonia (as N) (mg/l)*	N/A	Report	Report	Monthly/Grab
Un-ionized Ammonia (mg/l)	N/A	Report	0.02	Monthly/Calculation
Specific Conductance (umhos/cm)***	N/A	Report	1275	Daily/Grab
Gross Alpha Particle Activity (pCi/l)	N/A	Report	15	Monthly/Grab
Total Sulfate (mg/l)	N/A	Report	Report	Monthly/Grab
Oil and Grease			5.0	Monthly/Grab

pH (standard units)**	6.0	Report	8.5	Daily/Grab
Total Nitrogen (mg/l)*	N/A	Report	Report	Monthly Grab
Total Kjeldahl Nitrogen (mg/l)*	N/A	Report	Report	Monthly Grab
Total Suspended Solids (mg/l)	N/A	50	150	Monthly Grab
Water Temperature (°F) (Summer Season)	N/A	Report	92****	Continuous Recorder
Water Temperature (°F) (Winter Season)	N/A	Report	88.7****	Continuous Recorder
CBOD ₅ (mg/l)	N/A	1.0	3.0	Monthly Grab
Total Residual Chlorine (mg/l)	N/A	Report	0.01	Monthly Grab
ICP 23 metals (ug/l) with Class III standards	N/A	Report	****	2/year/Grab

* The Permittee shall not exceed the background levels of this parameters, as specified in Table 50.9.a. (Volume 4 of Sufficiency Responses).

** As per Rule 17-302.530 (52)(c), F.A.C.

*** As per Rule 17-302.530 (23), F.A.C.

**** Limits pursuant to Rule 17-302.560, F.A.C.

1. The time and depth for sampling Dissolved Oxygen (DO) should be specified and recorded. DO monitoring should occur before 10:00 a.m. whenever possible.

4. For each parameter for which the Department has granted a zone of mixing pursuant to Rule 17-4.244, F.A.C., TEC shall demonstrate compliance with the surface water standard(s) of Rules 17-302.510 and 17-302.530, F.A.C., at the edge of the mixing zone by not exceeding the effluent limitation(s) for those parameters at the POD established by Condition XIV.A.3. above. An exceedance of the effluent limitation at the POD for any parameter for which the Department has granted a zone of mixing shall be considered a violation of the surface water quality standard(s) of Rules 17-302.510, and 17-302.530, F.A.C., at the edge of the mixing zone and subject to enforcement action as per Sections 403.161, and 403.514, F.S.

B. Thermal Mixing Zone

The TEC is hereby granted a thermal mixing zone for the discharge from the cooling reservoir through Outfall 001 to the reclaimed lake. The mixing zone shall be a 250 foot radius semicircle centered at the point of entry into the reclaimed lake. The temperature at the edge of the mixing zone shall not

exceed the limitations of Rule 17-302.520(4)(a), F.A.C. The temperature at OSN 001 shall not exceed 92° F. during the summer season nor 88.7°F. during the winter season. The minimum criteria for surface waters as given in Rule 17-302.500, F.A.C., shall not be violated within the zone of mixing.

C. pH - The pH of the combined discharges to the cooling pond shall be such that the pH will fall within the range of 6.0 to 9.0, and any discharge from the pond at OSN 001 to the reclaimed lake shall fall within the range of 6.0 to 8.5.

D. Polychlorinated Biphenyl Compounds - There shall be no discharge of polychlorinated biphenyl compounds.

E. Construction Storm Water Runoff - During construction, discharge from the surface water management system to the RBW from a storm event less than the 10-year, 24-hour storm shall meet the following limits and shall be monitored at all point source discharges through discharge structures, by a grab sample once per discharge, but not more often than once per week:

<u>EFFLUENT CHARACTERISTIC</u>	<u>DISCHARGE LIMITS INSTANTANEOUS MAXIMUM</u>
FLOW (MGD)	Report
TSS (mg/l)	50
pH	6.0-8.5

During construction special consideration must be given to the control of sediment-laden runoff resulting from storm events. Best management practices erosion controls should be installed early during the construction period so as to prevent the transport of sediment into surface waters which could result in water quality violations and DEP enforcement action. Revegetation and stabilization of disturbed areas should be accomplished as soon as possible to reduce the potential for further soil erosion. Should construction phase runoff pose a threat to the water quality of state waters, additional measures such as treatment of imposed runoff or the use of turbidity curtains (screens) in on-site impoundments shall be implemented.

F. Steam System Blowdown

Blowdown discharge from the steam electric generating system to the cooling pond shall be limited and monitored at OSN 003 as specified below:

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITS		MONITORING REQUIREMENTS	
	DAILY AVERAGE	DAILY MAXIMUM	SAMPLE TYPE	MEASUREMENT FREQUENCY
TSS (mg/l)	30.0	100	grab	1/month
Oil and Grease (mg/l)	15.0	20	grab	1/month
Flow (MGD)	--	--	Calculation	1/month

G. Operation Storm Water Effluent Limits

1. From the date of plant startup, the effluent from OSN 002 shall not exceed the effluent limitations and shall be monitored by the Permittee as specified below. A grab sample of the storm water at the OSN 002 is required to be analyzed once per discharge but not more often than once per week, for the following parameters:

EFFLUENT LIMITATIONS WATER QUALITY STANDARDS

EFFLUENT CHARACTERISTICS	30-DAY AVERAGE	DAILY MAXIMUM	MINIMUM
Flow (MGD)	Report	Report	N/A
CBOD ₅ (mg/l)	Report	12.0	N/A
Total Suspended Solids (mg/l)	Report	50.0	N/A
pH (Std. Units)	N/A	8.5	6.0
Oil & Grease (mg/l)	Report	5.0	N/A

2. During plant operation, necessary measures shall be used to settle, filter, treat or absorb silt-containing or pollutant-laden storm water runoff to limit the suspended solids to 50 mg/l or less at OSN 001 and 002 during rainfall periods less than the 10-year, 24-hour rainfall.

3. Control measures shall consist at the minimum of filters, sediment traps, barriers, berms or vegetative planting. Exposed or disturbed soil shall be protected as soon as possible to minimize silt and sediment-laden runoff. The pH shall be kept within the range of 6.0 to 8.5 in the discharge.

H. Surface Water Monitoring

1. No later than one (1) year prior to startup, TEC shall submit for departmental approval a Biological Assessment Plan of Study for macroinvertebrates for the receiving water body (the reclaimed lake). Upon approval of the plan of study by the Department, TEC will carry out this biological assessment prior to startup and once every five (5) years, beginning three (3) years after the first discharge from OSN 001.

2. In order to provide the Department with reasonable assurance that the discharges from OSN 001 do not violate the acute toxicity requirements of Section 17-302.500(d), F.A.C., the Permittee shall perform the toxicity tests as specified below and submit the results to the Department for review.

a. The Permittee shall initiate a series of bioassay tests, as described below, within one hundred twenty (120) days from initiation of operations, to evaluate whole effluent toxicity of the discharge. All test species, procedures, and quality assurance criteria used shall be in accordance with Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms, EPA/600/4-90/27. The Permittee shall conduct a 96-hour static renewal acute toxicity test on the test species, *Ceriodaphnia dubia* and *Notropis leedsii*, twice a year (bi-annually) on samples of 100 percent whole effluent. Such static renewal tests will be conducted on four separate grab samples of 100 percent final effluent collected at evenly spaced (6-hour) intervals over a 24-hour period and used in four separate tests in order to account for daily variations in effluent quality. If the bioassays indicate acceptable levels of toxicity after four successive tests, the frequency of testing shall be reduced to annually or at a lesser frequency as approved by the Department.

A standard reference toxicant test shall be conducted concurrently with each species used in the toxicity test and all the test reports shall be submitted along with the concomitant monthly operation report.

b. If control mortality exceeds 10 percent of either species in any test, the test(s) for that species (including the control) shall be repeated. A test will be considered valid only if control mortality does not exceed 10 percent for either species. If, in any test, 100 percent mortality occurs prior to the end of the test, and control mortality is less than 10 percent at that time, that test (including the control) shall be terminated with the conclusion that the sample demonstrates unacceptable acute toxicity.

c. If any screening test indicates that unacceptable toxicity (less than 80 percent survival of test organisms in 100 percent effluent) is found in any sample of effluent, additional acute (definitive) renewal toxicity testing involving the determination of 96-hour LC50 values with ninety-five (95) percent confidence limits will be required. A minimum of three (3) such additional 96-hour tests are required to be conducted within thirty (30) days from the date that any screening test indicates the presence of toxicity. Preferably, the first of these additional tests shall be initiated within seventy-two (72) hours of a failed screening test. The second test shall be

initiated at least seven (7) days after completion of the first additional test. Such tests shall be conducted using the test species which exhibited the most toxic response in the screening tests above, and shall be taken at the same time of day and day of the week during which the greatest toxic response was exhibited.

3. WQBEL Study Requirements

If effluent Total Nitrogen concentrations for OSN 001 exceed the ambient levels (twice in a six-month period) of these parameters as specified in Table 50-9.9 (Volume 4 of Sufficiency Response), TEC shall initiate a Level II Water Quality Based Effluent Limitation Study for the discharge from OSN 001. The study shall be conducted in accordance with the requirements of Rule 17-650, F.A.C. TEC shall submit a draft plan of study to the Point Source Evaluation Section within six months of notification by the Department that a study is necessary, and shall modify the plan of study as necessary to obtain Department approval.

The final plan of study shall include a schedule for the submittal of:

- 1) an Intensive Survey document summarizing all data collected; and,

- 2) a WQBEL document summarizing all modeling conducted and proposed effluent limitations. The draft Intensive Survey document shall be provided within one year of the original plan of study submittal and the draft WQBEL document shall be provided within one and a half years of the original plan of study submittal.

XV. DOMESTIC WASTEWATER

A. No portion of the domestic wastewater collection system, treatment plant or effluent transmission line (excluding cooling reservoir) may be constructed without prior written approval from the Department. Construction of any portion of the domestic wastewater facility without the prior written approval of the Department will be considered a violation of the conditions of certification.

B. In order to obtain approval to construct a domestic wastewater treatment facility (DWT), the following forms, reports, plans and data, properly executed and appropriately signed and sealed by an engineer registered in the state of Florida, must be submitted to the Department at least one hundred twenty (120) days prior to proposed date for commencement of construction of that system:

1. The preliminary design report in accordance with Rule 17-600.715, F.A.C., (Minimum Class III Reliability features must be indicated. A Reduced Pressure Zone Backflow Preventer must be designated for potable water isolation.)

2. DER Form 17-604.900(1), Application to Construct a Domestic Wastewater Collection System, with supporting documents.

3. DER Form 17-600.910(1), Application to Construct a Domestic Wastewater Facility, with documentation.

4. DER Form 17-640(1), Agricultural Use Plan, or DER Form 17-640(2), Dedicated Disposal Site Plan, with documentation.

5. 8-1/2" x 11" copies of: (i) DWT location, (ii) sludge disposal site, indicating all public or private drinking water wells within 0.5 miles, (iii) roadmap, or drawing of roads leading to the DWT, (iv) flow process diagram, showing all piping, and planar and volumetric data.

C. All plans and proposals must comply with the requirements of the departmental rules and regulations in effect as of the date of proposed commencement of construction. All requirements of Chapters 17-4, 17-600, 17-640, F.A.C., and other pertinent Florida Administrative Code rules must be met, including construction certifications.

D. Department approval for construction of this domestic wastewater facility will be in effect for two (2) years from the date of issuance; request for extension of time must be submitted in writing on forms and in a manner prescribed by the Department of Environmental Protection at least sixty (60) days prior to date of expiration of the construction approval.

E. Domestic wastewater post-certification approvals will be issued under the provisions of Chapter 403, F.S., and Chapters 17-3, 17-4, 17-300, 17-500 and the 17-600, Series, F.A.C. TEC will be approved to perform the work or operate the facility shown on the approved drawing(s), plans, and other documents, attached thereto or on file with the Department.

F. In accordance with Chapter 17-699, F.A.C., the required certified operator on site time is:

A Class D or higher operator for three (3) non-consecutive visits per week for 1-1/2 hours per week. The Department reserves the right to modify staffing requirements.

G. The discharge from the chlorine contact chamber shall be sampled in accordance with Chapter 17-601, F.A.C., and shall meet the following limitations:

PARAMETER	UNIT	MIN- IMUM	MAXIMUM	TYPE SAMPLE
<u>FREQUENCY</u>				
Permitted Capacity (flow)	mgd	.000	0.0105	
Daily, 5/wk				
pH	STD UN	6.00	8.50	grab
Daily, 5/wk				
CBOD ₅ * & Total	mg/L	0	20 annual avg.	grab
Suspended Solids*			60 any one sample	
Monthly				
Nitrate (as N)	mg/L	0	12	grab
Monthly				
Cl ₂ residual	mg/L	0.5	-	grab
Daily, 5/wk				
Fecal coliform	#/100	0	200 annual avg.	grab
Monthly			200 monthly avg.	

* Influent shall be monitored and each sampling shall be reported on a monthly basis [Rule 17-601.300(1), F.A.C.]

The results shall be reported monthly on DER Form 17-601.900(1).

H. If sludge is disposed of by land application, the sludge shall be sampled after final treatment in accordance with Rule 17-640.700(1)(b) F.A.C., but prior to land application for the parameters listed below every twelve months. A copy of the analyses shall be submitted with the monthly operation report for the following parameters:

Total Nitrogen	-	% dry weight
Total Phosphorus	-	% dry weight
Total Potassium	-	% dry weight
Cadmium	-	mg/kg dry weight
Copper	-	mg/kg dry weight
Lead	-	mg/kg dry weight
Nickel	-	mg/kg dry weight
Zinc	-	mg/kg dry weight
pH	-	standard units
Total Solids	-	%

I. Direct discharge of effluent to waters of the state is not allowed. Such discharge shall be considered a violation of this certification and TEC shall immediately report any such discharge to the Southwest District office.

J. Upon completion of construction and prior to placing the treatment plant or effluent discharge system into operation for any purpose other than testing for leaks and equipment operation, TEC shall submit a Notification That a Domestic Wastewater Facility Will Be Placed Into Operation [DER Form 17-600.910(3)], signed and sealed by a Registered Engineer, to the DEP Southwest District office.

K. TEC shall provide an approved flow measurement device on the sewage treatment plant to monitor the influent (ahead of any return flows) and/or effluent flow, as appropriate. The flow measurement device shall be calibrated at least annually, with evidence of calibration kept at the site of flow measurement, and submitted to the Department upon request.

L. TEC shall provide a weatherproof location for an on-site log book to monitor each day's activities of the certified operator. This log book shall record sign in/out times of the certified operator, list any maintenance performed and contain the signature and certification number of the operator.

M. TEC shall maintain all audible and visual alarm systems on the lift station(s) in operating condition at all times.

N. A reduced pressure zone backflow preventer shall be installed on any potable water supply pipeline connected to the treatment facility. No potable water outlet intended for human contact shall be located down-line of the backflow preventer.

O. The disinfection system shall be operated to maintain a minimum chlorine residual of 0.5 mg/L at the outfall from the chlorine contact chamber. A metering device for dosing chlorine to the effluent shall be utilized, and the chlorine supply tank shall be inspected regularly to ensure proper operation.

P. Daily checks of the plant shall be performed by TEC or supplier, or his representative or agent five (5) days per week for a D plant pursuant to Rule 17-699.311(1), F.A.C.

XVI. DRINKING WATER FACILITIES

A. Prior Approval

1. No portion of the potable water supply system or any portion of a water supply system that will be or is intended to be converted to potable water use at a later date may be constructed without prior written approval from the Department. Construction of any portion of the potable water supply system without the prior written approval of the Department will be considered a violation of the conditions of certification.

2. In order to obtain approval to construct a potable water supply system which includes an on-site water treatment facility, the following information must be submitted to the Department no earlier than one year prior to the date that the water supply system is proposed for construction:

a. A completed and fully executed "Application to Construct a Public Drinking Water System" form which complies with the requirements of the rules and regulations of the Department in effect as of the date that the request for approval to commence construction of the system is made to the Department.

b. Copy of the well driller's well completion report for each well to be used as a potable water supply well.

c. Complete water quality analysis of the raw water from each individual well to be used as a potable water supply well. Analysis of composite samples will not be accepted. The analysis must include all water quality parameters required for the classification of the water supply system being proposed pursuant to the rules and regulations of the Department in effect as of the date that the request for approval to construct the system is made to the Department. Each individual analysis must have been performed by a laboratory certified by the state to perform that particular potable water quality analysis and must have an analysis date within one (1) year of the date that the request for approval to construct the water supply system is made to the Department.

d. Complete specifications for the material and workmanship for the entire potable water supply system for which the request for approval to construct is being made. The specifications must be signed and sealed by an engineer registered in the state of Florida and must provide documentation that the material and workmanship will comply with all applicable rules and regulations of the Department in effect as of the date that the request for approval to construct is made to the Department.

e. Complete engineering drawings of the entire proposed potable water supply system for which approval to construct is being requested. The drawings must demonstrate full compliance with all applicable rules and regulations of the Department in effect as of the date that the request is made to the Department for approval to construct the system. The drawings must be signed and sealed by an engineer registered in the state of Florida.

f. Site plan showing the location of each potable water supply well. The site plan must include all proposed and existing, above and below grade, facilities, natural formations (e.g., streams, creeks, etc.), structures, etc. within a minimum of a complete five hundred (500) foot radius of each wellhead; however, if any facility, natural formation, structure, etc. is located outside of the five hundred (500) foot radius and that facility, natural formation, structure, etc. has a setback distance from the wellhead greater than five hundred (500) feet established in applicable rules of the Department in effect as of the date that the request for approval to construct is made, then that facility, natural formation, structure, etc. must also be shown on the site plan requested here. The site plan must be certified for accuracy by the professional engineer registered in the state of Florida responsible for design of the potable water supply system.

g. Signed and sealed comprehensive engineering report on the proposed potable water supply system which fully describes the project and basis of design. The report must include design data and such pertinent data to give an accurate understanding of the work to be undertaken and must provide supporting documentation that the potable water system as proposed will comply with all applicable rules and regulations of the Department in effect as of the date that the request for approval to construct the water supply system is made to the Department.

3. Construction of potable water lines for the purpose of obtaining potable water from an off-site public water supply system is not covered by the conditions of certification. To obtain permission to connect to such a potable water system, TEC shall submit a modification request pursuant to 403.516, F.S., in accordance with the requirements of Chapter 17-555, F.A.C.

4. Prior to submitting any information to the Department for review of the proposed potable water supply system, all wells that are proposed for use as potable water supply wells and that will be included in the request for approval to construct the water supply system must have been constructed and fully developed. Once the well has been fully developed and the water samples collected, the well must be properly capped (or isolated from the potable water system) until written approval to construct the potable water supply system has been issued by the Department.

5. Should TEC request approval to construct a water treatment system which produces a waste stream (e.g., softening, electrodialysis, reverse osmosis, etc.) other than as described in the original SCA, TEC must submit as part of its request for approval to construct that water supply system documentation that the disposal of that waste stream has been approved by the appropriate agency or section of the Department.

B. Construction

1. TEC must retain the services of a project engineer registered in the state of Florida to observe that the construction of the water supply system is in accordance with the plans and specifications approved by the Department. The project engineer will be responsible for certifying to the Department that he/she observed the construction and that the construction conformed to the plans and specifications approved by the Department.

2. The approval to construct the potable water supply system will be in effect for two (2) years from the date of issuance. All construction of the potable water supply system must be completed within this two (2) year period unless a written request for an extension of this date is made to the Department at least sixty (60) days prior to the expiration of the construction approval, and written approval for an extension of the expiration date is issued by the Department. The expiration date of the construction approval may be extended on a year-by-year basis; however, under no circumstances will the approval to construct the water supply system be extended beyond three (3) years from the date of the earliest water quality analysis of the initial wells. The request for an extension of the expiration date must be accompanied by a analysis of the raw water from each well for each water quality parameter required pursuant to the requirements of the rules and regulations of the Department in effect as of the date that the request for the extension is made. Such an analysis and a request for approval shall be submitted and approved prior to constructing and operating any portion of the appurtenances necessary to connect and operate that new well to the existing system for each new well added to the potable water system after the initial system is constructed and approved. The water quality analysis report submitted with this request must have an analysis date no earlier than one year from the date that the request for an extension of the expiration date is made, must have been performed by a laboratory certified by the state to perform the analysis, and must contain no water quality violations other than those for which the water supply system was originally designed to address. The maximum length of time that the approval or each subsequent approval for the construction of the potable water system may be in effect is five (5) years from the date of the original approval or for subsequent approvals from the date of issuance of each approval. Should the construction of the water supply system not be completed within that five (5)

year period, should TEC have failed to request a timely extension of the approval expiration date, or should any water quality analysis submitted with the request for an extension of the expiration date demonstrate the presence of a contaminant for which the water treatment plant was not originally designed to handle, or as additional wells are installed on-site and proposed for connection to the potable water system, TEC will have to make a new request to the Department for approval to construct the potable water system. That request must meet the submittal and approval requirements of the rules of the Department in effect as of the date that the request for approval is submitted and will be subject to the same review schedule as the original request.

C. Operation

1. No portion of the potable water supply system may be placed into service without the prior written approval of the Department. Placing any portion of the potable water supply system into service prior to receipt of this written approval will be considered as a violation of the conditions of certification.

2. The Department will not issue approval to place the potable water supply system or any portion of that system into service unless the construction of the system or portion thereof had been approved for construction by the Department prior to the commencement of that construction.

3. In order to obtain approval to place the potable water supply system into service, TEC must make a written request for clearance to the Department. The request must be in the form and/or manner stipulated in the letter authorizing construction of the potable water supply system and must include all information stipulated in that letter as being required to be submitted with the request for clearance, as well as any information required for clearance of a potable water supply system contained in applicable rules and regulations of the Department in effect as of the date that the request for clearance is made.

4. The Department will issue a letter of clearance to place the water supply system into service within thirty (30) days of receipt of a written request for clearance, provided that the request is accompanied by all necessary supporting documentation and meets the criteria for clearance contained in the applicable rules and regulations of the Department in effect as of the date that the request for clearance was made.

5. All construction or activity taking place in the vicinity of the potable water supply wells must conform with the setback distances from a potable water supply well established.

in the rules of the Department at the time that the construction or activity is proposed and must be coordinated with the Department.

6. TEC must provide, in accordance with applicable state rules, a certified water treatment plant operator who meets the staffing requirements for the type and capacity of the water treatment system cleared for service.

7. The water meter at the potable water treatment plant(s) must be read at approximately the same time each day, seven days per week, and both the meter reading and the gallons of water pumped to distribution recorded in the plant log.

8. The certified water treatment plant operator must submit a report on the operation of the water treatment plant(s) to the Department monthly in the manner required by the rules and regulations of the Department.

9. The drinking water must be analyzed for all applicable water quality parameters to the degree and frequency required by the rules and regulations of the Department. The analysis must be performed in accordance with these rules and regulations and submitted to the Department in the format required by these rules and regulations.

10. The one-day maximum day demand for the period of time covering the most recent twelve (12) months of operation of the water treatment plant may not exceed the capacity of the water treatment plant approved for construction and cleared for use by the Department. Should the demand on any one day during a twelve (12) month period exceed the capacity of the water treatment plant, TEC shall submit a request for any expansion of the potable water system for review and approval.

11. TEC must plan, design, obtain approval for, and construct all necessary modifications to its water supply system in a timely manner in order to provide sufficient capacity to meet the potable water demands of its system.

12. TEC must operate the water supply system in such a manner as to comply with the provisions of Chapter 403, F.S., and all the rules of the Department.

XVII. INDUSTRIAL WASTEWATER

A. The Permittee shall assure that the sludge filter cake generated from the industrial wastewater treatment plant will meet the leachate standards established by the Toxicity Characteristic Leaching Procedure prior to its disposal.

B. The solids generated by the brine concentration system should be concentrated or dewatered to obtain a solids content of 50 percent or greater prior to disposal off-site.

C. Water Treatment Systems

1. Low Volume Wastes - All discharges of low volume wastes shall be treated in an adequately sized and constructed treatment facility prior to discharge into the cooling pond. TEC shall demonstrate that the discharge of reject water from the wastewater treatment plant will not cause or contribute to a violation of water quality standards at the POD from the cooling pond. Such demonstration will include as a minimum the testing of treated discharges as required by Condition XVII.K.

2. Submission of Plans - The Permittee shall submit to the Department at least ninety (90) days prior to start of construction of the industrial waste treatment system a set of drawings, signed and sealed by a professional engineer registered in the state of Florida, showing the construction details of the proposed lime/soda ash pretreatment system and multi-stage reverse osmosis system.

3. Chemical Metal Cleaning - Chemical metal cleaning wastes shall be disposed off-site in an approved treatment system or disposal area. Prior to operation, TEC shall provide the name and address of the firm holding the contract for off-site disposal to the Southwest District office of the DEP.

D. The Permittee shall ensure that construction and subsequent operation of the cooling pond, and its system of above-grade internal dikes and external berms shall be in strict accordance with the best engineering practices, using Chapter 17-672, F.A.C., where applicable as a guide.

E. The Permittee shall ensure that a vegetative or non-vegetative cover adequate to inhibit wind and water erosion shall be established and maintained on all exposed dam surfaces. Such vegetation shall be maintained by the Permittee sufficiently low enough to permit visual inspection of the soil surfaces in critical areas outlined in Section 17-672.400(1), F.A.C.

F. The Permittee shall, at a minimum, inspect the cooling pond once per week as prescribed in Section 17-672.500(2), F.A.C.

G. An inspection of the cooling pond berms shall be conducted annually by a professional engineer registered in Florida experienced in the field of construction and maintenance of dams. A copy of the inspection report shall be furnished, upon receipt by the Permittee, to the Department for review [Section 17-672.500(5), F.A.C.].

H. The Permittee shall ensure that the cooling pond will be designed, constructed and operated to maintain a surge capacity equal to the runoff from a 100-year, 24-hour rainfall event, plus the flow of all process water diverted from the power plant operation.

I. The Permittee shall dispose of all waste oil collected from the oil/water separator in a Department-approved manner.

J. The Permittee shall not allow any waste sludge or other solid waste to be discharged into the receiving waters either directly or indirectly.

K. Sampling and Design

Within twelve (12) months from commencement of operation of the IGCC, each of the wastestreams discharged to the cooling reservoir shall be properly characterized through an approved sampling and analytical protocol.

1. Ninety (90) days prior to operation of the unit producing the listed wastestream, TEC shall submit for approval a sampling and analysis plan identifying the expected frequency of each wastewater discharge, appropriate sampling parameters, expected variability of the wastewater stream quality and a proposed sampling schedule.

2. The sampling plan shall also include an assessment of the effectiveness of each of the wastewater treatment units prior to discharge to the cooling pond. Effluent sampling shall be conducted for each unit through a plan submitted as specified in Condition XVII.K.1.

3. Upon approval by the Department, the sampling and analysis plan specified in Condition XVII.K.1. and 2. shall be implemented.

XVIII. GROUND WATER

A. Specific Conditions

1. TEC shall submit a Ground Water Monitoring Plan within one hundred eighty (180) days of certification of the application. TEC shall propose monitor well locations, for Department approval, that will provide reasonable assurance that contamination to ground waters of the state that may potentially occur will be detected. These monitor well locations shall be located so that each disposal site as well as the facility will be monitored in the unconfined, upper intermediate, lower intermediate and upper Floridan aquifer system as defined by Florida Geological Survey Bulletin No. 59 and as discussed in the SCA. A ground water monitoring plan shall be prepared by TEC for submittal to the Department prior to construction of any solid waste disposal unit. The ground water monitoring plan shall include, at a minimum, the equivalent to the requirements of Chapter 17-701.510, F.A.C. Detection monitoring wells shall be screened at the base of the surficial aquifer system, specifically no deeper than the base of the Bone Valley Member as defined in FGS Bulletin No. 59. If the surficial aquifer is present within 100 feet laterally of the edge of the Solid Waste Disposal Area (SWDA), one additional well shall be located downgradient from the SWDA.

2. Construction on the monitoring system to implement the Ground Water Monitoring Plan shall be completed at least sixty (60) days prior to start of commercial operation in accordance with Rule 17-522.600, F.A.C.

3. Operation of the facility shall not commence without a written notice from the DEP's Technical Support Section that the installation of the monitor wells and water quality analyses have been approved and reviewed by the Technical Support Section.

B. Ground Water Monitoring Plan

At a minimum the Ground Water Monitoring Plan shall include or address the following, under the indicated section, and shall become effective upon written approval from the Technical Support Section of the Department's Southwest District office:

1. This Ground Water Monitoring Plan is designed for the monitoring of the following sites (as defined in Rule 17-520.200(15), F.A.C.): the Cooling Water Pond and the Brine Storage Area where the outward facing portion of the pond berms define each respective site boundary. The Zone of Discharge (as defined in Rule 17-520.200(19), F.A.C.), for each site, shall be horizontally located 100 feet from the disposal site boundary,

pursuant to Rule 17-522.410(2)(a), F.A.C., and vertically extend to the base of the surficial aquifer system, specifically no deeper than the base of the Bone Valley Member as defined in FGS Bulletin No. 59.

2. The Ground Water Monitoring System shall be designed and constructed by the Permittee in accordance with the plans and supporting documentation submitted and on file in the Southwest District office. Each monitor well shall be constructed within an individual bore hole.

3. Upon approval, TEC shall comply with the Ground Water Monitoring Plan.

C. Location Map

Within ninety (90) days of completion of construction of the ground water monitor wells, a surveyed drawing shall be submitted showing the location of all monitoring wells (active and abandoned) which will be horizontally located by metes and bounds or equivalent surveying techniques. The surveyed drawing shall include the monitor well identification number as well as location and elevation of all permanent benchmark(s) and/or corner monument marker(s) at the site. The survey shall be conducted by a Florida registered surveyor. Two copies of the certified drawing shall be sent to the DEP's Technical Support Section, Southwest District office.

D. Well Information

Within ninety (90) days of completion of construction of each monitor well, the Permittee or the authorized representative shall submit the following information for each monitor well:

- a) A complete DEP Monitor Well Completion Report.
- b) A copy of the SWFWMD Application to Construct a Well, SWFWMD Form SF 306(3) Rev. 9/92; and,
- c) A copy of the SWFWMD Well Completion Report, SWFWMD Form 25-18-3/90.

The information shall be sent to the Technical Support Section, Southwest District office, Department of Environmental Protection, 3804 Coconut Palm Drive, Tampa, Florida 33619-8318.

E. Monitoring

1. Within sixty (60) days of completion of construction of the Ground Water Monitoring System and every five (5) years thereafter, the Permittee shall sample all ground water monitor wells for the Primary and Secondary Drinking Water

parameters included in Chapter 17-550, F.A.C., Public Drinking Water Systems, Fecal Coliform and EPA Methods 601 and 602. The results shall be sent to the DEP's Technical Support Section. First test results shall determine background.

2. Within six (6) months of startup for any new facilities certified through supplemental proceedings and at least every five (5) years thereafter the Permittee shall provide a wastestream characterization for the cooling water pond. The wastestreams shall be analyzed for the Primary and Secondary Drinking Water Standards (Chapter 17-550, F.A.C), Fecal Coliform and the EPA Priority Pollutants. The results shall be sent to the Technical Support Section, Southwest District office, DEP.

3. The wells shall be sampled at the frequency specified and for the parameters listed in the ground water monitoring plan. The results shall be sent to the Technical Support Section, Southwest District office, DEP.

4. After four (4) consecutive quarters of data (after completion and operation of the IGCC), the Permittee may request a reduction in sampling frequency or specific parameters of the ground water monitoring plan. The request shall be considered reasonable when a trend analysis of the parameter indicates no significant or substantial change in the parameter. Specific parameters that are key indicators of the domestic or industrial processes or field measured parameters may not be reduced or eliminated from the ground water monitoring plan.

5. Following the initial analysis of the ground water monitor wells, all monitor wells shall be sampled, and analyzed, and results reported in accordance with the ground water monitoring plan. TEC shall submit to the Department the results of the water quality analyses no later than the 15th day of the month immediately following the end of the sampling period. The results shall be sent to the Technical Support Section, Southwest District office, DEP.

6. Ground water sampling shall be reported on the Monitoring Report Forms [DER Form 522.900(2)]. In order to facilitate entry of this data into the state computer system, these forms or an exact replica must be used and must not be altered as to content. The original copies should be retained so that the necessary information is available to properly complete future reports. The report forms received from the laboratory must be submitted along with the DEP/DER Parameter Monitoring Report Forms described above.

7. If, at any time, background ground water standards are exceeded at the edge of the zone of discharge, the Permittee has fifteen (15) days from receipt of the laboratory analyses in which to resample the monitor well(s) to verify the original analyses. The monitoring test results must be submitted to the Department within fifteen (15) days of receipt of the reanalyses

from the laboratory. Should the Permittee choose not to resample, the Department will consider the water quality analysis as representative of current ground water conditions at the facility.

8. The field testing, sample collection, preservation and laboratory testing, including quality control procedures, shall be in accordance with methods approved by the Department in accordance with Chapter 17-160, F.A.C.

9. If any monitor well becomes damaged or inoperable, the TEC shall notify the Department the next business day and a detailed written report shall follow within seven (7) days. The written report shall detail what problem has occurred and remedial measures that have been taken to prevent the recurrence. All monitoring well design and replacement shall be approved by the Department prior to installation of the replacement well.

F. Plugging and Abandonment

Within sixty (60) days of issuance of this certification, all piezometers and wells not a part of the approved ground water monitoring plan or monitoring wells required by SWFWMD are to be plugged and abandoned in accordance with Rule 17-532.500(4), F.A.C., and the rules of the SWFWMD. The Permittee shall submit a written report to the Department providing verification of the plugging program. A written request for exemption to the plugging of a well must be submitted to the DEP's Technical Support Section for prior approval.

G. Zone of Discharge

1. The Permittee shall ensure that the water quality standards for Class G-II ground waters will not be exceeded at the boundary of the zone of discharge in accordance with Rules 17-520.400 and 17-520.420, F.A.C.

2. The Permittee shall ensure that the minimum criteria for ground water specified in Rule 17-520.420, F.A.C., shall not be violated within the permitted zone of discharge.

H. Variances

Consideration of requests for ground water variances shall be postponed until two (2) years after the beginning of plant operations. A variance from the drinking water quality standard for antimony may be granted by the Department upon demonstration that levels of antimony in the cooling pond exceed the standard in Rule 17-520, F.A.C. However, if representative ambient values for iron and color are shown to already exceed secondary drinking water standards, then these representative values shall be the prevailing standard (Rule 17-520.420(2), F.A.C.).

I. Underground Injection,

TEC shall not use underground injection without prior approval pursuant to Chapter 403.516, F.S.

XIX. SCREENING

The Permittee shall provide screening of the site to the extent feasible through the use of aesthetically acceptable structures, vegetated earthen walls and/or existing or planted vegetation.

XX. TOXIC, DELETERIOUS OR HAZARDOUS MATERIALS

A. Spills

The spill of any toxic, deleterious, or hazardous materials shall be reported in the manner specified by Condition III.B., Noncompliance Notification.

B. Handling and Testing of Potentially Hazardous Material

Within one hundred twenty (120) days prior to commercial operation, TEC shall provide a plan for handling and disposing of hazardous catalysts to the DEP Southwest District office.

XXI. SOLID WASTE STORAGE AND DISPOSAL

A. Solid Waste General

1. The solid waste disposal areas shall be designed, constructed, operated, maintained, closed and monitored in accordance with acceptable landfill practices described in Chapter 17-701, F.A.C.

2. No solid waste disposal areas shall be constructed until detailed plans and drawings as required by Chapter 17-701, F.A.C., have been submitted to and approved by the Solid Waste Section of the Southwest District (SWSSWD) of the DEP.

3. Each solid waste disposal unit shall meet the general criteria for landfills as stated in Rule 17-701.340, F.A.C.

4. Any solid waste produced by the operation of the facility shall be disposed of in a permitted disposal facility. Byproducts that are sold for reuse are not considered solid waste.

B. Solid Waste Site Specific Standards

1. The temporary storage area for the brine solids shall have a leachate control system to prevent a discharge of leachate and mixing of leachate with storm water.

2. Provisions for storing slag for more than one year shall be addressed in the Solid Waste Operations Plan to be submitted to the SWSSWD of the DEP prior to operation of the slag storage unit.

3. The Permittee shall provide reasonable assurance that the liners for all solid waste storage areas shall be constructed, operated and maintained in accordance with acceptable landfill liner practices. Acceptable practices are detailed in Rule 17-701.400, F.A.C., (new January 6, 1993). The characteristics of the soils underlying the liner shall also be determined to prevent settlement or other problems associated with use of a geomembrane liner. The results of all soils and materials testing shall be submitted to the SWSSWD of the DEP with liner specifications for approval prior to construction.

4. The Permittee shall provide leachate collection and disposal plans that meet the criteria of Rule 17-701.400, F.A.C. Leachate sampling shall be addressed in the facility ground water monitoring plan as a post-certification submittal. Parameters detected in the leachate at levels of concern may be included in future ground water sampling analyses. The

Permittee is responsible for the storm water control in the solid waste retention areas. Storm water or other surface water which comes into contact with the solid waste or mixes with leachate shall be considered leachate.

5. The Permittee shall provide backup provisions for leachate management in the event that the industrial wastewater treatment plant is inoperable. This shall be submitted to the SWSSWD of the DEP prior to operation of any solid waste disposal unit.

6. The zone of discharge for each SWDA shall be 100 feet from the edge of the SWDA, or the property boundary, whichever is less. Ground water standards for G-II ground waters shall be maintained at the boundary of the zone of discharge.

7. The Permittee shall provide reasonable assurance that the solid waste disposal area liner system shall be equivalent to a composite or double liner system.

8. The Permittee shall submit to the SWSSWD of the DEP a quality assurance plan for the liner systems equivalent to that for a composite or double liner system for approval by the Department's SWSSWD prior to construction. Soil liner construction quality assurance shall include a quality control plan specifying performance criteria for the soil liner, testing procedures and sampling frequencies.

9. The Permittee shall submit to the SWSSWD of the DEP a comprehensive operation plan for the facility that provides written, detailed instructions for the daily operation of the solid waste disposal areas. The plan shall include the items listed in Rule 17-701.500, F.A.C. The plan shall be kept at the facility and shall be accessible to the operators. The plan shall be revised if operational procedures change. A schedule for routine maintenance of the leachate collection and removal system shall be established to ensure operation of the system. The maintenance schedule shall be a part of the operational procedures for the plan. The initial operation plan shall include the first solid waste disposal area and shall be submitted for approval to the SWSSWD of the DEP prior to operation of the solid waste disposal area.

10. The Permittee shall hold the operator responsible for leachate level monitoring, sampling, analysis of the leachate, and for providing copies of the leachate analysis to the Department's SWSSWD. The operator shall have a prepared contingency plan to handle leachate collection, removal, and treatment problems such as interruptions of discharges to a treatment plant. Quantities of leachate collected by the leachate collection and removal system shall be recorded in gallons per day before on-site treatment or transport off-site.

A rain gauge shall be installed, operated, and maintained to record precipitation at the facility. Precipitation records shall be maintained and used to compare with leachate generation rates.

11. Hazardous waste or any hazardous substance shall not be accepted for disposal at this site. Hazardous waste is a solid waste identified by the Department as a hazardous waste in Chapter 17-730, F.A.C. Hazardous substances are those defined in Section 403.703, F.S., or in any other applicable state or federal law or administrative rule.

12. The Permittee shall maintain a program which prohibits the disposal of bulk industrial wastes which operation personnel reasonably believe to either be or contain hazardous waste, without first obtaining a chemical analysis of the material showing the waste to be non-hazardous. The chemical analysis of any such material, along with the date of disposal, shall be kept on file at the facility.

13. A trained supervisor or foreman shall be responsible for maintaining the solid waste disposal areas in an orderly, safe, and sanitary manner. Sufficient personnel shall be employed for adequate operation. In the event of damage to any portion of the solid waste disposal area or failure of any portion of the related systems, the Department's SWSSWD shall receive notification in accordance with Condition III.B.

14. The facility ground water monitoring plan, to be submitted as a post-certification report, shall include monitoring of the solid waste disposal areas. This plan shall include, at a minimum, the equivalent to the requirements of Rule 17-701-510, F.A.C., for the solid waste disposal areas. The facility ground water monitoring plan must be approved by the Department prior to facility operation. The facility ground water monitoring plan is described in condition of certification Section XVIII.

15. All engineering plans, reports, and related information shall be provided by the engineer of record with professional certification and shall be approved by the Department's SWSSWD prior to construction. A construction certification report signed and sealed by a professional engineer, and record drawings showing all modifications to construction plans, shall be submitted for approval to the SWSSWD of the DEP prior to operation of each solid waste disposal area.

16. Prior to any construction of each solid waste disposal area, the engineer shall define the engineering properties of the site that are necessary for the design, construction, and support for the disposal area.

17. The closure of each solid waste disposal area shall be equivalent to lined landfill closures, and shall have a barrier layer. All engineering plans, reports, and related information shall be provided by the engineer of record with professional certification and shall be approved by the Department's SWSSWD prior to closure.

18. Financial assurance for the solid waste disposal areas shall be provided in accordance with Rule 17-701.630, F.A.C., prior to operation of each solid waste disposal area. All cost estimates for closure and long-term care shall be adjusted and submitted annually to: SWSSWD of the DEP. Proof that the financial assurance has been funded adequately shall be submitted annually to the SWSSWD and to: Financial Coordinator, Solid Waste Section, Department of Environmental Protection, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400.

19. If ground water monitoring reveals chemical parameters at concentrations significantly above background concentrations due to leachate, the Permittee shall submit a contamination assessment plan to the Department's Solid Waste Section within one hundred fifty (150) days of knowledge of exceedance. The contamination assessment plan shall provide a detailed plan for evaluating the vertical and horizontal extent of affected soils and ground water.

C. Processing Additional Information

The Permittee shall send all appropriate submittals to the SWSSWD of the DEP to the following address:

Florida Department of Environmental Protection
Solid Waste Section
3804 Coconut Palm Drive
Tampa, FL 33619

XXII. FEDERAL ANNUAL OPERATING PERMITS AND FEES

A. DEP Responsibilities

The Department of Environmental Protection shall implement the provisions of Title V of the 1990 Clean Air Act for the Power Plant Station (PPS) developing conditions of certification requiring submission of annual operating permit information and annual pollutant emission fees in accordance with federal law and federal regulations.

B. TEC Responsibilities

TEC shall submit the appropriate annual operating information as well as the appropriate annual pollutant emission fees as required by federal law to the Department.

XXIII. WETLANDS MITIGATION

A. Procedures for the Selection of the Transmission Line ROW

Prior to finalization of the ROW location, three copies of blue-line reproductions of the aerial photographs, taken no earlier than 1991, of the corridor, at a scale of 1"= 400' with wetland locations generally identified (see Appendix 2), shall be submitted to DEP, and one copy to SWFWMD delineating the certified corridor and the designated transmission line ROW, structure locations and access road locations. In addition, TEC shall note on the aerial photographs new development in the corridor. TEC shall notify all parties of such filing. This information may be submitted in segments. The agencies receiving copies of the aerial photographs from TEC shall have thirty (30) days from receipt of the photographs to review the photographs and to notify DEP of any apparent conflicts with the requirements of the conditions of certification. However, this paragraph shall not operate to avoid the need for post-certification submittals and compliance reviews otherwise required by the conditions of certification.

After review of the aerial photographs and comments from the other reviewing agencies, if DEP has reason to believe that the construction of the transmission line, access roads, or pads within TEC's designated ROW cannot be accomplished in compliance with the conditions of certification, TEC shall be so notified in writing within forty-five (45) days from receipt of the aerial photographs. Such notice shall specify with particularity the basis for DEP's conclusion, and possible corrective measures shall be suggested. If such notice is provided, TEC may relocate the ROW within the certified corridor to address the specified concern, or TEC may proceed with design of the transmission line on the noticed ROW at its own risk that construction can be accomplished in compliance with the conditions of certification.

B. Work on the Certified Site

Prior to construction, TEC shall submit to DEP for review a detailed narrative and 8-1/2" x 11" plan view and cross-section drawings explaining and illustrating the dewatering plans and turbidity controls for each construction and reclamation phase on the certified site. The purpose of the information is to provide DEP with reasonable assurance that state water quality standards will not be violated in waters of the state during the construction and reclamation on the site.

C. Transmission Line Construction Activities

Prior to construction, TEC shall submit to DEP for review 8-1/2" x 11" plan view and cross-section drawings showing all dredge and fill, structure placement and wetland clearing

necessary to construct the transmission line. The drawings shall include the dimensions and elevations of all the structures and show the areas to be cleared to the ground and restrictively cleared.

D. Off-Site Impacts

It is the responsibility of TEC to ensure that adverse off-site water resource related impacts do not occur during construction. All wetland areas or waterbodies that are outside of the specific limits of construction authorized by this certification shall be protected from erosion, siltation, scouring or excess turbidity, and dewatering. TEC shall prevent adverse off-site water resource related impacts during construction as required by Condition XII.B.1. In determining the acceptability of other methods of control, DEP shall consult with SWFWMD. Off-site discharges during construction and development shall not violate state water quality standards.

E. Erosion/Runoff Control

TEC shall compact or otherwise stabilize any fill material placed around newly installed structures, to reduce erosion, turbidity, nutrient loading and sedimentation in the receiving waters.

Grass seed, mulch or sod must be installed and maintained on exposed slopes within forty-eight (48) hours of completing final grade, and at any other time as necessary, to prevent erosion, sedimentation or turbid discharges into waters of the state.

TEC shall take additional measures when necessary to prevent turbid discharges in violation of state water quality standards and to minimize off-site damage associated with erosion or turbidity. These measures may include but are not limited to the installation of turbidity barriers at all locations where the possibility of transferring suspended solids into the receiving waterbody exists due to the proposed construction. Turbidity barriers must be maintained in effective condition at all locations until construction is completed and disturbed soil areas are stabilized. TEC shall be responsible for implementing measures to address any sedimentation, turbidity, erosion, or shoaling problems that result from the construction, operation or maintenance of the works authorized under this certification. After fill material has been stabilized, TEC will be responsible for the removal of the barriers.

F. Wetlands Clearing

TEC shall use only restrictive clearing practices during construction and maintenance of the transmission line where it crosses wetlands. Restrictive clearing, as used in this condition, is the cutting and removal of vegetation from the wetland by hand, usually with chain saws, or with low-ground-pressure shear or rotary machines to reduce soil compaction and damage to ground cover. These methods may be used alone or in combination, as may be appropriate for specific sites. Restrictive clearing includes the removal of vegetation from areas extending from the transmission line centerline to 20 feet on each side of the outer conductors and in work areas approximately 100 feet by 150 feet around structure sites. Also, in areas where TEC may need to create access to particular structure sites via finger roads rather than a continuous access road, a path approximately 20- to 25- feet wide may be cleared to reach the site from an existing access road. If necessary, the work area around the structure and the access areas may be destumped. Removable construction matting may be used in these areas to support equipment. The stumps shall not be removed in the portion of the ROW outside of the work area and the access areas. The remainder of the ROW in wetland areas, beyond 20 feet on either side of the outer conductors, shall not be cleared to the ground; however, these areas may be restrictively cleared, in that vegetation that has an expected mature height greater than 14 feet may be removed. All cut vegetation shall be removed from the restrictively cleared areas by hand, if practicable. All invasive exotic species shall be removed from the ROW. Herbicides shall not be applied to the cut stumps of native tree species during the initial clearing.

G. Herbicides

Herbicides used in the transmission line ROW or on the certified site shall include only those registered by the U.S. Environmental Protection Agency and which have state approval. Herbicide application rates and concentrations will be in accordance with label directions and will be carried out by a licensed applicator, meeting all federal, state, and local regulations. Herbicide applications shall be selectively applied to targeted vegetation. Broadcast or aerial application of a herbicide shall not be used in the ROW or on the certified site unless approved in writing by DEP.

H. Mitigation for Wetland Impacts

TEC shall provide mitigation as necessary to offset the wetland loss and habitat degradation resulting from the construction of this project. Prior to construction, TEC shall propose a mitigation plan and shall provide the following information to the Bureau of Wetland Resource Management to allow DEP to review the proposed mitigation plan:

1. detailed description of each wetland impact area;
2. acreage of the type and quality of wetland being impacted at each site;
3. narrative, drawings and aerial photographs showing and explaining the proposed mitigation;
4. detailed description of the existing conditions at the mitigation area;
5. acreage of the total proposed mitigation area, broken down by acreage of each mitigation type and wetland type;
6. documentation providing reasonable assurance that the proposed mitigation will be successful.

If the mitigation submittal is deemed by DEP to provide insufficient information for review, additional information requested by DEP shall be submitted.

If DEP, upon review of the proposed mitigation, determines that the proposed mitigation is inadequate to offset the wetland loss and habitat degradation from this project, TEC shall propose additional mitigation.

If the proposed mitigation plan is deemed acceptable by DEP, DEP shall establish construction conditions, success criteria and a monitoring plan to be carried out for the approved mitigation. These conditions, criteria and monitoring plan shall be incorporated into the certification conditions as a minor modification.

No construction within wetland areas shall commence until DEP approves a mitigation plan, and mitigation construction conditions, success criteria and a monitoring plan are incorporated into the certification conditions.

XXIV. WETLAND RECLAMATION REQUIREMENTS

A. Permit Transfer

Prior to any construction on the certified site, the process to transfer DEP Permit No. 531620259 from Agrico Chemical Company to TEC shall be initiated and a permit modification for the same permit to change the reclamation plan shall be submitted to the Bureau of Wetland Resource Management for review. The mining authorized in the above referenced permit shall be allowed to proceed as described in the permit pursuant to the conditions in the permit.

B. Planting Plans

Prior to construction, TEC shall submit final planting plans for all areas to be reclaimed as wetlands. The plans shall include plan views and cross-sections showing the species to be planted at the various elevations. The plans shall specify the size of the plants to be planted and the source of the plants.

C. Management Plan

Prior to construction, a detailed management plan for the reclaimed wetlands shall be submitted to DEP for review. The approved plan shall be made part of this certification. Upon approval, the plan shall be fully implemented. The management plan shall include, but not be limited to, frequent assessment and regular removal, if present, of any nuisance and exotic species and supplemental plantings of wetland species (including groundcover, shrubs and trees) to simulate a natural floristic composition in the shrub and groundcover strata in the forested wetlands. Specific details for all aspects of the plans shall be included, such as specific time intervals for nuisance species assessments and planting densities. The management and maintenance actions shall be fully described in the required annual monitoring reports.

D. Biological Consultant

In order to ensure that the wetland reclamation is correctly implemented, a qualified biological consultant shall oversee the earthmoving, mucking, grading, planting, and monitoring required for the reclamation plan. Prior to the commencement of any reclamation activities, TEC shall submit to DEP for review and approval the name of the biological consultant and supporting documentation that the biological consultant is qualified to oversee the work. The biological consultant must have documented experience in successful reclamation. Any proposed change in the biological consultant during the life of the facility shall be submitted to DEP for review and approval.

E. Hardwood Forest Reclamation

TEC shall plant the 17 acres to be reclaimed as hardwood forest with a mixture of woody species at a density of 800 trees/acre. The species shall be a mixture, including but not limited to, the following species: *Acer rubrum* (red maple), *Gordonia lasianthus* (loblolly bay), *Fraxinus caroliniana* (pop ash), *Nyssa sylvatica* var. *biflora* (black gum), *Magnolia virginiana* (sweet bay), *Liquidambar styraciflua* (sweetgum), *Ilex cassine* (dahoon holly), *Persea palustris* (swamp bay), and *Ulmus americana* (elm). In addition to the woody species, these areas shall be planted on 3-foot centers with a mixture, including but not limited to, the following herbaceous species: *Panicum hemitomon* (maidencane), *Pontederia cordata* (pickerelweed), *Sagittaria* sp. (arrowhead), *Saururus cernuus* (lizard's tail), *Woodwardia* sp. (chain fern), and *Juncus* sp. (bog rush). The woody species and the herbaceous species shall be planted at elevations within the reclaimed wetland that will provide hydroperiods appropriate for the species.

F. Mixed Forest Reclamation

TEC shall plant the 295 acres to be reclaimed as mixed forest with *Taxodium distichum* (bald cypress) in addition to the woody and herbaceous species listed for the hardwood forest areas at densities specified for the hardwood forest areas. The woody species and the herbaceous species shall be planted at elevations within the reclaimed wetland that will provide hydroperiods appropriate for the species.

G. Herbaceous Wetland Reclamation

TEC shall plant the 379 acres to be reclaimed as herbaceous wetlands with a mixture, including but not limited to the following herbaceous species: *Panicum hemitomon* (maidencane), *Pontederia cordata* (pickerelweed), *Sagittaria* sp. (arrowhead), *Spartina bakeri* (cordgrass), *Thalia geniculata* (arrowroot), and *Juncus* sp. (bog rush). These herbaceous species shall be planted at elevations within the reclaimed wetland that will provide hydroperiods appropriate for the species.

H. Surveying and Mapping

Within thirty (30) days of achieving final grade, cross sections of the wetland reclamation areas shall be resubmitted to DEP. The cross sections shall meet the following criteria:

1. They shall clearly depict the wetland topography in such a way as to unambiguously show how the site will retain, detain, shed, or otherwise influence the flow and detention of water at the site;

2. They shall be certified by a registered land surveyor;

3. They shall show any hydrologic connections between the reclaimed and adjacent, existing wetlands; and,

4. They shall show the variations of topographic relief within the graded areas.

I. Organic Soil Placement

To provide for a more hospitable root zone environment and to foster better water quality in the short term, DEP encourages TEC to place organic soils or muck to a minimum depth of four inches on as much of the reclaimed wetlands on the site as possible and requires that organic soils or muck be placed on the seven acres of wetlands to be reclaimed pursuant to DEP Permit No. 531620259. An alternative that would be acceptable to the Department would be to cap the wetland area with mucky sand rather than overburden. Mucky sand, for purposes of the condition, is defined as a fine sand with 6 percent or greater organic content, if tested by the Walkley-Black method.

J. Plant Stock Requirements

The plants used to plant the mitigation areas shall be container-grown, nursery stock. "Container-grown stock" means plants grown in containers from cuttings or seeds. The plants shall originate from within a 50 mile radius of the site or within the same SCS sub-hardiness zone as the mitigation site.

K. Reclamation Success Goals

1. Freshwater herbaceous wetland

Freshwater herbaceous wetland reclamation shall be considered successful when the following conditions are met:

a. Percent cover by non-nuisance, non-exotic wetland species shall be 80 percent or more. Percent covers for the aggregate of those wetland species, and of non-wetland species, bare ground and water shall be reported relative to the total area. A list of the wetland species included in the aggregate shall be included. Wetland species shall be those listed in Rule 17-301.400, F.A.C.;

b. Nuisance species, such as *Mikania scandens* (climbing hempvine), *Typha* sp. (cattail) and *Ludwigia peruviana* (primrose willow), and exotic species are limited to 10 percent or less of the total cover with no one species being more than five percent of the total cover. If these species exceed 10 percent of the total cover, their density must be declining over several years, which would be considered a positive indication that they are under control;

c. The reclaimed wetlands are constructed in accordance with the conditions of certification.

These criteria must all be met at least one year after connection to waters of the state for sites that are severed from waters of the state during some or all of the establishment phase.

2. Forested wetland reclamation shall be considered successful when the following conditions are met:

a. An average of at least 400 wetland trees per acre shall be growing above the herbaceous stratum;

b. The wetland species tree cover shall exceed 33 percent of the total area and in no area of an acre in size shall the tree cover be less than 20 percent total cover. Cover measurement shall be restricted to (1) those trees exceeding the herbaceous stratum in height and (2) those indigenous species that contribute to the overstory of the mature forest of the South Prong of the Alafia River and the Peace River and its tributaries and that are wetland vegetation listed in Rule 17-301.400, F.A.C.;

c. At least 80 percent of obligate groundcover (herbaceous) and obligate shrub (non-canopy woody species) vegetation shall be among those species listed in Rule 17-301.400, F.A.C., and shall be reproducing naturally, either normal, healthy, vegetative spread (in ways that would be normal for each wetland species) or through seedling establishment, growth and survival. Nuisance species such as *Mikania scandens* (climbing hempvine), *Typha* sp. (cattail) and *Ludwigia peruviana* (primrose willow), and all exotic species shall be limited to 10 percent or less of the total cover with no one species being more than five percent of the total cover. If these species exceed 10 percent of the total cover, their density must be declining over several years, which would be considered a positive indication that they are under control;

d. The reclaimed wetlands are constructed in accordance with the conditions of certification.

These criteria must all be met at least one year after connection to waters of the state for sites that are severed from waters of the state during some or all of the establishment phase.

L. Reporting

TEC shall furnish to DEP annual statistical reports of vegetational sampling of the reclaimed wetlands done by any mutually agreed-upon method. Acceptable methods may be found in Daubenmire (1968), Green (1979), Grieg-Smith (1983),

Mueller-Dombois and Ellenberg (1974), Oosting (1956), Poole (1974), and Southwood (1978). It is the responsibility of TEC to ensure that the monitoring report provides a qualitative and quantitative depiction of the site that is representative of the conditions at the entire site.

This report shall include on the cover page, just below the title, the certification of the following statement by the individual who supervised preparation of the report: "This report represents a true, accurate, and representative description of the site conditions present at the time of monitoring." This report shall also contain the following:

1. A monitoring plan describing sampling methods and report format, and map of sampling locations and photographic stations shall be submitted to the Department for review and approval within sixty (60) days after certification issuance and prior to the first monitoring event.

2. Annual statistical reports describing as appropriate for each reclamation area: (1) the density and percent cover of listed trees, and (2) percent cover of listed and non-listed herbaceous species, bareground and water. For forested wetlands, reports on canopy cover shall be submitted for not less than the third, fifth, and any subsequent years after planting until a determination of a successful reclamation has been made. Data for listed nuisance or exotic species shall be tabulated separately from the remaining data. A listed species is one listed in Rule 17-301.400, F.A.C. Reports shall also include an assessment of the jurisdictional status of each reclamation area. Data shall be taken during the summer growing season. Reports shall be submitted annually within sixty (60) days of data acquisition until a determination of a successful wetland reclamation has been made. The first annual statistical report data gathering shall occur not later than one year after planting.

M. Review of Reclamation/Mitigation

Following implementation of the reclamation plan, monitoring shall be performed, following the methods established in the monitoring section, until a determination of a successful reclamation is obtained. At the end of the first three (3) years of monitoring, TEC may request in writing that the monitoring program be reviewed by the DEP to determine whether or not the frequency or parameters of the monitoring program should be changed.

If it is determined by DEP staff, based on visual inspection and review of the monitoring reports that the reclamation is not trending toward success, TEC shall present within thirty (30) days of DEP's notification a plan of corrective actions containing methods and proposals to be

reviewed and approved by the DEP to ensure success of the reclamation effort. The plan of corrective actions shall be implemented within ninety (90) days of written approval by DEP.

N. Drag-line Walk Path

TEC shall notify the Bureau of Wetland Resource Management of a proposed usage of the drag-line walk path on the west side of SR 37 at least fifteen (15) days prior to the event. With the notification, TEC shall provide the Bureau with certified drawings showing the proposed modifications to the Payne Creek outfall. Within twenty-four (24) hours of the dragline crossing the Payne Creek outfall, the outfall and any adjacent areas that were impacted by the crossing shall be restored to original grade and stabilized by either planting or sodding. Within thirty (30) days of the crossing, TEC shall provide the Bureau with certified drawings of record showing the restored areas on one-foot contours with a 50 foot grid as verification that the outfall was restored to original grade.

XXV. MINE RECLAMATION CONDITIONS

A. The conceptual plan modification (AGR-FG-CPG) and variance (AGR-FG-TEC-V1) applications are to be incorporated into the DEP's siting certification process as part of the TEC's Polk Power Station Site Certification Application. Final agency action on these applications by the Governor and Cabinet, sitting as the Siting Board, shall take place simultaneously with the Site Certification Application under the provisions of the Florida Electric Power Plant Siting Act (FEPPSA), pursuant to Sections 403.501-403.517, F.S. Approval of the conceptual plan modification application, AGR-FG-CPG, and variance application, AGR-FG-TEC-V1, as part of the site certification of the PPS does not warrant the suitability of subject lands for any current or proposed land use and does not constitute a statement, admission, or waiver by the state of Florida concerning ownership of any interest in the subject lands within the PPS site or the conceptual plan area. Approval of the conceptual plan modification and variance applications does not relieve Agrico Chemical Company - Freeport MacMoran Resource Partners, Limited Partnership, American Cyanamid, IMC Fertilizer, Incorporated, IMC-Agrico Company, and/or the current land owner or mine operator from the obligation to comply with the requirements, standards, and criteria set forth in Chapter 16C-16, F.A.C., reference Subsection 16C-16.0033(6)(e), F.A.C.

B. All changes in land ownership and operators of each applicable mine, within the lands specifically identified in the TEC's Site Certification Application as the PPS site, shall be reported to the Bureau of Mine Reclamation no later than thirty (30) days after the effective date of such changes, pursuant to Subsection 16C-16.006(6), F.A.C. Pursuant to approval of Tampa Electric Company's Site Certification Application by the Governor and Cabinet, sitting as the Siting Board, each applicable operator (Agrico Chemical Company - Freeport MacMoran Resource Partners, Limited Partnership, American Cyanamid, IMC Fertilizer, Incorporated, IMC-Agrico Company) shall notify the Department within thirty (30) days of the sale or legal transfer of the land within the proposed Polk Power Station site to the TEC or any other entity(ies) claiming a fee interest in the land subject to the mandatory reclamation obligation, as defined in Section 211.32, F.S. This notification shall be in the form of a legal contract of sale or transfer agreement between each applicable operator and the entity(ies) claiming a fee interest in the affected lands. The contract/agreement shall appropriately identify the rights, duties, and responsibilities that shall be assumed and delegated by the transferee and each applicable operator, and shall be signed by the transferee and the applicable operators.

C. Reclamation/Restoration

The TEC shall reclaim and restore all lands within the 4,348-acre PPS site as depicted and described in the TEC's Site Certification Application and in the Agrico Chemical Company's (a Division of the Freeport MacMoran Resource Partners, Limited Partnership) conceptual plan modification application, AGR-FG-CPG, in accordance with the required time schedules in Condition XXV.D and in a manner which will yield the following total (including non-mandatory acreages) post-reclamation land use acreages: 3 acres of transportation routes; 321 acres of industrial use as power plant associated facilities; 730 acres of improved pasture; 18 acres of citrus; 544 acres of shrub and brushland; 6 acres of mixed rangeland; 55 acres of upland hardwood forest; 774 acres of upland mixed forest; 264 acres of lakes; 834 acres of cooling reservoir; 61 acres of wetland hardwood forest; 310 acres of wetland mixed forests; and 428 acres of herbaceous wetlands. Of the total site acreage, 523 acres are non-mandatory acres and will exist as 211 acres of improved pasture, 4 acres of shrub and brushland, 6 acres of mixed rangeland, 29 acres of upland hardwood forest, 34 acres of upland mixed forest, 165 acres of lakes, 40 acres of wetland hardwood forest, 11 acres of wetland mixed forest, and 23 acres of herbaceous wetlands.

D. Time Tables

The TEC shall carry out and complete all reclamation and restoration activities in Tract A, all lands east of State Road 37, and Tract B, all lands west of State Road 37, within the Polk Power Station site in accordance with the following time tables:

TRACT	CONTOURING		REVEGETATION		ESTABLISHMENT	
	BEGINS	ENDS	BEGINS	ENDS	BEGINS	ENDS
A	06/94	11/95	12/95	05/96	06/96	05/97
B	10/94	03/96	04/96	09/96	10/96	09/97

E. Standards

The TEC shall conduct all reclamation and restoration activities within the Polk Power Station site in accordance with the requirements, criteria, and standards as set forth in Sections 16C-16.0051 and 16C-16.0053, F.A.C., (reference attached copy of these rules), with the following exceptions:

1. No minimum annual zone of fluctuation shall be required for the 834-acre cooling reservoir, rather than the 25 percent required by Subsection 16C-16.0051(5)(a), F.A.C.;

2. Approximately eight percent (60 acres) of the low water surface of the cooling reservoir will consist of a zone between the annual low water line and six feet below the annual low water line to provide fish bedding areas and submerged vegetation zones, rather than the 20 percent required by Subsection 16C-16.0051(5)(b), F.A.C.; and,

3. Reclamation and restoration activities within the Polk Power Station site shall be conducted and completed in accordance with the required time schedules as stated previously in Condition XXV.D.

F. All authorized representatives of the Department, on presentation of appropriate credentials to the applicable land owner and/or mine operator, or its authorized representatives, shall have the right of entry to, on, or through all lands subject to Chapter 16C-16, F.A.C. Inspections shall be conducted in accordance with the requirements mandated in Subsections 16C-16.0067(1)-(9), F.A.C.

G. Release Procedures

Upon fulfillment of the requirements, standards, and criteria, as dictated above in Conditions XXV. B. and C., within Tracts A and B of the TEC's PPS site, the authorized agent of the TEC or the applicable land owner and/or mine operator shall submit a release request to the Department that identifies the post-reclamation land use acreages to be released. The release request shall include a statement certifying that the requirements, standards, and criteria, as required in the Conditions XXV.B.,C.,D.,E., and F. above, have been met. This request shall be submitted to:

The Department of Environmental Protection
The Bureau of Mine Reclamation
2051 Paul Dirac Drive,
Tallahassee, Florida 32310.

Release procedures shall be followed in accordance with the requirements set forth in Subsections 16C-16.0068(2)-(6), F.A.C..

XXVI. SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

A. Water Use Permitting Conditions

1. If any of the statements in the application and in the supporting data are found to be untrue and/or inaccurate, or if TEC fails to comply with all of the provisions of Chapter 373, F.S., Chapter 40D, F.A.C., or the conditions set forth herein, the SWFWMD shall initiate action for suspension or revocation of certification.

2. This certificate is issued based on information provided by TEC demonstrating that the use of water is reasonable and beneficial, is consistent with the public interest, and will not interfere with any existing legal use of water. If it is determined by the SWFWMD that the use is not reasonable and beneficial, is not in the public interest, or does impact an existing legal use of water, the SWFWMD shall initiate action for suspension or revocation of certification.

3. TEC shall not deviate from any of the water use related terms or conditions of the site certificate without written approval by the SWFWMD.

4. In the event the SWFWMD declares that a water shortage exists pursuant to Chapter 40D-21, F.A.C., the SWFWMD shall initiate any required action to alter, modify, or declare inactive all or parts of this certification as necessary to address the water shortage.

5. The SWFWMD shall collect water samples from any withdrawal point listed in the certificate or shall require TEC to submit water samples when the SWFWMD determines there is a potential for adverse impacts to water quality.

6. The SWFWMD shall initiate any necessary action to require TEC to cease or reduce withdrawal if water levels in aquifers fall below the minimum levels established by the Governing Board.

7. TEC shall practice water conservation to increase the efficiency of transport, application, and use, as well as to decrease waste and to minimize runoff from the property. At such time as the Governing Board adopts specific conservation requirements for TEC's water use classification, the SWFWMD shall initiate any required action to make this certification subject to those requirements upon notice and after a reasonable period for compliance.

8. The SWFWMD may establish special regulations for permits within the regions designated a Water Use Caution Area. If the SWFWMD has established, or establishes in the future, a

Water Use Caution Area for the region that encompasses this certificate, at such time as the Governing Board adopts such special regulations, the SWFWMD shall initiate any required action to make TEC subject to them upon notice and after a reasonable period for compliance.

9. TEC shall mitigate, to the satisfaction of the SWFWMD, any adverse impact to existing legal uses caused by withdrawals. When adverse impacts occur or are imminent, the SWFWMD shall require TEC to mitigate the impacts. Adverse impacts include, but are not limited to:

a. A reduction in water levels which impairs the ability of a well to produce water;

b. Significant reduction in levels or flows in waterbodies such as lakes, impoundments, wetlands, springs, streams or other water courses; or,

c. Significant inducement of natural or manmade contaminants into a water supply or into a usable portion of any aquifer or waterbody.

10. TEC shall mitigate to the satisfaction of the SWFWMD any adverse impact to environmental features or off-site land uses as a result of withdrawals. When adverse impacts occur or are imminent, the SWFWMD shall require TEC to mitigate the impacts. Adverse impacts include the following:

a. Significant reduction in levels or flows in waterbodies such as lakes, impoundments, wetlands, springs, streams, or other watercourses;

b. Sinkholes or subsidence caused by reduction in water levels;

c. Damage to crops and other vegetation causing financial harm to the owner; and,

d. Damage to the habitat of endangered or threatened species.

11. A SWFWMD identification tag shall be prominently displayed at each withdrawal point by permanently affixing the tag to the withdrawal facility.

12. TEC must notify the SWFWMD within thirty (30) days of the sale or transfer of permitted water withdrawal facilities or the land on which the facilities are located.

13. All reports required by the certificate shall be submitted to the SWFWMD on or before the tenth day of the month following data collection and shall be addressed to:

Southwest Florida Water Management District
Permits Data Section
2379 Broad Street
Brooksville, Florida 34609-6899

Unless otherwise indicated, three (3) copies of each plan or report, with the exception of pumpage, rainfall, evapotranspiration, water level or water quality data which require one copy, are required by the certification.

14. Subject to the provisions of Condition XXVI.A.27, TEC is authorized to withdraw from the Upper Floridan aquifer in support of the 260 MW nominal net generating capacity an amount of water not to exceed 5.24 MGD Annual Average Daily and 7.4 MGD Peak Month Daily. TEC is further authorized to withdraw, in support of 1,150 MW nominal net ultimate site capacity at its Polk Power Station, up to a total of 6.4 MGD Annual Average Daily and 9.22 MGD Peak Month Daily of water from the Upper Floridan aquifer, subject to the following conditions:

The total quantity of water which TEC is authorized to withdraw from the Upper Floridan aquifer shall be limited to 6.4 MGD Annual Average Daily, which amount is determined by the SWFWMD not to have an adverse effect on other legal existing users. However, withdrawal of any water from the Upper Floridan aquifer beyond 5.24 MGD Annual Average Daily and 7.4 MGD Peak Month Daily shall be subject to additional conditions. These conditions shall be applied during review pursuant to Section 403.517, F.S., of any supplemental application for the construction and operation of additional generating units or a further increment of generating capacity at the Polk Power Station. The conditions are as follows:

1) TEC shall demonstrate that any incremental quantity of process or cooling water which it proposes to withdraw from the Upper Floridan aquifer in support of generating units will be minimized to the greatest extent practicable by prudent technologically and economically feasible water conservation practices consistent with those generally required within the Southern Water Use Caution Area (SWUCA) of SWFWMD, including but not limited to the following:

a) Minimization of loss of water from the site during construction;

b) Use of water-conserving electric generation and pollution control technologies;

c) On-site rainwater and storm water capture and management;

d) Reuse of internal wastewater streams of technologically suitable quality;

e) Reuse of treated wastewater of technologically suitable quality available from other sources, such as publicly-owned sewage treatment facilities; and,

f) Use of other available sources of non-potable water of technologically suitable quality.

2) To the extent that total water use in the SWUCA is fixed in a manner which limits the withdrawal of Upper Floridan aquifer water for TEC's Polk Power Station, withdrawal by TEC from that source of any quantity greater than 5.24 MGD Annual Average Daily and 7.4 MGD Peak Month Daily must also be either:

a) Offset by retirement of permitted quantities which are actively used within the SWUCA, to the extent such quantities are eligible to provide offset, pursuant to agreements between TEC and other Permittees which are subject to review by SWFWMD for conformity with generally applicable standards; or,

b) Approved through the "competing application process" under the applicable standards of Section 373.233, F.S., and applicable SWFWMD rules.

3) To the extent that total water use in the SWUCA is not fixed in a manner which limits the withdrawal of Upper Floridan aquifer water for TEC's Polk Power Station, TEC may withdraw from that source up to 6.4 MGD Annual Average Daily and 9.22 MGD Peak Month Daily subject to the requirements of Condition XXVI.A.14.a.1., but not subject to those of Condition XXVI.A.14.a.2.

15. TEC shall investigate the feasibility of using reclaimed water as a water source and submit a report describing the feasibility to the Permits Data Section by January 1, 1995. The report shall contain an analysis of reclaimed water sources for the area, including the relative location of these sources to TEC's property, the quantity of reclaimed water available, the projected date(s) of availability, costs associated with obtaining the reclaimed water, and an implementation schedule for reuse, if feasible. Infeasibility shall be supported with a detailed explanation.

16. Within ninety (90) days of completion of construction of the withdrawal facility or prior to activation of a standby source, District ID Nos. 1, 2, 3, and 4, TEC ID Nos. P1, P2, P3, and P4, shall be equipped with non-resettable, totalizing flow meters, or other measuring devices as approved in writing by the Permitting Department Director, Resource

Regulation, unless an extension is granted by the Director. Such devices shall have and maintain an accuracy within five percent of the actual flow as installed. Total withdrawal and meter readings from each metered withdrawal shall be recorded on a monthly basis and reported to the Permits Data Section (using district forms) on or before the tenth day of the following month. If a metered withdrawal is not utilized during a given month, a report shall be submitted to the Permits Data Section indicating zero gallons. Prior to meter installation, non-use shall be documented with monthly pumpage reports indicating zero gallons withdrawn.

17. Water quality samples shall be collected and analyzed, for parameter(s) and frequency(ies) specified below. Water quality samples from production wells shall be collected whether or not the well is being used, unless infeasible. If sampling is infeasible, TEC shall indicate the reason for not sampling on the water quality data form. Water quality samples shall be analyzed by a Department of Health and Rehabilitative Services (DHRS) certified laboratory under Environmental Laboratory Certification General Category "1". At a minimum, water quality samples shall be collected after pumping the well at its normal rate for a pumping time specified in the table below, or to a constant temperature, pH, and conductivity. In addition, TEC's sampling procedure shall follow the handling and chain-of-custody procedures designated by the certified laboratory which will undertake the analysis. Any variance in sampling and/or analytical methods shall have prior approval of the Permitting Department Director, Resource Regulation. Reports of the analyses shall be submitted to the Permits Data Section (using SWFWMD forms) on or before the 10th day of the following month, and shall include the signature of an authorized representative and the certification number of the certified laboratory which undertook the analysis. The parameters and frequency of sampling and analysis may be modified by the Permitting Department Director, Resource Regulation, as necessary to ensure the protection of the resource.

<u>SWFWMD ID NO.</u>	<u>TEC ID NO.</u>	<u>MINIMUM PUMPING TIME (MINUTES)</u>	<u>PARAMETER</u>	<u>SAMPLING FREQUENCY</u>
1	P1	45 minutes	Chlorides, Sulfates, TDS	Feb., May, Aug., & Nov.

Water quality samples shall be collected based on the following time table:

Quarterly Same week of months specified

Analyses shall be performed according to procedures outlined in the current edition of Standard Methods for Examination of Water and Wastewater, by the American Public Health

Association-American Water Works Association-Water Pollution Control Federation (APHA-AWWA-WPCF) or Methods of Chemical Analyses of Water and Wastes, by the U.S. Environmental Protection Agency.

18. During drilling of SWFWMD ID Nos. 1 and 4, TEC ID Nos. P1 and P4, water quality samples shall be collected at intervals of 50 feet or less, from 300 feet to a maximum depth of five feet above the bottom of the well. Regardless of the specified sample collection interval, a sample shall be collected from the depth which corresponds to five feet above the bottom of the well. Samples shall be collected during reverse air drilling or other appropriate method with prior approval by the Permitting Department Director, Resource Regulation, which will allow representative samples for each depth to be collected. Samples shall be analyzed by a certified laboratory for chlorides, sulfates, and TDS. TEC's sampling procedure shall follow the handling and chain of custody procedures designated by the certified laboratory which will undertake the analysis. Reports of the analyses shall be submitted to the Permits Data Section (using SWFWMD forms) within thirty (30) days of sampling, and shall include the signature of an authorized representative and the certification number of the Department of Health and Rehabilitative Services (DHRS) certified laboratory under Environmental Laboratory Certification General Category "1" which undertook the analysis.

Analyses shall be performed according to procedures outlined in the current edition of Standard Methods for the Examination of Water and Wastewater, by the American Public Health Association-American Water Works Association-Water Pollution Control Federation (APHA-AWWA-WPCF) or Methods for Chemical Analyses of Water and Wastes, by the U.S. Environmental Protection Agency.

19. Within 90 days of completion of construction of the first phase power generation facility, TEC shall install and maintain a continuous recording rain gauge in the area around SWFWMD ID No. 1. Total daily rainfall shall be recorded at this station and submitted to the Permits Data Section, on SWFWMD forms on or before the tenth day of the following month. The reporting period for these data shall begin on the first day of each month and end on the last day of each month. Final location shall be submitted plotted on an original blue-line aerial map or United States Geological Survey quadrangle map, or by providing latitude - longitude location.

20. Any wells not in use and in which pumping equipment is not installed shall be capped or valved in a water tight manner in accordance with Chapter 17-532.500(3)(a)(4), F.A.C.

21. TEC shall construct the proposed wells according to the surface diameter and casing depth specifications below. The casing depth specified is to prevent the unauthorized interchange

of water between different water bearing zones. If a total depth is listed below, this is an estimate, based on best available information, of the depth at which high producing zones are encountered. However, it is TEC's responsibility to have the water in the well sampled during well construction, before reaching the estimated total depth. Such sampling is necessary to ensure that the well does not encounter water quality that cannot be utilized by TEC, and to ensure that withdrawals from the well will not cause saltwater intrusion.

<u>SWFWMD ID NO.</u>	<u>TEC ID NO.</u>	<u>SURFACE DIAMETER</u>	<u>MINIMUM CASING DEPTH</u>	<u>ESTIMATED TOTAL DEPTH</u>
1	P1	10 in.	300 ft.	900 ft.
2	P2	10 in.	300 ft.	900 ft.
3	P3	24 in.	300 ft.	900 ft.
4	P4	24 in.	300 ft.	900 ft.

a. The casing shall be continuous from land surface to the minimum depth stated above;

b. All well casing (including liners and/or pipe) must be sealed with neat cement grout to the depth specified above;

c. The proposed wells(s) shall be constructed of materials that are resistant to degradation of the casing/grout due to interaction with water of lesser quality. A minimum grout thickness of two (2) inches is required on wells four (4) inches or more in diameter.

d. A minimum of twenty (20) feet overlap and two (2) centralizers is required for public supply wells, and all wells six (6) inches or more in diameter.

e. The finished well casing depth shall not vary from these specifications by greater than ten (10) percent unless advance approval is granted by the Permitting Department Director, Resource Regulation, or the Supervisor of the Well Construction Permitting Section in Brooksville.

f. Advance approval from the Permitting Department Director, Resource Regulation is necessary should TEC propose to change the well location or casing diameter.

22. Within six (6) months of site certification issuance, TEC shall submit a detailed plan for a long-term aquifer performance test (APT) for approval by the Permitting Department Director, Resource Regulation. The test shall be conducted for a sufficient period of time to determine the leakance parameter between the surficial and intermediate aquifers and the leakance parameter between the intermediate and Upper Floridan aquifers. The test shall be conducted for a minimum of seven (7) days, and shall include collection of water

quality data (see Condition XXVI.A.21 for water quality parameters). Attempts will be made to conduct the test during a period of minimal adjacent pumpage and during a period of minimal rainfall to minimize interference with the test. This test shall take place prior to initiation of pumpage from these wells. A report of the results of the test, including all raw data and analyses, shall be provided to the Permits Data Section within thirty (30) days of the completion of the test.

If any of the aquifer characteristics vary significantly from those used in the ground water flow model submitted with the certification, TEC shall submit an updated ground water flow model upon notification by the Permitting Department Director, Resource Regulation. This model shall utilize the actual aquifer characteristics determined during the APT to predict impacts due to ground water withdrawals at this site. If the new modeling (if required) indicates that there are adverse impacts not indicated in the SCA, TEC may be required to amend the Site Certification.

23. By January 1, 1998, TEC shall submit for approval by the Permitting Department Director, Resource Regulation, a water conservation plan for the purposes of documenting the current ground water use for each aspect of the plant's water use operations, and the existing and proposed water conservation programs which are, or will be, implemented to conserve ground water at the plant. The plan shall address the following:

a. Current Plant Operation

1) For ground water and recycled surface water sources, separately document the processes which use water, and the magnitude of the use in terms of average annual and peak monthly quantities;

2) For ground water and recycled surface water sources, separately document the range in monthly water use for each process;

3) For ground water and recycled surface water sources, separately document the factors which contribute to monthly fluctuations in water use; and,

4) Describe the methods used to determine the range in water use and the methods used to determine the factors which contribute to the water use fluctuations.

b. Future Plant Operation

1) Determine processes which can be modified to reduce ground water dependency;

2) Propose conservation measures for reducing ground water use and provide implementation dates; and,

3) Propose methods for calculating the effectiveness of water conservation methods in Condition XXVI.A.23.b.2. above.

24. Prior to dewatering within 2,640 feet of a property boundary, TEC shall comply with one of the following two alternatives:

a. Secure written consent from all adjacent property users for lowering the water table below their lands. Three copies of the consent shall be submitted in writing to the Permitting Department Director, Resource Regulation prior to dewatering within the specified distance. This alternative cannot be used if adjacent lands contain wetlands or other waterbodies within 2,640 feet of TEC's dewatering activity.

b. Implement a procedure to mitigate impacts by maintaining the water table at historic levels at the property boundary. TEC must obtain approval from the Permitting Department Director, Resource Regulation. The procedure shall include Conditions XXVI.A.26.a., b., c., d., and e.

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25. Prior to dewatering within 2,640 feet of an on- or off-site wetland that is greater than 0.5 acre in size and will not be disturbed in association with this certification, TEC shall implement a procedure to mitigate impacts by maintaining the water table at historic levels beneath such wetlands or at the property boundary for off-site wetlands. Prior to implementation, TEC must obtain approval, in writing, from the Permitting Department Director, Resource Regulation. The procedure shall include:

a. A water table monitoring network, approved by the Permitting Department Director, Resource Regulation, designed to demonstrate that water table drawdown does not exceed one foot under on-site wetlands that will not be disturbed.

b. Collection of water table level data after construction of the approved monitor well network for at least six (6) months prior to the initiation of dewatering in the area, to obtain background data. During this time period, water level data shall be recorded on a weekly basis and submitted monthly.

c. If a rim-ditch system is proposed to recharge the water table near on-site wetlands that will not be disturbed, design and operation details must be submitted to demonstrate that the water table will be maintained at appropriate levels based on the background data collected. Rim-ditch systems must also be accompanied by a monitor well network to verify water table maintenance.

d. At least one month prior to the anticipated date of dewatering an area within the setback distance, water level data shall be recorded and submitted on a weekly basis.

e. Data collection shall continue for six months following completion of dewatering and reclamation or until SWFWMD staff determine that background or steady-state levels are attained. During this time period, water level data shall be recorded on a weekly basis and reported monthly. Water levels shall be reported in feet relative to the National Geodetic Vertical Datum (N.G.V.D.).

26. TEC's current development schedule for ultimate site capacity at the Polk Power Station estimates incremental additions of generating capacity at an approximate average rate of approximately 72 MW (range of 65 to 220 MW) every two to three years for the period 1995 through 2010, both inclusive, for a total of approximately 1,150 MW nominal net generating capacity. The following additional requirements shall apply in order to ensure that TEC does not unnecessarily deprive other users of ground water:

a. In each supplemental application for the construction and operation of a further increment of generating capacity at the Polk Power Station, TEC shall indicate:

1) Whether it has determined not to install any prior or subsequent increment of generating capacity;

2) The basis for delay in the installation of any increment of generating capacity for more than five (5) years beyond the estimated schedule; and,

3) The quantity of ground water from the Upper Floridan aquifer which any such increment of capacity that has been eliminated or delayed would have required.

b. If TEC has determined not to install any increment of generating capacity or in the absence of a reasonable basis for a delay greater than five (5) years, the quantity of ground water which TEC is authorized to withdraw from the Upper Floridan aquifer in support of ultimate site capacity may be reduced accordingly.

27. Prior to initiation of withdrawals from the proposed production wells in amounts in excess of 3.14 MGD Annual Average Daily and 5.8 MGD Peak Month Daily ground water quantities for the first phase, and 4.3 MGD Annual Average Daily and 7.6 MGD Peak Month Daily quantities for buildout, TEC must submit a detailed plan of study, including a detailed cost analysis for the treatment and reuse of the 2.1 MGD of cooling reservoir blowdown water (wastewater) that is proposed to be discharged to prevent the water quality in the cooling reservoir from exceeding

Class III Florida water quality standards. This plan must address, but is not limited to: the initial investment capital costs for construction of the treatment facilities, operational costs of the treatment facility on an annual basis, costs associated with construction of the brine storage area, and the average cost to store and/or dispose of the brines on- or off-site. The study must also include a comparison of the above mentioned costs with the total budgeted project cost. TEC will also address the feasibility of reuse of treated wastewater of technologically suitable quality available from other sources, such as publicly-owned sewage treatment facilities, and the feasibility of use of other available sources of non-potable water of technologically suitable quality. The study shall be submitted to the Permitting Department Director, Resource Regulation. Based on the information submitted, the SWFWMD Governing Board shall determine whether or not treatment of the wastewater is feasible. If the SWFWMD Governing Board, subject to approval pursuant to the site certification modification process, determines that treatment of this wastewater is economically feasible, then the first phase Annual Average Daily and Peak Month Daily ground water quantities shall be maintained at 3.14 MGD and 5.8 MGD, respectively, and the build-out Annual Average Daily and Peak Month Daily quantities shall be maintained at 4.3 MGD and 7.6 MGD, respectively. If the SWFWMD Governing Board determines that treatment of this wastewater is economically infeasible, the quantities shall not change for the first phase.

If the SWFWMD Governing Board determines that treatment of the wastewater is infeasible for the first phase of the project, TEC shall submit a revised plan of study prior to any subsequent increases in power generation capacity and the corresponding increase in ground water requirements. If during the review of any of the subsequent plans of study the SWFWMD Governing Board determines that treatment of the wastewater is economically feasible, the Annual Average Daily and Peak Month Daily quantity shall be reduced by 2.1 MGD and 1.6 MGD, respectively, from the quantities indicated in SWFWMD Water Use Condition XXVI.A.14. subject to approval pursuant to the site certification modification process.

B. Surface Water Management

1. TEC shall provide post-certification submittals to the SWFWMD to ensure that the construction, operation and maintenance of the surface water management system will be in compliance with the conditions of certification and the rules of Chapter 40D-4, F.A.C., in effect at the time of post-certification submittals. The TEC shall consult with the SWFWMD surface water permitting staff prior to finalization of construction designs, plans, specifications and locations of project facilities to coordinate and foster mutual understanding of construction designs, techniques and regulatory objectives which are to be reflected on any post-certification review information submittals.

Three (3) sets of the post-certification submittals for the surface water management system shall be sent to the Southwest Florida Water Management District, Bartow Service Office, 170 Century Boulevard, Bartow, Florida 33830. If SWFWMD staff does not issue a written request within 30 days of receipt of the information, the information will be deemed to be complete and sufficient. Within ninety (90) days of the determination by SWFWMD staff that the additional information is complete and sufficient, the SWFWMD shall determine and notify the TEC in writing whether the proposed activities conform to SWFWMD criteria, as required by Chapter 40D-4, F.A.C., and the conditions of certification. Construction activities which impact works of the SWFWMD or have surface water management impacts shall not begin until the SWFWMD has determined that the activities are in compliance with the applicable SWFWMD rule criteria and conditions of certification, either in writing or by failure to notify the TEC in writing.

The following information shall be provided to the SWFWMD by the TEC for further post-certification regulatory review:

a. At least one hundred twenty (120) days prior to commencement of construction of the linear facilities, copies of blue-line reproductions of aerial photographs of at least 1:400 scale shall be submitted to the SWFWMD delineating the row routes selected, boundaries, preliminary pole and pad locations and access roads. The SWFWMD and any other party who requests to do so shall have thirty (30) days from receipt of notice to review the photographs and to call any apparent conflicts with the requirements of the conditions of certification to the TEC's attention. However, this condition shall not operate to avoid the need for post-certification submittals and compliance reviews otherwise required by the conditions of certification.

If any substantially affected party has reason to believe that the construction of the linear facility and access roads within the TEC's designated row cannot be accomplished in compliance with the conditions of certification, the TEC shall be so notified in writing. Failure of such a notice to be served on the TEC within thirty (30) days from the notice of filing of the aerial photographs with SWFWMD constitutes acknowledgment that construction of the linear facilities and access roads can be accomplished within the designated row submitted for review.

The TEC shall, where practicable, utilize adjacent existing public roads for access to the linear facility rows for construction, operation and/or maintenance purposes. Finger roads connecting the existing roads to transmission lines, structure pads and access roads must be constructed in a manner which minimizes changes to natural drainage flows and adverse water resource impacts.

The acquisition of a particular ROW or the expenditure of funds toward acquisition of a particular ROW prior to post-

certification review pursuant to these conditions will be at the TEC's risk, and no party will be estopped by such acquisition to seek disapproval of the construction of the linear facility or access roads within the ROW in accordance with these conditions of certification.

b. At least one hundred twenty days (120) days prior to the commencement of construction of any portion or phase of the project which may obstruct, divert, control, or impound waters of the state, such construction must be reviewed by the SWFWMD for a determination of compliance with Chapter 40D-4, F.A.C., and the conditions of certification, as appropriate. "Construction" activities for which such review is required shall include those activities as defined in Rule 40D-4.021(13), F.A.C., and includes, but is not limited to, installation of all surface water and storm water management facilities, the placement of structure pads, dredging and filling, the installation of access/maintenance roads and culverts and fill materials, and related activities in circumstances where a permit from the SWFWMD would ordinarily be required. The TEC will provide appropriate final site information and construction drawings, engineering design calculations, operating and maintenance procedures (all designed and sealed by an engineer practicing in the state of Florida, having the appropriate experience in surface water management design and construction, and in compliance with Chapter 471, F.S.), mitigation/compensation measures and other explicit supporting information for various project phases that are applicable to surface water or storm water management systems. This information shall be sufficiently provided in scope, content and detail to demonstrate compliance with the surface water regulation requirements of Chapter 40D-4, F.A.C., and the conditions of certification.

For all construction activities resulting in and adjacent to wetlands, the following information shall be provided as a minimum:

i. Provide a certified survey or other form of accurate and reproducible means of depicting the field verified wetland limits and clearly indicate these limits on the construction drawings.

ii. Provided a numbering system for all on-site wetlands (including those less than 0.5 acre) and for each wetland clearly indicate the index number on the construction drawings. In tabular form, please indicate for each wetland the index number, on-site acreage, impact acreage, and indicate whether the wetland has been claimed by the SWFWMD, the ACOE, and/or DEP.

iii. Conduct a habitat assessment of each of the proposed wetland impact areas. Describe the type and function and include the dominant floral and faunal species for each distinct vegetative zone and stratum.

iv. Submit a sufficiently comprehensive wetland mitigation/compensation plan to provide reasonable assurance of the successful replacement of the proposed impact wetlands values and functions. Include all design details of the wetland mitigation/compensation areas on the construction drawings. Details should include plan and cross-sectional views showing limits of each distinct zone in reference to proposed control elevations, proposed plantings (species, relative compensation, sizes, and densities) within each zone, mulching details, proposed water elevations (Seasonal High Water Level and Normal Pool), bottom elevations, slopes, and schedules for wetlands compensation, grading, mulching, planting of the mitigation areas, etc.

v. Provide a monitoring and maintenance plan for the wetland mitigation/compensation areas. Sampling design and methodology must clearly demonstrate that the sampling methods and intensity are sufficient to accurately characterize each vegetative zone and stratum in a reproducible manner.

For all construction activities related to linear facilities, the following information shall be provided as a minimum:

i. A centerline profile of existing topographic features along the proposed linear facilities corridor(s) sufficient to show contours, drainage patterns, and wetland limits;

ii. Construction plans and designs of the proposed access/maintenance and finger road(s) with elevations, dimensions, and wetland limits shown;

iii. Typical cross-sections of the proposed access/maintenance and finger road(s);

iv. Cross-section(s) of each wetland, stream or creek at the points to be crossed by the access/maintenance and finger road(s) or other construction;

v. Specifications showing the location of each linear facility structure, finger and maintenance/access road, and culvert to be constructed, including all areas to be filled or excavated;

vi. Specifications, including supporting assumptions and calculations, showing the type and size of water control structures (ditch, culvert, equalizer, etc.) to be used, with proposed flowline elevations marked, drainage areas identified and design capacity verified; and,

vii. A cross-section of all proposed fill/excavation areas, with the exception of fill/excavation directly associated with transmission line support poles, showing the proposed depth.

2. TEC shall avoid impacting wetlands by construction of the linear facilities wherever practicable. If necessary and feasible, the location of and span between power poles shall be varied to eliminate or reduce wetland impacts.

3. Subsequent modifications to the drawings and supporting calculations submitted to the SWFWMD which may significantly alter the quantity and/or quality of waters discharged off-site shall also be submitted to the SWFWMD for determinations that the modifications are in compliance with Chapters 40D-4, F.A.C., as appropriate, prior to the commencement of construction.

4. The operational phase of the surface water management system authorized under this certification shall not become effective until the TEC confirms in writing, upon completion of each phase, that these facilities have been constructed consistent with the conditions of certification. Such confirmation shall include a certification by an engineer registered in the state of Florida that the facilities have been constructed in accordance with the approved project design. Within thirty (30) days after completion of construction of each phase of the surface water management system, the TEC shall submit the confirmation, including "as-built" construction drawings with the engineer's certification and a description of any deviations and notify the SWFWMD that the facilities are ready for inspection for consistency with the conditions of certification and information submitted hereunder.

5. The SWFWMD may initiate action to require additional post-certification monitoring requirements as a result of technical review of construction information, where necessary to demonstrate compliance with SWFWMD regulations.

6. If a situation arises in which mutual agreement cannot be reached between the TEC and an agency with regulatory jurisdiction, then the matter shall be immediately referred to the Division of Administrative Hearings (DOAH) for disposition in accordance with the provisions of Chapter 120, F.S.

7. The terms, conditions, requirements, limitations, and restrictions set forth herein are "conditions of certification" for the surface water management system and as such are binding upon the TEC and enforceable pursuant to the authority of Chapters 373 and 403, F.S. The TEC is hereby placed on notice that the SWFWMD will review this certification periodically and may initiate enforcement action for any violation of the "conditions of certification" for the surface water management system by the TEC, its agents, employees, servants, or representatives.

8. This certification for the surface water management system is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits.

Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of certification may constitute grounds for revocation and enforcement action.

9. This certification for the surface water management system does not relieve the TEC from liability for harm or injury to human health or welfare, animal, plant or aquatic life or property and penalties therefore caused by the construction or operation of the certified system, nor does it allow the TEC to cause pollution in contravention of Florida Statutes and SWFWMD rules, unless specifically authorized by any order from the SWFWMD.

10. The TEC shall at all times properly operate and maintain the systems of treatment and control (and related appurtenances) that are installed or used by the TEC to achieve compliance with conditions of certification for the surface water management system, as required by the SWFWMD rules (Chapter 40D-4, F.A.C.). This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of certification and when required by the SWFWMD rules.

11. If, for any reason, the TEC does not comply with or will be unable to comply with any condition or limitation specified in this certification for the surface water management system, the TEC shall immediately notify and provide the SWFWMD with the following information:

- a. A description of and cause of noncompliance; and,
- b. The period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance.

The TEC shall be responsible for any and all damages which may result and may be subject to enforcement action for penalties or revocation of the certificate.

12. In accepting this certification for the surface water management system, the TEC understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this certified source, which are submitted to the SWFWMD, may be used by the SWFWMD as evidence in any enforcement case arising under the Florida Statutes, or SWFWMD rules, except where such use is proscribed by Florida Statutes.

13. The SWFWMD may initiate any necessary action to require TEC to comply with any applicable changes in SWFWMD rules and Florida Statutes after a reasonable time for compliance, provided, however, the TEC does not waive any other rights granted by Florida Statutes or SWFWMD rules.

14. TEC shall comply with the following monitoring and record keeping requirements:

a. Upon request, the TEC shall furnish all records and plans required under the SWFWMD rules. The retention period for all records will be extended automatically, unless otherwise stipulated by the SWFWMD, during the course of any unresolved enforcement action.

b. The TEC shall retain, at the facility or other location designated by this certification, records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentations), copies of all reports required by this certification, and records of all data used to complete the application for this certification for the surface water management system. The time period of retention shall be at least three (3) years from the date of the sample, measurement, report or application unless otherwise specified by SWFWMD rule.

c. Records of monitoring information shall include:

i. the date, exact place, and time of sampling or measurements;

ii. The person responsible for performing the sampling or measurements;

iii. The date(s) analyses were performed;

iv. The person responsible for performing the analyses;

v. The analytical techniques or methods used; and,

vi. The results of such analyses.

15. When requested by the SWFWMD, the TEC shall within a reasonable time furnish any information required by law which is needed to determine compliance with the certification for the surface water management system. If the TEC becomes aware that relevant facts were not submitted or were incorrect in the certification application or in any report to the SWFWMD, such facts or information shall be submitted or corrected promptly.

16. Drawings, plans, calculations, specifications or other information submitted by the TEC, not attached hereto, but retained on file at the SWFWMD office, are made a part of this certification.

17. A copy of this certification and a set of construction drawings depicting the certified system are required to be kept at the work site of the certified activity during the entire period of construction or operation.

18. Any surface water discharged from the site during construction of the project shall meet state water quality standards at the property boundary or point of discharge to wetlands or state waters. If the discharge does not meet these standards, the discharge will be immediately stopped and the SWFWMD shall be notified of action taken to correct the violation. Turbidity shall not exceed 29 N.T.U. above background level. Turbidity shall be monitored at least daily during discharge, or more often as determined by the project engineer or SWFWMD if needed, to ensure compliance.

19. The TEC and construction representatives shall assure that erosion and sediment control measures as necessary and as required by Rule 40D-4.091, F.A.C., shall be effectively implemented continuously from the beginning of project construction until completion to prevent erosion and transport and discharge of sediment to wetlands or any property other than the project area. Project detention ponds and discharge control structures which are to be constructed as part of the project shall be initially built and maintained continuously during project construction to avoid adverse impact to receiving waters or off-site lands.

20. Except as authorized by this certification for the surface water management system, any further land development, wetlands disturbance or other construction within the total land area of this site will require a review and potential modification of these conditions pursuant to Section 403.516, F.S. and in accordance with the SWFWMD's rules (Chapter 40D-4, F.A.C.).

21. All rights-of-way and easement locations necessary to construct, operate and maintain all facilities, including uplands conservation/buffer areas and wetlands which constitute the certified surface water management system, shall be reserved for water management purposes.

22. Construction of the discharge control and water quality treatment facilities which are part of the certified surface water management system shall be completed and operational prior to beneficial occupancy and use of the project development being served.

23. Establishment and survival of littoral areas provided for storm water quality treatment in wet detention systems shall be assured by proper and continuing maintenance procedures designed to promote viable wetlands plant growth of natural diversity and character. As-built drawings depicting the established wet detention treatment areas shall be submitted to the SWFWMD for inspection and approval upon completion of construction. Following as-built approval, perpetual maintenance shall be provided for the certified system.

24. Any existing wells in the path of construction shall be properly plugged and abandoned by a licensed water well contractor in accordance with Chapter 40D-3 and Rule 17-532.500(4), F.A.C.

25. Any existing septic tanks on this site shall be abandoned at the beginning of the project construction in accordance with Rule 10D-6.53, F.A.C.

26. Any existing fuel storage tanks and fuel pumps on this site shall be removed at the beginning of project construction in accordance with Rule 17-61.05(3)(c), F.A.C.

27. All retention/detention pond side slopes shall be sodded and staked as necessary, to prevent erosion.

28. By issuance of this certification, the SWFWMD, its employees and representatives assume no responsibility and/or liability in regard to either the design, construction or performance of the certified facilities.

29. Any system alteration, including for augmentation into or withdrawal of water from the certified surface water management system, other than as specifically authorized by this certification will require additional SWFWMD certification consideration. The water level of detention ponds shall not be augmented by pumping or diversion of water into the ponds to artificially control their level above the design normal or beginning storage level.

30. Information and reports required to be submitted by this certification shall be submitted to:

Southwest Florida Water Management District
Permits Data Section
2379 Broad Street
Brooksville, Florida 34609-6899

31. Construction of all surface water management facilities, excluding wetlands compensation, grading, mulching, planting of the mitigation areas, etc., must be completed prior to operation of the surface water management system.

32. The TEC shall notify the SWFWMD within thirty (30) days of the sale or transfer of ownership of land on which a surface water management system will be or is located.

33. The TEC shall perform the construction authorized in a manner so as to minimize any adverse impact of the system on fish, wildlife, natural environmental values, and water quality. TEC shall institute necessary measures during the construction period, including full compaction of any fill material placed around newly installed structures, to reduce erosion, turbidity, nutrient loading and sedimentation in the receiving waters.

34. Following review of post-certification submittals, the SWFWMD may initiate action to require additional water quality data for the storm water discharged from the surface water management system. Parameters to be monitored may include those listed in Chapter 17-302, F.A.C. Analyses shall be performed according to procedures outlined in the current edition of Standard Methods for the Examination of Water and Wastewater, by the American Public Health Association, or Methods for Chemical Analyses of Water and Wastes, by the U.S. Environmental Protection Agency. If water quality data are required, the TEC shall provide data as required on volumes of water discharged from the surface water management system, including total volume discharged during the days of sampling and total monthly discharges from the property or into surface waters of the state.

35. The TEC shall obtain all necessary federal, state, local and special district authorizations prior to the start of any construction or alteration of works authorized by this certification.

36. The operation phase of this certification for the surface water management system shall not become effective until the owner or authorized agent certifies that all facilities of the surface water management system have been constructed in accordance with the design approved by the SWFWMD. Within thirty (30) days after completion of construction of the surface water management system, the TEC shall submit the as-builts and notify the SWFWMD that the facilities are complete. The SWFWMD may inspect the system and require remedial measures.

37. Off-site discharges of surface water during construction and development shall be made only through the facilities authorized by this certificate. Water discharged from the project shall be through structures having a mechanism suitable for regulating upstream stages. Stages may be subject to operating schedules satisfactory to the SWFWMD.

38. No construction authorized herein shall commence until a responsible entity acceptable to the SWFWMD has been established and has agreed to operate and maintain the system. The entity must be provided with sufficient ownership so that it has control over all water management facilities authorized herein. Upon receipt of written evidence of the satisfaction of this condition, the SWFWMD will issue an authorization to commence construction.

39. The TEC shall hold and save the SWFWMD harmless from any and all damages, claims, or liabilities which may arise by reason of the construction operation, maintenance or use of any facility authorized by the certificate.

40. This certificate is issued based on the TEC's submitted information, which reasonably demonstrates that adverse off-site water resource-related impacts will not be caused by the

completed surface water management system. It is also the responsibility of the TEC to ensure that adverse off-site water resource-related impacts do not occur during construction.

41. All surface water management systems shall practice water conservation to maintain environmental quality and resource protection; to increase the efficiency of transport, application and use; to decrease waste; to minimize unnatural runoff from the property; and to minimize dewatering of off-site property. At such time in the future as the SWFWMD Governing Board establishes minimum water levels in aquifers or minimum rates of flow in streams, or otherwise adopts specific conservation criteria, SWFWMD may initiate any necessary action to require TEC to undergo an alteration of the system to comply with such criteria upon notice and after a reasonable period for compliance.

42. In order to ensure that the person who will construct the proposed work is identified as required by Subsection 373.413(2)(f), F.S., once the contract is awarded, the name, address, and telephone number of the contractor will be submitted to the SWFWMD prior to construction.

43. The TEC shall immediately provide written notification to the SWFWMD upon beginning any construction authorized by this certificate.

44. The TEC shall retain the design engineer, or other professional engineer registered in Florida, to conduct on-site observations of construction and assist with the as-built certification requirements of this project; the TEC shall inform the SWFWMD in writing and prior to beginning construction of the name, address and phone number of the professional engineer so employed by the TEC for that purpose.

45. The operation and maintenance entity shall submit inspection reports for the surface water management system in the form required by the SWFWMD, in accordance with the following schedule:

For systems utilizing wet detention the inspections shall be performed two (2) years after operation is authorized and every two years thereafter.

XXVII. FLORIDA DEPARTMENT OF COMMUNITY AFFAIRS

A. To the extent feasible, TEC shall avoid guyed transmission line structures in any residential areas to reduce visual impact.

B. To the extent feasible, TEC shall locate the proposed linear facilities within existing utility rights-of-way.

C. To the extent feasible, TEC shall locate the transmission line away from residences, schools, and places of employment.

D. Hazardous and Non-Hazardous Materials

1. The Permittee shall make all feasible efforts to recycle project wastes.

2. The Permittee shall treat its sanitary waste on-site and route it to the cooling pond in order to reduce ground water withdrawals.

XXVIII. FLORIDA GAME AND FRESH WATER FISH COMMISSION

A. The postreclamation land use plan proposed by TEC includes areas which, by nature of elevation, soils and hydroperiod, may be suitable for the development of xeric upland habitat systems. Following reclamation, areas so identified will be managed to promote their succession into productive xeric systems. The use of any available top soil mulch stripped from the disturbed power block area which would advance this succession is encouraged.

B. During the final phases of the reclamation of portions of the Polk Power Station site intended to function as habitat, TEC will develop, with Game and Fresh Water Fish Commission input, a wildlife habitat and management plan. Where appropriate, TEC will incorporate best management practices from the Florida Game and Fresh Water Fish Commission publication Habitat Reclamation Guidelines: A Series of Recommendations for Fish and Wildlife Habitat Enhancement on Phosphate Mined Lands and Other Disturbed Areas, April, 1985.

C. Reclamation success and wildlife utilization of the site should be monitored on a routine basis as proposed in the site certification application. In addition, the Florida Game and Fresh Water Fish Commission will encourage TEC to provide reasonable access to local Audubon chapters and other conservation groups who may desire to conduct annual bird counts, nesting surveys or other studies of fish and wildlife habitat values.

D. Prior to construction of the proposed facility or installation of any associated linear facility, wildlife surveys shall be conducted for the presence of listed species (endangered, threatened, or species of special concern). The results of these surveys shall be presented to the Florida Game and Fresh Water Fish Commission and the United States Fish and Wildlife Service. TEC shall consult with the Florida Game and Fresh Water Fish Commission and the United States Fish and Wildlife Service to determine the appropriate steps to be taken to avoid, minimize, mitigate or otherwise appropriately address impacts within each agency's respective jurisdiction.

XXIX. FLORIDA DEPARTMENT OF TRANSPORTATION

A. By 1995, TEC shall begin a traffic monitoring program at the intersection of SR 37 and CR 630 for determining the need to install a traffic signal or to make geometric improvements. Intersection monitoring shall consist of conducting turning movement counts and a signal warrant analysis. The monitoring shall be conducted once per year in January, February or March, until the number of employees has peaked or a signal and appropriate intersections improvements are installed, whichever comes first. Should the traffic monitoring program show the need for a new traffic signal and/or geometric improvements as a result of traffic to the Polk Power Station, it shall be the responsibility of TEC to install a new traffic signal and/or to make geometric improvements.

B. By 1995, TEC shall begin a traffic monitoring program at the intersection of SR 37 and CR 640 for determining the need to install a traffic signal or to make geometric improvements. Intersection monitoring shall consist of conducting turning movement counts and a signal warrant analysis. The monitoring shall be conducted once per year in January, February or March, until the number of employees has peaked or a signal and appropriate intersections improvements are installed, whichever comes first. Should the traffic monitoring program show the need for a new traffic signal and/or geometric improvements as a result of traffic to the Polk Power Station, it shall be the responsibility of TEC to install a new traffic signal and/or to make geometric improvements.

C. Work/Construction Within the State Rights-of-Way

All utility work/construction within the state rights-of-way shall conform to the minimum requirements of the Utility Accommodation Guidelines (UAG) dated 5/90, or as may be amended. For all work normally requiring a Utility Permit, FDOT shall issue the permit within ninety (90) days, or as may be required by the UAG, of the submission of a satisfactorily completed Utility Permit (Form #592-03, or as may be amended).

D. New and Modifications to Existing Intersections

Construction of new and modifications to existing intersections with state roads shall be in compliance with Rule Chapters 14-96 and 14-97, F.A.C. For construction of new and modifications to existing intersections with state roads, FDOT shall assign a permit number within ninety (90) days of the submission of a satisfactorily completed Connection Permit (Form #850-040-10-a (12/89), or as may be amended).

E. New Public Rail/Highway At-Grade Crossings

Any new public rail/highway at-grade crossings which may be deemed necessary for this site by TEC must adhere to the standards of Rule 14-46.003, F.A.C. TEC shall submit the appropriate information on the proposed crossing to FDOT for review and approval.

F. Erection of Towers and/or Structures

Erection of towers and/or structures that exceed an overall height of 200 feet above ground level, including any appurtenances, must be coordinated with FDOT's Aviation Bureau in Tallahassee as required by Chapter 14-60, F.A.C.

XXX. POLK COUNTY

A. CUP 92-05 Conditions

1. Permits - Copies of all federal permits and the PPSA certification order required for each phase of development of the Polk County Site facility shall be provided to the Polk County Planning Division Director prior to the commencement of building construction code compliance review.

2. Fuel - The project shall be restricted to the use of the following fuels: natural gas, coal, coal gas, petroleum coke, or oil unless a CUP modification is received.

3. Fire Protection Plan - Prior to obtaining a building permit, TEC shall submit an acceptable fire protection plan to Polk County outlining specific measures to be taken to meet all local fire codes and regulations. As part of these plans, TEC shall give consideration to foam systems for tank protection as discussed in NFPA 850(5-3.9.2) as part of the overall fire risk evaluation. The evaluation shall consider such factors as the specific type of tank to be utilized, exposure to other important structures, product value and resupply capability.

4. Emergency Management and Response Plans - Following site certification, and prior to commercial operation, TEC shall submit an acceptable Emergency Management Plan to Polk County (Office of Public Safety). This plan will detail emergency management procedures for any project-related, off-site incident in Polk County so as to minimize response time and maximize effectiveness to protect the public health, safety, and welfare.

5. Emergency Notice - TEC shall agree to immediately contact Polk County's Office of Public Safety when the applicant becomes aware of project-related off-site incidents which have the potential for affecting the public's health, safety, and welfare.

6. Transportation

a. In 1995, 1996, and 1997, TEC shall begin a traffic monitoring program at the intersection of SR 37 and CR 630 to monitor the need to install a traffic signal or to make geometric improvements. Intersection monitoring shall consist of conducting turning movement counts and a signal warrant analysis. The monitoring shall be conducted once in 1995, 1996, and 1997, during January, February, or March and reported to the Transportation Section of the Planning Division. Should the traffic monitoring program show the need for a new traffic signal as a result of traffic to the Polk Power Station, it shall be the responsibility of TEC to install such a signal.

b. In 1995, 1996, and 1997, TEC shall begin a traffic monitoring program at the intersection of CR 630 and Fort Green Road to monitor the need to install a traffic signal or to make geometric improvements. Intersection monitoring shall consist of conducting turning movement counts and a signal warrant analysis. The monitoring shall be conducted once in 1995, 1996, and 1997, during January, February, or March. Should the traffic monitoring program show the need for improvements as a result of traffic to the Polk Power Station, it shall be the responsibility of TEC to install a new traffic signal or to make geometric improvements.

7. Solid Waste Disposal

a. TEC shall be responsible for proper disposal of slag and/or ash by-products produced in the power generation process at locations other than at county landfills.

b. TEC shall monitor ground water in relation to by-product and temporary storage areas and make available to the county all data produced from the ground water monitoring system. Upon 24-hour notice, TEC shall allow county staff members access to the site for purposes of examining the condition of the ground water monitoring equipment.

8. Hazardous Materials Storage - TEC shall report its storage and usage of hazardous material annually to Polk County's Environmental Services Department and shall allow the county to make random inspection of the facility to determine compliance with the reporting requirements. As part of the first report, TEC shall specifically address provision (a) through (g) of Comprehensive Plan Policy 2.310A4.

9. Spill Prevention Containment and Control Plan (SPCC) - TEC shall be required to submit a preliminary Spill Prevention Containment and Control Plan (SPCC) to the Polk County Public Safety Department and the Polk County Planning Department as part of the building construction code compliance review. The final SPCC Plan shall be submitted within six (6) months after the date the facility begins operations. Spill Prevention Containment and Control Plan updates and amendments, due to a change in design, construction, operation, technology, or maintenance, shall be submitted within six (6) months of such change.

10. Flood Study - TEC shall submit a flood study within one year of release of reclamation of the site.

11. Stack Emissions Monitoring - TEC shall make available to the county all data produced from the emissions monitoring systems for the exhaust stack when requested and shall allow designated county staff members access to the site for purposes of examining the condition of this equipment, upon prior notice.

12. Compliance with Applicable Air Quality Regulations - TEC shall comply with applicable air quality regulations in effect at the time of filing of each site certification application or supplemental application for each phase of development of the Polk Power Station.

13. Wildlife Habitat Management Plan - Within one year of release of reclamation of the site by DEP, TEC shall prepare a wildlife management plan in consultation with the Florida Game and Fresh Water Fish Commission, Polk County and other interested parties concerning that portion of TEC's site located west of SR 37.

14. Water Use and Conservation Reporting - TEC shall supply water use quantities, methods of water conservation, and estimates of water conservation if available, on an annual basis to Polk County (Planning and Water Resources Divisions).

15. Ambient Air Quality Testing - The purpose of this condition is to assist Polk County in gathering air quality data. Therefore, to the extent not required as a condition of TEC's certification approval and provided for through the DEP Title V funded statewide air quality monitoring network or other means, TEC shall provide up to two ambient air quality monitoring stations ("Monitors"). The parameters to be monitored, the location of the Monitors, and the operational date of the Monitors will be determined during TEC's certification process.

B. Transmission Lines

TEC shall apply to Polk County for a modification to CUP 92-05 at the time it submits a supplement to or modification of its site certification application to the state regarding a defined, proposed corridor route for any new, proposed transmission lines associated with the TEC Polk Power Station site, other than those detailed in the CUP application.

C. Sinkhole Response Plan

TEC shall develop and submit to Polk County for approval six (6) months prior to commencing operation of the first commercial unit, a plan detailing the emergency measures to be implemented if a sinkhole occurs on the TEC site. TEC shall include a plan to address any necessary remedial actions required as a result of contamination to impacted aquifer(s) and surface water(s) if a sinkhole occurs on the TEC site.

D. Landscape Buffer

Landscaping shall be installed in accordance with the landscape plan included in the Site Certification Application.

E. Tall Structure Compliance

TEC shall, at the time it proposes to construct any structure over 500 feet in height at its site, comply with all regulations as imposed by the Polk County Airport Zoning Ordinance, prior to completion of building construction code compliance review for the units requiring such a structure.

F. Inspection and Permit Compliance Fees

Polk County shall be allowed to inspect any and all construction, operating, monitoring, sampling, and remediation activities which TEC conducts on site. Polk County shall provide notice to TEC prior to performing any such inspection. TEC shall be required to pay Polk County all generally applicable building code compliance and inspection fees provided, however, that such fees shall be adjusted to reasonably reflect actual cost to the county.

G. Flood Protection

TEC during construction and operation shall maintain adequate flood protection berms to assure that residential properties will not receive flood waters in the event of a berm failure. TEC shall perform and provide to Polk County an analysis of berm failure flood conditions including alternatives for minimizing obstruction and damage to roadways.

H. Reporting

TEC shall submit all reports and submissions to the Director of the Polk County Community Services Department in addition to the other departments as noted in the preceding conditions.

XXXI. HILLSBOROUGH COUNTY

Placement of natural gas pipeline facilities in Hillsborough County to serve future Polk Power Station units will require modification of this certification or submittal of a supplemental certification application.



Lawton Chiles
Governor

Florida Department of Environmental Protection

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

Virginia B. Wetherell
Secretary

November 5, 1993

Mr. Thomas W. Davis, P.E.
Environmental Consulting & Technology, Inc.
3701 N.W. 98th. St.
Gainesville, FL 32606

RE: Tampa Electric Company
Polk Power Station
Conditions of Certification

Dear Mr. Davis:

This is a follow-up to our letter of October 19, 1993, in which we outlined recommended changes to the Conditions of Certification in response to your request of the October 14, 1993 letter. We will recommend additional changes to the conditions of certification as follows:

The heat input language (Specific condition B) in the Condition of Certification will be changed to read as follows:

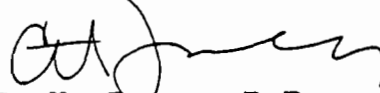
"The maximum heat input to the IGCC combustion turbine (CT) shall neither exceed 1,755 MMBtu/hr while firing syngas, nor 1765 MMBtu/hr while firing No. 2 fuel oil at an ambient temperature of 59° F. Heat input may vary depending on ambient conditions and the CT characteristics. Manufacturer's curves for the heat input correction to other temperatures shall be provided to DEP for review 90 days after the selection of the CT. Subject to approval by the Department, the manufacturer's curve may be used to establish heat input rates over a range of temperature for the purpose of compliance determination."

Additionally, the following language will be added to footnote (*) in Table H.1.

"Pollutant emission rates may vary depending on ambient conditions and the CT characteristics. Manufacturer's curves for the emission rate correction to other temperatures at different loads shall be provided to DEP for review 90 days after the selection of the CT. Subject to approval by the Department, the manufacturer's curve may be used to establish pollutant emission rates over a range of temperature for the purpose of compliance determination."

If there are any questions or comments on the above, please call
Syed Arif at (904) 488-1344.

Sincerely,

A handwritten signature in dark ink, appearing to read 'C. H. Fancy', written over the typed name.

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

cc: Richard Donelan
Buck Oven
Greg Nelson, TEC
Larry Curtin, Holland & Knight



Lawton Chiles
Governor

Florida Department of Environmental Protection

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

Virginia B. Wetherell
Secretary

October 19, 1993

Mr. Thomas W. Davis, P.E.
Environmental Consulting & Technology, Inc.
3701 N.W. 98th Street
Gainesville, FL 32606

Patty,
Do you need
a copy of this
for file?
[Signature]

RE: Tampa Electric Company
Polk Power Station
Conditions of Certification

Dear Mr. Davis:

This letter is in response to your letter of October 14, 1993, requesting additions to the Conditions of Certification and is to inform you of the changes to the Conditions of Certification that we plan to make. This does not constitute authority to operate in accordance with the changes until the Conditions of Certification have been changed. Items No. 1, 3, 4, and 5 will be revised as outlined in your letter.

Item No. 2 of your letter relating to oil fuel bound nitrogen (FBN) adjustments cannot be accepted as presented. The range of FBN requested is much greater than other facilities. TECO has not presented data that shows ranges of the distillate fuel oil FBN content by weight within their system. When the fuel oil is required to have a maximum sulfur content of 0.05 percent by weight, as proposed for this project, the additional sulfur is removed by hydrotreating. FBN values are also reduced using this process.

Item No. 2 for FBN adjustments shall read as follows (based on FBN information for other facilities):

(2) The emission limit for NO_x is adjusted as follows for higher fuel bound nitrogen contents up to a maximum of 0.030 percent by weight:

<u>FUEL BOUND NITROGEN</u> <u>(% by weight)</u>	<u>NO_x EMISSION LEVELS</u> <u>(ppmvd @ 15% O₂)</u>
0.015 or less	42
0.020	44
0.025	46
0.030	48

using the formula $STD = 0.0042 + F$ where:

Mr. Thomas W. Davis, P.E.
October 19, 1993
Page Two

STD = allowable NO_x emissions (% by volume at 15% O₂ and on a dry basis).

F = NO_x emission allowance for FBN defined by the following table:

<u>FUEL BOUND NITROGEN (% by weight)</u>	<u>F (NO_x % by volume)</u>
0 < N < 0.015	0
0.015 < N ≤ 0.03	0.04 (N-0.015)

N = nitrogen content of the fuel (% by weight).

NO_x emissions are preliminary for the fuel oil specified in Specific Condition XIII. C of Conditions of Certification. The permittee shall submit fuel bound nitrogen content data for the low sulfur fuel oil prior to commercial operation to the Bureau of Air Regulation in Tallahassee, and on each occasion that fuel oil is transferred to the storage tanks from any other source to the Southwest District office in Tampa. The % FBN (Z) following each delivery of fuel shall be determined by the following equation:

$$x(y) + m(n) = (x+m)(Z)$$

where x = amount fuel in storage tank
y = % FBN in storage tank
m = amount fuel added
n = % FBN of fuel added
Z = % FBN of composite

If there are any questions or comments on the above, please call Syed Arif at (904) 488-1344.

Sincerely,



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

CHF/SA/bjb

cc: Richard Donelan
Buck Oven
Greg Nelson, TEC
Larry Curtin, Holland & Knight

TEST REPORT
on
EXHAUST EMISSIONS

from a
GENERAL ELECTRIC PG7241FA
NATURAL GAS FIRED SIMPLE CYCLE POWER TURBINE

at the
POLK POWER STATION

located in
POLK COUNTY, FLORIDA

Prepared for
TAMPA ELECTRIC COMPANY

September, 2000

Cubix Job No. 5906

Prepared by

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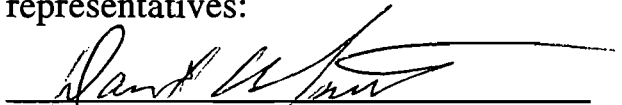
INTRODUCTION

Emission testing was conducted on a simple cycle combustion turbine manufactured by General Electric (GE). The unit, used to generate power, was recently installed at the Polk Power Station located in Mulberry, Polk County, Florida. Tampa Electric Company (TECO) owns and operates this facility. This report documents the testing of the turbine engine while firing with natural gas. A separate report will be provided for the testing of this unit while fueled with No. 2 Fuel Oil. The testing was conducted by Cubix Corporation.

The purpose of this testing was to determine the status of compliance for turbine engine emissions with the permit limits set forth by the Florida Department of Environmental Protection (FDEP), Permit Number PSD-FL-263. Additionally, the emissions were measured to determine compliance with the Environmental Protection Agency (EPA) regulation entitled "Standards of Performance for Stationary Gas Turbines", 40 CFR 60, Subpart GG. The tests followed the procedures set forth in 40 CFR 60, Appendix A, Methods 1, 2, 3a, 9, 10, 19, 20, and 25a.

Turbine exhaust was analyzed for oxides of nitrogen (NO_x), carbon monoxide (CO), total unburned hydrocarbons (UHC), oxygen (O_2), and carbon dioxide (CO_2) using continuous instrumental monitors. Volatile organic compounds (VOC) were determined from the product of UHC and the fraction of non-methane/non-ethane hydrocarbons contained in the exhaust. Gaseous analyses were performed on a dry basis for all compounds except hydrocarbons. Laboratory analyses were conducted on samples of the natural gas fired during the testing schedule. Table 1 provides background data pertinent to these tests.

This test report has been reviewed and approved for submittal to the Florida Department of Environmental Protection (FDEP) by the following representatives:


Tampa Electric Company

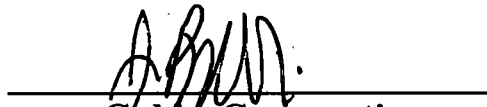

Cubix Corporation

TABLE 1
BACKGROUND DATA

<u>Owner/Operator:</u>	Tampa Electric Company 702 N Franklin Street Tampa, Florida 33602 (813) 228-1111, ext. 39109 TEL (863) 428-5927 FAX Attn: Mike Perkins
<u>Testing Organization:</u>	Cubix Corporation, Headquarters 9225 U.S. Highway 183 South Austin, Texas 78747 (512) 243-0202 TEL (512) 243-0222 FAX Attn: Jim Barufaldi
<u>Test Participants:</u>	Tampa Electric Company David Smith Cubix Corporation Juan Ramirez Sid Cason
<u>Test Dates:</u>	October 7, 2000
<u>Facility Location:</u>	Polk County Power Station 9995 Sate Road 37 South Mulberry, Florida 33860
<u>Process Description:</u>	One simple cycle combustion turbine is used to generate electrical power. The unit, GE Model PG7241FA, consists of a single shaft gas turbine directly connected to a 60 Hz power generator. The turbine is fueled on either distillate oil or natural gas.

Regulatory Application:

State of Florida, Department of Environmental Protection (FDEP) Permit No. PSD-FL-263 and EPA New Source Performance Standards (NSPS) 40 CFR 60, Subpart GG.

Sampling Location:

The exhaust stack is a circular stack 114' tall with a diameter of 18'. Four 4" sample ports were located 90° from each other at 106' above grade. Access to the sample ports was provided with a permanently mounted steel grate service platform equipped with a caged safety ladder.

Test Methods:

EPA Method 1 for O₂ and particulate matter traverse point locations.

EPA Method 2 for stack gas pressure head measurements.

EPA Method 3a for CO₂ concentrations.

EPA Method 9 for opacity observations.

EPA Method 10 for CO concentrations.

EPA Method 19 for the calculation of volumetric flow and pollutant mass emission rates.

EPA Method 20 for NO_x and O₂ concentrations.

EPA Method 25a for UHC concentrations.

SUMMARY OF RESULTS

Exhaust emissions from a GE PG7241FA combustion turbine (CT) were tested to determine the quantity of emissions being vented to the atmosphere. Testing was conducted on the unit while fired with natural gas. Tests were performed at four different combustion turbine loads: approximately 80 MW generator output, ~112 MW generator output, ~136 MW generator output, and full capacity 160 MW generator output.

The first step in the test matrix consisted of conducting the initial O₂-traverse of the exhaust stack. The turbine was set to 80 MW with the water injection system operating. O₂ concentrations were measured at 48 traverse points within the stack to determine the eight points of lowest O₂ concentration. No stratification was found at any of the 48 points; therefore, all subsequent tests were conducted at the eight most convenient traverse points.

Following the O₂-traverse, Cubix conducted three test runs at four load conditions across the operational range of the CT (~80 MW, ~112 MW, ~136 MW, and capacity at ~160 MW). Each reduced load test run was 20 minutes in duration (8 sample points, 2.5 minutes per point). Capacity is defined as 90 to 100% of the maximum permitted capacity, expressed as heat input, defined from the GE performance curve for the unit. NO_x, CO₂, O₂, and UHC were continuously monitored at all load conditions. Additional base load measurements included opacity. The base load test runs were 1 hour in duration for all constituents. Opacity results can be found in Appendix G of this report.

The executive summary, Table 2, signifies the performance of the unit during the full load testing. This performance is an average of the three full load test runs. These emissions are compared to FDEP Permit No. PSD-FL-263. These conditions include the maximum allowable emissions from the combustion turbine firing natural gas. Based upon the FDEP permit, the maximum allowable NO_x emissions at 15% O₂ were 9 ppmv, dry basis.

TABLE 2
Executive Summary
Base Load Conditions

Parameter	Gas Turbine Emissions	NSPS/FDEP Permit Limits
NO _x @ 15% O ₂ (ppmv dry basis)	7.58	9
NO _x (lbs/hr)	27.1	59
CO @ 15% O ₂ (ppmv dry basis)	0.24	12
CO (lbs/hr)	0.5	38
VOC @ 15% O ₂ (ppmv dry basis)	0.11	1.4
VOC (lbs/hr)	0.134	2.8
SO ₂ (gr S/100 ft ³)	0.054	2 gr S/100 ft ³
SO ₂ (lbs/hr)	0.08	9.2
Visible Emissions (% Opacity)	0	10%

Table 3 represents the reduced load test results for the combustion turbine testing. This tabular summary contains all pertinent operational parameters, ambient conditions, Cubix measurements, the calculated emission rates, and corrected concentrations. NO_x emissions are reported in terms of ppmvd (dry basis), ppmvd at 15% O₂, and lbs/hr. CO emissions are reported as ppmvd and lbs/hr. SO₂ emission units are reported in % weight, ppmvd @ 15% O₂, lbs/hr and lbs/MMBtu of fuel burned. VOC emissions are reported in terms of lbs/hr and lbs/MMBtu of fuel burned.

Table 4 summarizes the results of the base load test on the combustion turbine. This table provides the same data as Table 3 with the addition of the opacity measurements.

Appendix A contains all field data sheets used during these tests. Appendix B contains examples of all calculations necessary for the reduction of the data presented in this section of the report. Appendix F contains the strip charts used to record the NO_x, CO, VOC, O₂, and CO₂ concentrations. A data logger was also utilized during the tests for quick, convenient checks of concentrations; however, the strip chart records provided the data used for presentation of the results included in this report. Appendix H contains the operational data provided by General Electric during the test runs. The operational data was recorded in the control room on computer printouts at 20-minute intervals during each test run. The operational data reported in the summary tables is an average of the readings recorded during the gaseous test period of each run. Appendix G contains all VE readings.

TABLE 3: Summary of Results Reduced Load

Test Number	C-1	C-2	C-3		C-4	C-5	C-6		C-7	C-8	C-9	
Date:	10/7/2000	10/7/2000	10/7/2000		10/7/2000	10/7/2000	10/7/2000		10/7/2000	10/7/2000	10/7/2000	
Start Time	3:11	5:18	5:38		6:06	6:31	6:55		10:42	11:05	11:27	
Stop Time	4:47	5:34	5:54		6:22	6:48	7:11		10:58	11:21	11:43	
Operation	70% Load	70% Load	70% Load		70% Load	70% Load	70% Load		85% Load	85% Load	85% Load	
Turbine Load (MW)	94.6	94.8	95.2		114.8	115.8	115.3		134.3	134.5	134.4	
Ambient Conditions												
Temperature (°F wet)	73	74	75		75	75	75		76	76	77	
Temperature (°F dry)	75	76	77		77	77	77		87	87	87	
Barometer (in. Hg)	29.83	29.84	29.84		29.85	29.85	29.85		29.91	29.91	29.91	
Humidity (lbs/lb of air)	0.0167	0.0173	0.0179		0.0179	0.0179	0.0179		0.0163	0.0163	0.0172	
Fuel Stoichiometric Data												
Fuel Flow (lbs/sec)	8.50	8.51	8.53		9.47	9.53	9.51		10.47	10.49	10.48	
Fuel Flow (MMBtu/hr)	707.36	707.96	709.75		788.00	792.85	791.09		871.23	872.76	872.21	
Fuel Heating Value (BTU/lb-HHV)	23108	23108	23108		23108	23108	23108		23108	23108	23108	
Fuel O2 F-Factor (DSCF/MMBTU)	8637	8637	8637		8637	8637	8637		8637	8637	8637	
Fuel CO2 F-Factor (DSCF/MMBTU)	1025	1025	1025		1025	1025	1025		1025	1025	1025	
Combustion Moisture (vol % @ 0% O2)	18.92	18.92	18.92		18.92	18.92	18.92		18.92	18.92	18.92	
Moisture Content (vol % at stack)	9.56	9.06	9.16		9.26	9.24	9.25		9.02	9.03	9.17	
Fo Factor	1.88	1.72	1.73		1.71	1.71	1.72		1.71	1.71	1.71	
Stack Flow Rates (Dry, SCFH)				AVG				AVG				AVG
O2 Stoichiometry	1.68E+07	1.84E+07	1.85E+07	1.79E+07	2.01E+07	2.04E+07	2.03E+07	2.03E+07	2.23E+07	2.23E+07	2.22E+07	2.23E+07
CO2 Stoichiometry	1.79E+07	1.80E+07	1.81E+07	1.80E+07	1.96E+07	1.98E+07	1.98E+07	1.98E+07	2.16E+07	2.16E+07	2.15E+07	2.16E+07
Measured Emissions												
NOx (ppmv)	6.90	6.20	6.20	6.43	7.50	7.60	7.60	7.57	7.50	7.40	7.30	7.40
NOx (ppm @ 15% O2)	5.36	5.27	5.27	5.30	6.27	6.38	6.36	6.34	6.27	6.18	6.08	6.18
CO (ppmvd)	1.00	2.00	1.70	1.57	0.30	0.50	0.70	0.50	0.30	0.40	0.40	0.37
CO (ppmvd @ 15% O2)	0.78	1.70	1.45	1.31	0.25	0.42	0.59	0.42	0.25	0.33	0.33	0.31
O2 (%)	13.30	13.96	13.96	13.74	13.84	13.87	13.85	13.85	13.84	13.83	13.82	13.83
CO2 (%)	4.05	4.03	4.02	4.03	4.12	4.10	4.09	4.10	4.13	4.14	4.15	4.14
VOC (ppmv dry as C1 by M-25a)	0.50	0.40	0.60	0.50	0.40	0.50	0.30	0.40	0.30	0.10	0.20	0.20
VOC (ppmvd @ 15% O2)	0.39	0.34	0.51	0.41	0.33	0.42	0.25	0.33	0.25	0.08	0.17	0.17
Mass Emissions												
NOx (lbs/hr)	13.8	13.6	13.7	13.7	18.0	18.5	18.4	18.3	20.0	19.7	19.4	19.7
NOx (lbs/MMBTU)	0.020	0.019	0.019	0.019	0.023	0.023	0.023	0.023	0.023	0.023	0.022	0.023
CO (lbs/hr)	1.2	2.7	2.3	2.1	0.4	0.7	1.0	0.7	0.5	0.6	0.6	0.6
CO (lbs/MMBTU)	0.002	0.004	0.003	0.0029	0.001	0.001	0.001	0.0009	0.001	0.001	0.001	0.0007
SO2 (lbs/hr)	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.07	0.08	0.08	0.08	0.08
SO2 (lbs/MMBTU)	0.00009	0.00009	0.00009	0.00009	0.00009	0.00009	0.00009	0.00009	0.00009	0.00009	0.00009	0.00009
VOC (lbs/MMBTU as C1)	0.0005	0.0004	0.0006	0.0005	0.0004	0.0005	0.0003	0.0004	0.0003	0.0001	0.0002	0.0002
VOC (lbs/hr as C1)	0.349	0.306	0.460	0.372	0.335	0.423	0.252	0.337	0.278	0.093	0.185	0.185

TABLE 4: Summary of Results Base Load

Test Number	C-10	C-11	C-12	
Date:	10/7/2000	10/7/2000	10/7/2000	
Start Time	12:16	13:30	14:37	
Stop Time	13:16	14:30	15:37	
Operation	100% Load	100% Load	100% Load	
Turbine Load (MW)	154.6	155.0	155.6	
Ambient Conditions				
Temperature (°F wet)	78	78	78	
Temperature (°F dry)	88	90	90	
Barometer (in. Hg)	29.88	29.86	29.85	
Humidity (lbs/lb of air)	0.0179	0.0174	0.0174	
Fuel Stoichiometric Data				
Fuel Flow (lbs/sec)	11.72	11.76	11.81	
Fuel Flow (MMBtu/hr)	975.33	978.32	982.56	
Fuel Heating Value (BTU/lb-HHV)	23108	23108	23108	
Fuel O2 F-Factor (DSCF/MMBTU)	8637	8637	8637	
Fuel CO2 F-Factor (DSCF/MMBTU)	1025	1025	1025	
Combustion Moisture (vol % @ 0% O2)	18.84	18.92	18.92	
Moisture Content (vol % at stack)	9.46	9.42	9.46	
Fo Factor	1.71	1.72	1.72	
Stack Flow Rates (Dry SCFH)				AVG.
O2 Stoichiometry	2.41E+07	2.42E+07	2.41E+07	2.41E+07
CO2 Stoichiometry	2.34E+07	2.37E+07	2.35E+07	2.35E+07
Measured Emissions				
NOx (ppmv)	8.79	9.27	10.19	9.42
NOx (ppm @ 15% O2)	7.10	7.48	8.17	7.58
CO (ppmvd)	0.40	0.20	0.30	0.30
CO (ppmvd @ 15% O2)	0.32	0.16	0.24	0.24
O2 (%)	13.60	13.59	13.54	13.58
CO2 (%)	4.27	4.24	4.29	4.27
VOC (ppmv dry as C1 by M-25a)	0.10	0.20	0.10	0.13
VOC (ppmvd @ 15% O2)	0.08	0.16	0.08	0.11
Mass Emissions				
NOx (lbs/hr)	25.3	26.7	29.3	27.1
NOx (lbs/MMBTU)	0.026	0.027	0.030	0.028
CO (lbs/hr)	0.7	0.4	0.5	0.5
CO (lbs/MMBTU)	0.001	0.000	0.001	0.0005
SO2 (lbs/hr)	0.08	0.08	0.09	0.08
SO2 (lbs/MMBTU)	0.00009	0.00009	0.00009	0.00009
VOC (lbs/MMBTU as C1)	0.0001	0.0002	0.0001	0.0001
VOC (lbs/hr as C1)	0.100	0.201	0.100	0.134

PROCESS DESCRIPTION

Tampa Electric Company is the owner of the Polk Power Station which is located in Mulberry, Polk County, Florida. This station contains a simple cycle gas turbine manufactured by General Electric. This unit was installed to provide electrical power to Tampa, Florida and surrounding areas. Emission testing was conducted on the simple cycle unit to determine its compliance status with state and federal regulations. This section of the emission test report provides a brief description of the unit.

The unit is a GE Model PG7241FA 165 MW simple cycle combustion turbine. The main body consists of a single shaft combustion turbine directly coupled to a 60 Hz generator. The facility is designed to provide two fuels to the combustion turbine: distillate oil and natural gas. During natural gas operation, NO_x emissions are controlled through the use of dry low NO_x combustors. While firing natural gas, the CT has a base load rating of 165 MW at site conditions of 59°F inlet air temperature, 60% relative humidity, 14.7 psia atmospheric pressure. The FDEP permit has defined the base load of the unit at a heat input of 1600 MMBtu/hr at 59°F while firing natural gas.

The circular CT/HRSG exhaust stack was utilized for exhaust emission measurements of the turbine testing. The exhaust stack dimensions are depicted in the stack diagram of Appendix A. Four four-inch diameter sample ports are spaced perpendicular to each other. The stack is 114 ft tall and has a diameter of 18 ft. These ports are located 8 ft from the top of the stack (106 ft above ground level). Metal grate service platforms, a caged safety ladder, and a metal grate stairway were installed to provide access to the sample ports.

ANALYTICAL TECHNIQUES

The sampling and analysis procedures used during these tests conformed with those outlined in The Code of Federal Regulations, 40 CFR 60, Appendix A, Methods 1, 2, 3a, 4, 5B, 8 (modified), 9, 10, 18, 19, 20, and 25a. This section of the report describes the analytical techniques and procedures used during these tests.

Samples of the natural gas fuel were collected on a daily basis during the test schedule. The natural gas samples were analyzed for composition, specific gravity, both higher and lower heat value, and total sulfur content. All sample procedures were submitted to FDEP in Cubix's emission test plan. These procedures were approved by FDEP prior to analysis of the gas samples. Results of these analyses along with chain-of-custody forms are in Appendix C of this report.

The turbine was tested at four load conditions. Measurements of NO_x , CO, VOC, opacity, CO_2 , and O_2 were performed during base load tests. At reduced loads, NO_x , CO, VOC, CO_2 , and O_2 were measured. Each reduced load test run was 20 minutes in duration (8 sample points, 2.5 minutes per point). Three 60 minute test runs were conducted at base load for all components. All compounds were measured on a dry basis except hydrocarbons.

Provisions were made to introduce the calibration gases to the instrumental monitors via two paths: 1) directly to the instruments via the sample manifold quick-connects and rotometers, and 2) through the complete sampling system including the sample probe, filter, heat trace, condenser, manifold, and rotometers. The former method was used for quick, convenient calibration checks. The latter method was used to demonstrate that the sample was not altered due to leakage, reactions, or adsorption within the sampling system (sample system bias check). A NO_x standard calibration gas was introduced into the NO_x analyzer directly. Then the response from the NO_x analyzer was noted as the calibration gas was introduced at the probe. Any difference between the two responses in the instrument was attributed to the bias of the sample system. Following the span gas bias check, a zero gas bias check was performed on the NO_x analyzer using nitrogen to check for any zero bias of the sample system. In accordance with EPA Methods 3a, 20, and 25a, this span and zero bias check procedure was repeated for the CO_2 , O_2 , and UHC analyzers.

As shown in Figure 1, a 1" stainless steel probe was inserted into the sample port of the stack. The gas sample was continuously pulled through the probe and transported via $\frac{3}{8}$ " heat-traced Teflon® tubing to the mobile laboratory through Teflon® tubing via a stainless steel/Teflon® diaphragm pump and into a heated sample manifold. From the heated manifold, the sample was partitioned to the hydrocarbon analyzers through heated lines. The bulk of the gas stream then passed to a stainless steel minimum contact condenser to dry the sample stream and into the (dry) sample manifold. From the manifold, the sample was partitioned to the analyzers through glass and stainless steel rotometers for flow control of the sample.

All instruments were housed in an air conditioned trailer-mounted mobile laboratory. Gaseous calibration standards were provided in aluminum cylinders with the concentrations certified by the vendor. EPA Protocol No. 1 was used to determine the cylinder concentrations where applicable (i.e. NO_x calibration gases).

EPA Method 1 procedures were used to determine the O₂-traverse point locations for sampling per the requirements of EPA Method 20. The location of the sample ports and the traverse point distances for the turbine are described by the stack diagram located in Appendix A.

The stack gas analyses for CO₂ concentrations were performed in accordance with procedures set forth in EPA Method 3a. Instrumental analyses are usually used by Cubix in lieu of an Orsat or a Fyrite procedure due to the greater accuracy and precision provided by the instruments. The CO₂ analyzer is based on the principle of infrared absorption.

The F_o calculation of EPA Method 3b (Section 3.4.1.1) was used to verify that the ratio of O₂ to CO₂ were within an acceptable range during all runs. In all cases, the F_o fell within the expected values for natural gas.

CO emission concentrations were quantified in accordance with procedures set forth in EPA Method 10. A continuous nondispersive infrared (NDIR) analyzer was used for this purpose. This analyzer was equipped with a gas correlation filter which eliminates any interference from moisture, CO₂, or other combustion products.

EPA Method 20 was used to determine concentrations of NO_x (via chemiluminescence) and O₂ (via a micro-fuel cell). An initial O₂-traverse was conducted in the CT/HRSG stack; 48 total points were sampled. This test was performed to identify the 8 sample points of lowest O₂ concentration among the sample traverse points. EPA Method 1 was used to determine the location of

these traverse points. No identifiable differences in the O₂ emission concentrations were found during the sampling traverse of the gas turbine's exhaust. After this initial determination of a well mixed exhaust, all subsequent sampling was performed at eight randomly selected points in the stack.

NO_x concentrations were reported in parts per million by volume on a dry basis corrected to 15% O₂. The example calculations can be found in Appendix B. This O₂ correction was made in accordance with the formula published in 40 CFR 60, Method 20.

Total hydrocarbons (THC) concentrations were quantified during the testing using Method 25a. Total hydrocarbons were continuously measured throughout each test run using a flame ionization detector (FID). The THC continuous analyzer was calibrated on methane standards in an air matrix. Thus, the results included in this report are presented on a methane basis. Having the calibration standards in an air basis (i.e. 20.9% O₂) more closely matches the background matrix of the engine exhaust and helps to reduce the effect of O₂ synergism on flame ionization detectors.

The stoichiometric calculations of EPA Method 19 were used to calculate the stack volumetric flow rates and mass emission rates. These calculations are based on the heating value and the O₂ and CO₂ "F-factors" (DSCF of exhaust per MMBtu of fuel burned) for natural gas. Method 19 flow rate determinations are also based on the excess air (as measured from the exhaust diluent concentrations) and the fuel flow rates. EPA Method 19 was used as the stack flow rate measurement technique for all gaseous testing. Fuel samples were analyzed by Adirondack Environmental Services. The results of these analysis can be found in Appendix C of this report. Appendix C also contains Cubix's fuel calculations for the O₂ "F-factor" and gross heating value reported by the laboratory.

Table 5 lists the instruments and detection principals used for gaseous analyses. All data from the continuous monitoring instruments were recorded on two synchronized 3-pen strip chart recorders (Soltec Model 1243). These recorders were operated at a chart speed of 30 centimeters/hour and record over a 25-centimeter width. Strip chart records may be found in Appendix F of this report. A data logger with a computer generated display screen was also used as a convenient means of monitoring the emission concentrations, but the results included in this report were obtained from the strip chart records.

Cubix personnel collected ambient absolute pressure, temperature, and humidity data during each test run. A continuous battery-operated psychrometer utilizing a wet/dry bulb was used to determine temperature and humidity

conditions. An aircraft-type aneroid barometer (altimeter) was used to measure absolute atmospheric pressure.

All emission calculations were conducted by a computer spreadsheet as shown in Tables 3 and 4 of this report. Example calculations were performed manually using a hand-held calculator in order to verify the formulas used in the spreadsheet. Example calculations are located in Appendix B of this report.

The printouts of the operational data are included in Appendix H of this report. The tabular summaries in Summary of Results include the averages for all of the above operational parameters during each test run.

ANALYTICAL INSTRUMENTATION

Parameter	Model and Manufacturer	Common Use Ranges	Sensitivity	Response Time (sec.)	Detection Principle
NO _x	TECO 10AR TECO 42H TECO 42C	0-10 ppm	0.2 ppmv	1.7	Thermal reduction of NO ₂ to NO. Chemiluminescence of reaction of NO with O ₃ . Detection by PMT. Inherently linear for listed ranges.
		0-25 ppm			
		0-100 ppm			
		0-300 ppm			
		0-500 ppm			
		0-1,000 ppm			
CO	TECO 48 TECO 48C	0-10 ppm	0.1 ppmv	10.0	Infrared absorption, gas filter correlation detector, microprocessor based linearization.
		0-30 ppm			
		0-100 ppm			
		0-300 ppm			
		0-1000 ppmv			
CO ₂	Servomex 1400	0-5% 0-25%	0.02%	5.0	Infrared absorption, analog linearization.
O ₂	Servomex 1400	0-5% 0-25%	0.10%	15.0	Paramagnetic cell, inherently linear.
UHC	JUM Model 3-300	0-30, 0-100, 0-1000, 0-10000 0-100000 ppm	0.5 ppm	5.0	Flame ionization of hydrocarbons inherently linear over 2 orders of magnitude.
Temperature	Omega HH-26K	-120 to 2000 °F	0.1 °F	n/a	Chromel-alumel, K-type thermocouple with digital thermometer. Response time based on thermocouple design.

Cubix reserves the right to substitute equivalent model analyzers that meet the specifications of the test methods.

Higher ranges available by sample dilution

Other ranges available via signal attenuation. Operating range is defined by the calibration gases used during the test.

TABLE 5
Analytical Instrumentation

GASEOUS SAMPLING AND ANALYSIS DIAGRAM

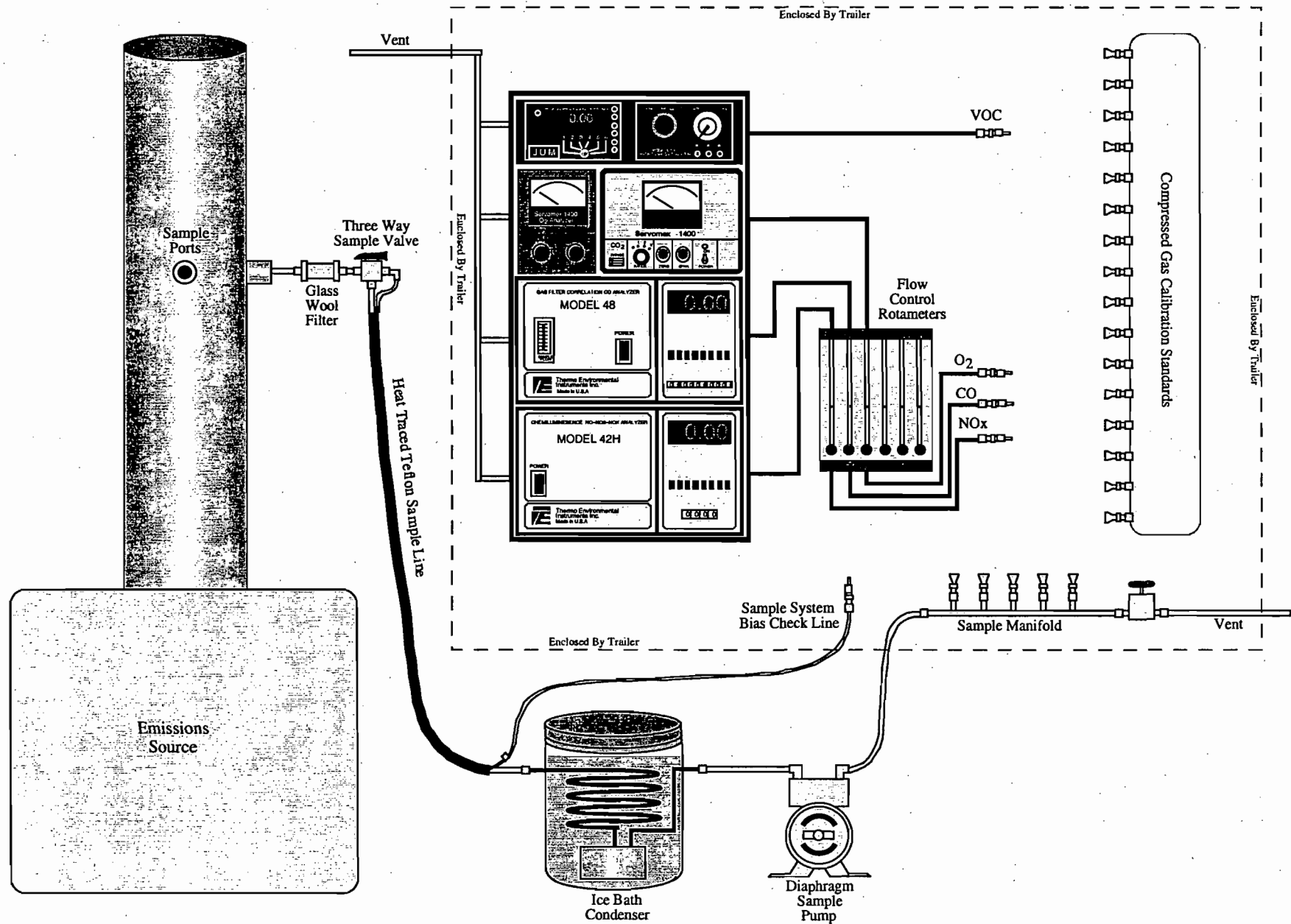


FIGURE 1
Instrumental Sample System Diagram

QUALITY ASSURANCE ACTIVITIES

A number of quality assurance activities were undertaken before, during, and after this testing project. This section of the report combined with the documentation in Appendices D and E describe each of those activities.

A multi-point calibration was performed for each instrument in the field prior to the collection of data. The instrument's linearity was checked by first adjusting the instrument's zero and span responses to zero nitrogen and an upscale calibration gas in the range of the expected concentrations. The instrument response was then challenged with other calibration gases of known concentration. The instrument's response was accepted as being linear if the response of the other calibration gases agree within ± 2 percent of range from the predicted values. (The response of the infrared absorption type CO and CO₂ analyzers is electronically linearized.)

System bias checks were performed both before and after the sampling system was used for emissions testing. The sampling system's integrity was tested by comparing the responses of the NO_x analyzer to a calibration gas (and a zero gas) introduced via two paths as previously described in the *Analytical Techniques* section of this report. This system bias test was performed to assure that no alteration of the sample had occurred during the test due to leakage, reactions, or absorption. Similarly, system bias checks were performed with UHC, O₂, and CO₂ for added assurance of sample system integrity. The results of the system bias checks are available in Appendix D.

Before and after each test run, the analyzers were checked for zero and span drift. This allows each test run to be bracketed by calibrations and documents the precision of the data just collected. The criterion for acceptable data is that the instrument drift no more than ± 2 or ± 3 percent of the full scale response, depending on the applicable constituent's EPA method. Appendix D contains quality assurance tables which summarize the zero and span checks that were performed for each test run. No drift in excess of each gas constituents calibration requirement was found.

Vacuum leak checks were performed before and after the sampling system was used for emissions testing (i.e. each time the sampling system was set up). Additionally, a vacuum leak check was performed after the sample system was partially disassembled or moved. The sampling system was leak checked by demonstrating that it could hold a vacuum greater than 10" Hg (~23 "Hg actual)

for at least 1 minute with a decline of less than 1" Hg. No leakage was detected at any time during the day of testing. The results of the vacuum leak checks are presented in Appendix D.

The efficiency of the NO₂ to NO converter housed in the NO_x analyzer was checked by having the analyzer sample a mixture of NO in nitrogen standard gas and ambient air from a Tedlar® bag. When this bag is mixed and exposed to sunlight, the NO is oxidized to NO₂ over approximately a 30 minute period. If the NO_x instrument's converter is 100% efficient, the NO_x response will not decline as the NO in the bag is converted to NO₂. The criterion for acceptability is a demonstrated NO_x converter efficiency greater than 90%. The strip charts show that the NO_x concentration remained steady throughout the 30 minute time period. The results of the converter efficiency test are available in Appendix D.

Interference response tests on the instruments were conducted by the instrument vendors and Cubix Corporation on the NO_x, CO, and O₂ analyzers. The sum of the interference responses for H₂O, C₃H₈, CO, CO₂ and O₂ is less than 2 percent of the applicable full scale span value. The instruments used for the tests meet the performance specifications for EPA Methods 3a, 7e, 10, and 20. The results of the interference tests are available in Appendix D of this report.

The residence time of the sampling and measurement system was estimated using the pump flow rate and the sampling system volume. The pump's rated flow rate is 0.8 SCFM at 5 psig. The sampling system volume was ≈ 0.21 SCF. Therefore, the minimum sample residence time is approximately 16 seconds.

The NO_x and O₂ sampling and analysis system was checked for response time per the procedures outlined in EPA's Method 20. The average NO_x analyzer's response times were 67.3 seconds upscale and 67.7 seconds down scale. The O₂ analyzer's response times were 60.7 seconds upscale and 65.0 seconds down scale. Method 20 requires a minimum sample time per traverse point of 1-minute plus the average sample system response time. Cubix chose to use 128 seconds per point for the initial O₂ traverses on the turbine and 128 seconds per point during the gaseous constituent compliance tests. The results of these response time tests are contained in Appendix E.

The calibration gases used to calibrate the instruments were analyzed and certified by the compressed gas vendors to within ±1% analytical accuracy. EPA Protocol No. 1 was used, where applicable, to assign the concentration values traceable to the National Institute of Standards and Technologies (formally the National Bureau of Standards). Calibration gas certifications may be found in Appendix E of this report.

Appendix E also contains other required additional certifications. The calibration of the altimeter/barometer used during this testing is included. Cubix employee, Dwight Dindial, was certified by the State of Florida to perform visual emission readings by EPA Method 9 procedures. This certification can be found with the observation forms in Appendix G of this report.

Cubix collected and reported the enclosed test data in accordance with the procedures and quality assurance activities described in this test report. Cubix makes no warranty as to the suitability of the test methods. Cubix assumes no liability relating to the interpretation and use of the test data.

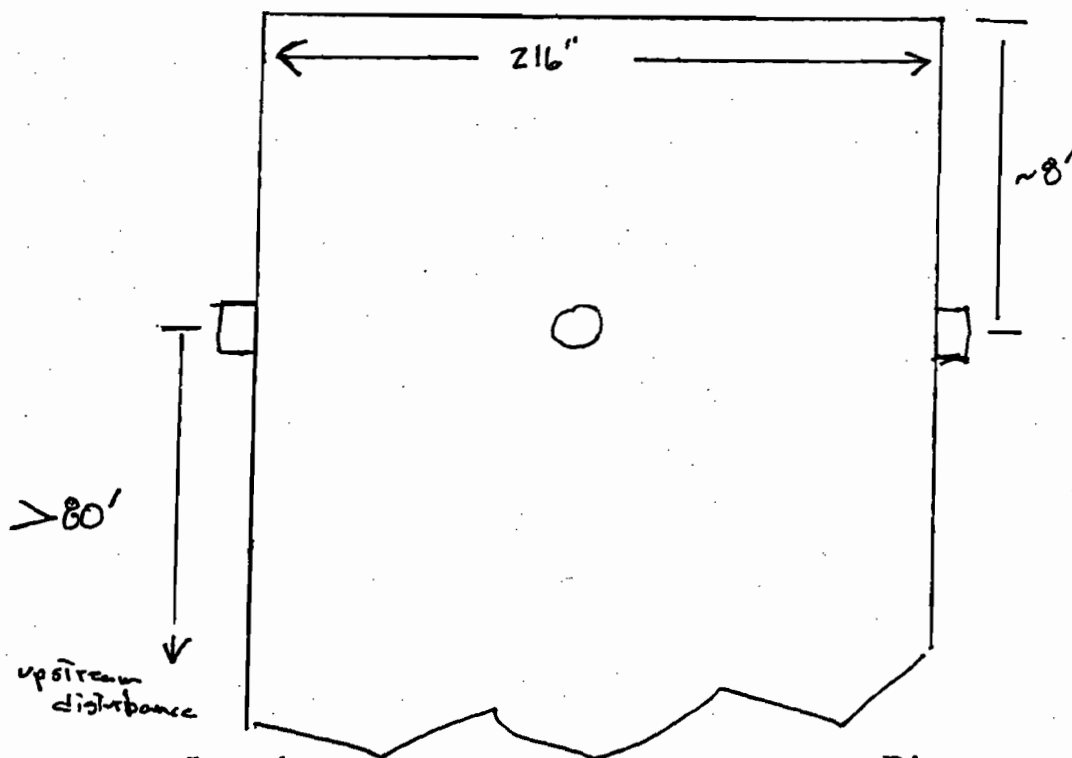
APPENDIX A:
FIELD DATA SHEETS

Circular Stack Sampling Traverse Point Layout (EPA Method 1)

Date: 7/13/00
 Plant: Polk City Power - Tampa Electric
 Source: Unit #2
 Technician(s): J.B., J.J., N.G.

Port + Stack ID: 227" in.
 Port Extension 11" in.
 Stack ID: 216" in.
 Stack Area _____ ft²
 Total Req'd Traverse Pts. 48
 No. of Traverse Pts. 12 /diam.
 No. of Traverse Pts. 6 /port

Stack Diagram (Side View showing major unit components, dimensions and nearest upstream & downstream flow disturbances)



Traverse Point Number	Length Factor (% of diameter)					Distance from Reference Point (inches)
	Number of traverse pts./diameter					
	4	6	8	12	24	
1	6.7	4.4	3.2	2.1	1.1	<u>2.4</u>
2	25.0	14.6	10.5	8.2	3.2	<u>6.7</u>
3	75.0	29.6	19.4	11.8	5.5	<u>11.9</u>
4	93.3	70.4	32.3	17.7	7.9	<u>17.1</u>
5		85.4	67.7	25.0	10.5	<u>22.7</u>
6		95.6	80.6	35.6	13.2	<u>28.5</u>
7			89.5	64.4	16.1	<u>34.8</u>
8			96.8	75.0	19.4	<u>41.9</u>
9				82.3	23.0	<u>49.7</u>
10				88.2	27.2	<u>58.8</u>
11				93.3	32.3	<u>67.8</u>
12				97.9	35.8	<u>86.0</u>

APPENDIX B:
EXAMPLE CALCULATIONS

NOx, CO Correction to 15% O2

Refers to test Run C-10 Base Load for NOx

Measured NOx emissions (NOx Meas) = C_{gas} = 8.79 ppmv

Measured O₂ emissions (C_{O₂}) = 13.60% (from analyzer)

$$\text{NOx @ 15 \% O}_2 = \frac{(\text{NOx Meas} \times (20.9 - 15.0))}{(20.9 - C_{O_2})}$$

$$\text{NOx @ 15 \% O}_2 = \frac{(8.79 \times 5.9)}{(20.9 - 13.60)}$$

$$\text{NOx @ 15 \% O}_2 = 7.10 \text{ ppmv}$$

Flow Rate in Stack by O2 F Factor (Qd)

Refers to test Run C-10 Base Load for NOx

Fg = Fuel flow rate.

$$F_g = 11.72 \text{ lbs/sec}$$

Htg = heating value of fuel from fuel analysis calculations

$$\text{Htg} = 23108 \text{ BTU/lb} = 0.023108 \text{ MMBTU/lb}$$

$$H = \text{heat rate of turbine} = F_g \times \text{Htg} = 11.72 \times 3600 \times 0.023108$$

$$H = 975.33 \text{ MMBTU/hr}$$

For this fuel the products of combustion (i.e. based on combustion stoichiometry) were determined to be 8637 dry SCF/MMBTU of fuel burned

$$\text{O}_2f = \text{O}_2 \text{ F-factor} = 8637 \text{ DSCF/MMBTU}$$

$$\text{O}_2 = \text{O}_2 \text{ concentration in stack (from O}_2 \text{ analyzer)} = 13.60 \text{ vol\%}$$

$$\text{O}_2 \text{ in ambient air} = 20.9 \text{ vol \%}$$

$$Q_d = \text{Flow rate in stack} = H \times \text{O}_2f \times 20.9 / (20.9 - \text{O}_2)$$

$$Q_d = 975.33 \times 8637 \times 20.9 / (20.9 - 13.60)$$

$$Q_d = 2.41 \times 10^7 \text{ DSCF/hr}$$

NOx, CO, VOC Mass Emission Rate

Refers to test Run C-10 Base Load for NOx

E_{NOx} = NOx mass emission rate

NOx = NOx concentration (drift corrected only) = 8.79 ppmvd

Qd = stack flow rate = 2.41×10^7 DSCFH

MW = molecular weight of NOx = 46.01 lb/lb-mole

R = ideal gas constant = 385.15 SCF/lb-mole

E_{NOx} = NOx mass emission rate

$E_{NOx} = (NOx / 1000000) \times Qd \times MW / R$

$E_{NOx} = (8.79 / 1000000) \times 2.41 \times 10^7 \times 46.01 / 385.15$

$E_{NOx} = 25.3$ lbs/hr

SO₂ Emission Rate Calculation (E_{SO₂})

Refers to gas fuel analysis for turbine #2 and run C-10 Base Load

Sw = Sulfur content of fuel (from fuel analysis)

Sw = 0.0002 % by weight of sulfur

Fg = Fuel flow to turbine (averaged Mark V data for run T2-FO-1)

Fg = 11.72 lbs/sec

MWso2 = molecular weight of SO₂ = 64 lb/lb-mole

MWs = molecular weight of sulfur = 32 lb/lb-mole

E_{SO₂} = SO₂ Emission Rate (lbs/hr)

$E_{SO_2} = (Sw / 100) \times Fg \times MW_{so2} / MW_s$

$E_{SO_2} = (0.0002 / 100) \times 11.72 \times 3600 \times 64 / 32$

$E_{SO_2} = 0.08$ lbs/hr

**APPENDIX C:
FUEL ANALYSIS**

Gas Fuel F Factor & Heating Value Calculation

Client **TECO**
Sample ID
Time
Date **10/7/2000**

CALCULATION OF DENSITY AND HEATING VALUE @ 60°F and 30 in Hg

Component	% Volume	Molecular Wt.	Density (lb/ft ³)	% volume x Density	weight %	Component Gross Btu/lb	Weight Fract. Btu	Gross Heating Value (Btu/SCF)	Volume Fract. Btu
Hydrogen		2.016	0.0053	0.00000	0.0000	61100	0.00	325.0	0
Oxygen		32.000	0.0846	0.00000	0.0000	0	0.00	0.0	0
Nitrogen	0.2890	28.016	0.0744	0.00022	0.4845	0	0.00	0.0	0
CO2	0.8920	44.010	0.1170	0.00104	2.3518	0	0.00	0.0	0
CO		28.010	0.0740	0.00000	0.0000	4347	0.00	322.0	0
Methane	96.5070	16.041	0.0424	0.04092	92.2084	23879	22018.45	1013.0	977.616
Ethane	1.7850	30.067	0.0803	0.00143	3.2300	22320	720.93	1792.0	31.9872
Ethylene		28.051	0.0746	0.00000	0.0000	21644	0.00	1614.0	0
Propane	0.3000	44.092	0.1196	0.00036	0.8085	21661	175.14	2590.0	7.77
propylene		42.077	0.1110	0.00000	0.0000	21041	0.00	2336.0	0
Isobutane	0.0700	58.118	0.1582	0.00011	0.2495	21257	53.05	3363.0	2.3541
n-butane	0.0640	58.118	0.1582	0.00010	0.2282	21308	48.62	3370.0	2.1568
Isobutene		56.102	0.1480	0.00000	0.0000	20730	0.00	3068.0	0
Isopentane	0.0280	72.144	0.1904	0.00005	0.1201	21052	25.29	4008.0	1.12224
n-pentane	0.0170	72.144	0.1904	0.00003	0.0729	21091	15.38	4016.0	0.68272
n-hexane	0.0480	86.169	0.2274	0.00011	0.2460	20940	51.51	4762.0	2.28576
H2S		34.076	0.0911	0.00000	0.0000	7100	0.00	647.0	0
total	100.00		Average Density	0.04438	100.0000	Gross Heating Value Btu/lb	23108	Gross Heating Value Btu/SCF	1026
			Specific Gravity	0.58009					

CALCULATION OF F FACTORS

Component	Mol. Wt.	C Factor	H Factor	% volume	Fract. Wt.	Weight Percents				
						Carbon	Hydrogen	Nitrogen	Oxygen	Sulfur
Hydrogen	2.016	0	1	0.00	0.0000		0			
Oxygen	32.000	0	0	0.00	0.0000				0	
Nitrogen	28.016	0	0	0.29	8.0966			0.482663046		
CO2	44.010	0.272273	0	0.89	39.2569	0.63717815			1.70134	
CO	28.010	0.42587	0	0.00	0.0000	0			0	
Methane	16.041	0.75	0.25	96.51	1548.0688	69.213625	23.071208			
Ethane	30.067	0.8	0.2	1.79	53.6696	2.55951915	0.6398798			
Ethylene	28.051	0.85714	0.14286	0.00	0.0000	0	0			
Propane	44.092	0.81818	0.181818	0.30	13.2276	0.6451638	0.1433699			
Propene	42.077	0.85714	0.14286	0.00	0.0000	0	0			
Isobutane	58.118	0.82759	0.17247	0.07	4.0683	0.20070769	0.0418275			
n-butane	58.118	0.82759	0.17247	0.06	3.7196	0.18350417	0.0382423			
Isobutene	56.102	0.85714	0.14286	0.00	0.0000	0	0			
Isopentane	72.144	0.83333	0.16667	0.03	2.0200	0.10034953	0.0200704			
n-pentane	72.144	0.83333	0.16667	0.02	1.2264	0.0609265	0.0121856			
n-hexane	86.169	0.83721	0.16279	0.05	4.1361	0.20642713	0.0401384			
H2S	34.076	0	0.058692	0.00	0.0000	0	0			0
Totals				100.00000	1677.4899	73.8074012	24.01	0.482663046	1.70134	0

CALCULATED VALUES

O2 F Factor (dry)	8637	DSCF of Exhaust/MM Btu of Fuel Burned @ 0% excess air
O2 F Factor (wet)	10642	SCF of Exhaust/MM Btu of Fuel Burned @ 0% excess air
Moisture F Factor	2005	SCF of Water/MM Btu of Fuel Burned @ 0% excess air
Combust. Moisture	18.84	volume % water in flue gas @ 0% excess air
CO2 F Factor	1025	DSCF of CO2/MM Btu of Fuel Burned @ 0% excess air
Carbon Dioxide	11.87	volume % CO2 in flue gas @ 0% O2
Predicted Fo Factor	1.76	EPA Method 3a Fo value
Fuel VOC % (non-C1)	5.07%	non-methane fuel VOC content
Fuel VOC % (non-C1,C2)	1.78%	non-methane non-ethane fuel VOC content



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

CERTIFICATE OF ANALYSIS NO.

2000110038-001A

Station Name : Cylinder #27
Project Name : Natural Gas Analysis
Sample Of : Natural Gas
Sampled By : Cubix
Sample Date : 10/07/2000
Sample Pressure : 150.00 Temp 75.00
Cylinder Number : 27
Comments : NET BTU, DRY GAS, DRY AIR, AS REAL GAS = 920.4 NET
BTU, WET GAS, DRY AIR, AS REAL GAS = 904.3

For :

Cubix Corporation
Jim Barufaldi
Austin, TX 78747-
USA

Test By G.C. GPA Method 2261 Factors From GPA-2145, Jan. 01, 2000

<u>Analysis:</u>	<u>Mol %</u>	<u>Wt %</u>	<u>GPM at 14.650 psia</u>
Nitrogen	0.289	0.482	
Carbon DiOxide	0.892	2.338	
Methane	96.507	92.234	
Ethane	1.785	3.197	0.475
Propane	0.300	0.788	0.082
Iso Butane	0.070	0.242	0.023
n-Butane	0.064	0.222	0.020
Iso Pentane	0.028	0.120	0.010
n-Pentane	0.017	0.073	0.006
Hexane	0.002	0.010	0.001
Heptane Plus	0.046	0.294	0.022
	100.000	100.000	0.639

Specific Gravity at 60F (air = 1)	Ideal Gas	0.5797
	Real Gas	0.5805

Calculated Molecular Weight	16.78
	Deviation Factor

Calculated Gross B.T.U / ft³ at 14.650 psia and 60 F

Ideal Gas	Dry Basis	1020
	Saturated Basis	1002
Real Gas	Dry Basis	1022
	Saturated Basis	1004

Southern Petroleum Laboratories, Inc.



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 680-0901

Certificate of Analysis No. H9-0011080-01

Cubix Corporation
9225 US Hwy 183 South
Austin, TX 78747-3233
ATTN: Jim Barufaldi

P.O.#
2000568
11/07/00

PROJECT: Natural Gas Analysis
SITE:
SAMPLED BY: Cubix Corporation
SAMPLE ID: Cylinder #27

PROJECT NO:
MATRIX: NAT GAS
DATE SAMPLED: 10/07/00 03:00:00
DATE RECEIVED: 11/06/00

ASTM D-3246	
PARAMETER	RESULTS
Total Sulfur in ppm/Wt.	1.7
Total Sulfur in Wt. %	0.0002
Total Sulfur in gr/100 cu Ft.	0.054

ANALYZED BY: HR
METHOD: ASTM D-3246 Sulfur, Total by Dohrman
DATE ANALYZED: 11/06/00
NOTES:

COMMENTS:

QUALITY ASSURANCE: These analyses are performed in accordance with ASTM, UOP, or GPA guidelines for quality assurance.


Fred DeAngelo, Laboratory Manager

APPENDIX D:
QUALITY ASSURANCE ACTIVITIES

Linearity Check	NO _x	O ₂	CO ₂
Analyzer Range (ppm), O ₂ & CO ₂ in %	30.00	25.00	25.00
Strip Chart Offset	2.00	10.00	2.00
Low Level Certified Value (PPM or %)	8.52	3.99	5.04
Mid Level Certified Value (PPM or %)	12.89	12.46	9.99
High Level Certified Value (PPM or %)	24.20	20.80	18.01
Zero Target (% Chart)	2.00	10.00	2.00
Low Level Target (% Chart)	30.40	25.96	22.16
Mid Level Target (% Chart)	44.97	59.84	41.96
High Level Target (% Chart)	82.67	93.20	74.04
Zero Observed (% Chart)	2.00	10.00	2.00
Low Level Observed (% Chart)	31.00	26.00	21.90
Mid Level Observed (% Chart)	45.00	59.80	41.50
High Level Observed (% Chart)	82.80	93.00	73.30
%Diff. From Zero to Target <2%	0.00	0.00	0.00
%Diff. From Low to Target <2%	0.60	0.04	-0.26
%Diff. From Mid to Target <2%	0.03	-0.04	-0.46
%Diff. From High to Target <2%	0.13	-0.20	-0.74
Run 1 Low	NO _x	O ₂	CO ₂
Analyzer Range (ppm), O ₂ & CO ₂ in %	30.00	25.00	25.00
Span Gas Certified Value (ppm or %)	12.89	20.80	9.99
Strip Chart Offset	2.00	10.00	2.00
Target Span (Chart %)	44.97	93.20	41.96
Actual Zero from Linearity (Chart %)	2.00	10.00	2.00
Actual Span from Linearity (Chart %)	44.97	93.00	41.50
Initial Readings			
Zero (chart %)	2.00	10.00	2.00
Span (chart %)	44.00	92.80	41.00
Final Readings			
Zero (chart %)	2.10	10.10	2.00
Span (chart %)	44.40	92.80	41.00
Bias and Drift Calculations			
Zero Bias (% Chart) (Run-Direct Cal) <5%	0.10	0.10	0.00
Span Bias (% Chart) <5%	-0.57	-0.20	-0.50
Zero Drift (Chart %) (Run-Run) <3%	0.10	0.10	0.00
Span Drift (Chart %) <3%	0.40	0.00	0.00
Run Results			
Raw Results (chart %)	24.00	63.20	18.50
Corrected Results (ppmv) from Chart %	6.71	13.36	4.23

Run 2 Low	NOx	O2	CO2
Analyzer Range (ppm), O2 & CO2 in %	30.00	25.00	25.00
Span Gas Certified Value (ppm or %)	12.89	20.80	9.99
Strip Chart Offset	2.00	10.00	2.00
Target Span (Chart %)	44.97	93.20	41.96
Actual Zero from Linearity (Chart %)	2.00	10.00	2.00
Actual Span from Linearity (Chart %)	44.97	93.00	41.50
Initial Readings			
Zero (chart %)	2.10	10.10	2.00
Span (chart %)	44.40	92.80	41.00
Final Readings			
Zero (chart %)	2.10	10.00	2.00
Span (chart %)	44.40	92.80	41.00
Bias and Drift Calculations			
Zero Bias (% Chart) (Run-Direct Cal) <5%	0.10	0.00	0.00
Span Bias (% Chart) <5%	-0.57	-0.20	-0.50
Zero Drift (Chart %) (Run-Run) <3%	0.00	-0.10	0.00
Span Drift (Chart %) <3%	0.00	0.00	0.00
Run Results			
Raw Results (chart %)	23.80	63.40	18.10
Corrected Results (ppmv) from Chart %	6.61	13.41	4.12
Run 3 Low	NOx	O2	CO2
Analyzer Range (ppm), O2 & CO2 in %	30.00	25.00	25.00
Span Gas Certified Value (ppm or %)	12.89	20.80	9.99
Strip Chart Offset	2.00	10.00	2.00
Target Span (Chart %)	44.97	93.20	41.96
Actual Zero from Linearity (Chart %)	2.00	10.00	2.00
Actual Span from Linearity (Chart %)	44.97	93.00	41.50
Initial Readings			
Zero (chart %)	2.10	10.00	2.00
Span (chart %)	44.40	92.80	41.00
Final Readings			
Zero (chart %)	2.10	10.00	2.00
Span (chart %)	44.40	92.80	41.00
Bias and Drift Calculations			
Zero Bias (% Chart) (Run-Direct Cal) <5%	0.10	0.00	0.00
Span Bias (% Chart) <5%	-0.57	-0.20	-0.50
Zero Drift (Chart %) (Run-Run) <3%	0.00	0.00	0.00
Span Drift (Chart %) <3%	0.00	0.00	0.00
Run Results			
Raw Results (chart %)	23.80	63.50	18.10
Corrected Results (ppmv) from Chart %	6.61	13.44	4.12

Run 1 Mid	NOx	O2	CO2
Analyzer Range (ppm), O2 & CO2 in %	30.00	25.00	25.00
Span Gas Certified Value (ppm or %)	12.89	20.80	9.99
Strip Chart Offset	2.00	10.00	2.00
Target Span (Chart %)	44.97	93.20	41.96
Actual Zero from Linearity (Chart %)	2.00	10.00	2.00
Actual Span from Linearity (Chart %)	44.97	93.00	41.50
Initial Readings			
Zero (chart %)	2.10	10.00	2.00
Span (chart %)	44.40	92.80	41.00
Final Readings			
Zero (chart %)	2.10	10.00	2.00
Span (chart %)	44.40	93.00	41.00
Bias and Drift Calculations			
Zero Bias (% Chart) (Run-Direct Cal) <5%	0.10	0.00	0.00
Span Bias (% Chart) <5%	-0.57	0.00	-0.50
Zero Drift (Chart %) (Run-Run) <3%	0.00	0.00	0.00
Span Drift (Chart %) <3%	0.00	0.20	0.00
Run Results			
Raw Results (chart %)	25.00	63.50	18.40
Corrected Results (ppmv) from Chart%	6.98	13.42	4.20
Run 2 Mid	NOx	O2	CO2
Analyzer Range (ppm), O2 & CO2 in %	30.00	25.00	25.00
Span Gas Certified Value (ppm or %)	12.89	20.80	9.99
Strip Chart Offset	2.00	10.00	2.00
Target Span (Chart %)	44.97	93.20	41.96
Actual Zero from Linearity (Chart %)	2.00	10.00	2.00
Actual Span from Linearity (Chart %)	44.97	93.00	41.50
Initial Readings			
Zero (chart %)	2.10	10.00	2.00
Span (chart %)	44.40	93.00	41.00
Final Readings			
Zero (chart %)	2.10	10.00	2.00
Span (chart %)	44.50	93.00	41.00
Bias and Drift Calculations			
Zero Bias (% Chart) (Run-Direct Cal) <5%	0.10	0.00	0.00
Span Bias (% Chart) <5%	-0.47	0.00	-0.50
Zero Drift (Chart %) (Run-Run) <3%	0.00	0.00	0.00
Span Drift (Chart %) <3%	0.10	0.00	0.00
Run Results			
Raw Results (chart %)	25.00	63.60	18.20
Corrected Results (ppmv) from Chart%	6.97	13.43	4.15

Run 3 Mid	NO _x	O ₂	CO ₂
Analyzer Range (ppm), O ₂ & CO ₂ in %	30.00	25.00	25.00
Span Gas Certified Value (ppm or %)	12.89	20.80	9.99
Strip Chart Offset	2.00	10.00	2.00
Target Span (Chart %)	44.97	93.20	41.96
Actual Zero from Linearity (Chart %)	2.00	10.00	2.00
Actual Span from Linearity (Chart %)	44.97	93.00	41.50
Initial Readings			
Zero (chart %)	2.10	10.00	2.00
Span (chart %)	44.50	93.00	41.00
Final Readings			
Zero (chart %)	2.10	10.20	2.00
Span (chart %)	44.50	93.00	41.00
Bias and Drift Calculations			
Zero Bias (% Chart) (Run-Direct Cal) <5%	0.10	0.20	0.00
Span Bias (% Chart) <5%	-0.47	0.00	-0.50
Zero Drift (Chart %) (Run-Run) <3%	0.00	0.20	0.00
Span Drift (Chart %) <3%	0.00	0.00	0.00
Run Results			
Raw Results (chart %)	24.90	63.60	18.20
Corrected Results (ppmv) from Chart%	6.93	13.42	4.15
Run 1 High	NO _x	O ₂	CO ₂
Analyzer Range (ppm), O ₂ & CO ₂ in %	30.00	25.00	25.00
Span Gas Certified Value (ppm or %)	12.89	20.80	9.99
Strip Chart Offset	2.00	10.00	2.00
Target Span (Chart %)	44.97	93.20	41.96
Actual Zero from Linearity (Chart %)	2.00	10.00	2.00
Actual Span from Linearity (Chart %)	44.97	93.00	41.50
Initial Readings			
Zero (chart %)	2.10	10.20	2.00
Span (chart %)	44.50	93.00	41.00
Final Readings			
Zero (chart %)	2.00	10.00	2.00
Span (chart %)	44.50	93.00	41.00
Bias and Drift Calculations			
Zero Bias (% Chart) (Run-Direct Cal) <5%	0.00	0.00	0.00
Span Bias (% Chart) <5%	-0.47	0.00	-0.50
Zero Drift (Chart %) (Run-Run) <3%	-0.10	-0.20	0.00
Span Drift (Chart %) <3%	0.00	0.00	0.00
Run Results			
Raw Results (chart %)	23.60	63.40	18.20
Corrected Results (ppmv) from Chart%	6.54	13.37	4.15

Run 2 High	NO_x	O₂	CO₂
Analyzer Range (ppm), O ₂ & CO ₂ in %	30.00	25.00	25.00
Span Gas Certified Value (ppm or %)	12.89	20.80	9.99
Strip Chart Offset	2.00	10.00	2.00
Target Span (Chart %)	44.97	93.20	41.96
Actual Zero from Linearity (Chart %)	2.00	10.00	2.00
Actual Span from Linearity (Chart %)	44.97	93.00	41.50
Initial Readings			
Zero (chart %)	2.00	10.00	2.00
Span (chart %)	44.50	93.00	41.00
Final Readings			
Zero (chart %)	2.10	10.20	2.00
Span (chart %)	44.80	93.00	41.00
Bias and Drift Calculations			
Zero Bias (% Chart) (Run-Direct Cal) <5%	0.10	0.20	0.00
Span Bias (% Chart) <5%	-0.17	0.00	-0.50
Zero Drift (Chart %) (Run-Run) <3%	0.10	0.20	0.00
Span Drift (Chart %) <3%	0.30	0.00	0.00
Run Results			
Raw Results (chart %)	23.60	63.50	18.20
Corrected Results (ppmv) from Chart%	6.52	13.40	4.15
Run 3 High	NO_x	O₂	CO₂
Analyzer Range (ppm), O ₂ & CO ₂ in %	30.00	25.00	25.00
Span Gas Certified Value (ppm or %)	12.89	20.80	9.99
Strip Chart Offset	2.00	10.00	2.00
Target Span (Chart %)	44.97	93.20	41.96
Actual Zero from Linearity (Chart %)	2.00	10.00	2.00
Actual Span from Linearity (Chart %)	44.97	93.00	41.50
Initial Readings			
Zero (chart %)	2.10	10.20	2.00
Span (chart %)	44.80	93.00	41.00
Final Readings			
Zero (chart %)	2.00	10.00	2.00
Span (chart %)	44.50	93.00	41.00
Bias and Drift Calculations			
Zero Bias (% Chart) (Run-Direct Cal) <5%	0.00	0.00	0.00
Span Bias (% Chart) <5%	-0.47	0.00	-0.50
Zero Drift (Chart %) (Run-Run) <3%	-0.10	-0.20	0.00
Span Drift (Chart %) <3%	-0.30	0.00	0.00
Run Results			
Raw Results (chart %)	23.80	63.50	18.20
Corrected Results (ppmv) from Chart%	6.58	13.40	4.15

BASE

Linearity Check	NO _x	CO	O ₂	CO ₂	THC
Analyzer Range (ppm), O ₂ & CO ₂ in %	30.00	50.00	25.00	25.00	50.00
Strip Chart Offset	2.00	5.00	10.00	2.00	5.00
Low Level Certified Value (PPM or %)	8.52	15.27	3.99	5.04	14.92
Mid Level Certified Value (PPM or %)	12.89	25.10	12.46	9.99	25.50
High Level Certified Value (PPM or %)	24.20	45.00	20.80	18.01	44.91
Zero Target (% Chart)	2.00	5.00	10.00	2.00	5.00
Low Level Target (% Chart)	30.40	35.54	25.96	22.16	34.84
Mid Level Target (% Chart)	44.97	55.20	59.84	41.96	56.00
High Level Target (% Chart)	82.67	95.00	93.20	74.04	94.82
Zero Observed (% Chart)	2.00	4.90	10.00	2.00	5.00
Low Level Observed (% Chart)	31.00	36.20	26.00	21.90	35.50
Mid Level Observed (% Chart)	45.00	55.50	59.80	41.50	56.70
High Level Observed (% Chart)	82.80	95.30	93.00	73.30	94.50
%Diff. From Zero to Target <2%	0.00	-0.10	0.00	0.00	0.00
%Diff. From Low to Target <2%	0.60	0.66	0.04	-0.26	0.66
%Diff. From Mid to Target <2%	0.03	0.30	-0.04	-0.46	0.70
%Diff. From High to Target <2%	0.13	0.30	-0.20	-0.74	-0.32
Run 1 Base	NO _x	CO	O ₂	CO ₂	THC
Analyzer Range (ppm), O ₂ & CO ₂ in %	30.00	50.00	25.00	25.00	50.00
Span Gas Certified Value (ppm or %)	12.89	15.27	20.80	9.99	14.92
Strip Chart Offset	2.00	5.00	10.00	2.00	5.00
Target Span (Chart %)	44.97	35.54	93.20	41.96	34.84
Actual Zero from Linearity (Chart %)	2.00	4.90	10.00	2.00	5.00
Actual Span from Linearity (Chart %)	44.97	36.20	93.00	41.50	36.20
Initial Readings					
Zero (chart %)	2.00	4.50	10.10	2.00	5.10
Span (chart %)	44.50	36.00	93.00	41.00	35.20
Final Readings					
Zero (chart %)	2.00	4.30	10.00	2.00	5.50
Span (chart %)	44.30	36.00	92.80	41.00	36.20
Bias and Drift Calculations					
Zero Bias (% Chart) (Run-Direct Cal) <5%	0.00	-0.60	0.00	0.00	0.50
Span Bias (% Chart) <5%	-0.67	-0.20	-0.20	-0.50	0.00
Zero Drift (Chart %) (Run-Run) <3%	0.00	-0.20	-0.10	0.00	0.40
Span Drift (Chart %) <3%	-0.20	0.00	-0.20	0.00	1.00
Run Results					
Raw Results (chart %)	30.90	7.00	63.90	18.10	6.90
Corrected Results (ppmv) from Chart %	8.79	1.26	13.52	4.12	0.79

BASE

Run 2 Base	NO _x	CO	O ₂	CO ₂	THC
Analyzer Range (ppm), O ₂ & CO ₂ in %	30.00	50.00	25.00	25.00	50.00
Span Gas Certified Value (ppm or %)	12.89	15.27	20.80	9.99	14.92
Strip Chart Offset	2.00	5.00	10.00	2.00	5.00
Target Span (Chart %)	44.97	35.54	93.20	41.96	34.84
Actual Zero from Linearity (Chart %)	2.00	4.90	10.00	2.00	5.00
Actual Span from Linearity (Chart %)	44.97	36.20	93.00	41.50	36.20
Initial Readings					
Zero (chart %)	2.00	4.30	10.00	2.00	5.50
Span (chart %)	44.30	36.00	92.80	41.00	36.20
Final Readings					
Zero (chart %)	2.00	4.90	10.00	2.00	5.50
Span (chart %)	44.00	36.00	92.80	41.00	34.00
Bias and Drift Calculations					
Zero Bias (% Chart) (Run-Direct Cal) <5%	0.00	0.00	0.00	0.00	0.50
Span Bias (% Chart) <5%	-0.97	-0.20	-0.20	-0.50	-2.20
Zero Drift (Chart %) (Run-Run) <3%	0.00	0.60	0.00	0.00	0.00
Span Drift (Chart %) <3%	-0.30	0.00	0.00	0.00	-2.20
Run Results					
Raw Results (chart %)	32.30	7.30	63.80	18.10	5.90
Corrected Results (ppmv) from Chart%	9.27	1.31	13.51	4.12	0.20
Run 3 Base	NO _x	CO	O ₂	CO ₂	THC
Analyzer Range (ppm), O ₂ & CO ₂ in %	30.00	50.00	25.00	25.00	50.00
Span Gas Certified Value (ppm or %)	12.89	15.27	20.80	9.99	14.92
Strip Chart Offset	2.00	5.00	10.00	2.00	5.00
Target Span (Chart %)	44.97	35.54	93.20	41.96	34.84
Actual Zero from Linearity (Chart %)	2.00	4.90	10.00	2.00	5.00
Actual Span from Linearity (Chart %)	44.97	36.20	93.00	41.50	36.20
Initial Readings					
Zero (chart %)	2.00	4.90	10.00	2.00	5.50
Span (chart %)	44.00	36.00	92.80	41.00	34.00
Final Readings					
Zero (chart %)	2.00	6.00	10.00	2.00	5.00
Span (chart %)	44.00	35.50	92.80	41.00	32.50
Bias and Drift Calculations					
Zero Bias (% Chart) (Run-Direct Cal) <5%	0.00	1.10	0.00	0.00	0.00
Span Bias (% Chart) <5%	-0.97	-0.70	-0.20	-0.50	-3.70
Zero Drift (Chart %) (Run-Run) <3%	0.00	1.10	0.00	0.00	-0.50
Span Drift (Chart %) <3%	0.00	-0.50	0.00	0.00	-1.50
Run Results					
Raw Results (chart %)	35.20	6.90	63.20	18.20	5.80
Corrected Results (ppmv) from Chart%	10.19	0.73	13.36	4.15	0.29

APPENDIX E:
CALIBRATION CERTIFICATIONS



T-5
SPECTRA GASES INC.

3434 Route 22 West • Branchburg, NJ 08876 USA Tel.: (908) 252-9300 • (800) 932-0624 • Fax: (908) 252-0811
Shipped From: 80 Industrial Drive • Alpha, NJ 08865

**CERTIFICATE OF ANALYSIS****EPA PROTOCOL MIXTURE
PROCEDURE #: G1**

CUSTOMER: Cubix Corporation
SGI ORDER #: 149061
ITEM#: 1
P.O.#: 99404

CYLINDER #: CC68327
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 660

CERTIFICATION DATE: 12/28/99
EXPIRATION DATE: 12/28/2001

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Nitric Oxide	12/21/99	24.09 ppm	24.1 ppm	+/- 1%
	12/28/99	24.12 ppm		
NOx			24.2 ppm	Reference Value Only

BALANCE Nitrogen

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Nitric Oxide	NTRM-81684	CC79982	98.6 ppm

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Nitric Oxide	Teco 10	10AR-34979-249	Cheml	12/15/99

**THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 160 PSIG.**

ANALYST: FRED PIKULA

DATE: 12/28/99



SPECTRA GASES INC.

3434 Route 22 West • Branchburg, NJ 08876 USA Tel.: (908) 252-9300 • (800) 932-0624 • Fax: (908) 252-0811
Shipped From: 80 Industrial Drive • Alpha, NJ 08865



CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE PROCEDURE #: G1

CUSTOMER: Cublx Corporation
SGI ORDER #: 156176
ITEM#: 3
P.O.#: 2000301 T-5 Rick

CYLINDER #: CC117566
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 660

CERTIFICATION DATE: 7/25/2000
EXPIRATION DATE: 7/25/2002

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Nitric Oxide	7/18/2000	12.83 ppm	12.84 ppm	+/- 1%
	7/25/2000	12.84 ppm		
NOx			12.89 ppm	Reference Value Only

BALANCE Nitrogen

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Nitric Oxide	GMIS-1	CC117561	20.16 ppm

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Nitric Oxide	Teco 42C	42C-64942-345	ChemI	7/12/2000

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: 
FRED PIKULA

DATE: 7/25/2000



Scott Specialty Gases

6141 ROUTE 611, PLUMSTEADVILLE, PA 18934

COMPLIANCE CLASS

Dual-Analyzed Calibration Standard

Phone: 215-766-8861

Fax: 215-766-2009

CERTIFICATE OF ACCURACY: EPA Protocol Gas

Assay Laboratory

SCOTT SPECIALTY GASES
6141 ROUTE 611
PLUMSTEADVILLE, PA 18934

P.O. No.: 99270
Project No.: 06-02000-003

Customer

CUBIX CORPORATION
KEVIN HERRING
9225 U.S. HWY 183 SOUTH
AUSTIN TX 78747

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; September, 1997.

Cylinder Number: AAL067465 Certification Date: 9/28/99 Exp. Date: 9/27/2001
Cylinder Pressure***: 2000 PSIG Prev Certification Date: 9/21/99

ANALYTICAL

<u>COMPONENT</u>	<u>CERTIFIED CONCENTRATION (Moles)</u>	<u>ACCURACY**</u>	<u>TRACEABILITY</u>
NITRIC OXIDE	8.52 PPM	+/- 2%	GMIS
NITROGEN - OXYGEN FREE	BALANCE		
TOTAL OXIDES OF NITROGEN	8.59 PPM	+/- 2%	

*** Do not use when cylinder pressure is below 150 psig.

** Analytical accuracy is based on the requirements of EPA Protocol procedures, September 1997.

REFERENCE STANDARD

<u>TYPE/SRM NO.</u>	<u>EXPIRATION DATE</u>	<u>CYLINDER NUMBER</u>	<u>CONCENTRATION</u>	<u>COMPONENT</u>
GMIS 10PPMNO	8/02/01	AAL067404	9.990 PPM	NITRIC OXIDE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#
MONITOR LABS/9841A/2341

DATE LAST CALIBRATED
08/10/99

ANALYTICAL PRINCIPLE
CHEMILUMINESCENCE

APPROVED BY:

TOM SASSAMAN



SPECTRA GASES INC.

3434 Route 22 West • Branchburg, NJ 08876 USA Tel.: (908) 252-9300 • (800) 932-0624 • Fax: (908) 252-0811
Shipped From: 80 Industrial Drive • Alpha, NJ 08865



CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE

PROCEDURE #: G1

CUSTOMER: Cubix Corporation
SGI ORDER #: 156176
ITEM#: 4
P.O.#: 2000301 T-5 Rick

CYLINDER #: CC83913
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 590

CERTIFICATION DATE: 7/26/2000

EXPIRATION DATE: 7/26/2003

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Oxygen	7/26/2000	20.8 %	20.8 %	+/- 1%
Carbon Dioxide	7/26/2000	5.04 %	5.04 %	+/- 1%

BALANCE Nitrogen

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Oxygen	NTRM-82858x	CC83908	22.8 %
Carbon Dioxide	GMIS-1	CC91046	10.03 %

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Oxygen	Horiba MPA-510	570694081	PM	7/24/2000
Carbon Dioxide	Horiba VIA-510	571417045	NDIR	7/8/2000

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: FRED PIKULA

DATE: 7/26/2000

T-5



SPECTRA GASES INC.

3434 Route 22 West • Branchburg, NJ 08876 USA Tel.: (908) 252-9300 • (800) 932-0624 • Fax: (908) 252-0811
Shipped From: 80 Industrial Drive • Alpha, NJ 08865



T-6

CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE

PROCEDURE #: G1

CUSTOMER: Cubix Corporation
SGI ORDER #: 146620
ITEM#: 1
P.O.#: 99304

CYLINDER #: CC106722
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 590

CERTIFICATION DATE: 10/07/99
EXPIRATION DATE: 10/07/2002

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Oxygen	10/07/99	12.46 %	12.46 %	+/- 1%
Carbon Dioxide	10/07/99	9.99 %	9.99 %	+/- 1%

BALANCE Nitrogen

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Oxygen	NTRM-82659X	CC83900	22.80 %
Carbon Dioxide	GMIS-1	CC57143	10.00 %

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Oxygen	Horiba MPA-510	570694081	PM	9/21/99
Carbon Dioxide	Horiba VIA-510	571417045	NDIR	9/23/99

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: 
FRED PIKULA

DATE: 10/07/99



SPECTRA GASES INC.

3434 Route 22 West • Branchburg, NJ 08876 USA Tel.: (908) 252-9300 • (800) 932-0624 • Fax: (908) 252-0811
Shipped From: 80 Industrial Drive • Alpha, NJ 08865



CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE

PROCEDURE #: G1

CUSTOMER: Cubix Corporation
SGI ORDER #: 148038
ITEM#: 2
P.O.#: 89277

CYLINDER #: CC114045
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 580

CERTIFICATION DATE: 9/17/99
EXPIRATION DATE: 9/17/2002

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Carbon Dioxide	9/17/99	18.01 %	18.01 %	+/- 1%
Oxygen	9/17/99	3.99 %	3.99 %	+/- 1%

BALANCE Nitrogen

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Carbon Dioxide	NTRM-82745x	CC79944	20.00 %
Oxygen	GMIS-1	CC53245	10.00 %

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Carbon Dioxide	Horiba VIA-510	571417045	NDIR	8/20/99
Oxygen	Horiba MPA-510	570894081	PM	9/10/99

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: FRED PIKULA

DATE: 9/17/99



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CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE

PROCEDURE #: G1

CUSTOMER: Cubix Corporation
SGI ORDER #: 146620
ITEM#: 3
P.O.#: 99304

CYLINDER #: CC85002
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 590

CERTIFICATION DATE: 10/07/99
EXPIRATION DATE: 9/30/2002

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Carbon Monoxide	9/29/99	24.96 ppm	25.1 ppm	+/- 1%
	10/07/99	25.17 ppm		
Methane	9/30/99	25.50 ppm	25.5 ppm	+/- 1%

BALANCE Air

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Carbon Monoxide	NTRM-81679	CC88368	97.4 ppm
Methane	SRM-2751	CAL013479	98.6 ppm

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Carbon Monoxide	Horiba VIA-510	570423011	NDIR	9/24/99
Methane	H. Packard 6890	US00001434	GC - FID	9/30/99

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: FRED PIKULA

DATE: 10/07/99

T-5



SPECTRA GASES INC.

3434 Route 22 West • Branchburg, NJ 08876 USA Tel.: (908) 252-9300 • (800) 932-0624 • Fax: (908) 252-0811
Shipped From: 80 Industrial Drive • Alpha, NJ 08865



CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE

PROCEDURE #: G1

CUSTOMER: Cubix Corporation
SGI ORDER #: 146744
ITEM#: 1
P.O.#: 99316

CYLINDER #: CC110250
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 590

CERTIFICATION DATE: 10/12/99
EXPIRATION DATE: 10/04/2002

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Carbon Monoxide	10/04/99	45.05 ppm	45.0 ppm	+/- 1%
	10/12/99	44.94 ppm		
Methane	10/04/99	44.9 ppm	44.9 ppm	+/- 1%

BALANCE Air

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Carbon Monoxide	NTRM-81679	CC88368	97.4 ppm
Methane	SRM-2751	CAL013479	98.6 ppm

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Carbon Monoxide	Horiba VIA-510	570423011	NDIR	9/24/99
Methane	H. Packard 6890	US00001434	GC - FID	9/30/99

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST:

FRED PIKULA

DATE: 10/12/99

**SPECTRA GASES INC.**

3434 Route 22 West • Branchburg, NJ 08876 USA Tel.: (908) 252-9300 • (800) 932-0624 • Fax: (908) 252-0811
Shipped From: 80 Industrial Drive • Alpha, NJ 08865

**CERTIFICATE OF ANALYSIS****EPA PROTOCOL MIXTURE
PROCEDURE #: G1**

CUSTOMER: Cubix Corporation
SGI ORDER #: 140748
ITEM#: 5
P.O.#: 99049

CYLINDER #: CC106737
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 590

CERTIFICATION DATE: 3/24/99
EXPIRATION DATE: 3/15/2002

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Carbon Monoxide	3/17/99	15.33 ppm	15.27 ppm	+/- 1%
	3/24/99	15.22 ppm		
Methane	3/15/99	14.92 ppm	14.92 ppm	+/- 1%

BALANCE Air

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Carbon Monoxide	GMIS-1	CC38290	49.8 ppm
Methane	SRM-2751	CAL013479	98.6 ppm

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Carbon Monoxide	Horiba VIA-510	570423011	NDIR	3/17/99
Methane	H. Packard 6890	US00001434	GC - FID	3/9/99

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST:
FRED PIKULA

DATE: 3/24/99

APPENDIX F:
STRIP CHART RECORDS

100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100

10

10

44.2 NOX RAS

20.80 RAS

50 NOX RAS

20 RAS

8.52 NOX

12.89 NOX

9.95 NOX

12.46 NOX

24.2 NOX

100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100

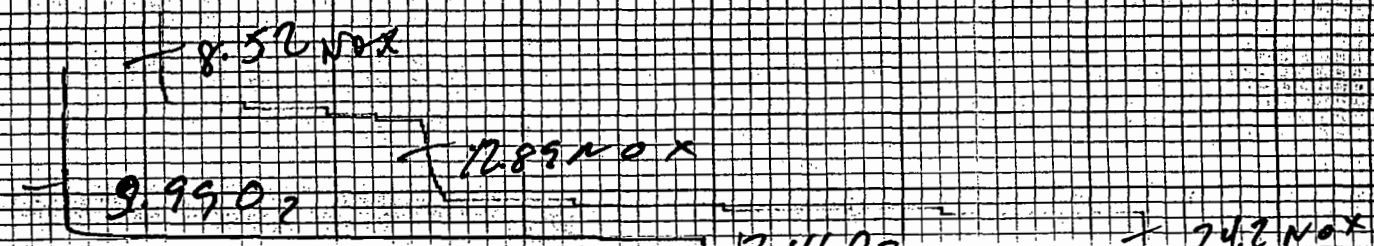
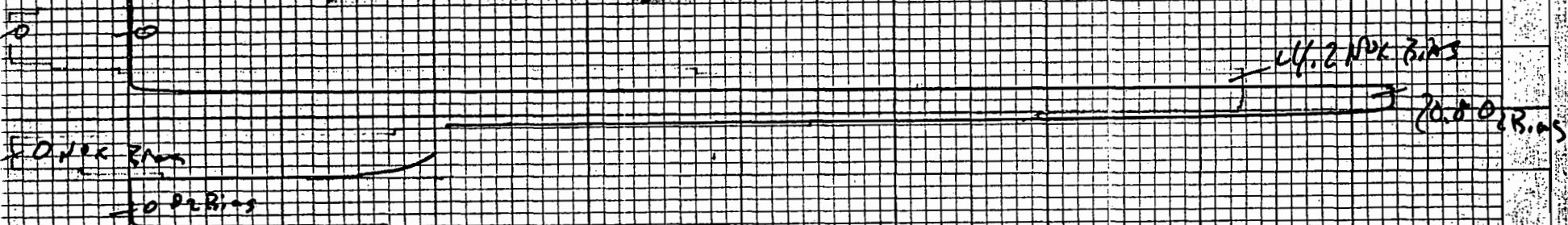
20.2

20.80

(16545)

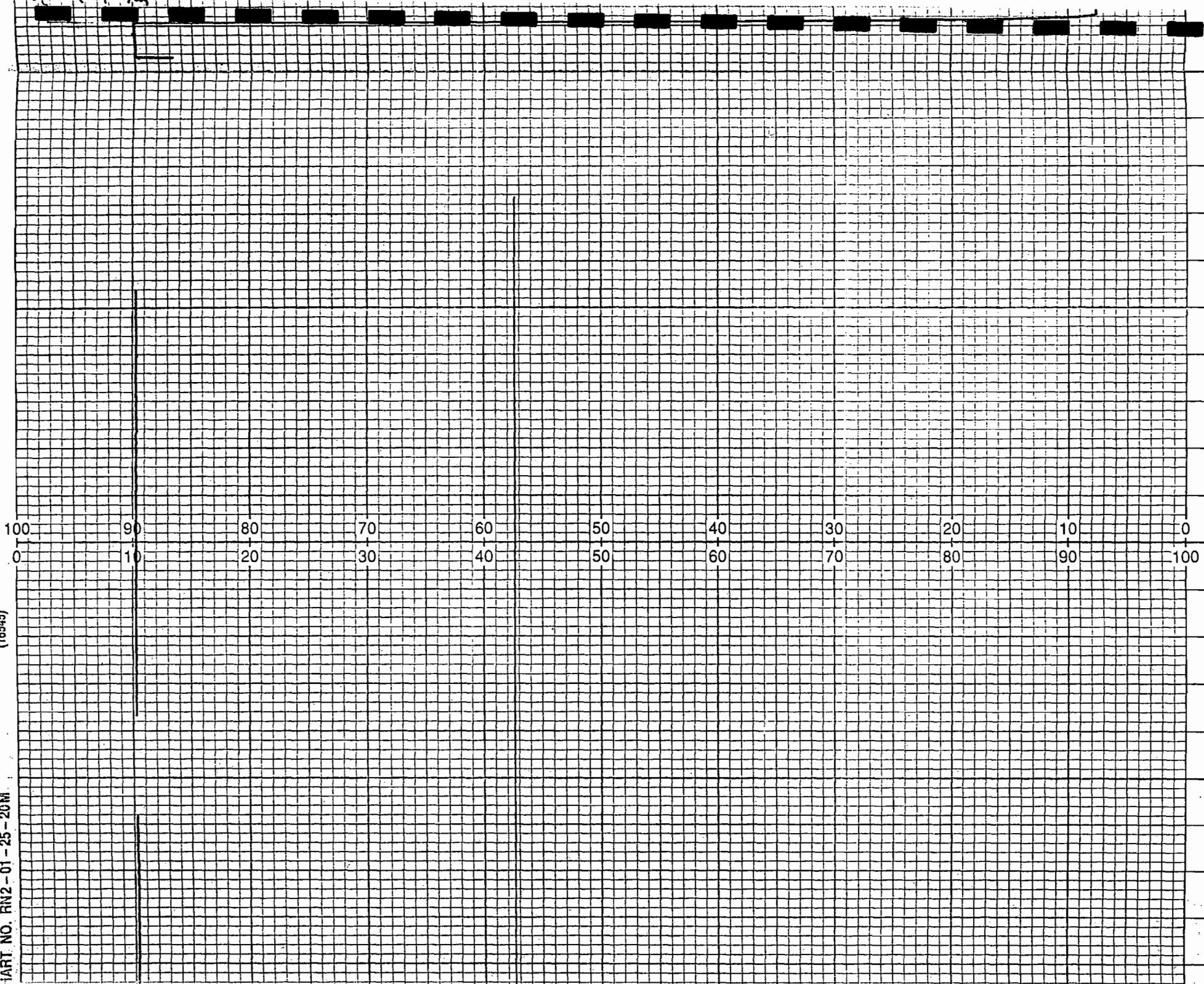
NOX - 0-25
NOX - 0-30

90 80 70 60 50 40 30 20 10 0
10 20 30 40 50 60 70 80 90 100



PART NO. RN2-01-25-20M

(16x45)

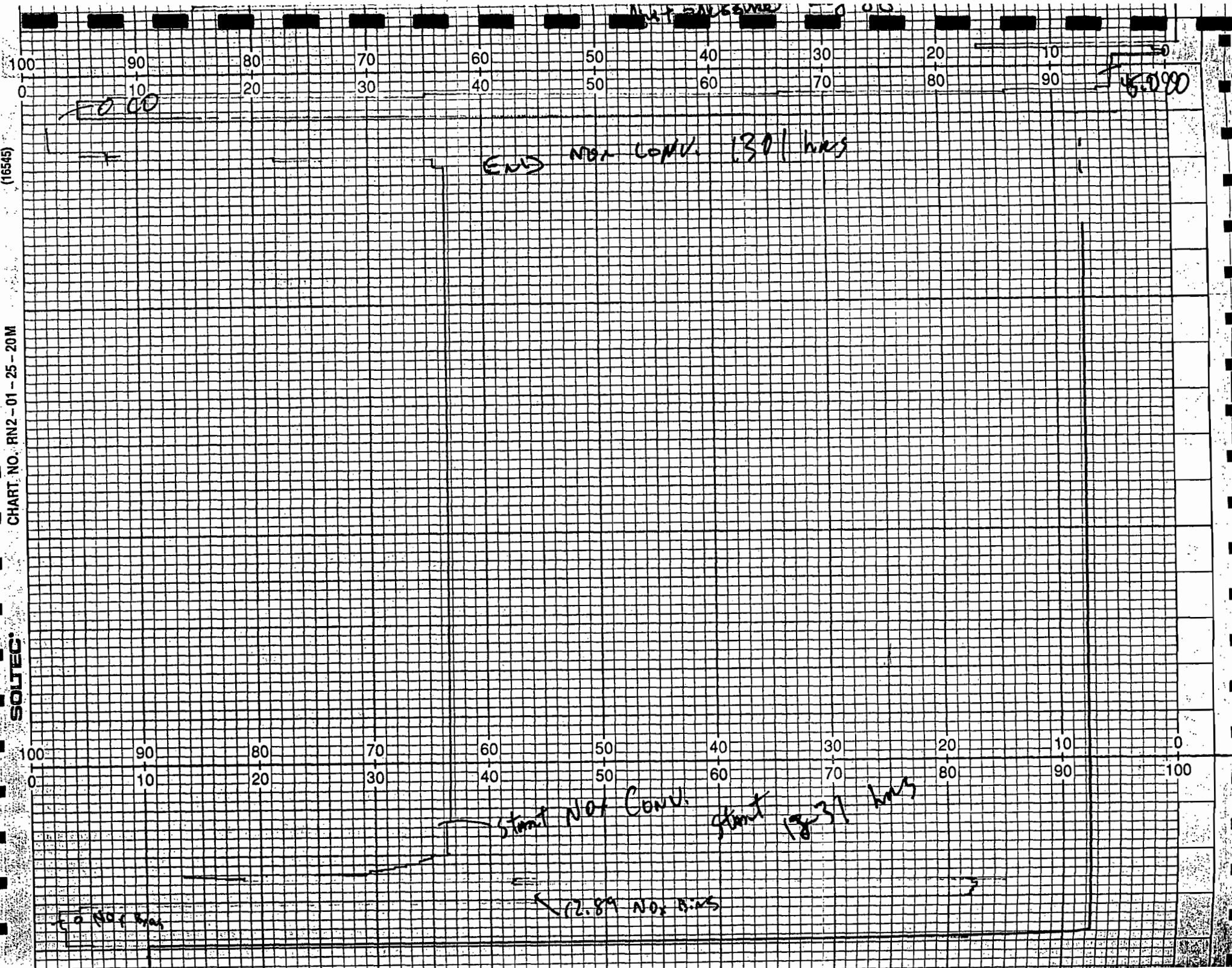


325 K

(16545)

CHART NO. RN2-01-25-20M

SOLTEC



100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100

$NO_2 = 6.9$

$MA = 6.75$

$O_2 = 13.3$

$O_2 \text{ CON} = 8017.36$

O_2 Traverse point D

Start Run 1 Low O_2 has

$P_b = 29.83$
Bar $75^\circ F$
Wet $73^\circ F$

35.54 CO

25.1 CO

Adjust Pressure Reg 88

NO. RW2 6-25-20M (16545)

$\phi = 0^\circ$

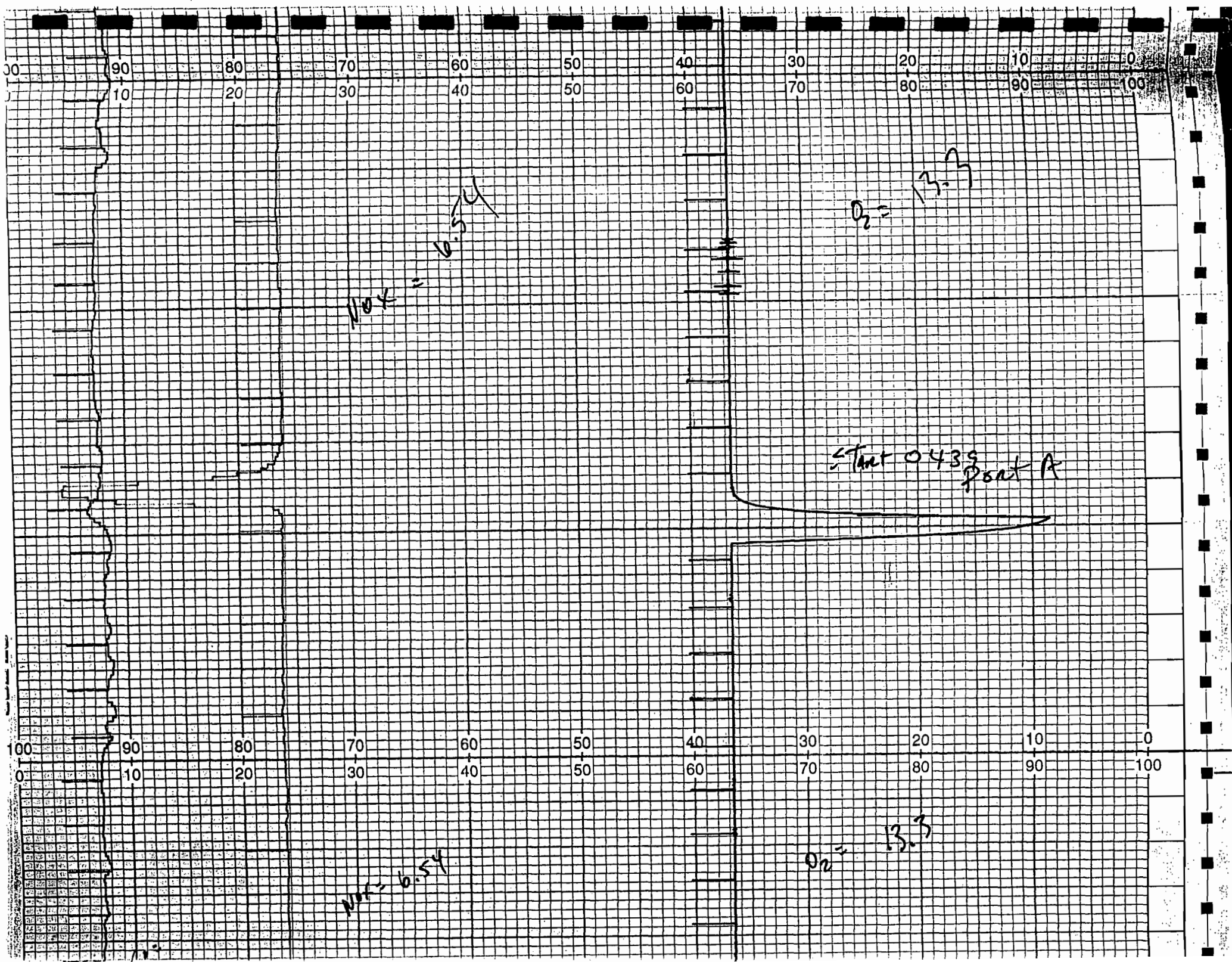
$\phi_{02} = 6.4^\circ$

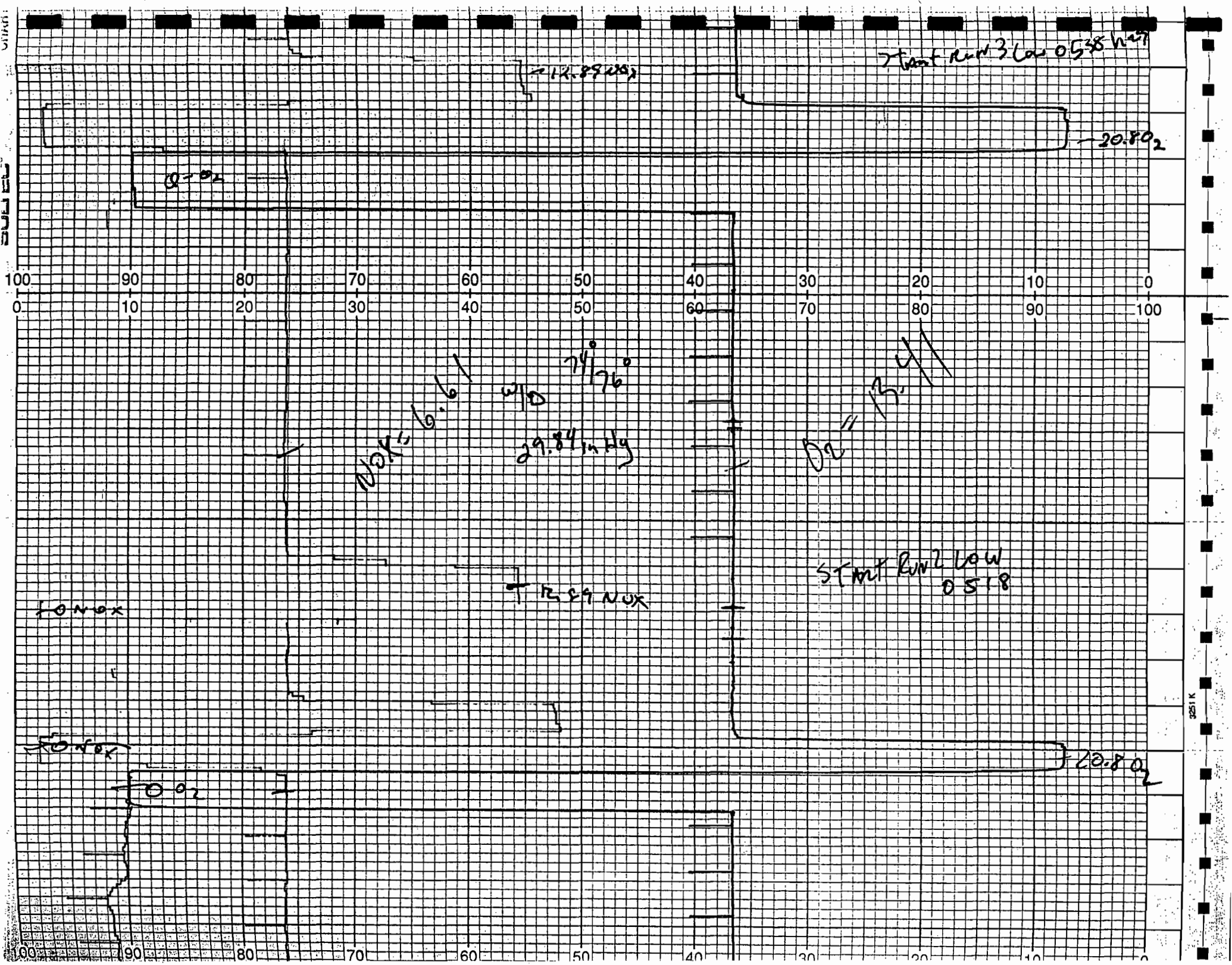
$\phi_2 = 13.3^\circ$

Port B Start 0411

Port C Start 0341

3251 K





$NO_x = 6.98$

$O_2 = 13.42$

$w/d \quad 75^\circ / 77^\circ$

29.85 in Hg

Start Run 1 mid
0606 hrs

20.7%

12.89 NO_x

0 NO_x

0 O_2

$NO_x = 6.61$

$w/d \quad 75^\circ / 77^\circ$

29.84 in Hg

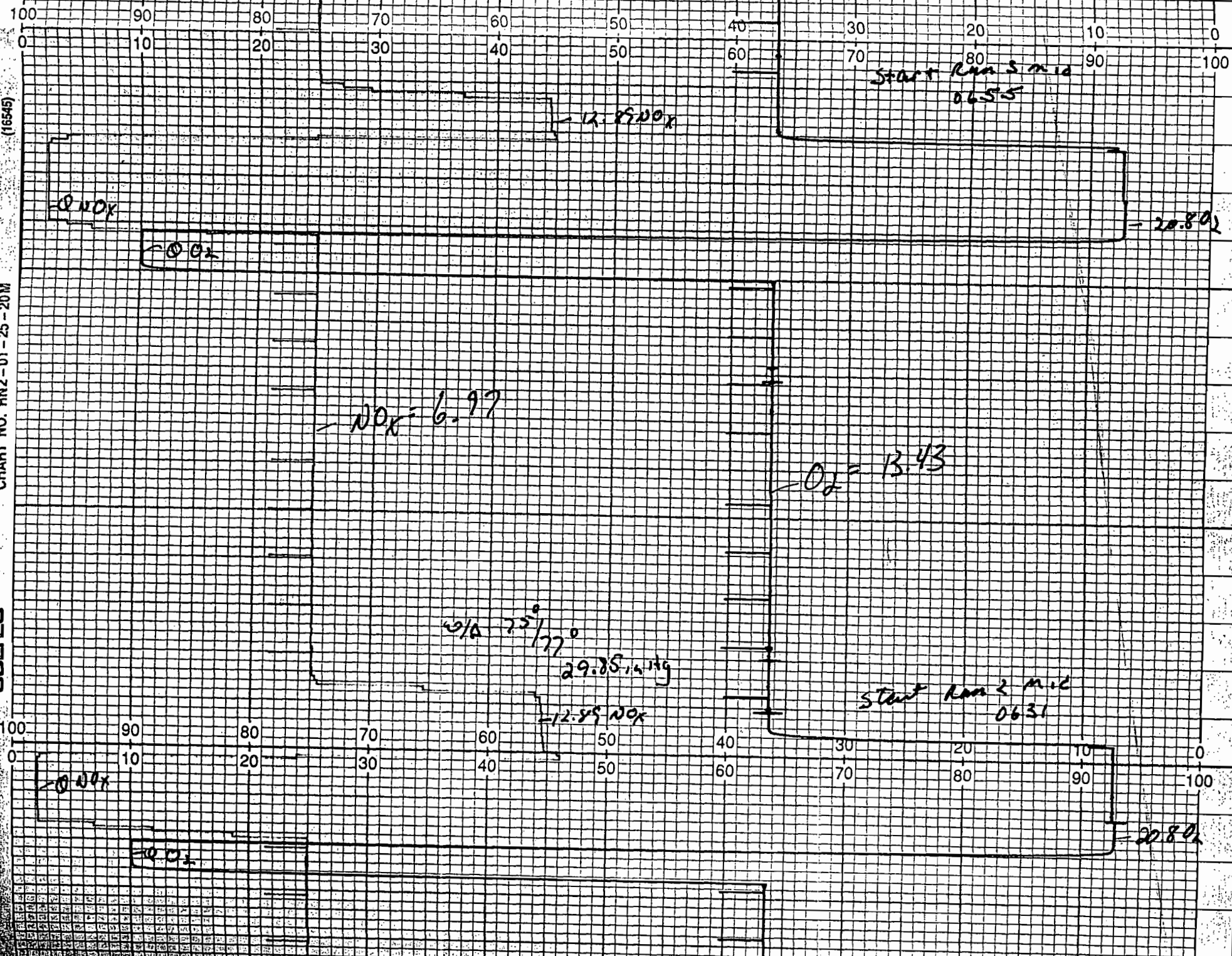
$O_2 = 13.44$

Start Run 3 low 0538 hrs

(16545)

CHART NO. RN2-01-25-20M

SOLTEC



$$NO_x = 6.54$$

$$O_2 = 13.37$$

$$P_b = 29.91$$

$$\sum \frac{O_2}{1076}$$

Start Row 1 High 1042 hrs

Q_{NO_x}

$-20.8 O_2$

Q_{O_2}

W/A 75% 77°
29.25 in Hg

NOX = 6.68

O₂ = 13.40

Start Run 3 HGL 112.7

Pb = 29.91
b = 9.2
w = 8.7

12.84 NOX

12.80 O₂

NOX = 6.52

O₂ = 13.40

Pb = 29.91
b = 9.6
w = 8.7

Start Run 2 110.5 has
High

12.84 NOX

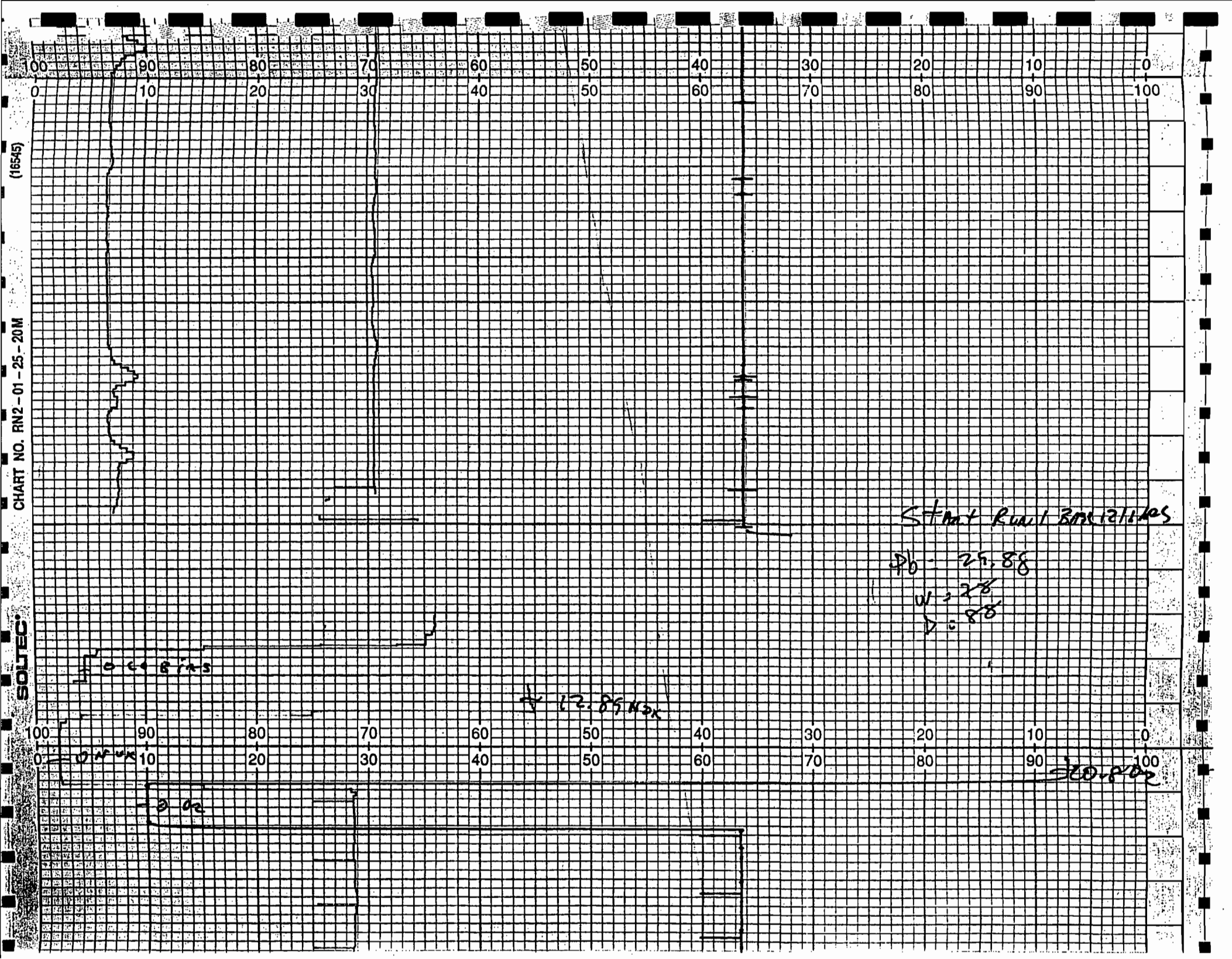
12.80 O₂

100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100

(18545)

HART NO. RN2-01-25-20M

COLTEC



CH

SOLTEC

100
090
1080
2070
3060
4050
5040
6030
7020
8010
900
100

Max - ~~16.44~~
5.77
1.24
1.24
13.52

~~NOX~~

NO_x = 13.9
O₂ = 13.9
CO = 1.31

100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100

START BASE RUN 2 133042

15.2740

12.89 NOX

CHART NO. RN2-01-25-20M

(15545)

0.000

0.002

20.000

2

100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100

12.85 NOx

10.802

(16545)

CHART NO. RN2-01-25-20M

SOLTEC

100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100

NOx = 9.27
13.57

CHAR

SOLTEC

100	90	80	70	60	50	40	30	20	10	0
0	10	20	30	40	50	60	70	80	90	100

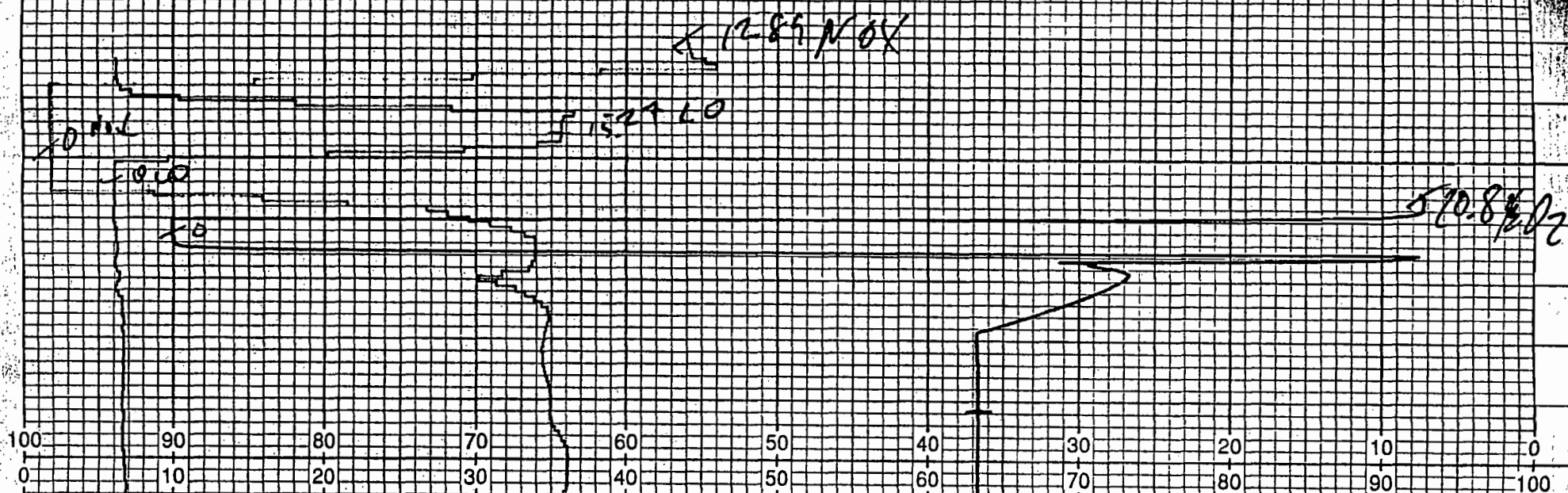
$\mu\sigma \approx 10.19$
 $\sigma^2 = 13.36$
 $\omega = 0.73$

BASE
 Start Run 3 1937

2-06-1937

(16545)

CHART NO. RN2-01-25-20M



(16545)

CHART NO. RN2-01-25-20M

100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100

9.99 CO₂ R.A.S

0 R.A.S CO₂

5.04 CO₂

9.99% CO₂

18.01 CO₂

0 CO₂

90 80 70 60 50 40 30 20 10 0
10 20 30 40 50 60 70 80 90 100

60 CO₂

00-

25

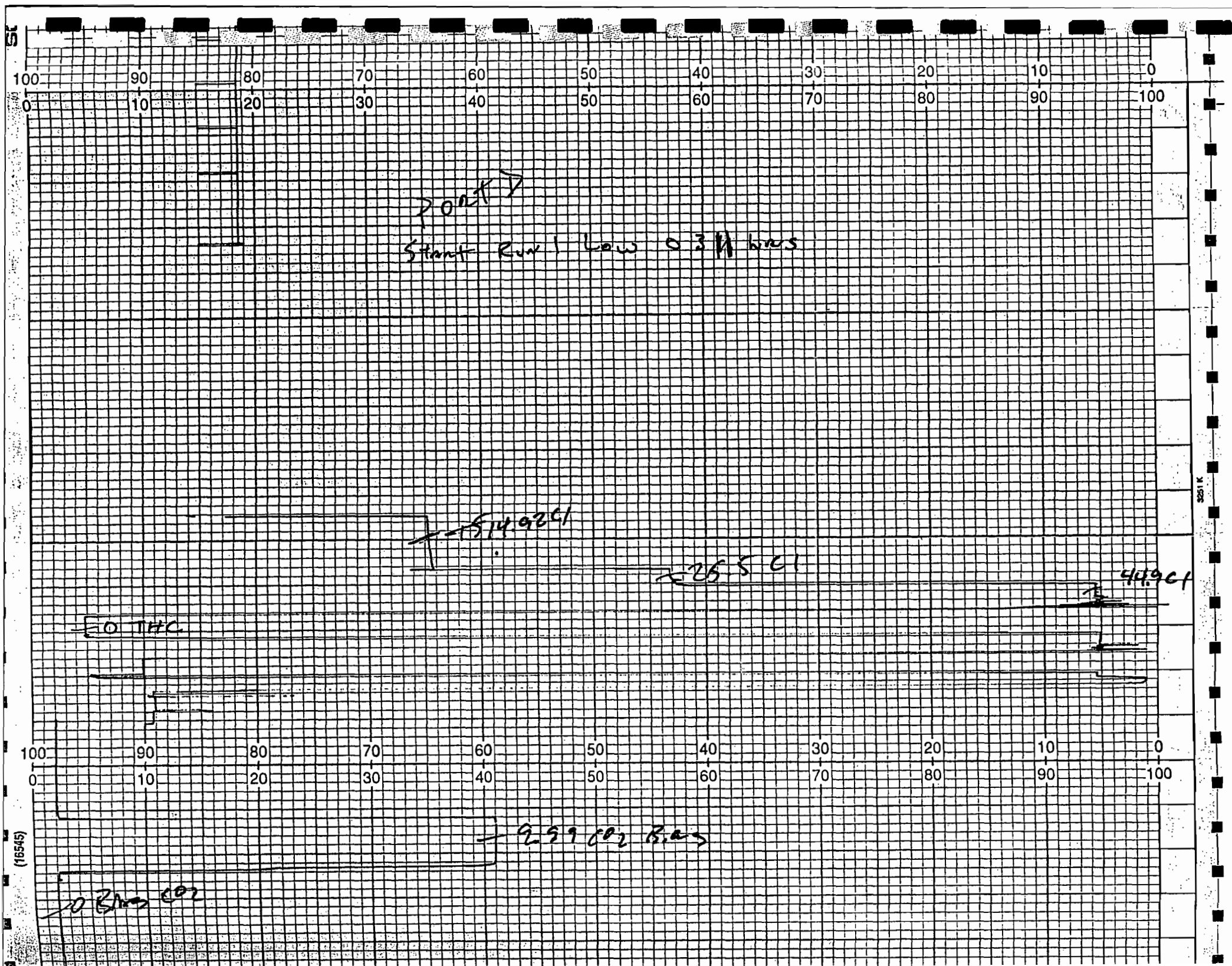


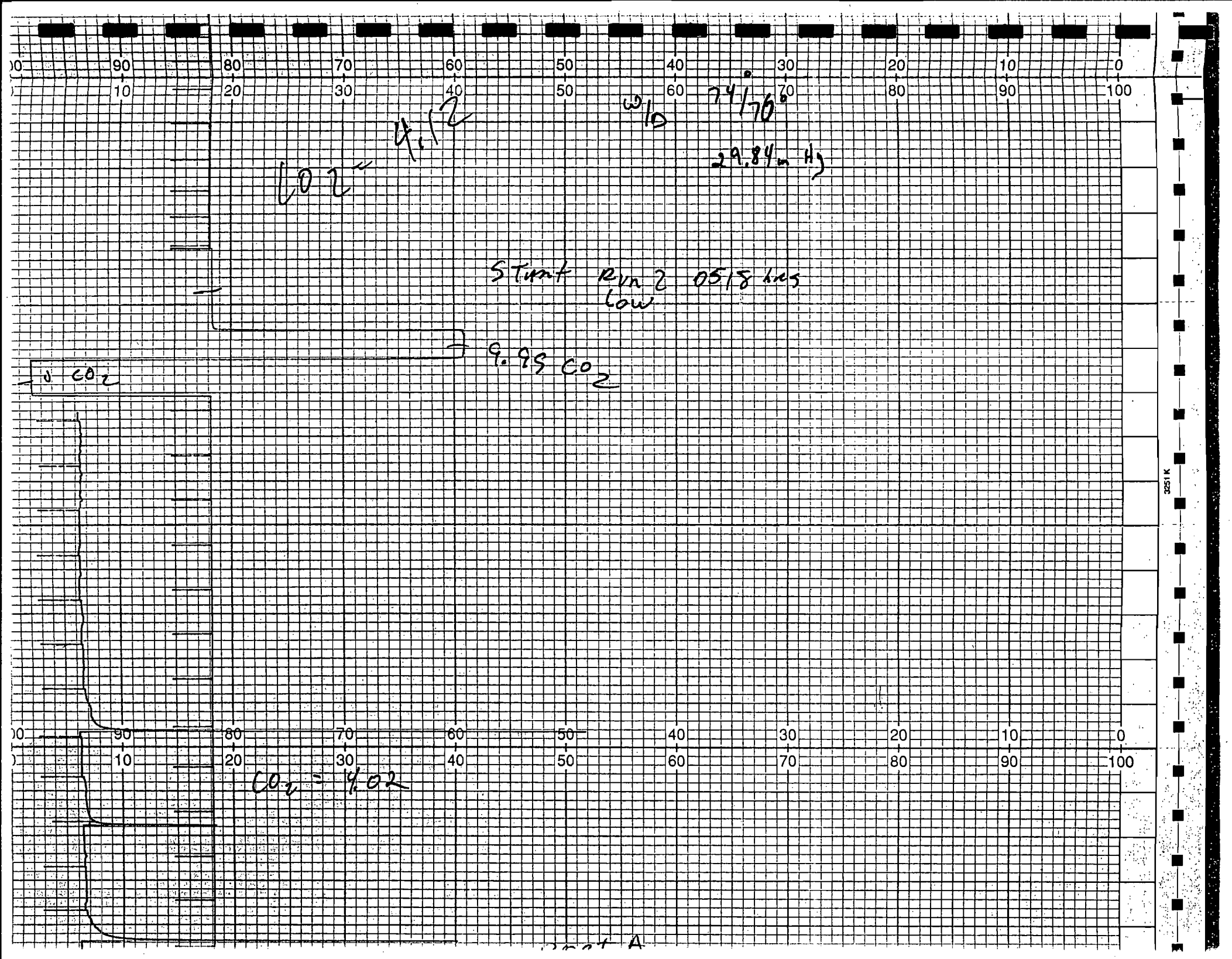
CHART NO. HW2-01-25-20M

SUN 10

Start 0439 Port A

602 = 4.02

Port B Start 0411



Start Run 1 mid 0606 hrs

W/D 75/77°

29.85 in Hg

7.99 CO₂

CO₂

W/D 75/77

29.84 in Hg

CO₂ 4.12

Start Run 3 Low 0538 hrs

7.99 CO₂

CO₂

- 9.99 CO₂

- 0 CO₂

- CO₂ = 4.15

W/D 75°/77°

29.85 in Hg

Start Run 2 mid 0631

100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100

- 9.99 CO₂

- 0 CO₂

- CO₂ = 4.20

00 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100

Start Run High 1040 hrs

- 9.79 CO₂

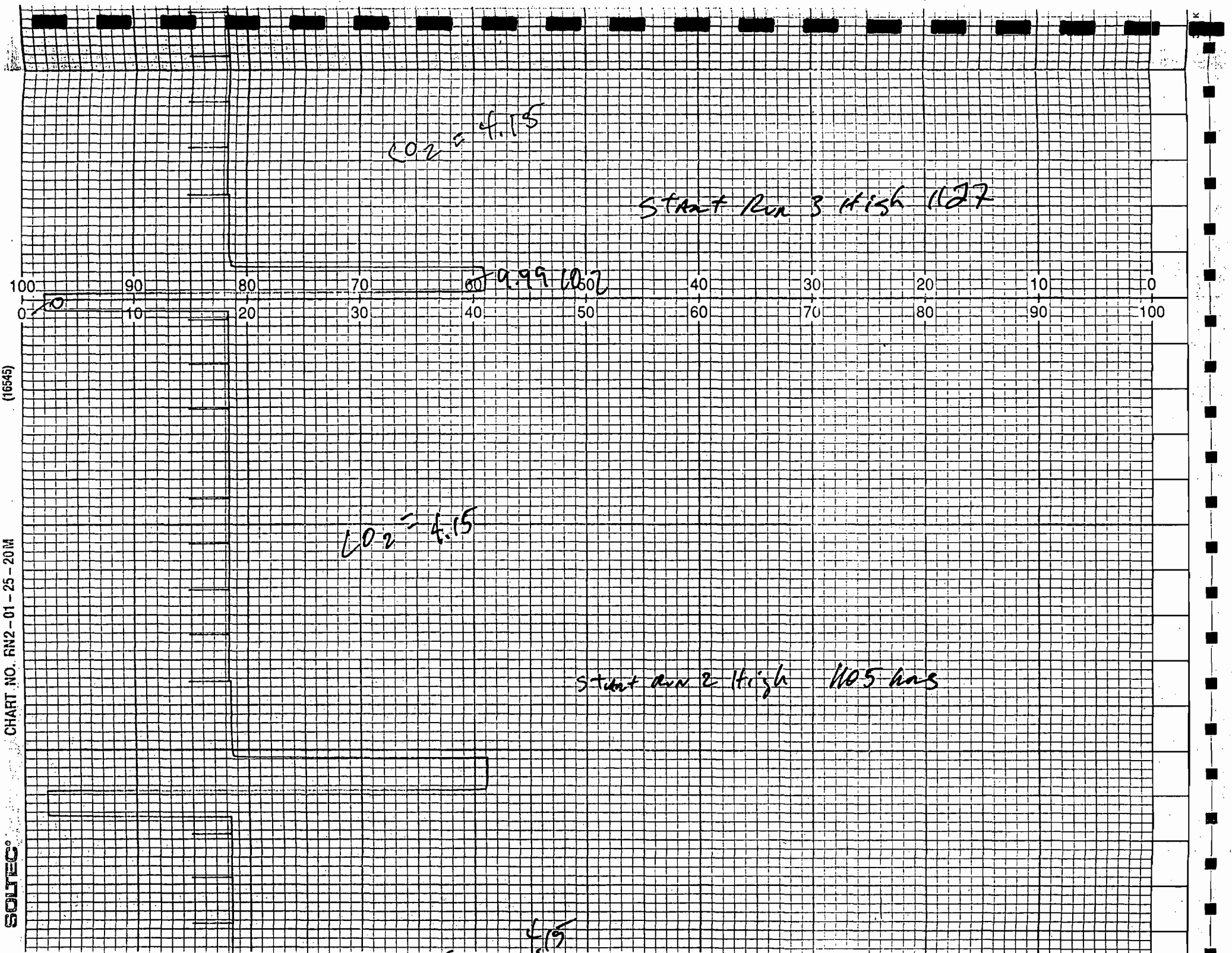
- 0 CO₂

2/10 75°/77°

29.85 in Hg

100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100

Start Run 3 mid 0655



START RUN BASE 12/6 hrs

+ 14.92 C/Bases

/D 14.92 C/Bases

100	90	80	70	60	50	40	30	20	10	0
0	10	20	30	40	50	60	70	80	90	100

+ 9.99 C/Bases

/D 9.99 C/Bases

$$\pi + C = 0.79$$

$$CO_2 = 4.12$$

$$p_b = 29.58$$

$$\begin{matrix} w \\ D \end{matrix} \begin{matrix} 78 \\ 88 \end{matrix}$$

100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100

Start Run 2 1330 hrs
BACG

10,92 C/

9.99 102

$Pb = 80.81$
 $w = 78$
 $\Delta = 90$

$Pb = 79.81$
 $w = 78$
 $\Delta = 88$

100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100

THC = 0.20
CO₂ = 64.12

pb 29.86
W 38
D 90

CO₂
T_{HC}

0.2

Start Run 3 Base 1457

14.92 C₁

9.95 C₂

$\phi = 29.55$

$\psi = 78$

$\delta = 700$

(16545)



(16545)

CHART NO. RN2-01-25-20M

SOLTEC

Best Available Copy

D-90

PB 29.85
W 79
D 90

4.15

100"

29

**APPENDIX G:
OPACITY OBSERVATIONS**

VISIBLE EMISSION OBSERVATION

E-496 R 10/85

SOURCE NAME		SOURCE LOCATION		OBSERVATION DATE				START TIME				STOP TIME			
POLK POWER STATION		UNIT 2 TURBINE SS		10/7/00				12:20				13:20			
TYPE OF FACILITY				SEC.	0	15	30	45	SEC.	0	15	30	45		
INTEGRATED COAL GASIFICATION/NATURAL GAS FEED				MIN	0	15	30	45	MIN	0	15	30	45		
DISTANCE FROM OBSERVER				1	0	0	0	0	31	0	0	0	0		
~290'				2	0	0	0	0	32	0	0	0	0		
SKY CONDITIONS/PLUME BACKGROUND				3	0	0	0	0	33	0	0	0	0		
BROKEN SKIES/BLUE BACKGROUND				4	0	0	0	0	34	0	0	0	0		
SOURCE LAYOUT SKETCH DRAW NORTH ARROW				5	0	0	0	0	35	0	0	0	0		
				6	0	0	0	0	36	0	0	0	0		
				7	0	0	0	0	37	0	0	0	0		
				8	0	0	0	0	38	0	0	0	0		
				9	0	0	0	0	39	0	0	0	0		
				10	0	0	0	0	40	0	0	0	0		
				11	0	0	0	0	41	0	0	0	0		
				12	0	0	0	0	42	0	0	0	0		
				13	0	0	0	0	43	0	0	0	0		
				14	0	0	0	0	44	0	0	0	0		
				15	0	0	0	0	45	0	0	0	0		
				16	0	0	0	0	46	0	0	0	0		
				17	0	0	0	0	47	0	0	0	0		
				18	0	0	0	0	48	0	0	0	0		
				19	0	0	0	0	49	0	0	0	0		
				20	0	0	0	0	50	0	0	0	0		
				21	0	0	0	0	51	0	0	0	0		
22	0	0	0	0	52	0	0	0	0						
23	0	0	0	0	53	0	0	0	0						
24	0	0	0	0	54	0	0	0	0						
25	0	0	0	0	55	0	0	0	0						
26	0	0	0	0	56	0	0	0	0						
27	0	0	0	0	57	0	0	0	0						
28	0	0	0	0	58	0	0	0	0						
29	0	0	0	0	59	0	0	0	0						
30	0	0	0	0	60	0	0	0	0						

SUN-O WIND->

AVERAGE OPACITY -

0.0%

WIND SPEED (EST.)

~ 1-5 MPH

WIND DIRECTION (EST.)

SOUTHERLY

OBSERVER'S NAME (PRINT)

JAMES A. WERNER

OBSERVER'S SIGNATURE

[Signature]

DATE

10/7/00

COMMENTS

7 of inclination = 15°

COPY OF VISIBLE EMISSIONS CERTIFICATION CARD



State of Florida
**Department of
Environmental Protection**

This is to Certify That

JAMES WERNER

has completed the STATE OF FLORIDA visible emissions evaluation training and is a qualified observer of visible emissions as specified by EPA reference method 9.

This Certificate Expires

Feb 23, 2001

Certificate Officer

[Signature]

Bearer's Signature

[Signature]

APPENDIX H: OPERATIONAL DATA

UNIT 2 TEST DATA OCTOBER 7, 2000

FROM

10/7/2000 3:11

TO

10/7/2000 4:47

1m

	2TMEI1934	2EGSF1904CMP	2TMSI1922M	2PWRJ1900	2TMSPI1916	2PWRZI904	2TMSPI1909	2TMSPI1912
TIME	Mean Turbine Exhaust Temp	Fuel Gas Flow lbs./sec	Compressor inlet Temp OF	Generator Output MW	Compressor discharge press psig	Inlet guide vane angle O	Barometric Pressure Hg	Air inlet Duct Losses H2O
07-Oct-00 03:11:00	1190.604736	8495.049805	87.37539673	94.25924683	140.0977478	53.97223282	29.72685242	1.023278713
07-Oct-00 03:12:00	1190.447388	8501.670898	87.18617249	94.2396698	140.101181	53.97869873	29.72681999	1.022033691
07-Oct-00 03:13:00	1190.854126	8516.008789	87.59436035	94.20346069	140.1046143	53.98516464	29.72678757	1.02078855
07-Oct-00 03:14:00	1190.851807	8498.150391	87.63194275	94.16725159	140.1080627	53.99163055	29.72675514	1.019543529
07-Oct-00 03:15:00	1190.65625	8496.200195	87.5486145	94.13103485	140.111496	53.99809647	29.72672272	1.018298507
07-Oct-00 03:16:00	1190.828979	8481.900391	87.6875	94.66313934	140.1149292	54.00456238	29.72669029	1.017053366
07-Oct-00 03:17:00	1190.78125	8497.5	87.6875	94.47208405	140.1183777	54.0110321	29.72665787	1.015808344
07-Oct-00 03:18:00	1190.901001	8496.900391	87.40371704	94.28102875	140.1218109	54.01749802	29.72662544	1.014563203
07-Oct-00 03:19:00	1190.958374	8494.5	87.6875	94.20803833	140.1252441	54.02396393	29.72659302	1.013318181
07-Oct-00 03:20:00	1190.59375	8495.099609	87.6875	94.66098785	140.1286926	54.03042984	29.72656059	1.01207304
07-Oct-00 03:21:00	1190.699585	8492.950195	87.6875	94.37760162	140.1321259	54.03689575	29.72652817	1.010828018
07-Oct-00 03:22:00	1190.966919	8474.75	87.6875	93.77864838	140.1355591	54.04336166	29.72649384	1.009582877
07-Oct-00 03:23:00	1191.455322	8474.75	87.6875	93.83067322	140.1390076	54.04982758	29.72646141	1.008337855
07-Oct-00 03:24:00	1190.460205	8474.75	87.6875	93.95503998	140.1424408	54.05629349	29.72642899	1.007092834
07-Oct-00 03:25:00	1191.375	8474.75	87.6875	94.07939911	140.145874	54.0627594	29.72639656	1.005847692
07-Oct-00 03:26:00	1190.945557	8474.75	87.6875	94.03324127	140.1493225	54.06922531	29.72636414	1.004602671
07-Oct-00 03:27:00	1191.427734	8474.75	87.6875	93.88835144	140.1527557	54.07569504	29.72633171	1.00335753
07-Oct-00 03:28:00	1191.212524	8474.75	87.6875	93.6328125	140.156189	54.08216095	29.72629929	1.002112508
07-Oct-00 03:29:00	1190.4375	8474.75	87.6875	94.35005951	140.1596375	54.08862686	29.72626686	1.000867367
07-Oct-00 03:30:00	1191.034546	8470.200195	87.6875	94.15238953	140.1630707	54.09509277	29.72623444	0.999622345
07-Oct-00 03:31:00	1191.369995	8452	87.6875	94.101857758	140.1665039	54.10155869	29.72620201	0.998377264
07-Oct-00 03:32:00	1191.169678	8456.475586	87.6875	94.10149384	140.1699524	54.1080246	29.72616959	0.997132182
07-Oct-00 03:33:00	1191.520264	8474.75	87.6875	94.05742645	140.1733856	54.11449051	29.72613716	0.995887101
07-Oct-00 03:34:00	1191.1875	8474.75	87.6875	94.01335144	140.1768188	54.12095642	29.72610474	0.994642019
07-Oct-00 03:35:00	1191.022705	8474.75	87.6875	93.96928406	140.1802673	54.12742233	29.72607231	0.993396938
07-Oct-00 03:36:00	1190.449951	8474.75	87.6875	93.95703125	140.1837006	54.13388824	29.72603989	0.992151856
07-Oct-00 03:37:00	1191.25	8474.75	87.6875	93.9631958	140.1871338	54.14035797	29.72600555	0.990906775
07-Oct-00 03:38:00	1191.015625	8474.200195	87.6875	93.96936798	140.1905823	54.14682388	29.72597313	0.989661753
07-Oct-00 03:39:00	1191.225952	8476.470703	87.6875	93.97553253	140.1940155	54.15328979	29.7259407	0.988416672
07-Oct-00 03:40:00	1190.71875	8493.329102	87.6875	93.98170471	140.1974487	54.15975571	29.72590828	0.987171159
07-Oct-00 03:41:00	1191.125	8474.75	87.62004089	93.984375	140.2008972	54.16622162	29.72587585	0.985926509
07-Oct-00 03:42:00	1191.443481	8470.200195	87.38194275	93.984375	140.2043304	54.17268753	29.72584343	0.984681427
07-Oct-00 03:43:00	1191.517822	8456.549805	87.82142639	94.06815338	140.2077637	54.17915344	29.725811	0.983436346
07-Oct-00 03:44:00	1190.994263	8470.799805	87.71746826	94.30967712	140.2112122	54.18561935	29.72577858	0.982191265
07-Oct-00 03:45:00	1190.90625	8459.599609	87.78662872	94.2090683	140.2146454	54.19208527	29.72574615	0.980946183
07-Oct-00 03:46:00	1190.734375	8477.349609	87.85578918	94.10845947	140.2180786	54.19855118	29.72571373	0.979701102
07-Oct-00 03:47:00	1191.122803	8474.75	87.92494965	94.00785065	140.2215271	54.2050209	29.7256813	0.97845608
07-Oct-00 03:48:00	1190.899292	8478.991211	87.99411011	94.2474823	140.2249603	54.21148682	29.72564888	0.977210999
07-Oct-00 03:49:00	1191.525024	8488.548828	88.06327057	94.06602478	140.2283936	54.21795273	29.72561646	0.975965917
07-Oct-00 03:50:00	1191.800049	8456.170898	88.13243103	93.94721222	140.231842	54.22441864	29.72558403	0.974720836
07-Oct-00 03:51:00	1191.314697	8469.902344	88.20159149	93.8796463	140.2352753	54.23088455	29.72555161	0.973475754

07-Oct-00 03:52:00	1191.320801	8449.400391	87.875	93.859375	140.2387085	54.23735046	29.72551727	0.972230673
07-Oct-00 03:53:00	1190.964233	8452	88.25	93.859375	140.2421417	54.24381638	29.72548485	0.970985591
07-Oct-00 03:54:00	1191.155273	8451.349609	88.25	93.95735168	140.2455902	54.25028229	29.72545242	0.96974051
07-Oct-00 03:55:00	1191.388062	8453.950195	88.37397003	94.08798981	140.2490234	54.2567482	29.72542	0.968495429
07-Oct-00 03:56:00	1190.932983	8483.849609	88.49793243	94.27105713	140.2669525	54.26321411	29.72538757	0.967250347
07-Oct-00 03:57:00	1190.261719	8515.700195	88.5	95.203125	140.2906189	54.26968002	29.72535515	0.966005325
07-Oct-00 03:58:00	1190.90625	8502.049805	88.5	94.44260406	140.3142853	54.27614975	29.72532272	0.964760244
07-Oct-00 03:59:00	1191.067261	8520.25	88.5	94.6839447	140.3379517	54.28261566	29.7252903	0.963515162
07-Oct-00 04:00:00	1189.831543	8520.25	88.5	94.92527771	140.3616028	54.28908157	29.72525787	0.962270081
07-Oct-00 04:01:00	1189.979126	8520.25	88.5	95.19271088	140.3852692	54.29554749	29.72522545	0.961025
07-Oct-00 04:02:00	1190.098267	8520.25	88.5	95.13952637	140.4089355	54.3020134	29.72519302	0.959779918
07-Oct-00 04:03:00	1189.775879	8520.950195	88.5	95.07014465	140.4326019	54.30847931	29.7251606	0.958534837
07-Oct-00 04:04:00	1190.11145	8523.049805	88.5	94.95046234	140.4562683	54.31494522	29.72512817	0.957289755
07-Oct-00 04:05:00	1190.440796	8520.25	88.41551971	94.83078766	140.4799194	54.32141113	29.72509575	0.956044674
07-Oct-00 04:06:00	1190.1875	8520.25	88.31207275	94.796875	140.5035858	54.32787704	29.72506332	0.954799652
07-Oct-00 04:07:00	1190.3125	8519.650391	88.20861816	94.82169342	140.5272522	54.33434296	29.72502899	0.953554571
07-Oct-00 04:08:00	1190.25	8517.849609	88.1051712	94.92095947	140.5509186	54.34081268	29.72499657	0.952309489
07-Oct-00 04:09:00	1190.035156	8520.25	88.00172424	94.97678375	140.5745697	54.34727859	29.72496414	0.951064408
07-Oct-00 04:10:00	1190.128296	8520.25	88.0338974	95.02391815	140.5982361	54.35374451	29.72493172	0.949819326
07-Oct-00 04:11:00	1189.766724	8524.849609	88.1306839	95.07105255	140.6219025	54.36021042	29.72489929	0.948574245
07-Oct-00 04:12:00	1189.666626	8534.099609	87.70587921	95.14688873	140.6455688	54.36667633	29.72486687	0.947329164
07-Oct-00 04:13:00	1189.833374	8502.049805	87.72631073	95.22779083	140.66922	54.37314224	29.72483444	0.946084082
07-Oct-00 04:14:00	1190.1875	8520.938477	87.74673462	95.30869293	140.6928864	54.37960815	29.72480202	0.944839001
07-Oct-00 04:15:00	1190.495483	8523.108398	87.76715851	95.15380859	140.7165527	54.38607407	29.72476959	0.943593979
07-Oct-00 04:16:00	1189.790405	8524.466797	87.7875824	95.01291656	140.7402191	54.39253998	29.72473717	0.942348897
07-Oct-00 04:17:00	1189.886353	8539.033203	87.80800629	94.87201691	140.7638855	54.39900589	29.72470474	0.941103816
07-Oct-00 04:18:00	1189.864258	8520.25	87.82843018	94.83437347	140.7875366	54.40547562	29.72467232	0.939858735
07-Oct-00 04:19:00	1189.757813	8520.25	87.84885406	94.91473389	140.811203	54.41194153	29.72463989	0.938613653
07-Oct-00 04:20:00	1190.106567	8520.25	87.86927795	95.0025177	140.8348694	54.41840744	29.72460747	0.937368572
07-Oct-00 04:21:00	1189.972534	8520.25	87.88970947	95.09324646	140.8585358	54.42487335	29.72457504	0.93612349
07-Oct-00 04:22:00	1190.160767	8520.25	87.91013336	95.25937653	140.8821869	54.43133926	29.72454071	0.934878409
07-Oct-00 04:23:00	1189.835571	8520.25	87.93055725	94.98356628	140.9058533	54.43780518	29.72450829	0.933633327
07-Oct-00 04:24:00	1190.052124	8524.849609	87.95098114	95.10921478	140.9295197	54.44427109	29.72447586	0.932388246
07-Oct-00 04:25:00	1190.703979	8542.650391	87.97140503	95.23485565	140.953186	54.450737	29.72444344	0.931143224
07-Oct-00 04:26:00	1189.98877	8536.25	87.99182892	95.33839417	140.9768372	54.45720291	29.72441101	0.929898143
07-Oct-00 04:27:00	1189.885986	8520.25	88	95.29821777	141.0005035	54.46366882	29.72437859	0.928653061
07-Oct-00 04:28:00	1190.166626	8520.25	87.69036865	95.25803375	141.0241699	54.47013855	29.72434616	0.92740798
07-Oct-00 04:29:00	1190.401001	8520.25	88.45833588	95.21785736	141.0478363	54.47660446	29.72431374	0.926162899
07-Oct-00 04:30:00	1190.21875	8524.466797	88	95.41767883	141.0715027	54.48307037	29.72428131	0.924917817
07-Oct-00 04:31:00	1190.64624	8539.033203	88.04776764	95.23577118	141.0951538	54.48953629	29.72424889	0.923672736
07-Oct-00 04:32:00	1189.644653	8524.466797	88.23885345	95.11185455	141.1188202	54.4960022	29.72421646	0.922427654
07-Oct-00 04:33:00	1189.758911	8543.25	88.42993927	95.59233093	141.1424866	54.50246811	29.72418404	0.921182573
07-Oct-00 04:34:00	1189.75	8538.650391	88.02173615	95.42460632	141.166153	54.50893402	29.72415161	0.919937551
07-Oct-00 04:35:00	1189.9375	8524.849609	88.13043213	95.58866882	141.1898041	54.51539993	29.72411919	0.91869247
07-Oct-00 04:36:00	1190.020874	8543.25	88.23912811	95.640625	141.2134705	54.52186584	29.72408676	0.917447388
07-Oct-00 04:37:00	1189.75	8543.25	88.3478241	95.38210297	141.2371368	54.52833176	29.72405243	0.916202307
07-Oct-00 04:38:00	1189.735107	8543.25	88.45652008	95.39878082	141.2608032	54.53480148	29.72402	0.914957225
07-Oct-00 04:39:00	1189.756226	8543.25	88.9375	95.4223175	141.2844543	54.5412674	29.72398758	0.913712144
07-Oct-00 04:40:00	1190.032715	8543.25	88	95.53455353	141.3081207	54.54773331	29.72395515	0.912467062
07-Oct-00 04:41:00	1189.630737	8543.25	88	95.1919632	141.3317871	54.55419922	29.72392273	0.911221981

07-Oct-00 04:42:00	1189.924316	8543.25	88	95.57142639	141.3554535	54.56066513	29.7238903	0.9099769
07-Oct-00 04:43:00	1189.508545	8538.650391	88	95.13198853	141.3791199	54.56713104	29.72385788	0.908731878
07-Oct-00 04:44:00	1190.043457	8520.25	88	94.89670563	141.402771	54.57359695	29.72382545	0.907486796
07-Oct-00 04:45:00	1189.884888	8520.25	88	94.83229828	141.4264374	54.58006287	29.72379303	0.906241715
07-Oct-00 04:46:00	1190.074219	8525.414063	88.2726593	95.01525879	141.4501038	54.58652878	29.7237606	0.904996634
07-Oct-00 04:47:00	1189.349976	8541.6875	88.3195343	95.48608398	141.4737701	54.59299469	29.72372818	0.903751552
	1190.506626	8502.969414	87.95379269	94.64340186	140.5470219	54.28261444	29.7252903	0.963515151

FROM 10/7/2000 5:18
 TO 10/7/2000 5:34
 1m

	2TMEI1934	2FGSF1904CMP	2TMST1922M	2PWRJ1900	2TMSP1916	2PWRZ1904	2TMSP1909	2TMSPD1912
TIME	Mean Turbine Exhaust Temp	Fuel Gas Flow	Compressor inlet	Generator	Compressor discharge press	Inlet guide	Barometric Pressure	Air inlet Duct
	OF	lbs./sec	Temp OF	Output MW	psig	vane angle O	Hg	Losses H2O
07-Oct-00 05:18:00	1190.219849	8520.25	88	94.74817657	140.8171844	54.7934494	29.72271919	0.865154207
07-Oct-00 05:19:00	1190.078125	8520.25	88	94.61536407	140.8356934	54.79991913	29.72268677	0.863909125
07-Oct-00 05:20:00	1190.3125	8515.700195	88	94.60165405	140.8542023	54.80638504	29.72265434	0.862664044
07-Oct-00 05:21:00	1190.333374	8497.5	88.15591431	94.79367828	140.8727112	54.81285095	29.72262192	0.861419022
07-Oct-00 05:22:00	1190.4375	8497.5	88.47849274	94.65694427	140.8912201	54.81931686	29.72258759	0.860173941
07-Oct-00 05:23:00	1190.28125	8502.049805	88.11643982	94.55586243	140.909729	54.82578278	29.72255516	0.858928859
07-Oct-00 05:24:00	1189.84375	8520.25	88.2756424	94.61914063	140.9282379	54.83224869	29.72252274	0.857683778
07-Oct-00 05:25:00	1189.625	8516.079102	88.5	94.50195313	140.9467621	54.8387146	29.72249031	0.856438696
07-Oct-00 05:26:00	1190.337524	8497.5	88.18125153	94.6484375	140.965271	54.84518051	29.72245789	0.855193615
07-Oct-00 05:27:00	1190.210205	8498.095703	88.5	94.80995941	140.9837799	54.85164642	29.72242546	0.853948534
07-Oct-00 05:28:00	1190.023193	8500.75	88.1692276	95.03125	141.0022888	54.85811234	29.72239304	0.852703452
07-Oct-00 05:29:00	1190.009155	8500.099609	87.6607132	94.88322449	141.0207977	54.86458206	29.72236061	0.851458371
07-Oct-00 05:30:00	1190.119507	8502.75	88.25	94.81833649	141.0393066	54.87104797	29.72232819	0.850213349
07-Oct-00 05:31:00	1189.909668	8523.049805	88.21370697	94.86985016	141.0578156	54.87751389	29.72229576	0.848968267
07-Oct-00 05:32:00	1190.067505	8520.25	87.39904022	94.9213562	141.0763245	54.8839798	29.72226334	0.847723186
07-Oct-00 05:33:00	1190.470581	8520.25	88.02409363	94.97286987	141.0948334	54.89044571	29.72223091	0.846478105
07-Oct-00 05:34:00	1190.229126	8520.25	88.08433533	95.02438354	141.1133423	54.89691162	29.72219849	0.845233023
	1190.147518	8510.151425	88.1181681	94.76896712	140.9652647	54.84518163	29.72245833	0.855193622

Unit 2 Test Data October 7, 2000 8.510151425

FROM 10/7/2000 5:38
 TO 10/7/2000 5:54
 1m

	2TMEI1934	2FGSF1904CMP	2TMST1922M	2PWRJ1900	2TMSP1916	2PWRZ1904	2TMSP1909	2TMSPD1912
TIME	Mean Turbine Exhaust Temp	Fuel Gas Flow	Compressor inlet	Generator	Compressor discharge press	Inlet guide	Barometric Pressure	Air inlet Duct
	OF	lbs./sec	Temp OF	Output MW	psig	vane angle O	Hg	Losses H2O
07-Oct-00 05:38:00	1190.25	8520.25	88.64893341	95.0830307	141.1873779	54.92277527	29.72206688	0.840252697
07-Oct-00 05:39:00	1190.603271	8520.25	87.88315582	95.14409637	141.2058868	54.929245	29.72203445	0.839007676
07-Oct-00 05:40:00	1190.408081	8520.25	88.25	95.19001007	141.2243958	54.93571091	29.72200203	0.837762594
07-Oct-00 05:41:00	1189.515625	8524.774414	88.25	94.7964859	141.2429047	54.94217682	29.7219696	0.836517513
07-Oct-00 05:42:00	1189.539063	8539.674805	88.41666412	95.69271088	141.2579803	54.94864273	29.72193718	0.835272431
07-Oct-00 05:43:00	1190.106201	8527.920898	88.171875	95.53646088	141.2709045	54.95510864	29.72190475	0.83402735
07-Oct-00 05:44:00	1189.710571	8545.904297	87.859375	95.38021088	141.2838287	54.96157455	29.72187233	0.832782269

07-Oct-00 05:45:00	1189.975952	8543.855469	87.78353882	95.27770233	141.2967682	54.96804047	29.7218399	0.831537187
07-Oct-00 05:46:00	1190.189575	8541.950195	88.32926941	95.19155121	141.3096924	54.97450638	29.72180748	0.830292106
07-Oct-00 05:47:00	1190.269287	8523.049805	88.51219177	95.10540771	141.3226318	54.98097229	29.72177505	0.829047024
07-Oct-00 05:48:00	1189.868408	8520.25	88.69512177	95.10090637	141.335556	54.9874382	29.72174263	0.827801943
07-Oct-00 05:49:00	1189.9375	8520.25	88.33333588	95.1342392	141.3484955	54.99390793	29.72171021	0.826556921
07-Oct-00 05:50:00	1190.67395	8524.25	88.45833588	95.16757202	141.3614197	55.00037384	29.72167778	0.82531184
07-Oct-00 05:51:00	1189.819458	8540.849609	88.58333588	95.20090485	141.3743591	55.00683975	29.72164536	0.824066758
07-Oct-00 05:52:00	1190.033691	8543.25	88.70833588	95.10167694	141.3872833	55.01330566	29.72161102	0.822821677
07-Oct-00 05:53:00	1189.556274	8543.25	88.25	95.12791443	141.4002228	55.01977158	29.7215786	0.821576595
07-Oct-00 05:54:00	1189.838501	8538.650391	88.25	95.19147491	141.413147	55.02623749	29.72154617	0.820331514
	1190.017377	8531.684111	88.31667463	95.20131504	141.3072267	54.9745075	29.72180714	0.830292123

FROM 10/7/2000 6:06 8.531684111

TO 10/7/2000 6:22

1m

TIME	2TMETI934 Mean Turbine Exhaust Temp OF	2FGSFT904CMP Fuel Gas Flow lbs./sec	2TMSTI922M Compressor inlet Temp OF	2PWRJI900 Generator Output MW	2TMSPI916 Compressor discharge press psig	2PWRZI904 Inlet guide vane angle O	2TMSPI909 Barometric Pressure Hg	2TMSPDI912 Air inlet Duct Losses H2O
07-Oct-00 06:06:00	1169.589478	9475.579102	83.10354614	114.4697723	157.9396973	60.66588211	29.72115707	0.805390596
07-Oct-00 06:07:00	1169.565308	9460.575195	83.01026154	114.4347229	157.7657623	60.67234039	29.72112274	0.804145575
07-Oct-00 06:08:00	1169.832153	9468.623047	82.91697693	114.771965	157.6357269	60.67879868	29.72109032	0.802900493
07-Oct-00 06:09:00	1170.099243	9429.700195	82.875	114.3693924	157.5415802	60.68525696	29.72105789	0.801655412
07-Oct-00 06:10:00	1170.319824	9411.5	82.875	113.9668198	157.4474335	60.69171524	29.72102547	0.80041033
07-Oct-00 06:11:00	1170.540405	9416.049805	82.875	114.0654297	157.353302	60.69817352	29.72099304	0.799165249
07-Oct-00 06:12:00	1169.29541	9447.950195	82.875	114.203125	157.3716583	60.70463181	29.72096062	0.797920167
07-Oct-00 06:13:00	1168.940186	9498.849609	82.875	114.828125	157.476059	60.71109009	29.72092819	0.796675086
07-Oct-00 06:14:00	1168.860474	9482.561523	82.875	115.0176849	157.5804596	60.71754837	29.72089577	0.795430005
07-Oct-00 06:15:00	1168.842651	9484.644531	82.875	114.8401871	157.6848602	60.72400665	29.72086334	0.794184923
07-Oct-00 06:16:00	1168.824829	9505.349609	82.875	115.167366	157.7892609	60.73046494	29.72083092	0.792939842
07-Oct-00 06:17:00	1168.807007	9502.75	82.875	115.494545	157.8936462	60.73692322	29.72079849	0.79169482
07-Oct-00 06:18:00	1168.789185	9502.75	82.875	115.4184723	157.9980469	60.7433815	29.72076607	0.790449739
07-Oct-00 06:19:00	1168.771362	9498.533203	82.86280823	115.3355637	158.1024475	60.74983978	29.72073364	0.789204657
07-Oct-00 06:20:00	1168.75354	9479.75	82.83466339	115.252655	158.2068481	60.75629807	29.72070122	0.787959576
07-Oct-00 06:21:00	1168.725342	9479.75	82.80651855	115.1697464	158.3112488	60.76275635	29.72066879	0.786714494
07-Oct-00 06:22:00	1168.69458	9483.700195	82.77837372	115.1038055	158.4156494	60.76921463	29.72063446	0.785469413
	1169.250057	9472.271542	82.88606756	114.8181987	157.7949228	60.71754837	29.72089577	0.795430022

FROM 10/7/2000 6:31 9.472271542

TO 10/7/2000 6:47

1m

TIME	2TMETI934 Mean Turbine Exhaust Temp OF	2FGSFT904CMP Fuel Gas Flow lbs./sec	2TMSTI922M Compressor inlet Temp OF	2PWRJI900 Generator Output MW	2TMSPI916 Compressor discharge press psig	2PWRZI904 Inlet guide vane angle O	2TMSPI909 Barometric Pressure Hg	2TMSPDI912 Air inlet Duct Losses H2O
07-Oct-00 06:31:00	1167.947266	9548.25	82.625	115.6757278	158.7883148	60.6937561	29.72034264	0.77426374
07-Oct-00 06:32:00	1167.858765	9543.700195	82.625	116.4076691	158.7694702	60.67189026	29.72031021	0.773018658
07-Oct-00 06:33:00	1167.770386	9530.049805	82.625	115.9668503	158.7506256	60.65002823	29.72027779	0.771773577
07-Oct-00 06:34:00	1167.681885	9547.660156	82.625	116.04422	158.731781	60.6281662	29.72024536	0.770528495
07-Oct-00 06:35:00	1167.593506	9541.628906	82.625	116.1215897	158.7129364	60.60630035	29.72021294	0.769283473

07-Oct-00 06:36:00	1167.836426	9525.5	82.625	115.765625	158.6940918	60.58443832	29.72018051	0.768038392
07-Oct-00 06:37:00	1168.25769	9525.5	82.625	115.5877075	158.6752472	60.56257629	29.72014618	0.766793311
07-Oct-00 06:38:00	1168.679077	9525.5	82.625	115.4097824	158.6564026	60.54071426	29.72011375	0.765548229
07-Oct-00 06:39:00	1168.865356	9521.599609	82.375	115.4655685	158.637558	60.51884842	29.72008133	0.764303148
07-Oct-00 06:40:00	1168.873169	9509.835938	82.39027405	115.6137466	158.6187134	60.49698639	29.7200489	0.763058066
07-Oct-00 06:41:00	1168.362549	9525.5	82.4055481	115.7619171	158.5998688	60.47512436	29.72001648	0.761812985
07-Oct-00 06:42:00	1168.336914	9525.5	82.42082214	115.9100952	158.5810242	60.45326233	29.71998405	0.760567904
07-Oct-00 06:43:00	1168.311157	9525.5	82.43609619	116.0582733	158.5621796	60.43139648	29.71995163	0.759322822
07-Oct-00 06:44:00	1168.285522	9525.5	82.45137787	115.2281265	158.543335	60.40953445	29.7199192	0.758077741
07-Oct-00 06:45:00	1168.259888	9525.5	82.46665192	115.7616882	158.5244904	60.38767242	29.71988678	0.756832719
07-Oct-00 06:46:00	1168.234131	9529.741211	82.48192596	115.7321625	158.5056458	60.36581039	29.71985435	0.755587637
07-Oct-00 06:47:00	1168.208496	9543.700195	82.49720001	115.7026291	158.4868164	60.34394455	29.71982193	0.754342556
	1168.197775	9530.598001	82.5249939	115.7772576	158.6375589	60.51884999	29.720082	0.764303144

FROM 10/7/2000 6:55
TO 10/7/2000 7:11

1m

TIME	2TMET1934 Mean Turbine Exhaust Temp OF	2FGSFT904CMP Fuel Gas Flow lbs./sec	2TMST1922M Compressor inlet Temp OF	2PWRJI900 Generator Output MW	2TMSPI916 Compressor discharge press psig	2PWRZI904 Inlet guide vane angle O	2TMSPI909 Barometric Pressure Hg	2TMSPD1912 Air inlet Duct Losses H2O
07-Oct-00 06:55:00	1168.549072	9525.5	82.61940002	115.735199	158.3360596	60.16904068	29.71956062	0.744381964
07-Oct-00 06:56:00	1168.675049	9525.5	82.66424561	115.7423248	158.317215	60.14717865	29.7195282	0.743136883
07-Oct-00 06:57:00	1168.801025	9525.5	82.9258728	115.6695862	158.2983704	60.12531662	29.71949577	0.741891801
07-Oct-00 06:58:00	1168.927002	9520.950195	83.1875	115.5968475	158.2795258	60.10345078	29.71946335	0.74064672
07-Oct-00 06:59:00	1169.022583	9507.299805	82.625	115.5241089	158.2606812	60.08158875	29.71943092	0.739401639
07-Oct-00 07:00:00	1169.115234	9525.5	82.625	115.4513702	158.2418365	60.05972672	29.7193985	0.738156557
07-Oct-00 07:01:00	1169.208008	9525.5	81.88124847	115.3786392	158.2229919	60.03786469	29.71936607	0.736911476
07-Oct-00 07:02:00	1169.300781	9525.5	82.625	115.3059006	158.2041473	60.01599884	29.71933365	0.735666394
07-Oct-00 07:03:00	1169.344482	9521.329102	82.625	115.2322922	158.1809998	59.99413681	29.71930122	0.734421372
07-Oct-00 07:04:00	1169.192017	9502.75	82.625	115.1072922	158.1252747	59.97227478	29.7192688	0.733176291
07-Oct-00 07:05:00	1169.039673	9498.150391	82.66364288	114.9822922	158.0695648	59.95041275	29.71923637	0.73193121
07-Oct-00 07:06:00	1168.887207	9479.75	82.92127991	114.9648819	158.0138397	59.92854691	29.71920395	0.730686128
07-Oct-00 07:07:00	1168.79248	9479.75	83.1789093	115.2433472	157.9581146	59.90668488	29.71916962	0.729441047
07-Oct-00 07:08:00	1169.13562	9484.349609	82.64386749	115.3148956	157.9023895	59.88482285	29.71913719	0.728195965
07-Oct-00 07:09:00	1169.184692	9502.75	82.7146225	115.2386398	157.8466797	59.86296082	29.71910477	0.726950884
07-Oct-00 07:10:00	1169.233765	9502.75	82.7853775	115.162384	157.7909546	59.84109497	29.71907234	0.725705802
07-Oct-00 07:11:00	1169.282837	9507.299805	82.85613251	115.09375	157.7352295	59.81923294	29.71903992	0.724460721
	1169.040678	9509.419347	82.71571171	115.3378677	158.1049338	59.99413726	29.71930066	0.734421344

FROM 10/7/2000 10:42
TO 10/7/2000 10:58

1m

TIME	2TMET1934 Mean Turbine Exhaust Temp OF	2FGSFT904CMP Fuel Gas Flow lbs./sec	2TMST1922M Compressor inlet Temp OF	2PWRJI900 Generator Output MW	2TMSPI916 Compressor discharge press psig	2PWRZI904 Inlet guide vane angle O	2TMSPI909 Barometric Pressure Hg	2TMSPD1912 Air inlet Duct Losses H2O
07-Oct-00 10:42:00	1149.068481	10485	79.1875	134.3169708	175.6698303	67.1404953	29.71217155	1.221981525
07-Oct-00 10:43:00	1149.014648	10472.7334	79.1875	134.4265442	175.6887665	67.16210938	29.71213913	1.226093531
07-Oct-00 10:44:00	1148.960815	10474.2666	79.22225952	134.5361176	175.7077026	67.18372345	29.7121067	1.230205536

07-Oct-00 10:45:00	1148.978027	10485	79.38269043	134.5276794	175.7266388	67.20533752	29.71207428	1.23431766
07-Oct-00 10:46:00	1149.049438	10472.7334	79.54311371	134.4458923	175.745575	67.2269516	29.71204185	1.238429666
07-Oct-00 10:47:00	1149.12085	10462	79.6875	134.36409	175.7645264	67.24856567	29.71200943	1.242541671
07-Oct-00 10:48:00	1149.206177	10462	79.6875	134.2823029	175.7834625	67.27017975	29.71197701	1.246653795
07-Oct-00 10:49:00	1149.485962	10462	79.6875	134.2005005	175.8023987	67.29178619	29.71194458	1.2507658
07-Oct-00 10:50:00	1149.635498	10474.2666	79.6875	134.1167603	175.8213348	67.31340027	29.71191216	1.254877925
07-Oct-00 10:51:00	1149.778198	10448.4668	79.6875	134.0319519	175.840271	67.33501434	29.71187973	1.25898993
07-Oct-00 10:52:00	1149.920898	10428.5332	79.6875	133.9471588	175.8592224	67.35662842	29.7118454	1.263101935
07-Oct-00 10:53:00	1149.39917	10451.09473	79.6875	133.9399719	175.8781586	67.37824249	29.71181297	1.26721406
07-Oct-00 10:54:00	1149.331299	10486.03809	79.6875	134.0879974	175.8970947	67.39985657	29.71178055	1.271326065
07-Oct-00 10:55:00	1149.293701	10495.61621	79.66810608	133.9203796	175.9160309	67.42147064	29.71174812	1.27543819
07-Oct-00 10:56:00	1148.938599	10497.13379	79.53879547	134.4235229	175.9349823	67.44308472	29.7117157	1.279550195
07-Oct-00 10:57:00	1148.959717	10495.61621	79.40948486	134.400238	175.9539185	67.46469116	29.71168327	1.2836622
07-Oct-00 10:58:00	1148.980957	10485	79.28017426	134.3769379	175.9728546	67.48630524	29.71165085	1.287774324
	1149.242496	10472.79406	79.52468378	134.2555892	175.8213393	67.31340251	29.71191137	1.254877883

FROM 10/7/2000 11:05
TO 10/7/2000 11:21

1m

	2TMETI934	2FGSFT904CMP	2TMSTI922M	2PWRJI900	2TMSPI916	2PWRZI904	2TMSPI909	2TMSPDI912
TIME	Mean Turbine Exhaust Temp	Fuel Gas Flow	Compressor inlet	Generator	Compressor discharge press	Inlet guide	Barometric Pressure	Air inlet Duct
	OF	lbs./sec	Temp OF	Output MW	psig	vane angle O	Hg	Losses H2O
07-Oct-00 11:05:00	1148.814331	10495.61621	79.6875	134.3035736	176.0283661	67.63759613	29.71142387	1.316558599
07-Oct-00 11:06:00	1148.736206	10485	79.6875	134.3839264	176.0334625	67.65921021	29.71139145	1.320670724
07-Oct-00 11:07:00	1148.889893	10485	79.64583588	134.3605042	176.038559	67.68082428	29.71135712	1.324782729
07-Oct-00 11:08:00	1148.951172	10485	79.45352936	134.1526489	176.0436554	67.70243835	29.71132469	1.328894854
07-Oct-00 11:09:00	1148.778687	10497.13379	79.26121521	134.9754486	176.0487366	67.72405243	29.71129227	1.333006859
07-Oct-00 11:10:00	1148.606323	10495.61621	79.71346283	134.9620514	176.053833	67.7456665	29.71125984	1.337118864
07-Oct-00 11:11:00	1148.648682	10486.7334	80.2326889	134.8505859	176.0589294	67.76727295	29.71122742	1.341230989
07-Oct-00 11:12:00	1148.869019	10486.5166	79.6875	134.5429688	176.0640259	67.78888702	29.71119499	1.345342994
07-Oct-00 11:13:00	1148.854858	10485	79.6875	134.3578186	176.0691223	67.8105011	29.71116257	1.349455118
07-Oct-00 11:14:00	1148.840576	10485	79.6875	134.6625061	176.0742188	67.83211517	29.71113014	1.353567123
07-Oct-00 11:15:00	1148.826294	10496.75391	79.6875	134.495163	176.0793152	67.85372925	29.71109772	1.357679129
07-Oct-00 11:16:00	1148.820923	10507.75	79.6875	134.2552032	176.0844116	67.87534332	29.71106529	1.361791253
07-Oct-00 11:17:00	1149.084351	10507.75	79.93553162	134.0531311	176.0895081	67.8969574	29.71103287	1.365903258
07-Oct-00 11:18:00	1149.521851	10495.61621	80.20127869	134.3812561	176.0946045	67.91856384	29.71100044	1.370015383
07-Oct-00 11:19:00	1149.927368	10485	80.25	134.5523682	176.0997009	67.94017792	29.71096802	1.374127388
07-Oct-00 11:20:00	1149.724243	10485	80.17009735	134.4879608	176.1047821	67.96179199	29.71093559	1.378239393
07-Oct-00 11:21:00	1149.52124	10485	80.07421875	134.411377	176.1098785	67.98340607	29.71090317	1.382351518
	1149.024472	10491.14625	79.80884462	134.481676	176.0691241	67.810502	29.71116279	1.349455069

FROM 10/7/2000 11:27
TO 10/7/2000 11:43

1m

	2TMETI934	2FGSFT904CMP	2TMSTI922M	2PWRJI900	2TMSPI916	2PWRZI904	2TMSPI909	2TMSPDI912
TIME	Mean Turbine Exhaust Temp	Fuel Gas Flow	Compressor inlet	Generator	Compressor discharge press	Inlet guide	Barometric Pressure	Air inlet Duct
	OF	lbs./sec	Temp OF	Output MW	psig	vane angle O	Hg	Losses H2O
07-Oct-00 11:27:00	1149.60791	10475.79199	80.42073059	134.6465454	176.1404572	68.11308289	29.71070671	1.407023787

07-Oct-00 11:28:00	1149.559814	10486.5166	80.6646347	134.6264954	176.1455536	68.13469696	29.71067429	1.411135793
07-Oct-00 11:29:00	1150.04895	10485	80.29102325	134.3851013	176.15065	68.15631104	29.71064186	1.415247917
07-Oct-00 11:30:00	1149.678955	10497.13379	80.35753632	134.1782379	176.1557465	68.17792511	29.71060944	1.419359922
07-Oct-00 11:31:00	1149.508545	10507.75	80.42405701	134.3691101	176.1608429	68.19953918	29.71057701	1.423472047
07-Oct-00 11:32:00	1149.338013	10495.61621	80.4905777	134.559967	176.1659241	68.22115326	29.71054459	1.427584052
07-Oct-00 11:33:00	1149.189941	10496.93457	80.55709839	134.7242126	176.1710205	68.2427597	29.71051216	1.431696057
07-Oct-00 11:34:00	1149.211182	10495.99609	80.62361145	134.8085938	176.1761169	68.26437378	29.71047974	1.435808182
07-Oct-00 11:35:00	1149.2323	10485	80.69013214	134.3717804	176.1812134	68.28598785	29.71044731	1.439920187
07-Oct-00 11:36:00	1149.262451	10472.7334	80.67308044	134.5386963	176.1863098	68.30760193	29.71041489	1.444032311
07-Oct-00 11:37:00	1149.355957	10474.2666	80.75	134.3809814	176.1914063	68.329216	29.71038055	1.448144317
07-Oct-00 11:38:00	1149.486084	10472.7334	80.75219727	134.2359161	176.1965027	68.35083008	29.71034813	1.452256322
07-Oct-00 11:39:00	1149.616333	10474.2666	80.8840332	134.1052704	176.2015991	68.37244415	29.7103157	1.456368446
07-Oct-00 11:40:00	1149.553955	10472.93457	81.01586914	134.0862579	176.2066956	68.3940506	29.71028328	1.460480452
07-Oct-00 11:41:00	1149.477783	10474.08496	81.14770508	134.2132111	176.211792	68.41566467	29.71025085	1.464592576
07-Oct-00 11:42:00	1149.401611	10485	81.27954102	134.3401642	176.2168884	68.43727875	29.71021843	1.468704581
07-Oct-00 11:43:00	1149.556641	10485	81.52884674	134.384964	176.2219696	68.45889282	29.710186	1.472816586
	1149.475672	10484.51522	80.73827497	134.4091474	176.181217	68.28598875	29.71044653	1.439920208

FROM 10/7/2000 12:16 10.48451522
 TO 10/7/2000 13:16
 1m

TIME	2TMEI1934 Mean Turbine Exhaust Temp OF	2FGSFI904CMP Fuel Gas Flow lbs./sec	2TMSTI922M Compressor inlet Temp OF	2PWRJI900 Generator Output MW	2TMSPI916 Compressor discharge press psig	2PWRZI904 Inlet guide vane angle O	2TMSPI909 Barometric Pressure Hg	2TMSPDI912 Air inlet Duct Losses H2O
07-Oct-00 12:16:00	1123.670776	11729.49609	83.23628235	154.7570496	201.2313385	86.89707947	29.70911217	1.608514309
07-Oct-00 12:17:00	1123.8125	11720.30859	83.48018646	154.6285248	201.1958313	86.89732361	29.70907974	1.612626433
07-Oct-00 12:18:00	1123.65625	11731.94629	82.88900757	154.5	201.1603394	86.89756775	29.70904732	1.616738439
07-Oct-00 12:19:00	1123.5	11741.25	82.80555725	154.6033325	201.1248322	86.89781189	29.70901489	1.620850444
07-Oct-00 12:20:00	1123.46521	11731.30371	83.30500031	154.7323151	201.0893402	86.89805603	29.70898247	1.624962568
07-Oct-00 12:21:00	1123.916016	11720.19141	83.1875	154.8612823	201.053833	86.89830017	29.70895004	1.629074574
07-Oct-00 12:22:00	1124.366821	11706.41504	83.1875	154.8942871	201.0183411	86.90638733	29.70891571	1.633186698
07-Oct-00 12:23:00	1124.885742	11697.36621	83.1875	154.4475098	201.0027618	86.92405701	29.70888329	1.637298703
07-Oct-00 12:24:00	1124.807739	11697.13379	83.1875	154.0500488	201.0084534	86.94171906	29.70885086	1.641410708
07-Oct-00 12:25:00	1124.134644	11695.5	83.1875	154.6484375	201.0141602	86.95938873	29.70881844	1.645522833
07-Oct-00 12:26:00	1124.709595	11693.7666	83.1171875	154.2417755	201.0198517	86.97705078	29.70878601	1.649634838
07-Oct-00 12:27:00	1125.139038	11693.9834	82.33159637	154.21875	201.0255585	86.99472046	29.70875359	1.653746963
07-Oct-00 12:28:00	1124.5177	11695.5	82.6267395	154.21875	201.03125	87.01238251	29.70872116	1.657858968
07-Oct-00 12:29:00	1123.873901	11695.5	82.921875	154.2493591	201.0369415	87.01013947	29.70868874	1.661970973
07-Oct-00 12:30:00	1124.350586	11695.5	83.1875	154.3460083	201.0426483	87.0034256	29.70865631	1.666083097
07-Oct-00 12:31:00	1124.51355	11671.09961	83.109375	154.4426575	201.0483398	86.99671173	29.70862389	1.670195103
07-Oct-00 12:32:00	1124.95752	11661.9502	83.21022797	153.6770782	201.0540466	86.98999786	29.70859146	1.674307108
07-Oct-00 12:33:00	1125.244141	11684.8252	83.43141937	153.96875	201.0597382	86.983284	29.70855904	1.678419232
07-Oct-00 12:34:00	1124.801758	11695.5	83.67947388	153.9861145	201.0766449	86.97657013	29.70852661	1.682531238
07-Oct-00 12:35:00	1124.635742	11695.5	83.92752838	153.8385468	201.1040192	86.96985626	29.70849419	1.686643362
07-Oct-00 12:36:00	1124.278442	11695.5	84.17558289	154.2205353	201.1313934	86.9631424	29.70846176	1.690755367
07-Oct-00 12:37:00	1124.943481	11695.5	84.17666626	154.1233368	201.1587524	86.95642853	29.70842743	1.694867373
07-Oct-00 12:38:00	1125.12207	11695.5	83.9622879	154.0784607	201.1861267	86.94971466	29.708395	1.698979497
07-Oct-00 12:39:00	1125.344482	11695.5	83.67552948	154.0335846	201.213501	86.94300079	29.70836258	1.703091502
07-Oct-00 12:40:00	1124.806519	11695.5	83.59574127	154.0697174	201.2408752	86.93628693	29.70833015	1.707203627

07-Oct-00 12:41:00	1124.430176	11707.7666	83.51596069	154.8001709	201.2325897	86.92957306	29.70829773	1.711315632
07-Oct-00 12:42:00	1124.332764	11708.27051	83.4375	154.3643799	201.2064667	86.92285919	29.7082653	1.715427637
07-Oct-00 12:43:00	1124.235352	11709.0752	83.66761017	153.484375	201.1803436	86.91614532	29.70823288	1.719539762
07-Oct-00 12:44:00	1124.137939	11706.41504	83.9744339	153.8667297	201.1542358	86.90943146	29.70820045	1.723651767
07-Oct-00 12:45:00	1125.221924	11695.5	84.29891205	154.6317902	201.1281128	86.90271759	29.70816803	1.727763891
07-Oct-00 12:46:00	1124.6875	11697.36621	84	154.15625	201.1019897	86.89600372	29.7081356	1.731875896
07-Oct-00 12:47:00	1124.933594	11697.16406	84	154.4514465	201.0758667	86.88928986	29.70810318	1.735987902
07-Oct-00 12:48:00	1124.901367	11707.58496	84	154.4909515	201.0497437	86.88257599	29.70807076	1.740100026
07-Oct-00 12:49:00	1124.725342	11718.5	84	154.4416046	201.0236359	86.87586212	29.70803833	1.744212031
07-Oct-00 12:50:00	1124.875	11718.5	84	154.3901825	200.9975128	86.86914825	29.70800591	1.748324156
07-Oct-00 12:51:00	1124.983887	11706.2334	84	154.3693848	200.9713898	86.86243439	29.70797348	1.752436161
07-Oct-00 12:52:00	1124.349365	11707.7666	83.91847992	154.5929718	200.9452667	86.85572052	29.70793915	1.756548166
07-Oct-00 12:53:00	1125.259766	11718.5	83.75543213	154.0814667	200.9191589	86.84900665	29.70790672	1.760660291
07-Oct-00 12:54:00	1124.640381	11706.2334	83.59239197	154.017746	200.8930359	86.84229279	29.7078743	1.764772296
07-Oct-00 12:55:00	1124.383545	11697.36621	83.44480896	154.4161987	200.8669128	86.83557892	29.70784187	1.768884301
07-Oct-00 12:56:00	1123.89209	11697.13379	83.59091187	154.0195313	200.8407898	86.82886505	29.70780945	1.772996426
07-Oct-00 12:57:00	1124.665161	11695.5	83.73701477	154.1995239	200.814682	86.82215118	29.70777702	1.777108431
07-Oct-00 12:58:00	1125.282593	11695.5	83.88311768	153.953125	200.7445679	86.81543732	29.7077446	1.781220555
07-Oct-00 12:59:00	1123.869873	11695.5	84	154.7021484	200.6704559	86.80872345	29.70771217	1.785332561
07-Oct-00 13:00:00	1123.865234	11685.2334	84	154.09375	200.596344	86.80200958	29.70767975	1.789444566
07-Oct-00 13:01:00	1124.528442	11676.25	84	153.9596405	200.5222321	86.92392731	29.70764732	1.79355669
07-Oct-00 13:02:00	1125.146118	11686.5166	84	153.7229919	200.799057	87.07470703	29.7076149	1.797668695
07-Oct-00 13:03:00	1124.209717	11732.0332	84	154.8844299	201.1631775	87.15996552	29.70758247	1.80178082
07-Oct-00 13:04:00	1126.807739	11776.2666	84	155.234375	201.425827	87.15951538	29.70755005	1.805892825
07-Oct-00 13:05:00	1127.673096	11799.2666	84	155.6195068	201.6884766	87.15906525	29.70751762	1.81000483
07-Oct-00 13:06:00	1131.15564	11834.2666	84	156.3535919	201.9511261	87.15862274	29.7074852	1.814116955
07-Oct-00 13:07:00	1133.336792	11855.5	84	155.9803314	202.1855316	87.15817261	29.70745087	1.81822896
07-Oct-00 13:08:00	1134.03125	11843.36621	84	155.4760132	202.1659241	87.15772247	29.70741844	1.822341084
07-Oct-00 13:09:00	1132.676392	11820.61621	84.12928009	155.3531189	202.1463013	87.15727997	29.70738602	1.82645309
07-Oct-00 13:10:00	1131.529785	11811.86621	84.37167358	155.8223724	202.1266785	87.15682983	29.70735359	1.830565095
07-Oct-00 13:11:00	1132.244019	11811.63379	84.61406708	155.6620026	202.1070709	87.1563797	29.70732117	1.834677219
07-Oct-00 13:12:00	1132.830078	11799.59961	84.85646057	155.0637512	202.0874481	87.15593719	29.70728874	1.838789225
07-Oct-00 13:13:00	1133.269531	11788.63379	84.67613983	155.3488617	202.0678253	87.15548706	29.70725632	1.842901349
07-Oct-00 13:14:00	1132.9375	11774.52539	85.0625	155.5249939	202.0482178	87.15503693	29.70722389	1.847013354
07-Oct-00 13:15:00	1131.1875	11778.10449	85.0625	155.7011414	202.028595	87.15459442	29.70719147	1.85112536
07-Oct-00 13:16:00	1131.266479	11778.61621	85.0625	155.3106995	202.0089722	87.15414429	29.70715904	1.855237484
	1126.032084	11724.09356	83.76121246	154.5635699	201.2338439	86.97202651	29.70813535	1.731875893

FROM 10/7/2000 13:30 11.72409356
 TO 10/7/2000 14:30
 1m

	2TMET1934	2FGSFT904CMP	2TMST1922M	2PWRJ1900	2TMSP1916	2PWRZ1904	2TMSP1909	2TMSPD1912
TIME	Mean Turbine Exhaust Temp	Fuel Gas Flow	Compressor inlet	Generator	Compressor discharge press	Inlet guide	Barometric Pressure	Air inlet Duct
	OF	lbs./sec	Temp OF	Output MW	psig	vane angle O	Hq	Losses H2O
07-Oct-00 13:30:00	1130.703125	11730.63379	85.58635712	154.1473999	201.7343292	87.14787292	29.70670319	1.912806153
07-Oct-00 13:31:00	1130.789551	11729.11621	85.71083832	154.3930511	201.7147064	87.14743042	29.70667076	1.916918278
07-Oct-00 13:32:00	1130.729492	11718.5	85.8125	154.4494476	201.6950989	87.14698029	29.70663834	1.921030283
07-Oct-00 13:33:00	1130.879028	11718.5	85.8125	154.44104	201.6754761	87.14653015	29.70660591	1.925142288
07-Oct-00 13:34:00	1131.468262	11730.63379	86.02812195	154.5422974	201.6558533	87.14608765	29.70657349	1.929254413

07-Oct-00 13:35:00	1132.011719	11729.11621	86.30937195	154.6736603	201.6362457	87.14563751	29.70654106	1.933366418
07-Oct-00 13:36:00	1132.270508	11730.63379	85.94425964	154.64888	201.6166229	87.14518738	29.70650864	1.937478542
07-Oct-00 13:37:00	1131.5	11742.9834	86.35832977	154.514389	201.5970001	87.14474487	29.7064743	1.941590548
07-Oct-00 13:38:00	1131.388428	11730.63379	86.19166565	154.6679688	201.5773926	87.14429474	29.70644188	1.945702553
07-Oct-00 13:39:00	1131.072144	11732.36621	85.85713959	154.7252045	201.5577698	87.1438446	29.70640945	1.949814677
07-Oct-00 13:40:00	1131.611084	11730.63379	86.03749847	154.265625	201.538147	87.1434021	29.70637703	1.953926682
07-Oct-00 13:41:00	1131.588501	11720.36621	85.953125	154.4133453	201.5185394	87.14295197	29.7063446	1.958038688
07-Oct-00 13:42:00	1131.565918	11733.80371	86.11420441	154.9347687	201.4989166	87.14250183	29.70631218	1.962150812
07-Oct-00 13:43:00	1131.634888	11732.875	85.8125	154.3548584	201.4792938	87.14205933	29.70627975	1.966262817
07-Oct-00 13:44:00	1131.890015	11732.11426	85.8125	155.234375	201.4596863	87.14160919	29.70624733	1.970374942
07-Oct-00 13:45:00	1132.237061	11741.25	85.8125	154.8512573	201.4400635	87.14115906	29.7062149	1.974486947
07-Oct-00 13:46:00	1131.860107	11729.11621	85.8125	154.5512543	201.4204407	87.14071655	29.70618248	1.978598952
07-Oct-00 13:47:00	1131.483154	11720.36621	85.96651459	154.2512512	201.4008331	87.14026642	29.70615005	1.982711077
07-Oct-00 13:48:00	1130.997192	11732.2666	86.36830139	153.8690796	201.3812103	87.13981628	29.70611763	1.986823082
07-Oct-00 13:49:00	1128.881958	11729.11621	85.8125	154.6036987	201.3926697	87.13937378	29.70608521	1.990935206
07-Oct-00 13:50:00	1129.673584	11718.5	85.8125	154.4332428	201.4185333	87.13892365	29.70605278	1.995047212
07-Oct-00 13:51:00	1130.305176	11718.5	85.8125	154.4919128	201.444397	87.13847351	29.70602036	1.999159217
07-Oct-00 13:52:00	1130.856567	11732.36621	85.8125	154.394455	201.4702606	87.13803101	29.70598602	2.003271341
07-Oct-00 13:53:00	1130.469971	11730.86035	85.63567352	154.1354218	201.4961243	87.13758087	29.7059536	2.007383347
07-Oct-00 13:54:00	1128.748047	11730.45313	85.45274353	154.6687469	201.5219879	87.13713074	29.70592117	2.011495352
07-Oct-00 13:55:00	1128.656738	11729.31543	85.3125	154.5625	201.5478516	87.13668823	29.70588875	2.015607357
07-Oct-00 13:56:00	1129.325439	11718.5	85.3125	154.5625	201.5737	87.1362381	29.70585632	2.019719601
07-Oct-00 13:57:00	1130.230591	11718.5	85.3125	154.21875	201.5995636	87.13578796	29.7058239	2.023831606
07-Oct-00 13:58:00	1130.715698	11718.5	86.05034637	154.5625	201.6254272	87.13534546	29.70579147	2.027943611
07-Oct-00 13:59:00	1129.225952	11718.5	85.27825165	154.4491577	201.6512909	87.13489532	29.70575905	2.032055616
07-Oct-00 14:00:00	1127.258057	11730.63379	85.19921112	154.6126862	201.6771545	87.13444519	29.70572662	2.036167622
07-Oct-00 14:01:00	1126.846558	11716.84961	85.12017059	154.2433777	201.7030182	87.13400269	29.7056942	2.040279865
07-Oct-00 14:02:00	1125.136963	11695.5	85.04113007	153.6354218	201.7288818	87.13355255	29.70566177	2.04439187
07-Oct-00 14:03:00	1128.589722	11721.63379	84.96208954	154.3882599	201.7547455	87.13310242	29.70562935	2.048503876
07-Oct-00 14:04:00	1130.057007	11767.16699	84.88304901	155.0559692	201.7806091	87.13265991	29.70559692	2.052615881
07-Oct-00 14:05:00	1131.818481	11788.86621	84.80400848	155.4227905	201.8064728	87.13220978	29.7055645	2.056727886
07-Oct-00 14:06:00	1135.525024	11800.90039	84.80872345	156.25	201.8144226	87.13175964	29.70553207	2.06084013
07-Oct-00 14:07:00	1137.507568	11822.13379	84.99416351	156.0648499	201.8169403	87.13131714	29.70549774	2.064952135
07-Oct-00 14:08:00	1138.692871	11844.88379	85.17960358	156.3884125	201.8194427	87.130867	29.70546532	2.06906414
07-Oct-00 14:09:00	1139.878174	11857.36621	85.38907623	156.046875	201.8219604	87.13041687	29.70543289	2.073176146
07-Oct-00 14:10:00	1139.756714	11844.86621	85.65934753	155.5542603	201.8244781	87.12997437	29.70540047	2.077288151
07-Oct-00 14:11:00	1139.566284	11832.5	85.86195374	156.0708313	201.8269806	87.12952423	29.70536804	2.081400394
07-Oct-00 14:12:00	1139.375977	11832.5	86.23282623	155.9573212	201.8294983	87.1290741	29.70533562	2.0855124
07-Oct-00 14:13:00	1136.979126	11808.2334	85.8125	156.1484375	201.8320007	87.12863159	29.70530319	2.089624405
07-Oct-00 14:14:00	1136.273315	11788.86621	85.8125	155.6680756	201.8345184	87.12818146	29.70527077	2.09373641
07-Oct-00 14:15:00	1136.304565	11788.63379	85.8125	155.5686188	201.8370361	87.12773132	29.70523834	2.097848415
07-Oct-00 14:16:00	1136.135742	11774.7334	85.8125	155.3682556	201.8395386	87.12728882	29.70520592	2.101960659
07-Oct-00 14:17:00	1135.204346	11778.13379	85.8125	155.5814209	201.8420563	87.12683868	29.70517349	2.106072664
07-Oct-00 14:18:00	1135.117554	11790.5	85.8125	155.4886017	201.8445587	87.12638855	29.70514107	2.110184669
07-Oct-00 14:19:00	1135.609863	11788.63379	85.8125	155.156662	201.8470764	87.12594604	29.70510864	2.114296675
07-Oct-00 14:20:00	1135.154175	11787	85.8125	155.6616211	201.8495941	87.12549591	29.70507622	2.11840868
07-Oct-00 14:21:00	1134.950317	11787	85.8125	155.5086975	201.8520966	87.12504578	29.70504379	2.122520924
07-Oct-00 14:22:00	1135.796143	11788.86621	85.8125	154.765625	201.8546143	87.12460327	29.70500946	2.126632929
07-Oct-00 14:23:00	1138.144287	11790.5	85.8125	155.7738647	201.857132	87.12415314	29.70497704	2.130744934
07-Oct-00 14:24:00	1138.044678	11788.63379	85.8125	155.5916443	201.8596344	87.123703	29.70494461	2.134856939

07-Oct-00 14:25:00	1137.251465	11788.83594	85.8125	155.168396	201.8621521	87.1232605	29.70491219	2.138968945
07-Oct-00 14:26:00	1136.143433	11788.69141	85.8125	155.4459839	201.8646545	87.12281036	29.70487976	2.143081188
07-Oct-00 14:27:00	1135.664063	11787	85.8125	155.2209778	201.8671722	87.12236023	29.70484734	2.147193193
07-Oct-00 14:28:00	1135.880127	11798.85254	85.8125	154.9085999	201.8696899	87.12191772	29.70481491	2.151305199
07-Oct-00 14:29:00	1135.178589	11821.79395	85.8125	155.5507202	201.8721924	87.12146759	29.70478249	2.155417204
07-Oct-00 14:30:00	1137.209351	11832.5	85.8125	156.1812439	201.8747101	87.12101746	29.70475006	2.159529209
	1133.046237	11760.03655	85.699436	154.974763	201.6869584	87.13444769	29.7057265	2.036167727
		11.76003655						

FROM 10/7/2000 14:37
TO 10/7/2000 15:37
1m

	2TMET1934	2FSGSET904CMP	2TMS1922M	2PWRJ1900	2TMSR1916	2PWRZ1904	2TMSPI909	2TMSPD1912
TIME	Mean Turbine Exhaust Temp OF	Fuel Gas Flow lbs./sec	Compressor inlet Temp OF	Generator Output MW	Compressor discharge press psig	Inlet guide vane angle O	Barometric Pressure Hg	Air inlet Duct Losses H2O
07-Oct-00 14:37:00	1141.164063	11810	86.375	155.515625	201.8040924	87.1178894	29.70452118	2.188313723
07-Oct-00 14:38:00	1141.448486	11811.86621	86.80000305	156.0184174	201.7937775	87.11743927	29.70448875	2.192425728
07-Oct-00 14:39:00	1141.220459	11813.5	87.23986816	155.6588593	201.7834778	87.11698914	29.70445633	2.196537733
07-Oct-00 14:40:00	1140.972656	11811.63379	86.7638855	155.4953766	201.7731781	87.11654663	29.7044239	2.200649738
07-Oct-00 14:41:00	1139.743896	11810	86.78301239	155.8694	201.7628784	87.1160965	29.70439148	2.204761744
07-Oct-00 14:42:00	1138.1875	11823.86621	86.5070343	156.1083527	201.7525787	87.11564636	29.70435905	2.208873987
07-Oct-00 14:43:00	1137.272095	11822.13379	86.23106384	155.5595703	201.7422791	87.11520386	29.70432663	2.212985992
07-Oct-00 14:44:00	1137.11792	11823.86621	85.95508575	155.354538	201.7319641	87.11475372	29.7042942	2.217097998
07-Oct-00 14:45:00	1136.81958	11822.13379	85.75715637	155.9438934	201.7216644	87.11430359	29.70426178	2.221210003
07-Oct-00 14:46:00	1136.808716	11822	85.64265442	156.0770111	201.7113647	87.11385345	29.70422935	2.225322008
07-Oct-00 14:47:00	1136.885254	11832.5	85.48992157	156.1774597	201.7010651	87.11341095	29.70419693	2.229434252
07-Oct-00 14:48:00	1137.141846	11832.5	85.3125	155.984375	201.6907654	87.11296082	29.70416451	2.233546257
07-Oct-00 14:49:00	1137.786987	11832.5	85.3197937	155.8855896	201.6804657	87.11251068	29.70413208	2.237658262
07-Oct-00 14:50:00	1137.371948	11822.36621	85.4291687	155.7494965	201.6701508	87.11206818	29.70409966	2.241770267
07-Oct-00 14:51:00	1137.651001	11811.66406	85.5385437	155.6548309	201.6598511	87.11161804	29.70406723	2.245882273
07-Oct-00 14:52:00	1138.059692	11821.82227	85.6479187	155.6980896	201.6495514	87.11116791	29.7040329	2.249994516
07-Oct-00 14:53:00	1138.468384	11820.5	85.7572937	155.5483093	201.6392517	87.1107254	29.70400047	2.254106522
07-Oct-00 14:54:00	1139.899292	11811.86621	85.8666687	155.8284912	201.628952	87.11027527	29.70396805	2.258218527
07-Oct-00 14:55:00	1138.512451	11811.63379	85.9760437	155.5502472	201.6186523	87.10982513	29.70393562	2.262330532
07-Oct-00 14:56:00	1140.126221	11823.86621	86.0854187	155.9273834	201.6083374	87.10938263	29.7039032	2.266442537
07-Oct-00 14:57:00	1140.605835	11846.40039	86.1947937	156.1255341	201.5980377	87.1089325	29.70387077	2.270554781
07-Oct-00 14:58:00	1140.5177	11843.2334	86.3041687	156.1875	201.587738	87.10848236	29.70383835	2.274666786
07-Oct-00 14:59:00	1141	11832.5	86.4135437	156.1875	201.5774384	87.10803986	29.70380592	2.278778791
07-Oct-00 15:00:00	1141.625	11832.5	86.5229187	155.7984619	201.5671387	87.10758972	29.7037735	2.282890797
07-Oct-00 15:01:00	1141.563354	11820.5	86.61469269	155.2397308	201.556839	87.10713959	29.70374107	2.287002802
07-Oct-00 15:02:00	1141.20752	11810	86.46005249	155.4004517	201.546524	87.10669708	29.70370865	2.291115046
07-Oct-00 15:03:00	1141	11810	86.875	155.3385468	201.5362244	87.10624695	29.70367622	2.295227051
07-Oct-00 15:04:00	1141.017212	11810	87.33203125	155.3601227	201.5259247	87.10579681	29.7036438	2.299339056
07-Oct-00 15:05:00	1141.048462	11810	86.80000305	155.453125	201.515625	87.10535431	29.70361137	2.303451061
07-Oct-00 15:06:00	1141.22583	11822	87.34375	155.59375	201.5053253	87.10490417	29.70357895	2.307563066
07-Oct-00 15:07:00	1141.522949	11820.36621	86.375	155.359375	201.4950256	87.10445404	29.70354462	2.31167531
07-Oct-00 15:08:00	1141.498779	11797.61621	87.1129837	155.2246704	201.484726	87.10401154	29.70351219	2.315787315
07-Oct-00 15:09:00	1141.297974	11787	86.80000305	155.5832367	201.474411	87.1035614	29.70347977	2.319899321
07-Oct-00 15:10:00	1140.460571	11801.13379	87.40566254	155.5625	201.4641113	87.10311127	29.70344734	2.324011326

07-Oct-00 15:11:00	1139.869019	11811.63379	87.4375	154.9356689	201.4538116	87.10266876	29.70341492	2.328123331
07-Oct-00 15:12:00	1139.578125	11797.7334	87.4375	155.4453125	201.443512	87.10221863	29.70338249	2.332235575
07-Oct-00 15:13:00	1139.695801	11787	87.4375	155.2444153	201.4332123	87.10176849	29.70335007	2.33634758
07-Oct-00 15:14:00	1139.617554	11799.2666	87.4375	155.2946472	201.4229126	87.10132599	29.70331764	2.340459585
07-Oct-00 15:15:00	1138.998291	11810	87.4375	155.3448639	201.4125977	87.10087585	29.70328522	2.34457159
07-Oct-00 15:16:00	1137.9375	11810	87.25	155.4156036	201.402298	87.10042572	29.70325279	2.348683596
07-Oct-00 15:17:00	1138.121338	11810	86.375	155.5171204	201.3919983	87.09998322	29.70322037	2.352795601
07-Oct-00 15:18:00	1139.227783	11810	86.375	155.6186371	201.3816986	87.09953308	29.70318794	2.356907845
07-Oct-00 15:19:00	1140.371826	11810	86.375	155.3102264	201.3713989	87.09908295	29.70315552	2.358059883
07-Oct-00 15:20:00	1139.915894	11810	86.7997818	155.4013672	201.3610992	87.09864044	29.70313072	2.354772568
07-Oct-00 15:21:00	1139.140137	11799.59961	86.53429413	155.6663666	201.3507843	87.09819031	29.70319557	2.351485014
07-Oct-00 15:22:00	1140.091797	11800.90039	87.31944275	155.7766571	201.3404846	87.09774017	29.70326042	2.34819746
07-Oct-00 15:23:00	1141.235352	11811.86621	86.40833282	155.8869476	201.3301849	87.09729767	29.70332527	2.344909906
07-Oct-00 15:24:00	1141.634644	11799.36621	86.56845093	155.8203125	201.3198853	87.09684753	29.70339203	2.341622353
07-Oct-00 15:25:00	1141.424805	11787	86.875	155.3589172	201.3095856	87.0963974	29.70345688	2.338334799
07-Oct-00 15:26:00	1141.367188	11799.44238	87.00480652	155.117569	201.2992859	87.0959549	29.70352173	2.335047245
07-Oct-00 15:27:00	1141.50354	11799.59961	87.4375	155.2025909	201.2889709	87.09550476	29.70358658	2.331759691
07-Oct-00 15:28:00	1140.660767	11788.63379	87.4375	155.1550903	201.2786713	87.09505463	29.70365143	2.328472376
07-Oct-00 15:29:00	1141.620605	11787	87.66130829	155.2997589	201.2683716	87.09461212	29.70371628	2.325184822
07-Oct-00 15:30:00	1141.184692	11787	87.51845551	155.5947876	201.2580719	87.09416199	29.70378304	2.321897268
07-Oct-00 15:31:00	1138.393799	11799.47461	87.21591187	156.0027466	201.2487488	87.09371185	29.70384789	2.318609715
07-Oct-00 15:32:00	1137.843506	11810	87.08333588	155.7193909	201.2429657	87.09326935	29.70391273	2.315322161
07-Oct-00 15:33:00	1137.415649	11797.55762	86.29130554	155.9645233	201.2371826	87.09281921	29.70397758	2.312034607
07-Oct-00 15:34:00	1137.286133	11788.86621	86.1745224	155.776535	201.2313995	87.09236908	29.70404243	2.308747053
07-Oct-00 15:35:00	1137.674072	11802.7666	86.05773926	155.5466156	201.2256012	87.09192657	29.70410728	2.305459499
07-Oct-00 15:36:00	1138.509155	11811.63379	85.94096375	155.6794281	201.2198181	87.09147644	29.70417404	2.302172184
07-Oct-00 15:37:00	1139.344238	11810	85.8241806	155.7447968	201.214035	87.09102631	29.70423889	2.29888463
	1139.637915	11811.01327	86.56963886	155.6206675	201.4966881	87.10445692	29.70379301	2.290010214



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BUREAU OF AIR REGULATION

November 10, 2000

Mr. W.A. Proses
Florida Department of Environmental Protection
Southwest District
3804 Coconut Palm Drive
Tampa, FL 33619

Via FedEx
Airbill No. 7923 8144 8615

Re: Polk Power Station Unit 2 Fuel Oil Fired Initial Compliance Testing

Dear Mr. Proses:

Please find enclosed the final test report addressing the initial compliance test of Polk Unit 2 while firing distillate oil.

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

Sincerely,

Patrick L. Shell
Administrator – Air Programs
Environmental Affairs

Enclosure

EP\gm\SKT207

c(enc): Mr. A. Linero – FDEP
Mr. H. Oven – FDEP
Mr. S. Sheplak – FDEP
Mr. J. Kissel – FDEP SW

TEST REPORT
on
EXHAUST EMISSIONS

from a
GENERAL ELECTRIC PG7241FA
SIMPLE CYCLE POWER TURBINE

at the
POLK POWER STATION

located in
POLK COUNTY, FLORIDA

Prepared for
TAMPA ELECTRIC COMPANY

September, 2000

Cubix Job No. 5906

Prepared by

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H. Operational Data	

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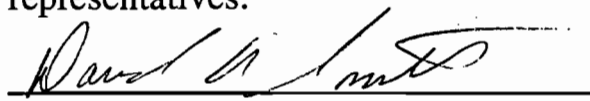
INTRODUCTION

Emission testing was conducted on a simple cycle combustion turbine manufactured by General Electric (GE). The unit, used to generate power, was recently installed at the Polk Power Station located in Mulberry, Polk County, Florida. Tampa Electric Company (TECO) owns and operates this facility. This report documents the testing of the turbine engine while firing with No.2 fuel oil. A separate report will be provided for the testing of this unit while fueled with natural gas. The testing was conducted by Cubix Corporation.

The purpose of this testing was to determine the status of compliance for turbine engine emissions with the permit limits set forth by the Florida Department of Environmental Protection (FDEP), Permit Number PSD-FL-263. Additionally, the emissions were measured to determine compliance with the Environmental Protection Agency (EPA) regulation entitled "Standards of Performance for Stationary Gas Turbines", 40 CFR 60, Subpart GG. The tests followed the procedures set forth in 40 CFR 60, Appendix A, Methods 1, 2, 3a, 9, 10, 19, 20, and 25a.

Turbine exhaust was analyzed for oxides of nitrogen (NO_x), carbon monoxide (CO), total unburned hydrocarbons (UHC), oxygen (O_2), and carbon dioxide (CO_2) using continuous instrumental monitors. Volatile organic compounds (VOC) were determined from the product of UHC and the fraction of non-methane/non-ethane hydrocarbons contained in the exhaust. Gaseous analyses were performed on a dry basis for all compounds except hydrocarbons. Laboratory analyses were conducted on samples of the distillate fuel obtained from the fuel storage tank during the testing schedule. Table 1 provides background data pertinent to these tests.

This test report has been reviewed and approved for submittal to the Florida Department of Environmental Protection (FDEP) by the following representatives:


Tampa Electric Company

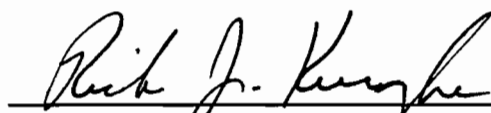

Cubix Corporation

TABLE 1
BACKGROUND DATA

<u>Owner/Operator:</u>	Tampa Electric Company 702 N Franklin Street Tampa, Florida 33602 (813) 228-1111, ext. 39109 TEL (863) 428-5927 FAX Attn: Mike Perkins
<u>Testing Organization:</u>	Cubix Corporation, Headquarters 9225 U.S. Highway 183 South Austin, Texas 78747 (512) 243-0202 TEL (512) 243-0222 FAX Attn: Jim Barufaldi
<u>Test Participants:</u>	Tampa Electric Company David Smith Cubix Corporation Jim Barufaldi Jeremiah Jarrell Nick Garcia
<u>Test Dates:</u>	September 13 and 15, 2000
<u>Facility Location:</u>	Polk County Power Station 9995 Sate Road 37 South Mulberry, Florida 33860
<u>Process Description:</u>	One simple cycle combustion turbine is used to generate electrical power. The unit, GE Model PG7241FA, consists of a single shaft gas turbine directly connected to a 60 Hz power generator. The turbine is fueled on either distillate oil or natural gas.

Regulatory Application:

State of Florida, Department of Environmental Protection (FDEP) Permit No. PSD-FL-263 and EPA New Source Performance Standards (NSPS) 40 CFR 60, Subpart GG.

Sampling Location:

The exhaust stack is a circular stack 114' tall with a diameter of 18'. Four 4" sample ports were located 90° from each other at 106' above grade. Access to the sample ports was provided with a permanently mounted steel grate service platform equipped with a caged safety ladder.

Test Methods:

EPA Method 1 for O₂ and particulate matter traverse point locations.

EPA Method 2 for stack gas pressure head measurements.

EPA Method 3a for CO₂ concentrations.

EPA Method 9 for opacity observations.

EPA Method 10 for CO concentrations.

EPA Method 19 for the calculation of volumetric flow and pollutant mass emission rates.

EPA Method 20 for NO_x and O₂ concentrations.

EPA Method 25a for UHC concentrations.

SUMMARY OF RESULTS

Exhaust emissions from a GE PG7241FA combustion turbine (CT) were tested to determine the quantity of emissions being vented to the atmosphere. Testing was conducted on the unit while fired with on No.2 fuel oil. Tests were performed at four different combustion turbine loads: approximately 80 MW generator output, ~112 MW generator output, ~136 MW generator output, and full capacity 160 MW generator output.

The first step in the test matrix consisted of conducting the initial O₂-traverse of the exhaust stack. The turbine was set to 80 MW with the water injection system operating. O₂ concentrations were measured at 48 traverse points within the stack to determine the eight points of lowest O₂ concentration. No stratification was found at any of the 48 points; therefore, all subsequent tests were conducted at the eight most convenient traverse points.

Following the O₂-traverse, Cubix conducted three test runs at four load conditions across the operational range of the CT (~80 MW, ~112 MW, ~136 MW, and capacity at ~160 MW). Each reduced load test run was 20 minutes in duration (8 sample points, 2.5 minutes per point). Capacity is defined as 90 to 100% of the maximum permitted capacity, expressed as heat input, defined from the GE performance curve for the unit. NO_x, CO₂, O₂, and UHC were continuously monitored at all load conditions. Additional base load measurements included opacity. The base load test runs were 1 hour in duration for all constituents. Opacity results can be found in Appendix G of this report.

The executive summary, Table 2, signifies the performance of the unit during the full load testing. This performance is an average of the three full load test runs. These emissions are compared to FDEP Permit No. PSD-FL-263. These conditions include the maximum allowable emissions from the combustion turbine firing No.2 fuel oil. Based upon the FDEP permit, the maximum allowable NO_x emissions at 15% O₂ were 42 ppmv, dry basis.

Table 2
TABLE 2
Executive Summary
Base Load Conditions

Parameter	Gas Turbine Emissions	NSPS/FDEP Permit Limits
NO _x @ 15% O ₂ (ppmv dry basis)	41.45	42
NO _x (lbs/hr)	235.8	319
CO @ 15% O ₂ (ppmv dry basis)	1.05	20
CO (lbs/hr)	3.6	65
VOC @ 15% O ₂ (ppmv dry basis)	0.1	3.5
VOC (lbs/hr)	0.133	7
SO ₂ (% weight)	0.04%	0.05%
SO ₂ (lbs/hr)	59.1	98.1
Visible Emissions (% Opacity)	0 %	10%

Table 3 represents the reduced load test results for the combustion turbine testing. This tabular summary contains all pertinent operational parameters, ambient conditions, Cubix measurements, the calculated emission rates, and corrected concentrations. NO_x emissions are reported in terms of ppmvd (dry basis), ppmvd at 15% O₂, and lbs/hr. CO emissions are reported as ppmvd and lbs/hr. SO₂ emission units are reported in % weight, ppmvd @ 15% O₂, lbs/hr and lbs/MMBtu of fuel burned. VOC emissions are reported in terms of lbs/hr and lbs/MMBtu of fuel burned.

Table 4 summarizes the results of the base load test on the combustion turbine. This table provides the same data as Table 3 with the addition of the opacity measurements.

Appendix A contains all field data sheets used during these tests. Appendix B contains examples of all calculations necessary for the reduction of the data presented in this section of the report. Appendix F contains the strip charts used to record the NO_x, CO, VOC, O₂, and CO₂ concentrations. A data logger was also utilized during the tests for quick, convenient checks of concentrations; however, the strip chart records provided the data used for presentation of the results included in this report. Appendix H contains the operational data provided by General Electric during the test runs. The operational data was recorded in the control room on computer printouts at 20-minute intervals during each test run. The operational data reported in the summary tables is an average of the readings recorded during the gaseous test period of each run. Appendix G contains all VE readings.

TABLE 3: Summary of Results Reduced Loads

Test Number	Run 1	Run 2	Run 3		Run 1	Run 2	Run 3		Run 1	Run 2	Run 3	
Date:	9/15/2000	9/15/2000	9/15/2000		9/15/2000	9/15/2000	9/15/2000		9/15/2000	9/15/2000	9/15/2000	
Start Time	6:11	6:36	7:01		7:44	8:09	8:34		9:20	9:45	10:10	
Stop Time	6:31	6:56	7:21		8:04	8:29	8:54		9:40	10:05	10:30	
Operation	50% Load	50% Load	50% Load		70% Load	70% Load	70% Load		85% Load	85% Load	85% Load	
Turbine Load (MW)	80.2	80.5	79.7		112.4	112.7	112.6		136.3	136.6	136.5	
Ambient Conditions												
Temperature (°F wet)	75	76	76		76	77	77		78	78	78	
Temperature (°F dry)	78	78	79		80	81	82		83	83	83	
Barometer (in. Hg)	29.74	29.75	29.75		29.76	29.77	29.77		29.78	29.80	29.80	
Humidity (lbs/lb of air)	0.0177	0.0185	0.0183		0.0181	0.0187	0.0185		0.0191	0.0191	0.0191	
Fuel Stoichiometric Data												
Fuel Flow (lbs/sec)	13.56	13.38	13.53		16.40	16.36	16.21		18.50	18.58	18.54	
Fuel Flow (MMBtu/hr)	951.09	938.33	949.18		1150.71	1147.91	1136.84		1297.41	1303.28	1300.35	
Fuel Heating Value (BTU/lb-HHV)	19485	19485	19485		19485	19485	19485		19485	19485	19485	
Fuel O2 F-Factor (DSCF/MMBTU)	9225	9225	9225		9225	9225	9225		9225	9225	9225	
Fuel CO2 F-Factor (DSCF/MMBTU)	1436	1436	1436		1436	1436	1436		1436	1436	1436	
Combustion Moisture (vol % @ 0% O2)	12.04	12.04	12.04		12.04	12.04	12.04		12.04	12.04	12.04	
Moisture Content (vol % at stack)	7.67	7.78	7.65		7.90	7.98	7.94		8.16	8.17	8.16	
Fo Factor	1.40	1.39	1.36		1.37	1.36	1.37		1.37	1.37	1.37	
Stack Flow Rates (Dry SCFH)				AVG.				AVG.				AVG.
O2 Stoichiometry	2.19E+07	2.17E+07	2.24E+07	2.20E+07	2.56E+07	2.57E+07	2.54E+07	2.56E+07	2.84E+07	2.84E+07	2.84E+07	2.84E+07
CO2 Stoichiometry	2.28E+07	2.25E+07	2.27E+07	2.27E+07	2.62E+07	2.60E+07	2.58E+07	2.60E+07	2.89E+07	2.91E+07	2.90E+07	2.90E+07
Measured Emissions												
NOx (ppmv)	49.10	50.66	50.29	50.02	56.52	56.36	56.68	56.52	57.47	57.05	56.96	57.16
NOx (ppm @ 15% O2)	34.61	35.92	36.36	35.63	38.51	38.58	38.75	38.61	38.44	38.08	38.10	38.21
CO (ppmvd)	3.38	2.87	2.67	2.97	2.91	2.58	2.58	2.69	2.30	2.20	2.21	2.24
CO (ppmvd @ 15% O2)	2.38	2.04	1.93	2.12	1.98	1.77	1.76	1.84	1.54	1.47	1.48	1.50
O2 (%)	12.53	12.58	12.74	12.62	12.24	12.28	12.27	12.26	12.08	12.06	12.08	12.07
CO2 (%)	5.99	6.00	6.00	6.00	6.31	6.33	6.32	6.32	6.45	6.44	6.44	6.44
VOC (ppmv dry as C1 by M-25a)*	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
VOC (ppmvd @ 15% O2)	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
Mass Emissions												
NOx (lbs/hr)	128.5	131.6	134.7	131.6	172.9	172.8	171.9	172.6	194.7	193.7	193.4	193.9
NOx (lbs/MMBTU)	0.135	0.140	0.142	0.139	0.150	0.151	0.151	0.151	0.150	0.149	0.149	0.149
CO (lbs/hr)	5.4	4.5	4.4	4.8	5.4	4.8	4.8	5.0	4.7	4.5	4.6	4.6
CO (lbs/MMBTU)	0.006	0.005	0.005	0.0050	0.005	0.004	0.004	0.0044	0.004	0.003	0.004	0.0036
SO2 (lbs/hr)	38.56	38.04	38.48	38.36	46.65	46.54	46.09	46.42	52.60	52.84	52.72	52.72
SO2 (lbs/MMBTU)	0.04054	0.04054	0.04054	0.04054	0.04054	0.04054	0.04054	0.04054	0.04054	0.04054	0.04054	0.04054
VOC (lbs/MMBTU as C1)	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
VOC (lbs/hr as C1)	0.091	0.090	0.093	0.092	0.106	0.107	0.106	0.106	0.118	0.118	0.118	0.118

*Measurements at lower detection limit of Analyzer

TABLE 4: Summary of Results Base Load

Test Number	Run 1	Run 2	Run 3	
Date:	9/13/2000	9/13/2000	9/13/2000	
Start Time	17:12	18:23	19:28	
Stop Time	18:12	19:23	20:28	
Operation	100% Load	100% Load	100% Load	
Turbine Load (MW)	159.7	160.0	159.8	
Ambient Conditions				
Temperature (°F wet)	79	79	79	
Temperature (°F dry)	89	91	88	
Barometer (in. Hg)	29.77	29.77	29.77	
Humidity (lbs/lb of air)	0.0186	0.0181	0.0189	
Fuel Stoichiometric Data				
Fuel Flow (lbs/sec)	20.79	20.77	20.79	
Fuel Flow (MMBtu/hr)	1458.30	1456.90	1458.30	
Fuel Heating Value (BTU/lb-HHV)	19485	19485	19485	
Fuel O2 F-Factor (DSCF/MMBTU)	9225	9225	9225	
Fuel CO2 F-Factor (DSCF/MMBTU)	1436	1436	1436	
Combustion Moisture (vol % @ 0% O2)	12.04	12.04	12.04	
Moisture Content (vol % at stack)	8.04	8.00	8.10	
Fo Factor	1.35	1.36	1.36	
Stack Flow Rates (Dry SCFH)				AVG.
O2 Stoichiometry	3.21E+07	3.18E+07	3.20E+07	3.20E+07
CO2 Stoichiometry	3.24E+07	3.23E+07	3.24E+07	3.24E+07
Measured Emissions				
NOx (ppmv)	61.02	62.01	62.15	61.73
NOx (ppm @ 15% O2)	41.14	41.48	41.72	41.45
CO (ppmvd)	1.65	1.55	1.50	1.57
CO (ppmvd @ 15% O2)	1.11	1.04	1.01	1.05
O2 (%)	12.15	12.08	12.11	12.11
CO2 (%)	6.46	6.47	6.46	6.46
VOC (ppmv dry as C1 by M-25a)*	0.10	0.10	0.10	0.10
VOC (ppmvd @ 15% O2)	0.07	0.07	0.07	0.07
Mass Emissions				
NOx (lbs/hr)	234.2	235.9	237.4	235.8
NOx (lbs/MMBTU)	0.161	0.162	0.163	0.162
CO (lbs/hr)	3.9	3.6	3.5	3.6
CO (lbs/MMBTU)	0.003	0.002	0.002	0.0025
SO2 (lbs/hr)	59.12	59.06	59.12	59.10
SO2 (lbs/MMBtu)	0.04054	0.04054	0.04054	0.04054
VOC (lbs/MMBTU as C1)	0.0001	0.0001	0.0001	0.0001
VOC (lbs/hr as C1)	0.133	0.132	0.133	0.133

PROCESS DESCRIPTION

Tampa Electric Company is the owner of the Polk Power Station which is located in Mulberry, Polk County, Florida. This station contains a simple cycle gas turbine manufactured by General Electric. This unit was installed to provide electrical power to Tampa, Florida and surrounding areas. Emission testing was conducted on the simple cycle unit to determine its compliance status with state and federal regulations. This section of the emission test report provides a brief description of the unit.

The unit is a GE Model PG7241FA 165 MW simple cycle combustion turbine. The main body consists of a single shaft combustion turbine directly coupled to a 60 Hz generator. The facility is designed to provide two fuels to the combustion turbine: distillate oil and natural gas. During fuel oil operation, NO_x emissions are controlled through injection of water into the combustoin chamber. While firing fuel oil, the CT has a base load rating of 165 MW at site conditions of 59°F inlet air temperature, 60% relative humidity, 14.7 psia atmospheric pressure. The FDEP permit has defined the base load of the unit at a heat input of 1800 MMBtu/hr at 59°F while firing fuel oil.

The circular CT/HRSG exhaust stack was utilized for exhaust emission measurements of the turbine testing. The exhaust stack dimensions are depicted in the stack diagram of Appendix A. Four four-inch diameter sample ports are spaced perpendicular to each other. The stack is 114 ft tall and has a diameter of 18 ft. These ports are located 8 ft from the top of the stack (106 ft above ground level). Metal grate service platforms, a caged safety ladder, and a metal grate stairway were installed to provide access to the sample ports.

ANALYTICAL TECHNIQUES

The sampling and analysis procedures used during these tests conformed with those outlined in The Code of Federal Regulations, 40 CFR 60, Appendix A, Methods 1, 2, 3a, 4, 5B, 8 (modified), 9, 10, 18, 19, 20, and 25a. This section of the report describes the analytical techniques and procedures used during these tests.

Samples of the oil used to fuel the turbine were collected into 1 L bottles on a daily basis during the test schedule. The samples were analyzed by TECO's lab. The fuel oil samples were analyzed for composition (C, H, and O), specific gravity, both higher and lower heat value, and total sulfur content. All sample procedures were submitted to FDEP in Cubix's emission test plan. These procedures were approved by FDEP prior to analysis of the oil samples. Results of these analyses along with chain-of-custody forms are in Appendix C of this report.

The turbine was tested at four load conditions. Measurements of NO_x, CO, VOC, opacity, CO₂, and O₂ were performed during base load tests. At reduced loads, NO_x, CO, VOC, CO₂, and O₂ were measured. Each reduced load test run was 20 minutes in duration (8 sample points, 2.5 minutes per point). Three 60 minute test runs were conducted at base load for all components. All compounds were measured on a dry basis except hydrocarbons.

Provisions were made to introduce the calibration gases to the instrumental monitors via two paths: 1) directly to the instruments via the sample manifold quick-connects and rotometers, and 2) through the complete sampling system including the sample probe, filter, heat trace, condenser, manifold, and rotometers. The former method was used for quick, convenient calibration checks. The latter method was used to demonstrate that the sample was not altered due to leakage, reactions, or adsorption within the sampling system (sample system bias check). A NO_x standard calibration gas was introduced into the NO_x analyzer directly. Then the response from the NO_x analyzer was noted as the calibration gas was introduced at the probe. Any difference between the two responses in the instrument was attributed to the bias of the sample system. Following the span gas bias check, a zero gas bias check was performed on the NO_x analyzer using nitrogen to check for any zero bias of the sample system. In accordance with EPA Methods 3a, 20, and 25a, this span and zero bias check procedure was repeated for the CO₂, O₂, and UHC analyzers.

As shown in Figure 1, a 1" stainless steel probe was inserted into the sample port of the stack. The gas sample was continuously pulled through the probe and transported via $\frac{3}{8}$ " heat-traced Teflon® tubing to the mobile laboratory through Teflon® tubing via a stainless steel/Teflon® diaphragm pump and into a heated sample manifold. From the heated manifold, the sample was partitioned to the hydrocarbon analyzers through heated lines. The bulk of the gas stream then passed to a stainless steel minimum contact condenser to dry the sample stream and into the (dry) sample manifold. From the manifold, the sample was partitioned to the analyzers through glass and stainless steel rotometers for flow control of the sample.

All instruments were housed in an air conditioned trailer-mounted mobile laboratory. Gaseous calibration standards were provided in aluminum cylinders with the concentrations certified by the vendor. EPA Protocol No. 1 was used to determine the cylinder concentrations where applicable (i.e. NO_x calibration gases).

EPA Method 1 procedures were used to determine the O₂-traverse point locations for sampling per the requirements of EPA Method 20. The location of the sample ports and the traverse point distances for the turbine are described by the stack diagram located in Appendix A.

The stack gas analyses for CO₂ concentrations were performed in accordance with procedures set forth in EPA Method 3a. Instrumental analyses are usually used by Cubix in lieu of an Orsat or a Fyrite procedure due to the greater accuracy and precision provided by the instruments. The CO₂ analyzer is based on the principle of infrared absorption.

The F_o calculation of EPA Method 3b (Section 3.4.1.1) was used to verify that the ratio of O₂ to CO₂ were within an acceptable range during all runs. In all cases, the F_o fell within the expected values for distillate oil.

CO emission concentrations were quantified in accordance with procedures set forth in EPA Method 10. A continuous nondispersive infrared (NDIR) analyzer was used for this purpose. This analyzer was equipped with a gas correlation filter which eliminates any interference from moisture, CO₂, or other combustion products.

EPA Method 20 was used to determine concentrations of NO_x (via chemiluminescence) and O₂ (via a micro-fuel cell). An initial O₂-traverse was conducted in the CT/HRSG stack; 48 total points were sampled. This test was performed to identify the 8 sample points of lowest O₂ concentration among the sample traverse points. EPA Method 1 was used to determine the location of

these traverse points. No identifiable differences in the O₂ emission concentrations were found during the sampling traverse of the gas turbine's exhaust. After this initial determination of a well mixed exhaust, all subsequent sampling was performed at eight randomly selected points in the stack.

NO_x concentrations were reported in parts per million by volume on a dry basis corrected to 15% O₂. The example calculations can be found in Appendix B. This O₂ correction was made in accordance with the formula published in 40 CFR 60, Method 20.

Total hydrocarbons (THC) concentrations were quantified during the testing using Method 25a. Total hydrocarbons were continuously measured throughout each test run using a flame ionization detector (FID). The THC continuous analyzer was calibrated on methane standards in an air matrix. Thus, the results included in this report are presented on a methane basis. Having the calibration standards in an air basis (i.e. 20.9% O₂) more closely matches the background matrix of the engine exhaust and helps to reduce the effect of O₂ synergism on flame ionization detectors.

The stoichiometric calculations of EPA Method 19 were used to calculate the stack volumetric flow rates and mass emission rates. These calculations are based on the heating value and the O₂ and CO₂ "F-factors" (DSCF of exhaust per MMBtu of fuel burned) for natural gas. Method 19 flow rate determinations are also based on the excess air (as measured from the exhaust diluent concentrations) and the fuel flow rates. EPA Method 19 was used as the stack flow rate measurement technique for all gaseous testing. Fuel samples were analyzed by Adirondack Environmental Services. The results of these analysis can be found in Appendix C of this report. Appendix C also contains Cubix's fuel calculations for the O₂ "F-factor" and gross heating value reported by the laboratory.

Table 5 lists the instruments and detection principals used for gaseous analyses. All data from the continuous monitoring instruments were recorded on two synchronized 3-pen strip chart recorders (Soltec Model 1243). These recorders were operated at a chart speed of 30 centimeters/hour and record over a 25-centimeter width. Strip chart records may be found in Appendix F of this report. A data logger with a computer generated display screen was also used as a convenient means of monitoring the emission concentrations, but the results included in this report were obtained from the strip chart records.

Cubix personnel collected ambient absolute pressure, temperature, and humidity data during each test run. A continuous battery-operated psychrometer utilizing a wet/dry bulb was used to determine temperature and humidity

conditions. An aircraft-type aneroid barometer (altimeter) was used to measure absolute atmospheric pressure.

All emission calculations were conducted by a computer spreadsheet as shown in Tables 3 and 4 of this report. Example calculations were performed manually using a hand-held calculator in order to verify the formulas used in the spreadsheet. Example calculations are located in Appendix B of this report.

The printouts of the operational data are included in Appendix H of this report. The tabular summaries in Summary of Results include the averages for all of the above operational parameters during each test run.

TABLE 5
Analytical Instrumentation

Parameter	Model and Manufacturer	Common Ranges	Sensitivity	Response Time	Detection Principle
NO_x	TECO Model 42C	0-10 ppm 0-20 ppm 0-50 ppm 0-100 ppm 0-200 ppm 0-1000 ppm 0-2000 ppm 0-5000 ppm	0.1 ppm	1.7 sec.	Thermal reduction of NO ₂ to NO. Chemiluminescence reaction of NO with O ₃ . Detection by PMT. Inherently linear for listed ranges.
CO	TECO 48	0-10 ppm 0-20 ppm 0-50 ppm 0-100 ppm 0-200 ppm 0-500 ppm 0-1000 ppm	.1 ppm	10 sec.	Infrared absorption, gas filter correlation detector, microprocessor based linearization.
CO₂	Servomex 1410 B	0-4 % 0-20 %	0.02%	30 sec	Infrared absorption, analog linearization.
O₂	Servomex 1420 B	0-10 % 0-25 %	0.10%	15 sec.	Paramagnetic cell, inherently linear.
THC	JUM Model 3-300	0-10, 0-100, 0-1K, 0-10K 0-100K ppm	0.2 ppm	5 sec.	Flame ionization of hydrocarbons inherently linear over 2 orders of magnitude.

NOTE: Higher ranges available by sample dilution
Other ranges available via signal attenuation.

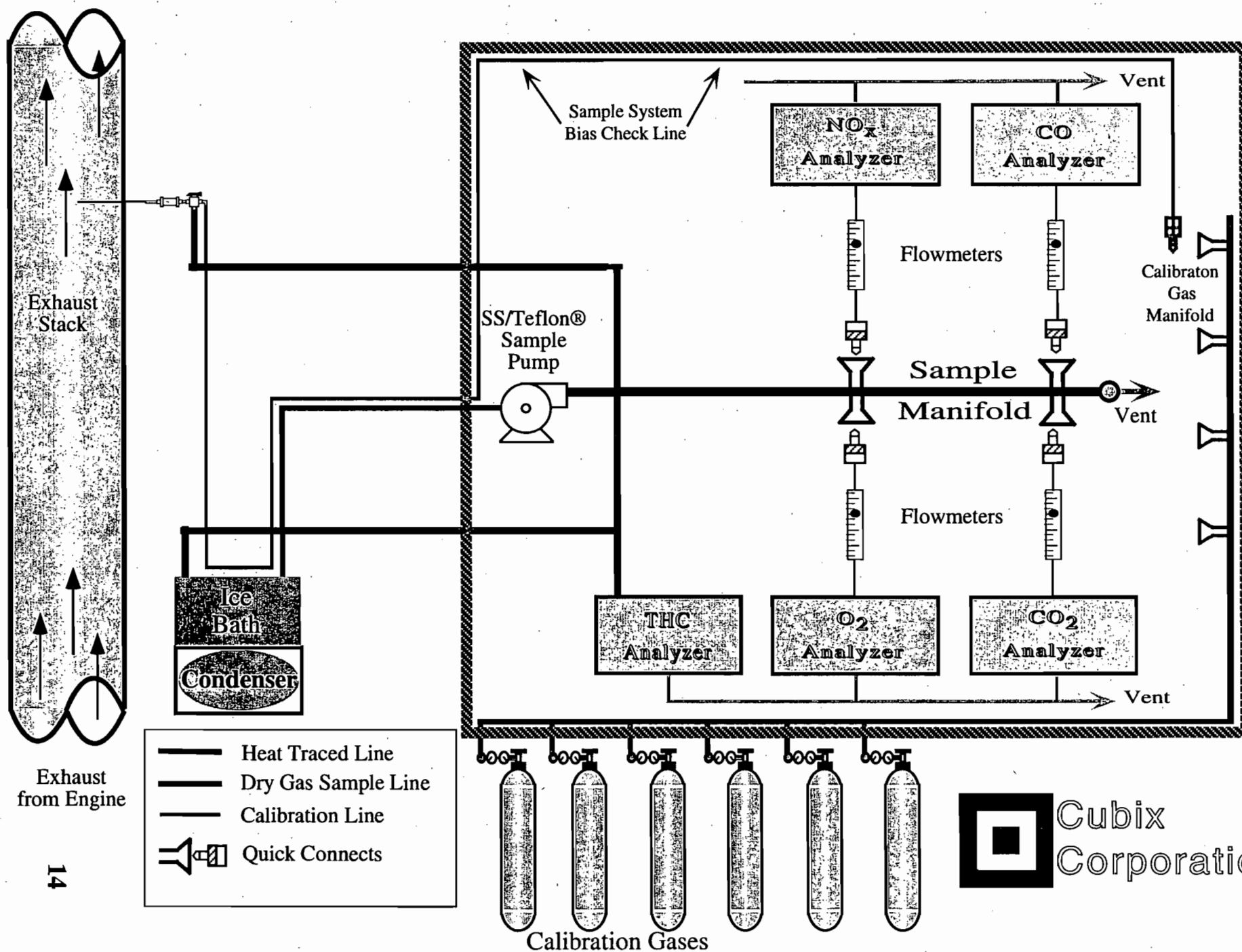


FIGURE 1 : INSTRUMENTAL SAMPLING AND ANALYSIS SYSTEM

QUALITY ASSURANCE ACTIVITIES

A number of quality assurance activities were undertaken before, during, and after this testing project. This section of the report combined with the documentation in Appendices D and E describe each of those activities.

A multi-point calibration was performed for each instrument in the field prior to the collection of data. The instrument's linearity was checked by first adjusting the instrument's zero and span responses to zero nitrogen and an upscale calibration gas in the range of the expected concentrations. The instrument response was then challenged with other calibration gases of known concentration. The instrument's response was accepted as being linear if the response of the other calibration gases agree within ± 2 percent of range from the predicted values. (The response of the infrared absorption type CO and CO₂ analyzers is electronically linearized.)

System bias checks were performed both before and after the sampling system was used for emissions testing. The sampling system's integrity was tested by comparing the responses of the NO_x analyzer to a calibration gas (and a zero gas) introduced via two paths as previously described in the *Analytical Techniques* section of this report. This system bias test was performed to assure that no alteration of the sample had occurred during the test due to leakage, reactions, or absorption. Similarly, system bias checks were performed with UHC, O₂, and CO₂ for added assurance of sample system integrity. The results of the system bias checks are available in Appendix D.

Before and after each test run, the analyzers were checked for zero and span drift. This allows each test run to be bracketed by calibrations and documents the precision of the data just collected. The criterion for acceptable data is that the instrument drift no more than ± 2 or ± 3 percent of the full scale response, depending on the applicable constituent's EPA method. Appendix D contains quality assurance tables which summarize the zero and span checks that were performed for each test run. No drift in excess of each gas constituents calibration requirement was found.

Vacuum leak checks were performed before and after the sampling system was used for emissions testing (i.e. each time the sampling system was set up). Additionally, a vacuum leak check was performed after the sample system was partially disassembled or moved. The sampling system was leak checked by demonstrating that it could hold a vacuum greater than 10" Hg (~23 "Hg actual)

for at least 1 minute with a decline of less than 1" Hg. No leakage was detected at any time during the day of testing. The results of the vacuum leak checks are presented in Appendix D.

The efficiency of the NO₂ to NO converter housed in the NO_x analyzer was checked by having the analyzer sample a mixture of NO in nitrogen standard gas and ambient air from a Tedlar® bag. When this bag is mixed and exposed to sunlight, the NO is oxidized to NO₂ over approximately a 30 minute period. If the NO_x instrument's converter is 100% efficient, the NO_x response will not decline as the NO in the bag is converted to NO₂. The criterion for acceptability is a demonstrated NO_x converter efficiency greater than 90%. The strip charts show that the NO_x concentration remained steady throughout the 30 minute time period. The results of the converter efficiency test are available in Appendix D.

Interference response tests on the instruments were conducted by the instrument vendors and Cubix Corporation on the NO_x, CO, and O₂ analyzers. The sum of the interference responses for H₂O, C₃H₈, CO, CO₂ and O₂ is less than 2 percent of the applicable full scale span value. The instruments used for the tests meet the performance specifications for EPA Methods 3a, 7e, 10, and 20. The results of the interference tests are available in Appendix D of this report.

The residence time of the sampling and measurement system was estimated using the pump flow rate and the sampling system volume. The pump's rated flow rate is 0.8 SCFM at 5 psig. The sampling system volume was ≈ 0.21 SCF. Therefore, the minimum sample residence time is approximately 16 seconds.

The NO_x and O₂ sampling and analysis system was checked for response time per the procedures outlined in EPA's Method 20. The average NO_x analyzer's response times were 67.3 seconds upscale and 67.7 seconds down scale. The O₂ analyzer's response times were 60.7 seconds upscale and 65.0 seconds down scale. Method 20 requires a minimum sample time per traverse point of 1-minute plus the average sample system response time. Cubix chose to use 128 seconds per point for the initial O₂ traverses on the turbine and 128 seconds per point during the gaseous constituent compliance tests. The results of these response time tests are contained in Appendix E.

The calibration gases used to calibrate the instruments were analyzed and certified by the compressed gas vendors to within ±1% analytical accuracy. EPA Protocol No. 1 was used, where applicable, to assign the concentration values traceable to the National Institute of Standards and Technologies (formally the National Bureau of Standards). Calibration gas certifications may be found in Appendix E of this report.

Appendix E also contains other required additional certifications. The calibration of the altimeter/barometer used during this testing is included. Cubix employee, Dwight Dindial, was certified by the State of Florida to perform visual emission readings by EPA Method 9 procedures. This certification can be found with the observation forms in Appendix G of this report.

Cubix collected and reported the enclosed test data in accordance with the procedures and quality assurance activities described in this test report. Cubix makes no warranty as to the suitability of the test methods. Cubix assumes no liability relating to the interpretation and use of the test data.

**APPENDIX A:
FIELD DATA SHEETS**

SIGN IN SHEET

Job Name Polk City Electric

DATE(S): 7/13/00

Job Number 5906

PERMIT #

Plant Name/Location Polk County Power - Tampa Electric

Emission Source(s) Unit #2 Simple Cycle

PARTICIPANTS:

CUBIX CORPORATION

Test Contractor

TECO

Owner/Operator

Regulatory Agency

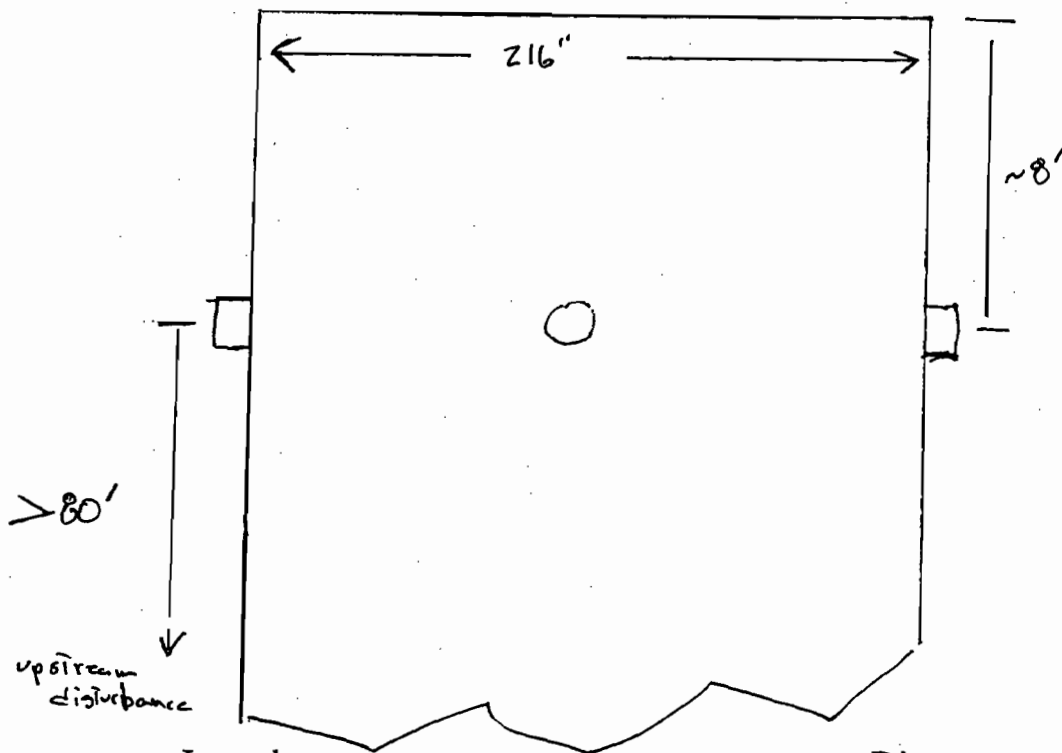
[illegible]

Circular Stack Sampling Traverse Point Layout (EPA Method 1)

Date: 7/13/00
 Plant: Polk city Power - Tampa Electric
 Source: Unit #2
 Technician(s): J.B., J.J., N.G.

Port + Stack ID: 227" in.
 Port Extension 11" in.
 Stack ID: 216" in.
 Stack Area _____ ft²
 Total Req'd Traverse Pts. 48
 No. of Traverse Pts. 12 /diam.
 No. of Traverse Pts. 6 /port

Stack Diagram (Side View showing major unit components, dimensions and nearest upstream & downstream flow disturbances)



Traverse Point Number	Length Factor (% of diameter)					Distance from Reference Point (inches)
	Number of traverse pts./diameter					
	4	6	8	12	24	
1	6.7	4.4	3.2	2.1	1.1	<u>2.4</u>
2	25.0	14.6	10.5	8.2	3.2	<u>6.9</u>
3	75.0	29.6	19.4	11.8	5.5	<u>11.9</u>
4	93.3	70.4	32.3	17.7	7.9	<u>17.1</u>
5		85.4	67.7	25.0	10.5	<u>22.7</u>
6		95.6	80.6	35.6	13.2	<u>28.5</u>
7			89.5	64.4	16.1	<u>34.8</u>
8			96.8	75.0	19.4	<u>41.9</u>
9				82.3	23.0	<u>49.7</u>
10				88.2	27.2	<u>58.8</u>
11				93.3	32.3	<u>67.8</u>
12				97.9	39.8	<u>86.0</u>

Cubix Corporation
Air Emission Testing Job Safety Analysis

Job Name <u>Polk Cain Electric</u>		Description of Testing Activities:	
Job Number <u>5906</u>		<u>Compliance For Unit 2</u>	
Project Mgr. <u>Jim Barufaldi</u>		<u>Turbine</u>	
Plant Contact <u>David Smith</u>			
Date <u>9/13/00</u> <u>6:00 AM</u>			
Permits Required (Y or N)		Personal Protective Equipment Required (Y or N)	
Hot Work _____		hard hat ☒	acid suit _____
Cold Work _____		ear plugs/muffs ☒	rubber boots _____
Lock & Tag _____		safety glasses ☒	monogoggles _____
Scaffolding _____		steel toed shoes ☒	face shield _____
Crane/Lift _____		gloves ☒	safety harness _____
Line Break _____		hot gloves ☒	respirator _____
Emergency Response			
Safe Haven Location: <u>Safety Office lot</u>		Alarm Knowledge (list type of sound) <u>None</u>	
Wind Direction: <u>N NE E SE S SW W NW</u>		Evacuate: _____ Fire _____	
Evacuation Route _____		Poison Gas: _____ All Clear: _____	
Assembly Points _____		Other _____	
Plant Map Reviewed/ Posted (Y or N) _____			
Emergency Equipment Locations Identified (Y or N)			
fire monitors _____			
fire extinguishers <u>✓ Trailer</u>			
safety showers _____			
escape air <u>Surviv escape gas</u>			
JOB HAZARD IDENTIFIED (circle)		PRECAUTIONS (circle items completed or required)	
Hazardous Materials			
flammability, reactivity, health hazards		MSDS reviewed	
Environmental Hazards			
airborne particulate		respirator	
<u>heat stress</u>		<u>liquid intake</u> <u>shade breaks</u>	
cold weather/frostbite		cold weather clothing <u>gloves</u> hard hat liner	
inadequate lighting		flash light/head lamp night lighting	
<u>noise</u>		<u>hearing protection</u>	
poor access/egress		<u>housekeeping</u> alternate route	
Chemical Hazards			
asfixiation	carcinogen	Respiratory	Protective Clothing
poison gas	chemical burns	supplied fresh air	slicker suit
chemical eye exposure	chemical skin exposure	SCBA	acid suit
<u>flammable gas</u>	flamable liquid	respirator	rubber boots
strong acid	strong base	escape pack	monogoggles
		exposure dosimeter	face shield
Equipment/lifting			
<u>test equipment hoisting (pulley/boom)</u>		<u>equipment secure</u> clear lift zone	
fork lift		certification reviewed <u>rope condition</u>	
man lift (hydraulic)		guy lines harness	
personnel basket (crane)		<u>radios/handsignals</u> guard rails, toe plates	
<u>stairs/ladders</u>		<u>housekeeping</u> braces/tie offs	
rigging		<u>lines secure</u> monorails secure	
scaffold		<u>secure tools</u> <u>hard hats</u>	

APPENDIX B:
EXAMPLE CALCULATIONS

NOx, CO Correction to 15% O2

Refers to test Run 1 Base Load for NOx

Measured NOx emissions (NOx Meas) = C_{gas} = 61.02 ppmv

Measured O2 emissions (CO2) = 12.15% (from analyzer)

$$\text{NOx @ 15 \% O}_2 = \frac{(\text{NOx Meas} \times (20.9 - 15.0))}{(20.9 - C_{\text{O}_2})}$$

$$\text{NOx @ 15 \% O}_2 = \frac{(61.02 \times 5.9)}{(20.9 - 12.15)}$$

$$\text{NOx @ 15 \% O}_2 = 41.14 \text{ ppmv}$$

Flow Rate in Stack by O2 F Factor (Qd)

Refers to test Run 1 Base Load

Fg = Fuel flow rate.

Fg = 20.79 lbs/sec

Htg = heating value of fuel from fuel analysis calculations

Htg = 19485 BTU/lb = 0.019485 MMBTU/lb

H = heat rate of turbine = $F_g \times H_{\text{tg}} = 20.79 \times 3600 \times 0.019485$

H = 1458.30 MMBTU/hr

For this fuel the products of combustion (i.e. based on combustion stoichiometry) were determined to be 8776 dry SCF/MMBTU of fuel burned

O2f = O2 F-factor = 9225 DSCF/MMBTU

O2 = O2 concentration in stack (from O2 analyzer) = 12.15 vol%

O2 in ambient air = 20.9 vol %

Qd = Flow rate in stack = $H \times O_{2f} \times 20.9 / (20.9 - O_2)$

Qd = $1458.30 \times 9225 \times 20.9 / (20.9 - 12.15)$

Qd = 3.21×10^7 DSCF/hr

NO_x, CO, VOC Mass Emission Rate

Refers to Test Run 1 Base Load for NO_x

E_{NO_x} = NO_x mass emission rate

NO_x = NO_x concentration (drift corrected only) = 61.02 ppmvd

Qd = stack flow rate = 3.21×10^7 DSCFH

MW = molecular weight of NO_x = 46.01 lb/lb-mole

R = ideal gas constant = 385.15 SCF/lb-mole

E_{NO_x} = NO_x mass emission rate

$E_{NO_x} = (NO_x / 1000000) \times Qd \times MW / R$

$E_{NO_x} = (61.02 / 1000000) \times 3.21 \times 10^7 \times 46.01 / 385.15$

$E_{NO_x} = 234.2$ lbs/hr

SO₂ Emission Rate Calculation (E_{SO_2})

Refers to distillate fuel oil analysis for turbine #2 and run T2-FO-1
(turbine 2, fuel oil fire, test run 1)

Sw = Sulfur content of fuel (from fuel analysis)

Sw = 0.04 % by weight of sulfur

Fg = Fuel flow to turbine (averaged Mark V data for run T2-FO-1)

Fg = 20.79 lbs/sec

MWso2 = molecular weight of SO₂ = 64 lb/lb-mole

MWs = molecular weight of sulfur = 32 lb/lb-mole

E_{SO_2} = SO₂ Emission Rate (lbs/hr)

$E_{SO_2} = (Sw / 100) \times Fg \times MW_{so2} / MW_s$

$E_{SO_2} = (0.04 / 100) \times 20.79 \times 3600 \times 64 / 32$

$E_{SO_2} = 59.12$ lbs/hr

APPENDIX C:
FUEL ANALYSIS



**Environmental Affairs
Laboratory Services**

5012 Causeway Blvd * Tampa Fl. 33619 * Ph (813)630-7378 * Fax (813)630-7360 * CompQAP #910140G * DOH #E54272

Wednesday, October 11, 2000

Report For: Fuel Data Coord., Envir. Plan.
Stack Test Coord., Air Programs

Sample Information

Sample ID: AA56809

Lab Submittal Date: 09/18/00

Location Code: PK-STK-2

Sample Collection Date: 09/13/00

Location Description: Polk Power, Stack Test, Unit 2

Sample Collector: POLK POWER

Laboratory Results

Parameter	Result	Unit	MDL	Lower Limit	Upper Limit	Violation
API Gravity @ 60 Deg. F	35.0	Degrees API	0.1			
Carbon	87.2	%	0.1			
Fuel Bound Nitrogen in Liquid Petroleum	110	ppm				
Gross Heat of Combustion, Oils, (HHV)	19476	BTU/Lb.	1			
Gross Heat of Combustion, Oils, (HHV)	137812	BTU/Gal.	1			
Hydrogen	12.7	%	0.1			
Nitrogen	Not requested	%	0.1			
Pounds / Gallon @ 60 Deg. F	7.076	Lbs./Gal.	0.001			
Pounds SO2 / Million BTU, Oil	0.04054	Lbs.				
Relative Density 60/60 Deg. F	0.8498		0.0001			
Sulfur in Petroleum Products	0.04	%	0.02			

Comments:

Results for %Carbon and %Hydrogen are normalized.



**Environmental Affairs
Laboratory Services**

5012 Causeway Blvd * Tampa Fl. 33619 * Ph (813)630-7378 * Fax (813)630-7360 * CompQAP #910140G * DOH #E54272

Wednesday, October 11, 2000

Report For: Fuel Data Coord., Envir. Plan.
Stack Test Coord., Air Programs

Sample Information

Sample ID: AA56810

Lab Submittal Date: 09/18/00

Location Code: PK-STK-2

Sample Collection Date: 09/15/00

Location Description: Polk Power, Stack Test, Unit 2

Sample Collector: POLK POWER

Laboratory Results

Parameter	Result	Unit	MDL	Lower Limit	Upper Limit	Violation
API Gravity @ 60 Deg. F	35.0	Degrees API	0.1			
Carbon	87.1	%	0.1			
Fuel Bound Nitrogen in Liquid Petroleum	100	ppm				
Gross Heat of Combustion, Oils, (HHV)	19493	BTU/Lb.	1			
Gross Heat of Combustion, Oils, (HHV)	137933	BTU/Gal.	1			
Hydrogen	12.8	%	0.1			
Nitrogen	Not requested	%	0.1			
Pounds / Gallon @ 60 Deg. F	7.076	Lbs./Gal.	0.001			
Pounds SO2 / Million BTU, Oil	0.04051	Lbs.				
Relative Density 60/60 Deg. F	0.8498		0.0001			
Sulfur in Petroleum Products	0.04	%	0.02			

Comments:

Results for %Carbon and %Hydrogen are normalized.

APPENDIX D:
QUALITY ASSURANCE ACTIVITIES

T-5 Interference Response Analyzer Checks

Interference Response Checks

(Frequency: Prior to initial use of sampling system or after alteration or modification.)

Test Date: 8/1/2000

Technician: RJK

Analyzer	Make	Model	Serial Number	Detection Method	
NOx Analyzer	TECO	42C	42 CEL-64933-345	Chemiluminescence with Ozone	
CO Analyzer	TECO	48H	48-42825-268	Infrared Absorption/GFC Detector	
O2 Analyzer	Servomex	1400	1420/B701/591	Paramagnetic	
CO2 Analyzer	Servomex	1400	1410/B570	Infrared Absorption/Solid State Detector	
Interferrent Test Gases		Analyzer Response (ppmv or % as applicable)			
Type Gas	Conc.	NOx	CO	O2	CO2
NOx in N2	4042 ppmv		0.30 ppmv	0.15%	0.00%
CO/C1 in Air	3934 ppmv	0.00 ppmv			0.00%
Moisture	4%	0.00 ppmv	0.00 ppmv	0.00%	0.00%
SO2 in N2	4400	1.70 ppmv	0.00 ppmv	0.00%	0.00%
O2 in N2	15%	0.00 ppmv	0.10 ppmv		0.00%
O2/CO2 in N2	12.63%/10.06%	0.00 ppmv	0.50 ppmv		

5906 Base Oil QA

Oil 100% Load Run 1		9/13/2000	17:12:20	18:12:20				
	Raw	Corrected	Low Gas	Mid Gas	High Gas	Full Scale		
NOx (ppmv)	62.77	61.02	24.2	45.6	81.6	100		
CO (ppmv)	1.5	1.65	15.27	25.1	45	50		
O2 (%)	12.12	12.15	3.99	12.46	20.8	25		
CO2 (%)	6.47	6.46	5.04	9.99	18.01	25		
THC (ppmv)	-1.01	-0.83	14.92	25.5	44.9	50		
	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin	
NOx (ppmv)	-0.26	23.77	45.56	81.09	0.43	0.04	0.51	
CO (ppmv)	0.08	15.14	24.9	44.92	0.27	0.4	0.16	
O2 (%)	0.02	4.02	12.38	20.84	-0.1	0.3	-0.18	
CO2 (%)	0	4.96	9.91	18.07	0.33	0.34	-0.23	
THC (ppmv)	-0.02	14.69	25.3	44.92	0.46	0.4	-0.05	
	I-Zero	I-Span	F-Zero	F-Span	Z-Bias	S-Bias	Z-Drift	S-Drift
NOx (ppmv)	-0.61	84.18	-0.49	84.08	-0.23	2.99	-0.12	0.1
CO (ppmv)	-0.37	46.14	0	45.23	-0.17	0.62	-0.74	1.81
O2 (%)	0.02	20.54	0.05	20.87	0.14	0.12	-0.14	-1.33
CO2 (%)	0	18.07	0	18	0.02	-0.27	-0.02	0.27
THC (ppmv)	-0.07	44.85	-0.27	45.28	-0.5	0.72	0.4	-0.86

Oil 100% Load Run 2		9/13/2000	18:23:05	19:23:05				
	Raw	Corrected	Low Gas	Mid Gas	High Gas	Full Scale		
NOx (ppmv)	61.89	62.01	24.2	45.6	81.6	100		
CO (ppmv)	1.69	1.55	15.27	25.1	45	50		
O2 (%)	12.12	12.08	3.99	12.46	20.8	25		
CO2 (%)	6.47	6.47	5.04	9.99	18.01	25		
THC (ppmv)	-1.09	-0.77	14.92	25.5	44.9	50		
	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin	
NOx (ppmv)	-0.26	23.77	45.56	81.09	0.43	0.04	0.51	
CO (ppmv)	0.08	15.14	24.9	44.92	0.27	0.4	0.16	
O2 (%)	0.02	4.02	12.38	20.84	-0.1	0.3	-0.18	
CO2 (%)	0	4.96	9.91	18.07	0.33	0.34	-0.23	
THC (ppmv)	-0.02	14.69	25.3	44.92	0.46	0.4	-0.05	
	I-Zero	I-Span	F-Zero	F-Span	Z-Bias	S-Bias	Z-Drift	S-Drift
NOx (ppmv)	-0.49	81.18	-0.49	82.02	-0.23	0.93	0	-0.84
CO (ppmv)	0	45.23	0.24	45.91	0.32	1.97	-0.49	-1.36
O2 (%)	0.05	20.87	0.05	20.78	0.14	-0.26	0	0.38
CO2 (%)	0	18	0	18	0	-0.25	0.02	-0.02
THC (ppmv)	-0.27	45.28	-0.34	44.91	-0.64	-0.02	0.14	0.74

Oil 100% Load Run 3		9/13/2000	19:28:04	20:28:04				
	Raw	Corrected	Low Gas	Mid Gas	High Gas	Full Scale		
NOx (ppmv)	62.9	62.15	24.2	45.6	81.6	100		
CO (ppmv)	1.77	1.5	15.27	25.1	45	50		
O2 (%)	12.13	12.11	3.99	12.46	20.8	25		
CO2 (%)	6.47	6.47	5.04	9.99	18.01	25		
THC (ppmv)	-1.03	-0.68	14.92	25.5	44.9	50		
	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin	
NOx (ppmv)	-0.26	23.77	45.56	81.09	0.43	0.04	0.51	
CO (ppmv)	0.08	15.14	24.9	44.92	0.27	0.4	0.16	
O2 (%)	0.02	4.02	12.38	20.84	-0.1	0.3	-0.18	
CO2 (%)	0	4.96	9.91	18.07	0.33	0.34	-0.23	
THC (ppmv)	-0.02	14.69	25.3	44.92	0.46	0.4	-0.05	
	I-Zero	I-Span	F-Zero	F-Span	Z-Bias	S-Bias	Z-Drift	S-Drift
NOx (ppmv)	-0.49	82.02	-0.49	83.47	-0.23	2.37	0	-1.44
CO (ppmv)	0.24	45.91	0.24	46.37	0.32	2.89	0	-0.92
O2 (%)	0.05	20.78	0.03	20.82	0.05	-0.09	0.09	-0.17
CO2 (%)	0	18	0.01	17.97	0.06	-0.4	-0.06	0.15
THC (ppmv)	-0.34	44.91	-0.34	44.63	-0.64	-0.58	0.01	0.55

5906 Reduced Oil QA

Oil 50% Load Run 1		9/15/2000	6:11:50	6:31:50				
	Raw	Corrected	Low Gas	Mid Gas	High Gas	Full Scale		
NOx (ppmv)	48.83	49.1	24.2	45.6	81.6	100		
CO (ppmv)	3.85	3.38	15.27	25.1	45	50		
O2 (%)	12.59	12.53	3.99	12.46	20.8	25		
CO2 (%)	5.98	5.99	5.04	9.99	18.01	25		
THC (ppmv)	-0.09	-0.12	14.92	25.5	44.9	50		
	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin	
NOx (ppmv)	-0.51	23.5	44.92	81.24	0.7	0.68	0.36	
CO (ppmv)	0.47	15.39	25.16	44.93	-0.23	-0.12	0.14	
O2 (%)	-0.01	3.91	12.4	20.87	0.34	0.22	-0.28	
CO2 (%)	0	4.9	9.91	18.06	0.55	0.31	-0.2	
THC (ppmv)	-0.06	13.8	25.3	44.85	2.24	0.39	0.11	
	I-Zero	I-Span	F-Zero	F-Span	Z-Bias	S-Bias	Z-Drift	S-Drift
NOx (ppmv)	-0.38	80.26	-0.42	82.58	0.09	1.34	0.04	-2.32
CO (ppmv)	0.49	45.17	0.49	45.16	0.04	0.46	0	0.02
O2 (%)	0.09	20.55	0.69	20.72	2.78	-0.59	-2.38	-0.71
CO2 (%)	0	17.95	0	17.97	0	-0.34	0	-0.1
THC (ppmv)	-0.02	44.81	0.08	44.71	0.28	-0.27	-0.21	0.2

Oil 50% Load Run 2		9/15/2000	6:36:58	6:56:58				
	Raw	Corrected	Low Gas	Mid Gas	High Gas	Full Scale		
NOx (ppmv)	51.24	50.66	24.2	45.6	81.6	100		
CO (ppmv)	3.35	2.87	15.27	25.1	45	50		
O2 (%)	12.58	12.58	3.99	12.46	20.8	25		
CO2 (%)	5.98	6	5.04	9.99	18.01	25		
THC (ppmv)	-0.2	-0.28	14.92	25.5	44.9	50		
	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin	
NOx (ppmv)	-0.51	23.5	44.92	81.24	0.7	0.68	0.36	
CO (ppmv)	0.47	15.39	25.16	44.93	-0.23	-0.12	0.14	
O2 (%)	-0.01	3.91	12.4	20.87	0.34	0.22	-0.28	
CO2 (%)	0	4.9	9.91	18.06	0.55	0.31	-0.2	
THC (ppmv)	-0.06	13.8	25.3	44.85	2.24	0.39	0.11	
	I-Zero	I-Span	F-Zero	F-Span	Z-Bias	S-Bias	Z-Drift	S-Drift
NOx (ppmv)	-0.42	82.58	-0.32	82.95	0.19	1.7	-0.1	-0.37
CO (ppmv)	0.49	45.16	0.5	45.17	0.07	0.47	-0.03	-0.01
O2 (%)	0.69	20.72	-0.34	20.65	-1.33	-0.89	4.11	0.3
CO2 (%)	0	17.97	0	17.94	0	-0.46	0	0.12
THC (ppmv)	0.08	44.71	0.07	44.67	0.26	-0.34	0.03	0.08

Oil 50% Load Run 3		9/15/2000	7:01:50	7:21:51				
	Raw	Corrected	Low Gas	Mid Gas	High Gas	Full Scale		
NOx (ppmv)	50.71	50.29	24.2	45.6	81.6	100		
CO (ppmv)	3.15	2.67	15.27	25.1	45	50		
O2 (%)	12.63	12.74	3.99	12.46	20.8	25		
CO2 (%)	5.98	6	5.04	9.99	18.01	25		
THC (ppmv)	-0.43	-0.44	14.92	25.5	44.9	50		
	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin	
NOx (ppmv)	-0.51	23.5	44.92	81.24	0.7	0.68	0.36	
CO (ppmv)	0.47	15.39	25.16	44.93	-0.23	-0.12	0.14	
O2 (%)	-0.01	3.91	12.4	20.87	0.34	0.22	-0.28	
CO2 (%)	0	4.9	9.91	18.06	0.55	0.31	-0.2	
THC (ppmv)	-0.06	13.8	25.3	44.85	2.24	0.39	0.11	
	I-Zero	I-Span	F-Zero	F-Span	Z-Bias	S-Bias	Z-Drift	S-Drift
NOx (ppmv)	-0.32	82.95	-0.47	82.11	0.04	0.87	0.15	0.84
CO (ppmv)	0.5	45.17	0.49	45.31	0.04	0.75	0.03	-0.28
O2 (%)	-0.34	20.65	0.14	20.74	0.59	-0.52	-1.91	-0.37
CO2 (%)	0	17.94	0	17.94	0	-0.46	0	0
THC (ppmv)	0.07	44.67	-0.05	44.59	0.02	-0.51	0.23	0.16

5906 Reduced Oil QA

Oil 70% Load Run 1								
		9/15/2000	7:44:47	8:04:47				
	Raw	Corrected	Low Gas	Mid Gas	High Gas	Full Scale		
NOx (ppmv)	56.71	56.52	24.2	45.6	81.6	100		
CO (ppmv)	3.38	2.91	15.27	25.1	45	50		
O2 (%)	12.22	12.24	3.99	12.46	20.8	25		
CO2 (%)	6.29	6.31	5.04	9.99	18.01	25		
THC (ppmv)	-0.48	-0.45	14.92	25.5	44.9	50		
	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin	
NOx (ppmv)	-0.51	23.5	44.92	81.24	0.7	0.68	0.36	
CO (ppmv)	0.47	15.39	25.16	44.93	-0.23	-0.12	0.14	
O2 (%)	-0.01	3.91	12.4	20.87	0.34	0.22	-0.28	
CO2 (%)	0	4.9	9.91	18.06	0.55	0.31	-0.2	
THC (ppmv)	-0.06	13.8	25.3	44.85	2.24	0.39	0.11	
	I-Zero	I-Span	F-Zero	F-Span	Z-Bias	S-Bias	Z-Drift	S-Drift
NOx (ppmv)	-0.47	82.11	-0.45	82.02	0.06	0.78	-0.02	0.09
CO (ppmv)	0.49	45.31	0.49	45.21	0.04	0.55	0	0.2
O2 (%)	0.14	20.74	-0.03	20.71	-0.1	-0.64	0.69	0.12
CO2 (%)	0	17.94	0	17.97	0	-0.34	0	-0.12
THC (ppmv)	-0.05	44.59	-0.01	44.59	0.09	-0.51	-0.07	0

Oil 70% Load Run 2								
		9/15/2000	8:09:58	8:29:58				
	Raw	Corrected	Low Gas	Mid Gas	High Gas	Full Scale		
NOx (ppmv)	56.35	56.36	24.2	45.6	81.6	100		
CO (ppmv)	3.05	2.58	15.27	25.1	45	50		
O2 (%)	12.23	12.28	3.99	12.46	20.8	25		
CO2 (%)	6.31	6.33	5.04	9.99	18.01	25		
THC (ppmv)	-0.51	-0.47	14.92	25.5	44.9	50		
	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin	
NOx (ppmv)	-0.51	23.5	44.92	81.24	0.7	0.68	0.36	
CO (ppmv)	0.47	15.39	25.16	44.93	-0.23	-0.12	0.14	
O2 (%)	-0.01	3.91	12.4	20.87	0.34	0.22	-0.28	
CO2 (%)	0	4.9	9.91	18.06	0.55	0.31	-0.2	
THC (ppmv)	-0.06	13.8	25.3	44.85	2.24	0.39	0.11	
	I-Zero	I-Span	F-Zero	F-Span	Z-Bias	S-Bias	Z-Drift	S-Drift
NOx (ppmv)	-0.45	82.02	-0.42	81.54	0.09	0.3	-0.03	0.48
CO (ppmv)	0.49	45.21	0.49	45.16	0.05	0.46	-0.01	0.09
O2 (%)	-0.03	20.71	0.01	20.72	0.1	-0.58	-0.2	-0.06
CO2 (%)	0	17.97	0	17.95	0	-0.44	0	0.1
THC (ppmv)	-0.01	44.69	-0.08	44.83	-0.04	-0.04	0.13	-0.27

Oil 70% Load Run 3								
		9/15/2000	8:34:57	8:54:57				
	Raw	Corrected	Low Gas	Mid Gas	High Gas	Full Scale		
NOx (ppmv)	56.25	56.68	24.2	45.6	81.6	100		
CO (ppmv)	3.05	2.58	15.27	25.1	45	50		
O2 (%)	12.24	12.27	3.99	12.46	20.8	25		
CO2 (%)	6.3	6.32	5.04	9.99	18.01	25		
THC (ppmv)	-0.6	-0.54	14.92	25.5	44.9	50		
	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin	
NOx (ppmv)	-0.51	23.5	44.92	81.24	0.7	0.68	0.36	
CO (ppmv)	0.47	15.39	25.16	44.93	-0.23	-0.12	0.14	
O2 (%)	-0.01	3.91	12.4	20.87	0.34	0.22	-0.28	
CO2 (%)	0	4.9	9.91	18.06	0.55	0.31	-0.2	
THC (ppmv)	-0.06	13.8	25.3	44.85	2.24	0.39	0.11	
	I-Zero	I-Span	F-Zero	F-Span	Z-Bias	S-Bias	Z-Drift	S-Drift
NOx (ppmv)	-0.42	81.54	-0.39	80.77	0.12	-0.48	-0.03	0.78
CO (ppmv)	0.49	45.16	0.49	45.16	0.04	0.46	0.01	0
O2 (%)	0.01	20.72	0.03	20.73	0.17	-0.57	-0.07	-0.01
CO2 (%)	0	17.95	0	17.95	0	-0.45	0	0.01
THC (ppmv)	-0.08	44.83	-0.04	44.82	0.04	-0.05	-0.08	0.01

5906 Reduced Oil QA

Oil 85% Load Run 1	9/15/2000	9:20:05	9:40:05					
	Raw	Corrected	Low Gas	Mid Gas	High Gas	Full Scale		
NOx (ppmv)	56.72	57.47	24.2	45.6	81.6	100		
CO (ppmv)	2.77	2.3	15.27	25.1	45	50		
O2 (%)	12.08	12.08	3.99	12.46	20.8	25		
CO2 (%)	6.44	6.46	5.04	9.99	18.01	25		
THC (ppmv)	-0.72	-0.63	14.92	25.5	44.9	50		
	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin	
NOx (ppmv)	-0.51	23.5	44.92	81.24	0.7	0.68	0.36	
CO (ppmv)	0.47	15.39	25.16	44.93	-0.23	-0.12	0.14	
O2 (%)	-0.01	3.91	12.4	20.87	0.34	0.22	-0.28	
CO2 (%)	0	4.9	9.91	18.06	0.55	0.31	-0.2	
THC (ppmv)	-0.06	13.8	25.3	44.85	2.24	0.39	0.11	
	I-Zero	I-Span	F-Zero	F-Span	Z-Bias	S-Bias	Z-Drift	S-Drift
NOx (ppmv)	-0.39	80.77	-0.41	80.64	0.1	-0.61	0.02	0.13
CO (ppmv)	0.49	45.14	0.49	45.2	0.04	0.54	0	-0.12
O2 (%)	0.03	20.73	0.05	20.79	0.25	-0.31	-0.08	-0.26
CO2 (%)	0	17.95	0	17.99	0	-0.26	0	-0.19
THC (ppmv)	-0.04	44.82	-0.14	45.41	-0.16	1.12	0.19	-1.17

Oil 85% Load Run 2		9/15/2000	9:45:01	10:05:01					
	Raw	Corrected	Low Gas	Mid Gas	High Gas	Full Scale			
NOx (ppmv)	56.25	57.05	24.2	45.6	81.6	100			
CO (ppmv)	2.71	2.22	15.27	25.1	45	50			
O2 (%)	12.05	12.06	3.99	12.46	20.8	25			
CO2 (%)	6.45	6.44	5.04	9.99	18.01	25			
THC (ppmv)	-0.9	-0.66	14.92	25.5	44.9	50			
	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin		
NOx (ppmv)	-0.51	23.5	44.92	81.24	0.7	0.68	0.36		
CO (ppmv)	0.47	15.39	25.16	44.93	-0.23	-0.12	0.14		
O2 (%)	-0.01	3.91	12.4	20.87	0.34	0.22	-0.28		
CO2 (%)	0	4.9	9.91	18.06	0.55	0.31	-0.2		
THC (ppmv)	-0.06	13.8	25.3	44.85	2.24	0.39	0.11		
	I-Zero	I-Span	F-Zero	F-Span	Z-Bias	S-Bias	Z-Drift	S-Drift	
NOx (ppmv)	-0.41	80.64	-0.31	80.57	0.2	-0.68	-0.1	0.07	
CO (ppmv)	0.49	45.2	0.51	45.17	0.09	0.48	-0.05	0.06	
O2 (%)	0.05	20.79	-0.03	20.75	-0.1	-0.47	0.35	0.16	
CO2 (%)	0	18.07	0	18.06	0	-0.01	0	0.04	
THC (ppmv)	-0.14	45.41	-0.32	45.47	-0.51	1.25	0.36	-0.13	

Oil 85% Load Run 3		9/15/2000	10:10:14	10:30:14					
	Raw	Corrected	Low Gas	Mid Gas	High Gas	Full Scale			
NOx (ppmv)	56.15	56.96	24.2	45.6	81.6	100			
CO (ppmv)	2.71	2.21	15.27	25.1	45	50			
O2 (%)	12.05	12.08	3.99	12.46	20.8	25			
CO2 (%)	6.44	6.44	5.04	9.99	18.01	25			
THC (ppmv)	-0.97	-0.63	14.92	25.5	44.9	50			
	Zero	Low	Mid	Span	L-Lin	M-Lin	S-Lin		
NOx (ppmv)	-0.51	23.5	44.92	81.24	0.7	0.68	0.36		
CO (ppmv)	0.47	15.39	25.16	44.93	-0.23	-0.12	0.14		
O2 (%)	-0.01	3.91	12.4	20.87	0.34	0.22	-0.28		
CO2 (%)	0	4.9	9.91	18.06	0.55	0.31	-0.2		
THC (ppmv)	-0.06	13.8	25.3	44.85	2.24	0.39	0.11		
	I-Zero	I-Span	F-Zero	F-Span	Z-Bias	S-Bias	Z-Drift	S-Drift	
NOx (ppmv)	-0.31	80.57	-0.39	80.6	0.12	-0.65	0.08	-0.03	
CO (ppmv)	0.51	45.17	0.51	45.17	0.09	0.48	0	0	
O2 (%)	-0.03	20.75	0.01	20.76	0.09	-0.45	-0.19	-0.02	
CO2 (%)	0	18.06	0	17.95	0	-0.42	0	0.41	
THC (ppmv)	-0.32	45.47	-0.34	45.37	-0.56	1.05	0.04	0.2	

APPENDIX E:
CALIBRATION CERTIFICATIONS



SPECTRA GASES INC.

3434 Route 22 West • Branchburg, NJ 08876 USA Tel.: (908) 252-9300 • (800) 932-0624 • Fax: (908) 252-0811
Shipped From: 80 Industrial Drive • Alpha, NJ 08865



CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE

PROCEDURE #: G1

CUSTOMER: Cubix Corporation
SGI ORDER #: 150834
ITEM#: 1
P.O.#: CHAZ

CYLINDER #: CC113974
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 660

CERTIFICATION DATE: 2/17/2000

EXPIRATION DATE: 2/17/2002

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Nitric Oxide	2/8/2000	81.75 ppm	81.6 ppm	+/- 1%
NOx	2/17/2000	81.52 ppm	81.6 ppm	Reference Value Only

BALANCE Nitrogen

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Nitric Oxide	NTRM-81684	CC79981	98.6 ppm

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Nitric Oxide	Teco 10	10AR-34979-249	Cheml	1/17/2000

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 160 PSIG.

ANALYST:

FRED PIKULA

DATE: 2/17/2000

T-5



SPECTRA GASES INC.

3434 Route 22 West • Branchburg, NJ 08876 USA Tel.: (908) 252-9300 • (800) 932-0624 • Fax: (908) 252-0811
Shipped From: 80 Industrial Drive • Alpha, NJ 08865



CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE PROCEDURE #: G1

CUSTOMER: Cublix Corporation
SGI ORDER #: 140748
ITEM#: 1
P.O.#: 99049

CYLINDER #: CC106766
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 660

CERTIFICATION DATE: 3/25/99
EXPIRATION DATE: 3/25/2001

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Nitric Oxide	3/16/99	45.06 ppm	45.3 ppm	+/- 1%
NOx	3/25/99	45.50 ppm	45.6 ppm	Reference Value Only

BALANCE Nitrogen

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Nitric Oxide	NTRM-NTRM81684	CC79984	98.6 ppm

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Nitric Oxide	Teco 10	10AR-34979-249	Cheml	3/9/99

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: JP.
FRED PIKULA

DATE: 3/25/99



T-5

SPECTRA GASES INC.

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CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE PROCEDURE #: G1

CUSTOMER: Cubix Corporation
SGI ORDER #: 149081
ITEM#: 1
P.O.#: 99404

CYLINDER #: CC88327
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 660

CERTIFICATION DATE: 12/28/99
EXPIRATION DATE: 12/28/2001

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Nitric Oxide	12/21/99	24.09 ppm	24.1 ppm	+/- 1%
NOx	12/28/99	24.12 ppm		
			24.2 ppm	Reference Value Only

BALANCE Nitrogen

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Nitric Oxide	NTRM-81684	CC79982	98.6 ppm

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Nitric Oxide	Teco 10	10AR-34979-249	Cheml	12/15/99

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: F.P.
FRED PIKULA

DATE: 12/28/99

T-5



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CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE

PROCEDURE #: G1

CUSTOMER: Cubix Corporation
SGI ORDER #: 148744
ITEM#: 1
P.O.#: 99318

CYLINDER #: CC110250
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 590

CERTIFICATION DATE: 10/12/99
EXPIRATION DATE: 10/04/2002

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Carbon Monoxide	10/04/99	45.05 ppm	45.0 ppm	+/- 1%
	10/12/99	44.94 ppm		
Methane	10/04/99	44.9 ppm	44.9 ppm	+/- 1%

BALANCE Air

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Carbon Monoxide	NTRM-81679	CC88386	97.4 ppm
Methane	SRM-2751	CAL013479	98.6 ppm

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Carbon Monoxide	Horiba VIA-510	570423011	NDIR	9/24/99
Methane	H. Packard 6890	US00001434	GC - FID	9/30/99

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 180 PSIG.

ANALYST:

FP
FRED PIKULA

DATE: 10/12/99



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CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE PROCEDURE #: G1

CUSTOMER: Cubix Corporation
SGI ORDER #: 148620
ITEM#: 3
P.O.#: 99304

CYLINDER #: CC85002
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 590

CERTIFICATION DATE: 10/07/99
EXPIRATION DATE: 9/30/2002

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Carbon Monoxide	9/29/99	24.98 ppm	25.1 ppm	+/- 1%
	10/07/99	25.17 ppm		
Methane	9/30/99	25.50 ppm	25.5 ppm	+/- 1%

BALANCE Air

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Carbon Monoxide	NTRM-81679	CC88366	97.4 ppm
Methane	SRM-2751	CAL013479	98.6 ppm

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Carbon Monoxide	Horiba VIA-510	570423011	NDIR	9/24/99
Methane	H. Packard 6890	US00001434	GC - FID	9/30/99

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST:


FRED PIKULA

DATE: 10/07/99

**SPECTRA GASES INC.**

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**CERTIFICATE OF ANALYSIS****EPA PROTOCOL MIXTURE
PROCEDURE #: G1**

CUSTOMER: Cublix Corporation
SGI ORDER #: 140748
ITEM#: 5
P.O.#: 99049

CYLINDER #: CC106737
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 590

CERTIFICATION DATE: 3/24/99
EXPIRATION DATE: 3/15/2002

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Carbon Monoxide	3/17/99	15.33 ppm	15.27 ppm	+/- 1%
	3/24/99	15.22 ppm		
Methane	3/15/99	14.92 ppm	14.92 ppm	+/- 1%

BALANCE Air

PREVIOUS CERTIFICATION DATES: None

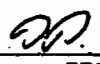
REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Carbon Monoxide	GMIS-1	CC38290	49.8 ppm
Methane	SRM-2751	CAL013479	98.6 ppm

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Carbon Monoxide	Horiba VIA-510	570423011	NDIR	3/17/99
Methane	H. Packard 6890	US00001434	GC - FID	3/9/99

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: 
FRED PIKULA

DATE: 3/24/99

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**CERTIFICATE OF ANALYSIS****EPA PROTOCOL MIXTURE
PROCEDURE #: G1**

CUSTOMER: Cubix Corporation
SGI ORDER #: 156176
ITEM#: 4
P.O.#: 2000301 T-5 Rick

CYLINDER #: CC83913
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 590

CERTIFICATION DATE: 7/26/2000
EXPIRATION DATE: 7/26/2003

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Oxygen	7/26/2000	20.8 %	20.8 %	+/- 1%
Carbon Dioxide	7/26/2000	5.04 %	5.04 %	+/- 1%

BALANCE Nitrogen

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Oxygen	NTRM-82859x	CC83908	22.8 %
Carbon Dioxide	GMIS-1	CC91046	10.03 %

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Oxygen	Horiba MPA-510	570694081	PM	7/24/2000
Carbon Dioxide	Horiba VIA-510	571417045	NDIR	7/6/2000

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: 
FRED PIKULA

DATE: 7/26/2000

T-5



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T-6

CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE PROCEDURE #: G1

CUSTOMER: Cubix Corporation
SGI ORDER #: 146620
ITEM#: 1
P.O.#: 99304

CYLINDER #: CC108722
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 590

CERTIFICATION DATE: 10/07/99
EXPIRATION DATE: 10/07/2002

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Oxygen	10/07/99	12.46 %	12.46 %	+/- 1%
Carbon Dioxide	10/07/99	9.99 %	9.99 %	+/- 1%

BALANCE Nitrogen

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Oxygen	NTRM-82659X	CC83900	22.80 %
Carbon Dioxide	GMIS-1	CC57143	10.00 %

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Oxygen	Horiba MPA-510	570894081	PM	9/21/99
Carbon Dioxide	Horiba VIA-510	571417045	NDIR	9/23/99

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 180 PSIG.

ANALYST: 
FRED PIKULA

DATE: 10/07/99

T-9



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CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE PROCEDURE #: G1

CUSTOMER: Cubix Corporation
SGI ORDER #: 146038
ITEM#: 2
P.O.#: 99277

CYLINDER #: CC114045
CYLINDER PRES: 2000 PSIG
CGA OUTLET: 580

CERTIFICATION DATE: 9/17/99
EXPIRATION DATE: 9/17/2002

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	ANALYTICAL ACCURACY
Carbon Dioxide	9/17/99	18.01 %	18.01 %	+/- 1%
Oxygen	9/17/99	3.99 %	3.99 %	+/- 1%

BALANCE Nitrogen

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION
Carbon Dioxide	NTRM-82745x	CC79944	20.00 %
Oxygen	GMIS-1	CC53245	10.00 %

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Carbon Dioxide	Horiba VIA-510	571417045	NDIR	8/20/99
Oxygen	Horiba MPA-510	570694081	PM	9/10/99

THIS STANDARD WAS CERTIFIED ACCORDING TO THE EPA PROTOCOL PROCEDURES.
DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 150 PSIG.

ANALYST: FRED PIKULA

DATE: 9/17/99

APPENDIX F:
STRIP CHART RECORDS

26.100

25.00

20.80

100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100

POLK POWER STATION

7/13/00 UNIT Z

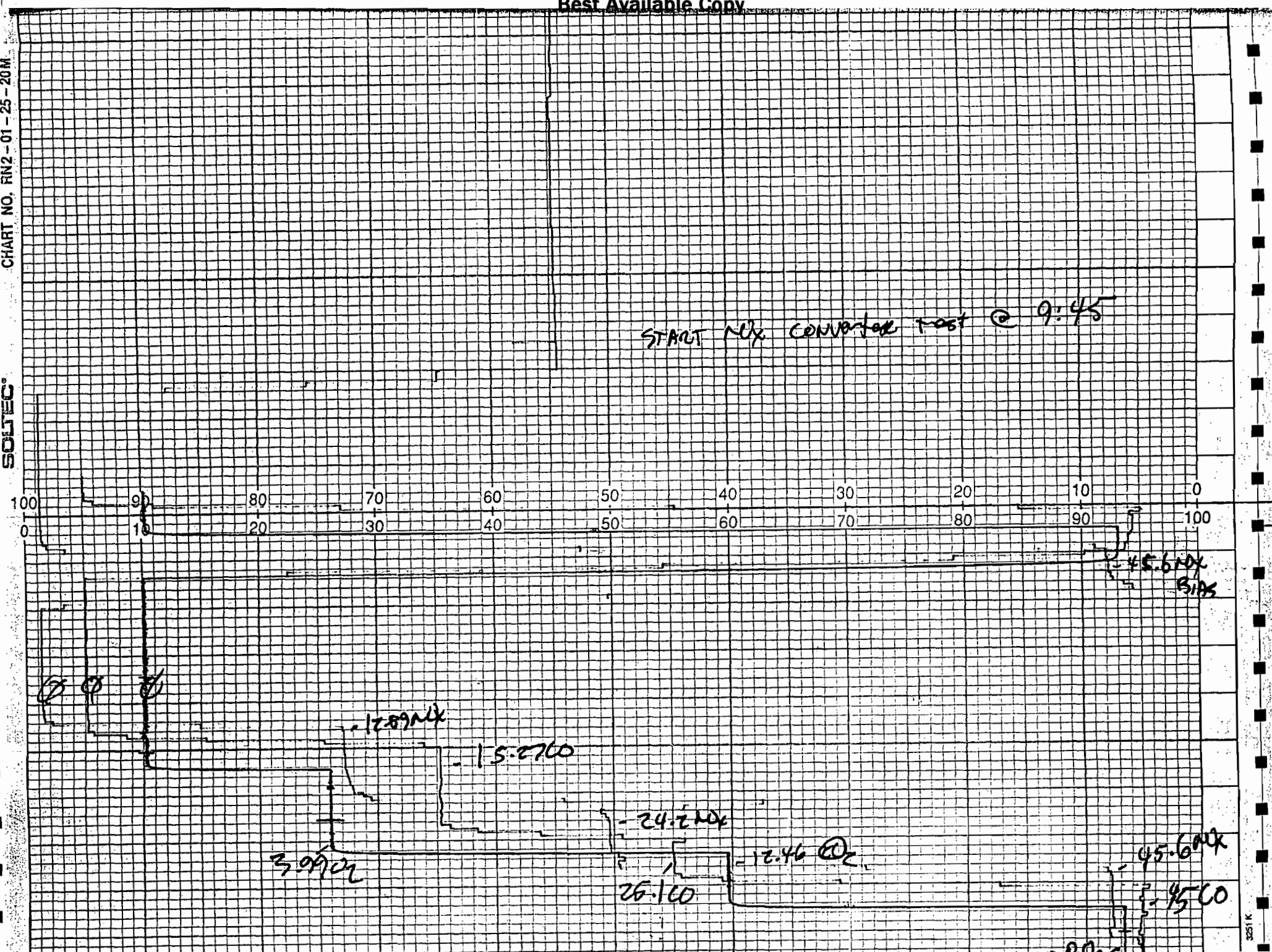
NOx 0.550

CO 0.550

SO₂ 0.25

CHART NO. RN2-01-25-20M

SOLTEC



100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100

54 UP

57 DOWN

59 DOWN

57 UP

START RESPONSE TIME TEST

END NOX TEST @ 10:15

100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100

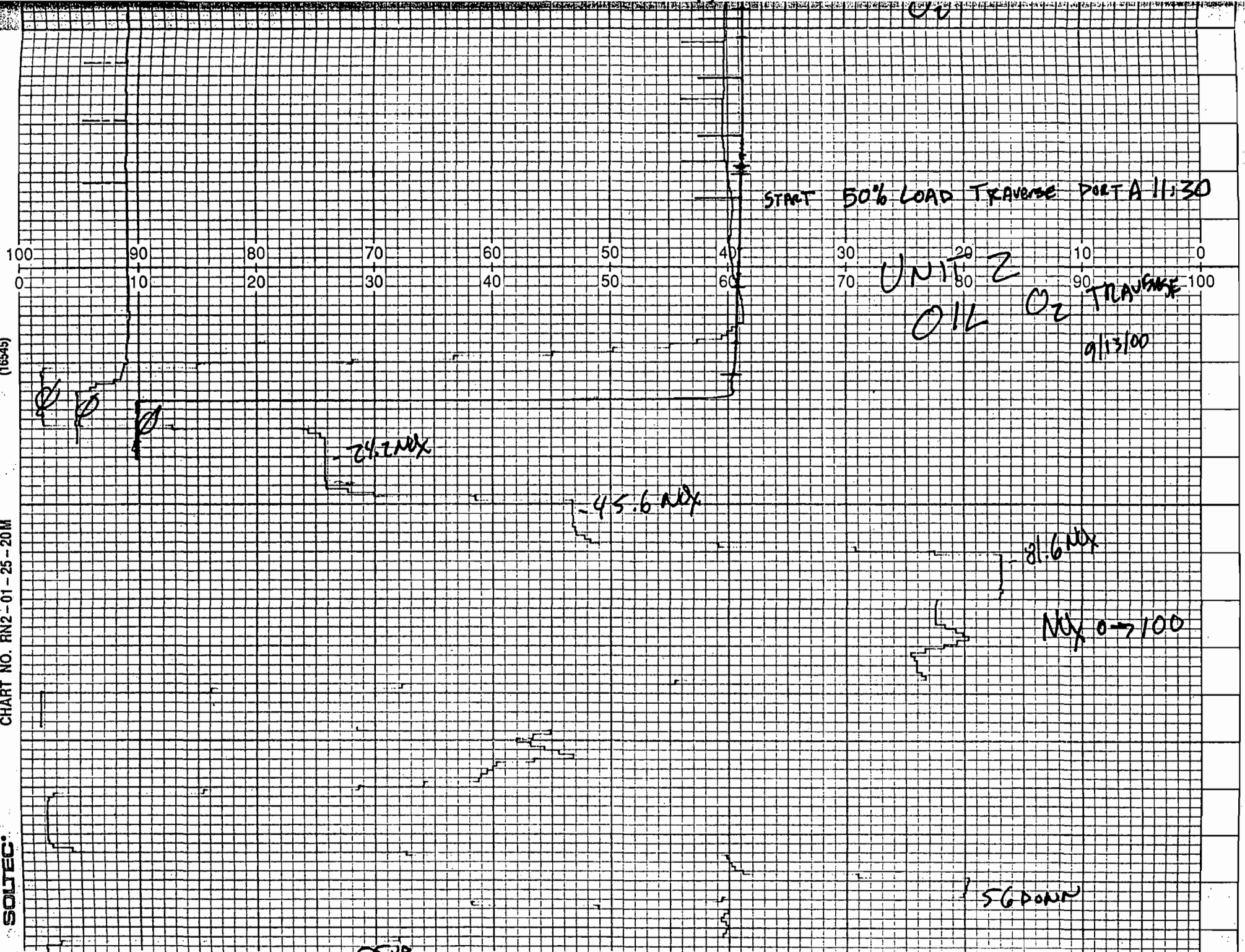
(16545)

3351 K

(16545)

CHART NO. RN2-01-25-20M

SOLTEC



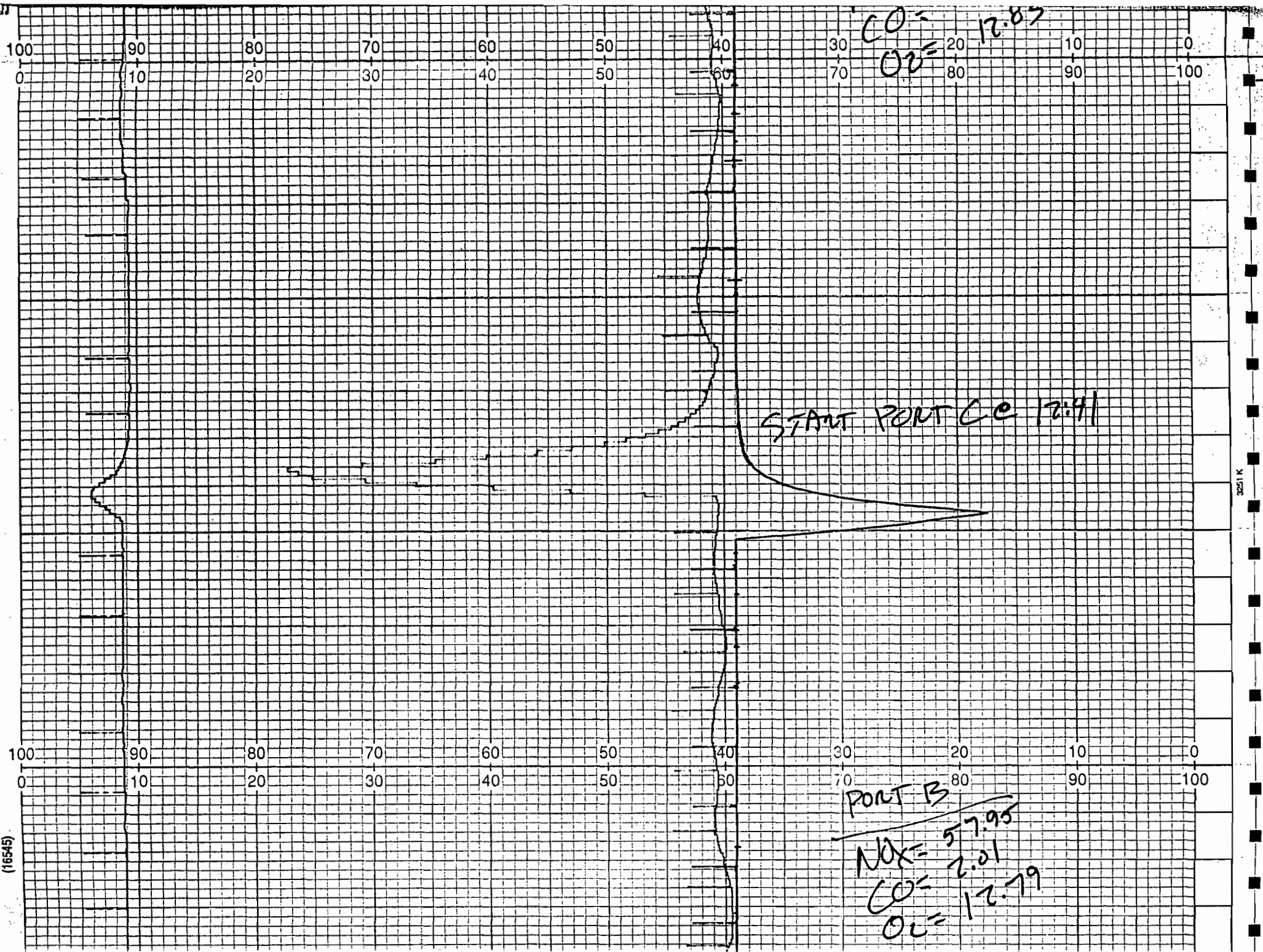
START NW. MIN 2-01-25-20M

100
0

100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100

START PORT B @ 12:05

PORT A
NOx = 58.67
CO = 1.95
O₂ = 12.64



CO = 12.87
OC = 70

START PORT C @ 12.91

PORT B
NAX = 57.95
CO = 2.01
OC = 12.79

(16545)

3251 K

Best Available Copy

CO = 1.01
O2 = 12.77

START PORT D @ 13:16

PORT C
NOx = 57.27
CO = 1.98
O2 = 12.83

CHART NO. RN2-01-25-20M

SOLTEC

(16545)

100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100

PORT D

$NO_x = 57.24$

41.54

$CO = 1.81$

$O_2 = 12.77$

START PORT D @ 13:16

CHART NO. RN2-01-25-20M

SOLTEC

100	90	80	70	60	50	40	30	20	10	0
0	10	20	30	40	50	60	70	80	90	100

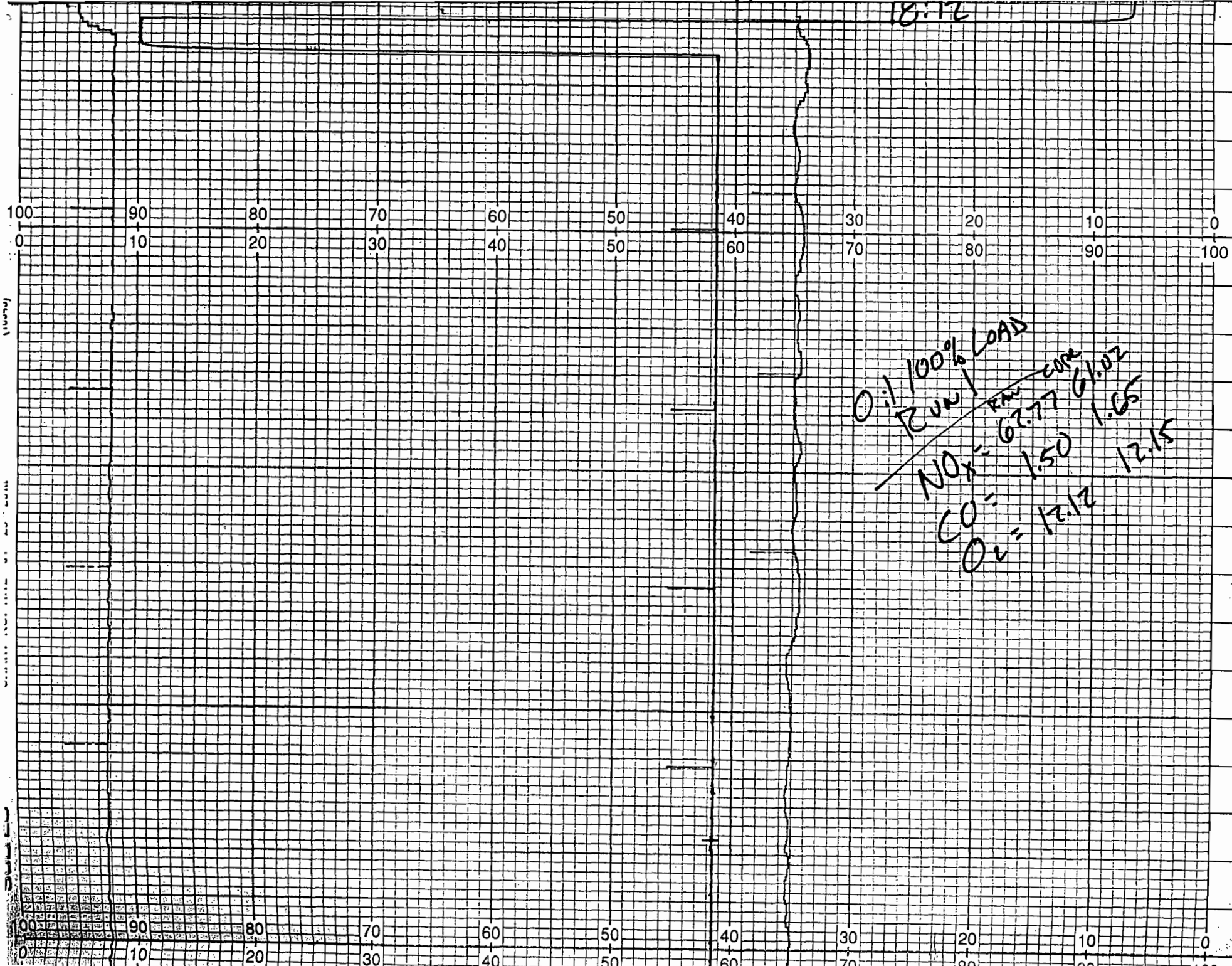
0 10 20 30 40 50 60 70 80 90 100

100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100

79/89
17:12

START RUN 1 OIL 100% LOAD
17:12

18:12



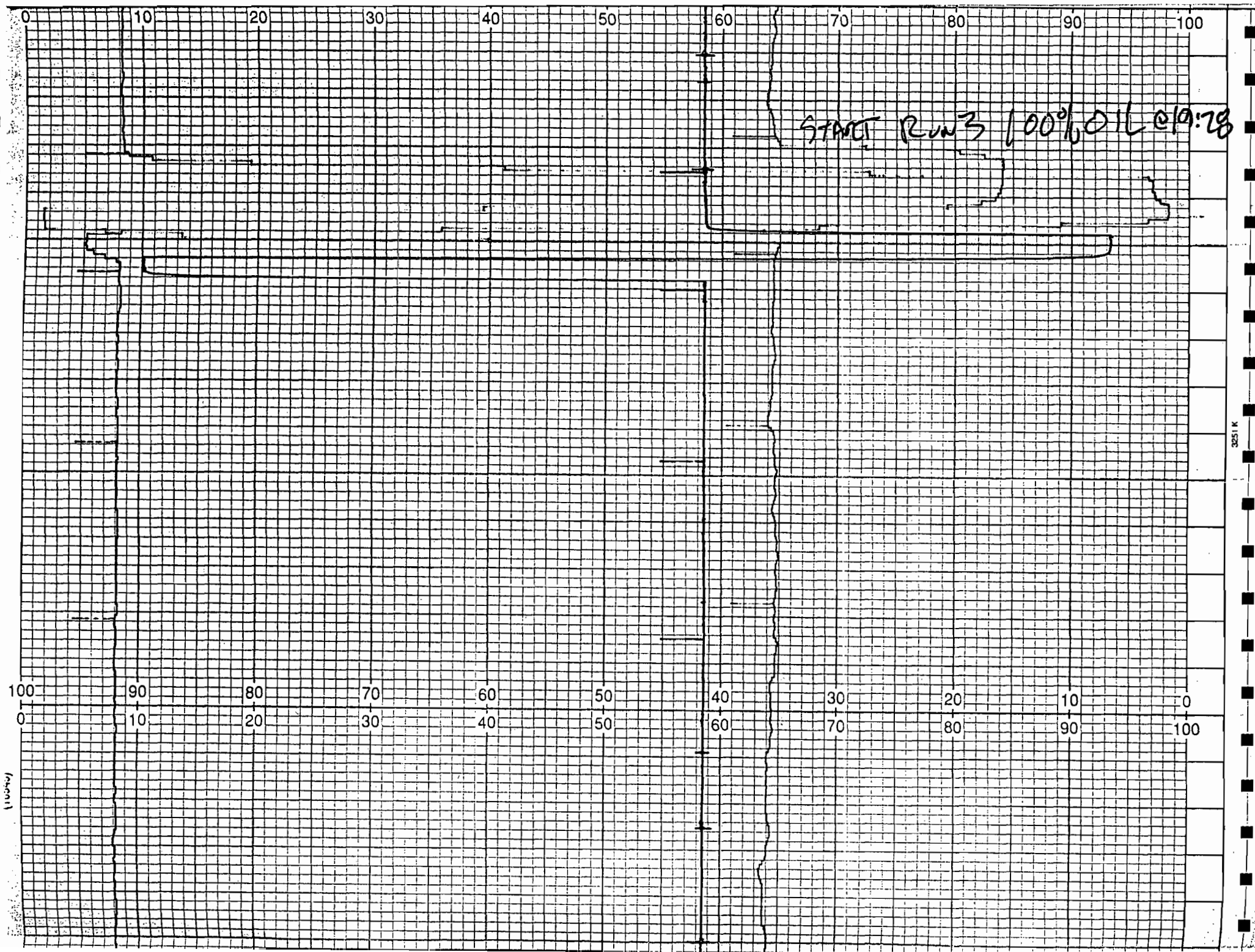
0.1/100% LOAD
 RUN
 NOx = 67.77 ppm
 CO = 1.50
 O₂ = 12.12
 61.02
 1.65
 12.15

100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100

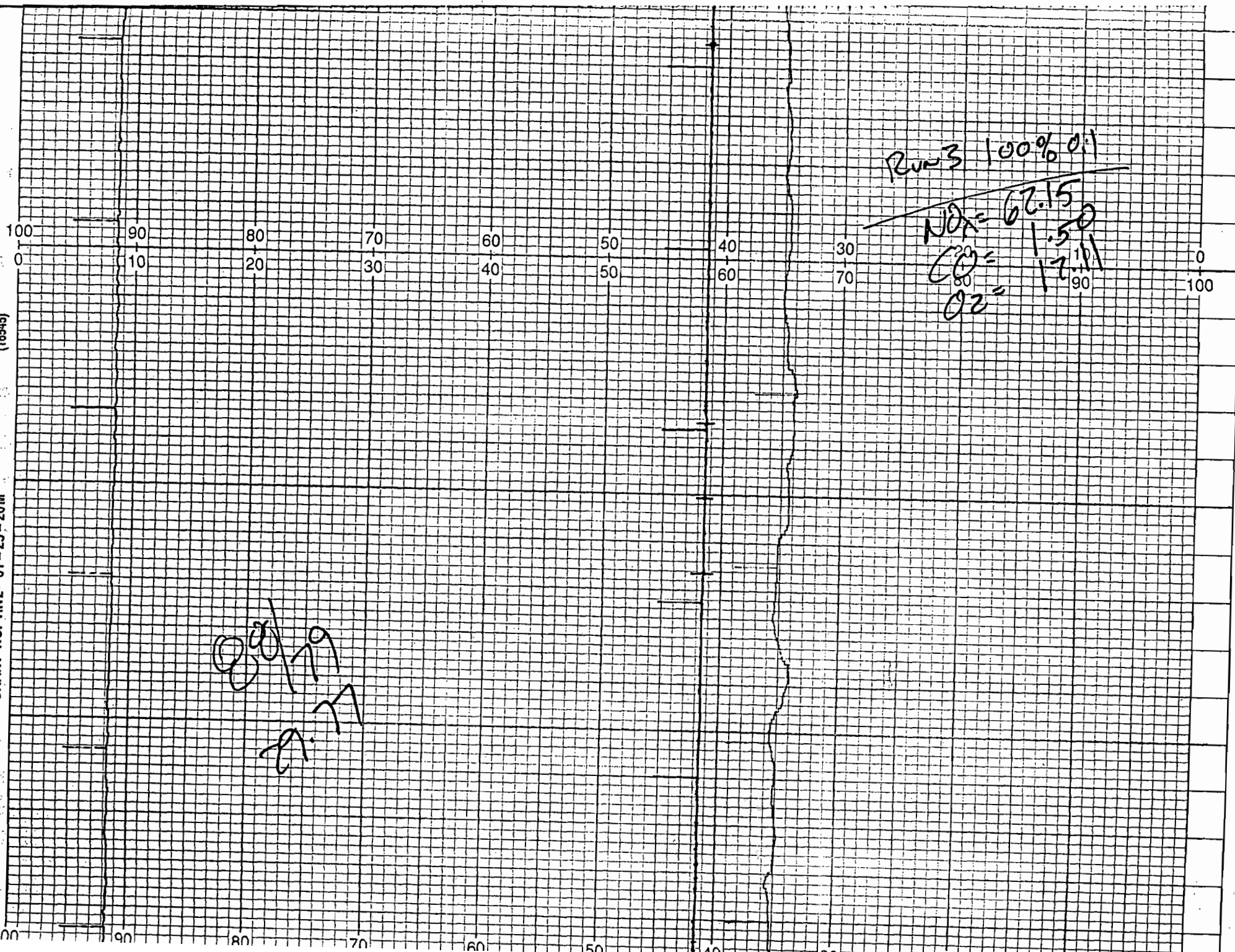
9/1/79
29.7

Oil Run 2 100%
POK = 62.01
CO = 1.55
O2 = 17.08

18:23 START Run 2 100%



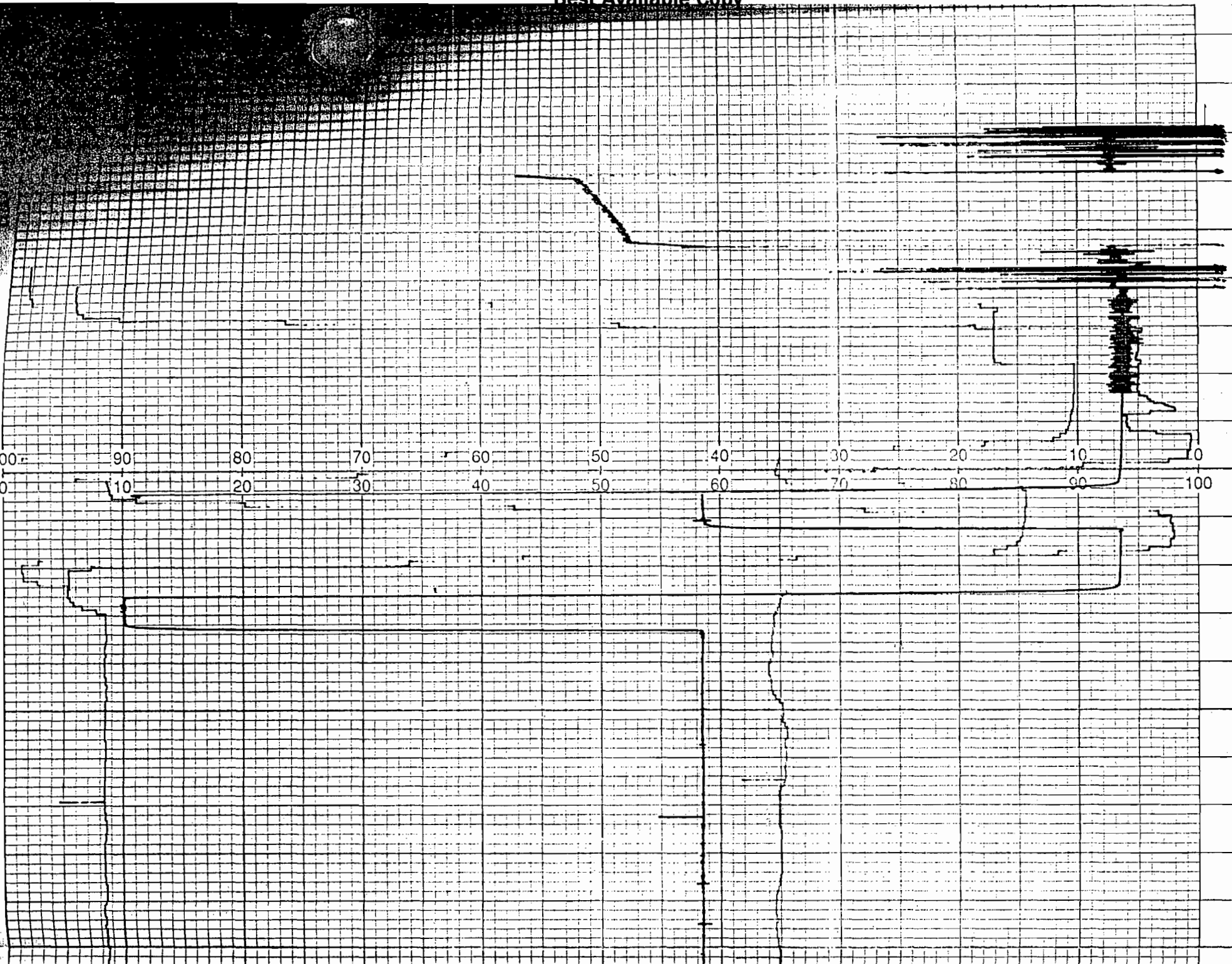
325 K



Best Available Copy

SOITEC

100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100



Best Available Copy

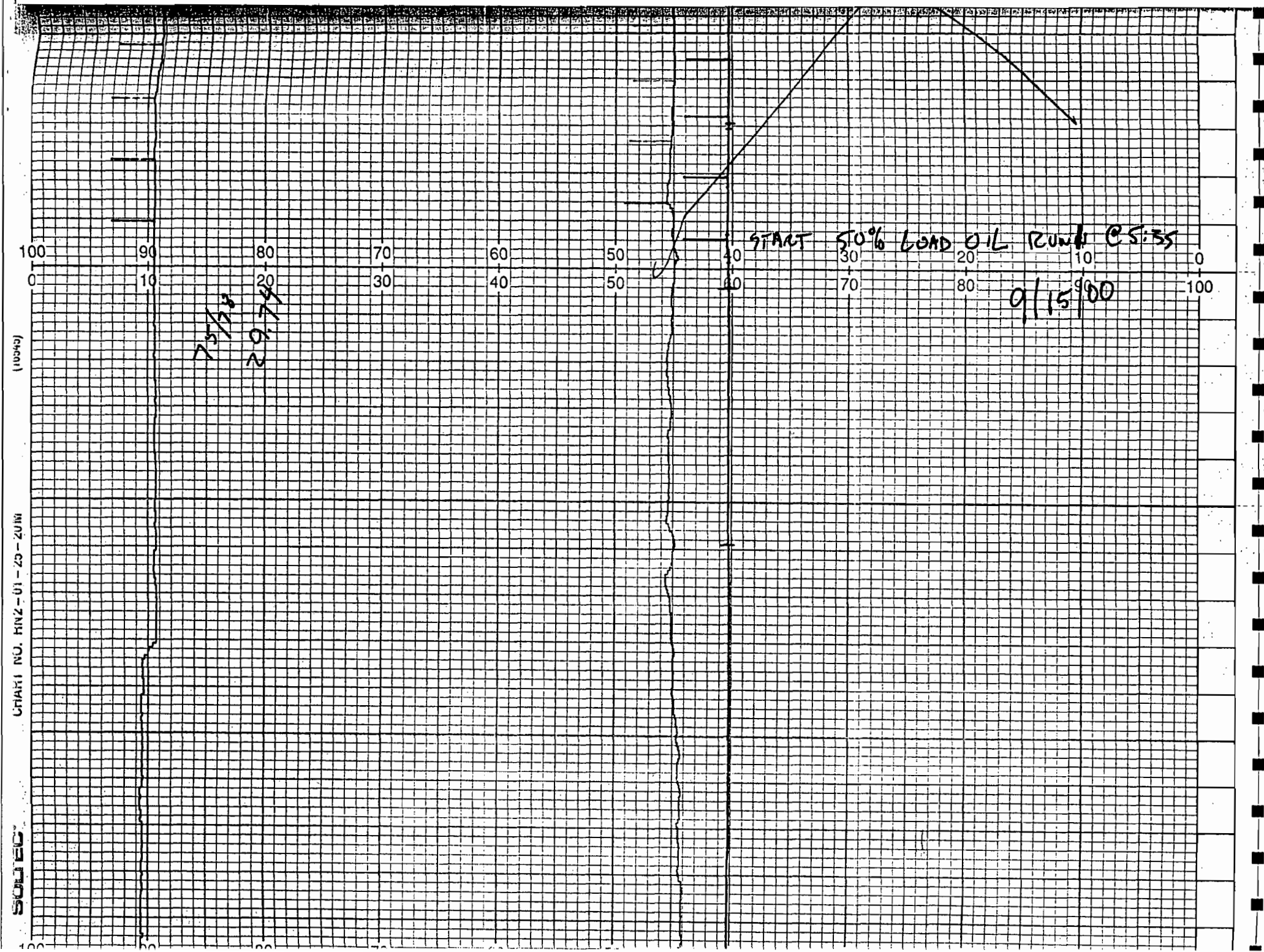
SOLTEC

100 90 80 70 60 50 40 30 20 10 0
20 30 40 50 60 70 80 90 100

100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100

16545

3251 K



Best Available Copy

CHART NO. RN2-01-25-20M

SOLTEC

100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100

START 50% Run 0.1 @ 6:11

~~NOx = 53.68
CO = 2.46
O₂ = 12.47~~

Best Available Copy

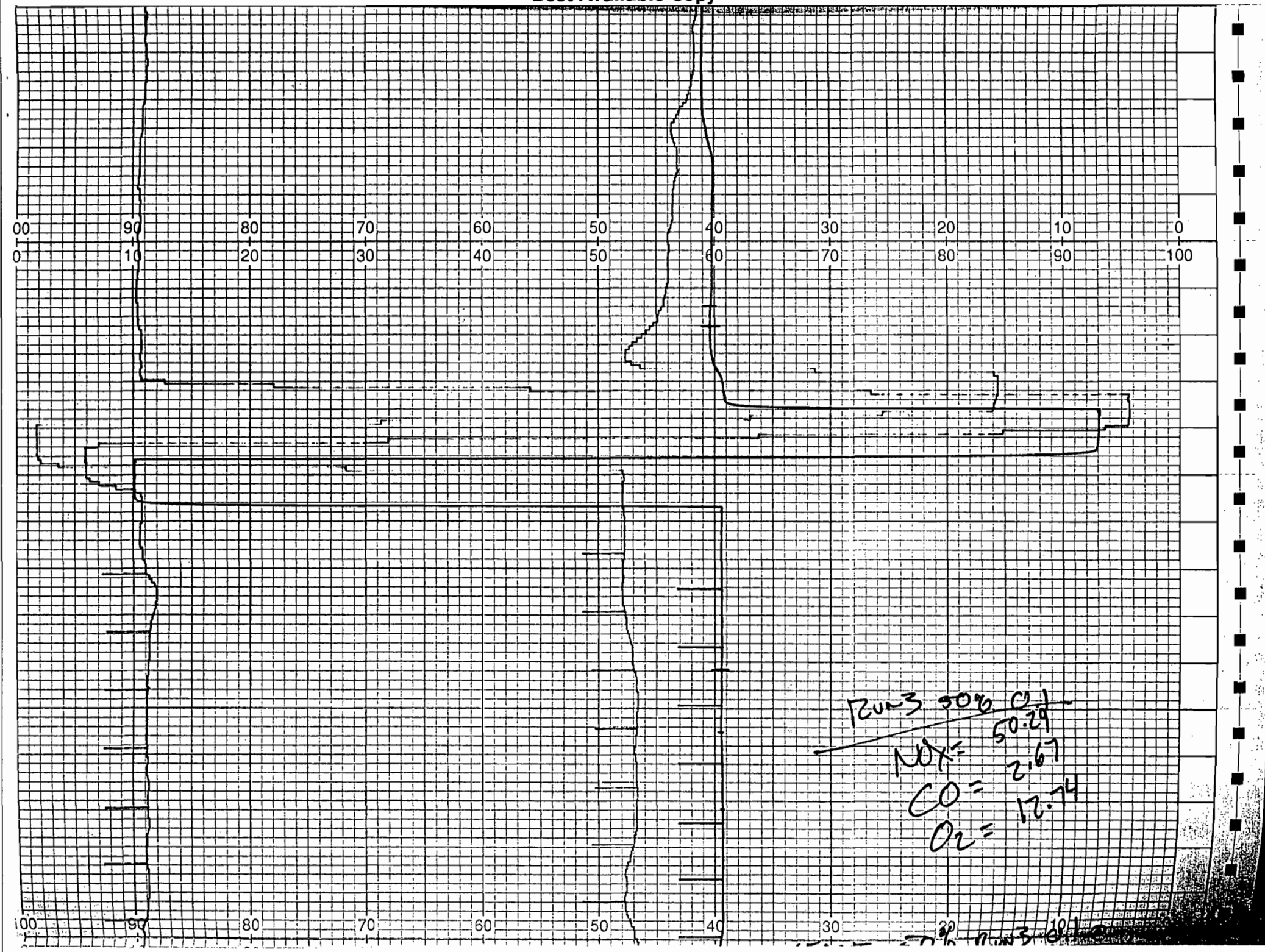
START 50% Run 3 0.1 @ 7:01

Run 2 50% 0.1
NOx = 50.66
CO = 2.87
O₂ = 12.58

START 50% Run 2 0.1 @ 6:36

Run 1 50% oil
NOx = 49.10
CO = 3.30
O₂ = 12.58

Best Available Copy



100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100

RUN 2 @ 70% O₂

$\overline{NO_x} = 56.36$
 $\overline{CO} = 2.58$
 $\overline{O_2} = 12.28$

START RUN 2 70% 8:09

RUN 1 @ 70% O₂

$\overline{NO_x} = 56.52$
 $\overline{CO} = 2.91$
 $\overline{O_2} = 12.24$

START 70% RUN 1 @ 7:44

(16545)

CHART NO. RN2-01-25-20M

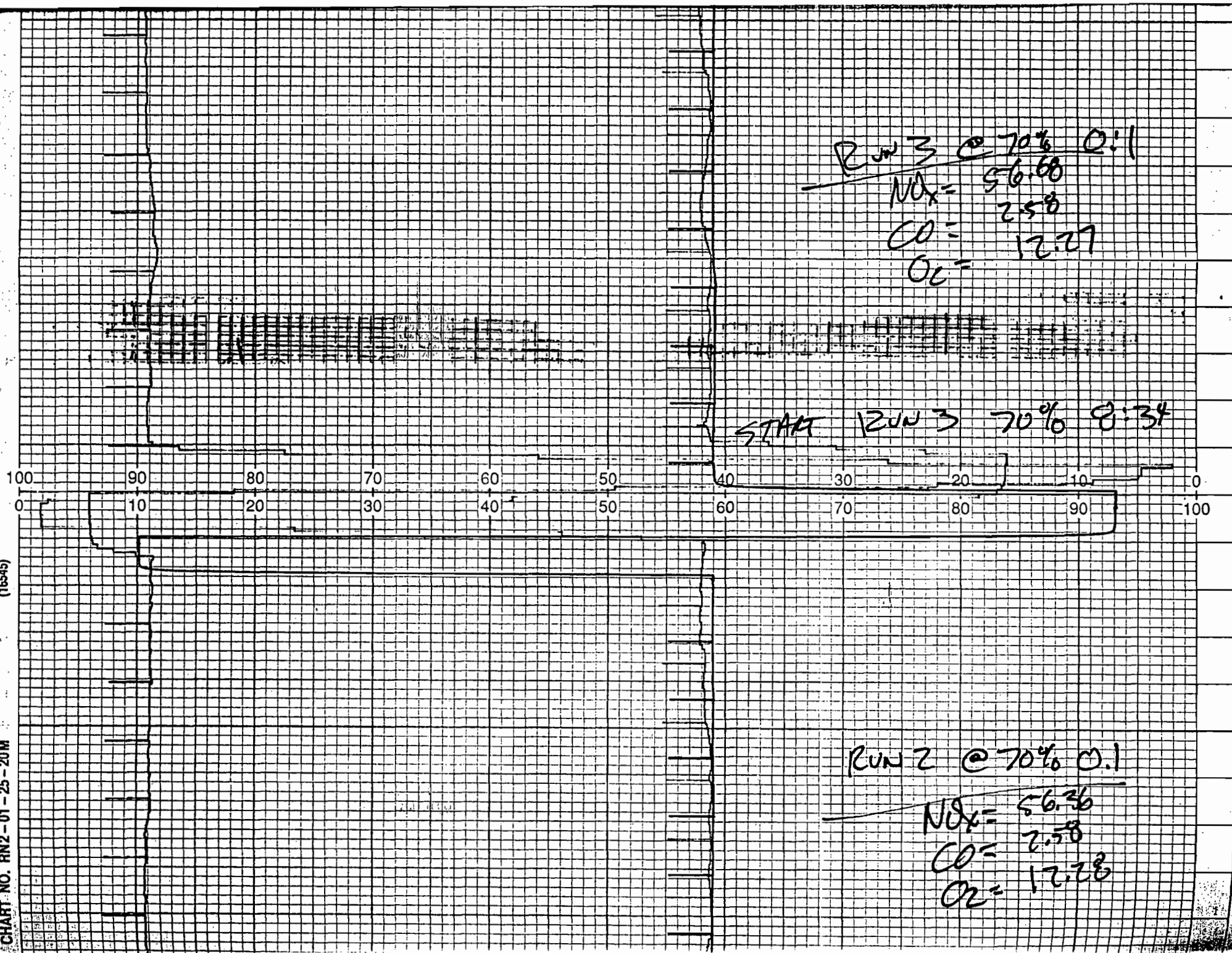


CHART NO. RN2-01-25-20M

SOLTEC

100	90	80	70	60	50	40	30	20	10	0
0	10	20	30	40	50	60	70	80	90	100

START RUN 1 85% LOAD 9:20

RUN 3 @ 70% Q:1
NOx = 56.68
2.58

Run 2 85% Oil

NOx = 57.05
CO = 2.22

O₂ = 12.06

Start Run 2 85% Load 9:45

8/3/79
29.20

Run 1 85% Oil

NOx = 57.47

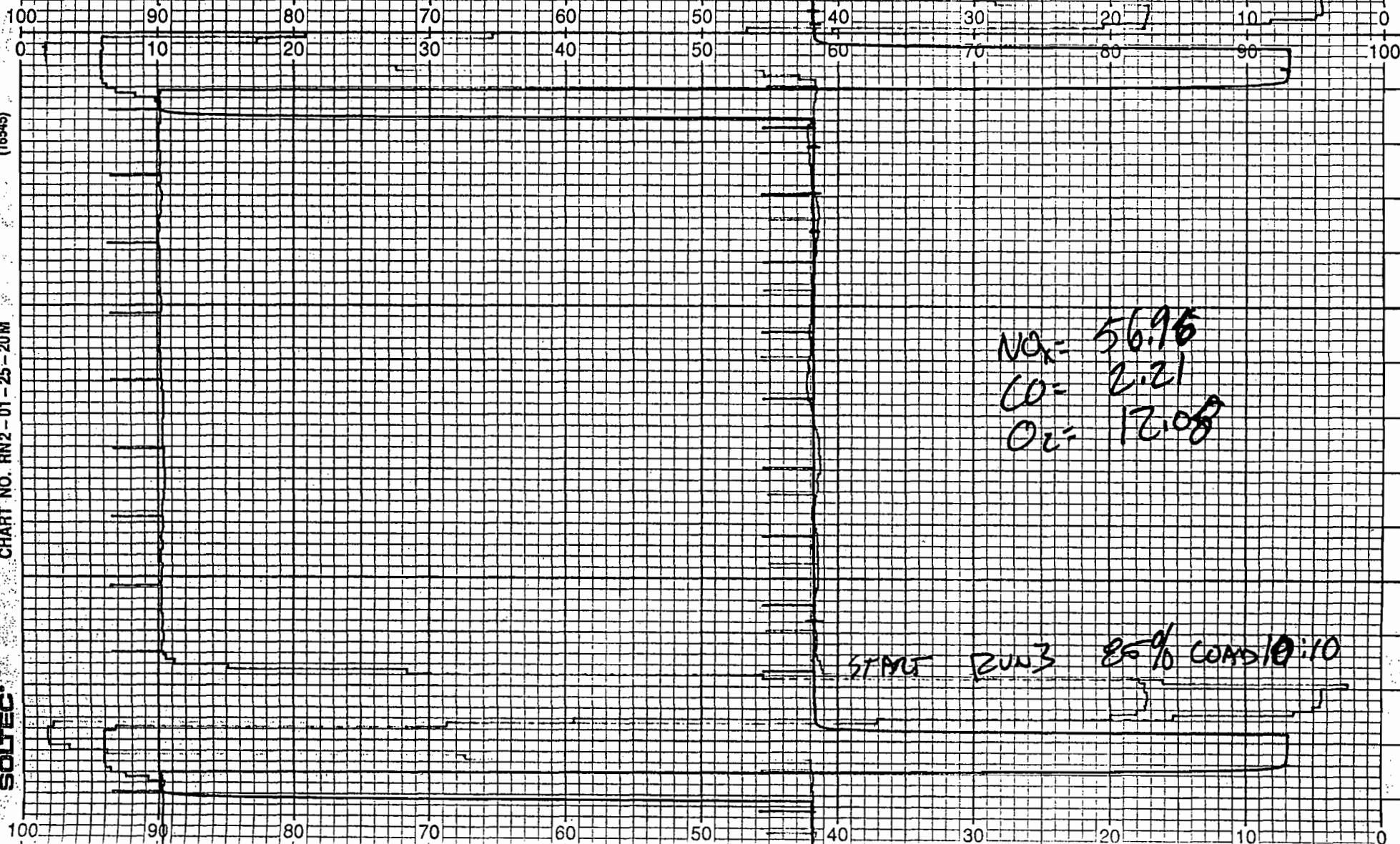
CO = 2.30

O₂ = 12.08

(15545)

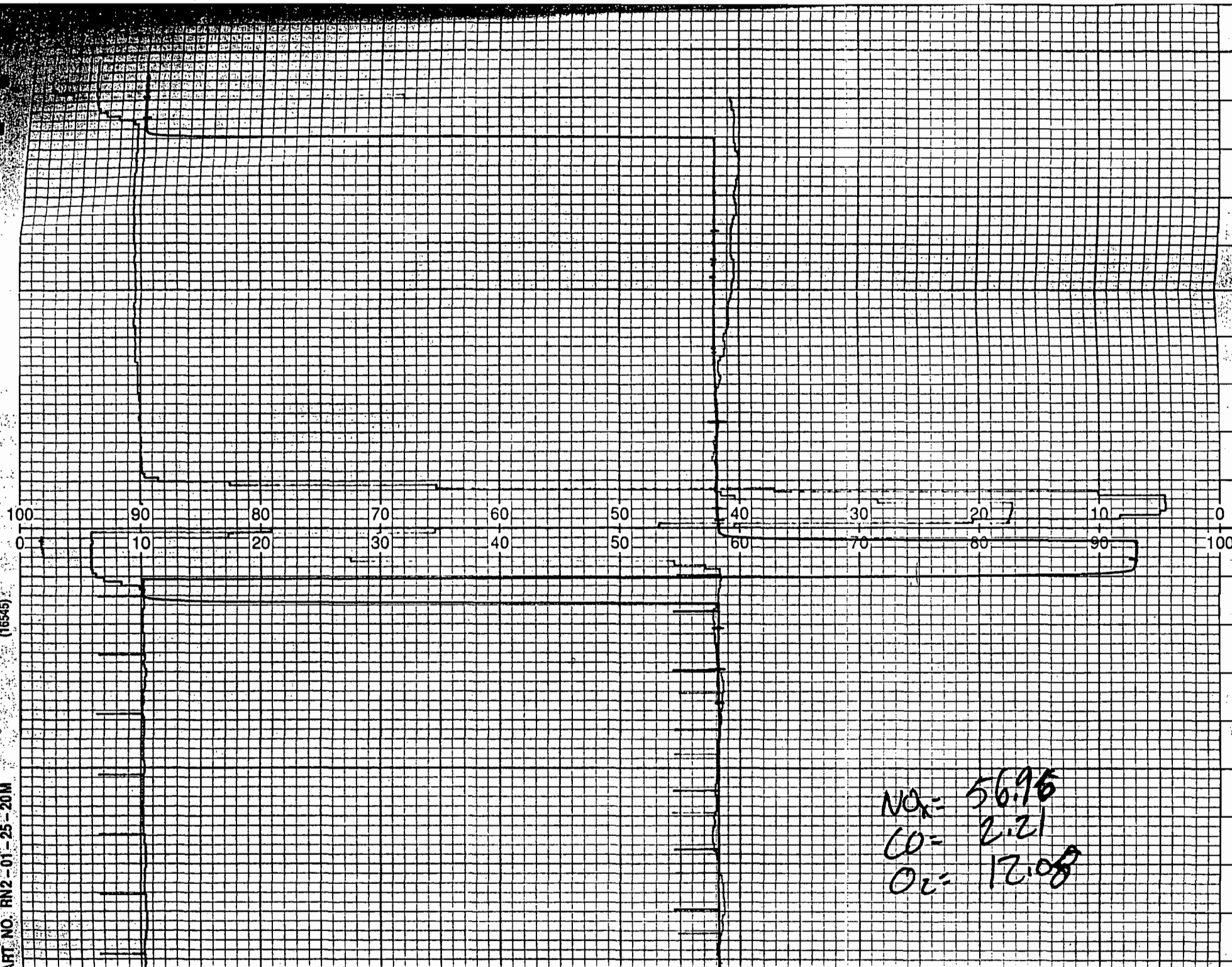
CHART NO. RN2-01-25-20M

SOLTEC



(16545)

LFT NO RN2-01-25-20M



3251 K

100 90 80 70 60 50 40 30 20 10 0

START 50% LOAD TRANSF PORTA 11:30

UNIT 2
OIL OZ TRANSF

9/13/00

18.01 CO₂ Bias

-6.04 CO₂

-14.91 C₁

-9.99 CO₂

-25.5 C₁

18.01 CO₂

44.91
C₁
Bias

44.91
C₁

POLK POWER STATION
9/13/00 UNIT 2

~~CO₂ 50~~
CO₂ 50
THC 50

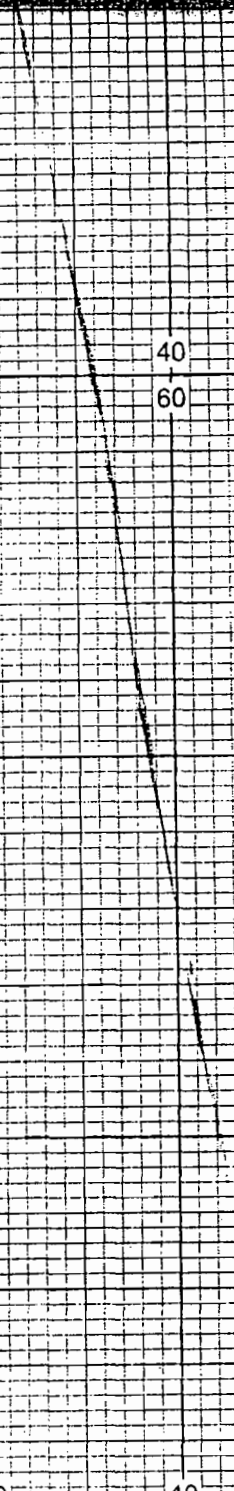
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100

(16386)

CHART NO. RN2-01-25-20M

SOLEC

100 90 80 70 60 50 40 30 20 10 0



START RUN 100% Oil @ 7:12

100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100

Oil 100% LOAD
Bowl
CO₂ = 6.47
+ HC = 0
CO₂ = 6.46
0

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COE = 0
THC = 0

100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100

18:23 START RUNZ 100%

9/13/00 UNITZ POLK FACILITY

(16545)

CHART NO. RN2-01-25-20M

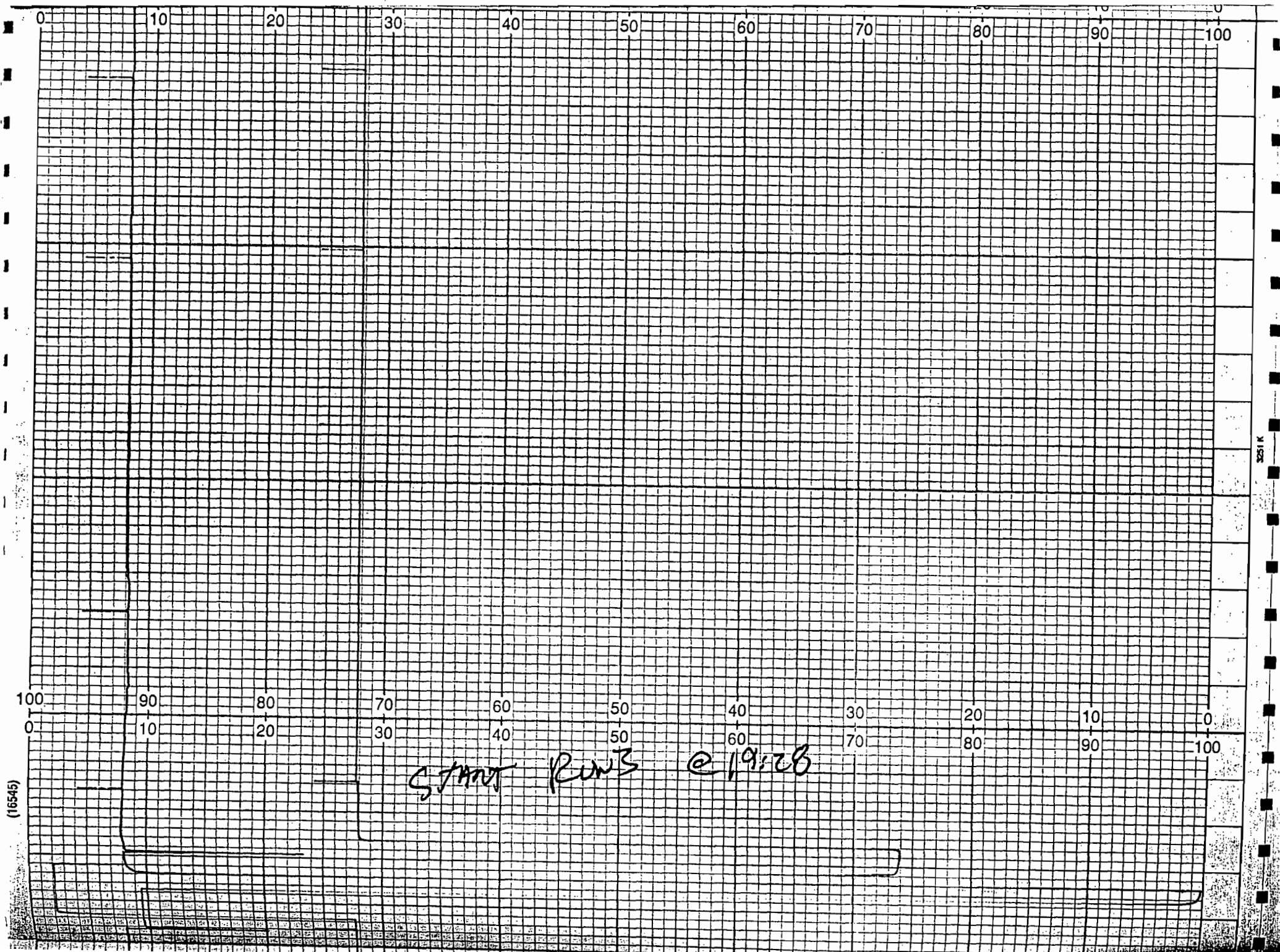
100	90	80	70	60	50	40	30	20	10	0
0	10	20	30	40	50	60	70	80	90	100

0:1 RUNZ 100%

COE = 647

THC = 0

(16545)



3251 K

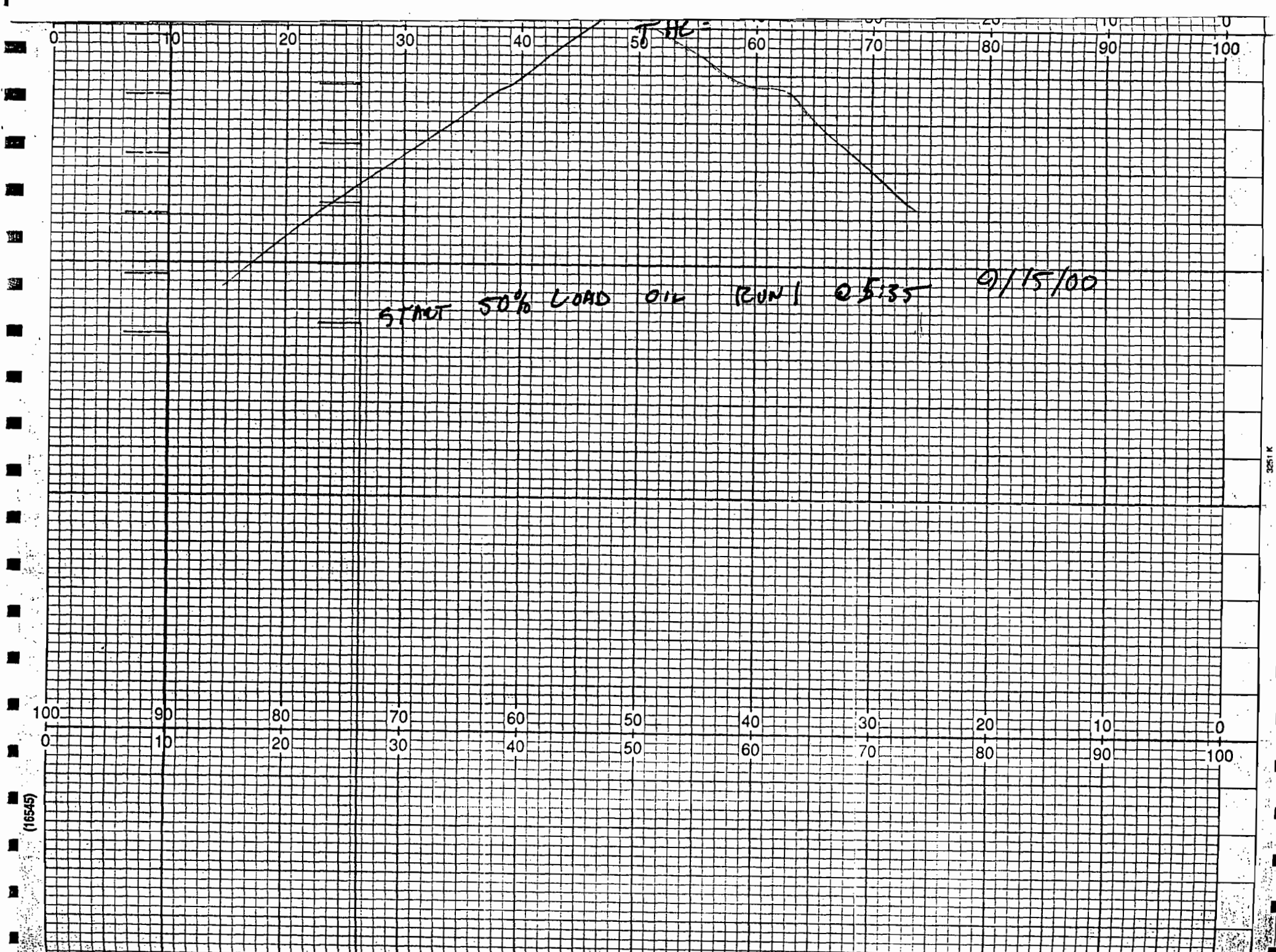
(16545)

CHART NO. RN2-01-25-20M

SOLTEC

100 90 80 70 60 50 40 30 20 10 0
0 0 20 30 40 50 60 70 80 90 100

Run 3 (100% O.)
CO₂ = 6.47
THC = 0



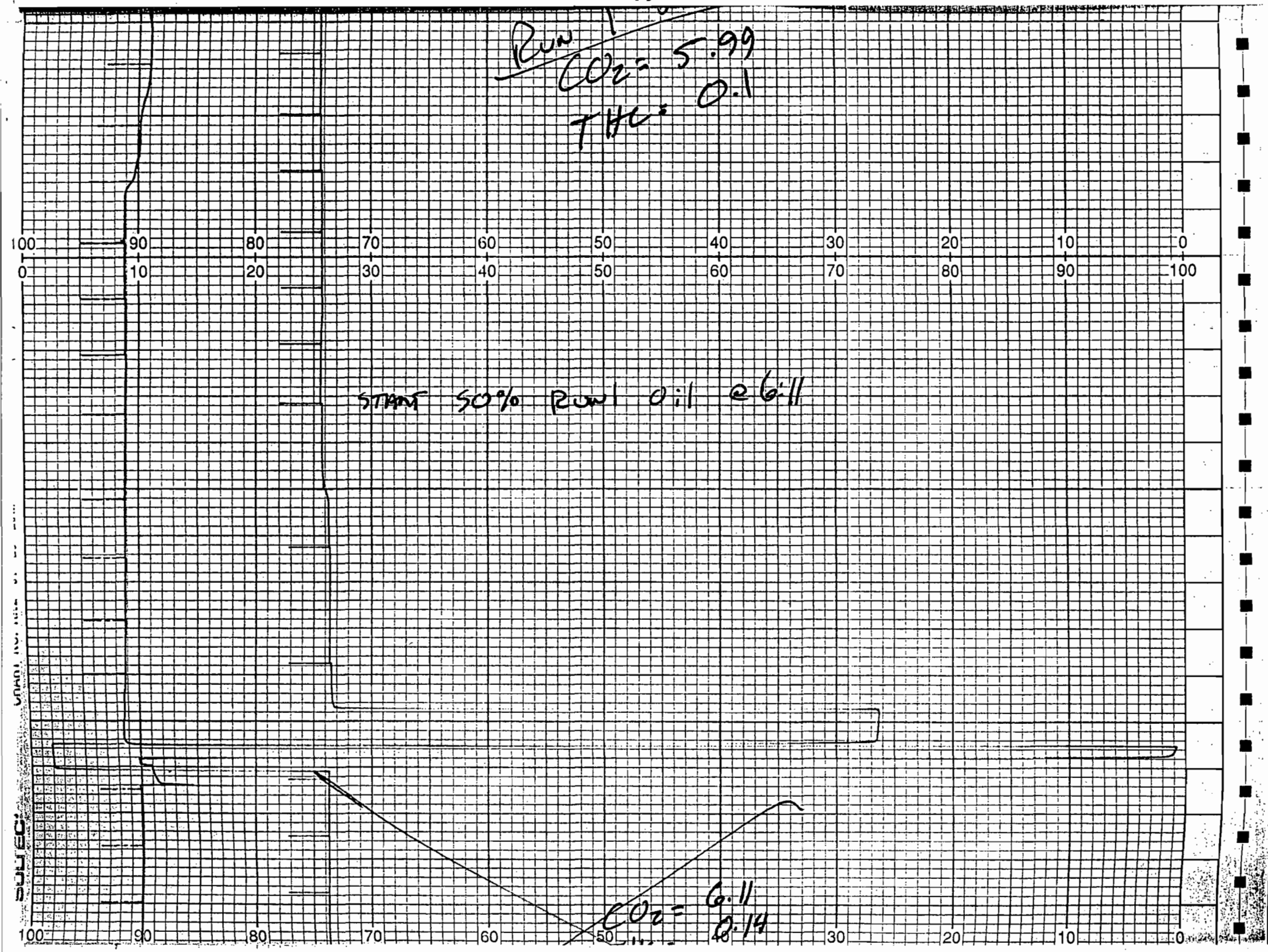
(16545)

3251 K

Run 1
 $CO_2 = 5.99$
 $THC = 0.1$

START 50% Run 1 oil @ 6:11

$CO_2 = 6.11$
 $THC = 0.14$



START 50% RUN3 0.1 @ 7:01

Run 2 50% 0.1
 $CPZ = 6.00$
 $THZ = 0.1$

START 50% RUN2 0.1 @ 6:36

50% 0.1

START 70% Run @ 7144

Run 3 50% 0.1

CO₂ = 6.00

THC = 0.01

Run 2 @ 70% O₂
CO₂ = 6.33
THC = 0.1

START RUN 2 70% O₂

Run 1 @ 70% O₂
CO₂ = 6.31
THC = 0.1

100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100

Run 3 @ 70% 0.1
CO₂ = 6.32
THC = 0.1

START Run 3 70% 8:34

Run 85% Oil

CO₂ = 6.45

THC = 0.1

START Run 85% Cond 9:20

100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100

(16545)

(16545)

CHART NO. RN2-01-25-20M

SOLTEC

$CO_2 = 6.4\%$

$THC = 0.1$

START Run 3 85% Low 10:10

Run 2 85% Low

$CO_2 = 6.4\%$

$THC = 0.1$

APPENDIX G:
OPACITY OBSERVATIONS

EPA Method Used: (Circle One)
 Method 9 Method 22 Other:

Company Name Polk CNTY Electric/Tampa Electric
 Facility Name Polk CNTY Power Station
 Street Address 9995 State Rd 37 South
 City Mulberry State FL Zip 33860

Process Turbine Unit# 02 Operating Mode 100% load
 Control Equipment # Steam/Water injection Operating Mode Full

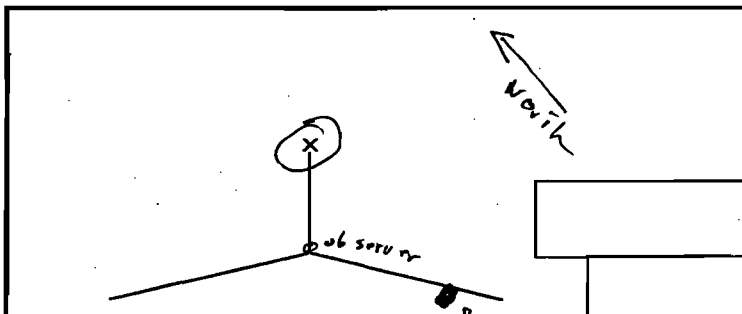
Describe Emiss. Pt. Turbine Stack, circular

Height of Emiss. Pt. Start ~150' End Same Hgt of Emiss. Pt. Rel. to Observer Start ~150' End Same
 Distance to Emiss. Pt. Start ~400' End Same Direction to Emiss. Pt. (Degrees) Start 45° End Same

Vertical Angle to Obs. Pt. Start 30° End Same Direction to Obs. Pt. (Degrees) Start 30° End Same
 Distance and Direction to Observation Point from Emission Point Start 10 FT up End Same

Describe Emissions Start None End Same
 Emission Color Start N/A End None Water Droplet Plume Attached None Detached None

Describe Plume Background Start partly cloudy 7/6 End Same
 Background Color Start blue End Same Sky Conditions Start partly cloudy End Same
 Wind Speed Start 0-5 mph End Same Wind Direction Start Variable End Same
 Ambient Temp. Start 90° End Same Wet Bulb Temp. 79° R.H. %



Form # 0 I L 0 1 Page 1 of 1
 Continued on VEO Form Number

Observation Date			Time Zone		Start Time			Stop Time	
9/13/00			EST		5:15pm			6:25	
Min/Sec	0	15	30	45	Min/Sec	0	15	30	45
1	0	0	0	0	31	0	0	0	0
2	0	0	0	0	32	0	0	0	0
3	0	0	0	0	33	0	0	0	0
4	0	0	0	0	34	0	0	0	0
5	0	0	0	0	35	0	0	0	0
6	0	0	0	0	36	0	0	0	0
7	0	0	0	0	37	0	0	0	0
8	0	0	0	0	38	0	0	0	0
9	0	0	0	0	39	0	0	0	0
10	0	0	0	0	40	0	0	0	0
11	0	0	0	0	41	0	0	0	0
12	0	0	0	0	42	0	0	0	0
13	0	0	0	0	43	0	0	0	0
14	0	0	0	0	44	0	0	0	0
15	0	0	0	0	45	0	0	0	0
16	0	0	0	0	46	0	0	0	0
17	0	0	0	0	47	0	0	0	0
18	0	0	0	0	48	0	0	0	0
19	0	0	0	0	49	0	0	0	0
20	0	0	0	0	50	0	0	0	0
21	0	0	0	0	51	0	0	0	0
22	0	0	0	0	52	0	0	0	0
23	0	0	0	0	53	0	0	0	0
24	0	0	0	0	54	0	0	0	0
25	0	0	0	0	55	0	0	0	0
26	0	0	0	0	56	0	0	0	0
27	0	0	0	0	57	0	0	0	0
28	0	0	0	0	58	0	0	0	0
29	0	0	0	0	59	0	0	0	0
30	0	0	0	0	60	0	0	0	0

Observer's Name Jeremiah Jarrell
 Observer's Signature [Signature] Date 9/13/00
 Organization Cubix Corp
 Certified By TNRCC Date 9/00

Additional Information

EPA Method Used: (Circle One)
 Method 3 Method 22 Other:

Company Name Polk City Electric / Tampa Electric
 Facility Name Polk City Power Station
 Street Address 9995 State R2 37 South
 City Mulberry State FL Zip 33860

Process Turbine Unit# 02 Operating Mode 100% load
 Control Equipment Water injection oil Full

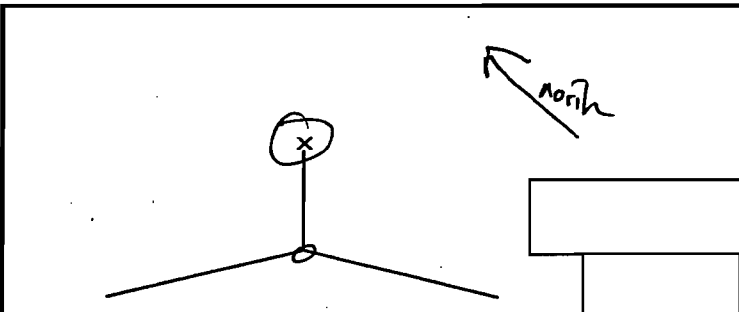
Describe Emiss. Pt. Circular Turbine Stack

Height of Emiss. Pt. Start ~150 End same Hgt of Emiss. Pt. Rel. to Observer Start 750 End same
 Distance to Emiss. Pt. Start ~400 End same Direction to Emiss. Pt. (Degrees) Start 45° End same

Vertical Angle to Obs. Pt. Start ~30° End same Direction to Obs. Pt. (Degrees) Start 45° End same
 Distance and Direction to Observation Point from Emission Point Start 10 ft up End same

Describe Emissions Start None End same
 Emission Color Start N/A End same Water Droplet Plume Attached None Detached None

Describe Plume Background Start partly cloudy sky End same
 Background Color Start blue End same Sky Conditions Start partly cloudy End same
 Wind Speed Start 5-10 mph End same Wind Direction Start Variable End same
 Ambient Temp. Start 90° End same Wet Bulb Temp. 79° R.H. %



Form # 0 I L 02 Page 1 Of 1
 Continued on VEO Form Number

Observation Date					Time Zone					Start Time					Stop Time				
9/13/00					EST					6:35					7:40				
Min/Sec	0	15	30	45	Min/Sec	0	15	30	45	Min/Sec	0	15	30	45	Min/Sec	0	15	30	45
1	0	0	0	0	31	0	0	0	0	31	0	0	0	0	1	0	0	0	0
2	0	0	0	0	32	0	0	0	0	32	0	0	0	0	2	0	0	0	0
3	0	0	0	0	33	0	0	0	0	33	0	0	0	0	3	0	0	0	0
4	0	0	0	0	34	0	0	0	0	34	0	0	0	0	4	0	0	0	0
5	0	0	0	0	35	0	0	0	0	35	0	0	0	0	5	0	0	0	0
6	0	0	0	0	36	0	0	0	0	36	0	0	0	0	6	0	0	0	0
7	0	0	0	0	37	0	0	0	0	37	0	0	0	0	7	0	0	0	0
8	0	0	0	0	38	0	0	0	0	38	0	0	0	0	8	0	0	0	0
9	0	0	0	0	39	0	0	0	0	39	0	0	0	0	9	0	0	0	0
10	0	0	0	0	40	0	0	0	0	40	0	0	0	0	10	0	0	0	0
11	0	0	0	0	41	0	0	0	0	41	0	0	0	0	11	0	0	0	0
12	0	0	0	0	42	0	0	0	0	42	0	0	0	0	12	0	0	0	0
13	0	0	0	0	43	0	0	0	0	43	0	0	0	0	13	0	0	0	0
14	0	0	0	0	44	0	0	0	0	44	0	0	0	0	14	0	0	0	0
15	0	0	0	0	45	0	0	0	0	45	0	0	0	0	15	0	0	0	0
16	0	0	0	0	46	0	0	0	0	46	0	0	0	0	16	0	0	0	0
17	0	0	0	0	47	0	0	0	0	47	0	0	0	0	17	0	0	0	0
18	0	0	0	0	48	0	0	0	0	48	0	0	0	0	18	0	0	0	0
19	0	0	0	0	49	0	0	0	0	49	0	0	0	0	19	0	0	0	0
20	0	0	0	0	50	0	0	0	0	50	0	0	0	0	20	0	0	0	0
21	0	0	0	0	51	0	0	0	0	51	0	0	0	0	21	0	0	0	0
22	0	0	0	0	52	0	0	0	0	52	0	0	0	0	22	0	0	0	0
23	0	0	0	0	53	0	0	0	0	53	0	0	0	0	23	0	0	0	0
24	0	0	0	0	54	0	0	0	0	54	0	0	0	0	24	0	0	0	0
25	0	0	0	0	55	0	0	0	0	55	0	0	0	0	25	0	0	0	0
26	0	0	0	0	56	0	0	0	0	56	0	0	0	0	26	0	0	0	0
27	0	0	0	0	57	0	0	0	0	57	0	0	0	0	27	0	0	0	0
28	0	0	0	0	58	0	0	0	0	58	0	0	0	0	28	0	0	0	0
29	0	0	0	0	59	0	0	0	0	59	0	0	0	0	29	0	0	0	0
30	0	0	0	0	60	0	0	0	0	60	0	0	0	0	30	0	0	0	0

Observer's Name Jeremiah Jervell
 Observer's Signature [Signature] Date 9/13/00
 Organization Cubix Corp.
 Certified By TNRCC Date 4/00

Additional Information

EPA Method Used: (Circle One)
 Method 9 Method 22 Other:

Company Name
 Polk City Electric/Tampa Elec.
 Facility Name
 Polk City Power Station
 Street Address
 7225 State Rd 37 South
 City mulberry State FL Zip 33860

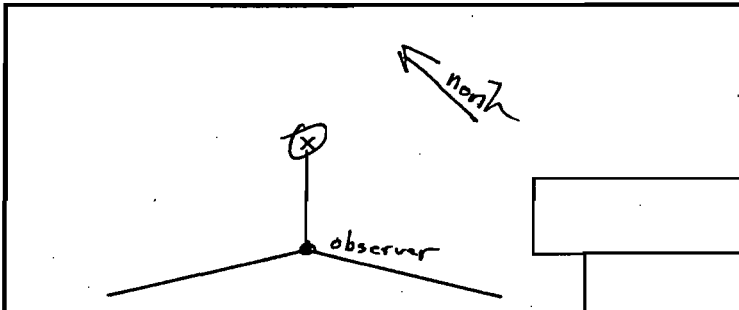
Process Turbine Unit# 02 Operating Mode Full Load 2
 Control Equipment Water Injection Oil Operating Mode Full

Describe Emiss. Pt.
 Circular Turbine Stack
 Height of Emiss. Pt. Start ~150' End same Hgt of Emiss. Pt. Rel. to Observer Start ~150' End same
 Distance to Emiss. Pt. Start ~400' End same Direction to Emiss. Pt. (Degrees) Start 45° End same

Vertical Angle to Obs. Pt. Start 30° End same Direction to Obs. Pt. (Degrees) Start 45° End same
 Distance and Direction to Observation Point from Emission Point Start 10 ft up End same

Describe Emissions
 Start None End same
 Emission Color N/A End Water Droplet Plume Attached Detached None

Describe Plume Background
 Start clear sky End same
 Background Color Blue End same Sky Conditions Start Few clouds End same
 Wind Speed Start 5-10 mph End same Wind Direction Start Variable End same
 Ambient Temp. Start 88 End same Wet Bulb Temp. 79 R.H. %



Form # 0 1 2 0 3 Page 1 of 1
 Continued on VEO Form Number

Observation Date 9/13/00					Time Zone EST					Start Time 7:45					Stop Time 8:40				
Min/Sec	0	15	30	45	Min/Sec	0	15	30	45	Min/Sec	0	15	30	45	Min/Sec	0	15	30	45
1	0	0	0	0	31	0	0	0	0	31	0	0	0	0	31	0	0	0	0
2	0	0	0	0	32	0	0	0	0	32	0	0	0	0	32	0	0	0	0
3	0	0	0	0	33	0	0	0	0	33	0	0	0	0	33	0	0	0	0
4	0	0	0	0	34	0	0	0	0	34	0	0	0	0	34	0	0	0	0
5	0	0	0	0	35	0	0	0	0	35	0	0	0	0	35	0	0	0	0
6	0	0	0	0	36	0	0	0	0	36	0	0	0	0	36	0	0	0	0
7	0	0	0	0	37	0	0	0	0	37	0	0	0	0	37	0	0	0	0
8	0	0	0	0	38	0	0	0	0	38	0	0	0	0	38	0	0	0	0
9	0	0	0	0	39	0	0	0	0	39	0	0	0	0	39	0	0	0	0
10	0	0	0	0	40	0	0	0	0	40	0	0	0	0	40	0	0	0	0
11	0	0	0	0	41	0	0	0	0	41	0	0	0	0	41	0	0	0	0
12	0	0	0	0	42	0	0	0	0	42	0	0	0	0	42	0	0	0	0
13	0	0	0	0	43	0	0	0	0	43	0	0	0	0	43	0	0	0	0
14	0	0	0	0	44	0	0	0	0	44	0	0	0	0	44	0	0	0	0
15	0	0	0	0	45	0	0	0	0	45	0	0	0	0	45	0	0	0	0
16	0	0	0	0	46	0	0	0	0	46	0	0	0	0	46	0	0	0	0
17	0	0	0	0	47	0	0	0	0	47	0	0	0	0	47	0	0	0	0
18	0	0	0	0	48	0	0	0	0	48	0	0	0	0	48	0	0	0	0
19	0	0	0	0	49	0	0	0	0	49	0	0	0	0	49	0	0	0	0
20	0	0	0	0	50	0	0	0	0	50	0	0	0	0	50	0	0	0	0
21	0	0	0	0	51	0	0	0	0	51	0	0	0	0	51	0	0	0	0
22	0	0	0	0	52	0	0	0	0	52	0	0	0	0	52	0	0	0	0
23	0	0	0	0	53	0	0	0	0	53	0	0	0	0	53	0	0	0	0
24	0	0	0	0	54	0	0	0	0	54	0	0	0	0	54	0	0	0	0
25	0	0	0	0	55	0	0	0	0	55	0	0	0	0	55	0	0	0	0
26	0	0	0	0	56	0	0	0	0	56	0	0	0	0	56	0	0	0	0
27	0	0	0	0	57	0	0	0	0	57	0	0	0	0	57	0	0	0	0
28	0	0	0	0	58	0	0	0	0	58	0	0	0	0	58	0	0	0	0
29	0	0	0	0	59	0	0	0	0	59	0	0	0	0	59	0	0	0	0
30	0	0	0	0	60	0	0	0	0	60	0	0	0	0	60	0	0	0	0

Observer's Name Jeramiah Jarrell
 Observer Signature [Signature] Date 9/13/00
 Organization Cubix Corp
 Certified By TNRCC Date 4/00

Additional Information

APPENDIX H:
OPERATIONAL DATA

	Generator Output	Mean	Turbine	Fuel Oil	Compressor	Compressor Inlet	Compressor	Inlet Guide	Vane	Water Injection	Water	Fuel	Specific Humidity	Barometric	Air Inlet	Duct
	MW	Exhaust Temp °F	Flow	Lbs/sec	Discharge Temp °F	Temperature °F	Discharge Press	Angle	Dea	Rate	Ratio	lbs water/ lbs air	Pressure	Hq	Losses	H.O
	9/15/2000															
Tag #	2PWRJ1900	2TMET1934	2FOYFI900	2TMST1920B	2TMST1922M	2TMSP1916	2PWRZ1904	2TMSFI914				2TMDM1915	2TMSP1909	2TMSPD1912		
Start Time	9/15/00 6:11 AM	9/15/00 6:11 AM	9/15/00 6:11 AM	9/15/00 6:11 AM	9/15/00 6:11 AM	9/15/00 6:11 AM	9/15/00 6:11 AM	9/15/00 6:11 AM	9/15/00 6:11 AM	9/15/00 6:11 AM	9/15/00 6:11 AM	9/15/00 6:11 AM	9/15/00 6:11 AM	9/15/00 6:11 AM	9/15/00 6:11 AM	9/15/00 6:11 AM
End Time	9/15/00 6:31 AM	9/15/00 6:31 AM	9/15/00 6:31 AM	9/15/00 6:31 AM	9/15/00 6:31 AM	9/15/00 6:31 AM	9/15/00 6:31 AM	9/15/00 6:31 AM	9/15/00 6:31 AM	9/15/00 6:31 AM	9/15/00 6:31 AM	9/15/00 6:31 AM	9/15/00 6:31 AM	9/15/00 6:31 AM	9/15/00 6:31 AM	9/15/00 6:31 AM
	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min
15-Sep-00 06:11:00	79.28125	1198.512451		13.54400539	672.3125	100.7079468	125.5237656	48.64352796	17.93491745	1.324195977	Tag not found: -5	29.61144257	1.97155869			
15-Sep-00 06:12:00	80.66405945	1198.375		13.53060246	673.4545288	100.4275665	126.2103882	48.65221024	17.9347477	1.325495133	Tag not found: -5	29.61150742	1.970351219			
15-Sep-00 06:13:00	81.289505	1199.634155		13.51720047	674.1363525	100.25	126.8970108	48.66089249	17.93457794	1.326796771	Tag not found: -5	29.61157227	1.969143867			
15-Sep-00 06:14:00	81.05955505	1200.201904		13.50378753	673.9626465	100.25	126.9136581	48.66957474	17.93440619	1.326101088	Tag not found: -5	29.61163712	1.967936397			
15-Sep-00 06:15:00	80.785625	1200.310425		13.49039459	673.75	100.1176453	128.8120804	48.67825699	17.93423843	1.329407896	Tag not found: -5	29.61170387	1.966729045			
15-Sep-00 06:16:00	80.45726776	1200.035278		13.47699165	673.75	100.6301651	126.710495	48.68693924	17.93406868	1.330717503	Tag not found: -5	29.61176872	1.965521893			
15-Sep-00 06:17:00	80.78222856	1200.167603		13.46358967	673.75	100.3822327	126.6089172	48.69562149	17.93389893	1.332029523	Tag not found: -5	29.61183357	1.964314222			
15-Sep-00 06:18:00	80.69921875	1199.641113		13.45018673	673.75	100.25	126.5073395	48.70430374	17.93373108	1.333344394	Tag not found: -5	29.61189842	1.983106871			
15-Sep-00 06:19:00	80.468875	1199.483643		13.43678379	673.75	100.25	126.4057541	48.71298599	17.93356133	1.334661747	Tag not found: -5	29.61196327	1.961899519			
15-Sep-00 06:20:00	80.63541412	1199.55127		13.4255228	673.75	100.25	128.3041763	48.72166824	17.93339157	1.335768583	Tag not found: -5	29.61202612	1.960692048			
15-Sep-00 06:21:00	80.7265625	1199.818774		13.47637177	673.5144043	100.25	126.2025986	48.73035049	17.93322182	1.330715873	Tag not found: -5	29.61209297	1.959484696			
15-Sep-00 06:22:00	80.3046875	1199.686401		13.52722073	673.25	100.25	126.1010132	48.73903275	17.93305206	1.325701149	Tag not found: -5	29.61215973	1.958277225			
15-Sep-00 06:23:00	79.86399841	1199.881816		13.57806873	673.25	100.5914612	125.9994354	48.747715	17.93288231	1.320724078	Tag not found: -5	29.61222458	1.957069874			
15-Sep-00 06:24:00	79.546875	1199.822388		13.62891769	673.25	100.75	125.8978577	48.75639725	17.93271255	1.315784053	Tag not found: -5	29.61228943	1.955862522			
15-Sep-00 06:25:00	80.29771423	1199.918579		13.6797657	673.25	100.9375	125.7962723	48.7650795	17.9325428	1.310808843	Tag not found: -5	29.61235428	1.954655051			
15-Sep-00 06:26:00	80.14316559	1200.060181		13.71444988	673.1833496	100.75	125.6946945	48.77376175	17.93237495	1.307553355	Tag not found: -5	29.61241913	1.9534477			
15-Sep-00 06:27:00	80.10958862	1200.20166		13.69602203	672.9611206	100.75	125.5931168	48.78244781	17.9322052	1.309300259	Tag not found: -5	29.61248398	1.952240348			
15-Sep-00 06:28:00	79.52807617	1200.414083		13.87759418	672.212875	100.75	125.5229797	48.79113007	17.93203545	1.31051871	Tag not found: -5	29.61254883	1.951032877			
15-Sep-00 06:29:00	78.59375	1199.918213		13.65916729	672.1875	100.75	125.7987137	48.79981232	17.93186589	1.312808117	Tag not found: -5	29.61261368	1.949825525			
15-Sep-00 06:30:00	79.3340683	1199.345337		13.64073944	672.4171143	100.75	126.0744476	48.80849457	17.93169594	1.3145692	Tag not found: -5	29.61268044	1.948618054			
15-Sep-00 06:31:00	80.12631989	1199.851074		13.62231159	671.6875	100.75	126.3501818	48.81717682	17.93152818	1.316335048	Tag not found: -5	29.61274529	1.947410703			
Average	80.23227038	1199.743387		13.55903353	673.2159889	100.5140246	126.1868998	48.7303514	17.93322173	1.322663931	#DIV/0!	29.6120937	1.959484674			

	Generator Output	Mean	Turbine	Fuel Oil	Compressor	Compressor Inlet	Compressor	Inlet Guide	Vane	Water Injection	Water	Fuel	Specific Humidity	Barometric	Air Inlet	Duct
	MW	Exhaust Temp °F	Flow	Lbs/sec	Discharge Temp °F	Temperature °F	Discharge Press	Angle	Dea	Rate	Ratio	lbs water/ lbs air	Pressure	Hq	Losses	H.O
	9/15/2000															
Tag #	2PWRJ1900	2TMET1934	2FOYFI900	2TMST1920B	2TMST1922M	2TMSP1916	2PWRZ1904	2TMSFI914				2TMDM1915	2TMSP1909	2TMSPD1912		
Start Time	9/15/00 8:36 AM	9/15/00 8:36 AM	9/15/00 8:36 AM	9/15/00 8:36 AM	9/15/00 8:36 AM	9/15/00 8:36 AM	9/15/00 8:36 AM	9/15/00 8:36 AM	9/15/00 8:36 AM	9/15/00 8:36 AM	9/15/00 8:36 AM	9/15/00 8:36 AM	9/15/00 8:36 AM	9/15/00 8:36 AM	9/15/00 8:36 AM	9/15/00 8:36 AM
End Time	9/15/00 8:56 AM	9/15/00 8:56 AM	9/15/00 8:56 AM	9/15/00 8:56 AM	9/15/00 8:56 AM	9/15/00 8:56 AM	9/15/00 8:56 AM	9/15/00 8:56 AM	9/15/00 8:56 AM	9/15/00 8:56 AM	9/15/00 8:56 AM	9/15/00 8:56 AM	9/15/00 8:56 AM	9/15/00 8:56 AM	9/15/00 8:56 AM	9/15/00 8:56 AM
	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min
15-Sep-00 08:36:00	80.29458618	1200.096191		13.53017235	673.2870483	100.5909119	126.3819189	48.88058807	17.93067832	1.325236579	Tag not found: -5	29.61308953	1.941373706			
15-Sep-00 08:37:00	80.94458008	1200.158813		13.5117445	673.25	100.3486862	126.3700562	48.86927032	17.93050957	1.327031426	Tag not found: -5	29.61313629	1.940166354			
15-Sep-00 08:38:00	80.57630157	1200.221558		13.49331685	673.25	100.546051	126.3581848	48.87795258	17.93033981	1.328831175	Tag not found: -5	29.61320114	1.938958883			
15-Sep-00 08:39:00	80.94366455	1200.284302		13.4748888	673.25	100.7434235	128.3483211	48.88663483	17.93017008	1.330635848	Tag not found: -5	29.61326599	1.937751532			
15-Sep-00 08:40:00	81.26438904	1200.518799		13.45646095	673.25	100.2807693	128.3344574	48.89531706	17.93000031	1.33244546	Tag not found: -5	29.61333084	1.93654418			
15-Sep-00 08:41:00	80.328125	1200.638428		13.4380331	673.25	100.7423096	126.3225861	48.90399933	17.92983246	1.334260179	Tag not found: -5	29.61339569	1.935336709			
15-Sep-00 08:42:00	81.16858673	1199.949341		13.41960526	673.25	100.5596771	126.3107224	48.91288158	17.9296627	1.33607974	Tag not found: -5	29.61346054	1.934129357			
15-Sep-00 08:43:00	80.21875	1199.87688		13.40117741	673.25	100.366127	126.298851	48.92136383	17.92949295	1.337904305	Tag not found: -5	29.61352539	1.932922006			
15-Sep-00 08:44:00	80.9026413	1199.657593		13.38032722	672.75	100.25	126.2869873	48.93004608	17.9293232	1.339976437	Tag not found: -5	29.61359215	1.931714535			
15-Sep-00 08:45:00	80.68629456	1199.638184		13.35735798	672.7098389	100.25	126.275116	48.93872833	17.92915344	1.342267945	Tag not found: -5	29.613657	1.930507183			
15-Sep-00 08:46:00	80.875	1199.660542		13.33438873	672.75	100.25	126.2632523	48.94741058	17.92898369	1.344567347	Tag not found: -5	29.61372185	1.929299712			
15-Sep-00 08:47:00	80.53646088	1199.655713		13.31141853	672.75	100.1768281	126.2513809	48.95609283	17.92881393	1.346874782	Tag not found: -5	29.6137867	1.92809236			
15-Sep-00 08:48:00	80.3859787	1199.952026		13.28844929	673.1906738	99.7529068	126.2395172	48.96477509	17.92884418	1.349190097	Tag not found: -5	29.61385155	1.926885009			
15-Sep-00 08:49:00	80.5	1199.979128		13.26548004	672.75	100.25	126.2278535	48.97345734	17.92847633	1.351513573	Tag not found: -5	29.6139164	1.925677538			
15-Sep-00 08:50:00	80.55952454	1199.992188		13.24250984	672.75	100.25	126.2157822	48.98213959	17.92830658	1.353845064	Tag not found: -5	29.61398125	1.924470188			
15-Sep-00 08:51:00	80.61904907	1200.049683		13.2195408	672.916687	100.25	126.2039185	48.99082184	17.92813683	1.356184558	Tag not found: -5	29.614048	1.923262835			
15-Sep-00 08:52:00	80.13038635	1200.259888		13.1965704	673.25	100.3080521	126.1920471	48.9995079	17.92796707	1.358532295	Tag not found: -5	29.61411285	1.922055384			
15-Sep-00 08:53:00	80.01171875	1200.380005		13.28171921	673.25	100.4204102	126.1801834	49.00819018	17.92779732	1.349809994	Tag not found: -5	29.6141777	1.920848012			
15-Sep-00 08:54:00	79.91459656	1200.469971		13.42622852	673.25	100.5327682	126.1683121	49.01687241	17.92762756	1.35269062	Tag not found: -5	29.61424255	1.919640541			
15-Sep-00 08:55:00	80.06406403	1200.4375		13.43843555	673.7285767	100.645134	126.1564484	49.02555466	17.92745781	1.334043515	Tag not found: -5	29.6143074	1.918433189			
15-Sep-00 08:56:00	80.13326263	1200.329834		13.45141029	673.5142822	100.75	126.144577	49.03423691	17.92728806	1.332744126	Tag not found: -5	29.61437258	1.917225838			
Average	80.52856955	1200.106027		13.37710644	673.1236718	100.3935169	126.2632512	48.94741149	17.92898396	1.340344929	#DIV/0!	29.6137215	1.929299763			

	Generator Output	Mean	Turbine	Fuel Oil	Compressor	Compressor Inlet	Compressor	Inlet Guide	Vane	Water Injection	Water	Fuel	Specific Humidity	Barometric	Air Inlet	Duct
	MW	Exhaust Temp °F	Flow	Lbs/sec	Discharge Temp °F	Temperature °F	Discharge Press Psia	Angle	Dea	Rate lbs/sec	Ratio	lbs water/ lbs air	Pressure	Hq	Losses	H.O
9/15/2000																
Tag #	2PWRJ1900	2TMETI934	2FOYFI900	2TMSTI920B	2TMSTI922M	2TMSP1916	2PWRZI904	2TMSFI914				2TMDMI915	2TMSP1909		2TMSPDI912	
Start Time	9/15/00 7:01 AM	9/15/00 7:01 AM	9/15/00 7:01 AM	9/15/00 7:01 AM	9/15/00 7:01 AM	9/15/00 7:01 AM	9/15/00 7:01 AM	9/15/00 7:01 AM	9/15/00 7:01 AM	9/15/00 7:01 AM	9/15/00 7:01 AM	9/15/00 7:01 AM	9/15/00 7:01 AM	9/15/00 7:01 AM	9/15/00 7:01 AM	9/15/00 7:01 AM
End Time	9/15/00 7:21 AM	9/15/00 7:21 AM	9/15/00 7:21 AM	9/15/00 7:21 AM	9/15/00 7:21 AM	9/15/00 7:21 AM	9/15/00 7:21 AM	9/15/00 7:21 AM	9/15/00 7:21 AM	9/15/00 7:21 AM	9/15/00 7:21 AM	9/15/00 7:21 AM	9/15/00 7:21 AM	9/15/00 7:21 AM	9/15/00 7:21 AM	9/15/00 7:21 AM
	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min
15-Sep-00 07:01:00	79.34163668	1200.657837	13.54532337	873.1278076	100.75	125.7827988	49.07764816	17.92844119		1.323441361	Tag not found: -5	29.61469841		1.911188841		
15-Sep-00 07:02:00	78.9108963	1200.192871	13.58410599	872.8189697	100.75	125.1179047	49.08633041	17.92627144		1.321596238	Tag not found: -5	29.61476328		1.90989137		
15-Sep-00 07:03:00	80.52681896	1199.503296	13.5828886	673.75	100.75	125.3588333	49.09501286	17.92610168		1.319756217	Tag not found: -5	29.61482811		1.908774018		
15-Sep-00 07:04:00	79.72016907	1200.092163	13.60167122	673.7949219	101.3125	125.6821136	49.10369492	17.92593193		1.317921279	Tag not found: -5	29.61489296		1.907566667		

15-Sep-00 07:05:00	80.57421875	1200.130493	13.62045383	673.8847048	101.3125	126.0053884	49.11237717	17.92576408	1.316091542	Tag not found: -5	29.61495972	1.906359196
15-Sep-00 07:06:00	80.23567963	1199.750732	13.62116721	673.9745483	100.515625	126.3067845	49.12105942	17.92559433	1.31600822	Tag not found: -5	29.61502457	1.905151844
15-Sep-00 07:07:00	80.87812805	1199.626587	13.60715389	674.0643921	101.0106735	126.2345278	49.12974167	17.92542458	1.317352969	Tag not found: -5	29.61508942	1.903944492
15-Sep-00 07:08:00	80.69062805	1199.553589	13.59311962	674.1541748	100.75	126.1602707	49.13842392	17.92525482	1.318700587	Tag not found: -5	29.61515427	1.902737021
15-Sep-00 07:09:00	80.74887195	1199.804126	13.5790863	674.2440186	101.2466049	126.0860138	49.14710617	17.92508507	1.320050898	Tag not found: -5	29.61521912	1.90152967
15-Sep-00 07:10:00	80.58853912	1200.140625	13.56505203	673.4014893	100.7524261	126.0117589	49.15578842	17.92491531	1.321404096	Tag not found: -5	29.61528397	1.900322318
15-Sep-00 07:11:00	80.765625	1200.549438	13.55101871	672.75	100.2582397	125.9375	49.18447067	17.92474558	1.322760003	Tag not found: -5	29.61534882	1.899114847
15-Sep-00 07:12:00	79.63570404	1200.516848	13.53698444	672.75	100.75	125.8904495	49.17315292	17.92457771	1.324118956	Tag not found: -5	29.61541557	1.897907495
15-Sep-00 07:13:00	79.41001129	1200.484253	13.52295113	672.75	100.2987823	125.843399	49.18183517	17.92440796	1.325480495	Tag not found: -5	29.61548042	1.896700025
15-Sep-00 07:14:00	79.16239929	1200.45166	13.50891685	672.630188	100.75	125.7963486	49.19051743	17.9242382	1.326844957	Tag not found: -5	29.61554527	1.895492673
15-Sep-00 07:15:00	79.23089763	1200.418823	13.49488354	671.8613892	100.75	125.7492905	49.19919968	17.92406845	1.328212163	Tag not found: -5	29.61561012	1.894285321
15-Sep-00 07:16:00	78.95491791	1200.385988	13.48084927	671.6875	100.75	125.702224	49.20788193	17.9236987	1.329582309	Tag not found: -5	29.61567497	1.89307785
15-Sep-00 07:17:00	78.90274811	1200.158569	13.46881595	671.6675	100.75	125.6551895	49.21656799	17.92123383	1.3359679	Tag not found: -5	29.61573982	1.891870499
15-Sep-00 07:18:00	79.140625	1199.94165	13.45278168	671.729187	100.75	125.608139	49.22525024	18.10678864	1.345951274	Tag not found: -5	29.61580467	1.890663147
15-Sep-00 07:19:00	78.734375	1199.795898	13.43874836	671.3649292	100.7738878	125.5610886	49.2339325	18.22234154	1.355955261	Tag not found: -5	29.61587143	1.889455676
15-Sep-00 07:20:00	78.85530853	1200.188965	13.42471409	672.1875	100.9041977	125.5140381	49.24281475	18.33789444	1.361598026	Tag not found: -5	29.61593628	1.888248324
15-Sep-00 07:21:00	78.98488817	1200.560669	13.41068077	672.1875	101.0345078	125.4669876	49.251297	18.45344734	1.376026143	Tag not found: -5	29.61600113	1.887040854
Average	79.71384212	1200.128813	13.53187556	672.8952724	100.8057117	125.7844315	49.16447158	17.99592509	1.329962054	#DIV/0!	29.61534963	1.899114864

9/15/2000																
Tag #	Generator Output	Mean	Turbine	Fuel Oil	Compressor	Compressor Inlet	Compressor	Inlet Guide	Vane	Water Injection	Water	Fuel	Specific Humidity	Barometric	Air Inlet	Duct
Start Time	MW	Exhaust Temp	°F	Flow	Lbs/sec	Discharge Temp °F	Temperature °F	Discharge Press	Psia	Angle	Dea	Rate	Ratio	lbs water/ lbs air	Pressure	Hq
End Time	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min
15-Sep-00 07:44:00	2PWRJ1900	2TMET1934	2FOYFI900	2TMST1920B	2TMST1922M	2TMSP1918	2PWRZ1904	2TMSFI914	2TMDMI915	2TMSP1909	2TMSPD1912					
15-Sep-00 07:45:00	9/15/00 7:44 AM	9/15/00 7:44 AM	9/15/00 7:44 AM	9/15/00 7:44 AM	9/15/00 7:44 AM	9/15/00 7:44 AM	9/15/00 7:44 AM	9/15/00 7:44 AM	9/15/00 7:44 AM	9/15/00 7:44 AM	9/15/00 7:44 AM	9/15/00 7:44 AM	9/15/00 7:44 AM	9/15/00 7:44 AM	9/15/00 7:44 AM	9/15/00 7:44 AM
15-Sep-00 07:46:00	9/15/00 8:04 AM	9/15/00 8:04 AM	9/15/00 8:04 AM	9/15/00 8:04 AM	9/15/00 8:04 AM	9/15/00 8:04 AM	9/15/00 8:04 AM	9/15/00 8:04 AM	9/15/00 8:04 AM	9/15/00 8:04 AM	9/15/00 8:04 AM	9/15/00 8:04 AM	9/15/00 8:04 AM	9/15/00 8:04 AM	9/15/00 8:04 AM	9/15/00 8:04 AM
15-Sep-00 07:47:00	112.4076891	1177.828125	18.31008148	690.6875	85.74177551	150.7863484	55.74423218	23.69594574	1.452840427	Tag not found: -5	29.6174984	1.859270811				
15-Sep-00 07:48:00	112.8032227	1178.576904	16.29463387	690.8772583	85.84308929	150.7988739	55.75820923	23.89429018	1.454116144	Tag not found: -5	29.61756325	1.85806334				
15-Sep-00 07:49:00	112.3946838	1178.033081	16.27918434	691.1849365	85.54441071	150.8114014	55.77219009	23.69236268	1.455394335	Tag not found: -5	29.6176281	1.856855989				
15-Sep-00 07:50:00	112.8875	1177.948853	16.26373482	691.4926147	85.44572449	150.8239288	55.78616714	23.69097519	1.456674955	Tag not found: -5	29.61769295	1.855648637				
15-Sep-00 07:51:00	112.437973	1178.5	18.26072311	691.2092285	85.34703827	150.8364718	55.80014801	23.6893177	1.456842819	Tag not found: -5	29.6177597	1.854441166				
15-Sep-00 07:52:00	112.4095612	1177.879688	16.2654438	691.2329716	85.38246155	150.848999	55.81412506	23.68766022	1.4563181	Tag not found: -5	29.61782455	1.85323814				
15-Sep-00 07:53:00	112.6650391	1177.633911	16.27016449	691.6875	85.50591278	150.8615285	55.82810593	23.68600273	1.455793686	Tag not found: -5	29.6178894	1.852026463				
15-Sep-00 07:54:00	112.5234375	1177.771729	16.27488708	691.8797607	85.62937184	150.874054	55.84208298	23.68434525	1.455269405	Tag not found: -5	29.61795425	1.850818992				
15-Sep-00 07:55:00	112.1920929	1177.898438	16.27960777	692.25	85.75283051	150.8865967	55.85606003	23.68268778	1.454745599	Tag not found: -5	29.6180191	1.84961164				
15-Sep-00 07:56:00	111.8671875	1178.326416	16.28432848	691.6875	85.8125	150.8991241	55.87004089	23.68103027	1.454222096	Tag not found: -5	29.61808395	1.848404169				
15-Sep-00 07:57:00	112.28125	1178.240845	16.28904915	692.0374756	85.8125	150.9116516	55.88401794	23.67937279	1.453686897	Tag not found: -5	29.6181468	1.847196817				
15-Sep-00 07:58:00	112.1953125	1178.283325	18.42694855	691.6875	88.70561218	150.9241791	55.89799881	23.6777153	1.441394623	Tag not found: -5	29.61821556	1.845989466				
15-Sep-00 07:59:00	112.5464172	1178.334595	18.68151093	691.6875	85.88232422	150.9367218	55.91197586	23.67605782	1.419299362	Tag not found: -5	29.61828041	1.844781895				
15-Sep-00 08:00:00	112.1076738	1178.192017	16.2215786	691.6875	85.99871063	150.9492493	55.92595673	23.67440224	1.459438864	Tag not found: -5	29.61834526	1.843574643				
15-Sep-00 08:01:00	111.8929672	1179.118042	16.58754349	691.7335815	86.11508942	150.9617767	55.93993378	23.87274475	1.427139876	Tag not found: -5	29.61841011	1.842367291				
15-Sep-00 08:02:00	112.1875	1178.279419	16.58701134	692.416687	88.2314682	150.9743042	55.95391464	23.87108727	1.427085735	Tag not found: -5	29.61847496	1.841159821				
15-Sep-00 08:03:00	111.9284821	1178.53125	16.58647919	692.486084	88.34784686	150.9868469	55.96789169	23.66942978	1.427031591	Tag not found: -5	29.61853391	1.839552469				
15-Sep-00 08:04:00	112.3203125	1179.28125	18.58594704	692.0287944	88.17550659	150.9993744	55.98187256	23.66777229	1.426977443	Tag not found: -5	29.61860468	1.838744998				
15-Sep-00 08:05:00	112.8147354	1177.848267	18.58541298	691.5567017	85.91530609	151.0133057	55.99584961	23.66611481	1.426923456	Tag not found: -5	29.61867142	1.837537646				
15-Sep-00 08:06:00	112.4149323	1177.758911	18.58488083	691.078125	85.85510559	151.0273132	56.00983047	23.88445732	1.426869301	Tag not found: -5	29.61873627	1.836330295				
15-Sep-00 08:07:00	112.6491241	1178.241089	16.58434868	691.1875	85.39489746	151.043386	56.02380753	23.66279984	1.426815143	Tag not found: -5	29.61880112	1.835122824				
Average	112.3679559	1178.252674	16.40492857	691.60832	85.81140391	150.9120658	55.88401958	23.87937342	1.443566279	#DIV/0!	29.61814962	1.847196823				

	Generator Output	Mean	Turbine	Fuel Oil	Compressor	Compressor Inlet	Compressor	Inlet Guide	Vane	Water Injection	Water	Fuel	Specific Humidity	Barometric	Air Inlet	Duct
	MW	Exhaust Temp	°F Flow	Lbs/sec	Discharge Temp °F	Temperature °F	Discharge Press	Angle	Dea	Rate lbs/sec	Ratio	lbs water/ lbs air	Pressure	Hq	Losses	H.O
9/15/2000																
Tag #	2PWRJ1900	2TMET1934	2FOYF1900	2TMST1920B	2TMST1922M	2TMSP1918	2PWRZ1904	2TMSF1914				2TMDM1915	2TMSP1909		2TMSPD1912	
Start Time	9/15/00 8:09 AM	9/15/00 8:09 AM	9/15/00 8:09 AM	9/15/00 8:09 AM	9/15/00 8:09 AM	9/15/00 8:09 AM	9/15/00 8:09 AM	9/15/00 8:09 AM	9/15/00 8:09 AM	9/15/00 8:09 AM	9/15/00 8:09 AM	9/15/00 8:09 AM	9/15/00 8:09 AM	9/15/00 8:09 AM	9/15/00 8:09 AM	9/15/00 8:09 AM
End Time	9/15/00 8:29 AM	9/15/00 8:29 AM	9/15/00 8:29 AM	9/15/00 8:29 AM	9/15/00 8:29 AM	9/15/00 8:29 AM	9/15/00 8:29 AM	9/15/00 8:29 AM	9/15/00 8:29 AM	9/15/00 8:29 AM	9/15/00 8:29 AM	9/15/00 8:29 AM	9/15/00 8:29 AM	9/15/00 8:29 AM	9/15/00 8:29 AM	9/15/00 8:29 AM
	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min
15-Sep-00 08:09:00	112.8018494	1177.1875		16.56958199	890.1875	85.27302551	151.1113739	56.09370041		23.65451241		1.427586551	Tag not found: -5		29.61912727	1.829085827
15-Sep-00 08:10:00	112.4736633	1177.625		16.52821159	889.7477417	85.15460205	151.1253967	58.10768127		23.65285683		1.431059658	Tag not found: -5		29.61919212	1.827678475
15-Sep-00 08:11:00	112.4439318	1177.8125		16.46481895	889.8821411	85.03818622	151.1394043	58.12165833		23.65119934		1.438468837	Tag not found: -5		29.61925697	1.826871124
15-Sep-00 08:12:00	112.4326537	1177.229128		18.40142822	690.1020508	84.91776276	151.1534119	58.13563919		23.64954185		1.441919663	Tag not found: -5		29.61932182	1.825463653
15-Sep-00 08:13:00	112.474762	1177.559328		18.33803558	690.5721438	84.79933929	151.1674194	58.14961624		23.64788437		1.447412955	Tag not found: -5		29.61938667	1.824256301
15-Sep-00 08:14:00	112.8068771	1177.296875		18.27464485	690.2000122	85.3125	151.181427	58.16359711		23.64822688		1.452948872	Tag not found: -5		29.61945152	1.823044894
15-Sep-00 08:15:00	112.7904434	1177.119751		16.21125221	690.8349609	85.03125	151.139328	56.17757416		23.6445694		1.458528255	Tag not found: -5		29.61951637	1.821841478
15-Sep-00 08:16:00	112.9131622	1177.358201		18.14786148	691.2195435	85.09124756	151.054306	58.19155502		23.64291191		1.464151271	Tag not found: -5		29.61958313	1.820634127
15-Sep-00 08:17:00	112.7013855	1177.507813		16.24020576	691.804187	84.86624908	150.9692993	56.20553207		23.64125443		1.455723823	Tag not found: -5		29.61964798	1.819426775
15-Sep-00 08:18:00	113.046875	1177.174438		16.3467083	691.9191284	84.890625	150.8842928	56.21950912		23.63959694		1.448138055	Tag not found: -5		29.61971283	1.818219304
15-Sep-00 08:19:00	112.6349411	1177.463013		16.45321083	691.8482056	85.3125	150.7992708	56.23348999		23.63793945		1.436676385	Tag not found: -5		29.61977768	1.817011952
15-Sep-00 08:20:00	112.3618393	1177.333374		16.55971338	692.25	85.48046875	150.7142639	56.24748704		23.63628197		1.437236419	Tag not found: -5		29.61984253	1.815804482
15-Sep-00 08:21:00	112.7558365	1176.854126		16.6682159	692.6171875	85.71484375	150.6292572	56.26144791		23.63462448		1.418115824	Tag not found: -5		29.61990738	1.814597113
15-Sep-00 08:22:00	112.5815234	1178.625		16.67522621	691.6875	85.8125	150.6524506	56.27542496		23.632967		1.417250159	Tag not found: -5		29.61997223	1.813389778
15-Sep-00 08:23:00	112.7890625	1177.984375		16.39609337	692.166687	85.8125	150.6813507	56.28940582		23.63131142		1.441276946	Tag not found: -5		29.62003708	1.812182307
15-Sep-00 08:24:00	112.109375	1177.90625		16.37265587	692.1237183	85.99013519	150.7102509	56.30338287		23.62965393		1.442338905	Tag not found: -5		29.62010384	1.810974958
15-Sep-00 08:25:00	112.5529251	1177.9375		16.31948754	891.895813	85.8125	150.739151	56.31736374		23.62799844		1.447841137	Tag not found: -5		29.62016889	1.809787804
15-Sep-00 08:26:00	112.4437485	1178.583374		16.24644681	691.9143068	85.80371704	150.7680511	56.33134079		23.62633896		1.454246552	Tag not found: -5		29.62023354	1.808560131
15-Sep-00 08:27:00	112.90625	1177.195801		16.17342567	691.791687	86.35979462	150.7969513	56.34532188		23.62468147		1.460790806	Tag not found: -5		29.62029839	1.807352781

15-Sep-00 08:28:00	112.9920883	1177.221191	16.12766647	692.25	85.8125	150.8258514	56.35929671	23.62302399	1.46475152	Tag not found: -5	29.62036324	1.80614531
15-Sep-00 08:29:00	112.9644852	1178.319458	16.15086365	692.25	85.8125	150.8547363	56.37327957	23.6213665	1.462545101	Tag not found: -5	29.62042809	1.804937959
Average	112.6646609	1177.585333	16.36483974	691.3840245	85.43794033	150.8093926	56.23348981	23.63794	1.444567938	#DIV/0!	29.61977759	1.817011924

	Generator Output	Mean	Turbine	Fuel Oil	Compressor	Compressor Inlet	Compressor	Inlet Guide	Vane	Water Injection	Water	Fuel	Specific Humidity	Barometric	Air Inlet	Duct
	MW	Exhaust Temp	*F Flow	Lbs/sec	Discharge Temp *F	Temperature *F	Discharge Press	Angle	Dea	Rate	Ratio	lbs water/ lbs air	Pressure	Hg	Losses	H ₂ O
							Psia			lbs/sec						
9/15/2000																
Tag #	2PWRJ1900	2TMET1934	2FOYFI900	2TMST1920B	2TMST1922M	2TMSP1916	2PWRZ1904	2TMSFI914		2TMDMI915	2TMSP1909	2TMSPDI912				
Start Time	9/15/00 8:34 AM	9/15/00 8:34 AM	9/15/00 8:34 AM	9/15/00 8:34 AM	9/15/00 8:34 AM	9/15/00 8:34 AM	9/15/00 8:34 AM	9/15/00 8:34 AM	9/15/00 8:34 AM	9/15/00 8:34 AM	9/15/00 8:34 AM	9/15/00 8:34 AM	9/15/00 8:34 AM	9/15/00 8:34 AM	9/15/00 8:34 AM	9/15/00 8:34 AM
End Time	9/15/00 8:54 AM	9/15/00 8:54 AM	9/15/00 8:54 AM	9/15/00 8:54 AM	9/15/00 8:54 AM	9/15/00 8:54 AM	9/15/00 8:54 AM	9/15/00 8:54 AM	9/15/00 8:54 AM	9/15/00 8:54 AM	9/15/00 8:54 AM	9/15/00 8:54 AM	9/15/00 8:54 AM	9/15/00 8:54 AM	9/15/00 8:54 AM	9/15/00 8:54 AM
	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min
15-Sep-00 08:34:00	112.5130234	1178.375	18.30213928	692.25	88.375	150.9992371	56.44317245	23.81307907	1.448465055	Tag not found: -5	29.62075424	1.798900962				
15-Sep-00 08:35:00	112.3605804	1177.740845	16.35054398	692.25	88.375	151.0281372	56.45714951	23.61142159	1.444075599	Tag not found: -5	29.62081909	1.79769361				
15-Sep-00 08:36:00	112.4265594	1177.789063	16.39894676	692.3109741	86.375	151.0570374	56.47113037	23.60978601	1.439712339	Tag not found: -5	29.62088394	1.796486139				
15-Sep-00 08:37:00	112.4968719	1178.048584	18.39089968	692.6768188	88.375	151.085937	56.48510742	23.60810852	1.440318043	Tag not found: -5	29.62094879	1.795278788				
15-Sep-00 08:38:00	112.680397	1178.731689	18.33968544	692.904541	66.375	151.1148224	56.49908829	23.60645103	1.444731058	Tag not found: -5	29.62101555	1.794071436				
15-Sep-00 08:39:00	113.0270844	1178.199951	18.28848931	693.1772481	88.375	151.1437225	56.51306534	23.80479355	1.449171994	Tag not found: -5	29.6210804	1.792863965				
15-Sep-00 08:40:00	112.4424515	1178.420288	18.23725319	693.25	88.375	151.1726227	56.5270462	23.80313608	1.453640945	Tag not found: -5	29.62114525	1.791656613				
15-Sep-00 08:41:00	112.25	1178.277832	18.18853951	692.75	86.375	151.2015228	56.54102325	23.60147858	1.457812778	Tag not found: -5	29.6212101	1.790449262				
15-Sep-00 08:42:00	112.3625031	1177.800049	18.17481995	692.75	88.42071533	151.230423	56.55500412	23.59982109	1.459046912	Tag not found: -5	29.62127495	1.789241791				
15-Sep-00 08:43:00	113.0701675	1178.529419	16.16110229	692.416687	86.50643158	151.2593231	56.56898117	23.5981636	1.4601828	Tag not found: -5	29.6213398	1.788034439				
15-Sep-00 08:44:00	112.8203125	1178.275024	16.14738274	692.972229	86.5921402	151.2882233	56.58295822	23.59650612	1.461320791	Tag not found: -5	29.62140465	1.786826968				
15-Sep-00 08:45:00	112.4160156	1177.949585	16.13366508	693.25	88.67785645	151.3171234	56.59693909	23.59484863	1.462460545	Tag not found: -5	29.62147141	1.785619617				
15-Sep-00 08:46:00	112.595932	1177.760988	16.11994743	693.75	86.76357269	151.3460236	56.61091614	23.59319115	1.463602238	Tag not found: -5	29.62153625	1.784412265				
15-Sep-00 08:47:00	112.8515625	1177.548096	16.10622787	694.0707397	86.84928894	151.3749084	56.624897	23.59153366	1.46474605	Tag not found: -5	29.6216011	1.783204794				
15-Sep-00 08:48:00	112.5885391	1177.862524	16.09251022	694.25	87.12228394	151.4038088	56.63887405	23.58987617	1.465891638	Tag not found: -5	29.62166595	1.781997442				
15-Sep-00 08:49:00	112.5061417	1178.287476	16.07879068	694.25	87.47554016	151.4327087	56.65285492	23.5882206	1.467039474	Tag not found: -5	29.6217308	1.780790091				
15-Sep-00 08:50:00	112.4429398	1179.034912	16.09760475	694.25	87.64484569	151.4616089	56.66683197	23.58656311	1.465221906	Tag not found: -5	29.62179565	1.77958262				
15-Sep-00 08:51:00	112.5197906	1178.836501	16.13268471	694.25	87.53749847	151.490509	56.68081284	23.58490562	1.481933091	Tag not found: -5	29.6218605	1.778375288				
15-Sep-00 08:52:00	113.1138362	1178.453125	16.18776276	694.25	87.51249695	151.5194092	56.69478969	23.58324814	1.458658721	Tag not found: -5	29.62192728	1.777167797				
15-Sep-00 08:53:00	112.5319138	1178.140625	16.20284271	694.192688	87.51308441	151.5483093	56.70877075	23.58159065	1.455398356	Tag not found: -5	29.62199211	1.775960451				
15-Sep-00 08:54:00	113.203125	1178.979126	16.23792076	694.0038452	87.6875	151.5772095	56.7227478	23.57993317	1.45215225	Tag not found: -5	29.62205696	1.774753094				
Average	112.6295119	1178.24489	16.20713043	693.3440842	88.82395499	151.2882204	56.58296004	23.59650648	1.455984885	#DIV/0!	29.62140547	1.786827019				

	Generator Output	Mean	Turbine	Fuel Oil	Compressor	Compressor Inlet	Compressor	Inlet Guide	Vane	Water Injection	Water	Fuel	Specific Humidity	Barometric	Air Inlet	Duct	
	MW	Exhaust Temp	*F Flow	Lbs/sec	Discharge Temp *F	Temperature *F	Discharge Press Psia	Angle	Dea	Rate lbs/sec	Ratio		lbs water/ lbs air	Pressure	Hg	Losses	H ₂ O
9/15/2000																	
Tag #	2PWRJ1900	2TMET1934	2FOYFI900	2TMST1920B	2TMST1922M	2TMSP1916	2PWRZ1904	2TMSFI914		2TMDMI915		2TMSP1909	2TMSPDI912				
Start Time	9/15/00 9:20 AM	9/15/00 9:20 AM	9/15/00 9:20 AM	9/15/00 9:20 AM	9/15/00 9:20 AM	9/15/00 9:20 AM	9/15/00 9:20 AM	9/15/00 9:20 AM		9/15/00 9:20 AM		9/15/00 9:20 AM	9/15/00 9:20 AM				
End Time	9/15/00 9:40 AM	9/15/00 9:40 AM	9/15/00 9:40 AM	9/15/00 9:40 AM	9/15/00 9:40 AM	9/15/00 9:40 AM	9/15/00 9:40 AM	9/15/00 9:40 AM		9/15/00 9:40 AM		9/15/00 9:40 AM	9/15/00 9:40 AM				
	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min
15-Sep-00 09:20:00	136.0352783	1155.837817	18.6291258	709.8070068	81.8125	169.8159332	61.70550537	27.35626793	1.468467631	Tag not found: -5	29.62375069	1.743360758					
15-Sep-00 09:21:00	136.7312469	1155.773315	18.58774948	710.2045288	81.8125	169.8327332	61.72175217	27.35513115	1.471675265	Tag not found: -5	29.62381554	1.742153406					
15-Sep-00 09:22:00	136.8445007	1155.908936	18.54837527	709.625	81.46556091	169.8495331	61.73800278	27.35399246	1.474896957	Tag not found: -5	29.62388039	1.740945935					
15-Sep-00 09:23:00	138.3733215	1156.044434	18.50500107	710.6875	81.77916718	169.866333	61.75425339	27.35285568	1.478133159	Tag not found: -5	29.62394524	1.739738584					
15-Sep-00 09:24:00	136.265625	1155.956787	18.46362495	710.6875	81.65194702	169.8831329	61.770504	27.3517189	1.481384017	Tag not found: -5	29.62401009	1.738531232					
15-Sep-00 09:25:00	135.9254456	1155.834839	18.42225075	711.2219849	81.37671681	169.8999481	61.78675461	27.35058022	1.484649221	Tag not found: -5	29.62407494	1.737323761					
15-Sep-00 09:26:00	136.8020782	1155.944458	18.38087654	711.428894	81.93112183	169.916748	61.80300522	27.34944344	1.487929228	Tag not found: -5	29.62413979	1.736116409					
15-Sep-00 09:27:00	136.3299103	1155.996948	18.33950043	711.6358032	82.1607132	169.933548	61.81925583	27.34830475	1.491224085	Tag not found: -5	29.62420464	1.734908938					
15-Sep-00 09:28:00	136.1087799	1156.049438	18.35602188	711.6875	82.40778351	169.9503479	61.83550644	27.34716797	1.48981997	Tag not found: -5	29.62427139	1.733701587					
15-Sep-00 09:29:00	136.296875	1156.101807	18.38144675	711.6049805	82.80978394	169.9671478	61.85175705	27.34603119	1.487697274	Tag not found: -5	29.62433624	1.732494235					
15-Sep-00 09:30:00	136.296875	1156.154297	18.40687561	711.3137207	82.20324707	169.9839478	61.86800768	27.34489925	1.485580339	Tag not found: -5	29.62440109	1.731286764					
15-Sep-00 09:31:00	138.2389984	1156.162007	18.43230438	711.3153078	81.94561005	170.0007477	61.88425827	27.34375572	1.483469194	Tag not found: -5	29.62446594	1.730079412					
15-Sep-00 09:32:00	138.5219727	1156.16887	18.45773125	711.5408938	82.375	170.0175476	61.90050507	27.34281894	1.481364019	Tag not found: -5	29.62453079	1.728872061					
15-Sep-00 09:33:00	136.6781311	1156.151855	18.48315811	711.6875	82.375	170.0343628	61.91675568	27.34148026	1.479264533	Tag not found: -5	29.62459564	1.72766459					
15-Sep-00 09:34:00	136.1927032	1156.136841	18.50858688	711.6875	82.375	170.0511627	61.93300829	27.34034348	1.477170767	Tag not found: -5	29.62466049	1.726457238					
15-Sep-00 09:35:00	135.9581451	1156.068726	18.53401375	711.5443115	82.48332977	170.0679626	61.9492569	27.33920479	1.475082794	Tag not found: -5	29.62472725	1.725249767					
15-Sep-00 09:36:00	138.2881012	1155.808838	18.55944061	711.3619995	82.23213959	170.0847628	61.96550751	27.33806801	1.473000646	Tag not found: -5	29.6247921	1.724042416					
15-Sep-00 09:37:00	136.3783875	1155.793701	18.58486938	711.347229	82.83244324	170.1015625	61.98175812	27.33693123	1.470924044	Tag not found: -5	29.62485695	1.722835064					
15-Sep-00 09:38:00	136.7410128	1155.992798	18.61029625	711.1875	82.61968231	170.1183624	61.99800873	27.33579254	1.468853165	Tag not found: -5	29.6249218	1.721627593					
15-Sep-00 09:39:00	136.2359314	1155.905762	18.63572311	711.2410889	82.40691376	170.1351624	62.01425934	27.33465578	1.466788039	Tag not found: -5	29.62498665	1.720420241					
15-Sep-00 09:40:00	136.2828064	1155.684673	18.5976182	711.9375	82.84667805	170.1519775	62.03050995	27.33351707	1.469732292	Tag not found: -5	29.62481689	1.71921289					
Average	136.3488631	1155.865483	18.49631382	711.1788214	82.18585895	169.9839507	61.86800621	27.34489305	1.478433649	#DIV/0!	29.62438974	1.731286804					

	Generator Output	Mean	T

15-Sep-00 09:45:00	136.3180785	1155.457642	18.41259384	711.8836426	62.47499847	170.2359772	62.11175919	27.32783127	1.484192369	N/A	29.62367821	1.721455574
15-Sep-00 09:46:00	135.9736786	1155.447754	18.45566177	712.9067383	82.67500305	170.2527771	62.1280098	27.32689258	1.480667175	N/A	29.62344933	1.722041607
15-Sep-00 09:47:00	136.3130341	1155.437988	18.49873161	712.4541628	82.875	170.2695923	62.14426041	27.3255558	1.477158346	N/A	29.62322235	1.72282764
15-Sep-00 09:48:00	136.7226583	1155.852905	18.54179955	712.0493184	82.7893634	170.2863922	62.16051102	27.32441711	1.473665868	N/A	29.62299347	1.723213673
15-Sep-00 09:49:00	136.4233246	1155.602051	18.58486938	712.96875	82.66373444	170.3031921	62.17676163	27.32328033	1.470189527	N/A	29.62276649	1.723799706
15-Sep-00 09:50:00	136.7406311	1155.554565	18.62793732	712.9375	82.66760254	170.3199921	62.19301224	27.32214355	1.466729412	N/A	29.62253761	1.724385738
15-Sep-00 09:51:00	136.9150085	1155.50708	18.87100716	713.4541018	82.73488328	170.338792	62.20928285	27.32100487	1.463285009	N/A	29.62231064	1.724971771
15-Sep-00 09:52:00	136.5920715	1155.459595	18.71407509	713.0842898	82.80213165	170.3535919	62.22551346	27.31986809	1.45985671	N/A	29.62208176	1.725557804
15-Sep-00 09:53:00	136.9137573	1155.412231	18.76074219	714.036438	82.8693924	170.3703918	62.24176025	27.3187294	1.45618464	N/A	29.62185478	1.726143837
15-Sep-00 09:54:00	136.8785564	1155.525513	18.8112545	714	83.50485992	170.3871918	62.25801086	27.31759262	1.45219409	N/A	29.6216259	1.72672987
15-Sep-00 09:55:00	136.6968689	1156.219849	18.86176682	713.4894409	83.58258057	170.404007	62.27426147	27.31645584	1.448244807	N/A	29.62139702	1.727315903
15-Sep-00 09:56:00	136.6391754	1156.36853	18.91227722	714.3684082	83.66030121	170.4208089	62.29051208	27.31531715	1.444316664	N/A	29.62117004	1.727801936
15-Sep-00 09:57:00	136.6575775	1156.433228	18.23141098	713.8421021	83.63114168	170.4376068	62.3067627	27.31418037	1.498193442	N/A	29.62094116	1.728487968
15-Sep-00 09:58:00	136.757309	1156.497803	18.03758332	713.171875	83.54443359	170.4544067	62.32301331	27.31304359	1.514231335	N/A	29.62071419	1.729074001
15-Sep-00 09:59:00	136.7194214	1155.775024	18.35075951	712.9375	83.45773315	170.4712067	62.33926392	27.31190491	1.488325587	N/A	29.62048531	1.729660153
15-Sep-00 10:00:00	136.6690216	1155.627441	18.6839576	712.3098145	83.37102509	170.4880068	62.35551453	27.31076813	1.463289229	N/A	29.62025833	1.730246186
15-Sep-00 10:01:00	136.6186218	1155.851929	18.68053246	711.8311157	83.28431702	170.5048065	62.37176514	27.30962944	1.461929827	N/A	29.62002945	1.730832219
15-Sep-00 10:02:00	136.9268341	1155.868286	18.64476204	712.895813	83.19761658	170.5216217	62.38801575	27.30849268	1.464673703	N/A	29.61980247	1.731418252
15-Sep-00 10:03:00	136.885849	1155.976318	18.60899182	712.375	83.1875	170.5384216	62.40426254	27.30735588	1.467428028	N/A	29.61957359	1.732004285
15-Sep-00 10:04:00	136.5473022	1156.084351	18.57322311	712.3281828	82.73048875	170.5552216	62.42051315	27.30621719	1.470192708	N/A	29.61934662	1.732590318
15-Sep-00 10:05:00	136.2087706	1156.192383	18.5374527	712.0863037	82.92717743	170.5639343	62.43676376	27.30508041	1.472968312	N/A	29.61911774	1.733176351
Average	136.6245975	1155.816784	18.58006523	712.8291178	83.07672591	170.403816	62.27426238	27.3164553	1.470376042	N/A	29.62139793	1.727315942

	Generator Output	Mean	Turbine	Fuel Oil	Compressor	Compressor Inlet	Compressor	Inlet Guide	Vane	Water Injection	Water	Fuel	Specific Humidity	Barometric	Air Inlet	Duct
	MW	Exhaust Temp	*F Flow	Lbs/sec	Discharge Temp	*F	Temperatura	*F		Rate		Ratio	lbs water/ lbs air	Pressure	Hq	Losses
										lbs/sec						H.O
9/15/2000																
Tag #	2PWRJI900	2TMETI934	2FOYFI900	2TMSTI920B	2TMSTI922M	2TMSPi918	2PWRZI904	2TMSFI914				2TMDMI915	2TMSPi909		2TMSPDI912	
Start Time	9/15/00 10:10 AM	9/15/00 9:45 AM	9/15/00 9:45 AM	9/15/00 9:45 AM	9/15/00 9:45 AM	9/15/00 9:45 AM	9/15/00 9:45 AM	9/15/00 9:45 AM				9/15/00 9:45 AM	9/15/00 9:45 AM		9/15/00 9:45 AM	
End Time	9/15/00 10:30 AM	9/15/00 10:05 AM	9/15/00 10:05 AM	9/15/00 10:05 AM	9/15/00 10:05 AM	9/15/00 10:05 AM	9/15/00 10:05 AM	9/15/00 10:05 AM				9/15/00 10:05 AM	9/15/00 10:05 AM		9/15/00 10:05 AM	
	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min				1 min	1 min		1 min	

COULD NOT READ FROM PI

UNIT 2
COMBUSTION TURBINE DATA FROM SEPTEMBER 13, 2000

From	To	Mean Turbine Exhaust Temp °F	Fuel Gas Flow lbs./sec	Compressor discharge Temp °F	Compressor Inlet Temp °F	Generator Output MW	Compressor discharge press psig	Inlet guide vane angle Deg	Water Injection Rate lbs./sec
11:30	13:46	1200.05	13.48	685.28	180.97	80.13	127.64	50.27	16.14
13:55	14:15	1199.92	13.42	687.63	110.2	80.27	128	50.65	16.9
14:24	14:44	1200.02	13.45	688.55	111.48	79.41	127.4	50.78	17.28
17:12	18:12	1132.64	20.79	757.7	89.83	159.71	195.29	78.16	32.52
18:23	19:23	1132.02	20.77	755.45	88.84	159.95	195.33	77.9	31.81
19:28	20:28	1131.93	20.79	752.65	87.56	159.84	195.06	77.68	31.79

From	To	Water fuel ratio	Specific Humidity lbs. water/ lbs. air	Barometric Pressure Hg	Air inlet Duct Losses H2O
11:30	13:46	1.19	N/A	29.65	1.52
13:55	14:15	1.25	N/A	29.63	1.98
14:24	14:44	1.28	N/A	29.63	2.13
17:12	18:12	1.56	N/A	29.58	2.14
18:23	19:23	1.53	N/A	29.59	2.1
19:28	20:28	1.52	N/A	29.6	2.07

Eastern Standard time

	Generator Output	Mean	Turbine	Fuel Oil	Compressor	Compressor Inlet	Compressor	Inlet Guide	Vane	Water Injection	Water	Fuel	Specific Humidity	Barometric	Air Inlet	Duct	
	MW	Exhaust Temp	°F	Flow	Lbs/sec	°F	Discharge Temp	Discharge Press	Anale	Dea	Rate	Ratio	Lbs water/Lbs air	Pressure	H ₂	Losses	H ₂ O
9/13/2000																	
Tag #	2PWRJ1900	2TMTI934		2FOYFI900	2TMTI920B	2TMTI922M	2TMSPI918	2PWRZ1904	2TMSFI914			2TMDMI915	2TMSPI909	2TMSPD1912			
Start Time	9/13/00 11:30 AM	9/13/00 11:30 AM		9/13/00 11:30 AM	9/13/00 11:30 AM	9/13/00 11:30 AM	9/13/00 11:30 AM	9/13/00 11:30 AM	9/13/00 11:30 AM	9/13/00 11:30 AM	9/13/00 11:30 AM	9/13/00 11:30 AM	9/13/00 11:30 AM	9/13/00 11:30 AM	9/13/00 11:30 AM	9/13/00 11:30 AM	9/13/00 11:30 AM
End Time	9/13/00 1:46 PM	9/13/00 1:46 PM		9/13/00 1:46 PM	9/13/00 1:46 PM	9/13/00 1:46 PM	9/13/00 1:46 PM	9/13/00 1:46 PM	9/13/00 1:46 PM	9/13/00 1:46 PM	9/13/00 1:46 PM	9/13/00 1:46 PM	9/13/00 1:46 PM	9/13/00 1:46 PM	9/13/00 1:46 PM	9/13/00 1:46 PM	9/13/00 1:46 PM
	1 min	1 min		1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min
13-Sep-00 11:30:00	79.50682068	1200.155151		13.46599911	682.265625	107.8125	126.8742905	49.98443604	15.72771358	1.166225317	Tag not found: -5		29.67537308			1.156688809	
13-Sep-00 11:31:00	80.0567627	1200.180664		13.50200653	682.5	108.0763855	126.8658068	49.9887819	15.73333549	1.165259064	Tag not found: -5		29.67511177			1.161984563	
13-Sep-00 11:32:00	79.4963913	1199.971802		13.48775959	682.5	107.5243912	126.8573227	49.99308395	15.73895845	1.166906657	Tag not found: -5		29.67485237			1.167280316	
13-Sep-00 11:33:00	79.02777863	1199.677734		13.47351265	682.5	107.6348648	126.8488388	49.99740601	15.74457838	1.168557805	Tag not found: -5		29.67459106			1.17257607	
13-Sep-00 11:34:00	79.77812195	1199.467163		13.45926571	683	107.8125	126.8403549	50.00173187	15.75019932	1.170212377	Tag not found: -5		29.67432976			1.177871823	
13-Sep-00 11:35:00	79.48348236	1199.629028		13.44501877	682.6228027	108.4027786	126.831871	50.00805392	15.75582027	1.171870456	Tag not found: -5		29.67407036			1.183167577	
13-Sep-00 11:36:00	79.4609375	1199.790894		13.43077278	683.1491089	107.8125	126.8233871	50.01037979	15.76144218	1.17353204	Tag not found: -5		29.67380905			1.18846333	
13-Sep-00 11:37:00	79.76852417	1199.948608		13.41652584	683.5	107.8125	126.8149033	50.01470184	15.76706314	1.175197168	Tag not found: -5		29.67354774			1.193759084	
13-Sep-00 11:38:00	79.21398163	1200.350464		13.4022789	683.5	108.1201935	126.8064194	50.01902187	15.77268505	1.176865902	Tag not found: -5		29.67328835			1.199054837	
13-Sep-00 11:39:00	79.59505463	1200.476563		13.38803196	683	108.3125	126.7979355	50.02334976	15.77830601	1.178538119	Tag not found: -5		29.67302704			1.204350591	
13-Sep-00 11:40:00	79.93891907	1200.110229		13.37378502	683.1890869	108.3125	126.7894518	50.02767181	15.78392696	1.180213899	Tag not found: -5		29.67276573			1.209646344	
13-Sep-00 11:41:00	79.57142639	1199.8398		13.35953088	683.4411621	108.3125	126.7809677	50.03199768	15.78954887	1.181893325	Tag not found: -5		29.67250633			1.214942098	
13-Sep-00 11:42:00	79.23046875	1200.027344		13.34529114	683.4903564	108.3125	126.7724838	50.03631973	15.79516693	1.183578264	Tag not found: -5		29.67224503			1.220237851	
13-Sep-00 11:43:00	79.56432343	1200.359009		13.3310442	682.7592773	108.3125	126.7639999	50.04064178	15.80079174	1.185262873	Tag not found: -5		29.67198563			1.225533605	
13-Sep-00 11:44:00	79.95898438	1200.151489		13.31879726	682.7622681	108.3125	126.7555181	50.04496765	15.8064127	1.186953018	Tag not found: -5		29.67172432			1.230829358	
13-Sep-00 11:45:00	79.69723511	1200.383789		13.30384064	683.2540894	108.3125	126.7470322	50.0492897	15.81203365	1.188531499	Tag not found: -5		29.67146301			1.236125112	
13-Sep-00 11:46:00	79.49181366	1200.335205		13.29819775	683.734375	108.3125	126.7385483	50.05361557	15.81765558	1.189458592	Tag not found: -5		29.67120361			1.241420865	
13-Sep-00 11:47:00	79.59022522	1200.005493		13.29255239	683.7998978	107.9136887	126.7300644	50.05793762	15.82327652	1.190388485	Tag not found: -5		29.67094231			1.246716619	
13-Sep-00 11:48:00	79.96320343	1200.194458		13.28691006	683.5	108.2708359	126.7215805	50.06225967	15.82889843	1.191315239	Tag not found: -5		29.670681			1.251201237	
13-Sep-00 11:49:00	79.41903687	1200.434937		13.28126821	683.5	108.2998428	126.7130966	50.06658554	15.83451939	1.19224471	Tag not found: -5		29.6704216			1.257308125	
13-Sep-00 11:50:00	79.45891571	1200.394775		13.27562332	683.5	108.1732559	126.7048127	50.07090759	15.84014034	1.193174886	Tag not found: -5		29.67016029			1.262603879	
13-Sep-00 11:51:00	79.91030121	1199.987549		13.26997948	683.427063	108.0466768	126.6961288	50.07523348	15.84576225	1.194106011	Tag not found: -5		29.66989899			1.267899632	
13-Sep-00 11:52:00	79.70117188	1199.754517		13.26433563	683.114583	107.9200974	126.687645	50.07855551	15.85138321	1.195037856	Tag not found: -5		29.66963959			1.273195386	
13-Sep-00 11:53:00	79.125	1199.77478		13.25869179	683.5	108.3125	126.6791534	50.08387756	15.85700512	1.195970568	Tag not found: -5		29.66937828			1.278491139	
13-Sep-00 11:54:00	79.61595917	1199.872119		13.2530489	683.0164185	108.3125	126.6706696	50.08820343	15.86262608	1.196903912	Tag not found: -5		29.66911697			1.283786893	
13-Sep-00 11:55:00	79.29427338	1199.569338		13.24740505	683.2194824	108.3125	126.6621857	50.09252548	15.86824703	1.19783814	Tag not found: -5		29.66885757			1.289082646	
13-Sep-00 11:56:00	79.53954315	1200.113525		13.24178121	683.4834399	108.3359375	126.6537018	50.09685135	15.87386894	1.198773237	Tag not found: -5		29.66859627			1.2943784	
13-Sep-00 11:57:00	79.52040663	1200.355591		13.34141159	683.5	108.50457	126.6452179	50.1011734	15.8794899	1.190240612	Tag not found: -5		29.66833496			1.299674153	
13-Sep-00 11:58:00	79.39286041	1200.188843		13.5511198	684.2249756	108.3584213	126.636734	50.10549545	15.88511181	1.172236098	Tag not found: -5		29.66807556			1.304969907	
13-Sep-00 11:59:00	78.99919891	1200.394775		13.5235157	684.25	108.4385757	126.6282501	50.10982132	15.89073277	1.175044501	Tag not found: -5		29.66878125			1.31026566	
13-Sep-00 12:00:00	78.97515869	1200.404053		13.4959118	684.3408813	108.875	126.763916	50.11414337	15.89635468	1.177864464	Tag not found: -5		29.66755295			1.315561414	
13-Sep-00 12:01:00	78.95111847	1200.087891		13.4683075	683.5	108.875	126.9891815	50.11848924	15.90197563	1.180695914	Tag not found: -5		29.66729355			1.320857167	
13-Sep-00 12:02:00	79.47480011	1199.368042		13.44070339	683.7000122	108.875	127.214447	50.12279129	15.90759659	1.183538995	Tag not found: -5		29.66703224			1.326152921	
13-Sep-00 12:03:00	80.32545471	1199.527832		13.41309929	684.189209	107.9136887	127.4397049	50.12711334	15.9132185	1.186393849	Tag not found: -5		29.66677094			1.331448874	
13-Sep-00 12:04:00	80.59222412	1199.696899		13.38549519	884.2211304	108.752327	127.6649704	50.13143921	15.91883945	1.189260407	Tag not found: -5		29.66651154			1.336744428	
13-Sep-00 12:05:00	80.2767868	1199.720825		13.35789108	684.2438965	108.5728073	127.7205887	50.13576126	15.92446136	1.192138884	Tag not found: -5		29.66625023			1.342040181	
13-Sep-00 12:06:00	80.0200882	1199.579956		13.35121822	684.5	108.3932877	127.7573547	50.14008713	15.93008232	1.193155715	Tag not found: -5		29.66598892			1.347335935	
13-Sep-00 12:07:00	80.75676727	1199.948853		13.35351563	684.2142944	108.3125	127.7941206	50.14440918	15.93570328	1.193371373	Tag not found: -5		29.66572952			1.352631688	
13-Sep-00 12:08:00	80.6947937	1200.418701		13.35581303	684.5	108.3125	127.8308792	50.14873123	15.94132519	1.193587029	Tag not found: -5		29.66546822			1.357927442	
13-Sep-00 12:09:00	80.6835437	1199.830688		13.35811138	684.0769043	108.3125	127.8676453	50.1530571	15.94694614	1.193802454	Tag not found: -5		29.66520691			1.363223195	
13-Sep-00 12:10:00	80.6322937	1199.9375		13.36040878	684.5401611	108.3125	127.9044113	50.15737915	15.95256805	1.194017961	Tag not found: -5		29.66494751			1.368518949	
13-Sep-00 12:11:00	80.72933197	1200.04541		13.36270714	685.0625	108.3125	127.9411774	50.16170502	15.95818901	1.194233238	Tag not found: -5		29.66466682			1.373814702	
13-Sep-00 12:12:00	81.0642395	1199.842651		13.36500454	685.0625	107.9375	127.9779434	50.16602707	15.96380997	1.194448528	Tag not found: -5		29.6644249			1.379110456	
13-Sep-00 12:13:00	80.58522797	1199.401367		13.47460938	685.229187	108.3125	128.0147095	50.17034812	15.96943188	1.185149894	Tag not found: -5		29.6641855			1.384406328	
13-Sep-00 12:14:00	81.08018968	1200.116455		13.59198952	685.2340698	108.3125	128.0514679	50.17467499	15.97505283	1.175328513	Tag not found: -5		29.66390419			1.389702082	
13-Sep-00 12:15:00	80.90625	1199.854126		13.60247231	685.1291504	108.3125	128.0882416	50.17899704	15.98067474	1.174836043	Tag not found: -5		29.66364288			1.394997835	
13-Sep-00 12:16:00	80.90625	1199.4375		13.61295414	684.734375	108.2215881	128.125	50.18332291	15.9862957	1.174344344	Tag not found: -5		29.66338348			1.400293589	
13-Sep-00 12:17:00	80.80942535	1199.63147		13.62343693	684.5	107.8125	128.1817584	50.18764498	15.99191666	1.173853319	Tag not found: -5		29.66312218			1.405859342	
13-Sep-00 12:18:00	81.234375	1199.790894		13.63391878	685.4582378	107.25	128.1843109	50.19196701	15.99753857	1.173363201	Tag not found: -5		29.66286087			1.410880968	
13-Sep-00 12:19:00	80.85473633	1200.122192		13.64440155	685.0625	108.0711212	128.1737061	50.19628288	16.0								

13-Sep-00 12:27:00	80.40483856	1200.4375	13.57988262	685.2025757	108.875	128.0888214	50.23088074	16.04813004	1.18175784	Tag not found: -5	29.86051483	1.458546877
13-Sep-00 12:28:00	80.46827698	1200.041626	13.56816387	685.0625	107.8521805	128.0782013	50.23520279	16.05375099	1.183192593	Tag not found: -5	29.66025543	1.46384263
13-Sep-00 12:29:00	80.5	1200.484375	13.55644512	685.2443237	108.3125	128.0675964	50.23952868	18.05937386	1.184630168	Tag not found: -5	29.65999413	1.469138384
13-Sep-00 12:30:00	80.60198212	1200.350952	13.54472637	685.0625	108.3125	128.0589763	50.24385071	16.06499481	1.186070089	Tag not found: -5	29.65973282	1.474431347
13-Sep-00 12:31:00	80.74427795	1199.431763	13.53300762	685.0625	108.3125	128.0463715	50.24817657	16.07061577	1.187512504	Tag not found: -5	29.65947342	1.479729891
13-Sep-00 12:32:00	80.765625	1200.265625	13.52128887	684.4677124	108.3125	128.0357666	50.25249863	16.07623672	1.188957419	Tag not found: -5	29.65921211	1.485025644
13-Sep-00 12:33:00	81.03057098	1199.724976	13.50957012	684.5	108.3125	128.0251465	50.25682088	16.08185768	1.190404842	Tag not found: -5	29.65850581	1.490321398
13-Sep-00 12:34:00	80.78646088	1200.083498	13.49785137	684.8952637	108.3125	128.0145418	50.26114655	16.08748055	1.191854918	Tag not found: -5	29.65889141	1.495617151
13-Sep-00 12:35:00	81.40429688	1200.374512	13.48613282	684.5661621	108.3848224	128.0039215	50.2654686	16.0931015	1.193307374	Tag not found: -5	29.6584301	1.500912905
13-Sep-00 12:36:00	81.20999908	1200.164814	13.47441387	685.2897949	108.625	127.9933187	50.26979448	16.09872246	1.194762356	Tag not found: -5	29.65816879	1.506208658
13-Sep-00 12:37:00	80.74342346	1200.520874	13.46269512	685.4910889	108.3125	127.9827042	50.27411652	16.10434341	1.19621987	Tag not found: -5	29.65790839	1.511504412
13-Sep-00 12:38:00	80.72787476	1200.015625	13.45097637	685.5625	108.3125	127.9720917	50.27843857	16.10996437	1.197679925	Tag not found: -5	29.65764809	1.516800165
13-Sep-00 12:39:00	80.68347168	1199.798096	13.43925762	685.7651978	108.3125	127.9614792	50.28276443	16.11558723	1.199142668	Tag not found: -5	29.65738678	1.522095919
13-Sep-00 12:40:00	80.63906097	1199.91748	13.42753887	685.9678955	108.3125	127.9508687	50.28708649	16.12120819	1.200607821	Tag not found: -5	29.65712738	1.527391672
13-Sep-00 12:41:00	80.38476583	1199.75	13.41582012	686.3890381	108.5337067	127.9402618	50.29141235	16.12682915	1.202075535	Tag not found: -5	29.65686807	1.532687426
13-Sep-00 12:42:00	80.785625	1199.779419	13.40410137	687.0625	108.875	127.9296494	50.29573441	16.1324501	1.203545815	Tag not found: -5	29.65680477	1.537983179
13-Sep-00 12:43:00	80.765625	1199.584106	13.39238262	686.6831665	108.875	127.9190369	50.30005646	16.13807297	1.20501881	Tag not found: -5	29.65634537	1.543278933
13-Sep-00 12:44:00	80.99182892	1199.649048	13.38066387	686.4053345	108.875	127.9084244	50.30438232	16.14369392	1.208494243	Tag not found: -5	29.65608406	1.548574688
13-Sep-00 12:45:00	80.453125	1200.224976	13.36894512	686.2022095	108.86261	127.8978119	50.30870438	16.14931488	1.207972262	Tag not found: -5	29.65582468	1.553870744
13-Sep-00 12:46:00	80.88017273	1200.479492	13.35722637	686.1659548	108.9259949	127.8871994	50.31303024	16.15493584	1.209452875	Tag not found: -5	29.65556335	1.559166193
13-Sep-00 12:47:00	80.76841736	1200.395874	13.36434269	686.3997192	108.9657288	127.8765945	50.31735229	16.16055679	1.209229452	Tag not found: -5	29.65530205	1.564461946
13-Sep-00 12:48:00	80.85666199	1199.835938	13.40643692	685.4818726	109.0054626	127.8669357	50.32167435	16.16617968	1.205852068	Tag not found: -5	29.65504265	1.5697577
13-Sep-00 12:49:00	80.9200592	1200.410034	13.44853231	685.7998874	109.0451965	127.8574448	50.32600021	16.17180061	1.202495595	Tag not found: -5	29.65478134	1.575053453
13-Sep-00 12:50:00	80.17702484	1200.495117	13.49062634	686.0625	109.0849304	127.8479614	50.33032227	16.17742157	1.199160155	Tag not found: -5	29.65452003	1.580349207
13-Sep-00 12:51:00	79.76284454	1200.164185	13.53272152	685.5625	109.1246719	127.8384705	50.33464813	16.18304253	1.195845381	Tag not found: -5	29.65426064	1.58564496
13-Sep-00 12:52:00	79.6875	1199.865479	13.5748187	686.0625	109.1644058	127.8289871	50.33897018	16.18866348	1.192551168	Tag not found: -5	29.65399933	1.590940714
13-Sep-00 12:53:00	79.35546875	1200.032593	13.61691093	685.8028564	109.2041397	127.8194962	50.34329224	16.19428635	1.189277541	Tag not found: -5	29.65373802	1.596236467
13-Sep-00 12:54:00	79.8203125	1200.199829	13.65900612	685.5625	109.2438736	127.8100128	50.3476181	16.1999073	1.18602387	Tag not found: -5	29.65347862	1.601532221
13-Sep-00 12:55:00	80.08944275	1200.36792	13.70110035	685.1280518	109.2836075	127.8005219	50.35194016	16.20552826	1.182790276	Tag not found: -5	29.65321732	1.606827974
13-Sep-00 12:56:00	79.88600922	1199.660034	13.74319553	684.8911133	109.3233414	127.7910309	50.35626602	16.21114922	1.179576408	Tag not found: -5	29.65295601	1.612123728
13-Sep-00 12:57:00	79.97661427	1200.033203	13.78528976	685.5625	109.3630829	127.7815475	50.36058807	16.21677017	1.178382249	Tag not found: -5	29.65289661	1.617419481
13-Sep-00 12:58:00	79.63632202	1200.415771	13.80583191	685.0625	109.4081955	127.7720586	50.36491013	16.22239304	1.175039153	Tag not found: -5	29.6524353	1.622715238
13-Sep-00 12:59:00	79.4739151	1200.5625	13.79404449	685.0625	109.4704381	127.7625732	50.36923599	16.22801399	1.17645075	Tag not found: -5	29.652174	1.628010988
13-Sep-00 13:00:00	79.10336304	1200.288799	13.78225708	685.0625	109.5326787	127.7530823	50.37355804	16.23383495	1.177884762	Tag not found: -5	29.6519146	1.633306742
13-Sep-00 13:01:00	79.56973267	1200.168091	13.77046967	685.0721436	109.5949173	127.7435989	50.37788391	16.23925591	1.179281194	Tag not found: -5	29.65165329	1.638602495
13-Sep-00 13:02:00	79.3208847	1199.587158	13.75868225	684.9622803	109.6571579	127.734108	50.38220598	16.24487686	1.180700053	Tag not found: -5	29.65139198	1.643898249
13-Sep-00 13:03:00	79.609375	1200.375	13.74689484	685.3125	109.7193985	127.724617	50.38652802	16.25049973	1.182121484	Tag not found: -5	29.65113258	1.649194002
13-Sep-00 13:04:00	79.82793427	1200.418823	13.73510742	685.5665283	109.7818391	127.7151337	50.39085388	16.25612068	1.183545216	Tag not found: -5	29.65087128	1.654489756
13-Sep-00 13:05:00	79.13541412	1200.361572	13.72332001	686.1303711	109.8438797	127.7056427	50.39517593	16.26174184	1.184971394	Tag not found: -5	29.65060997	1.659785509
13-Sep-00 13:06:00	79.45883179	1199.553833	13.71153259	686.3446655	109.875	127.6961594	50.3995018	16.26736259	1.186400024	Tag not found: -5	29.65035057	1.665081263
13-Sep-00 13:07:00	79.66917419	1200.505859	13.69974518	686.5588989	109.875	127.6866684	50.40382385	16.27298355	1.187831112	Tag not found: -5	29.65008926	1.670377018
13-Sep-00 13:08:00	79.87950897	1200.593018	13.68795776	687.0317993	109.875	127.6771851	50.4081459	16.27860641	1.189284805	Tag not found: -5	29.64982796	1.67567277
13-Sep-00 13:09:00	79.82637787	1200.412354	13.67617035	686.863728	109.875	127.6676941	50.41247177	16.28422737	1.190700829	Tag not found: -5	29.64956856	1.680968523
13-Sep-00 13:10:00	79.63137817	1199.883301	13.66438293	687.3109131	109.875	127.6582031	50.41879382	16.28984633	1.192139331	Tag not found: -5	29.64930725	1.686264277
13-Sep-00 13:11:00	79.91874895	1199.990967	13.65259552	686.8828125	109.875	127.6487198	50.42111969	16.29546928	1.193580317	Tag not found: -5	29.64904594	1.69158003
13-Sep-00 13:12:00	79.83210297	1199.835571	13.64080811	685.9915771	109.875	127.6392268	50.42544174	16.30531502	1.195333509	Tag not found: -5	29.64878654	1.696855783
13-Sep-00 13:13:00	79.97350311	1199.786743	13.62902069	685.8125	109.875	127.6297455	50.42976379	16.31656837	1.197193015	Tag not found: -5	29.64852524	1.702151537
13-Sep-00 13:14:00	79.42642885	1200.087524	13.61723328	685.8125	109.875	127.6353455	50.43408968	16.32762173	1.199055741	Tag not found: -5	29.64826393	1.70744729
13-Sep-00 13:15:00	79.80628967	1200.258301	13.60018158	685.9084473	109.875	127.6560287	50.43841171	16.33907509	1.20138654	Tag not found: -5	29.64800453	1.712743044
13-Sep-00 13:16:00	79.7503891	1200.017622	13.57260132	686.2114868	109.8776321	127.676712	50.44273376	16.35032845	1.204656945	Tag not found: -5	29.64774323	1.718038797
13-Sep-00 13:17:00	79.9144518	1200.0271	13.54502106	686.0830688	110.0355301	127.697403	50.44705963	16.3615818	1.207940669	Tag not found: -5	29.64748192	1.72333467
13-Sep-00 13:18:00	79.76973724	1200.060425	13.5174408	686.7889404	110.125	127.7180862	50.45138168	16.37283707	1.211237934	Tag not found: -5	29.64722252	1.728630424
13-Sep-00 13:19:00	80.15304565	1199.697632	13.48986053	686.8125	110.125	127.7387695	50.45570755	16.38409042	1.21454854	Tag not found: -5	29.64696192	1.733928177
13-Sep-00 13:20:00	80.10496521	1200.088867	13.46228027	687.2446899	110.1714708	127.7594528	50.46002096	16.39534378	1.217872712	Tag not found: -5	29.64689991	1.739221931
13-Sep-00 13:21:00	79.57566833	1200.652832	13.43470001	687.375	110.2876315	127.7801437	50.46435165	16.40659714	1.221210531	Tag not found: -5	29.64644051	1.744517684
13-Sep-00 13:22:00	80.15156555	1200.028687	13.40711975	687.375	110.3637848	127.800827	50.46867752	16.41785049	1.224562083	Tag not found: -5	29.6461792	1.749813437
13-Sep-00 13:23:00	79.9421463	1200.192139	13.37953949	687.375	110.459938	127.8215103	50.47299957	16.42910385	1.227927453	Tag not found: -5	29.64591789	1.755109191
13-Sep-00 13:24:00	79.92853546	1200.296875	13.35195923	686.9658813	110.5560913	127.8422012	50.47732544	16.44035721	1.231306728	Tag not found: -5	29.64565849	1.760404944
13-Sep-00 13:25:00	79.9396286	1200.1675	13.32437897	686.6055908	110.6522446	127.8628845	50.48164749	16.45181057	1.234699989	Tag not found: -5	29.64539719	1.765700698
13-Sep-00 13:26:00	79.95072174	1200.1875	13.29679871	686.8125	110.125	127.8835678	50.48596954	16.46286392	1.238107328	Tag not		

13-Sep-00 13:36:00	80.74508667	1200.051514	13.54507065	886.9249878	109.625	128.0793782	50.52920532	16.5753994	1.223721886	Tag not found: -5	29.64253044	1.823953986
13-Sep-00 13:37:00	81.4575882	1199.75	13.53809834	687.083313	109.6498413	128.0918732	50.53353119	16.58665278	1.225183358	Tag not found: -5	29.64226913	1.82924974
13-Sep-00 13:38:00	80.87976837	1200.742065	13.53112602	686.9213867	109.7146301	128.1043701	50.53785324	16.59790611	1.226646333	Tag not found: -5	29.64200783	1.834545493
13-Sep-00 13:39:00	81.08747864	1200.366089	13.52415468	688.8125	109.7794268	128.1168823	50.54217911	16.60915947	1.228110731	Tag not found: -5	29.64174843	1.839841247
13-Sep-00 13:40:00	81.2951889	1200.448853	13.51718235	687.0792236	109.844223	128.1293793	50.54650116	16.62041283	1.229576727	Tag not found: -5	29.64148712	1.845137
13-Sep-00 13:41:00	81.17169952	1200.213745	13.51021099	687.4074707	109.9090195	128.1418782	50.55082321	16.63166809	1.23104429	Tag not found: -5	29.64122581	1.850432754
13-Sep-00 13:42:00	81.01809692	1200.326294	13.50323868	688.2821655	109.9738083	128.1543732	50.55514908	16.64292145	1.232513314	Tag not found: -5	29.64098642	1.855728507
13-Sep-00 13:43:00	80.86449432	1200.138963	13.49626637	689.1178589	110.0386047	128.1668701	50.55947113	16.6541748	1.233983858	Tag not found: -5	29.64070511	1.861024261
13-Sep-00 13:44:00	80.78279114	1200.494019	13.48929501	688.0714111	110.1034012	128.1798323	50.563797	16.66542816	1.23545583	Tag not found: -5	29.6404438	1.866320014
13-Sep-00 13:45:00	80.91078949	1200.304888	13.48232269	688.375	110.125	128.1918793	50.56811905	16.67668152	1.236929415	Tag not found: -5	29.6401844	1.871615767
13-Sep-00 13:46:00	80.1818181	1200.160787	13.47535133	688.1130981	110.125	128.2043762	50.5724411	16.68793488	1.238404437	Tag not found: -5	29.6399231	1.876911521
Average	80.13243008	1200.058305	13.48284959	685.2756728	108.9662876	127.6389039	50.2784399	16.13550538	1.196844301	Tag not found: -5	29.65764832	1.516800154

	Generator Output	Mean	Turbine	Fuel Oil	Compressor	Compressor Inlet	Compressor	Inlet Guide	Vane	Water Injection	Water	Fuel	Specific Humidity	Barometric	Air Inlet	Duct		
	MW	Exhaust Temp	°F	Flow	Lbs/sec	°F	Discharge Temp	Discharge Press	Psi	Anale	Dea	Rate	Ratio	lbs water/ lbs air	Pressure	Ha	Losses	H ₂ O
9/13/2000																		
Tag #	2PWRJ1900	2TMET1934	2FOYFI900	2TMSTI920B	2TMSTI922M	2TMSP1916	2PWRZI904	2TMSFI914						2TMDMI915	2TMSP1909	2TMSPDI912		
Start Time	9/13/00 1:55 PM	9/13/00 1:55 PM	9/13/00 1:55 PM	9/13/00 1:55 PM	9/13/00 1:55 PM	9/13/00 1:55 PM	9/13/00 1:55 PM	9/13/00 1:55 PM	9/13/00 1:55 PM	9/13/00 1:55 PM	9/13/00 1:55 PM	9/13/00 1:55 PM	9/13/00 1:55 PM	9/13/00 1:55 PM	9/13/00 1:55 PM	9/13/00 1:55 PM	9/13/00 1:55 PM	9/13/00 1:55 PM
End Time	9/13/00 2:15 PM	9/13/00 2:15 PM	9/13/00 2:15 PM	9/13/00 2:15 PM	9/13/00 2:15 PM	9/13/00 2:15 PM	9/13/00 2:15 PM	9/13/00 2:15 PM	9/13/00 2:15 PM	9/13/00 2:15 PM	9/13/00 2:15 PM	9/13/00 2:15 PM	9/13/00 2:15 PM	9/13/00 2:15 PM	9/13/00 2:15 PM	9/13/00 2:15 PM	9/13/00 2:15 PM	9/13/00 2:15 PM
	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min
13-Sep-00 13:55:00	80.4375	1200.262817	13.69250011	686.6988525	109.914772	128.3168793	50.61135483	16.789217	1.226181538	Tag not found: -5	29.63757706	1.924573302						
13-Sep-00 13:56:00	80.59173584	1200.307983	13.88593788	687.6303101	109.7443161	128.3293762	50.61587688	16.80047035	1.227571723	Tag not found: -5	29.63731766	1.929869056						
13-Sep-00 13:57:00	80.39595795	1199.8125	13.67937469	687.375	109.7430573	128.3418732	50.62000275	16.81172371	1.228983348	Tag not found: -5	29.63705635	1.935164809						
13-Sep-00 13:58:00	80.12017164	1199.8125	13.65010834	687.875	110.4749985	128.3543701	50.6243248	16.82297707	1.232442751	Tag not found: -5	29.63679504	1.940460563						
13-Sep-00 13:59:00	80.4466629	1199.8125	13.81327267	687.875	110.5589294	128.3668823	50.62865067	16.83423042	1.23680422	Tag not found: -5	29.63653564	1.945756316						
13-Sep-00 14:00:00	80.34437561	1200.449951	13.576437	686.8636475	109.9319305	128.3793793	50.63297272	16.84548378	1.24078827	Tag not found: -5	29.63627434	1.95105207						
13-Sep-00 14:01:00	79.91601563	1199.787842	13.53960228	687.875	109.834903	128.3918762	50.63729477	16.85673714	1.244995	Tag not found: -5	29.63601303	1.956347823						
13-Sep-00 14:02:00	80.17153168	1200.286011	13.50276681	687.5335083	110.125	128.4043732	50.64162064	16.86799049	1.249224789	Tag not found: -5	29.63575363	1.961643577						
13-Sep-00 14:03:00	80.734375	1199.987549	13.46593189	687.6749878	110.125	128.4168701	50.64594269	16.87824385	1.25347759	Tag not found: -5	29.63549322	1.96693933						
13-Sep-00 14:04:00	80.87414093	1199.467163	13.42909622	687.375	110.125	128.4293823	50.65026855	16.89049911	1.257753972	Tag not found: -5	29.63523102	1.972235084						
13-Sep-00 14:05:00	81.14736178	1199.072878	13.39228151	687.375	110.125	128.3828125	50.65459061	16.90175247	1.262053647	Tag not found: -5	29.63497162	1.977530837						
13-Sep-00 14:06:00	80.99330138	1198.918701	13.35542583	688.6845093	110.125	128.2265625	50.65891268	16.91300583	1.266377129	Tag not found: -5	29.63471031	1.982826591						
13-Sep-00 14:07:00	81.03002167	1199.054199	13.31859112	687.917432	110.6650009	128.0703125	50.66323853	16.92425919	1.270724436	Tag not found: -5	29.63444901	1.988122344						
13-Sep-00 14:08:00	80.95649719	1200.346287	13.28175545	688.3529623	109.9728241	127.9140625	50.66756058	16.93551254	1.275095947	Tag not found: -5	29.63418961	1.993418097						
13-Sep-00 14:09:00	80.11623383	1199.859375	13.25832783	687.875	110.1984177	127.7989655	50.67188644	16.9467859	1.278390698	Tag not found: -5	29.6339283	1.998713851						
13-Sep-00 14:10:00	79.73350525	1200.302124	13.25208378	687.1671143	110.3113708	127.7603073	50.6762085	16.95801928	1.279649264	Tag not found: -5	29.63366699	2.004009724						
13-Sep-00 14:11:00	79.84954834	1200.0625	13.24783993	686.9249878	110.424324	127.7216492	50.68053055	16.96927281	1.280908639	Tag not found: -5	29.63340759	2.009305477						
13-Sep-00 14:12:00	79.73165894	1199.837891	13.24359703	687.375	110.4375	127.682991	50.68485641	16.98052597	1.282168729	Tag not found: -5	29.63314629	2.014601231						
13-Sep-00 14:13:00	79.3125	1200.083374	13.23935318	687.484375	110.0999985	127.6443329	50.68917847	16.99177933	1.283429719	Tag not found: -5	29.63288498	2.019896984						
13-Sep-00 14:14:00	79.34563282	1200.375	13.23510933	687.9099121	110.6139879	127.6056871	50.69350433	17.00303268	1.284691517	Tag not found: -5	29.63262558	2.025192738						
13-Sep-00 14:15:00	79.63433075	1200.375	13.23086548	688.375	110.9375	127.567009	50.69782639	17.01428604	1.285954125	Tag not found: -5	29.63236427	2.030488491						
Average	80.27067168	1199.917911	13.42324943	687.6291388	110.2042291	128.1002826	50.65459061	16.90175165	1.259402239	#DIV/0!	29.63497098	1.977530871						

	Generator Output	Mean	Turbine	Fuel Oil	Compressor	Compressor Inlet	Compressor	Inlet Guide	Vane	Water Injection	Water	Fuel	Specific Humidity	Barometric	Air Inlet	Duct	
					Discharge Temp		Discharge Press			Rate							
	MW	Exhaust Temp	°F	Flow	Lbs/sec	°F	Temperature °F	Psi	Anale	Dea	lbs/sec	Ratio	lbs water/ lbs air	Pressura	Ha	Losses	H ₂ O
9/13/2000																	
Tag #	2PWRJI900	2TMETI934		2FOYFI900	2TMSTI920B	2TMSTI922M	2TMSPI918	2PWRZI904	2TMSFI914				2TMDMI915	2TMSP1909	2TMSPD1912		
Start Time	9/13/00 2:24 PM	9/13/00 2:24 PM		9/13/00 2:24 PM	9/13/00 2:24 PM	9/13/00 2:24 PM	9/13/00 2:24 PM	9/13/00 2:24 PM	9/13/00 2:24 PM	9/13/00 2:24 PM	9/13/00 2:24 PM	9/13/00 2:24 PM	9/13/00 2:24 PM	9/13/00 2:24 PM	9/13/00 2:24 PM	9/13/00 2:24 PM	9/13/00 2:24 PM
End Time	9/13/00 2:44 PM	9/13/00 2:44 PM		9/13/00 2:44 PM	9/13/00 2:44 PM	9/13/00 2:44 PM	9/13/00 2:44 PM	9/13/00 2:44 PM	9/13/00 2:44 PM	9/13/00 2:44 PM	9/13/00 2:44 PM	9/13/00 2:44 PM	9/13/00 2:44 PM	9/13/00 2:44 PM	9/13/00 2:44 PM	9/13/00 2:44 PM	9/13/00 2:44 PM
	1 min	1 min		1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min
13-Sep-00 14:24:00	79.8442337	1199.684204		13.19267368	689.1985474	111.4375	127.2190704	50.73674011			17.11556818	1.297354014	Tag not found: -5	29.63001823		2.078150272	
13-Sep-00 14:25:00	79.08680725	1199.966875		13.18843079	686.8405151	111.4375	127.1804123	50.74106218			17.12682152	1.298624665	Tag not found: -5	29.62975693		2.083446028	
13-Sep-00 14:26:00	79.04051208	1200.174072		13.18418894	688.3233032	111.4375	127.1417542	50.74538422			17.13807487	1.299896229	Tag not found: -5	29.62949753		2.088741779	
13-Sep-00 14:27:00	79.24716187	1200.06665		13.20640469	687.8358643	111.4375	127.103098	50.74971008			17.14933014	1.298561611	Tag not found: -5	29.62923622		2.094037533	
13-Sep-00 14:28:00	79.24062347	1200.033203		13.26831532	689.0892944	111.4375	127.0644302	50.75403214			17.1605835	1.293350594	Tag not found: -5	29.62897491		2.099333286	
13-Sep-00 14:29:00	79.14687347	1200.430908		13.33022594	688.375	111.4375	127.1107407	50.758358			17.17183685	1.288187982	Tag not found: -5	29.62871552		2.10462904	
13-Sep-00 14:30:00	79.35137939	1200.280518		13.39213562	688.375	111.6100368	127.1815219	50.76268005			17.18309021	1.283073193	Tag not found: -5	29.62845421		2.109924793	
13-Sep-00 14:31:00	78.81568909	1200.4375		13.4504625	688.375	111.6875	127.2123032	50.78700211			17.19434357	1.278005386	Tag not found: -5	29.6281929		2.115220547	
13-Sep-00 14:32:00	79.078125	1200.625		13.45882225	688.1699829	111.6875	127.2630844	50.77132797			17.20559692	1.278388005	Tag not found: -5	29.6279335		2.1205163	
13-Sep-00 14:33:00	79.46923065	1200.578125		13.46282932	689.375	111.5803604	127.3138657	50.77565002			17.21685028	1.278862388	Tag not found: -5	29.6276722		2.125812054	
13-Sep-00 14:34:00	79.69999695	1199.963257		13.46643734	688.375	111.4543078	127.3646469	50.77997589			17.22810364	1.279336413	Tag not found: -5	29.62741089		2.131107807	
13-Sep-00 14:35:00	79.34901428	1200.194458		13.47024441	688.1685791	111.4375	127.4154282	50.78429794			17.23835699	1.27981026	Tag not found: -5	29.62715149		2.136403561	

13-Sep-00 14:38:00	79.56903839	1199.6875	13.4592886	687.8933716	111.1994019	127.4662094	50.78862	17.25061035	1.281688124	Tag not found: -5	29.82889018	2.141699314
13-Sep-00 14:37:00	79.41168213	1200.046875	13.42282963	688.625	111.625	127.5169907	50.79294586	17.26188371	1.286007808	Tag not found: -5	29.62662888	2.146995068
13-Sep-00 14:36:00	79.26592255	1199.862915	13.4008522	688.125	111.4375	127.5169907	50.7926791	17.27311707	1.288956613	Tag not found: -5	29.626636948	2.152290821
13-Sep-00 14:39:00	79.31898499	1199.723267	13.48851681	688.5681763	111.7672424	127.6185532	50.80159378	17.28437233	1.281413856	Tag not found: -5	29.62610817	2.157586575
13-Sep-00 14:40:00	79.16807556	1199.583498	13.57618237	688.6985474	111.4375	127.6693344	50.80591583	17.29562569	1.273968279	Tag not found: -5	29.62584688	2.162882328
13-Sep-00 14:41:00	79.26537323	1199.848267	13.66384697	687.7750244	111.4375	127.7201157	50.81023788	17.30687904	1.266618331	Tag not found: -5	29.62558746	2.168178082
13-Sep-00 14:42:00	80.0608902	1199.993042	13.75151157	688.708313	111.4375	127.7708969	50.81456375	17.3181324	1.259362093	Tag not found: -5	29.82532616	2.173473835
13-Sep-00 14:43:00	80.01708221	1199.762451	13.83917618	689.6375122	111.4375	127.8216782	50.8188858	17.32938576	1.252197785	Tag not found: -5	29.62506485	2.178769588
13-Sep-00 14:44:00	80.40600588	1199.680542	13.92684078	689.375	111.2306061	127.8724594	50.82321167	17.34063911	1.245123871	Tag not found: -5	29.62480545	2.184065342
Average	79.41203344	1200.029663	13.45731417	688.5574777	111.4805694	127.408303	50.77997444	17.22810391	1.280418443	#DIV/0!	29.62741152	2.131107807

	Generator Output		Mean	Turbine	Fuel Oil	Compressor	Compressor Inlet	Compressor	Inlet Guide	Vane	Water Injection	Water	Fuel	Specific Humidity	Barometric	Air Inlet	Duct
	MW	Exhaust Temp °F	Flow	Lbs/asc	°F	Temperature °F	Psls	Angle	Dec	Rate	Ratio	lbs water/ lbs air	Pressure	Hq	Losses	H.O	
9/13/2000																	
Tag #	2PWRJ1900	2TMTET1934	2FOYFI900	2TMSI1920B	2TMSI1922M	2TMSPI916	2PWRZ1904	2TMSFI914					2TMDM1915	2TMSPI909	2TMSPD1912		
Start Time	9/13/00 5:12 PM	9/13/00 5:12 PM	9/13/00 5:12 PM	9/13/00 5:12 PM	9/13/00 5:12 PM	9/13/00 5:12 PM	9/13/00 5:12 PM	9/13/00 5:12 PM	9/13/00 5:12 PM	9/13/00 5:12 PM	9/13/00 5:12 PM	9/13/00 5:12 PM	9/13/00 5:12 PM	9/13/00 5:12 PM	9/13/00 5:12 PM	9/13/00 5:12 PM	
End Time	9/13/00 6:12 PM	9/13/00 6:12 PM	9/13/00 6:12 PM	9/13/00 6:12 PM	9/13/00 6:12 PM	9/13/00 6:12 PM	9/13/00 6:12 PM	9/13/00 6:12 PM	9/13/00 6:12 PM	9/13/00 6:12 PM	9/13/00 6:12 PM	9/13/00 6:12 PM	9/13/00 6:12 PM	9/13/00 6:12 PM	9/13/00 6:12 PM	9/13/00 6:12 PM	
	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	
13-Sep-00 17:12:00	159.875	1132.560791	20.97826385	757.2272949	89.96245575	195.5962524	78.10655212	32.86971283	1.566846192	Tag not found: -5	29.58822742	2.160736084					
13-Sep-00 17:13:00	159.6096039	1132.805713	20.89511108	757.7232058	89.94087982	195.6262817	78.06301117	32.85830307	1.572535458	Tag not found: -5	29.58596811	2.180204411					
13-Sep-00 17:14:00	159.203125	1132.650757	20.81195831	757.125	89.91930389	195.6563283	78.01946259	32.84689331	1.578270188	Tag not found: -5	29.58570671	2.159672737					
13-Sep-00 17:15:00	159.03125	1132.699097	20.72880554	757.125	89.89772797	195.6683558	77.97592183	32.83548355	1.584050923	Tag not found: -5	29.58544544	2.159141064					
13-Sep-00 17:16:00	159.1363983	1132.762085	20.64562577	756.8732768	89.87815204	195.7163849	77.93237305	32.82407379	1.589878225	Tag not found: -5	29.5851841	2.15860939					
13-Sep-00 17:17:00	159.782547	1132.757202	20.5625	757.6392212	89.85457611	195.7464294	77.93187877	32.81266403	1.595752658	Tag not found: -5	29.5849247	2.158077717					
13-Sep-00 17:18:00	159.7927246	1132.480957	20.69548035	758.1160889	89.83300018	195.7764587	77.99524689	32.80125427	1.584947714	Tag not found: -5	29.58466339	2.157546043					
13-Sep-00 17:19:00	160.1322174	1131.879517	20.8284826	759.0430298	89.8125	195.806488	78.058815	32.78984451	1.574280596	Tag not found: -5	29.58440208	2.15701437					
13-Sep-00 17:20:00	159.9826355	1132.30481	20.96144295	758.6875	89.8125	195.7896881	78.12238312	32.77843475	1.563748967	Tag not found: -5	29.58414268	2.156482697					
13-Sep-00 17:21:00	180.078125	1132.460571	21.09442329	758.6875	89.8125	195.7611542	78.18595123	32.76702499	1.553350122	Tag not found: -5	29.58388138	2.155951023					
13-Sep-00 17:22:00	159.84375	1132.487183	21.22740555	758.6875	89.8125	195.7326355	78.24951935	32.75561523	1.543081427	Tag not found: -5	29.58362007	2.15541935					
13-Sep-00 17:23:00	160.0204773	1132.452148	21.36038589	758.5296021	89.8155899	195.7041018	78.31308748	32.74420547	1.532940727	Tag not found: -5	29.58336067	2.154887438					
13-Sep-00 17:24:00	160.2317857	1132.403442	20.83585487	758.1875	89.83411407	195.8755829	78.35313416	32.73279572	1.527976528	Tag not found: -5	29.58309937	2.154355704					
13-Sep-00 17:25:00	159.8600006	1132.573653	20.79380798	758.4087993	89.85264587	195.6470642	78.34612274	32.72138598	1.573812009	Tag not found: -5	29.58283806	2.153824091					
13-Sep-00 17:26:00	159.9730988	1132.744263	20.7516613	758.381958	89.87117004	195.8185303	78.33911133	32.7099762	1.576258196	Tag not found: -5	29.58257868	2.153292418					
13-Sep-00 17:27:00	160.0600891	1132.879565	20.70951462	758.7329712	89.88970184	195.9000118	78.33210754	32.69856644	1.578915153	Tag not found: -5	29.58231735	2.152760744					
13-Sep-00 17:28:00	160.1470642	1132.606812	20.68787003	758.5892432	89.90822601	195.5614929	78.32506613	32.68715668	1.580015562	Tag not found: -5	29.58202901	2.152229071					
13-Sep-00 17:29:00	160.2340546	1132.533938	20.67897034	757.7340088	89.92675018	195.532959	78.31808472	32.67574692	1.568143807	Tag not found: -5	29.58179865	2.151697397					
13-Sep-00 17:30:00	160.2906494	1132.527954	20.67007065	758.4375	89.94528198	195.5044403	78.3110733	32.66433716	1.580272158	Tag not found: -5	29.58153534	2.151165724					
13-Sep-00 17:31:00	160.3404388	1132.580444	20.66116905	758.4375	89.96380615	195.4759064	78.30406952	32.6529274	1.580407068	Tag not found: -5	29.58127403	2.150634045					
13-Sep-00 17:32:00	160.0822449	1132.628174	20.91983032	758.4375	89.98233795	195.4473877	78.29705811	32.64151764	1.560314646	Tag not found: -5	29.58101463	2.150102377					
13-Sep-00 17:33:00	160.1028442	1132.648928	20.363941	758.4938965	90.0088212	195.418869	78.29004669	32.63010788	1.602347233	Tag not found: -5	29.58075333	2.149507074					
13-Sep-00 17:34:00	159.9960938	1132.6698	20.82901192	758.7194824	90.01939392	195.3903351	78.28303528	32.61869812	1.568022347	Tag not found: -5	29.58049202	2.14903903					
13-Sep-00 17:35:00	160.1057892	1132.426392	20.57019234	758.9375	90.03791809	195.3618164	78.27603149	32.60728836	1.580517178	Tag not found: -5	29.58023262	2.148507204					
13-Sep-00 17:36:00	160.1365204	1132.331299	20.73137276	758.5041504	90.05644989	195.3332977	78.26902008	32.5958788	1.6048089236	Tag not found: -5	29.57997131	2.147975683					
13-Sep-00 17:37:00	160.4656219	1132.522705	21.14491844	758.9669198	90.07497406	195.3047638	78.26200867	32.58446884	1.541007071	Tag not found: -5	29.57971001	2.147444011					
13-Sep-00 17:38:00	159.9852448	1132.169434	21.11678696	759.6375122	90.09350586	195.2762451	78.25500488	32.57305908	1.542519682	Tag not found: -5	29.57945061	2.146912336					
13-Sep-00 17:39:00	159.9598236	1131.897339	21.08865356	759.6498413	90.11203003	195.2477112	78.24799347	32.56164932	1.544036428	Tag not found: -5	29.57918993	2.146380424					
13-Sep-00 17:40:00	159.9375	1132.233887	21.06052208	758.4406128	90.11370855	195.2191925	78.24098206	32.55023958	1.5458557106	Tag not found: -5	29.57892789	2.145848751					
13-Sep-00 17:41:00	159.9375	1132.358278	21.03238869	757.9375	90.07606508	195.1962738	78.23397064	32.53882898	1.547081093	Tag not found: -5	29.57866859	2.145317078					
13-Sep-00 17:42:00	160.0550385	1132.333374	21.0042572	758.3234863	90.038414	195.1621399	78.22696888	32.52742004	1.548619824	Tag not found: -5	29.57847029	2.144785404					
13-Sep-00 17:43:00	159.8307648	1132.298828	20.97612381	758.5974731	90.00077057	195.1336212	78.21995544	32.51601028	1.550143896	Tag not found: -5	29.57814598	2.144253731					
13-Sep-00 17:44:00	160.4791718	1132.217041	20.94799232	758.1017456	89.96312714	195.1051025	78.21294403	32.50460052	1.551680945	Tag not found: -5	29.57827568	2.143722057					
13-Sep-00 17:45:00	160.0719452	1132.135378	20.91985893	757.9375	89.9254837	195.0765686	78.20593262	32.49319077	1.553222289	Tag not found: -5	29.57844162	2.143190384					
13-Sep-00 17:46:00	162.1218583	1132.053589	20.89172745	757.9375	89.88784027	195.0480499	78.19892883	32.48178101	1.554767603	Tag not found: -5	29.57860565	2.14265871					
13-Sep-00 17:47:00	159.8541718	1131.971802	20.86359406	757.9375	89.85019684	195.019518	78.19191742	32.47037125	1.556317246	Tag not found: -5	29.57877159	2.142127037					
13-Sep-00 17:48:00	159.8671875	1131.890015	20.9831553	757.819458	89.81254578	194.9909987	78.18490601	32.45896149	1.546905724	Tag not found: -5	29.57893562	2.141595364					
13-Sep-00 17:49:00	159.6183014	1132.257813	21.12877653	757.4821768	89.77490224	194.9624786	78.17790222	32.44755173	1.53750424	Tag not found: -5	29.57910156	2.141063689					
13-Sep-00 17:50:00	159.7441406	1132.854907	20.92079926	757.336853	89.73725891	194.9339447	78.17089081	32.43614197	1.550425563	Tag not found: -5	29.57926559	2.140532017					
13-Sep-00 17:51:00	159.5356903	1133.027954	20.86154366	757.125	89.69961548	194.905426	78.16387939	32.42473221	1.554282499	Tag not found: -5	29.57943153	2.14000343					
13-Sep-00 17:52:00	156.6433668	1133.401123	20.80228998	758.8897095	89.66197205	194.8769073	78.15686798	32.41332245	1.558161265	Tag not found: -5	29.57959557	2.13946867					
13-Sep-00 17:53:00	159.01811885	1133.581787	20.74303436	756.4808154	89.82432098	194.8963623	78.1498642	32.40180887	1.562062151	Tag not found: -5	29.57976151	2.138936996					
13-Sep-00 17:54:00	159.2397766	1133.473511	20.68377876	756.2369385	89.58667755	194.9192657	78.14285278	32.39049911	1.565985572	Tag not found: -5	29.57992554	2.138405085					
13-Sep-00 17:55:00	159.2305298	1133.385358	20.82452316	755.9431783	89.54903412	194.9421539	78.13564137	32.37908936	1.569931537	Tag not found: -5	29.58009148	2.137873411					
13-Sep-00 17:56:00	159.4239655	1133.257202	20.56528947	758.625	89.51130669	194.9650421	78.12882996	32.36776796	1.573900596	Tag not found: -5	29.58026551	2.137341738					
13-Sep-00 17:57:00	158.7238617	1133.117065	20.50601387	756.232666	89.47374725	194.9879458	78.12182617	32.35826984	1.577891377	Tag not found: -5	29.58042145	2.136810064					
13-Sep-00 17:58:00	159.315979	1132.974731	20.42650414	756.625	89.43610382	195.0108373	78.11481476	32.34486808	1.583475071	Tag not found: -5	29.58058548	2.136278164					

13-Sep-00 17:58:00	158.8312531	1132.927124	20.34082794	755.6384888	89.39845278	195.0337372	78.10780334	32.33345032	1.589583787	Tag not found: -5	29.58075142	2.135746717
13-Sep-00 18:00:00	158.4080353	1133.100708	20.25515368	755.8411865	89.36080933	195.0566254	78.10078956	32.32204056	1.595744032	Tag not found: -5	29.58091545	2.135215044
13-Sep-00 18:01:00	159.1313934	1133.238892	20.16947937	756.0439453	89.32316589	195.0795135	78.09378815	32.3106308	1.80195681	Tag not found: -5	29.58108139	2.134683371
13-Sep-00 18:02:00	158.7436068	1133.297363	20.75569916	756.125	89.8125	195.102417	78.08677673	32.29922104	1.556161553	Tag not found: -5	29.58124542	2.134151697
13-Sep-00 18:03:00	159.0093689	1133.243774	20.81554794	756.3863525	89.8125	195.1253052	78.07976532	32.28781128	1.551139147	Tag not found: -5	29.58141136	2.133620024
13-Sep-00 18:04:00	159.3710938	1133.190186	20.87539673	756.6728516	89.8125	195.1481934	78.07276154	32.27640152	1.546145539	Tag not found: -5	29.58157539	2.13308835
13-Sep-00 18:05:00	159.6458282	1133.243164	20.93524742	756.8324585	89.8168669	195.1710968	78.06575012	32.26499176	1.541180341	Tag not found: -5	29.58174133	2.132556677
13-Sep-00 18:06:00	159.6956787	1132.587524	20.99509621	756.9920044	89.82785797	195.184906	78.05873871	32.253582	1.536243592	Tag not found: -5	29.58190536	2.132025003
13-Sep-00 18:07:00	159.4918229	1132.477661	20.92460251	756.8977051	89.83882904	195.1757355	78.05172729	32.24217224	1.540873822	Tag not found: -5	29.5820713	2.13149333
13-Sep-00 18:08:00	159.2890825	1132.390015	20.8519001	757.6875	89.84980011	195.1665802	78.04472351	32.23076248	1.545699065	Tag not found: -5	29.58223534	2.130961657
13-Sep-00 18:09:00	159.6468811	1132.339111	20.77919769	756.890625	89.86077118	195.1574097	78.03659821	32.21935272	1.550558072	Tag not found: -5	29.58240128	2.130429983
13-Sep-00 18:10:00	159.5251923	1132.567383	20.70649529	757.375	89.87174225	195.1462391	78.02810669	32.20794296	1.555451201	Tag not found: -5	29.58256531	2.129898071
13-Sep-00 18:11:00	159.8719788	1132.784058	20.63379097	758.4375	89.88271332	195.1390839	78.01961517	32.1965332	1.560378956	Tag not found: -5	29.58273125	2.129366398
13-Sep-00 18:12:00	159.9375	1132.924805	20.57264709	758.4375	89.89368439	195.1299133	78.01111603	32.18512344	1.564461943	Tag not found: -5	29.58289528	2.128834724
Average	159.7164992	1132.638696	20.79470253	757.7012568	89.83613511	195.2975401	78.16395319	32.52741879	1.56439857	Tag not found: -5	29.58142584	2.144785467

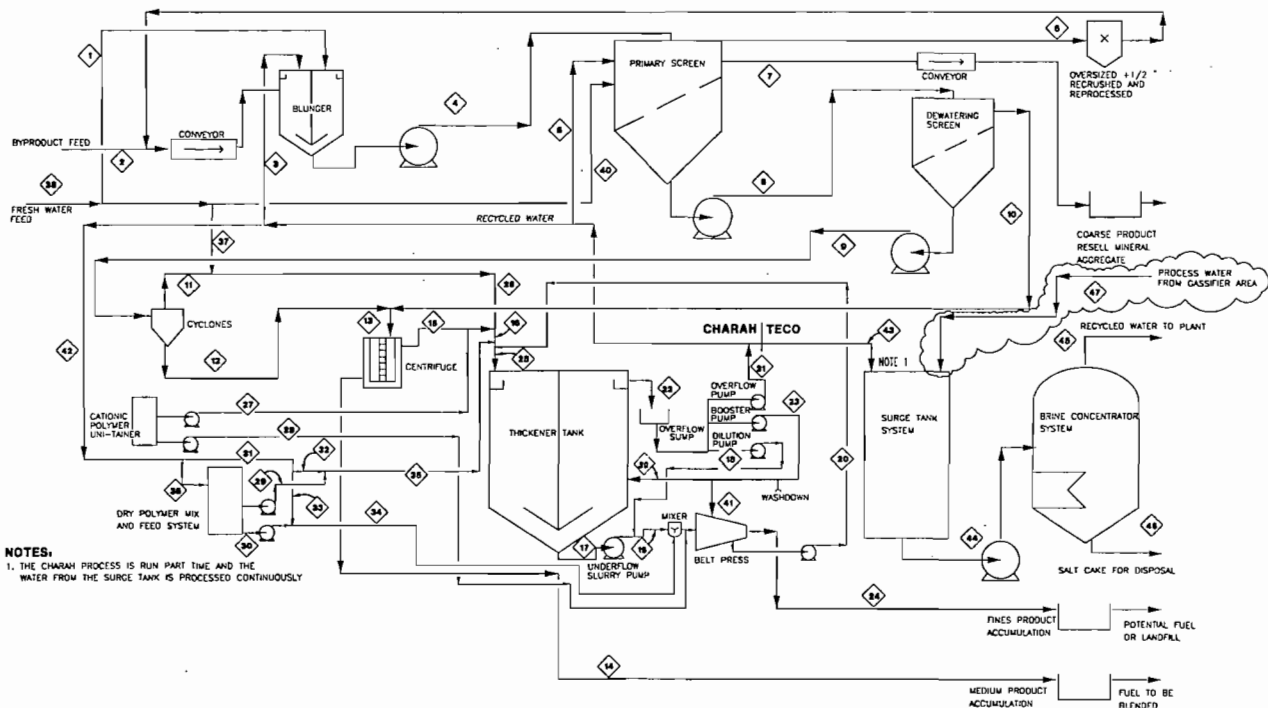
	Generator Output	Mean	Turbine	Fuel Oil	Compressor	Compressor Inlet	Compressor	Inlet Guide	Vane	Water Injection	Water	Fuel	Specific Humidity	Barometric	Air Inlet	Duct
	MW	Exhaust Temp °F	Flow	Lbs/sec	Discharge Temp °F	Temperature °F	Discharge Press Psia	Angle	Dea	Rate lbs/sec	Ratio	lbs water/ lbs air	Pressure	Hg	Losses	H.O
9/13/2000																
Tag #	2PWRJ1900	2TMET1934	2FOYFI900	2TMST1920B	2TMST1922M	2TMSP1918	2PWRZ1904	2TMSFI914				2TMDMI915	2TMSP1909		2TMSPD1912	
Start Time	9/13/00 8:23 PM	9/13/00 6:23 PM	9/13/00 6:23 PM	9/13/00 6:23 PM	9/13/00 6:23 PM	9/13/00 6:23 PM	9/13/00 6:23 PM	9/13/00 6:23 PM	9/13/00 6:23 PM	9/13/00 6:23 PM	9/13/00 6:23 PM	9/13/00 6:23 PM	9/13/00 6:23 PM	9/13/00 6:23 PM	9/13/00 6:23 PM	9/13/00 6:23 PM
End Time	9/13/00 7:23 PM	9/13/00 7:23 PM	9/13/00 7:23 PM	9/13/00 7:23 PM	9/13/00 7:23 PM	9/13/00 7:23 PM	9/13/00 7:23 PM	9/13/00 7:23 PM	9/13/00 7:23 PM	9/13/00 7:23 PM	9/13/00 7:23 PM	9/13/00 7:23 PM	9/13/00 7:23 PM	9/13/00 7:23 PM	9/13/00 7:23 PM	9/13/00 7:23 PM
	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min
13-Sep-00 18:23:00	159.53125	1132.294556	20.87481499	757.5600588	90.01437378	195.0291138	77.91768648	32.05961609	1.535803804	Tag not found: -5	29.58471107	2.122986317				
13-Sep-00 18:24:00	159.6414795	1132.435181	20.80718422	757.375	90.02534485	195.0199432	77.90919495	32.04820633	1.540247157	Tag not found: -5	29.58487511	2.122454643				
13-Sep-00 18:25:00	159.9857178	1132.575806	20.73955345	757.2799072	90.03631592	195.010786	77.90070343	32.03679657	1.54471969	Tag not found: -5	29.58504105	2.12192297				
13-Sep-00 18:26:00	159.3225403	1132.716431	20.67192268	757.1335449	90.04728699	195.0016174	77.89221191	32.02538681	1.549221488	Tag not found: -5	29.58520508	2.121391058				
13-Sep-00 18:27:00	159.7376709	1132.787109	20.60429382	756.9871828	90.05825806	194.9924622	77.88371277	32.01397705	1.553752695	Tag not found: -5	29.58537102	2.120859385				
13-Sep-00 18:28:00	159.5740204	1132.707153	20.53666308	756.4020386	90.06922913	194.9832916	77.87522125	32.00256729	1.55831389	Tag not found: -5	29.58553696	2.120327711				
13-Sep-00 18:29:00	159.592453	1132.627075	20.57833099	756.8074341	90.0802002	194.9741211	77.86672974	31.99115562	1.554603997	Tag not found: -5	29.58570099	2.119796038				
13-Sep-00 18:30:00	160.3574219	1132.547119	20.64186096	756.875	90.09117128	194.9649858	77.85823822	31.97974586	1.549266606	Tag not found: -5	29.58586693	2.119264364				
13-Sep-00 18:31:00	159.9882823	1132.467041	20.70539093	756.875	90.10214233	194.9557953	77.84973907	31.96833611	1.543961967	Tag not found: -5	29.58603096	2.118732691				
13-Sep-00 18:32:00	159.9828491	1132.386963	20.76891899	756.875	90.1131134	194.94664	77.84124756	31.95692635	1.538689922	Tag not found: -5	29.5861969	2.118201017				
13-Sep-00 18:33:00	159.6151733	1132.519897	20.83244896	756.875	90.12408447	194.9374695	77.83275604	31.94551659	1.533449891	Tag not found: -5	29.58636093	2.117669344				
13-Sep-00 18:34:00	159.6979218	1132.641479	20.89597893	756.6392822	89.55125427	194.928299	77.82428453	31.93410683	1.528241722	Tag not found: -5	29.58652687	2.117137671				
13-Sep-00 18:35:00	159.6854858	1132.68457	20.95950699	756.375	89.51157379	194.9191437	77.81576538	31.92269707	1.523065265	Tag not found: -5	29.5866909	2.116605997				
13-Sep-00 18:36:00	160.0316315	1132.794189	21.01234627	756.375	89.47189331	194.9099731	77.80727388	31.91128731	1.518692244	Tag not found: -5	29.58685684	2.116074324				
13-Sep-00 18:37:00	159.8267822	1132.908569	20.98424721	756.0540161	89.4322052	194.9008179	77.79878235	31.89987755	1.520182127	Tag not found: -5	29.58702087	2.11554265				
13-Sep-00 18:38:00	159.8886414	1133	20.95614815	755.875	89.39252472	194.8916473	77.7902832	31.88846779	1.521876005	Tag not found: -5	29.58718681	2.115010977				
13-Sep-00 18:39:00	159.8096008	1133	20.92804909	755.875	89.35284424	194.8824768	77.78179169	31.87705803	1.523173894	Tag not found: -5	29.58735085	2.114479303				
13-Sep-00 18:40:00	158.859375	1133	20.89994812	755.7987061	89.31316376	194.8656484	77.77330017	31.86564827	1.524875951	Tag not found: -5	29.58751678	2.11394763				
13-Sep-00 18:41:00	159.216217	1133	20.87184906	755.375	89.27347565	194.8146515	77.76480865	31.85423851	1.526181912	Tag not found: -5	29.58768082	2.113415718				
13-Sep-00 18:42:00	159.125	1133	20.84375	755.0499878	89.23379517	194.7836566	77.75630951	31.84282875	1.527691934	Tag not found: -5	29.58784676	2.112884045				
13-Sep-00 18:43:00	159.4859314	1133	20.79614258	755.2445879	89.19411469	194.712677	77.74781799	31.83141899	1.530640544	Tag not found: -5	29.58801079	2.112352371				
13-Sep-00 18:44:00	159.4385681	1132.925659	20.74853516	754.9837036	89.1543432	194.6616821	77.73932648	31.82000923	1.533602685	Tag not found: -5	29.58817673	2.111820698				
13-Sep-00 18:45:00	159.9882813	1132.694824	20.70092773	754.875	89.11474609	194.6106873	77.73083496	31.80859947	1.536578451	Tag not found: -5	29.58834078	2.111289024				
13-Sep-00 18:46:00	159.5189362	1132.597412	20.65332031	754.875	89.07506581	194.5596924	77.72233582	31.79718971	1.539567935	Tag not found: -5	29.5885087	2.110757351				
13-Sep-00 18:47:00	159.2860565	1132.5	20.60571289	755.3392944	89.00196838	194.5086975	77.7138443	31.78577995	1.542571234	Tag not found: -5	29.58867073	2.110225677				
13-Sep-00 18:48:00	159.3476583	1132.938721	20.55810547	754.6621704	88.91338348	194.4577028	77.70535278	31.77437019	1.545588442	Tag not found: -5	29.58883667	2.109694004				
13-Sep-00 18:49:00	159.7857208	1132.797119	20.57284548	754.3125	88.82480621	194.4067078	77.69886127	31.76295853	1.543926366	Tag not found: -5	29.5890007	2.109162331				
13-Sep-00 18:50:00	159.9827728	1132.655684	20.62914848	754.3125	88.73622131	194.3557129	77.68836212	31.75154877	1.539159447	Tag not found: -5	29.58916684	2.108630657				
13-Sep-00 18:51:00	159.40625	1132.51416	20.68545341	754.6193237	88.64763641	194.304718	77.67987061	31.74013901	1.534418338	Tag not found: -5	29.58933067	2.108098984				
13-Sep-00 18:52:00	159.140825	1132.372681	20.74175644	754.3125	88.55905151	194.2537231	77.67137909	31.72872625	1.529703106	Tag not found: -5	29.58949681	2.10756731				
13-Sep-00 18:53:00	159.5153961	1132.210179	20.78805948	754.3125	88.5	194.2027283	77.66288757	31.71731949	1.525013405	Tag not found: -5	29.58966064	2.107035637				
13-Sep-00 18:54:00	159.3020782	1132.384277	20.85436444	753.3125	88.5	194.1517334	77.65438843	31.70590973	1.520348889	Tag not found: -5	29.58982658	2.106503963				
13-Sep-00 18:55:00	159.4036407	1132.587524	20.91066742	752.9828491	88.46002825	194.1007385	77.64589891	31.69449997	1.51570983	Tag not found: -5	29.58999062	2.10597229				
13-Sep-00 18:56:00	159.1953125	1132.824829	20.93374062	752.3234863	88.44007874	194.1858173	77.6374054	31.68630051	1.514125024	Tag not found: -5	29.59015656	2.105440617				
13-Sep-00 18:57:00	159.0187531	1132.864722	20.89510153	752.7484131	88.40013123	194.5790863	77.62891388	31.67956997	1.517081139	Tag not found: -5	29.59032059	2.104980705				
13-Sep-00 18:58:00	158.875	1132.79541	20.85646057	753.1893311	88.36018372	194.9923401	77.62041473	31.7028389	1.52004885	Tag not found: -5	29.59048653	2.104377031				
13-Sep-00 18:59:00	159.2570343	1132.113647	20.8178215	753.6240845	88.32023621	195.0508091	77.61192322	31.70610619	1.523027094	Tag not found: -5	29.59065056	2.103845358				
13-Sep-00 19:00:00	160.5838013	1131.556763	20.77918053	754.875	88.26029633	195.7812457	77.63871002	31.70937538	1.526016648	Tag not found: -5	29.5908165	2.103313684				
13-Sep-00 19:01:00	159.8125	1131.83252	20.74054148	754.875	88.24034882	195.8287559	77.68081066	31.71264458	1.529071798	Tag not found: -5	29.59098053	2.102782011				
13-Sep-00 19:02:00	160.5916595	1131.888896	20.70190048	754.825	88.20040131	195.8982708	77.72251129	31.71591377	1.532029091	Tag not found: -5	29.59114647	2.102503338				
13-Sep-00 19:03:00	159.9375	1131.905396	20.86325951	754.854187	88.1604538	195.9637909	77.76441958	31.71918106	1.535052156	Tag not found: -5	29.5913105	2.101718663				
13-Sep-00 19:04:00	159.8457031	1131.925293	20.62482044	754.5581055	88.12050629	196.0312958	77.80632019	31.72245028	1.5380865	Tag not found: -5	29.59147644	2.10118659				

13-Sep-00 19:05:00	159.9375	1131.821167	20.59213257	754.3125	88.08055878	196.0988159	77.84822083	31.72571945	1.540671873	Tag not found: -5	29.59164047	2.100655317
13-Sep-00 19:06:00	159.9375	1131.717041	20.81501312	755.3218994	88.04061127	196.1663208	77.89012909	31.72898674	1.539120376	Tag not found: -5	29.59180841	2.100123644
13-Sep-00 19:07:00	160.5874939	1131.802417	20.63789368	754.3125	88.00066378	196.2338409	77.93202972	31.73225594	1.537572411	Tag not found: -5	29.59197044	2.09959197
13-Sep-00 19:08:00	159.8856859	1131.408447	20.66077423	754.2125244	88	196.3013458	77.97393799	31.73552513	1.536027875	Tag not found: -5	29.59213638	2.099060297
13-Sep-00 19:09:00	160.4872852	1130.837524	20.68365479	754.6339111	88	196.368866	78.01583882	31.73879242	1.534486663	Tag not found: -5	29.59230042	2.098528824
13-Sep-00 19:10:00	160.907196	1131.15332	20.70653534	755.3533325	88	196.4363706	78.05773928	31.74206181	1.53294895	Tag not found: -5	29.59246635	2.09799695
13-Sep-00 19:11:00	160.8012238	1131.056641	20.72941589	755.375	88	196.4738922	78.09964752	31.74533081	1.531414632	Tag not found: -5	29.59263039	2.097465277
13-Sep-00 19:12:00	160.9095001	1131.17041	20.75229645	755.6566772	88.00840759	196.5108946	78.14154818	31.74860001	1.529883897	Tag not found: -5	29.59279633	2.096933603
13-Sep-00 19:13:00	160.0046844	1131.40271	20.775177	755.710083	88.05428314	196.5478973	78.18344879	31.75186729	1.528356042	Tag not found: -5	29.59296036	2.096401691
13-Sep-00 19:14:00	160.9042969	1130.71582	20.79805756	756.1972046	88.10015106	196.5849152	78.22535708	31.75513649	1.52683184	Tag not found: -5	29.5931263	2.095670018
13-Sep-00 19:15:00	160.890625	1130.078857	20.82093811	756.375	88.14602661	196.6219177	78.26725769	31.75840569	1.525310988	Tag not found: -5	29.59329033	2.095338345
13-Sep-00 19:16:00	161.1267889	1130.702759	20.84381866	756.375	88.19189453	196.5606689	78.30915833	31.76167297	1.523783384	Tag not found: -5	29.59345627	2.094806671
13-Sep-00 19:17:00	161.1784515	1130.836792	20.86669922	756.8379517	88.23777008	196.4904785	78.35106659	31.76494217	1.522279199	Tag not found: -5	29.5936203	2.094274998
13-Sep-00 19:18:00	161.4565277	1130.683718	20.88957977	756.6780398	88.283638	196.4202881	78.39296722	31.76821138	1.520768331	Tag not found: -5	29.59378624	2.093743324
13-Sep-00 19:19:00	161.0906219	1130.53064	20.91248033	756.7084209	88.32951355	196.3500977	78.43487549	31.77147865	1.519260678	Tag not found: -5	29.59395027	2.093211651
13-Sep-00 19:20:00	160.9737854	1129.95459	20.93534088	756.2307739	88.37538147	196.2799072	78.47677612	31.77474785	1.517756411	Tag not found: -5	29.59411621	2.092679977
13-Sep-00 19:21:00	161.15625	1130.004028	20.95822144	756.583313	88.42125702	196.2097321	78.51867878	31.77801704	1.516255429	Tag not found: -5	29.59428024	2.092148304
13-Sep-00 19:22:00	160.4497223	1131.307983	20.78948784	755.375	88.46712494	196.0797272	78.48154449	31.78128624	1.528719057	Tag not found: -5	29.59444618	2.091816631
13-Sep-00 19:23:00	160.2020418	1131.80481	20.81414719	755.6346438	88.53219604	195.9220278	78.41053772	31.78455353	1.541880595	Tag not found: -5	29.59461021	2.091084957
Average	159.9517349	1132.079826	20.76987732	755.4452615	88.84898064	195.3321631	77.90034697	31.81434237	1.531807587	#DIV/0!	29.58966105	2.10703557

	Generator Output	Mean	Turbine	Fuel Oil	Compressor	Compressor Inlet	Compressor	Inlet Guide	Vane	Water Injection	Water	Fuel	Specific Humidity	Barometric	Air Inlet	Duct
	MW	Exhaust Temp	°F	Flow	Lbs/sec	°F	Discharge Temp	Discharge Press		Rate						
9/13/2000																
Tag #	2PWRJ1900	2TMTET1934	2FOYFI900	2TMSTI9208	2TMSTI922M	2TMSP1916	2PWRZ1904	2TMSFI914				2TMDMI915	2TMSP1909	2TMSPDI912		
Start Time	9/13/00 7:28 PM	9/13/00 7:28 PM	9/13/00 7:28 PM	9/13/00 7:28 PM	9/13/00 7:28 PM	9/13/00 7:28 PM	9/13/00 7:28 PM	9/13/00 7:28 PM	9/13/00 7:28 PM	9/13/00 7:28 PM	9/13/00 7:28 PM	9/13/00 7:28 PM	9/13/00 7:28 PM	9/13/00 7:28 PM	9/13/00 7:28 PM	9/13/00 7:28 PM
End Time	9/13/00 8:28 PM	9/13/00 8:28 PM	9/13/00 8:28 PM	9/13/00 8:28 PM	9/13/00 8:28 PM	9/13/00 8:28 PM	9/13/00 8:28 PM	9/13/00 8:28 PM	9/13/00 8:28 PM	9/13/00 8:28 PM	9/13/00 8:28 PM	9/13/00 8:28 PM	9/13/00 8:28 PM	9/13/00 8:28 PM	9/13/00 8:28 PM	9/13/00 8:28 PM
	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min	1 min
13-Sep-00 19:28:00	160.1875	1132	20.6837618	753.5625	88.52923584	195.1334688	78.05551147	31.8008976	1.537481345	Tag not found: -5	29.5954361	2.088426352				
13-Sep-00 19:29:00	159.6897278	1132.173098	20.70859528	752.6624756	88.45763397	195.0701904	77.9845047	31.80416489	1.535795377	Tag not found: -5	29.59560013	2.087894678				
13-Sep-00 19:30:00	159.2437439	1132.572754	20.73342898	752.5374756	88.38603393	195.0841827	77.91349792	31.80743408	1.53411354	Tag not found: -5	29.59576607	2.087363005				
13-Sep-00 19:31:00	159.2827606	1132.822876	20.75826263	752.6241455	88.31443787	195.098175	77.84249115	31.81070328	1.532435726	Tag not found: -5	29.59593301	2.086831331				
13-Sep-00 19:32:00	159.1553802	1132.848999	20.78309631	752.8624878	88.25	195.1121674	77.77148438	31.81397057	1.530781831	Tag not found: -5	29.59609604	2.086299658				
13-Sep-00 19:33:00	159.5071259	1132.875	20.80792999	752.5625	88.25	195.1261597	77.7004776	31.81723976	1.529092023	Tag not found: -5	29.59626007	2.085787984				
13-Sep-00 19:34:00	159.3444061	1133.053589	20.83276367	753.0516357	88.25	195.140152	77.62947845	31.82050896	1.527426195	Tag not found: -5	29.59642601	2.085236311				
13-Sep-00 19:35:00	159.5695496	1132.940796	20.85759544	753.697937	88.25	195.1541443	77.55847168	31.82377815	1.525764475	Tag not found: -5	29.59659004	2.084704638				
13-Sep-00 19:36:00	159.8085175	1132.5625	20.88242912	754.0625	88.25	195.1681366	77.53559875	31.82704544	1.524106475	Tag not found: -5	29.59675598	2.084172964				
13-Sep-00 19:37:00	159.5732422	1132.310059	20.9072828	755.0341187	88.25	195.1821289	77.54265594	31.83031484	1.522452505	Tag not found: -5	29.59692001	2.083641291				
13-Sep-00 19:38:00	159.285825	1131.928711	20.93209648	755.125	88.25	195.1723785	77.54970551	31.83358383	1.52080248	Tag not found: -5	29.59708595	2.083109617				
13-Sep-00 19:39:00	159.6831818	1131.888354	20.95693016	754.8609619	88.22695923	195.1478729	77.5567627	31.83685112	1.519156235	Tag not found: -5	29.59724998	2.082577944				
13-Sep-00 19:40:00	159.578125	1131.90625	20.98176384	754.930542	88.20136281	195.1233673	77.56381989	31.84012032	1.517513997	Tag not found: -5	29.59741592	2.08204627				
13-Sep-00 19:41:00	160.34375	1132.277344	21.00659752	754.0625	88.17576599	195.0988817	77.57086945	31.84338951	1.515875643	Tag not found: -5	29.59757996	2.081514597				
13-Sep-00 19:42:00	160.6181804	1132.162478	21.0314312	754.8125	88.15016937	195.0743408	77.57792684	31.84665668	1.514241066	Tag not found: -5	29.5977459	2.080982924				
13-Sep-00 19:43:00	159.5812946	1132.3125	20.63265228	754.2788696	88.12457275	195.0498352	77.58498383	31.84992599	1.543666105	Tag not found: -5	29.59790993	2.08045125				
13-Sep-00 19:44:00	160.1586609	1131.591875	20.9923954	754.625	88.09897614	195.0253298	77.59203339	31.85319519	1.517368294	Tag not found: -5	29.59807587	2.079919338				
13-Sep-00 19:45:00	159.8883972	1131.5625	20.92071915	754.4891357	88.07337952	195.000824	77.59909058	31.85648439	1.522723199	Tag not found: -5	29.5982399	2.079387665				
13-Sep-00 19:46:00	159.7937489	1132.170778	20.84904099	753.2281353	88.0477829	194.9783031	77.60614777	31.85973167	1.528114972	Tag not found: -5	29.59840584	2.078855991				
13-Sep-00 19:47:00	160.2421875	1132.375	20.77736282	752.5625	88.02218628	194.9517975	77.61319733	31.86300087	1.533544037	Tag not found: -5	29.59856987	2.078324318				
13-Sep-00 19:48:00	160.3022814	1131.4375	20.70568466	752.340271	87.97406006	194.9272919	77.62025452	31.86388206	1.538889361	Tag not found: -5	29.59873581	2.077792645				
13-Sep-00 19:49:00	159.5426178	1131.544678	20.6340065	751.8091187	87.77947998	194.902771	77.62731171	31.85961151	1.54403419	Tag not found: -5	29.59889984	2.077260971				
13-Sep-00 19:50:00	159.7401733	1131.58867	20.56233025	751.6807861	87.58490753	194.8762654	77.63438127	31.85534096	1.549208702	Tag not found: -5	29.59906578	2.076729298				
13-Sep-00 19:51:00	159.7940389	1131.815845	20.5376873	751.6875	87.39032745	194.8537598	77.64141846	31.8510704	1.550859643	Tag not found: -5	29.59922981	2.076197824				
13-Sep-00 19:52:00	159.285625	1131.644897	20.64239693	751.0904541	87.195755	194.6292542	77.64846802	31.84679985	1.542785945	Tag not found: -5	29.59939575	2.075665951				
13-Sep-00 19:53:00	159.265625	1131.67395	20.74710655	751.25	87.00118256	194.8047333	77.65552521	31.8425293	1.534793742	Tag not found: -5	29.59955978	2.075134277				
13-Sep-00 19:54:00	159.1204529	1131.909668	20.85181618	751.4095459	88.80660248	194.7802277	77.6625824	31.83825874	1.526881806	Tag not found: -5	29.59972572	2.074602604				
13-Sep-00 19:55:00	159.3656311	1132.153564	20.86680031	751.2233887	86.84972687	194.755722	77.66963196	31.83398819	1.525580718	Tag not found: -5	29.59988978	2.07407093				
13-Sep-00 19:56:00	159.279953	1132.212846	20.83691978	751.8693048	87.02060699	194.7312164	77.67668915	31.82971764	1.527563477	Tag not found: -5	29.60005569	2.073539257				
13-Sep-00 19:57:00	159.3136139	1132.25	20.80704117	751.6363525	87.1875	194.7066956	77.68374634	31.82544708	1.529551791	Tag not found: -5	29.60021973	2.073007584				
13-Sep-00 19:58:00	160.0334778	1131.77478	20.77716255	752.0625	87.1875	194.6950684	77.6907959	31.82117653	1.531545623	Tag not found: -5	29.60038567	2.07247591				
13-Sep-00 19:59:00	159.9584045	1132.039795	20.74728394	752.0625	87.1875	194.7300262	77.69785309	31.81890598	1.533545599	Tag not found: -5	29.6005492	2.071944237				
13-Sep-00 20:00:00	159.8125	1132.403564	20.7467556	752.0625	87.1875	194.7649841	77.70491028	31.81263542	1.53337881	Tag not found: -5	29.60071564	2.071412325				
13-Sep-00 20:01:00	160.078125	1132.434814	20.76321983	752.0625	87.1875	194.799942	77.71195984	31.80836487	1.531957236	Tag not found: -5	29.60087967	2.070880651				
13-Sep-00 20:02:00	159.6328125	1132.060059	20.77968407	752.0625	87.24690247	194.8348999	77.71901703	31.80409431	1.530537814	Tag not found: -5	29.60104561	2.070348978				
13-Sep-00 20:03:00	159.9017792	1132.240356	20.7961483	752.5625	87.54393768	194.8698578	77.72607422	31.79982376	1.52912084	Tag not found: -5	29.60120964	2.069817305				
13-Sep-00 20:04:00	159.8125	1132.216553	20.8270092	751.7098999	88.71289063	194.9048157	77.73312378	31.79555321	1.526649981	Tag not found: -5	29.60137558	2.069285564				

13-Sep-00 20:05:00	159.8699951	1132.056763	20.86334036	751.5	87.42500305	194.9397736	77.74018097	31.79128075	1.523788708	Tag not found: -5	29.60153961	2.068753958
13-Sep-00 20:06:00	159.8720245	1131.896973	20.88316536	751.546875	87.1875	194.9747314	77.74723053	31.78701019	1.522135638	Tag not found: -5	29.60170555	2.068222284
13-Sep-00 20:07:00	160.0729218	1131.737061	20.90299225	751.7653198	87.1875	195.0096893	77.75426772	31.78273964	1.520487558	Tag not found: -5	29.60186958	2.067690811
13-Sep-00 20:08:00	159.8403168	1131.577271	20.92281723	751.8707275	87.1875	195.0446472	77.76134491	31.77846909	1.518842742	Tag not found: -5	29.60203552	2.067158937
13-Sep-00 20:09:00	159.629425	1131.589214	20.94284221	752.0625	87.1875	195.0796051	77.76839447	31.77419853	1.517201039	Tag not found: -5	29.60219955	2.066627264
13-Sep-00 20:10:00	159.4232025	1131.903442	20.9624891	752.0625	87.1875	195.114563	77.77545168	31.76992798	1.515562304	Tag not found: -5	29.60236549	2.066095591
13-Sep-00 20:11:00	159.9955292	1132.232422	20.98229408	751.9482422	87.1875	195.1495209	77.78250885	31.76565742	1.513926804	Tag not found: -5	29.60252953	2.065563917
13-Sep-00 20:12:00	159.7011871	1132.487305	21.00211908	751.96875	87.1875	195.1844788	77.78955841	31.78138687	1.512294392	Tag not found: -5	29.60289547	2.065032244
13-Sep-00 20:13:00	159.3083344	1132.380249	21.02194595	752.5625	87.23544312	195.2194368	77.7968156	31.75711632	1.510664921	Tag not found: -5	29.6028614	2.06450057
13-Sep-00 20:14:00	159.8125	1131.984375	21.04177094	752.0625	87.64640045	195.2543945	77.80367279	31.75284578	1.509038658	Tag not found: -5	29.60302544	2.063968897
13-Sep-00 20:15:00	159.5545197	1131.609131	21.01015091	752.3816528	87.1875	195.2893524	77.81072235	31.74857521	1.511106481	Tag not found: -5	29.60319138	2.063436985
13-Sep-00 20:16:00	160.0390625	1131.541382	20.82419586	752.2877197	87.19168565	195.3243103	77.81777954	31.74430466	1.524395221	Tag not found: -5	29.60335541	2.062905312
13-Sep-00 20:17:00	159.5416718	1131.473633	20.63823891	751.9490967	87.2416687	195.3592682	77.82483673	31.7400341	1.537923572	Tag not found: -5	29.60352135	2.062373638
13-Sep-00 20:18:00	159.40625	1131.296753	20.55564117	753.5341797	87.29166412	195.3854022	77.80318925	31.73578355	1.54369558	Tag not found: -5	29.60368538	2.081841965
13-Sep-00 20:19:00	160.4514618	1131.006104	20.59116936	754.0625	87.34166718	195.3479814	77.75637817	31.731493	1.541024332	Tag not found: -5	29.60385132	2.081310291
13-Sep-00 20:20:00	160.6753845	1131.368896	20.62669754	754.0148926	87.39167023	195.3305206	77.7095871	31.72722244	1.538162974	Tag not found: -5	29.60401535	2.080778618
13-Sep-00 20:21:00	160.84758	1131.731812	20.68222382	753.6555178	87.43090057	195.3130798	77.66280365	31.72295169	1.535311599	Tag not found: -5	29.60418129	2.080246944
13-Sep-00 20:22:00	160.696579	1131.682739	20.59833336	752.875	87.35166931	195.295639	77.61601257	31.71868134	1.539866395	Tag not found: -5	29.60434532	2.059715271
13-Sep-00 20:23:00	160.9548187	1131.612061	20.50694466	752.8643188	87.27244568	195.2781982	77.5692215	31.71441078	1.546520523	Tag not found: -5	29.60451126	2.059183598
13-Sep-00 20:24:00	160.546875	1131.452148	20.41555595	751.949707	87.19322205	195.2607574	77.52243042	31.71014023	1.553234225	Tag not found: -5	29.60467529	2.058651924
13-Sep-00 20:25:00	160.3100891	1131.127319	20.32416725	751.5	87.11399841	195.2433167	77.47563934	31.70586967	1.560008304	Tag not found: -5	29.60484123	2.058120251
13-Sep-00 20:26:00	159.90625	1130.854492	20.46582031	751.7327881	87.03477478	195.2258759	77.42684827	31.70159912	1.549002123	Tag not found: -5	29.60500528	2.057588577
13-Sep-00 20:27:00	160.3343046	1130.826294	21.0758934	752.385437	86.95554352	195.2084351	77.38206482	31.6878376	1.503511002	Tag not found: -5	29.6051712	2.057058904
13-Sep-00 20:28:00	160.4080811	1130.948829	21.03125	751.2333984	86.87631989	195.1909943	77.33527374	31.67302132	1.505998042	Tag not found: -5	29.60533524	2.05652523
Average	159.8346075	1131.929381	20.79536078	752.6571925	87.55567832	195.0600541	77.67682698	31.79551991	1.529069315	#DIV/0!	29.60036545	2.072475805

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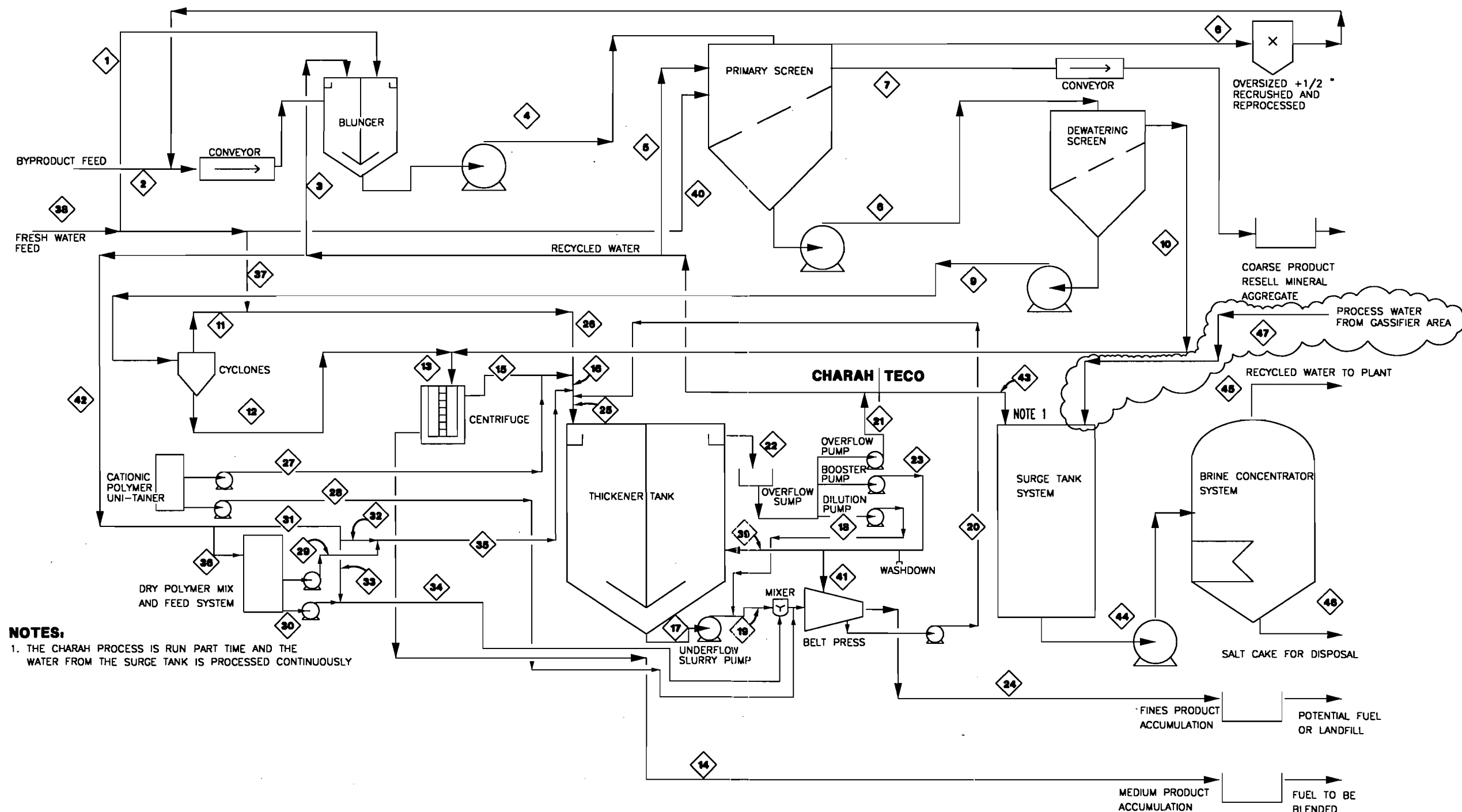
NOTES:
1. THE CHARAH PROCESS IS RUN PART TIME AND THE WATER FROM THE SURGE TANK IS PROCESSED CONTINUOUSLY

CHARAH PROCESS AT POLK P.S.

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PROCESS FLOW DIAGRAM
CHARAH FUEL RECOVERY
REHABILITATION PROCESS
POLK POWER STATION

92127-PFD-23-7F



NOTES:
 1. THE CHARAH PROCESS IS RUN PART TIME AND THE WATER FROM THE SURGE TANK IS PROCESSED CONTINUOUSLY

**CHARAH PROCESS
 AT POLK P.S.**

PFD-23-7F				PROJECT #			
FILE NAME				PROJECT NUMBER			
1	ADDED NUMBER 47	JFM	MAP	TAD	6/19/01	PROCESS FLOW DIAGRAM CHARAH FUEL RECOVERY BENEFICIATION PROCESS POLK POWER STATION	
0	ORIGINAL ISSUE	MJS	TAD	TAD	06/12/01		
REV#	DESCRIPTION	DATE	BY	CHKD	DATE		
APD	TAD	6/12/01				ENERGY SUPPLY - GENERATION ENGINEERING	
CHKD	TAD	6/12/01					
DRN	MJS	6/6/01				92127-PFD-23-7F	
DRN	CHKD					1	



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JUN 26 2001

BUREAU OF AIR REGULATION

June 25, 2001

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

Via FedEx
Airbill No. 7900 8642 6427

**Re: Tampa Electric Polk Power Station
Coal Residual Beneficiation**

Dear Mr. Sheplak:

Tampa Electric Company (TEC) presently generates coal residual material, or slag, at its Polk Power Station as a by-product of the coal gasification process. An air source construction permit application to handle, store, beneficiate, and combust this by-product material at TEC's Big Bend Station was previously submitted to the Department and the Hillsborough County Environmental Protection Commission in May 2001. TEC now plans to install and operate the coal residual beneficiation process (i.e., the Charah Environmental Slag Beneficiation Process) at the Polk Power Station instead of the Big Bend Station. Coal residual beneficiated at the Polk Power Station will be transferred by truck to the Big Bend Station for use as a supplemental fuel.

The coal residual beneficiation process is essentially a wet process and therefore will have insignificant fugitive particulate matter (PM) emissions. A process description, process flow diagram, and PM emission estimates are included with this letter as Attachments I through III, respectively. A professional engineer certification is provided in Attachment IV.

Estimates of potential fugitive PM emissions are projected to be less than one ton per year. Accordingly, the coal residual beneficiation process qualifies for the generic emissions unit exemption pursuant to Rule 62-210.300(3)(b)1., F.A.C. Department confirmation that the proposed Polk Power Station coal residual beneficiation process is exempt from permitting is requested. If you have any questions regarding this matter, please feel free to contact me at (813) 641-5376.

Sincerely,

Laura R. Crouch
Manager-Air Programs
Environmental Affairs

EA\l\SKT262

Enclosures

c: Mr. Jerry Kissel, FDEP SW

6/26/01 cc: Ed Sree

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

(813) 228-4111

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OUTSIDE HILLSBOROUGH COUNTY 1 (888) 223-0800

ATTACHMENT I

TAMPA ELECTRIC COMPANY POLK POWER STATION

COAL RESIDUAL BENEFICIATION PROCESS DESCRIPTION

Coal residual material, or slag, is a by-product of the Polk Power Station (PPS) coal gasification process. Tampa Electric Company (TEC) plans to install the Charah Environmental slag beneficiation process at the PPS to process this by-product coal residual and produce a material suitable for use as a supplemental fuel at TEC's Big Bend Station. The Charah beneficiation process is essentially a wet process and therefore will have insignificant emissions of particulate matter. A process flow diagram of the Charah beneficiation process is provided as Attachment II. A description of the Charah beneficiation process follows this introduction.

Slag currently stockpiled at the PPS will be transported to the inlet feed hopper of the beneficiation process by a rubber tired front-end loader. The slag is then transferred from the feed hopper to the slurry blunger by means of a conveyor belt. Water is added and the slag crushed in the blunger to produce a slag slurry that is subsequently pumped to a three deck primary screen.

Spray water is added at the primary screen to wash fines from the +0.5 inch oversize material. The +0.5 inch oversized material will be recycled to the blunger for recrushing. The primary screen will produce a washed 20 mesh to 0.5 inch material that will be transported off-site by truck and sold as an aggregate product. Material passing through the bottom of the primary screen will be pumped to a high frequency dewatering screen.

Underflow from the high frequency dewatering screen will be pumped to cyclones for additional water separation. Underflow from the cyclones will combine with the oversize material from the high frequency dewatering screen to feed a centrifuge for final dewatering. The centrifuge produces a moist, beneficiated coal residual that will be transported from the PPS by truck for use at the Big Bend Station as a supplemental fuel.

The overheads of the cyclones will combine with the centrifuge underflow and be pumped to a thickener. Cationic and anionic polymers will be added to the thickener to improve solids concentration. Underflow (i.e., concentrated solids) from the thickener will be pumped to a filter press for dewatering. Overflow water from the thickener will be recycled and used as process water.

Dewatered cake from the filter press will be initially trucked to a landfill for disposal. In the future, this material may also be blended with the beneficiated coal residual. The underflow from the filter press will be recycled to the feed section of the thickener.

ATTACHMENT II

**TAMPA ELECTRIC COMPANY
POLK POWER STATION**

**COAL RESIDUAL BENEFICIATION
PROCESS FLOW DIAGRAM**

ATTACHMENT III
TAMPA ELECTRIC COMPANY
POLK POWER STATION
COAL RESIDUAL BENEFICIATION
EMISSION ESTIMATES

As previously noted in Attachment I (Process Description), the Charah beneficiation process is essentially a wet process and therefore will have insignificant emissions of particulate matter (PM).

Potential fugitive PM emission points include:

- Transfer of slag from the existing slag stockpile to the beneficiation process inlet feed hopper by front-end loader;
- Transfer of slag from the inlet feed hopper to the slurry blunger; and
- Truck traffic on plant roadways.

The slag inlet feed rate will be up to 100 tons per hour, on a dry basis. Up to 200 tons per day of beneficiated coal residual will be produced by the Charah Environmental process.

Estimates of potential fugitive PM/PM₁₀ emissions due to slag handling (upstream of the slurry blunger) are projected to be less than one ton per year using EPA AP-42 algorithms. Details of the potential fugitive PM/PM₁₀ emission estimates are provided on the attached worksheets.

Downstream of the slurry blunger, fugitive PM/PM₁₀ emissions will be minimal since the coal residual will be in a slurry form or as a moist, solid material. Fugitive PM/PM₁₀ emissions due to truck traffic will be insignificant since all PPS roadways are paved and the trucks will be hauling a moist material.

EMISSION INVENTORY WORKSHEET								FUG-PM			
Tampa Electric Company - Polk Power Station											
EMISSION SOURCE TYPE											
FUGITIVE PM - MATERIAL TRANSFER (DROPS)								Figure:			
FACILITY AND SOURCE DESCRIPTION											
Emission Source Description:					Fugitive PM - Polk Power Station Coal Residual (Drops)						
Emission Control Method(s)/ID No. (s):					Moist material, enclosures						
Emission Point ID:					FUG-PM						
EMISSION ESTIMATION EQUATIONS											
$PM \text{ Emission (lb/hr)} = 0.74 \times 0.0032 \times [(Wind \text{ Speed}/5)^{1.3} / (Material \text{ Moisture Content}/2)^{1.4}] \times Material \text{ Handled (ton/hr)}$											
$PM \text{ Emission (ton/yr)} = 0.74 \times 0.0032 \times [(Wind \text{ Speed}/5)^{1.3} / (Material \text{ Moisture Content}/2)^{1.4}] \times Material \text{ Handled (ton/yr)} \times (1 \text{ ton}/2,000 \text{ lb})$											
Source: Section 13.2-4, AP-42, January 1995.											
INPUT DATA AND EMISSIONS CALCULATIONS											
Mean Wind Speed:				8.6 mph		Material Moisture Content:				1.0 weight %	
Material Transfer Point	Source ID	Material Transfer Rates		Uncontrolled Emission Factor (lb PM/ton)	Control Efficiency (%)	Controlled Emission Factor (lb PM/ton)	Potential PM Emission Rates				
		(lb/hr)	(tpy)				(lb)	(tons)			
Front-End Loader to Inlet Feed Hopper	SF-1	200,000	73,000	0.012648	0.0	0.012648	1.26477	0.46164			
Belt Conveyor to Slurry Blunger	SF-2	200,000	73,000	0.012648	0.0	0.012648	1.26477	0.46164			
						Totals	2.5295	0.9233			
SOURCES OF INPUT DATA											
Parameter	Data Source										
Mean Wind Speed, mph	Climate of the States (Tampa, FL), Third Edition, 1985.										
Material Moisture Content	TEC, 2001.										
Material Transfer Point Identification	ECT, 2001.										
Material Transfer Rates	TEC, 2001.										
NOTES AND OBSERVATIONS											
DATA CONTROL											
Data Collected by:	S. Todd						Date:	6/01			
Evaluated by:	T. Davis						Date:	6/01			
Data Entered by:	T. Davis						Date:	6/01			

EMISSION INVENTORY WORKSHEET							FUG-PM10	
Tampa Electric Company - Polk Power Station								
EMISSION SOURCE TYPE								
FUGITIVE PM ₁₀ - MATERIAL TRANSFER (DROPS)							Figure:	
FACILITY AND SOURCE DESCRIPTION								
Emission Source Description:		Fugitive PM ₁₀ - Polk Power Station Coal Residual (Drops)						
Emission Control Method(s)/ID No.(s):		Moist material, enclosures						
Emission Point ID:		FUG-PM ₁₀						
EMISSION ESTIMATION EQUATIONS								
$PM_{10} \text{ Emission (lb/hr)} = 0.35 \times 0.0032 \times [(Wind \text{ Speed}/5)^{1.3} / (Material \text{ Moisture Content}/2)^{1.4}] \times Material \text{ Handled (ton/hr)}$								
$PM_{10} \text{ Emission (ton/yr)} = 0.35 \times 0.0032 \times [(Wind \text{ Speed}/5)^{1.3} / (Material \text{ Moisture Content}/2)^{1.4}] \times Material \text{ Handled (ton/yr)} \times (1 \text{ ton}/2,000 \text{ lb})$								
Source: Section 13.2-4, AP-42, January 1995.								
INPUT DATA AND EMISSIONS CALCULATIONS								
Mean Wind Speed:		8.6 mph		Material Moisture Content:		1.0 weight %		
Material Transfer Point	Source ID	Material Transfer Rates		Uncontrolled Emission Factor (lb PM/ton)	Control Efficiency (%)	Controlled Emission Factor (lb PM/ton)	Potential PM ₁₀ Emission Rates	
		(lb/hr)	(tpy)				(lb)	(tons)
Front-End Loader to Inlet Feed Hopper	SF-1	200,000	73,000	0.005982	0.0	0.005982	0.59820	0.21834
Belt Conveyor to Slurry Blunger	SF-2	200,000	73,000	0.005982	0.0	0.005982	0.59820	0.21834
						Totals	1.1964	0.4367
SOURCES OF INPUT DATA								
Parameter	Data Source							
Mean Wind Speed, mph	Climate of the States (Tampa, FL), Third Edition, 1985.							
Material Moisture Content	TEC, 2001.							
Material Transfer Point Identification	ECT, 2001.							
Material Transfer Rates	TEC, 2001.							
NOTES AND OBSERVATIONS								
DATA CONTROL								
Data Collected by:	S. Todd					Date:	6/01	
Evaluated by:	T. Davis					Date:	6/01	
Data Entered by:	T. Davis					Date:	6/01	

ATTACHMENT IV

**TAMPA ELECTRIC COMPANY
POLK POWER STATION
COAL RESIDUAL BENEFICIATION**

Professional Engineer Certification

Professional Engineer Statement:

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

(1) To the best of my knowledge, there is reasonable assurance that the permit exemption requested by Tampa Electric Company for the Polk Power Station residual coal beneficiation process is in accordance with all applicable Florida Statutes and rules of the Department of Environmental Protection; and

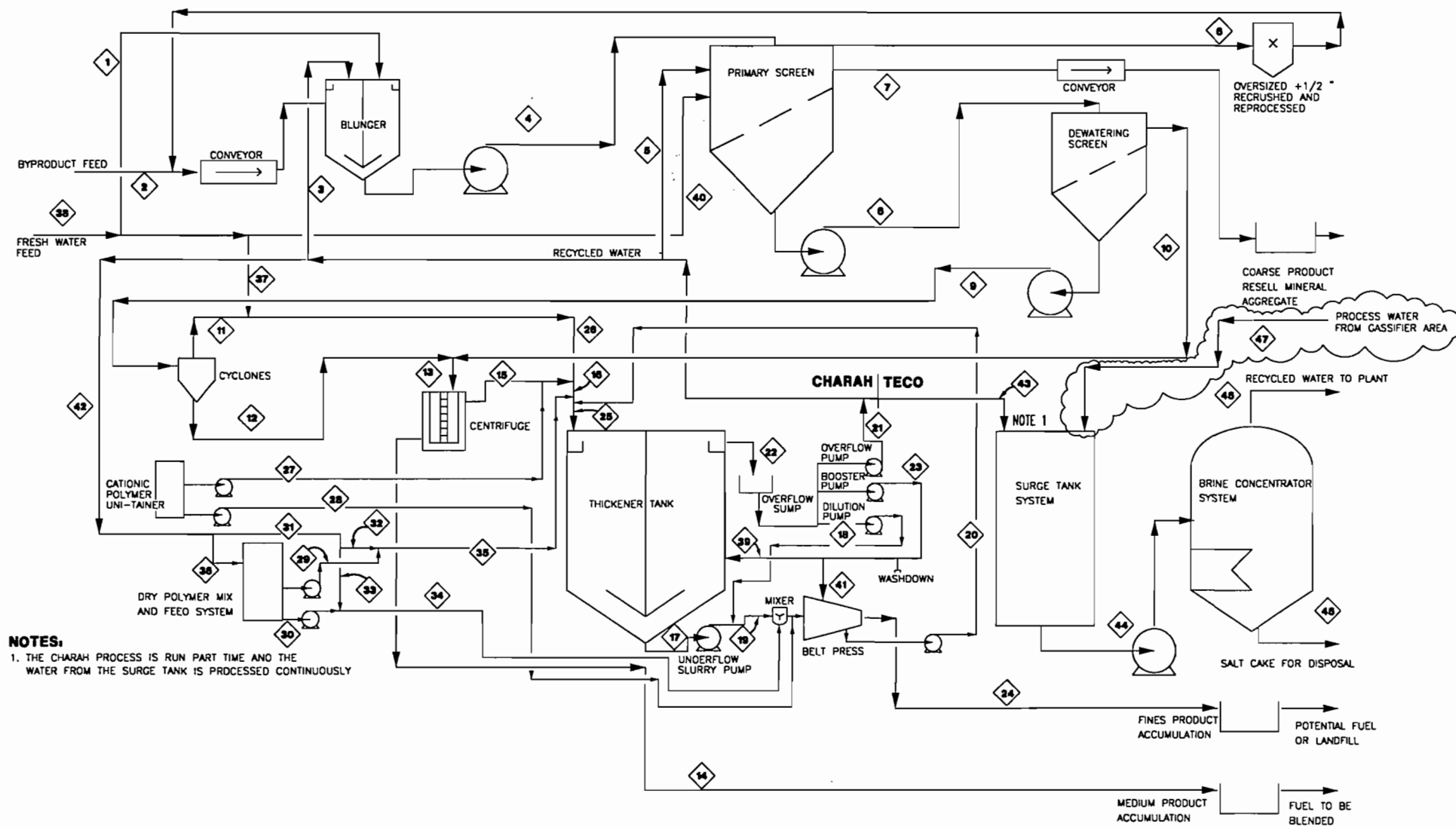
(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of air pollutants not regulated for an emissions unit, based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

Signature

Date

(seal)

*Certification is applicable to the permit exemption request for the Tampa Electric Company Polk Power Station coal residual beneficiation process.



NOTES:
 1. THE CHARAH PROCESS IS RUN PART TIME AND THE WATER FROM THE SURGE TANK IS PROCESSED CONTINUOUSLY

CHARAH PROCESS AT POLK P.S.

PFD-23-7F		PROJECT #
T.E.C.O.		PROCESS NUMBER
PROCESS FLOW DIAGRAM		
CHARAH FUEL RECOVERY		
BENEFICIATION PROCESS		
POLK POWER STATION		
ENERGY SUPPLY - GENERATION ENGINEERING		
92127-PFD-23-7F		1



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MAR 15 2001
BUREAU OF AIR REGULATION

March 12, 2001

Mr. Scott Sheplak, P.E.
Division of Air Resources Management
Florida Department of Environmental Protection
2600 Blair Stone Road, MS # 5505
Tallahassee, Florida 32399-2400

**Re: Tampa Electric Company – Polk Power Station
Final Title V Permit No. 1050233-001-AV
Combustion Turbine Units 2 and 3**

Dear Mr. Sheplak:

On March 19, 1999, the Florida Department of Environmental Protection (FDEP) issued Permit No. PSD-FL-263 to Tampa Electric Company (TEC) authorizing the construction and initial operation of two, simple-cycle combustion turbines at the existing TEC Polk Power Station.

Condition No. 10 of Permit No. PSD-FL-263 requires the submittal of a Title V operating permit to the FDEP's Bureau of Air Regulation, with a copy to the FDEP's Southwest District, in accordance with Chapter 62-213, F.A.C. Rule 62-213.420(1)(a)5., F.A.C., indicates that a Title V source which commences operation on or before October 25, 1995, but which contains an emission unit that commences operation after October 25, 1995, shall submit a revision to its Title V permit application, or an application for a permit revision, as applicable, no later than 180 days after the emissions unit commences operation.

Simple-cycle combustion turbine Unit 2 commenced initial operations on June 29, 2000. Emissions compliance testing, as required by Condition Nos. 27, 28, 31, 32, 33, and 34, was performed on September 15, 2000 (oil) and October 7, 2000 (natural gas). The results of this compliance testing were submitted to the FDEP's Southwest District as required by Condition No. 36. The initial compliance testing demonstrated that Unit 2 was operating in compliance with all applicable permit emission limits. Simple-cycle combustion turbine Unit 3 is presently under construction and is expected to commence initial operations during the fourth quarter of 2001.

To avoid multiple Title V permit revisions and in confirmation of our telephone conversation on March 7, 2001, TEC understands that the application for a revision to Polk Power Station Title V Final Permit No. 1050233-001-AV to include simple-cycle combustion turbine Units 2 and 3 may be submitted to the FDEP within 180 days following commencement of operation of Unit 3.

Mr. Scott Sheplak, P.E.
March 12, 2001
Page 2 of 2

Please contact me at (813) 641-5033 if there are any questions regarding this matter.

Sincerely,

A handwritten signature in black ink, appearing to be 'Jamie Hunter', written over the word 'Sincerely,'.

Jamie Hunter
Consulting Engineer
Environmental Affairs

EP\gm\JJH951

c: Tom Davis, ECT



TAMPA ELECTRIC

March 6, 2001

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MAR 12 2001

BUREAU OF AIR REGULATION

Mr. Brian McLean
U.S. Environmental Protection Agency
Clean Air Markets Division (6204N)
633 3rd Street, NW
Washington, DC 20001

Via FedEx
Airbill No. 7919 9143 8133

**Re: Tampa Electric Company
Polk Power Station (ORIS 7242)
Petition to Remove Opacity Monitoring Requirement
Under the Acid Rain Program for Unit **1
Additional Information**

Dear Mr. McLean:

As requested by Kim Nguyen of your staff, please find enclosed additional information to support the above referenced petition request originally submitted on February 19, 2001. The enclosed information consists of the following:

- A graphical depiction of the data for all of calendar year 2000.
- A list of dates when the Unit 1 opacity monitor was realigned during calendar year 2000.
- A tabulation of the individual six-minute average data points from the Unit 1 continuous opacity monitor for calendar year 2000.
- Copies of the Method 9 annual compliance tests conducted on Unit 1 (during diesel oil and during coal syngas firing) from 1997 – 2000.
- Copies of the Method 9 initial compliance tests conducted on Unit 2 (during diesel oil and during natural gas firing) from 2000.

The continuous opacity monitoring data for calendar year 2000 is provided as requested. However, this data needs further explanation to be understood fully. As can be seen in the graphical representation of the data, there is a constant shift upward in the monitor data. This is caused by a progression in the misalignment of the opacity monitor due to atmospheric conditions, causing the monitor data to constantly drift upward until corrected. Due to this phenomenon, plant personnel must periodically re-site the opacity monitor to correct the misalignment. This can only be performed when the unit is offline and there is a clear stack. Because of this alignment problem, it is felt that most of the data recorded by the opacity monitor does not reflect the correct opacity for this unit. This has been further verified by conducting visible emissions testing on the unit that shows that the actual opacity is zero when burning either gasified coal or diesel oil. The Method 9 compliance tests for this unit have been enclosed in support of this issue. In addition, the initial Method 9

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

(813) 228-4111

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HILLSBOROUGH COUNTY (813) 223-0800
OUTSIDE HILLSBOROUGH COUNTY 1 (888) 223-0800

Mr. Brian McLean
March 6, 2001
Page 2 of 2

tests (on diesel oil and on natural gas) for a similar combustion turbine (Unit 2) have been enclosed to demonstrate that emissions from a combustion turbine unit are typically zero.

During the third quarter of 2000, a large amount of data could not be collected due to the alignment issues. Due to the inability to correctly align the monitor on the stack, the monitor was removed from the stack and realigned. Once returned to the stack the monitor would still not align properly and was again removed and sent to the vendor for alignment. After reinstalling the monitor on the stack, the monitor could still not be aligned correctly. At this point it was determined that physical modifications needed to be made to the mounting location on the stack to allow proper alignment of the monitor due to the severity of the twisting that causes the misalignment.

It is due to the difficulties encountered with maintaining an opacity monitoring system on a combustion turbine unit, along with the lack of actual visual emissions from this unit that TEC has filed the petition. Hopefully this information, along with the arguments outlined in the original petition, provides adequate support for the removal of a continuous opacity monitoring requirement on this unit.

Should you have any questions regarding this information, please call Jamie Hunter or me at (813) 641-5033.

Sincerely,



Gregory M. Nelson
Tampa Electric Company
Designated Representative
Acid Rain Program

EP/gm/JJH949

Enclosures

- c: Ms. Kim Nguyen, U.S. EPA (enc)
- Mr. Lynn Haynes, U.S. EPA Region IV
- Mr. Scott Sheplak, FDEP - Tallahassee
- Mr. Joe Kahn, FDEP - Tallahassee (enc)
- Mr. Bill Proses, FDEP - Tampa
- Mr. Tom Ellison, FDEP - Tampa



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MAR 2 2001

BUREAU OF AIR REGULATION

February 27, 2001

Mr. W.A. Proses
Florida Department of Environmental Protection
Southwest District
3804 Coconut Palm Drive
Tampa, FL 33619

Via FedEx
Airbill No. 7919 8438 8990

**Re: Tampa Electric Company
Polk Power Station Unit 3
Start of Construction Notification**

Dear Mr. Proses:

As required by 40 CFR 60.7 and Condition 3 of permit PSD-FL-263, TEC hereby gives notice that construction of Polk Power Station Unit 3 commenced on February 26, 2001.

If you have any questions, please feel free to call me at (813) 641-5125.

Sincerely,

A handwritten signature in black ink, appearing to read "J. Hunter", with a large, sweeping flourish extending from the bottom left.

Jamie Hunter
Consulting Engineer
Environmental Affairs

EP\gm\JJH947

c: Mr. A. Linero – FDEP
Mr. H. Oven – FDEP
Mr. S. Sheplak – FDEP
Mr. J. Kissel – FDEP SW



Ed

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JAN 26 2001

January 25, 2001

BUREAU OF AIR REGULATION

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

Via FedEx
Airbill No. 7911 4243 7413

**Re: Tampa Electric Company
Polk Power Station Unit 1
Alternative Sampling Procedure Request
1050233-001-AV**

Dear Mr. Sheplak:

In correspondence dated January 17, 2001, Tampa Electric Company (TEC) submitted a permit modification request to modify both the PSD and Title V Permit associated with the above source. Please accept this letter as a request to temporarily withdraw the request to modify the Title V Permit. This request is being made to separate the processing of the PSD portion of the modification request so that it may proceed on an independent track. Once the PSD modification is complete, a separate request to continue processing of the Title V modification will be submitted.

If you have any questions, please telephone Shannon Todd, Jamie Hunter or me at (813) 641-5125.

Sincerely,

A handwritten signature in cursive script that reads "Mark J. Hornick".

Mark J. Hornick
General Manager / Responsible Official
Polk Power Station

EP\gm\SKT226

c: Al Linero, FDEP
Syed Arif, FDEP
Buck Oven, FDEP
Bill Thomas, FDEP - SWD

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JAN 16 2001

BUREAU OF AIR REGULATION

January 9, 2001

Mr. W.A. Proses
Florida Department of Environmental Protection
Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619

Via FedEx
Airbill No. 7904 4106 6561

Re: Polk Power Station Annual Compliance Inspection
Request for Supplemental Information

Dear Mr. Proses:

Please find enclosed the additional information that you requested during the December 21, 2000 annual compliance inspection of Polk Power Station. The enclosed information is summarized in the table below:

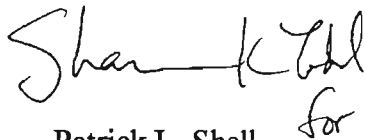
Unit	Permit Condition	Requested Information
1 Combustion Turbine	A.1	30-Day Rolling Average Heat Input for Unit 1 on December 21, 2000, Manufacturer's Heat Input Correction Curves
1 Combustion Turbine	A.5	SO ₂ Emissions Report
Auxiliary Boiler	B.1	Auxiliary Boiler Heat Input for Last Day Fired on Oil
Auxiliary Boiler	B.4	Cumulative Annual Hours of Operation of Auxiliary Boiler
Auxiliary Boiler	B.38	Fuel Consumption of Auxiliary Boiler
Auxiliary Boiler	B.40	30 Day NO _x Rolling Average Emission Rate for the Auxiliary Boiler
Sulfuric Acid Plant	C.6	No Test Required Until Title V Permit Renewal.
Sulfuric Acid Plant	C.7	No Test Required Until Title V Permit Renewal.
2 Combustion Turbine	8	Corrected Heat Input Values When Firing Fuel Oil
2 Combustion Turbine	13	Hours of Operation While Firing Each Fuel

Mr. W.A. Proses
January 9, 2001
Page 2 of 2

Since compliance with the emission rates defined in Condition A.5 is demonstrated by calculating a 30-day rolling average for each species, and the heat input defined in Condition A.1 of the permit is the basis for these emission rates, TEC believes that it is logical to conclude that compliance with the heat input defined in Condition A.1 is also demonstrated by calculating a 30-day rolling average. This allows for short term excursions due to ambient temperature fluctuations, fuel quality differences and other operation parameters. This calculation is included with the heat input correction curves for Unit 1.

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

Sincerely,

A handwritten signature in cursive script, appearing to read "Shan K Todd" with a small "for" written below it.

Patrick L. Shell
Administrator – Air Programs
Environmental Affairs

EP\gm\SKT218

Enclosures

c/enc: Mr. A. Linero – FDEP
Mr. H. Oven – FDEP
Mr. S. Sheplak – FDEP
Mr. J. Kissel – FDEP SW

Condition A.1 Attachment

Heat Input Analysis for Polk Power Station Unit 1 When Firing Syngas

Date	Average Heat
	Input When Firing Syngas
November 22, 2000	1681.5
November 23, 2000	1645.3
November 24, 2000	1648.1
November 25, 2000	1654.9
November 26, 2000	1647.0
November 27, 2000	1652.6
November 28, 2000	1647.4
November 29, 2000	1572.7
November 30, 2000	1569.3
December 1, 2000	1571.1
December 2, 2000	1456.8
December 3, 2000	1350.2
December 4, 2000	0.0
December 5, 2000	0.0
December 6, 2000	0.0
December 7, 2000	0.0
December 8, 2000	1581.8
December 9, 2000	1367.8
December 10, 2000	1771.7
December 11, 2000	1771.9
December 12, 2000	1566.7
December 13, 2000	1603.6
December 14, 2000	1747.7
December 15, 2000	1804.4
December 16, 2000	1802.9
December 17, 2000	1797.5
December 18, 2000	1813.4
December 19, 2000	1806.5
December 20, 2000	1822.5
December 21, 2000	1730.2

Based on the above data, the 30 day rolling average heat input to Unit 1 when firing syngas is

1657.14 MMBtu/hr

General Electric Model PG7221(FA) Gas Turbine **Estimated Performance – Configuration: Natural Gas & Distillate**

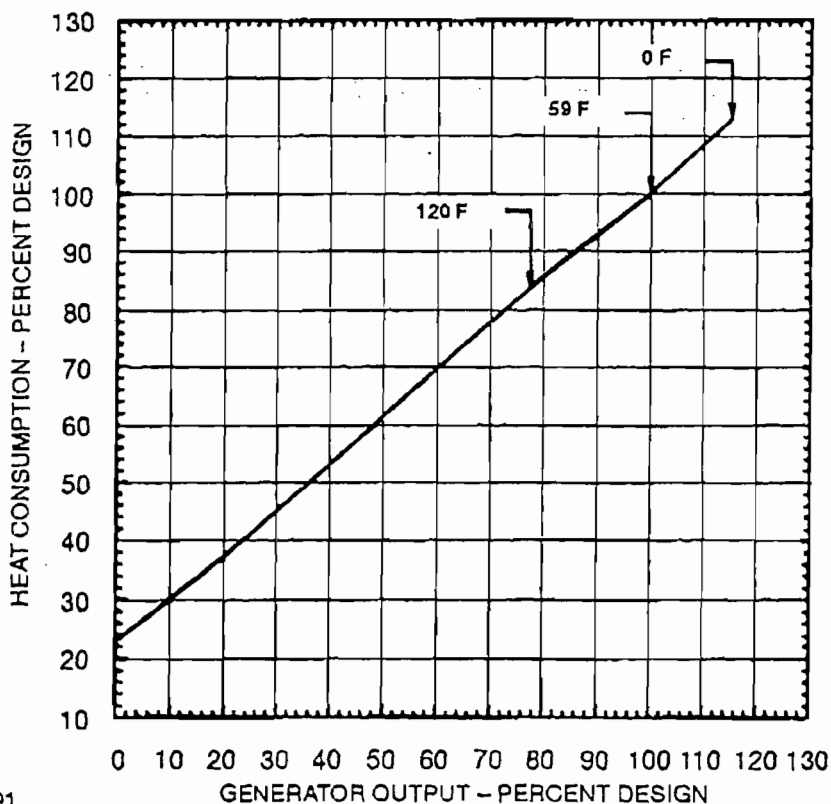
Compressor Inlet Conditions 59 F (15.0 C), 60% Rel. Humidity
 Atmospheric Pressure 14.7 psia (1.013 bar)

FUEL		NATURAL GAS		DISTILLATE	
DESIGN OUTPUT	kW	159000		155800	
DESIGN HEAT RATE (LHV)	Btu (kJ)/kWh	9500 (10030)		9580 (10110)	
DESIGN HEAT CONS (LHV) x10 ⁻⁶	Btu (kJ)/h	1510.5 (1594.8)		1492.6 (1575.1)	
DESIGN EXHAUST FLOW x10 ⁻³	lb/h (kg)/h	3347 (1518)		3357 (1523)	
MODE: BASE LOAD					

NOTES:

- Altitude correction on curve 416HA662 REV A
- Ambient temperature correction on curve 517HA304
- Effect of modulated IGV's on exhaust flow and temp. on curve 517HA305
- Hydrogen cooled generator
- Humidity correction on curve 498HA697 REV B – all performance calculated with specific humidity of .0064 or less so as not to exceed 100% relative humidity.
- Plant performance is measured at the generator terminals and includes allowances for excitation power, shaft driven auxiliaries, 3.5 in. H₂O (8.7 mbar) inlet and -3.0 in. H₂O (-7.5 mbar) exhaust pressure drops
- Additional pressure drop effects:

	%Effect on		Effect on
	Output	Heat Rate	Exhaust Temp.
4 in. H ₂ O (10.0 mbar) Inlet	-1.45	0.53	2.8 F (1.8 C)
4 in. H ₂ O (10.0 mbar) exhaust	-0.44	0.53	3.0 F (1.7 C)



DATE: 4/18/91
 FJ BROOKS

517HA303

Condition A.5 Attachment

POLK COUNTY QUARTERLY EMISSION REPORT
HRSG

DATE	SO2	30-DAY Oil (lbs)	30-DAY Gas (lbs)	Daily Oil (lbs)	Daily Gas (lbs)	Hours Boiler
10/01/2000		34.1	256.9	0.0	357.8	24
10/02/2000		34.1	264.3	0.0	388.8	24
10/03/2000		34.1	266.5	0.0	320.5	24
10/04/2000		34.1	269.1	0.0	331.9	24
10/05/2000		34.1	269.1	0.0	344.5	24
10/06/2000		34.1	275.3	0.0	363.2	24
10/07/2000		34.1	280.1	0.0	393.2	24
10/08/2000		34.1	280.4	0.0	329.5	24
10/09/2000		34.1	278.0	0.0	273.1	24
10/10/2000		34.1	277.2	0.0	244.0	24
10/11/2000		34.1	278.7	0.0	327.8	24
10/12/2000		34.1	277.9	0.0	268.6	24
10/13/2000		34.1	274.6	0.0	142.4	24
10/14/2000		34.1	270.3	0.0	95.9	24
10/15/2000		34.1	265.3	0.0	119.2	24
10/16/2000		34.1	265.9	0.0	277.5	24
10/17/2000		34.1	270.2	0.0	345.1	24
10/18/2000		34.1	275.3	0.0	361.3	24
10/19/2000		34.1	280.5	0.0	329.2	24
10/20/2000		34.1	284.9	0.0	283.1	24
10/21/2000		34.1	284.5	0.0	272.7	24
10/22/2000		34.1	283.5	0.0	261.1	24
10/23/2000		34.1	284.0	0.0	250.1	24
10/24/2000		35.3	280.7	68.9	210.1	24
10/25/2000		37.1	280.7	59.9	0.0	24
10/26/2000		37.4	269.7	44.0	111.1	20
10/27/2000		37.4	262.7	0.0	193.4	24
10/28/2000		37.4	261.1	0.0	232.5	24
10/29/2000		37.4	262.3	0.0	239.6	24
10/30/2000		37.8	271.5	0.0	284.2	24
10/31/2000		37.8	273.8	0.0	261.0	24
11/01/2000		37.8	270.1	0.0	248.8	24
11/02/2000		37.8	267.6	0.0	313.7	24
11/03/2000		37.8	266.8	0.0	296.5	24
11/04/2000		40.6	266.5	114.6	322.0	24
11/05/2000		40.6	266.2	0.0	334.7	24
11/06/2000		40.6	264.3	0.0	306.9	24
11/07/2000		40.6	261.8	0.0	319.5	24
11/08/2000		40.6	259.7	0.0	265.9	24
11/09/2000		40.6	261.3	0.0	320.7	24
11/10/2000		40.6	257.3	0.0	125.6	24
11/11/2000		40.6	248.6	0.0	64.7	24
11/12/2000		40.6	241.6	0.0	58.0	24
11/13/2000		40.6	240.7	0.0	115.3	24
11/14/2000		40.6	244.3	0.0	204.3	24
11/15/2000		40.6	250.4	0.0	304.1	24
11/16/2000		42.0	252.4	60.6	335.9	24
11/17/2000		42.0	250.8	0.0	296.4	24
11/18/2000		42.0	249.0	0.0	307.4	24
11/19/2000		42.0	247.8	0.0	294.5	24
11/20/2000		42.0	249.3	0.0	328.1	24
11/21/2000		42.0	245.7	0.0	164.5	24
11/22/2000		42.0	243.1	0.0	182.1	24
11/23/2000		42.0	239.3	0.0	138.3	24
11/24/2000		42.0	238.0	0.0	170.7	24
11/25/2000		42.0	242.1	0.0	233.2	24
11/26/2000		42.0	245.9	0.0	306.3	24
11/27/2000		42.0	247.9	0.0	294.6	24
11/28/2000		42.0	247.4	0.0	222.5	24
11/29/2000		43.1	244.8	57.9	207.9	24
11/30/2000		43.1	242.3	0.0	186.1	24
12/01/2000		43.1	240.9	0.0	205.9	24
12/02/2000		43.1	234.3	0.0	115.2	24
12/03/2000		44.1	227.0	60.5	79.5	22
12/04/2000		46.1	227.0	70.2	0.0	24
12/05/2000		47.5	227.0	69.5	0.0	24
12/06/2000		48.6	227.0	79.2	0.0	24

12/07/2000	50.5	227.0	74.1	0.0	24
12/08/2000	52.7	218.7	67.9	71.5	24
12/09/2000	52.7	209.4	0.0	55.4	24
12/10/2000	52.7	202.7	0.0	108.1	24
12/11/2000	52.7	199.4	0.0	219.9	24
12/12/2000	54.0	201.8	45.9	336.7	24
12/13/2000	54.0	202.1	0.0	330.7	24
12/14/2000	54.0	218.0	0.0	602.5	24
12/15/2000	54.0	227.1	0.0	337.1	24
12/16/2000	54.0	235.5	0.0	309.5	24
12/17/2000	54.0	241.9	0.0	307.1	24
12/18/2000	54.0	243.7	0.0	260.0	24
12/19/2000	54.0	239.8	0.0	184.9	24
12/20/2000	54.0	234.9	0.0	190.3	24

=====

Condition B.1 Attachment

**Polk Power Station
Auxiliary Boiler Fuel Oil No 2 Report**

Year 2000	Gallons	Hours	Gal/hour
January	20,914	55	380.26
February	61,079	177	345.08
March	68,121	212	321.33
April	68,351	138	495.30
May	399	3	133.15
June	51,746	150	344.97
July	16,427	44	373.34
August	34,761	90	386.24
September	44,609	115	387.90
October	2,105	8	263.13
November	0	0	0.00
December	7,111	31	229.38
Total	375,624	1023	

AUXILIARY BOILER

On December 12, 2000 the auxiliary boiler consumption was 2,032.02 gallons for 8 hours 52 minutes

Average oil consumption 229.34 gallons/hr

Average Heat Value of No 2 Oil 138,328 BTU/gallon

Average 31.642 MMBTU/HR

Condition B.4 Attachment

**Polk Power Station
Auxiliary Boiler Fuel Oil No 2 Report**

Year-2000	Gallons	Hours	Gal/hour
January	20,914	55	380.26
February	61,079	177	345.08
March	68,121	212	321.33
April	68,351	138	495.30
May	399	3	133.15
June	51,746	150	344.97
July	16,427	44	373.34
August	34,761	90	386.24
September	44,609	115	387.90
October	2,105	8	263.13
November	0	0	0.00
December	7,111	31	229.38
Total	375,624	1023	

AUXILIARY BOILER

On December 12, 2000 the auxiliary boiler consumption was 2,032.02 gallons for 8 hours 52 minutes

Average oil consumption 229.34 gallons/hr

Average Heat Value of No 2 Oil 138,328 BTU/gallon

Average 31.642 MMBTU/HR

Condition B.38 Attachment

Year 2000	Gallons	Hours	Gal/hour
January	20,914	55	380.26
February	61,079	177	345.08
March	68,121	212	321.33
April	68,351	138	495.30
May	399	3	133.15
June	51,746	150	344.97
July	16,427	44	373.34
August	34,761	90	386.24
September	44,609	115	387.90
October	2,105	8	263.13
November	0	0	0.00
December	7,111	31	229.38
Total	375,624	1023	

On December 12, 2000 the auxiliary boiler consumption was 2,032.02 gallons for 8 hours 52 minutes

Average Heat Value of No 2 Oil 138,328 BTU/gallon

Average 31.642 MMBTU/HR

Condition B.40 Attachment

POLK COUNTY QUARTERLY EMISSION REPORT
AUX

DATE	30-DAY NOX (lb/mmBTU)	DAILY NOX (lb/mmBTU)	HOURS BOILER	HOURS NOX	VALID DAYS
01/01/2000	0.07	0.08	4.00	4	30
01/24/2000	0.07	0.07	21.00	21	30
01/30/2000	0.07	0.11	7.00	7	30
01/31/2000	0.07	0.08	24.00	24	30
02/01/2000	0.07	0.07	24.00	24	30
02/02/2000	0.07	0.07	24.00	24	30
02/03/2000	0.07	0.04	5.00	5	30
02/04/2000	0.07	0.13	18.00	18	30
02/05/2000	0.07	0.08	12.00	12	30
02/08/2000	0.07	0.10	2.00	2	30
02/09/2000	0.07	0.10	7.00	7	30
02/10/2000	0.07	0.07	24.00	24	30
02/11/2000	0.08	0.10	8.00	8	30
02/13/2000	0.08	0.10	6.00	6	30
02/14/2000	0.08	0.11	5.00	5	30
02/25/2000	0.08	0.06	1.00	1	30
02/26/2000	0.08	0.08	24.00	24	30
02/27/2000	0.08	0.07	24.00	24	30
02/28/2000	0.08	0.06	3.00	3	30
03/11/2000	0.08	0.07	8.00	8	30
03/12/2000	0.07	0.07	24.00	24	30
03/13/2000	0.07	0.06	24.00	24	30
03/14/2000	0.07	0.06	24.00	24	30
03/15/2000	0.07	0.06	24.00	24	30
03/16/2000	0.07	0.06	12.00	12	30
03/17/2000	0.08	0.08	16.00	16	30
03/18/2000	0.08	0.05	24.00	24	30
03/19/2000	0.07	0.04	9.00	9	30
03/28/2000	0.08	0.08	8.00	8	30
03/29/2000	0.08	0.09	10.00	10	30
03/30/2000	0.08	0.09	12.00	12	30
03/31/2000	0.08	0.05	24.00	24	30
04/01/2000	0.07	0.05	24.00	24	30
04/02/2000	0.07	0.06	24.00	24	30
04/03/2000	0.07	0.05	6.00	6	30
04/08/2000	0.07	0.07	6.00	6	30
04/10/2000	0.07	0.07	1.00	1	30
04/13/2000	0.07	0.09	22.00	22	30
04/14/2000	0.07	0.06	24.00	24	30
04/15/2000	0.07	0.06	7.00	7	30
04/20/2000	0.07	0.08	3.00	3	30
04/21/2000	0.07	0.08	24.00	24	30
04/22/2000	0.07	0.05	1.00	1	30
05/31/2000	0.07	0.08	3.00	4	30
06/07/2000	0.07	0.06	21.00	21	30
06/20/2000	0.07	0.06	22.00	22	30
06/21/2000	0.07	0.04	5.00	5	30
06/26/2000	0.06	0.06	9.00	10	30
06/27/2000	0.06	0.04	4.00	24	29
06/28/2000	0.06	0.08	17.00	24	28
06/29/2000	0.06	0.07	23.00	24	28
06/30/2000	0.07	0.07	23.00	24	28
07/01/2000	0.07	0.07	23.00	24	28
07/02/2000	0.07	0.07	6.00	6	28
07/26/2000	0.07	0.05	15.00	16	28
08/28/2000	0.06	0.05	19.00	19	28
08/29/2000	0.06	0.05	23.00	24	28
08/30/2000	0.06	0.05	22.00	24	28
08/31/2000	0.06	0.05	22.00	24	28
09/01/2000	0.06	0.02	20.00	24	28
09/02/2000	0.06	0.05	18.00	18	28
09/03/2000	0.06	0.05	2.00	2	28
09/06/2000	0.06	0.06	4.00	4	28
09/07/2000	0.06	0.06	7.00	8	28
09/13/2000	0.06	0.09	7.00	8	28
09/20/2000	0.06	0.08	17.00	17	28
09/28/2000	0.06	0.08	19.00	19	28

09/29/2000	0.06	0.05	20.00	21	28
10/24/2000	0.06	0.17	3.00	3	28
10/26/2000	0.06	0.07	8.00	8	28
12/03/2000	0.06	0.06	8.00	9	28
12/12/2000	0.06	0.07	12.00	13	28
=====					

Condition 8 Attachment

12/21/00 Unit 2

* = replaced data, GAS units=100scfh, OIL units=lb/hr

TM	FUEL	FUEL FLOW	HEAT INPUT mmBtu	SO2 EM lbs/hr	CO2 EM ton/hr	GGEN Mw
0	OIL1	46267.2	837.4	46.30000	74.10	147.90
1	OIL1	36590.4	662.3	36.60000	58.60	99.80
2	OIL1	34473.6	624.0	34.50000	55.20	88.60
3	OIL1	34473.6	624.0	34.50000	55.20	88.50
4	OIL1	34372.8	622.1	34.40000	55.10	88.40
5	OIL1	34524.0	624.9	34.50000	55.30	88.60
6	OIL1	39110.4	707.9	39.10000	62.70	111.80
7	OIL1	42487.2	769.0	42.50000	68.10	129.60
8	OIL1	40924.8	740.7	40.90000	65.60	122.20
9	OIL1	46216.8	836.5	46.20000	74.10	147.90
10	OIL1	42487.2	769.0	42.50000	68.10	130.20
11	OIL1	34221.6	619.4	34.20000	54.80	88.50
12	OIL1	20412.0	369.5	20.40000	32.70	72.10

Daily totals:	FUEL FLOW	HEAT INPUT	SO2 EM	CO2 EM
		mmBtu	lbs/day	ton/day
OIL1	486561.6	8806.7	486.60000	779.60

Generation Daily Total: 1404.10 Mw

Fuels Data:	HEAT CONTENT	SULFUR CONTENT	CARBON CONTENT	DENSITY
	Btu/flow unit	oil-% gas-lb/mmBtu	%	
OIL1	18100.0	0.0500	87.40	8.40000 LB GAL

Condition 13 Attachment

Best Available Copy

03-JAN-2001 13:04:24.500 T1 Q 0457	FALSE PALARM INLET PRESSURE DROP MEASUREMENT FAULT
03-JAN-2001 13:05:09.656 T1 Q 0457	TRUE PALARM INLET PRESSURE DROP MEASUREMENT FAULT
03-JAN-2001 13:05:11.375 T1 Q 0457	FALSE PALARM INLET PRESSURE DROP MEASUREMENT FAULT
03-JAN-2001 13:05:22.781 T1 Q 0457	TRUE PALARM INLET PRESSURE DROP MEASUREMENT FAULT
03-JAN-2001 13:05:24.500 T1 Q 0457	FALSE PALARM INLET PRESSURE DROP MEASUREMENT FAULT
03-JAN-2001 13:06:04.781 T1 Q 0457	TRUE PALARM INLET PRESSURE DROP MEASUREMENT FAULT
03-JAN-2001 13:06:32.375 T1 Q 0457	FALSE PALARM INLET PRESSURE DROP MEASUREMENT FAULT
03-JAN-2001 13:08:02.875 T1 Q 0457	LOCK PALARM INLET PRESSURE DROP MEASUREMENT FAULT
03-JAN-2001 13:41:03.625 T1 Q 0522	FALSE PALARM LIQ FUEL SKID HEATER TROUBLE
03-JAN-2001 13:41:11.656 T1 Q 0522	TRUE PALARM LIQ FUEL SKID HEATER TROUBLE

TECO POLK

TIMERS and COUNTERS

UNIT-T1-2

03-JAN-2001 15:05:13



MANUALLY INITIATED STARTS COUNTER	266 STARTS

TOTAL STARTS COUNTER	245 STARTS

FIRE LOGIC STARTS COUNTER	0 STARTS

FIRED STARTS COUNTER	213 STARTS

EMERGENCY TRIPS COUNTER	43 STARTS

TOTAL FIRED HOURS	1662.6 HOURS

GAS FIRED HOURS	1036.6 HOURS

LIQUID FIRED HOURS	576.1 HOURS



EXIT	MORE OPTIONS	EDIT DISPLAY	HOT SPOTS	SAVE IMAGE	PRINT IMAGE	ALARM DISPLAY	MAIN DISPLAY



RECEIVED

DEC 21 2000

BUREAU OF AIR REGULATION

December 20, 2000

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

Via FedEx
Airbill No. 791926241313

**Re: Tampa Electric Company
Polk Power Station Unit 1
Pet Coke Modification Request
1050233-001-AV**

Dear Mr. Sheplak:

*Proj. No. : 1050233-008-AV
Also 001-AV*

In correspondence dated September 25, 2000, Tampa Electric Company (TEC) temporarily withdrew the request to modify the Title V permit to gasify blends of petcoke and coal at Polk Power Station. Since then, the Department has issued an air construction permit allowing the petcoke gasification referenced above. Therefore, TEC would like to move forward with the required Title V permit modification. As such, please accept this letter as a request to resume the processing of that Title V permit modification.

If you have any questions, please telephone Shannon Todd, Jamie Hunter or me at (813) 641-5125.

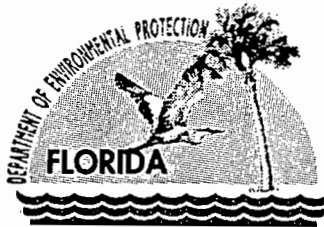
Sincerely,

Mark J. Hornick
General Manager / Responsible Official
Polk Power Station

EP\gm\218

c: Al Linero, FDEP
Syed Arif, FDEP
Buck Oven, FDEP
Bill Thomas, FDEP - SWD

-file- Ed fy;



Department of Environmental Protection

Jeb Bush
Governor

Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619

David B. Struhs
Secretary

October 13, 2000

Mr. Shannon K. Todd
Tampa electric Company
P.O. Box 111
Tampa, Florida 33601

Re: Tampa Electric Company
Polk Unit 2 Initial Compliance Testing

Dear Mr. Todd:

In response to your letter dated September 25, 2000, the Department is not authorized to grant your request for an extension of the NSPS initial compliance testing lead-time for the natural gas fired test.

In reviewing this request, the Southwest District was unable to locate the notifications required by 40 CFR 60, Section 60.7 (a) (1) through 60.7 (a) (3). Please provide copies of these notifications, or if none were made, provide the date construction commenced and the actual date of initial startup for both fuel oil and natural gas.

I see that the test took place on October 6, 2000. Was this test within the first 60 days of achieving maximum production rate while firing natural gas?

If you have should have any questions, please call me at (813) 744-6100 extension 119.

Sincerely,

W. A. Proses, P.E.
Air Compliance Supervisor

cc: Mr. Alvaro Linero – FDEP
Mr. Buck Oven – FDEP
✓ Mr. Scott Sheplak – FDEP
Mr. Jerry Kissel – FDEP/SWD

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OCT 18 2000

BUREAU OF AIR REGULATION



September 25, 2000

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

**Re: Tampa Electric Company
Polk Power Station Unit 1
Pet Coke Modification Request
1050233-001-AV**

RECEIVED
SEP 26 2000
BUREAU OF AIR REGULATION

**Via FedEx
Airbill No. 7908 8214 2190**

Dear Mr. Sheplak:

In correspondence dated July 3, 2000, Tampa Electric Company (TEC) submitted a permit modification request to modify both the PSD and Title V Permit associated with the above source. Please accept this letter as a request to temporarily withdraw the request to modify the Title V Permit. This request is being made to separate the processing of the PSD portion of the modification request so that it may proceed on an independent track. Once the PSD modification is complete, a separate request to continue processing of the Title V modification will be submitted.

If you have any questions, please telephone Shannon Todd, Jamie Hunter or me at (813) 641-5125.

Sincerely,

Mark J. Hornick
General Manager / Responsible Official
Polk Power Station

EP\gm\UJH936

c: Al Linero, FDEP
Syed Arif, FDEP
Buck Oven, FDEP
Bill Thomas, FDEP - SWD

9/29/00 cc: Scott Sheplak
Ed Svec

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

(813) 228-4111

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



RECEIVED

JUL 05 2000

BUREAU OF AIR REGULATION

July 3, 2000

Mr. A. A. Linero, P.E.
Administrator
New Source Review Section
Florida Department of Environmental Protection
111 South Magnolia Drive, Suite 4
Tallahassee, FL 32301

Via FedEx
Airbill No. 7903 3901 4024

**Re: Tampa Electric Company (TEC) – Polk Power Station Unit 1
Title V Permit Modification Request**

Dear Mr. Linero:

Please find enclosed the above referenced request to modify the Polk Power Station Title V permit to allow for the firing of syngas produced from the gasification of fuel blends of up to 60% petcoke and 40% coal. TEC has performed formal emissions testing as requested by the Department, and the results of these tests have shown that the requested modification will not result in a significant increase of any criteria pollutant as defined in Table 212.400-2. If you have any questions, please telephone Shannon Todd or me at (813) 641-5125.

Sincerely,

Mark J. Hornick
General Manager / Responsible Official
Polk Power Station

EP\kd\SKT180

Enclosure

c(enc): Syed Arif, FDEP
Buck Oven, FDEP
Bill Thomas, FDEP - SWD

q. sue
EPA
NPS

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

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HILLSBOROUGH COUNTY (813) 223-0800
OUTSIDE HILLSBOROUGH COUNTY 1 (888) 223-0800

INTRODUCTION

Tampa Electric Company (TEC) Polk Power Station (PPS) Unit 1 located in Polk County, Florida is a nominal 260 megawatt (MW) electric generation facility. Major components of PPS Unit 1 include solid fuel handling and gasification systems, a sulfuric acid plant for processing of the solid fuel gasification system gas cleanup stream, an auxiliary boiler fired with No. 2 distillate fuel oil, and one integrated coal gasification combined-cycle (ICGC) General Electric (GE) 7F combustion turbine (CT) fired with synthetic natural gas (syngas) or No. 2 distillate fuel oil.

Operation of PPS Unit 1 is currently authorized by Florida Department of Environmental Protection (FDEP) Prevention of Significant Deterioration (PSD) permit PSD-FL-194, Florida Power Plant Siting Act (PPSA) Certification PA 92-32, and Title V Air Operation Permit No. 1050233-001-AV.

In December 1999, TEC was authorized by the FDEP to conduct PPS Unit 1 performance tests using syngas developed from coal/petroleum coke (petcoke) fuel blends for comparison to baseline syngas emissions. TEC conducted the baseline syngas performance tests (i.e., syngas developed from coal) on February 7th and 8th, 2000. Performance tests using syngas developed from a 60 percent coal/40 percent petcoke blend were conducted on February 14th and 15th, 2000. Performance tests using syngas developed from a 40 percent coal/60 percent petcoke blend were conducted on April 24th through April 25th, 2000. The results of these performance tests were submitted to FDEP on March 29th and June 12th, 2000.

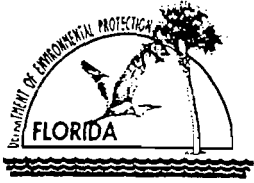
An analysis to determine whether future long-term firing of coal/petcoke fuel blends would constitute a modification subject to Prevention of Significant Deterioration (PSD) review pursuant to Rule 62-212.400, F.A.C. was prepared based on the performance test results, fuel analyses, and historical emissions data. This analysis of PSD applicability was conducted in accordance with the procedures specified in the December 13, 1999 FDEP performance test authorization letter. The analysis demonstrates that PSD review is not applicable to this permit modification request.

This submittal constitutes TEC's construction permit application for the permanent use of petcoke at PPS Unit 1 and is submitted to satisfy the requirements of Rule 62-210.300(1), F.A.C. TEC requests that the current PPS Unit 1 permits [PSD Permit PSD-FL-194, PPSA Certification PA 92-32, and Title V Permit No. 1050233-001-AV] be modified to allow for the gasification of coal and petcoke fuel blends, containing up to 60 percent petcoke, on a permanent basis as an alternative method of operation to the currently approved gasification of 100 percent coal. TEC is not requesting any revisions to any currently authorized emission limitation or standard for any PPS Unit 1 emission source.

Relevant portions of the FDEP Application for Air Permit – Title V Source are provided in Attachment A. The FDEP's performance test authorization letter dated December 13, 1999 and an analysis of PSD applicability are provided in Attachments B and C, respectively. Attachment D contains proposed permit condition language for the use of petcoke/coal blends.

ATTACHMENT A

**APPLICATION FOR AIR PERMIT—
TITLE V SOURCE**



Department of Environmental Protection

Division of Air Resources Management

APPLICATION FOR AIR PERMIT - TITLE V SOURCE

See Instructions for Form No. 62-210.900(1)

I. APPLICATION INFORMATION

Identification of Facility

1. Facility Owner/Company Name: Tampa Electric Company	
2. Site Name: Polk Power Station	
3. Facility Identification Number: ~~0530233~~ 1050233 [] Unknown	
4. Facility Location: Street Address or Other Locator: 9995 State Route 37, South City: Mulberry County: Polk Zip Code: 33860-0775	
5. Relocatable Facility? [] Yes [☒] No	6. Existing Permitted Facility? [☒] Yes [] No

Application Contact

1. Name and Title of Application Contact: Patrick Shell Administrator – Air Programs, Environmental Affairs	
2. Application Contact Mailing Address: Organization/Firm: Tampa Electric Company Street Address: 6499 U.S. Highway 41 North City: Apollo Beach State: FL Zip Code: 33572-9200	
3. Application Contact Telephone Numbers: Telephone: (813) 641 – 5210 Fax: (813) 641-5081	

Application Processing Information (DEP Use)

1. Date of Receipt of Application:	7-5-00
2. Permit Number:	1050233-003-AV, 1050233-004-AC
3. PSD Number (if applicable):	PSD-FL-194d
4. Siting Number (if applicable):	PA 92-32

Purpose of Application

Air Operation Permit Application

This Application for Air Permit is submitted to obtain: (Check one)

- ☐ Initial Title V air operation permit for an existing facility which is classified as a Title V source.
- ☐ Initial Title V air operation permit for a facility which, upon start up of one or more newly constructed or modified emissions units addressed in this application, would become classified as a Title V source.

Current construction permit number: _____

- ☐ Title V air operation permit revision to address one or more newly constructed or modified emissions units addressed in this application.

Current construction permit number: _____

Operation permit number to be revised: _____

- ☒ Title V air operation permit revision or administrative correction to address one or more proposed new or modified emissions units and to be processed concurrently with the air construction permit application. (Also check Air Construction Permit Application below.)

Operation permit number to be revised/corrected: 10500233-001-AV

- ☐ Title V air operation permit revision for reasons other than construction or modification of an emissions unit. Give reason for the revision; e.g., to comply with a new applicable requirement or to request approval of an "Early Reductions" proposal.

Operation permit number to be revised: _____

Reason for revision: _____

Air Construction Permit Application

This Application for Air Permit is submitted to obtain: (Check one)

- ☒ Air construction permit to construct or modify one or more emissions units.
- ☐ Air construction permit to make federally enforceable an assumed restriction on the potential emissions of one or more existing, permitted emissions units.
- ☐ Air construction permit for one or more existing, but unpermitted, emissions units.

Owner/Authorized Representative or Responsible Official

1. Name and Title of Owner/Authorized Representative or Responsible Official: Mark J. Hornick, General Manager
2. Application Contact Mailing Address: Organization/Firm: Tampa Electric Company Street Address: P.O. Box 775 City: Mulberry State: FL Zip Code: 33860-0775
3. Owner/Authorized Representative or Responsible Official Telephone Numbers: Telephone: (813) 288-1111 Fax: (813) 641-5081
4. Owner/Authorized Representative or Responsible Official Statement: <i>I, the undersigned, am the owner or authorized representative*(check here [☒], if so) or the responsible official (check here [☐], if so) of the Title V source addressed in this application, whichever is applicable. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof. I understand that a permit, if granted by the Department, cannot be transferred without authorization from the Department, and I will promptly notify the Department upon sale or legal transfer of any permitted emissions unit.</i> Signature <u>Mark Hornick</u> Date <u>7/3/00</u>

* Attach letter of authorization if not currently on file.

Professional Engineer Certification

1. Professional Engineer Name: Thomas W. Davis Registration Number: 36777
2. Professional Engineer Mailing Address: Organization/Firm: Environmental Consulting & Technology, Inc. Street Address: 3701 Northwest 98th Street City: Gainesville State: FL Zip Code: 32606
3. Professional Engineer Telephone Numbers: Telephone: (352) 332-0444 Fax: (352) 332-6722

4. Professional Engineer Statement:

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

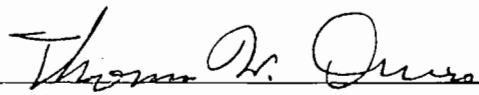
(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this Application for Air Permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

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

If the purpose of this application is to obtain a Title V source air operation permit (check here [☒], if so), I further certify that each emissions unit described in this Application for Air Permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance schedule is submitted with this application.

If the purpose of this application is to obtain an air construction permit for one or more proposed new or modified emissions units (check here [☒], if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

If the purpose of this application is to obtain an initial air operation permit or operation permit revision for one or more newly constructed or modified emissions units (check here [], if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.


Signature

6/30/00
Date

(seal)

* Attach any exception to certification statement.

Scope of Application

Emissions Unit ID	Description of Emissions Unit	Permit Type	Processing Fee
006	Solid Fuel Gasification System Revision	ACM2	N/A

Application Processing Fee

Check one: [] Attached - Amount: \$ _____ [☒] Not Applicable

Note: No fee required pursuant to Rule 62-4.050(4)(a)2., F.A.C.

Construction/Modification Information

1. Description of Proposed Project or Alterations:

In December 1999, TEC was authorized by the FDEP to conduct PPS Unit 1 performance tests using syngas developed from coal/petroleum coke (petcoke) fuel blends for comparison to baseline syngas emissions. TEC conducted the baseline syngas performance tests (i.e., syngas developed from coal) on February 7th and 8th, 2000. Performance tests using syngas developed from a 60 percent coal/40 percent petcoke blend were conducted on February 14th and 15th, 2000. Performance tests using syngas developed from a 40 percent coal/60 percent petcoke blend were conducted on April 24th through April 25th, 2000. The results of these performance tests were submitted to FDEP on March 29th and June 12th, 2000.

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2. Projected or Actual Date of Commencement of Construction:

Upon receipt of FDEP approval.

3. Projected Date of Completion of Construction: Not applicable

Application Comment

A. GENERAL FACILITY INFORMATION

1. Facility UTM Coordinates: Zone: 17				East (km): 402.45		North (km): 3,067.35			
2. Facility Latitude/Longitude: Latitude (DD/MM/SS):								Longitude (DD/MM/SS):	
3. Governmental Facility Code: 0		4. Facility Status Code: A		5. Facility Major Group SIC Code: 49		6. Facility SIC(s): 4911			
7. Facility Comment (limit to 500 characters):									

1. Name and Title of Facility Contact:	Michael Perkins, Environmental Coordinator		
2. Facility Contact Mailing Address:	Organization/Firm: Tampa Electric Company		
Street Address:	P.O. Box 775		
City:	Mulberry	State: FL	Zip Code: 33860-0775
3. Facility Contact Telephone Numbers:	Telephone: (813) 228-1111 Fax: (813) 428-5927		

Check all that apply:

1. ☐ Small Business Stationary Source?	☐ Unknown
2. ☒ Major Source of Pollutants Other than Hazardous Air Pollutants (HAPs)?	
3. ☐ Synthetic Minor Source of Pollutants Other than HAPs?	
4. ☐ Major Source of Hazardous Air Pollutants (HAPs)?	
5. ☐ Synthetic Minor Source of HAPs?	
6. ☒ One or More Emissions Units Subject to NSPS?	
7. ☐ One or More Emission Units Subject to NESHAP?	
8. ☐ Title V Source by EPA Designation?	
9. Facility Regulatory Classifications Comment (limit to 200 characters):	

List of Applicable Regulations

[illegible]

B. FACILITY POLLUTANTS

List of Pollutants Emitted

1. Pollutant Emitted	2. Pollutant Classif.	3. <u>Requested Emissions Cap</u>		4. Basis for Emissions Cap	5. Pollutant Comment
		lb/hour	tons/year		
NOX	A	N/A	N/A	N/A	
SO2	A	N/A	N/A	N/A	
CO	A	N/A	N/A	N/A	
PM10	A	N/A	N/A	N/A	
PM	A	N/A	N/A	N/A	
SAM	A	N/A	N/A	N/A	
VOC	A	N/A	N/A	N/A	
PB	B	N/A	N/A	N/A	

C. FACILITY SUPPLEMENTAL INFORMATION

Supplemental Requirements

1. Area Map Showing Facility Location: ☐ Attached, Document ID: ☐ Not Applicable ☒ Waiver Requested
2. Facility Plot Plan: ☐ Attached, Document ID: ☐ Not Applicable ☒ Waiver Requested
3. Process Flow Diagram(s): ☐ Attached, Document ID: ☐ Not Applicable ☒ Waiver Requested
4. Precautions to Prevent Emissions of Unconfined Particulate Matter: ☐ Attached, Document ID: ☐ Not Applicable ☒ Waiver Requested
5. Fugitive Emissions Identification: ☐ Attached, Document ID: _____ ☐ Not Applicable ☒ Waiver Requested
6. Supplemental Information for Construction Permit Application: ☐ Attached, Document ID: ☒ Not Applicable
7. Supplemental Requirements Comment: Items 1 through 6 above previously submitted – see Polk Power Station Title V permit application.

Additional Supplemental Requirements for Title V Air Operation Permit Applications

8. List of Proposed Insignificant Activities: ☐ Attached, Document ID: _____ ☐ Not Applicable
9. List of Equipment/Activities Regulated under Title VI: ☐ Attached, Document ID: _____ ☐ Equipment/Activities On site but Not Required to be Individually Listed ☐ Not Applicable
10. Alternative Methods of Operation: ☐ Attached, Document ID: _____ ☐ Not Applicable
11. Alternative Modes of Operation (Emissions Trading): ☐ Attached, Document ID: _____ ☐ Not Applicable
12. Identification of Additional Applicable Requirements: ☐ Attached, Document ID: _____ ☐ Not Applicable
13. Risk Management Plan Verification: ☐ Plan previously submitted to Chemical Emergency Preparedness and Prevention Office (CEPPO). Verification of submittal attached (Document ID: _____) or previously submitted to DEP (Date and DEP Office: _____) ☐ Plan to be submitted to CEPPO (Date required: _____) ☐ Not Applicable
14. Compliance Report and Plan: ☐ Attached, Document ID: _____ ☐ Not Applicable
15. Compliance Certification (Hard-copy Required): ☐ Attached, Document ID: _____ ☐ Not Applicable

Items 8. through 15. above previously submitted – see Polk Power Station Title V permit application.

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through J as required) must be completed for each emissions unit addressed in this Application for Air Permit. If submitting the application form in hard copy, indicate, in the space provided at the top of each page, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application.

A. GENERAL EMISSIONS UNIT INFORMATION (All Emissions Units)

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in This Section: (Check one)			
☐ This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).			
☒ This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.			
☐ This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.			
2. Regulated or Unregulated Emissions Unit? (Check one)			
☒ The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.			
☐ The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.			
2. Description of Emissions Unit Addressed in This Section (limit to 60 characters): Emission unit consists of an existing solid fuel gasification system. Approval to input coal/petcoke blends, containing up to 60.0 percent petcoke by weight, in addition to the currently authorized input of 100.0 percent coal to the existing solid fuel gasification system is requested.			
4. Emissions Unit Identification Number:		☐ No ID ☐ ID Unknown	
ID: 006			
5. Emissions Unit Status Code: A	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code: 49	8. Acid Rain Unit? []
9. Emissions Unit Comment: (Limit to 500 Characters)			

Emissions Unit Information Section 1 of 1

Emissions Unit Control Equipment

1. Control Equipment/Method Description (Limit to 200 characters per device or method):

N/A

2. Control Device or Method Code(s):

Emissions Unit Details

1. Package Unit:

Manufacturer:

Model Number:

2. Generator Nameplate Rating: MW

3. Incinerator Information:

Dwell Temperature:

°F

Dwell Time:

seconds

Incinerator Afterburner Temperature:

°F

**B. EMISSIONS UNIT CAPACITY INFORMATION
(Regulated Emissions Units Only)**

Emissions Unit Operating Capacity and Schedule

1. Maximum Heat Input Rate:	mmBtu/hr
2. Maximum Incineration Rate:	lb/hr tons/day
3. Maximum Process or Throughput Rate: 2,325 tons per day of solid fuel input, on a dry basis.	
4. Maximum Production Rate:	
5. Requested Maximum Operating Schedule:	
24	hours/day 7 days/week
52	weeks/year 8,760 hours/year
6. Operating Capacity/Schedule Comment (limit to 200 characters):	

C. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

List of Applicable Regulations

Previously submitted - see Polk Power Station Title V permit application.	

D. EMISSION POINT (STACK/VENT) INFORMATION
(Regulated Emissions Units Only) – Not Applicable

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram?		2. Emission Point Type Code:	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point):			
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:			
5. Discharge Type Code:	6. Stack Height: feet	7. Exit Diameter: feet	
8. Exit Temperature: °F	9. Actual Volumetric Flow Rate: acfm	10. Water Vapor: %	
11. Maximum Dry Standard Flow Rate: dscfm		12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates: Zone: East (km): North (km):			
14. Emission Point Comment (limit to 200 characters):			

Emissions Unit Information Section 1 of 2

E. SEGMENT (PROCESS/FUEL) INFORMATION
(All Emissions Units)

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type) (limit to 500 characters): Gasification of coal and coal/petcoke blends.		
3. Source Classification Code (SCC): 3-10-999-99		3. SCC Units: Tons Processed
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters): Maximum daily input rate of coal and coal/petcoke blends to the solid fuel gasification system shall not exceed 2,325 tons.		

Segment Description and Rate: Segment of

1. Segment Description (Process/Fuel Type) (limit to 500 characters): 		
2. Source Classification Code (SCC):		3. SCC Units:
3. Maximum Hourly Rate:	4. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
6. Maximum % Sulfur:	7. Maximum % Ash:	8. Million Btu per SCC Unit:
9. Segment Comment (limit to 200 characters): 		

F. EMISSIONS UNIT POLLUTANTS (All Emissions Units)

[illegible]

H. VISIBLE EMISSIONS INFORMATION
(Only Regulated Emissions Units Subject to a VE Limitation)

Not Applicable

Visible Emissions Limitation: Visible Emissions Limitation ____ of ____

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: [] Rule [] Other
3. Requested Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
5. Method of Compliance:	
6. Visible Emissions Comment (limit to 200 characters):	

Visible Emissions Limitation: Visible Emissions Limitation ____ of ____

2. Visible Emissions Subtype:	2. Basis for Allowable Opacity: [] Rule [] Other
3. Requested Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
7. Method of Compliance:	
8. Visible Emissions Comment (limit to 200 characters):	

I. CONTINUOUS MONITOR INFORMATION
(Only Regulated Emissions Units Subject to Continuous Monitoring)

Not Applicable

Continuous Monitoring System: Continuous Monitor ____ of ____

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[] Rule [] Other
4. Monitor Information: Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
6. Continuous Monitor Comment (limit to 200 characters):	

Continuous Monitoring System: Continuous Monitor ____ of ____

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[] Rule [] Other
4. Monitor Information: Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment (limit to 200 characters):	

Emissions Unit Information Section 2 of 2

J. EMISSIONS UNIT SUPPLEMENTAL INFORMATION
(Regulated Emissions Units Only)

Supplemental Requirements

1. Process Flow Diagram [] Attached, Document ID: _____ [] Not Applicable [✓] Waiver Requested
2. Fuel Analysis or Specification [] Attached, Document ID: _____ [] Not Applicable [✓] Waiver Requested
3. Detailed Description of Control Equipment [] Attached, Document ID: _____ [] Not Applicable [✓] Waiver Requested
4. Description of Stack Sampling Facilities [] Attached, Document ID: _____ [✓] Not Applicable [] Waiver Requested
5. Compliance Test Report [] Attached, Document ID: _____ [] Previously submitted, Date: _____ [✓] Not Applicable
6. Procedures for Startup and Shutdown [] Attached, Document ID: _____ [✓] Not Applicable [] Waiver Requested
7. Operation and Maintenance Plan [] Attached, Document ID: _____ [✓] Not Applicable [] Waiver Requested
8. Supplemental Information for Construction Permit Application [] Attached, Document ID: _____ [✓] Not Applicable
9. Other Information Required by Rule or Statute [] Attached, Document ID: _____ [✓] Not Applicable
10. Supplemental Requirements Comment: Items 1 through 3 above previously submitted – see Polk Power Station Title V permit application.

Additional Supplemental Requirements for Title V Air Operation Permit Applications

11. Alternative Methods of Operation [] Attached, Document ID: _____ [] Not Applicable
12. Alternative Modes of Operation (Emissions Trading) [] Attached, Document ID: _____ [] Not Applicable
13. Identification of Additional Applicable Requirements [] Attached, Document ID: _____ [] Not Applicable
14. Compliance Assurance Monitoring Plan [] Attached, Document ID: _____ [] Not Applicable
15. Acid Rain Part Application (Hard-copy Required) [] Acid Rain Part - Phase II (Form No. 62-210.900(1)(a)) Attached, Document ID: _____ [] Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) Attached, Document ID: _____ [] New Unit Exemption (Form No. 62-210.900(1)(a)2.) Attached, Document ID: _____ [] Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) Attached, Document ID: _____ [] Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.) Attached, Document ID: _____ [] Phase NOx Averaging Plan (Form No. 62-210.900(1)(a)5.) Attached, Document ID: _____ [] Not Applicable

Above items previously submitted, see Polk Power Station Title V permit application.

ATTACHMENT B

**PERFORMANCE TEST
AUTHORIZATION LETTER**



Jeb Bush
Governor

Department of Environmental Protection

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

David B. Struhs
Secretary

December 13, 1999

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Charles A. Shelnut
General Manager
Tampa Electric Company
P.O. Box 775
Tampa, Florida 33680-0775

Dear Mr. Shelnut:

Re: Modification of PSD-FL-194
Tampa Electric Polk Power Station, Unit No. 1
Petroleum Coke/Coal Performance Test Request

The Department has reviewed the request from Tampa Electric Company (TEC) dated May 21, 1998 and supplementary information dated September 8, 1998 and November 10, 1998 to conduct performance tests while firing synthetic natural gas (syngas) produced from petroleum coke/coal blends at Polk Power Station, Unit No. 1.

You are hereby authorized to conduct performance tests for pollutant emissions on Polk Power Station Unit No. 1 in Polk County while firing syngas produced from blends of petroleum coke (petcoke) and bituminous coal (coal). All Conditions of Certification and Conditions of Approval in your Site Certification and PSD Permit related to air pollution emission limits and control equipment remain in force.

The performance tests will be conducted in order to gather data regarding pollutant emissions and operational limitations while firing syngas produced from blends of petcoke and coal. The blends can contain a maximum of 70 percent (% by weight) petcoke. Screening to determine whether future long-term firing of syngas produced from blends of petcoke and coal blends syngas constitutes a modification subject to a review for Prevention of Significant Deterioration (PSD) shall be performed in accordance with Chapter 403, F.S.; Chapters 62-210 through 62-297 and 62-4, F.A.C.; and, Title 40, Code of Federal Regulations (CFR; July 1, 1998 version). The procedure will consist of a comparison of estimates of "representative actual annual emissions" while burning petcoke/coal blends syngas against past actual emissions while burning coal syngas (or estimates of past actual emissions developed from 100 percent coal syngas baseline performance tests).

The performance test results along with any modification application to allow permanent firing of syngas produced from blends of petcoke/coal will be reviewed by the Department's Bureau of Air Regulation (BAR) and interested agencies (i.e., DEP Southwest District office, U.S. EPA, U.S. Fish and Wildlife Service, National Park Service, etc.).

The performance tests shall be subject to the following conditions:

1. The permittee shall notify, in writing, the Department's BAR office, the Southwest District office, and the Site Certification office at least 15 days prior to commencement of the baseline and the petcoke/coal blend syngas performance tests. A written test result report shall be submitted to these offices within 45 days upon completion of the last test run.

2. The petcoke/coal blend syngas performance tests shall commence on or before March 1, 2000 and be conducted for not more than 90 days. The tests shall be conducted based on the proposed testing protocol to establish steady state operation and to achieve a maximum (70%) blend. If, for any reasons, a steady state operation of 70% petroleum coke/coal blend syngas, or less, is not achieved, or the testing at 70% petcoke blend syngas or less, presents any operational or environmental concerns, the testing shall be curtailed. The Department shall be immediately notified of the problems that have prevented steady state operations and what steps will be initiated to correct the problem. All testing shall be concluded within 150 days of when petcoke is first introduced into Unit No. 1.

Estimated Date of Introduction of Fuel Blend Syngas: January 1, 2000

(Note: This is the date at which a run on Petcoke fuel blend syngas may be commenced. It does not indicate that Unit 1 will run continuously from January 1 to June 1, 2000)

Estimated Testing Schedule:

Scenario: 55% Petcoke/ 45% Coal

Estimated date to begin testing: March 1, 2000

Scenario: 60% Petcoke/40% Coal (if 55% blend emissions are less than baseline)

Estimated date to begin testing: April 1, 2000

Scenario: 65% Petcoke/ 35% Coal (if 60% blend emissions are less than baseline)

Estimated date to begin testing: May 1, 2000

Scenario: 70% Petcoke/ 30% Coal (if 65% blend emissions are less than baseline)

Estimated date to begin testing: May 15, 2000

3. Stack emissions from Unit No. 1 shall not exceed the following during baseline and petcoke/coal blend syngas performance tests (based on most stringent of present PSD Permit and Certification Conditions):
 - a. Sulfur dioxide (SO_2) - 357 pounds per hour on a 30-day rolling average.
 - b. Nitrogen oxides (NO_x) - 222.5 pounds per hour on a 30-day rolling average.
4. As-burned fuel samples shall be collected and analyzed for the sulfur and nitrogen content throughout the petroleum coke/coal blend syngas and the baseline coal syngas test periods.
5. The performance tests of the petcoke/coal blend syngas shall be limited to a maximum of 70% petcoke, by weight. The maximum weight of the petroleum coke burned during the petcoke/coal blend syngas performance tests shall not exceed 1628 tons per day, on a dry basis.
6. The maximum sulfur content of the fuel shall not exceed 3.5 percent, by weight, during the baseline tests and the petroleum coke/coal blend syngas tests.
7. SO_2 , NO_x , and opacity emissions data shall be recorded using continuous emissions monitors (CEMS) during the baseline and the petcoke/coal blend syngas tests. If the plant CEMS are used for these tests, these systems shall be quality assured pursuant to 40 CFR 60, Appendix F requirements. The data assessment report per 40 CFR 60, Appendix F, for the most recent relative accuracy test audit (RATA) and most recent cylinder gas audit (CGA), shall be submitted with the test report. In addition, stack tests shall be conducted for sulfuric acid mist during the baseline and petcoke/coal blend syngas tests. A satisfactory performance test for each baseline test and each petroleum coke-coal blend syngas shall consist of a minimum of three tests at three runs per test.

8. The pollutant emission results from the petroleum coke/coal blend syngas performance tests shall be used to estimate "representative actual annual emissions" following an operational change per 62-210.200 (12)(d), F.A.C., for comparison with actual emissions per Rule 62-210.200(12)(a), F.A.C. The comparison will form the basis of a PSD applicability determination pursuant to 40 CFR 52.21. The results of baseline performance tests when firing coal syngas will be used only to the extent that such information does not already exist or is insufficient to determine actual emissions.
9. Performance tests shall be conducted using EPA Reference Methods, as contained in 40 CFR 60 (Standards of Performance for New Stationary Sources), or any other method approved by the Department, in writing, in accordance with Chapter 62-297, F.A.C.
10. If additional time is needed, the permittee shall request an extension of time and provide the Department with documentation of the progress accomplished to-date and shall identify the work required to complete the performance tests.
11. Daily records (e.g., heat input, MW, fuel input rates, etc.) of IGCC operations while firing the petcoke/coal blend syngas and while firing only coal syngas (baseline) during the tests shall be required.
12. The Southwest District office may conduct a Type I or II stack audit.
13. Complete documentation (recording) of any firing of the petroleum coke-coal blend syngas shall be required (i.e., all CEMs records; testing results; materials utilized, by weight; etc.) and kept on file for a minimum of five years.
14. The authorized petroleum coke/coal blend syngas performance tests shall not result in the release of objectionable odors pursuant to Rule 62-296.320(2), F.A.C.
15. Performance testing shall cease as soon as possible if Unit No. 1 operations are not in accordance with the conditions in the air section of Site Certification No. PA 92-32, PSD Permit No. PSD-FL-194, or this authorization protocol. Performance testing shall not resume until appropriate measures to correct the problem(s) have been implemented.
16. The performance tests for pollutant emissions shall be conducted under the direct supervision of a professional engineer registered in Florida.
17. This Department action is only to authorize the petroleum coke-coal blend syngas performance tests. Any firing of petroleum coke beyond the 90 days of testing within the 150 day period approved to conduct such tests will be deemed a violation of the Site Certification No. PA 92-32 and Permit No. PSD-FL-194.
18. The Southwest District office shall be immediately notified, in writing upon completion of the final test.
19. The testing series shall include emissions tests for each of the petroleum coke/coal blends syngas and pollutants with the source operating at permitted capacity. Permitted capacity is defined as 90-100 percent of the capacity allowed by Site Certification PA 92-32 and Permit PSD-FL-194. If it is impracticable to test at permitted capacity, then the source may be tested at a lesser rate. However, the tests shall be conducted at capacities within 10 percent of each other and corrected to the same heat input basis. Furthermore, subsequent source operation with a petroleum coke-coal blend syngas, if requested and approved by the Department, shall be limited to 110 percent of the tested capacity for that blend syngas until new tests are conducted, which requires prior Department authorization.
20. Attachments to be incorporated:
 - Tampa Electric Company letters dated May 21, September 8 and November 10, 1998.
 - FDEP letters dated June 16 and October 5, 1998.

A copy of this letter shall be filed with the referenced permit and shall become part of the permit. This permit modification is issued pursuant to Chapter 403, Florida Statutes.

Any party to this order (permit modification) has the right to seek judicial review of it under Section 120.68, F.S., by filing a notice of appeal under Rule 9.110 of the Florida Rules of Appellate Procedure with the clerk of the Department of Environmental Protection in the Office of General Counsel, Mail Station #35, 3900 Commonwealth Boulevard, Tallahassee, Florida, 32399-3000, and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The notice must be filed within thirty days after this order is filed with the clerk of the Department.

Executed in Tallahassee, Florida.



Howard L. Rhodes, Director
Division of Air Resources
Management

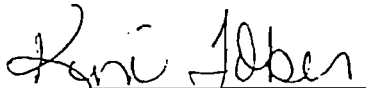
CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this permit modification was sent by certified-mail (*) and copies were mailed by U.S. Mail before the close of business on 12-14-99 to the person(s) listed:

Charles A. Shelnut, TEC*
Buck Oven, DEP PPS
Bill Thomas, DEP SWD
Gregg Worley, EPA
John Bunyak, NPS
Patrick Shell, TEC

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to §120.52, Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.


(Clerk)

12-14-99
(Date)

FINAL DETERMINATION

Tampa Electric Company

Permit No. 1050233-002-AC, PSD-FL-194C

Polk Power Station, Unit No. 1

An Intent to Issue PSD Permit modification to Tampa Electric Company, to temporarily burn syngas made from blends of petroleum coke and coal in Unit 1, in Polk County, was distributed on November 4, 1999. The Notice of Intent was published in the Lakeland Ledger on November 17, 1999. Copies of the draft construction permit were available for public inspection at the Department offices in Tampa and Tallahassee.

No comments were submitted by the National Park Service or the public. Telephonic comments were received from the Environmental Protection Agency (EPA) asking for clarification in the modification letter. The clarification sought was to include the word syngas after petroleum coke/coal blends. This addition will provide reasonable assurance that the blend of petroleum coke/coal will have to be converted to syngas prior to firing. The Department agrees with EPA's request and will make the necessary changes to the modification letter.

The final action of the Department is to issue the PSD permit modification with the changes noted above.

ATTACHMENT C

PSD APPLICABILITY ANALYSIS



TAMPA ELECTRIC

June 23, 2000

Mr. A.A. Linero, P.E.
Administrator
New Source Review Section
Florida Department of Environmental Protection
111 South Magnolia Drive, Suite 4
Tallahassee, FL 32301

Via FedEx
Airbill No. 7908 5510 1818

**Re: Tampa Electric Company (TEC) – Polk Power Station Unit 1
Petrocoke Test Burn Report**

Dear Mr. Linero:

In correspondence dated May 30, 2000, the Department reiterated concerns that the combustion of syngas produced from the gasification of a fuel blend of 40% petcoke and 60% coal results in a significant increase in sulfuric acid (H_2SO_4) mist emissions as defined in Table 212.400-2 F.A.C. This is due to the fact that when compared to the baseline coal test, H_2SO_4 mist emissions measured during the 40% petcoke 60% coal test were slightly elevated.

Tampa Electric Company, however, does not feel that comparing either blend test directly to the baseline test can be considered an accurate comparison, since operating conditions tend to vary over time at Polk Power Station.

The main constituents of clean syngas are hydrogen, carbon monoxide, carbon dioxide and nitrogen. Hydrogen sulfide and carbonyl sulfide are the important sulfur compounds since they are the source of all HRSG stack SO_2 and H_2SO_4 mist emissions, but they are present only at ppm levels. The clean syngas composition is independent of the originating fuel, but the composition does depend on the performance of many plant systems including the acid gas removal system when considering sulfur-containing compounds. Since the performance of the acid gas removal system varies depending on several operating factors, syngas composition experiences slight short-term variances which are absorbed over the course of a year. As such, in comparing petcoke blend test emissions for the purpose of determining PSD applicability, TEC believes that a statistical analysis better demonstrates how actual emissions of H_2SO_4 mist emissions are affected as a result of firing syngas produced from the gasification of petcoke and coal blends.

To demonstrate the variability associated with the Polk process, TEC analyzed sulfur dioxide (SO_2) emissions while firing syngas in the combustion turbine at 90% - 100% load during the

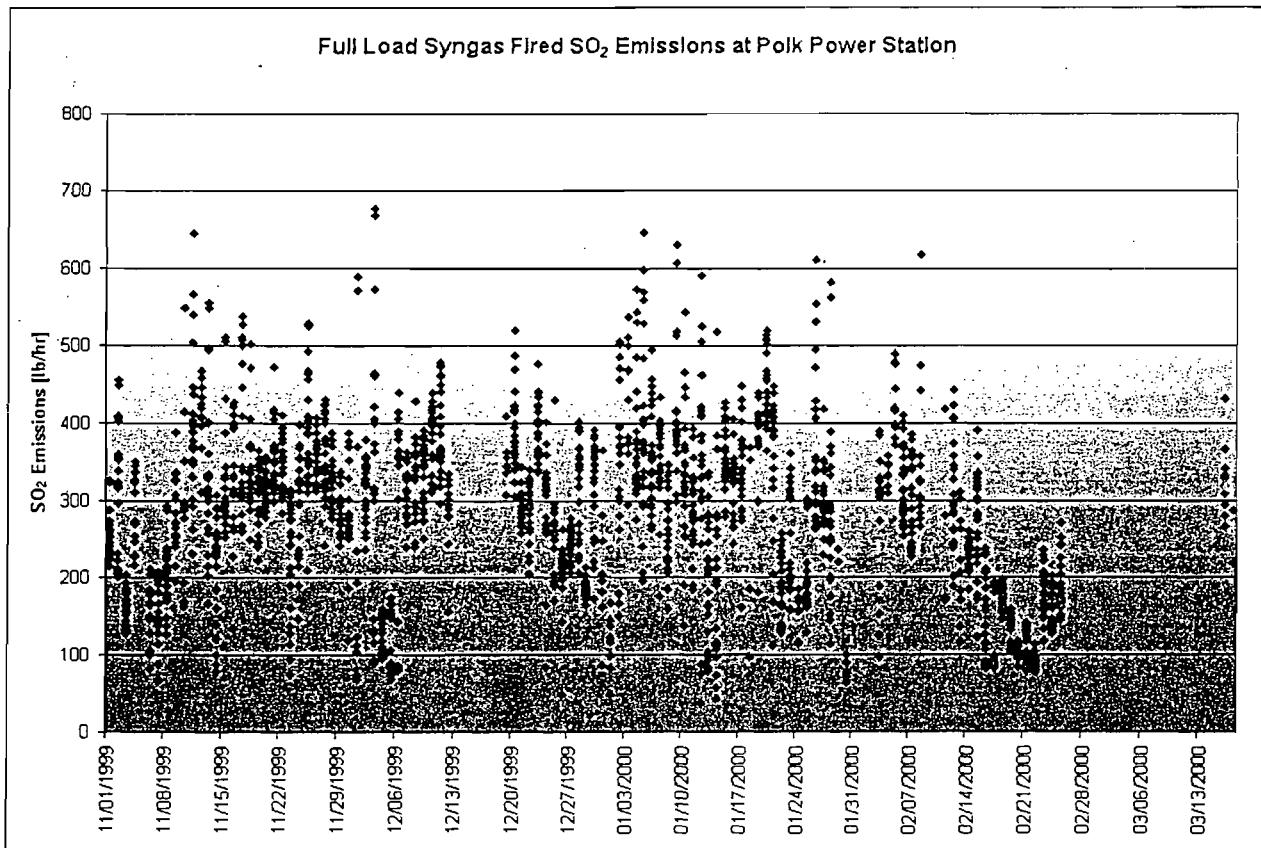
Best Available Copy

Mr. A.A. Linero, P.E.

June 23, 2000

Page 2 of 4

period beginning on November 1, 1999 and continuing to April 1, 2000. November 1, 1999 was selected as the start date because the newly installed COS hydrolysis system had achieved stability in mid-October. April 1, 2000 was chosen as the end date because TEC does not have officially reportable data past that point. As shown below, emission rates in lb/hr varied within a range over the five-month period.



The accompanying statistical analysis details the degree of data variation.

Statistical Analysis	
Mean	283
Median	295
Mode	325
Standard Deviation	107
Sample Variance	11517
Range	638
Minimum	38.2
Maximum	677
Count	2212

Since H₂SO₄ mist emissions track closely to SO₂ emissions, TEC feels that the same variability exists in H₂SO₄ mist emissions as in SO₂ emissions. In fact, upon examination of the H₂SO₄

mist emissions from the baseline and each blend test, the variability is very similar to that seen for the SO₂ emissions.

	Baseline Test	First Blend Test (40% Petcoke)	Second Blend Test (60% Petcoke)
H ₂ SO ₄ Mist Emissions (lb/hr)	31.1	33.4	19.1

Statistical Analysis	
Mean	27.9
Median	31.1
Standard Deviation	7.64
Sample Variance	58.4
Range	14.2
Minimum	19.1
Maximum	33.4
Count	3.00

As shown in the statistical analysis, the H₂SO₄ mist emissions vary between tests. During the first blend test, for example, Polk Power Station personnel were in the process of cleaning filters that serve the MDEA system. This tends to increase short-term H₂SO₄ mist emissions by temporarily reducing the removal efficiency of the acid gas removal system. Although this is a procedure that takes place on a routine basis, it did not take place during the baseline test. An inspection of the hourly emission rate of the first blend test compared to the baseline test shows that the emission rate, although higher, is well within one standard deviation of the mean. This suggests that emissions as a result of the first blend test burn did not vary significantly compared to standard operations. Therefore, over the course of one year, emissions would not be expected to vary significantly when combusting syngas produced from the gasification of a blend of petcoke and coal.

Further evidence of emissions variability is shown in the results of the 60% petcoke 40% coal blend test. Although a greater amount of petcoke was gasified, the unit emitted less H₂SO₄ (and less SO₂) than during the baseline test or the 40% petcoke 60% coal test. This occurred despite the fact that the plant operated within normal operating parameters during all three tests.

TEC feels that the above variability analysis provides the Department with reasonable assurance that the combustion of syngas produced from a blend of petcoke and coal up to 60% petcoke will not result in a significant increase of any regulated pollutant. Therefore, TEC requests permission from the Department to combust syngas produced from a fuel blend containing no greater than 60% petcoke and 40% coal.

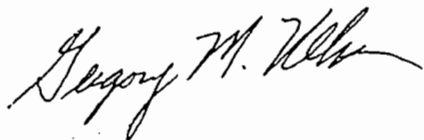
Mr. A.A. Linero, P.E.

June 23, 2000

Page 4 of 4

Should you have any questions, please feel free to contact Shannon K. Todd or me at (813) 641-5016.

Sincerely,

A handwritten signature in cursive script, appearing to read "Gregory M. Nelson".

Gregory M. Nelson, P.E.

Director

Environmental Affairs

EP\gm\SKT178

c: Syed Arif, FDEP
Buck Oven, FDEP
Bill Thomas, FDEP - SWD

ATTACHMENT D

PROPOSED PERMIT CONDITIONS

**Tampa Electric Company – Polk Power Station Unit 1
Attachment D - Proposed Permit Revisions**

A. Proposed Revisions to Permit PSD-PSD-FL-194(A)

SPECIFIC CONDITIONS

1. Revise Specific Condition F. on Page 6 of 16 as follows:

F. Fuel Consumption

Solid fuels input to the solid fuel gasification plant shall consist of coal or coal/petroleum coke blends containing a maximum of 60.0 percent petroleum coke by weight. The maximum input of coal solid fuels input to the coal solid fuel gasification plant shall not exceed 2,325 tons per day, on a dry basis.

2. Revise Specific Condition G. on Page 6 of 16 as follows:

G. Fugitive Dust

Fugitive dust emissions during the construction period shall be minimized by covering or watering dust generation areas. Particulate matter emissions from the ~~coal~~ handling of solid fuels shall be controlled by enclosing all ~~coal~~ solid fuel storage, conveyors and conveyor transfer points. Fugitive emissions shall be tested as specified in Specific Condition No. J. Water sprays or chemical wetting agents and stabilizers shall be applied to uncovered storage piles, roads, handling equipment, etc. during dry periods, as necessary, to all facilities to maintain an opacity of less than or equal to five percent.

3. Revise Specific Condition H. on Page 8 of 18 as follows:

H. Emission Limits

- (a) Syngas lb/MMBtu values based on heat input (HHV) to the coal solid fuel gasifier and includes emissions from the H₂SO₄ plant thermal oxidizer. Pollutant concentrations are corrected to 15% oxygen.

4. Revise Specific Condition M. on Page 14 of 18 as follows:

M. Notification, Reporting, and Recordkeeping

To determine compliance with the syngas and fuel oil firing heat input limitation, the permittee shall maintain daily records of syngas and fuel oil consumption for the turbine and heating value for each fuel. All records shall be maintained for a minimum of two years after the date of each record and shall be made available to representatives of the Department upon request. Documentation verifying that the coal/petroleum coke blends input to the solid fuel gasification system have not exceeded the 60.0 percent maximum petroleum coke by weight

Tampa Electric Company – Polk Power Station Unit 1
Attachment D - Proposed Permit Revisions

limit specified by Specific Condition F. shall be maintained and submitted to the Department's Southwest District Office with each annual report.

B. Proposed Revisions to Site Certification PA 92-32

XIII. AIR

1. Revise Condition of Certification XIII. F. on Page 14 as follows:

F. Fuel Consumption

Solid fuels input to the solid fuel gasification plant shall consist of coal or coal/petroleum coke blends containing a maximum of 60.0 percent petroleum coke by weight. The maximum input of ~~coal~~ solid fuels input to the ~~coal~~ solid fuel gasification plant shall not exceed 2,325 tons per day, on a dry basis.

2. Revise Condition of Certification XIII.G. on Page 15 as follows:

G. Fugitive Dust

Fugitive dust emissions during the construction period shall be minimized by covering or watering dust generation areas. Particulate matter emissions from the ~~coal~~ handling of solid fuels shall be controlled by enclosing all ~~coal~~ solid fuel storage conveyors and conveyor transfer points. Fugitive emissions shall be tested as specified in Condition No. XIII.J. Water sprays or chemical wetting agents and stabilizers shall be applied to uncovered storage piles, roads, handling equipment, etc. during dry periods, as necessary, to all facilities to maintain an opacity of less than or equal to five percent.

3. Revise Condition of Certification XIII.H. on Page 17 as follows:

H. Emission Limits

- (a) Syngas lb/MMBtu values based on heat input (HHV) to the ~~coal~~ solid fuel gasifier and includes emissions from the H₂SO₄ plant thermal oxidizer. Pollutant concentrations are corrected to 15% oxygen.

4. Revise Condition of Certification XIII.M. on Page 21 as follows:

To determine compliance with the syngas and fuel oil firing heat input limitation, the permittee shall maintain daily records of syngas and fuel oil consumption for the turbine and heating value for each fuel. All records shall be maintained for a minimum of two years after the date of each record and shall be made available to representatives of the Department upon request. Documentation verifying that the coal/petroleum coke blends input to the solid fuel

Tampa Electric Company – Polk Power Station Unit 1
Attachment D - Proposed Permit Revisions

gasification system have not exceeded the 60.0 percent maximum petroleum coke by weight limit specified by Condition XIII.F. shall be maintained and submitted to the Department's Southwest District Office with each annual report.

C. Proposed Revisions to Title V Permit No. 1050233-001-AV

Section II. Facility-wide Conditions

Revise Condition 8. on Page 5 as follows:

8. Not federally enforceable. Reasonable precautions to prevent emissions of unconfined particulate matter at this facility include: enclosing all ~~coal~~ solid fuel storage, conveyors, and conveyor transfer points; chemical or water application to unpaved road and unpaved yard areas; paving and maintenance of roads, parking areas, and yards; landscaping or planting of vegetation; confining abrasive blasting where possible; and other techniques, as necessary.
[Rule 62-296.320(4)(c)2., F.A.C.; Proposed by applicant in the initial Title V permit application received October 4, 1996]

Section III. Emissions Unit(s) and Conditions

1. Revise Condition A.5 on Page 8 as follows:

- (a) Syngas lb/MMBtu values based on heat input (HHV) to the ~~coal~~ solid fuel gasifier and includes emissions from the H₂SO₄ plant thermal oxidizer. Pollutant concentrations are corrected to 15% oxygen.

2. Revise Condition D.1 on Page 44 as follows:

D.1. Methods of Operation

- a. All ~~coal~~ solid fuel storage, conveyors and transfer points shall be enclosed.

3. Revise Conditions E.1 and E.3 on Page 48 as follows:

E.1. Permitted Capacity. Solid fuels input to the solid fuel gasification plant shall consist of coal or coal/petroleum coke blends containing a maximum of 60.0 percent petroleum coke by weight. The maximum ~~coal~~ input of solid fuels to the ~~coal~~ solid fuel gasification plant shall not exceed 2,325 tons per day, on a dry basis.

[Rules 62-4.160(2) and 62-210.200(PTE), F.A.C.; and, PSD-FL-194]

E.3. Record daily the actual ~~coal~~ input of solid fuels to the emissions unit, in tons per day.
[Rule 62-213.440(1)(b), F.A.C.]

Tampa Electric Company – Polk Power Station Unit 1
Attachment D - Proposed Permit Revisions

4. Add new Condition E.5 on Page 48 as follows:

E.5. Documentation verifying that the coal/petroleum coke blends input to the solid fuel gasification system have not exceeded the 60.0 percent maximum petroleum coke by weight limit specified by Condition E.1. shall be maintained and submitted to the Department's Southwest District Office with each annual report.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

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DIVISION OF AIR
RESOURCES MANAGEMENT

JAN 28 1999

4APT-ARB

Mr. Howard L. Rhodes, Director
Division of Air Resources Management
Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 30365

SUBJ: **Proposed Title V Permit for TEC - Polk Power Station**

Dear Mr. Rhodes:

The purpose of this letter is to acknowledge the receipt of the State of Florida's proposed changes to the Tampa Electric Company - Polk Power Station proposed title V permit which was the subject of a U.S. Environmental Protection Agency (EPA) title V objection on October 8, 1998. EPA Region 4 has completed its review of the proposed changes to the permit and believes that the State has adequately addressed each of the issues enumerated in the objection. Therefore, EPA considers the objection to be resolved. Once the State's proposed changes are incorporated into the permit, the State may proceed with permit issuance.

We commend the efforts of your staff for facilitating the resolution of the permit issues. If you have any questions about this letter, please contact Ms. Carla E. Pierce, Chief, Operating Source Section at (404)562-9099.

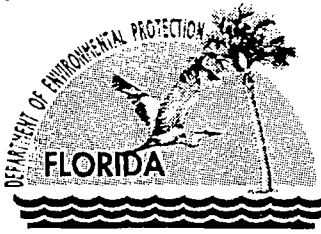
Sincerely,

James S. Kutzma for

Winston A. Smith
Director
Air, Pesticides and Toxics
Management Division

Greet with Ed.
sm8

2/2/99 cc: Ed Svec



Jeb Bush
Governor

Department of Environmental Protection

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

David B. Struhs
Secretary

January 22, 1999

Mr. R. Douglas Neeley, Chief
Air and Radiation Technology Branch
Air, Pesticides and Toxics Management Division
United States Environmental Protection Agency
Region 4
61 Forsyth Street, SW
Atlanta, GA 30303-8909

Re: Proposed Changes to Tampa Electric Company PROPOSED Title V Permit for the Polk
Power Station to Satisfy EPA Objections
Permit No. 1050233-001-AV

Dear Mr. Neeley:

This letter is to document changes that the Department proposes to satisfy EPA Region 4 objections to Florida's Proposed Title V permit 1050233-001-AV for Tampa Electric Company, Polk Power Station. These objections were detailed in a letter from EPA Region 4 dated October 8, 1998, in which EPA indicated the primary basis for objection was that the permit does not meet the periodic monitoring requirements of 40 CFR 70.6(a)(3)(i), does not identify 40 CFR 60, Subpart Y as an applicable requirement, and contains inadequate averaging times and startup/shutdown reporting requirements.

The changes proposed in this letter result primarily from a meeting with representatives of Tampa Electric Company (TEC) on November 20, 1998, and conveyed by letter to you on December 18, 1998. That meeting enabled us to clarify many of the issues and identify changes that could be made to the permit that would allow Florida to issue the Final Title V permit for this plant. The changes also reflect responses dated January 5, 1999, to written comments from Mr. David McNeal, received December 19, 1998, and a follow-up telephone conversations between Mr. McNeal and TEC on January 9, 1999; and, Ms. Gracy Danois and TEC on January 15, 1999.

Please review the following proposed changes to the referenced permit. If you concur with our changes, we will issue the FINAL Permit with these changes. The following items and changes are presented in the same order as listed in the October 19, 1998 letter cited above.

I. EPA Objection Issues

1. Periodic Monitoring: Conditions A.1. and B.1., establish the permitted capacity for the combined cycle combustion turbine and the auxiliary boiler, respectively. The origin of these conditions is the PSD permit for this facility. The permit needs to include appropriate periodic monitoring or recordkeeping requirements to reasonably assure compliance with these conditions. In order to satisfy this requirement, the permit must require that the facility maintain fuel usage records to demonstrate compliance with the applicable heat input rate. Since the limits are expressed as hourly limits, the condition should establish an hourly fuel usage recordkeeping.

RESPONSE: Tampa Electric is willing to accept the use of the currently required monitoring specified in condition A.12. and suggests the following language be added to condition A.1.: *Monitoring required under condition A.12. shall satisfy periodic monitoring requirements for heat input.*

2. Periodic Monitoring: The permit does not require sufficient periodic monitoring to ensure compliance with the applicable SO₂, PM/PM₁₀, CO, VOC, visible emissions, lead, inorganic arsenic, beryllium, and mercury limits in Section III, Subsection A. The TEC-Polk County permit only requires testing once every five years for SO₂, PM/PM₁₀, CO, visible emissions and VOC, and no testing for the remaining pollutants. It is not clear whether or not this monitoring scheme constitutes adequate periodic monitoring to ensure compliance with the limits contained in the permit. As for the lead, inorganic arsenic, beryllium and mercury limitations, EPA is concerned that the concentration of these pollutants could vary significantly with every fuel batch. In order for infrequent testing to be approved as the periodic monitoring method for this facility, the State must provide a technical demonstration that no additional monitoring is warranted to ensure compliance with the limits listed above. The demonstration should identify the rationale for basing the compliance certification on data from a short-term test once every five years. If it is determined that additional monitoring is necessary to ensure compliance with the permit conditions, more frequent testing requirements need to be included in the permit.

Regarding the visible emissions limit, the State needs to use the existing COMs to ensure compliance with the opacity standard. Requiring that the opacity monitor be used for conducting periodic monitoring imposes little or no additional burden on the source.

Additionally, this unit has a continuous emission monitor for SO₂. While fuel analysis may be adequate for determining SO₂ emissions from fuel oil combustion, that may not be true for syngas because of the variability of the fuel. We believe that using the data gathered by the SO₂ monitors would provide a better compliance demonstration than the fuel sampling analysis.

RESPONSE: Testing requirements for the pollutants regulated in Section III, Subsection A. are in compliance with the requirements of Chapter 62-297, F.A.C. NO_x, SO₂, CO, and visible emissions are required to be tested annually. VOC and PM/PM₁₀ are required to be tested prior to renewal. Lead, sulfuric acid mist, arsenic beryllium and mercury are required to perform an initial test, only, by the federally approved PSD permit. Please remember that Rule 62-297.310(7)(b), F.A.C., allows for additional compliance testing if the Department has good cause to believe that a standard is being violated. TEC has provided a synopsis of compliance tests (see attached letter dated December 9, 1998) showing results well below allowable emissions. Additionally, they have provided the results of nine

months of coal sample analyses which show very little variance in the concentrations of heavy metals. Based on the evidence, the Department feels that periodic monitoring is satisfied.

TEC will accept the use of the COMs for periodic monitoring but not for compliance.

TEC will accept the use of the SO₂ CEM for periodic monitoring during syngas firing. The following language is offered for addition under the Monitoring of Operations section for the combustion turbine:

During syngas firing, the SO₂ emission rate shall be monitored by the CEM for purposes of periodic monitoring.

Condition A.13. should satisfy periodic monitoring for periods of distillate fuel oil combustion.

No statement was made in the Department's response to objection #2 that would bring someone to the conclusion that there is a condition that specifically precludes the use of COMs data for enforcement.

TEC has provided data on the minimum detection limits (MDL). This discussion is contained in the attached document. For volatile organic compounds, the MDL calculates to emission rates of 1.8 to 2.0 pounds per hour and, for beryllium, an emission rate of 0.00024 pound per hour.

3. Periodic Monitoring: Section III, Subsection B, condition B.4 limits the hours of operation for the auxiliary boiler. This subpart needs to include recordkeeping requirements for this condition.

RESPONSE: A condition will be added to Section III, Subsection B. requiring recordkeeping of the non-standby hours of operation of the auxiliary boiler.

4. Periodic Monitoring: Section III, Subsection C does not contain adequate periodic monitoring requirements to provide reasonable assurance of compliance with the limitations for Visible Emissions, Sulfur Dioxide and Acid Mist. The permit only requires testing once every five years. It is not clear whether this testing frequency would provide reasonable assurance of compliance with the pollutant limitations contained in this subsection. In order to approve the infrequent testing for the pollutants included in this subsection as the periodic monitoring method, the State must provide a technical demonstration that no additional monitoring is warranted to ensure compliance with the limits. The demonstration should identify the rationale for basing the compliance certification on data from a short-term test once every five years. If it is determined that additional monitoring is necessary to ensure compliance with the permit conditions, more frequent testing requirements need to be included in the permit.

Also, daily recordkeeping of the plant production must be kept to ensure that the facility do not exceed the limit contained in condition C.1. This requirement is very important because it is limiting the source's production below 300 tons per day. If the facility exceeded the 300 tons per day production capacity, F.A.C. rule 62-296.402 requires that the facility install and operate continuous emissions monitors for VE, SO₂, and Acid Mist.

RESPONSE: Testing requirements for the pollutants regulated in Section III, Subsection C. are in compliance with the requirements of Chapter 62-297, F.A.C. SO₂ and visible emissions are required to be tested annually. Sulfuric acid mist is required to be tested prior to renewal. Please remember that Rule 62-297.310(7)(b), F.A.C., allows for additional compliance testing if the Department has good cause to believe that a standard is being violated. In addition, this "sulfuric acid plant" is actually a pollution control device for the coal gasification process. It converts hydrogen sulfide (which would have been emitted to the atmosphere) into sulfuric acid. It escapes the permitting requirements of 40 CFR 60, Subpart H, but not the requirements of Rule 62-296.402, F.A.C.

TEC will accept a daily visible emissions observation to satisfy periodic monitoring for visible emissions from the sulfuric acid plant. They also feel that the daily visible emission observation would provide an indicator of acid mist emissions. It was agreed that, due to the lack of other adequate indicators for periodic monitoring and the possibility that the sulfuric acid plant may be subject to compliance assurance monitoring requirements at the time of renewal of the Title V permit that, a daily visible emission observation will satisfy periodic monitoring requirements for this emission unit.

The following condition is offered for addition under the Monitoring of Operations section for the Sulfuric Acid Plant:

The owner or operator shall observe and record a quantified visible emission observation, six minutes in duration, for the sulfuric acid plant on a daily basis, for the purpose of periodic monitoring.

A condition will be added to Section III, Subsection C requiring recordkeeping of the daily production of the "sulfuric acid plant".

5. Periodic Monitoring: Section III, subsection D, condition D.4 specifies that the facility conducts a Method 22 test once per year. It is not clear whether this infrequent testing provides reasonable assurance of compliance with the visible emission limitation contained in this subsection. In order to approve the infrequent testing for visible emissions, the State must provide a technical demonstration that no additional monitoring is warranted to ensure compliance with the VE limit or require the source to conduct daily VE readings.

RESPONSE: The fuel handling system is adequately enclosed and also has the necessary controls in the form of surfactant sprays and baghouses where annual testing would constitute periodic monitoring. Please remember that Rule 62-297.310(7)(b), F.A.C., allows for additional compliance testing if the Department has good cause to believe that a standard is being violated. To better describe the fuel handling system, the description in the PROPOSED permit will be substituted with the following:

The solid fuel handling system consists of a bottom unloading station where water/surfactant spray is applied to the incoming fuel as needed for dust control. The system also includes enclosed conveying systems, rubber skirted drop points from bins, two fuel silos with an associated baghouse, a fuel surge bin with associated baghouse, and two rod mill crushers for slurry production.

Solid fuel is received by truck and is bottom unloaded to the fuel unloading bin. Fugitive emissions are controlled by water spray with surfactant applied at the unloading bin as needed. Fuel is conveyed via enclosed conveyor from the unloading bin to the fuel storage silos. The transfer points from the bin to the belts are rubber skirted. Fugitive emissions from the fuel silos are controlled by an associated baghouse. Fuel is then reclaimed from the silos via enclosed conveyors to the surge bin inside the slurry preparation building. Fugitive emissions from the surge bin are controlled by an associated baghouse. Fuel and water are then mixed in the rod mill crushers to produce a coal slurry.

6. Reporting and Recordkeeping: Section III, subsection C, condition C.8 addresses the excess emissions from start-up, shutdown and malfunctions. Condition C.20 requires the reporting of excess emissions due to malfunctions only. This condition needs to also require reporting of excess emissions from start-up and shutdown.

RESPONSE: See the response to objection 4., above. This is not an NSPS source, it is a SIP source and our rules do not require the reporting of excess emissions from startup or shutdown.

7. Missing Applicable Requirement: Subsection D of the permit needs to include a statement establishing that the source is subject to the requirements of 40 CFR Part 60, subpart Y, Standards of Performance for Coal Preparation Plants.

RESPONSE: 40 CFR Part 60, Subpart Y, Standards of Performance for Coal Preparation Plants, will be added to the permitting note beneath the description of the emissions unit which addresses the rules that regulate the emissions unit. Additionally, the visible emissions test method in specific condition **D.4.** will be changed to EPA Method 9, as required by the subpart.

8. Control Equipment Requirements: The description provided in Subsection E of this permit describes various pieces of control equipment. The permit does not contain any references to the control equipment nor does it contain adequate periodic monitoring requirements for the equipment. The State needs to explain and provide information in the statement of basis supporting the decision not to require parametric monitoring of the control equipment in the permit.

RESPONSE: The emissions unit is a regulated emissions unit solely because the tons per day throughput of coal was limited by the PSD permit. If not for the throughput requirement the emissions unit would be unregulated. Since the only parameter requiring monitoring is tons per day throughput, the requirements contained in conditions E.3. and E.4. constitute periodic monitoring for the emissions unit. To eliminate confusion, we will remove the reference to the afterburner from the description.

9. Averaging Times: In order for the emissions standards in conditions A.5 and A.6 to be practicably enforceable, appropriate averaging times must be specified in the permit. If the pounds per hours standards are the ones for which the facility would have to demonstrate compliance, the 30-day rolling average is not the appropriate averaging time. Also, for condition A.5, it is unclear whether the facility

would have to demonstrate compliance with the limitations listed under "Basis" or the "LB/HR" numbers or both.

RESPONSE: The factors under the column titled "BASIS" are the basis for the pound per hour values. The 30-day rolling average is a federally enforceable requirement established in the PSD permit and approved by EPA Region 4. This requirement was established by the preconstruction review process, not the Title V process.

II. EPA General Comments

1. Section II, condition 11: Please replace "Operating Source Section" with "Air & EPCRA Enforcement Branch, Air Compliance Section."

RESPONSE: The address for EPA will be changed, as follows:

United States Environmental Protection Agency
Region 4
Air, Pesticides & Toxics Management Division
Air and EPCRA Branch
Air Compliance Section
61 Forsyth Street
Atlanta, Georgia 30303
Telephone: 404/562-9099
Fax: 404/562-9095

2. Section III, subsection A, condition A.3.b: The equation should read:

$$[\text{Load}(\%)] / 100\% * \text{hrs. of operation} \leq 876 \text{ hrs}$$

RESPONSE: The equation currently reads: $[\text{Load}(\%)] / 100\% * \text{Hours of Operation} \leq 876 \text{ Hours}$. Assuming the abbreviation of the word "Hours" and using the lower case of the word "Operation" will remove this comment, the changes will be made to condition A.3.b.

3. Section III, subsection A, condition A.48: EPA recommends that this condition be moved to the "Emissions Limitations and Standards" section since it is related to the NOx limit that the facility would have to comply with after the demonstration period.

RESPONSE: Condition A.48. will be moved to the "Emissions Limitations and Standards" section of Section III., Subsection A and the other affected specific conditions will be renumbered, as necessary.

4. Section III, subsection A, conditions A.7 and A.51. EPA recommends that the State combine conditions A.7 and A.51, since they refer to the same parameter and are based on the same PSD permit requirement. We also recommend that the resulting condition be placed in the “Emissions Limitations and Standards” portion of subsection A.

RESPONSE: Conditions A.7. and A.51. will be linked using a statement “see specific condition X.xx.”

5. Section III, subsection A, condition A.49. Section III, subsection A, condition A.49 states that results from NOx testing conducted on the combustion turbine every two months for 12 to 18 months after the demonstration will not be used for compliance purposes. The State needs to provide the basis for this decision in the statement of basis.

RESPONSE: We cannot answer a preconstruction issue established prior to the Title V permitting. The process is a research and development project for the U. S. Department of Energy’s Clean Coal Technology Demonstration.

6. Section III, subsection B, conditions B.7 and B.52. EPA recommends that the State combine conditions B.7 and B.52, since they refer to the same parameter and are based on the same PSD permit requirement. We also recommend that the resulting condition be placed in the “Emissions Limitations and Standards” portion of subsection B.

RESPONSE: Conditions B.7. and B.52. will be linked using a statement “see specific condition X.xx.”

7. Section III, subsection B, conditions B.19 and B.32. EPA recommends that the State should combine conditions B.19 and B.32, since they refer to the same parameter and are based on the same NSPS subpart. We also recommend that the resulting condition be placed in the “Emissions Limitations and Standards” portion of subsection B.

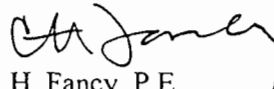
RESPONSE: Condition B.19. will be removed and the rule citation of B.19. will be added to the rule citation of condition B.32. The remaining specific conditions will be renumbered, as required.

8. Section III, subsection C, condition C.3. Section III, subsection C, C.3: The intent of this condition is unclear. It seems that this condition is intended to limit the fuel used by this plant to propane. If this is the case, the State should rephrase the condition to clearly state that intent.

RESPONSE: Condition C.3. will be changed to read “The conversion furnace fires only propane.”

As you know, the 90 day period ended January 6th. All parties involved have been expeditiously seeking resolution of these issues. We feel that EPA's concerns have been adequately addressed and we look forward to issuing final permits. Please advise as soon as possible if you concur with the specific changes detailed above. Please call me at 850/921-9503 if you have any questions. You may also contact Mr. Scott M. Sheplak, P.E., at 850/921-9532, or Mr. Edward J. Svec at 850/921-8985, if you need any additional information.

Sincerely,

A handwritten signature in black ink, appearing to read "C. H. Fancy".

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

CF/es

cc: Scott M. Sheplak
Pat Comer
James Hunter, TEC



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JAN 22 1999

BUREAU OF
AIR REGULATION

January 13, 1999

Gracy Danois
Region IV
Air Pesticide and Toxics Management Division
Operating Permits Section
61 Forsyth Street
Atlanta, Ga 30303

Via US Mail
Via Facsimile

Re: EPA's Review of the Proposed Title V Permit
Tampa Electric Company
Polk Power Station
Permit No. 1050233-001-AV

Dear Ms. Danois:

The following is provided as a response to the January 8, 1999 telephone conversation between David McNeal and Patrick Shell concerning resolution of EPA objections to the Polk Power Station title V permit. Mr. McNeal requested the following items from Tampa Electric:

- 1) Suggested permitting language for the use of the combustion turbine's SO₂ CEM for purpose of periodic monitoring, and
- 2) suggested permitting language for a daily visible emission observation for the sulfuric acid plant.

The following is the suggested permitting language for these items:

Item 1: This condition is offered for addition under the Monitoring of Operations section for the Combustion Turbine:

During syngas firing the SO₂ emission rate shall be monitored by the CEM for the purposes of periodic monitoring.

Condition A.13 should satisfy periodic monitoring for periods of distillate combustion.

Gracy Danois
January 13, 1999
Page 2 of 2

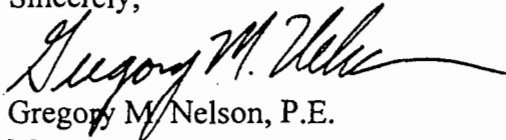
Item 2: This condition is offered for addition under the Monitoring of Operations section for the Sulfuric Acid Plant:

The owner or operator shall observe and record a quantified visible emission observation for the sulfuric acid plant stack on a daily basis, for the purposes of periodic monitoring.

Tampa Electric is suggesting the use of this quantified visible emission observation in lieu of the use of Method 22 for the daily visible emission observation. This change is offered to alleviate concerns over the inadequacy of Method 22 to quantify visible emissions.

If you have any questions or concerns about the response to the objections please contact Patrick Shell or me at (813)641-5210.

Sincerely,



Gregory M. Nelson, P.E.
Manager
Environmental Planning

1/25/99
c: S Scott Sheplak, FDEP
Edward Svec, FDEP



January 4, 1999

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JAN 06 1999

**BUREAU OF
AIR REGULATION**

Mr. Scott Sheplak
Bureau of Air Regulation
Florida Department of Environmental Protection
Twin Towers Office Building
111 South Magnolia Drive, Suite 4
Tallahassee, Florida 32399-2400

**Via Facsimile and FedEx
Airbill No. 808009421710**

**Re: Tampa Electric Company (TEC)
Polk Power Station
EPA's Initial Comments on DEP's Response
to the October 4th Objection Letter**

Dear Mr. Sheplak:

We hereby offer the following response to EPA's initial comments concerning DEP's December 18, 1998 letter to Douglas Neeley addressing proposed changes to the Polk Power Station (PPS) Title V permit.

Item 1:

Tampa Electric is willing to accept the use of the currently required monitoring specified in condition A.12 as a means to satisfy EPA's concerns. Tampa Electric suggests the following language:

Addition to A.1

Monitoring required under condition A.12 shall satisfy periodic monitoring requirements for heat input.

Item 2:

SO₂ Periodic Monitoring:

Tampa Electric is willing to accept the use of the acid rain SO₂ CEM to satisfy periodic monitoring requirements for the combustion turbine.

Mr. Scott Sheplak

January 4, 1999

Page 2 of 3

Minimum Detection Limits:

The following tables were provided which contained references to minimum detection limits:

<i>VOC (lb/hr)</i>	<i>Limit</i>	<i>5/15/97</i>	<i>6/15/98</i>	<i>8/29/97</i>	<i>10/24/98</i>
<i>CT-Oil</i>	32	-	-	<MDL	<MDL
<i>CT-Syngas</i>	2	0.15*	<MDL	-	-

* One run was <MDL

MDL- Minimum Detection Limit

<i>CT-Syngas Metals</i>	<i>Limit</i>	<i>5/15/97</i>
<i>Arsenic (lb/hr)</i>	0.08	0.0057
<i>Beryllium (lb/hr)</i>	0.001	<MDL
<i>Mercury (lb/hr)</i>	0.025	0.0049
<i>H₂SO₄ (lb/hr)</i>	55	NT

NT- Not tested, no test requirement in the permit.

VOC emission rates were determined using EPA Reference Method 18. The minimum detection emission rates for these tests were based on 1 PPM VOC concentration (the gas chromatograph's MDL) and the stack gas flow rates. The minimum detection emission rates are provided below.

Test	Minimum Detection Emission Rate
6/15/98	2.0 lb/hr
8/29/97	1.8 lb/hr
10/24/98	1.8 lb/hr

The beryllium emission rate was determined using EPA Reference Method 29 and Method 19. The minimum detection limit for Beryllium is 0.08 micrograms/m³. Using the average stack gas flow rate and the minimum detection limit concentration, the minimum detectable emission rate was 0.00024 lb/hr.

Item3:

Tampa Electric is willing to accept a condition requiring daily visible emissions observations using EPA Reference Method 22 to satisfy periodic monitoring for visible emissions from the PPS acid plant. Tampa Electric also believes that the daily visible emission observation will provide an indication of sulfuric acid mist periodic monitoring.

In an effort to satisfy EPA's concerns, Tampa Electric has extensively investigated the possibility of using acid plant operating parameters to satisfy periodic monitoring for SO₂ and sulfuric acid mist. The sulfuric acid plant at the PPS is part of the Department of Energy's Clean Coal demonstration project at the PPS and as such is a new and unconventional technology. Further, it is Tampa Electric's belief that the operation of a sulfuric acid plant as a SO₂ control device presents unique operating scenarios which were not considered in sulfuric acid plant rule making. Because the PPS acid plant is a new and unique process, Tampa Electric does not have enough data and operational experience to recommend a process parameter that can be utilized as a

Mr. Scott Sheplak

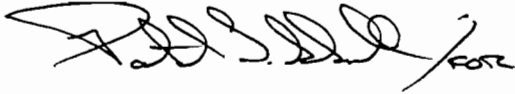
January 4, 1999

Page 3 of 3

candidate for SO₂ and H₂SO₄ periodic monitoring at this time. Tampa Electric will continue to study the issue of periodic monitoring for the acid plant, but requests that five year SO₂ and H₂SO₄ testing be utilized until the renewal of the Title V permit at which time Tampa Electric may be able to recommend an alternative.

I hope that this information provides a sufficient response to satisfy the objections made by EPA to the proposed PPS Title V permit. If you have any questions or need further data please contact Patrick Shell or me at (813) 641-5210.

Sincerely,

A handwritten signature in black ink, appearing to read 'James Hunter', followed by a horizontal line and the word 'for'.

James Hunter
Administrator-Air Programs
Environmental Planning

EP\gm\PLS116

Cc: E. Svec, FDEP



Lawton Chiles
Governor

Department of Environmental Protection

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

Virginia B. Wetherell
Secretary

January 5, 1999

Mr. R. Douglas Neeley, Chief
Air and Radiation Technology Branch
Air, Pesticides and Toxics Management Division
United States Environmental Protection Agency
Region 4
61 Forsyth Street, SW
Atlanta, GA 30303-8909

Re: Proposed Changes to Satisfy EPA Objections, Comments on Initial Responses
Tampa Electric Company, Polk Power Station, Proposed Title V Permit 1050233-001-AV

Dear Mr. Neeley:

This letter addresses the comments received on December 31, 1998 on the Department's proposal to satisfy EPA Region 4 objections to Florida's Proposed Title V permit 1050233-001-AV for Tampa Electric Company, Polk Power Station. The original objections were detailed in a letter from EPA Region 4 dated October 8, 1998. The Department's response to the objection letter was dated December 18, 1998.

Please review the following responses to the comments and the attached supporting information contained in a letter from Tampa Electric dated January 4, 1999. If you concur with these responses, we will issue the Final permit with the changes addressed our letter of December 18, 1998, incorporating the responses of this letter.

EPA Comments

1. We do not agree with the response to issue #1. Condition B of the PSD permit clearly establishes heat input as a limit for this facility. Further, specific PSD condition M requires the source to maintain daily records of syngas and fuel oil consumption "to determine compliance with the syngas and fuel oil firing heat input limitation..."

**** Potential solutions to this problem are:**

- a. Tie condition A.12. to A.1. Under NSPS, they have to maintain records of fuel consumption. Subpart GG requires hourly monitoring; PSD permit requires daily monitoring.
- b. Under Acid Rain, the plant has to collect fuel usage data. If they use that data, the monitoring requirements for heat input will likely be satisfied.

RESPONSE: Tampa Electric is willing to accept the use of the currently required monitoring specified in condition A.12. and suggests the following language be added to condition A.1.: *Monitoring required under condition A.12. shall satisfy periodic monitoring requirements for heat input.*

2. Regarding issue #2, the facility has SO₂ monitors. It has been our position that, when available, the CEM becomes the preferred periodic monitoring option. Since this is a demonstration project, requiring the recordkeeping of fuel analysis lab reports and recordkeeping requirements of excess emissions events would not be unreasonable. As we mentioned during our telephone discussions earlier today, we are willing to consider process records for periodic monitoring purposes which will demonstrate operation of the plant within the permit limits.

For example, we accessed the 1997 and 1998 third quarter Acid Rain Division data for Polk. The equivalent SO₂ emission rates are 0.22 lb and 0.23 lb per million BTU, respectively. These calculated emission rates are above the permitted emission rate for syngas for the post demonstration period. To prevent possible misinterpretations, we suggest that the 'Basis' column in condition A6, which contains the SO₂ standards (0.048 lb per million BTU for oil firing (low sulfur #2) and 0.17 lb per million BTU for syngas firing) for the post demonstration period be added to condition A5 with the correct equivalent lb per million BTU for the lb per hour limits for the demonstration period.

According to your response, the plant is accepting the use of COMs for periodic monitoring, but the company will not "accept" these monitors for compliance. TECO needs to be aware that, due to the any credible evidence rule, results from the COMs can be potentially be used to cite a violation of the applicable opacity standard. Although we are not suggesting that the permit must contain language identifying the COMs as a compliance method, we would object to any permit condition that specifically precludes the use of COMs data for enforcement.

One other concern that we have regarding the response to Objection Item No. 2 is that some of the test results cited as proof that emissions of certain pollutants (i.e., volatile organic compound emissions from oil combustion and beryllium emissions from syngas combustion) were below allowable limits are reported as being below the minimum detection limit (MDL). Although one might presume that an emission rate below the MDL would correspond to an emission rate below the applicable limit, clearly identifying the MDL with the test results would provide much more conclusive proof of this fact.

RESPONSE: Tampa Electric is willing to accept the use of the Acid Rain SO₂ CEM to satisfy periodic monitoring requirements for the combustion turbine.

No statement was made in the Department's response to objection #2 that would bring someone to the conclusion that there is a condition that specifically precludes the use of COMs data for enforcement.

Tampa Electric has provided data on the minimum detection limits (MDL). This discussion is contained in the attached document. For volatile organic compounds, the MDL calculated to emission rates of 1.8 to 2.0 pounds per hour and a beryllium emission rate of 0.00024 pound per hour.

3. On objection issue #4, once again, we question the rationale for having such infrequent testing for visible emissions, SO₂, and acid mist. We question the adequacy of this periodic monitoring scheme to support a yearly compliance certification. With respect to opacity, we would encourage the use of periodic (i.e., daily) opacity readings as a monitoring approach. To us, it appears that this level of monitoring would substantially increase the credibility of the annual compliance certification without being burdensome. With respect to SO₂ and acid mist, we would like TECO to address the issue of whether there are any sulfuric acid plant operating parameters that could be used as an indicators of

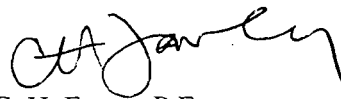
Mr. R. Douglas Neeley
January 5, 1999
Page 3 of 3

SO₂ and acid mist emissions since we are not convinced that the proposed periodic testing schedule alone will provide reasonable assurance of compliance.

RESPONSE: Tampa Electric will accept a daily visible emissions requirement using EPA Reference Method 22 to satisfy periodic monitoring for visible emissions from the sulfuric acid plant. They also feel that the daily visible emission observation would provide an indicator of acid mist emissions. However, they do not currently have enough operational data or experience with this unique process to recommend other process parameters which would be indicators of sulfur dioxide or acid mist emissions. They are requesting that they be allowed time to gain this experience and then incorporate any appropriate process parameters when the permit is due for renewal.

As you know, the 90 day period ends January 6th. All parties involved have been expeditiously seeking resolution of these issues. We feel that EPA's concerns have now been adequately addressed and we look forward to issuing final permits. Please advise as soon as possible if you concur with the specific changes detailed above. Please call me at 850/921-9503 if you have any questions. You may also contact Mr. Scott M. Sheplak, P.E., at 850/921-9532, or Mr. Edward J. Svec at 850/921-8985, if you need any additional information.

Sincerely,



C. H. Fancy, P.E.

Chief

Bureau of Air Regulation

CF/es

Attachments

cc: Scott M. Sheplak
Pat Comer
James Hunter, TEC



Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

December 18, 1998

Mr. R. Douglas Neeley, Chief
Air and Radiation Technology Branch
Air, Pesticides and Toxics Management Division
United States Environmental Protection Agency
Region 4
61 Forsyth Street, SW
Atlanta, GA 30303-8909

Re: Proposed Changes to Satisfy EPA Objections
Tampa Electric Company, Polk Power Station, Proposed Title V Permit 1050233-001-AV

Dear Mr. Neeley:

This letter is to document changes that the Department proposes to satisfy EPA Region 4 objections to Florida's Proposed Title V permit 1050233-001-AV for Tampa Electric Company, Polk Power Station. These objections were detailed in a letter from EPA Region 4 dated October 8, 1998, in which EPA indicated the primary basis for objection was that the permit does not meet the periodic monitoring requirements of 40 CFR 70.6(a)(3)(i), does not identify 40 CFR 60, Subpart Y as an applicable requirement, and contains inadequate averaging times and startup/shutdown reporting requirements.

The changes proposed in this letter result primarily from a meeting with representatives of Tampa Electric Company (TEC) on November 20, 1998. That meeting enabled us to clarify many of the issues and identify changes that could be made to the permit that would allow Florida to issue the Final Title V permit for this plant. Please review the following proposed changes to the referenced permits. If you concur with our changes, we will issue the Final permit with these changes.

I. EPA Objection Issues

1. Periodic Monitoring: Conditions A.1. and B.1., establish the permitted capacity for the combined cycle combustion turbine and the auxiliary boiler, respectively. The origin of these conditions is the PSD permit for this facility. The permit needs to include appropriate periodic monitoring or recordkeeping requirements to reasonably assure compliance with these conditions. In order to satisfy this requirement, the permit must require that the facility maintain fuel usage records to demonstrate compliance with the applicable heat input rate. Since the limits are expressed as hourly limits, the condition should establish an hourly fuel usage recordkeeping.

RESPONSE: The heat input limitations have been placed in a permit to identify the capacity of each unit for the purposes of confirming that emissions testing is conducted within 90 to 100 percent of the unit's rated capacity (or to limit future operation to 110 percent of the test load), to establish appropriate emission limits and to aid in determining future rule applicability. A note will be added to the permitted capacity conditions clarifying this, and an explanation that regular record keeping is not required for heat input will be added to the statement of basis. The following specific changes will be made:

Add to the statement of basis for the permit:

The heat input limitations have been placed in each permit to identify the capacity of each unit for the purposes of confirming that emissions testing is conducted within 90 to 100 percent of the unit's rated capacity (or to limit future operation to 110 percent of the test load), to establish appropriate emission limits and to aid in determining future rule applicability. A note below the permitted capacity condition clarifies this. Regular record keeping is not required for heat input. Instead the owner or operator is expected to determine heat input whenever emission testing is required, to demonstrate at what percentage of the rated capacity that the unit was tested. Rule 62-297.310(5), F.A.C., included in the permit, requires measurement of process variables for emission tests. Such heat input determination may be based on measurements of fuel consumption by various methods including but not limited to fuel flow metering or tank drop measurements, using the heat value of the fuel determined by the fuel vendor or the owner or operator, to calculate average hourly heat input during the test.

Add to the permit below the condition titled Permitted Capacity:

{Permitting note: The heat input limitations have been placed in each permit to identify the capacity of each unit for the purposes of confirming that emissions testing is conducted within 90 to 100 percent of the unit's rated capacity (or to limit future operation to 110 percent of the test load), to establish appropriate emission limits and to aid in determining future rule applicability.}

2. Periodic Monitoring: The permit does not require sufficient periodic monitoring to ensure compliance with the applicable SO₂, PM/PM₁₀, CO, VOC, visible emissions, lead, inorganic arsenic, beryllium, and mercury limits in Section III, Subsection A. The TEC-Polk County permit only requires testing once every five years for SO₂, PM/PM₁₀, CO, visible emissions and VOC, and no testing for the remaining pollutants. It is not clear whether or not this monitoring scheme constitutes adequate periodic monitoring to ensure compliance with the limits contained in the permit. As for the lead, inorganic arsenic, beryllium and mercury limitations, EPA is concerned that the concentration of these pollutants could vary significantly with every fuel batch. In order for infrequent testing to be approved as the periodic monitoring method for this facility, the State must provide a technical demonstration that no additional monitoring is warranted to ensure compliance with the limits listed above. The demonstration should identify the rationale for basing the compliance certification on data from a short-term test once every five years. If it is determined that additional monitoring is necessary to ensure compliance with the permit conditions, more frequent testing requirements need to be included in the permit.

Regarding the visible emissions limit, the State needs to use the existing COMs to ensure compliance with the opacity standard. Requiring that the opacity monitor be used for conducting periodic monitoring imposes little or no additional burden on the source.

Additionally, this unit has a continuous emission monitor for SO₂. While fuel analysis may be adequate for determining SO₂ emissions from fuel oil combustion, that may not be true for syngas because of the variability of the fuel. We believe that using the data gathered by the SO₂ monitors would provide a better compliance demonstration than the fuel sampling analysis.

RESPONSE: Testing requirements for the pollutants regulated in Section III, Subsection A. are in compliance with the requirements of Chapter 62-297, F.A.C. NO_x, SO₂, CO, and visible emissions are required to be tested annually. VOC and PM/PM₁₀ are required to be tested prior to renewal. Lead, sulfuric acid mist, arsenic beryllium and mercury are required to perform an initial test, only, by the federally approved PSD permit. Please remember that Rule 62-297.310(7)(b), F.A.C., allows for additional compliance testing if the Department has good cause to believe that a standard is being violated. TEC has provided a synopsis of compliance tests (see attached letter dated December 9, 1998) showing results well below allowable emissions. Additionally, they have provided the results of nine months of coal sample analyses which show very little variance in the concentrations of heavy metals. Based on the evidence, the Department feels that periodic monitoring is satisfied.

TEC will accept the use of the COMs for periodic monitoring but not for compliance.

The syngas specifications (attached) provided by TEC for their BACT analysis show a maximum sulfur content of less than 0.07 percent, by weight. Analysis of the syngas shows a sulfur content of 0.040 percent, by weight. With the actual sulfur content approximately 50 percent of the basis for the allowable emission rate, the Department feels that the annual emissions test constitutes periodic monitoring for SO₂.

3. Periodic Monitoring: Section III, Subsection B, condition B.4 limits the hours of operation for the auxiliary boiler. This subpart needs to include recordkeeping requirements for this condition.

RESPONSE: A condition will be added to Section III, Subsection B. requiring recordkeeping of the non-standby hours of operation of the auxiliary boiler.

4. Periodic Monitoring: Section III, Subsection C does not contain adequate periodic monitoring requirements to provide reasonable assurance of compliance with the limitations for Visible Emissions, Sulfur Dioxide and Acid Mist. The permit only requires testing once every five years. It is not clear whether this testing frequency would provide reasonable assurance of compliance with the pollutant limitations contained in this subsection. In order to approve the infrequent testing for the pollutants included in this subsection as the periodic monitoring method, the State must provide a technical demonstration that no additional monitoring is warranted to ensure compliance with the limits. The demonstration should identify the rationale for basing the compliance certification on data from a short-term test once every five years. If it is determined that additional monitoring is necessary to ensure compliance with the permit conditions, more frequent testing requirements need to be included in the permit.

Also, daily recordkeeping of the plant production must be kept to ensure that the facility do not exceed the limit contained in condition C.1. This requirement is very important because it is limiting the source's production below 300 tons per day. If the facility exceeded the 300 tons per day production capacity, F.A.C. rule 62-296.402 requires that the facility install and operate continuous emissions monitors for VE, SO₂, and Acid Mist.

RESPONSE: Testing requirements for the pollutants regulated in Section III, Subsection C. are in compliance with the requirements of Chapter 62-297, F.A.C. SO₂ and visible emissions are required to be tested annually. Sulfuric acid mist is required to be tested prior to renewal. Please remember that Rule 62-297.310(7)(b), F.A.C., allows for additional compliance testing if the Department has good cause to believe that a standard is being violated. In addition, this "sulfuric acid plant" is actually a pollution control device for the coal gasification process. It converts hydrogen sulfide (which would have been emitted to the atmosphere) into sulfuric acid. It escapes the permitting requirements of 40 CFR 60 Subpart H, but not the requirements of Rule 62-296.402, F.A.C. The Department feels that these testing frequencies along with the additional support of Rule 62-297.310(7)(b), F.A.C., satisfies periodic monitoring.

A condition will be added to Section III, Subsection C. requiring recordkeeping of the daily production of operation of the "sulfuric acid plant".

5. Periodic Monitoring: Section III, subsection D, condition D.4 specifies that the facility conducts a Method 22 test once per year. It is not clear whether this infrequent testing provides reasonable assurance of compliance with the visible emission limitation contained in this subsection. In order to approve the infrequent testing for visible emissions, the State must provide a technical demonstration that no additional monitoring is warranted to ensure compliance with the VE limit or require the source to conduct daily VE readings.

RESPONSE: The fuel handling system is adequately enclosed and also has the necessary controls in the form of surfactant sprays and baghouses where annual testing would constitute periodic monitoring. Please remember that Rule 62-297.310(7)(b), F.A.C., allows for additional compliance testing if the Department has good cause to believe that a standard is being violated. To better describe the fuel handling system, the description in the PROPOSED permit will be substituted with the following:

The solid fuel handling system consists of a bottom unloading station where water/surfactant spray is applied to the incoming fuel as needed for dust control. The system also includes enclosed conveying systems, rubber skirted drop points from bins, two fuel silos with an associated baghouse, fuel surge bin with associated baghouse, and two rod mill crushers for slurry production.

Solid fuel is received by truck and is bottom unloaded to the fuel unloading bin. Fugitive emissions are controlled by water spray with surfactant applied at the unloading bin as needed. Fuel is conveyed via enclosed conveyor from the unloading bin to the fuel storage silos. The transfer points from the bin to the belts are rubber skirted. Fugitive emissions from the fuel silos are controlled by an associated baghouse. Fuel is then reclaimed from the silos via enclosed conveyors to the surge bin inside the slurry preparation building. Fugitive emissions from the surge bin are controlled by an associated baghouse. Fuel and water are then mixed in the rod mill crushers to produce a coal slurry.

6. Reporting and Recordkeeping: Section III, subsection C, condition C.8 addresses the excess emissions from start-up, shutdown and malfunctions. Condition C.20 requires the reporting of excess emissions due to malfunctions only. This condition needs to also require reporting of excess emissions from start-up and shutdown.

RESPONSE: See the response to objection 4., above. This is not an NSPS source, it is a SIP source and our rules do not require the reporting of excess emissions from startup or shutdown.

7. Missing Applicable Requirement: Subsection D of the permit needs to include a statement establishing that the source is subject to the requirements of 40 CFR Part 60, subpart Y, Standards of Performance for Coal Preparation Plants.

RESPONSE: 40 CFR Part 60, Subpart Y, Standards of Performance for Coal Preparation Plants, will be added to the permitting note beneath the description of the emissions unit which addresses rules which regulate the emissions unit. Additionally, the visible emissions test method in specific condition **D.4.** will be changed to EPA Method 9, as required by the subpart.

8. Control Equipment Requirements: The description provided in Subsection E of this permit describes various pieces of control equipment. The permit does not contain any references to the control equipment nor does it contain adequate periodic monitoring requirements for the equipment. The State needs to explain and provide information in the statement of basis supporting the decision not to require parametric monitoring of the control equipment in the permit.

RESPONSE: The emissions unit is a regulated emissions unit solely because the tons per day throughput of coal was limited by the PSD permit. If not for the throughput requirement the emissions unit would be unregulated. Since the only parameter requiring monitoring is tons per day throughput, the requirements contained in conditions E.3. and E.4. constitute periodic monitoring for the emissions unit. To eliminate confusion, we will remove the reference to the afterburner from the description.

9. Averaging Times: In order for the emissions standards in conditions A.5 and A.6 to be practicably enforceable, appropriate averaging times must be specified in the permit. If the pounds per hours standards are the ones for which the facility would have to demonstrate compliance, the 30-day rolling average is not the appropriate averaging time. Also, for condition A.5, it is unclear whether the facility would have to demonstrate compliance with the limitations listed under "Basis" or the "LB/HR" numbers or both.

RESPONSE: The factors under the column titled "BASIS" are the basis for the pound per hour values. The 30-day rolling average is a federally enforceable requirement established in the PSD permit and approved by EPA Region 4. This requirement was established by the preconstruction review process, not the Title V process.

II. EPA General Comments

1. Section II, condition 11: Please replace "Operating Source Section" with "Air & EPCRA Enforcement Branch, Air Compliance Section."

RESPONSE: The address for EPA will be changed, as follows:

United States Environmental Protection Agency
Region 4
Air, Pesticides & Toxics Management Division
Air and EPCRA Branch
Air Compliance Section
61 Forsyth Street
Atlanta, Georgia 30303
Telephone: 404/562-9099
Fax: 404/562-9095

2. Section III, subsection A, condition A.3.b: The equation should read:

$$[\text{Load}(\%)] / 100\% * \text{hrs. of operation} \leq 876 \text{ hrs}$$

RESPONSE: The equation currently reads: $[\text{Load}(\%)] / 100\% * \text{Hours of Operation} \leq 876 \text{ Hours}$
Assuming the abbreviation of the word “Hours” and using the lower case of the word “Operation” will remove this comment, the changes will be made to condition A.3.b.

3. Section III, subsection A, condition A.48: EPA recommends that this condition be moved to the “Emissions Limitations and Standards” section since it is related to the NOx limit that the facility would have to comply with after the demonstration period.

RESPONSE: Condition A.48. will be moved to the “Emissions Limitations and Standards” section of Section III., Subsection A and the other affected specific conditions will be renumbered, as necessary.

4. Section III, subsection A, conditions A.7 and A.51.: EPA recommends that the State combine conditions A.7 and A.51, since they refer to the same parameter and are based on the same PSD permit requirement. We also recommend that the resulting condition be placed in the “Emissions Limitations and Standards” portion of subsection A.

RESPONSE: Conditions A.7. and A.51. will be linked using a statement “see specific condition X.xx.”

5. Section III, subsection A, condition A.49: Section III, subsection A, condition A.49 states that results from NOx testing conducted on the combustion turbine every two months for 12 to 18 months after the demonstration will not be used for compliance purposes. The State needs to provide the basis for this decision in the statement of basis.

RESPONSE: We cannot answer a preconstruction issue established prior to the Title V permitting. The process is a research and development project for the U. S. Department of Energy’s Clean Coal Technology Demonstration.

6. Section III, subsection B, conditions B.7 and B.52.: EPA recommends that the State combine conditions B.7 and B.52, since they refer to the same parameter and are based on the same PSD permit requirement. We also recommend that the resulting condition be placed in the "Emissions Limitations and Standards" portion of subsection B.

RESPONSE: Conditions B.7. and B.52. will be linked using a statement "see specific condition X.xx."

7. Section III, subsection B, conditions B.19 and B.32.: EPA recommends that the State should combine conditions B.19 and B.32, since they refer to the same parameter and are based on the same NSPS subpart. We also recommend that the resulting condition be placed in the "Emissions Limitations and Standards" portion of subsection B.

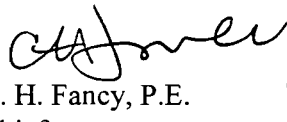
RESPONSE: Condition B.19. will be removed and the rule citation of B.19. will be added to the rule citation of condition B.32. The remaining specific conditions will be renumbered, as required.

8. Section III, subsection C, condition C.3: Section III, subsection C, C.3: The intent of this condition is unclear. It seems that this condition is intended to limit the fuel used by this plant to propane. If this is the case, the State should rephrase the condition to clearly state that intent.

RESPONSE: Condition C.3. will be changed to read "The conversion furnace fires only propane."

As you know, the 90 day period ends January 6th. All parties involved have been expeditiously seeking resolution of these issues. We feel that EPA's concerns have been adequately addressed and we look forward to issuing final permits. Please advise as soon as possible if you concur with the specific changes detailed above. Please call me at 850/921-9503 if you have any questions. You may also contact Mr. Scott M. Sheplak, P.E., at 850/921-9532, or Mr. Edward J. Svec at 850/921-8985, if you need any additional information.

Sincerely,



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

CF/es

Attachments

cc: Scott M. Sheplak
Pat Comer
James Hunter, TEC

12/22/98 cc Ed Svec

USEPA Objection on Florida Department of Environmental Protection
10S0233-001-AU Meeting Sign-In Sheet

Meeting Sign-In Sheet

Re: Tampa Electric - Pdk Power

Date: 11/20/18

[illegible]



FACSIMILE TRANSMITTAL SHEET

ENVIRONMENTAL PLANNING
813/641-5036
813/641-5081 FAX

DATE: 12/9/98 ~~X~~ FOR IMMEDIATE DELIVERY

TO: EDWARD SVEC

COMPANY: FOE

NUMBER OF PAGES (Including cover page): 4

FROM: PATRICK SHEL

COMMENTS: _____



TAMPA ELECTRIC

December 9, 1998

Mr. Edward Svec
Bureau of Air Regulation
Florida Department of Environmental Protection
Twin Towers Office Building
111 South Magnolia Drive, Suite 4
Tallahassee, Florida 32399-2400

Via Facsimile and FedEx
Airbill No. 808009421823

Re: Tampa Electric Company (TEC)
Polk Power Station
EPA Objections to the Proposed Title V Permit

Dear Mr. Svec:

We hereby provide the following information in support of issues we discussed during our November 20, 1998 meeting regarding the Environmental Protection Agency's (EPA's) objections to the Polk Power Station (PPS) Title V permit.

The following is the results of four compliance test conducted over the past two years for the PPS combustion turbine. Two tests were conducted on syngas and two tests were conducted on fuel oil. These test results demonstrate that the PPS combustion turbine emission rates are well below these stringent BACT emission limits. Therefore based on these emission rates and the low level of the emission limits, sufficient monitoring is provided by the present testing requirements of the proposed Title V permit.

<i>Particulate Matter (lb/hr)</i>	<i>Limit</i>	<i>5/15/97</i>	<i>6/15/98</i>	<i>8/29/97</i>	<i>10/24/98</i>
CT- Oil	17	-	-	9.27	11.97
CT- Syngas	17	0.42	NT	-	-

NT- Not tested(initial test only for syngas)

<i>Carbon Monoxide (lb/hr)</i>	<i>Limit</i>	<i>5/15/97</i>	<i>6/15/98</i>	<i>8/29/97</i>	<i>10/24/98</i>
CT-Oil	99	-	-	6.89	3.13
CT-Syngas	99	6.0	5.62	-	-

<i>Nitrogen Oxides (ppm @ 15% O₂)</i>	<i>Limit</i>	<i>5/15/97</i>	<i>6/15/98</i>	<i>8/29/97</i>	<i>10/24/98</i>
CT-Oil	42	-	-	41.8	38.4
CT-Syngas	25	19.7	17.3	-	-

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

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OUTSIDE HILLSBOROUGH COUNTY 1 (888) 223-0800

Mr. Edward Svec
December 9, 1998
Page 2 of 3

VOC (lb/hr)	Limit	5/15/97	6/15/98	8/29/97	10/24/98
CT-Oil	32	-	-	<MDL	<MDL
CT-Syngas	2	0.15*	<MDL	-	-

* One run was <MDL

MDL= Minimum Detection Limit

CT-Syngas Metals	Limit	5/15/97
Arsenic (lb/hr)	0.08	0.0057
Beryllium (lb/hr)	0.001	<MDL
Mercury (lb/hr)	0.025	0.0049
H ₂ SO ₄ (lb/hr)	55	NT*

NT*- Not tested, no test requirement in the permit.

Coal analysis which demonstrates the limited variability of metals in the base coal for the Polk Power Station is provided in the table below. This data demonstrates that metal concentrations do not vary significantly between fuel batches and therefore further monitoring is not required.

Date of Composite Analysis	Arsenic (ppm)	Lead (ppm)	Beryllium (ppm)	Mercury (ppm)
02/13/98	1.34	86.94	13.87	NA
03/13/98	1.47	74.26	15.97	NA
04/14/98	1.75	63.88	14.59	NA
05/14/98	1.82	68.28	13.63	0.05
06/15/98	1.46	110.00	13.76	0.06
07/14/98	1.91	68.75	14.85	0.05
08/18/98	3.11	78.00	16.34	0.05
09/14/98	1.70	101.00	14.69	0.06
10/15/98	1.73	105.00	13.20	0.05
Average	1.81	84.01	14.54	0.05
Standard Deviation	0.522	17.428	1.066	0.005

Each sample is a monthly composite of the base coal for the Polk Power Station.

The following is a more detailed description of the coal handling system at the Polk Power Station. The fact that the coal handling system has the level of control that is described below and it is currently required to test annually, provides sufficient monitoring to assurance compliance with its applicable limit. It appears that Subpart Y does apply to the fuel handling system at the PPS. The application of this requirement will mean the use of Method 9 for the annual compliance test.

Mr. Edward Svec
December 9, 1998
Page 3 of 3

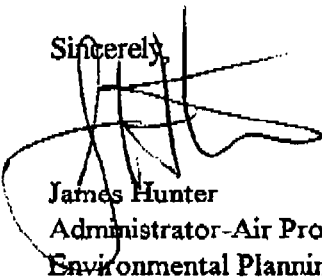
The solid fuel handling system consists of a bottom unloading station where water/surfactant spray may be applied to the incoming fuel as needed for dust control, enclosed conveying systems, rubber skirted drop points from bins, two fuel silos with an associated baghouse, a fuel surge bin with an associated baghouse and two rod mill crushers for slurry production.

Solid fuel is received by truck and bottom unloaded to the fuel unloading bin. Fugitive emissions are controlled by water spray with surfactant applied at the unloading bin as needed. Fuel is conveyed via enclosed conveyor from the unloading bin to the fuel silos. The transfer points from the bin to the belts is rubber skirted. Fugitive emissions from the fuel silos are controlled by an associated baghouse. Fuel is then reclaimed from the silos via enclosed conveyors to the surge bin inside the slurry preparation building. Fugitive emissions from the surge bin are controlled by an associated baghouse. Fuel and water is then mixed in the rod mill crushers to produce a coal slurry.

In reference to comments on periodic monitoring for the sulfuric acid plant, the sulfuric acid plant is a pollution control device that converts hydrogen sulfide to sulfuric acid which is specifically exempted from NSPS standard Subpart H by 40CFR 60.81 (a). Although this exemption is not explicit in Chapter 62-296.402, it is implicit in the adoption of 40 CFR 60.81 by Chapter 62-204.800 (7) (b) 11. Therefore the application of the SO₂ and sulfuric acid mist requirements for this acid plant are not appropriate.

I hope that this information provides the data you need to satisfy the objections made by EPA to the proposed PPS Title V permit. If you have any questions or need further data please contact Patrick Shell or me at (813) 641-5210.

Sincerely,



James Hunter
Administrator-Air Programs
Environmental Planning

EPgm\PLS112

Sent by: SWELL

Time: _____

FAX COVER LETTER

PLEASE DELIVER THE FOLLOWING 3 PAGE(S)
(INCLUDING THIS COVER LETTER)

DATE: 12/17/98
TO: ED SUELL
COMPANY: FDEP
FAX#: 850-922-6979
FROM: DATRECK SWELL

Comments:

ENCLOSED:① BACT ANALYSIS SINGAS 0.07% S② SINGAS ANALYSIS SINGAS 0.04% S% BY WEIGHT.

Thank you,

IF THE ABOVE TRANSMISSION IS
NOT COMPLETE, PLEASE CONTACT
(813) 671-3361

TAMPA ELECTRIC COMPANY
PRODUCTION SERVICE CENTER
6944 U.S. HWY 41 NORTH
APOLLO BEACH, FL 33572-9200
FAX#: (813) 641-5281 - outside line
46-281 - direct inside extension



CORE LABORATORIES

PM-1/C-10

LABORATORY TESTS RESULTS

05/29/97

NUMBER: 972303 CUSTOMER: CUBIX CORPORATION ATTN: LEONARD BRENNER

 IDENT I.D.:
 DATE SAMPLED: 05/15/97
 TIME SAMPLED: 00:00
 SAMPLE DESCRIPTION: #22 Syn Gas

 LABORATORY I.D.: 972303-0003
 DATE RECEIVED: 05/23/97
 TIME RECEIVED: 11:33
 REMARKS:

DESCRIPTION	FINAL RESULT	LIMITS/*DILUTION	UNITS OF MEASURE	TEST METHOD	DATE	TECHN
Oil Gas Analysis		*1		UOP 539	05/28/97	LS
Hydrogen	38.55	0.1	Mol %			
Hydrogen Sulfide	<0.01	0.01	Mol %			
Carbon Monoxide	42.53	0.01	Mol %			
Carbonyl Sulfide	0.03	0.01	Mol %			
Oxygen/Argon	1.20	0.01	Mol %			
Nitrogen	3.61	0.01	Mol %			
Carbon Dioxide	14.08	0.01	Mol %			
Methane	<0.01	0.01	Mol %			
Total	100.00	0.01	Mol %			
Relative Density	0.70084	0				
Gross Heating Value	261.5	0	BTU/ft (real)			
Carbon Content	33.52	0.01	Wt. %			
Hydrogen Content	3.83	0.01	Wt. %			
Nitrogen Content	4.98	0.01	Wt. %			
Oxygen Content	57.63	0.01	Wt. %			
Sulfur	0.040	0.001	Wt. %			
Sulfur, Total by Microcoulometry	410	1	ppm wt.	ASTM D-3246	05/29/97	LS
Sulfur Components of Natural Gas		*1		ASTM D-5504	05/28/97	VP
Hydrogen Sulfide	0.8	0.2	ppm v/v			
Carbonyl Sulfide	254	1	ppm v/v			
Sulfur Dioxide	<1	1	ppm v/v			
Carbon Disulfide	1	1	ppm v/v			
Methyl Mercaptan	<1	1	ppm v/v			
Ethyl Mercaptan	<1	1	ppm v/v			
Isopropyl Mercaptan	<1	1	ppm v/v			
n-Propyl Mercaptan	<1	1	ppm v/v			
tert-Butyl mercaptan	<1	1	ppm v/v			
sec-Butyl mercaptan	<1	1	ppm v/v			
Isobutyl Mercaptan	<1	1	ppm v/v			
n-Butyl Mercaptan	<1	1	ppm v/v			
Methyl Sulfide	<1	1	ppm v/v			
Ethyl Methyl Sulfide	<1	1	ppm v/v			
Ethyl Sulfide	<1	1	ppm v/v			
Methyl Disulfide	<1	1	ppm v/v			
Ethyl Methyl Disulfide	<1	1	ppm v/v			
Ethyl Disulfide	<1	1	ppm v/v			
Thiophene	<1	1	ppm v/v			
Unidentified Sulfur Compounds	0	0	ppm wt sulfur			
Refractive Index by Length of Stain	1.5	0.1	mg/L	ASTM D-4888	05/29/97	LS

 Specific Gravity & Heating Value calculated
 in accordance with ASTM D 3588.

 P O BOX 34766
 HOUSTON, TX 77234-4282
 (713) 943-9776

PAGE:3

The analytical results, comments or interpretations contained in this report are based upon information and material supplied by the client for whose analysis and consideration use this report has been made. The analytical results, opinions or interpretations expressed represent the best judgment of Core Laboratories. Core Laboratories, however, makes no warranty or representation, express or implied, of any kind and expressly disclaims liability as to the production, or other operations or processes of any oil, gas, coal or other mineral property, and is not in connection with which such report is used or relied upon for any reason whatsoever. This report shall not be reproduced, in whole or in part, without the written approval of Core Laboratories.



BACT-Tampa Electric Company
PSD-FL-194
PA-92-32
Page 3

- a - IGCC emissions include the highest annual emissions estimates from the 7F CT (based on the larger of 100 percent CGCU or 50/50 CGCU/HGCU), plus related combustion emissions (e.g., thermal oxidizer), plus other associated process and fugitive emissions (PM, CO, VOC, and H₂S).
- b - CC emissions represent the totals for four stand-alone CTs in CC mode.
- c - SC emission represent the totals for six stand-alone CTs in simple cycle mode.

The proposed facility will also include one 49.5 MMBtu/hr auxiliary boiler fired with low sulfur (0.05% or less by weight) distillate fuel oil. The auxiliary boiler will operate only during startup and shutdown of the IGCC unit, or when steam from the IGCC unit's HRSG is unavailable. The auxiliary boiler will operate a maximum of 1,000 hours per year.

The coal gasification facility will serve as a source of medium Btu, low sulfur (0.07% or less, by weight, sulfur bearing compounds) coal-derived gas. The coal used in the gasification facility will have a maximum sulfur content of 3.05% and have a minimum heating value of approximately 11,035 Btu/lb. The coal gasification plant will consist of coal receiving, storage and process facilities, air separation unit, gasifier, product gas cleaning facilities, acid gas removal unit, and auxiliary equipment. The coal gasification unit will have two stacks, one flare stack used during startup, shutdown and emergency conditions and one thermal oxidation unit stack which will be used continuously.

The applicant has indicated the maximum tonnage of regulated air pollutants emitted from the IGCC unit CT during the initial phase, demonstration and post demonstration periods to be as shown in Table 3.

Table 3

Maximum Annual Emissions from IGCC Unit CT for Various Operating Configurations

Pollutant	Demonstration Period (tpy) ^a	Post-Demonstration Period (tpy) ^b
PM ^c	74.5	74.5
SO ₂	2,269	1,564
NO _x	2,908	1,044
CO	430	430
VOC	38.5	38.5



RECEIVED

DEC 10 1998

BUREAU OF
AIR REGULATION

December 9, 1998

Mr. Edward Svec
Bureau of Air Regulation
Florida Department of Environmental Protection
Twin Towers Office Building
111 South Magnolia Drive, Suite 4
Tallahassee, Florida 32399-2400

Via Facsimile and FedEx
Airbill No. 808009421823

Re: Tampa Electric Company (TEC)
Polk Power Station
EPA Objections to the Proposed Title V Permit

Dear Mr. Svec:

We hereby provide the following information in support of issues we discussed during our November 20, 1998 meeting regarding the Environmental Protection Agency's (EPA's) objections to the Polk Power Station (PPS) Title V permit.

The following is the results of four compliance test conducted over the past two years for the PPS combustion turbine. Two tests were conducted on syngas and two tests were conducted on fuel oil. These test results demonstrate that the PPS combustion turbine emission rates are well below these stringent BACT emission limits. Therefore based on these emission rates and the low level of the emission limits, sufficient monitoring is provided by the present testing requirements of the proposed Title V permit.

<i>Particulate Matter (lb/hr)</i>	<i>Limit</i>	<i>5/15/97</i>	<i>6/15/98</i>	<i>8/29/97</i>	<i>10/24/98</i>
CT- Oil	17	-	-	9.27	11.97
CT- Syngas	17	0.42	NT	-	-

NT- Not tested(initial test only for syngas)

<i>Carbon Monoxide (lb/hr)</i>	<i>Limit</i>	<i>5/15/97</i>	<i>6/15/98</i>	<i>8/29/97</i>	<i>10/24/98</i>
CT-Oil	99	-	-	6.89	3.13
CT-Syngas	99	6.0	5.62	-	-

<i>Nitrogen Oxides (ppm @ 15% O₂)</i>	<i>Limit</i>	<i>5/15/97</i>	<i>6/15/98</i>	<i>8/29/97</i>	<i>10/24/98</i>
CT-Oil	42	-	-	41.8	38.4
CT-Syngas	25	19.7	17.3	-	-

<i>VOC (lb/hr)</i>	<i>Limit</i>	<i>5/15/97</i>	<i>6/15/98</i>	<i>8/29/97</i>	<i>10/24/98</i>
<i>CT-Oil</i>	32	-	-	<MDL	<MDL
<i>CT-Syngas</i>	2	0.15*	<MDL	-	-

* One run was <MDL

MDL- Minimum Detection Limit

<i>CT-Syngas Metals</i>	<i>Limit</i>	<i>5/15/97</i>
<i>Arsenic (lb/hr)</i>	0.08	0.0057
<i>Beryllium (lb/hr)</i>	0.001	<MDL
<i>Mercury (lb/hr)</i>	0.025	0.0049
<i>H₂SO₄ (lb/hr)</i>	55	NT*

NT*- Not tested, no test requirement in the permit.

Coal analysis which demonstrates the limited variability of metals in the base coal for the Polk Power Station is provided in the table below. This data demonstrates that metal concentrations do not vary significantly between fuel batches and therefore further monitoring is not required.

<i>Date of Composite Analysis</i>	<i>Arsenic (ppm)</i>	<i>Lead (ppm)</i>	<i>Beryllium (ppm)</i>	<i>Mercury (ppm)</i>
02/13/98	1.34	86.94	13.87	NA
03/13/98	1.47	74.26	15.97	NA
04/14/98	1.75	63.88	14.59	NA
05/14/98	1.82	68.28	13.63	0.05
06/15/98	1.46	110.00	13.76	0.06
07/14/98	1.91	68.75	14.85	0.05
08/18/98	3.11	78.00	16.34	0.05
09/14/98	1.70	101.00	14.69	0.06
10/15/98	1.73	105.00	13.20	0.05
<i>Average</i>	1.81	84.01	14.54	0.05
<i>Standard Deviation</i>	0.522	17.428	1.066	0.005

Each sample is a monthly composite of the base coal for the Polk Power Station.

The following is a more detailed description of the coal handling system at the Polk Power Station. The fact that the coal handling system has the level of control that is described below and it is currently required to test annually, provides sufficient monitoring to assurance compliance with its applicable limit. It appears that Subpart Y does apply to the fuel handling system at the PPS. The application of this requirement will mean the use of Method 9 for the annual compliance test.

Mr. Edward Svec
December 9, 1998
Page 3 of 3

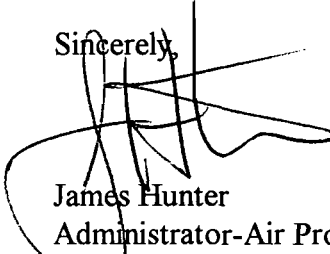
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In reference to comments on periodic monitoring for the sulfuric acid plant, the sulfuric acid plant is a pollution control device that converts hydrogen sulfide to sulfuric acid which is specifically exempted from NSPS standard Subpart H by 40CFR 60.81 (a). Although this exemption is not explicit in Chapter 62-296.402, it is implicit in the adoption of 40 CFR 60.81 by Chapter 62-204.800 (7) (b) 11. Therefore the application of the SO₂ and sulfuric acid mist requirements for this acid plant are not appropriate.

I hope that this information provides the data you need to satisfy the objections made by EPA to the proposed PPS Title V permit. If you have any questions or need further data please contact Patrick Shell or me at (813) 641-5210.

Sincerely,



James Hunter
Administrator-Air Programs
Environmental Planning

EP\gm\PLS112

12/10/98 cc: Ed Svec
Scott Shepler



TAMPA ELECTRIC

December 7, 1998

RECEIVED

DEC 08 1998

**BUREAU OF
AIR REGULATION**

Carla Pierce
Region IV
Air Pesticide and Toxics Management Division
Operating Permits Section
61 Forsyth Street
Atlanta, Ga 30303

**Re: EPA's Review of the Proposed Title V Permit
Tampa Electric Company
Polk Power Station
Permit No. 1050233-001-AV**

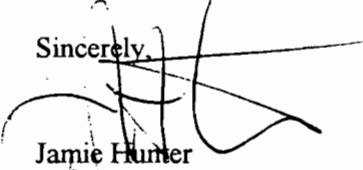
**Via FedEx
Airbill No 808009421960**

Dear Ms. Pierce:

The purpose of this letter is to update you on the status of the response to your October 8, 1998 letter concerning objections to the proposed Title V permit for the Polk Power Station. On November 20, 1998 Tampa Electric and staff from the Florida Department of Environmental Protection (FDEP) met to discuss the objections raised in EPA's October 8th letter. This meeting was very productive in establishing consensus on responses to the objections raised by the EPA. Based on our meeting and communications since, staff at the FDEP are currently drafting a letter containing revised permit conditions and comments to address the objections. We expect that this letter will be completed by the FDEP soon.

In light of time sensitive nature of the Title V permitting process, Tampa Electric is working with the FDEP to provide the EPA with changes and/or comments to address the objections raised prior to the end of the 90 day response period. If these comments do not sufficiently address EPA's concerns, Tampa Electric would like to meet with the EPA and the FDEP in order to expediently resolve any outstanding issues. If you have any questions or concerns about the response to the objections please contact Patrick Shell or me at (813)641-5210.

Sincerely,


Jamie Hunter
Administrator - Air Programs

EP/bj/pls109

c: Gracy Danois
Scott Sheplak

*12/17/98 cc: Scott Sheplak
Ed Svec*

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

(813) 228-4111

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OUTSIDE HILLSBOROUGH COUNTY 1 (888) 223-0800



Barbara / File

Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

October 26, 1998

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Charles A. Shelnut
General Manager
Tampa Electric Company
Post Office Box 775
Mulberry, Florida 33860-0775

Re: EPA Objection to PROPOSED Title V Permit No. 1050233-001-AV
Plant Name: Tampa Electric Company - Polk Power Station

Dear Mr. Shelnut:

On October 12, the department received a timely written objection from the United States Environmental Protection Agency to the referenced proposed permit. A copy of EPA's objection is attached.

In accordance with Section 403.0872(8), Florida Statutes (F.S.), the department must not issue a final permit until the objection is resolved or withdrawn. Pursuant to Section 403.0872(8), F.S., the applicant may file a written reply to the objection within 45 days after the date on which the department serves the applicant with a copy of the objection. The written reply must include any supporting materials that the applicant desires to include in the record relevant to the issues raised by the objection. The written reply must be considered by the department in issuing a final permit to resolve the objection of EPA. Please submit any written comments you wish to have considered concerning the objection to Mr. Scott M. Sheplak, P.E., at the above letterhead address.

Pursuant to 40 CFR 70.8(c)(4) the department will have to resolve the objection by issuing a permit that satisfies EPA within 90 days of the objection, or EPA will assume authority for the permit.

If you should have any questions, please contact Mr. Scott M. Sheplak, P.E., at 850/921-9532.

Sincerely,

Scott M. Sheplak
for C. H. Fancy, P.E.
Chief
Bureau of Air Regulation

CHF/sms/k

Enclosures

cc: Thomas W. Reese, Esquire w/enclosures
Pat Comer, OGC w/enclosures
Douglas Neeley, USEPA w/o enclosures
Carla Pierce, USEPA w/o enclosures
Lynda Crum, USEPA w/o enclosures

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PS Form 3800, April 1996

US Postal Service Receipt for Certified Mail No Insurance Coverage Provided. Do not use for International Mail (See reverse)	
Se	Mr. Charles A. Shelnut
Sl	General Manager
Pe	Tampa Electric Company
Po	P. O. Box 775
City	Mulberry, FL 33860-0775
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	10-26-98 Sph

P 263 584 897

Is your RETURN ADDRESS completed on the reverse side?

SENDER:

- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- 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):

- ☐ Addressee's Address
- ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Mr. Charles A. Shelnut
General Manager, Polk Power Station
Tampa Electric Company
P. O. Box 111
Tampa, FL 33601

4a. Article Number

P 263 584 899

4b. Service Type

☐ Registered	☒ Certified
☐ Express Mail	☐ Insured
☐ Return Receipt for Merchandise	☐ COD

7. Date of Delivery

11-5-98

5. Received By: (Print Name)

6. Signature: (Addressee or Agent)

X

8. Addressee's Address (Only if requested and fee is paid)

Thank you for using Return Receipt Service.

PS Form 3811, December 1994

Domestic Return Receipt



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

OCT 8 1998

RECEIVED

4APT-ARB

Howard L. Rhodes, Director
Air Resources Management Division
Florida Department of Environmental Protection
Mail Station 5500
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

OCT 12 1998
DIVISION OF AIR
RESOURCES MANAGEMENT

SUBJ: EPA's Review of Proposed Title V Permit
Tampa Electric Company
Polk Power Station
Permit No. 1050233-001-AV

RECEIVED
OCT 12 1998
BUREAU OF
AIR REGULATION

Dear Mr. Rhodes:

The purpose of this letter is to provide comments to the Florida Department of Environmental Protection (DEP) on the proposed title V operating permit for Tampa Electric Company, Polk Power Station, which was posted on DEP's web site on August 25, 1998. Based on the Environmental Protection Agency's (EPA's) review of the proposed permit and the supporting information for this facility, EPA formally objects, under the authority of Section 505(b) of the Clean Air Act (the Act) and 40 C.F.R. § 70.8(c) (see also Florida Regulation 62-213.450), to the issuance of the title V permit for this facility. The basis of EPA's objection is that the permit does not fully meet the periodic monitoring requirements of 40 C.F.R. § 70.6(a)(3)(i), the permit does not identify 40 C.F.R. Part 60, Subpart Y as an applicable requirement, and the permit contains inadequate averaging times and start-up/shutdown reporting requirements.

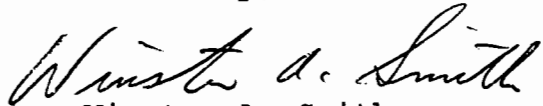
As you know, 40 C.F.R. § 70.8(c) requires EPA to object to the issuance of a proposed permit in writing within 45 days of receipt of the proposed permit (and all necessary supporting information) if EPA determines that the permit is not in compliance with the applicable requirements under the Act or 40 C.F.R. Part 70. Section 70.8(c)(4) and Section 505(c) of the Act further provide that if the State fails to revise and resubmit a proposed permit within 90 days to satisfy the objection, the authority to issue or deny the permit passes to EPA and EPA will act accordingly. Because the objection issues must be fully addressed within the 90 days, we suggest that the revised permit be submitted in advance in order that any outstanding issues may be addressed prior to the expiration of the 90-day period.

Pursuant to 40 C.F.R. § 70.8(c), this letter and its enclosure provide a statement of EPA's reasons for its objection. The enclosure contains a detailed explanation of the objection issues and the changes necessary to make the permit consistent

with the requirements of 40 C.F.R. Part 70. The enclosure also contains general comments applicable to the permit.

If you have any questions or wish to discuss this further, please contact Ms. Carla E. Pierce, Chief, Operating Source Section at (404) 562-9099. Should your staff need additional information they may contact Ms. Gracy R. Danois, Florida Title V Contact, at (404) 562-9119, or Ms. Lynda Crum, Associate Regional Counsel, at (404) 562-9524.

Sincerely,

A handwritten signature in cursive script that reads "Winston A. Smith".

Winston A. Smith
Director
Air, Pesticides & Toxics
Management Division

Enclosure

cc: Mr. Charles A. Shelnut
General Manager
Tampa Electric Company

Enclosure

U.S. EPA Region 4 Objection
Proposed Part 70 Operating Permit
Tampa Electric Company
Polk Power Station
Permit no. 1050233-001-AV

I. EPA Objection Issues

1. Periodic Monitoring: Conditions A.1. and B.1., establish the permitted capacity for the combined cycle combustion turbine and the auxiliary boiler, respectively. The origin of these conditions is the PSD permit for this facility. The permit needs to include appropriate periodic monitoring or recordkeeping requirements to reasonably assure compliance with these conditions. In order to satisfy this requirement, the permit must require that the facility maintain fuel usage records to demonstrate compliance with the applicable heat input rate. Since the limits are expressed as hourly limits, the condition should establish an hourly fuel usage recordkeeping.
2. Periodic Monitoring: The permit does not require sufficient periodic monitoring to ensure compliance with the applicable SO₂, PM/PM₁₀, CO, VOC, visible emissions (VE), lead, inorganic arsenic, beryllium, and mercury limits in Section III, subsection A. The TEC-Polk County permit only requires testing once every five years for SO₂, PM/PM₁₀, CO, VE, and VOC, and no testing for the remaining pollutants. This monitoring scheme does not constitute adequate periodic monitoring to ensure compliance with the limits contained in the permit. As for the lead, inorganic arsenic, beryllium and mercury limitations, EPA is concerned that the concentration of these pollutants could vary significantly with every fuel batch. In order for infrequent testing to be approved as the periodic monitoring method for this facility, the State must provide a technical demonstration that no additional monitoring is warranted to ensure compliance with the limits listed above. The demonstration should identify the rationale for basing the compliance certification on data from a short-term test once every five years. If it is determined that additional monitoring is necessary to ensure compliance with the permit conditions, more frequent testing requirements must be included in the permit.

Regarding the VE limit, the State must use the existing COMs to ensure compliance with the opacity standard. Requiring that the opacity monitor be used for

conducting periodic monitoring imposes little or no additional burden on the source.

Additionally, this unit has a continuous emission monitor for SO₂. While fuel analysis may be adequate for determining SO₂ emissions from fuel oil combustion, it may not be true for syngas because of the variability of the fuel. Use of the data gathered by the SO₂ monitors would provide a more reasonable assurance of compliance than fuel sampling analysis.

3. Periodic Monitoring: Section III, Subsection B, condition B.4 limits the hours of operation for the auxiliary boiler. This Subpart needs to include recordkeeping requirements for this condition.
4. Periodic Monitoring: Section III, Subsection C does not contain adequate periodic monitoring requirements to provide reasonable assurance of compliance with the limitations for VE, SO₂ and Acid Mist. Since the permit only requires testing once every five years, the testing frequency does not provide a reasonable assurance of compliance with the pollutant limitations contained in this subsection. In order to approve the infrequent testing for the pollutants included in this subsection as the periodic monitoring method, the State must provide a technical demonstration that no additional monitoring is warranted to ensure compliance with the limits. The demonstration should identify the rationale for basing the compliance certification on data from a short-term test once every five years. If it is determined that additional monitoring is necessary to ensure compliance with the permit conditions, more frequent testing requirements must be included in the permit.

Also, daily recordkeeping of the plant production must be kept to ensure that the facility does not exceed the limit contained in condition C.1. This requirement is very important because it is limiting the source's production below 300 tons per day. If the facility exceeded the 300 tons per day production capacity, F.A.C. rule 62-296.402 requires that the facility install and operate continuous emissions monitors for VE, SO₂, and Acid Mist.

5. Periodic Monitoring: Section III, subsection D, condition D.4 specifies that the facility conduct a Method 22 test once per year. The infrequent testing does not provide a reasonable assurance of compliance with the VE limitation contained in this subsection. In order to approve the infrequent testing for visible emissions, the State must provide a technical demonstration that no additional monitoring is

warranted to ensure compliance with the VE limit or require the source to conduct daily VE readings.

6. Reporting and Recordkeeping: Section III, subsection C, condition C.8 addresses the excess emissions from start-up, shutdown, and malfunctions. Condition C.20 requires the reporting of excess emissions due to malfunctions only. This condition needs to also require reporting of excess emissions from start-up and shutdown.
7. Missing Applicable Requirement: Subsection D of the permit must include a statement establishing that the source is subject to the requirements of 40 C.F.R. Part 60, Subpart Y, Standards of Performance for Coal Preparation Plants.
8. Control Equipment Requirements: The description provided in Subsection E of this permit describes various pieces of control equipment. The permit does not contain any references to the control equipment nor does it contain adequate periodic monitoring requirements for the equipment. The State must explain and provide information in the statement of basis supporting the decision not to require parametric monitoring of the control equipment in the permit.
9. Averaging Times: In order for the emissions standards in conditions A.5 and A.6 to be practicably enforceable, appropriate averaging times must be specified in the permit. If the pounds per hours standards are the ones for which the facility would have to demonstrate compliance, the 30-day rolling average is not the appropriate averaging time. Also, for condition A.5, it is unclear whether the facility would have to demonstrate compliance with the limitations listed under "Basis" or the "LB/HR" numbers or both.

II. EPA General Comments

1. Section II, condition 11: Replace "Operating Source Section" with "Air & EPCRA Enforcement Branch, Air Compliance Section."
2. Section III, subsection A, condition A.3.b: The equation should read:
$$[\text{Load}(\%)] / 100\% * \text{hrs. of operation} \leq 876 \text{ hrs}$$
3. Section III, subsection A, condition A.48: EPA recommends that this condition be moved to the "Emissions Limitations and Standards" section since it

is related to the NO_x limit that the facility would have to comply with after the demonstration period.

4. Section III, subsection A, conditions A.7 and A.51: EPA recommends that the State combine conditions A.7 and A.51, since they refer to the same parameter and are based on the same PSD permit requirement. We also recommend that the resulting condition be placed in the "Emissions Limitations and Standards" portion of subsection A.
5. Section III, subsection A, condition A.49: This condition states that results from NO_x testing conducted on the combustion turbine every two months for 12 to 18 months after the demonstration will not be used for compliance purposes. The State needs to provide the basis for this decision in the statement of basis.
6. Section III, subsection B, conditions B.7 and B.52: EPA recommends that the State combine conditions B.7 and B.52, since they refer to the same parameter and are based on the same PSD permit requirement. We also recommend that the resulting condition be placed in the "Emissions Limitations and Standards" portion of subsection B.
7. Section III, subsection B, conditions B.19 and B.32: EPA recommends that the State combine conditions B.19 and B.32, since they refer to the same parameter and are based on the same NSPS Subpart. We also recommend that the resulting condition be placed in the "Emissions Limitations and Standards" portion of subsection B.
8. Section III, subsection C, C.3: The intent of this condition is unclear. It appears that this condition is intended to limit the fuel used by this plant to propane. If this is the case, the State should rephrase the condition to clearly state that intent.

Date: 10/1/98 11:42:00 AM
From: Danois.Gracy
Subject: EPA Comments on TEC-Polk Power Station
To: sheplak_s
CC: Huey.Joël
CC: Pierce.Carla

Attached are EPA comments on the proposed permit for
TEC-Polk Power. Please call me if you have any questions.

Gracy

ELECTRONIC TRANSMISSION

Date: October 1, 1998
To: Scott Sheplak, FDEP - Tallahassee
From: Gracy R. Danois, EPA Region 4
Subject: Initial Comments on Proposed Title V Permit
TEC - Polk Power Station
Permit no. 1050233-001-AV

Below are initial comments from EPA Region 4 on the above referenced source. Our comments are divided into two categories: 1) Significant Comments and 2) General Comments. Significant comments are defined as those comments that would trigger an objection under 40 CFR Part 70. Given that EPA has several significant comments on this proposed permit, we would like to attempt resolution of all issues in order to avoid a formal objection on this permit. If resolution of our significant comments is not achieved, EPA Region 4 will issue an objection to the proposed permit pursuant to 40 CFR 70.8(c) on or before day-45 of the review period. For purposes of this permit review, day-45 is defined as **October 9, 1998**.

Another option available to you is withdrawal of the proposed permit from EPA review. If you choose to utilize this option, you must submit to EPA a written request that the permit be withdrawn including a statement that a proposed permit will be resubmitted for EPA review at a later date. Your written request to withdraw the proposed permit must be submitted to our office by no later than **October 9, 1998**.

Please contact me as soon as possible regarding resolution of this matter. You may reach me at (404) 562-9119.

1) Significant Comments:

- a. Periodic Monitoring: Conditions A.1. and B.1., establish the permitted capacity for the combined cycle combustion turbine and the auxiliary boiler, respectively. The origin of these conditions is the PSD permit for this facility. The permit needs to include appropriate periodic monitoring or recordkeeping requirements to reasonably assure compliance with these conditions. In order to satisfy this requirement, the permit must require that the facility maintain fuel usage records to demonstrate compliance with the applicable heat input rate. Since the limits are expressed as hourly limits, the condition should establish an hourly fuel usage recordkeeping.
- b. Periodic Monitoring: The permit does not require sufficient periodic monitoring to ensure compliance with the applicable SO₂, PM/PM₁₀, CO, VOC, visible emissions, lead, inorganic arsenic, berillium, and mercury limits in Section III, subsection A. The TEC-Polk County permit only requires testing once every five years for SO₂, PM/PM₁₀, CO visible emissions and VOC, and no testing for the remaining pollutants. It is not clear whether or not this monitoring scheme constitutes adequate periodic monitoring to ensure compliance with the limits contained in the permit. As for the lead, inorganic arsenic, berillium and mercury limitations, EPA is concerned that the concentration of these pollutants could vary significantly with every fuel batch. In order for infrequent testing to be approved as the periodic monitoring method for this facility, the State must

provide a technical demonstration that no additional monitoring is warranted to ensure compliance with the limits listed above. The demonstration should identify the rationale for basing the compliance certification on data from a short-term test once every five years. If it is determined that additional monitoring is necessary to ensure compliance with the permit conditions, more frequent testing requirements need to be included in the permit.

Regarding the visible emissions limit, the State needs to use the existing COMs to ensure compliance with the opacity standard. Requiring that the opacity monitor be used for conducting periodic monitoring imposes little or no additional burden on the source.

Additionally, this unit has a continuous emission monitor for SO₂. While fuel analysis may be adequate for determining SO₂ emissions from fuel oil combustion, that may not be true for syngas because of the variability of the fuel. We believe that using the data gathered by the SO₂ monitors would provide a better compliance demonstration than the fuel sampling analysis.

- c. Periodic Monitoring: Section III, Subsection B, condition B.4 limits the hours of operation for the auxiliary boiler. This subpart needs to include recordkeeping requirements for this condition.
- d. Periodic Monitoring: Section III, Subsection C does not contain adequate periodic monitoring requirements to provide reasonable assurance of compliance with the limitations for Visible Emissions, Sulfur Dioxide and Acid Mist. The permit only requires testing once every five years. It is not clear whether this testing frequency would provide reasonable assurance of compliance with the pollutant limitations contained in this subsection. In order to approve the infrequent testing for the pollutants included in this subsection as the periodic monitoring method, the State must provide a technical demonstration that no additional monitoring is warranted to ensure compliance with the limits. The demonstration should identify the rationale for basing the compliance certification on data from a short-term test once every five years. If it is determined that additional monitoring is necessary to ensure compliance with the permit conditions, more frequent testing requirements need to be included in the permit.

Also, daily recordkeeping of the plant production must be kept to ensure that the facility do not exceed the limit contained in condition C.1. This requirement is very important because it is limiting the source's production below 300 tons per day. If the facility exceeded the 300 tons per day production capacity, F.A.C. rule 62-296.402 requires that the facility install and operate continuous emissions monitors for VE, SO₂, and Acid Mist.

- f. Periodic Monitoring: Section III, subsection D, condition D.4 specifies that the facility conducts a Method 22 test once per year. It is not clear whether this infrequent testing provides reasonable assurance of compliance with the visible emission limitation contained in this subsection. In order to approve the infrequent testing for visible emissions, the State must provide a technical demonstration that no additional monitoring is warranted to ensure compliance with the VE limit or require the source to conduct daily VE readings.
- g. Reporting and Recordkeeping: Section III, subsection C, condition C.8 addresses the excess emissions from start-up, shutdown and malfunctions. Condition C.20 requires the reporting of excess emissions due to malfunctions only. This

condition needs to also require reporting of excess emissions from start-up and shutdown.

- h. Missing Applicable Requirement: Subsection D of the permit needs to include a statement establishing that the source is subject to the requirements of 40 CFR Part 60, subpart Y, Standards of Performance for Coal Preparation Plants.
- i. Control Equipment Requirements: The description provided in Subsection E of this permit describes various pieces of control equipment. The permit does not contain any references to the control equipment nor does it contain adequate periodic monitoring requirements for the equipment. The State needs to explain and provide information in the statement of basis supporting the decision not to require parametric monitoring of the control equipment in the permit.
- j. Appropriate Averaging Times: In order for the emissions standards in conditions A.5 and A.6 to be practicably enforceable, appropriate averaging times must be specified in the permit. If the pounds per hours standards are the ones for which the facility would have to demonstrate compliance, the 30-day rolling average is not the appropriate averaging time. Also, for condition A.5, it is unclear whether the facility would have to demonstrate compliance with the limitations listed under "Basis" or the "LB/HR" numbers or both.

2) General Comments

- a. Section II, condition 11: Please replace "Operating Source Section" with "Air & EPCRA Enforcement Branch, Air Compliance Section."
- b. Section III, subsection A, condition A.3.b: The equation should read:
$$[\text{Load}(\%)] / 100\% * \text{hrs. of operation} \_ 876 \text{ hrs}$$
- c. Section III, subsection A, condition A.48: EPA recommends that this condition be moved to the "Emissions Limitations and Standards" section since it is related to the NO_x limit that the facility would have to comply with after the demonstration period.
- d. EPA recommends that the State combine conditions A.7 and A.51, since they refer to the same parameter and are based on the same PSD permit requirement. We also recommend that the resulting condition be placed in the "Emissions Limitations and Standards" portion of subsection A.
- e. Section III, subsection A, condition A.49 states that results from NO_x testing conducted on the combustion turbine every two months for 12 to 18 months after the demonstration will not be used for compliance purposes. The State needs to provide the basis for this decision in the statement of basis.
- f. EPA recommends that the State combine conditions B.7 and B.52, since they refer to the same parameter and are based on the same PSD permit requirement. We also recommend that the resulting condition be placed in the "Emissions Limitations and Standards" portion of subsection B.
- g. EPA recommends that the State should combine conditions B.19 and B.32, since they refer to the same parameter and are based on the same NSPS subpart. We also recommend that the resulting condition be placed in the "Emissions

Limitations and Standards” portion of subsection B.

- h. Section III, subsection C, C.3: The intent of this condition is unclear. It seems that this condition is intended to limit the fuel used by this plant to propane. If this is the case, the State should rephrase the condition to clearly state that intent.



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NOV 20 2000

BUREAU OF AIR REGULATION

November 17, 2000

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

Via FedEx
Airbill No. 7904 0207 2581

**Re: Tampa Electric Company (TEC) – Polk Power Station
Request for Alternative Sampling Procedure
DEP File No. 1050233-05-AC (PSD-FL-263A)
DEP File No. 1050233-06AV**

Dear Mr. Sheplak:

Tampa Electric Company has received your letter dated August 23, 2000 regarding the request for an alternative sampling procedure for fuel bound nitrogen. After reviewing the document attached to that letter identifying alternative sampling methods that EPA has routinely approved, TEC is considering several of those options. This evaluation requires an extensive review of both the advantages and disadvantages of each alternative. TEC has not yet completed this review and to that end, the Company requests a 60-day extension of the 90-day response period required by 62-4.055(1) to ensure that the review is completed in a thorough manner.

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

Sincerely,

Mark J. Hornick
General Manager/Responsible Official
Polk Power Station

EP\gm\SKT211

c: Mr. Al Linero - FDEP
Mr. Edward Svec - FDEP
Mr. Jerry Kissel - FDEP SW
Mr. Buck Oven, FDEP

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

(813) 228-4111

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OUTSIDE HILLSBOROUGH COUNTY 1 (888) 223-0800

CERTIFICATION OF RESPONSIBLE OFFICIAL

Based on information and belief formed after reasonable inquiry, I certify that all statements made in these reports are true, accurate and complete.

Mark J. Hornick
(Signature of Responsible Official)

11/17/00
(Date)

Name: Mark J. Hornick
(Type or Print)

Title: General Manager, Polk Power Station
(Type or Print)



RECEIVED
NOV 09 2000
BUREAU OF AIR REGULATION

November 3, 2000

Mr. W.A. Proses
Florida Department of Environmental Protection
Southwest District
3804 Coconut Palm Drive
Tampa, FL 33619

Via FedEx
Airbill No. 7903 9162 8341

Re: Polk Power Station Unit 2 Initial Compliance Testing

Dear Mr. Proses:

Per your letter dated October 13, 2000, TEC hereby provides you with the information required by 40 CFR 60, Section 60.7 (a)(1) through 60.7(a)(3).

Construction on Polk Power Station Unit 2 commenced on November 10, 1999. Initial startup of the unit on natural gas took place on June 29, 2000 and initial startup of the unit while firing oil took place on July 7, 2000.

The initial compliance test while firing natural gas was originally scheduled for the week of September 11, 2000. Unfortunately, however, the test was not performed as scheduled due to a lack of natural gas availability. Consequently, the initial compliance test for natural gas took place on October 6, 2000, and as such was not within the first 60 days of achieving maximum production rate while firing natural gas, which was on July 16, 2000.

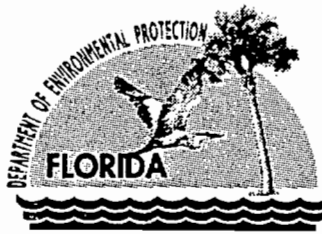
If you have any questions, please feel free to call me at (813) 641-5125.

Sincerely,

Shannon K. Todd
Engineer
Environmental Affairs

EP\gm\SKT206

c: Mr. A. Linero – FDEP
Mr. H. Oven – FDEP
Mr. S. Sheplak – FDEP
Mr. J. Kissel – FDEP SW



Jeb Bush
Governor

Department of Environmental Protection

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

David B. Struhs
Secretary

Barbara/File

August 23, 2000

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Mark J. Hornick
General Manager – Polk Power Station
Tampa Electric Company
Post Office Box 111
Tampa, Florida 33601-0111

Re: DEP File No. 1050233-05-AC (PSD-FL-263A)
and DEP File No. 1050233-06-AV
Requirement to Sample Fuel Oil for Fuel Bound Nitrogen

Dear Mr. Hornick:

The Department has reviewed your letter request dated August 7, 2000 requesting changes to the Title V Permit and PSD-FL-263 for the Polk Power Station. This request will require Department permits. Rule 62-4.050, F.A.C. requires that all applications for Department permits must be submitted on forms approved by the Department, in quadruplicate, and be certified by a professional engineer registered in the State of Florida.

It appears requested change will require a relaxation to a federal standard established by 40 CFR 60, Subpart GG. The EPA has recently issued a letter where certain specific, routine requests for alternative testing and monitoring procedures are automatically granted. We have attached a copy of this letter for your information. If the requested change does not meet one of the specific alternatives which can be approved by the Department, the Department will be unable to process your request until you have applied for and have been granted an approved alternate testing or monitoring proposal from EPA Region 4.

Additionally, permit applicants are advised that Rule 62-4.055(1), F.A.C. now requires applicants to respond to requests for information within 90 days. If you have any questions regarding this matter, please call Edward J. Svec at 850/921-8985.

Sincerely,

Scott Sheplak, P.E.
Administrator
Title V Section

Attachment

cc: Bill Thomas, DEP SWD

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PS Form 3800, April 1995

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 Mr. Mark Hornick, Gen. Manager
 Polk Power Station
 Tampa Electric Co.
 P.O. Box 111
 Tampa, FL 33601-0111

P 265 657 773

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- Complete items 3, 4a, and 4b.
- 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.
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1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Mr. Mark Hornick, Gen. Manager
 Polk Power Station
 Tampa Electric Co.
 P.O. Box 111
 Tampa, FL 33601-0111

4a. Article Number

P 265 657 773

4b. Service Type

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☐ Express Mail	☐ Insured
☐ Return Receipt for Merchandise	☐ COD

7. Date of Delivery

AUG 25

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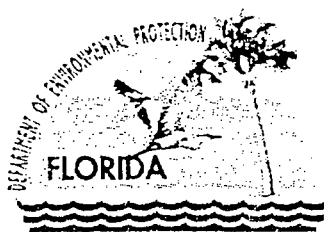
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Thank you for using Return Receipt Service.

PS Form 3811, December 1994

102595-97-B-0179

Domestic Return Receipt



Jeb Bush
Governor

Department of Environmental Protection

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

David B. Struhs
Secretary

July 25, 2000

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Mark J. Hornick
General Manager – Polk Power Station
Tampa Electric Company
Post Office Box 111
Tampa, Florida 33601-0111

Re: DEP File No. 1050233-004-AC; 1050233-003-AV; PSD-FL-194E; PA92-32
Polk Power Station Unit 1

Dear Mr. Hornick:

The Department has received the application on July 5, 2000 to allow for the permanent firing of syngas produced from the gasification of fuel blends of up to 60 percent petcoke and 40 percent coal. Based on our initial review of the proposed project, we have determined that additional information is needed in order to continue processing this application package.

Specific Condition 8 of the Performance Test permit states that “the pollutant emission results from the petroleum coke/coal blend syngas performance tests shall be used to estimate representative actual annual emissions following an operational change per 62-210.200(12)(d), F.A.C., for comparison with actual emissions per Rule 62-210.200(12)(a), F.A.C. The comparison will form the basis of a PSD applicability determination pursuant to 40 CFR 52.21. *The results of baseline performance tests when firing coal syngas will be used only to the extent that such information does not already exist or is insufficient to determine actual emissions.*”

The specific condition is clear in requiring the baseline performance test results to be utilized only for those pollutants for which prior information does not exist, such as sulfuric acid mist emissions. The pollutants, such as SO₂ and NO_x, for which prior actual emissions data exists should have been used for PSD applicability determination. Actual emissions is defined in 62-210.200(12)(a) as the average rate, in tons per year, at which the emissions unit actually emitted the pollutant during a two year period which precedes the particular date and which is representative of the normal operation of the emissions unit.

In order to comply with this requirement, please submit additional data for SO₂ and NO_x. The data should be compared with the fuel blend test results to provide reasonable assurance to the Department that PSD review is not triggered for these pollutants.

The Department will resume processing this application after receipt of the requested information. Rule 62-4.050(3), F.A.C. requires that all applications for a Department permit must be certified by a professional engineer registered in the State of Florida. This requirement also applies to responses to Department requests for additional information of an engineering nature. A new certification statement by the authorized representative or responsible official must accompany any material changes to the application. Rule 62-4.055(1), F.A.C. now requires applicants to respond to requests for information within 90 days.

If there are any questions regarding this matter, please call Syed Arif, P.E. at (850) 921-9528.

Sincerely,

 7/25

A.A. Linero, P.E. Administrator
New Source Review Section

AAL/sa

cc: Buck Oven, DEP
Ed Svec, DEP
Brian Beals, EPA
John Bunyak, NPS
Bill Thomas, SWD