Not in service
will convert
To coal

Unit No 1 - oil TECO
PAID SEP 17 1981 A029-7136

D.E.R.
SEP 17 1981
SOUTHWEST DISTRICT
TAMPA

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

RECEIVED
SEP 18 1981
H.C.E.P.C.

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: AIR POLLUTION [ ] New[1] [X] Existing[1]

APPLICATION TYPE: [ ] Construction [X] Operation [ ] Modification

COMPANY NAME: Tampa Electric Company COUNTY: Hillsborough

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peeking Unit No. 2, Gas Fired) Gannon Station Unit 1

SOURCE LOCATION: Street Port Sutton Road City Tampa

UTM: East 360,000 North 3,087,500

Latitude 27 ° 54 ' 25 "N Longitude 82 ° 25 ' 21 "W

APPLICANT NAME AND TITLE: Tampa Electric Company

APPLICANT ADDRESS: P.O. Box 111, Tampa, Florida 33601

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Tampa Electric Company

I certify that the statements made in this application for an Operating permit are true, correct and complete to the best of my knowledge and belief. Further, I agree to maintain and operate the pollution control source and pollution control facilities in such a manner as to comply with the provision of Chapter 403, Florida Statutes, and all the rules and regulations of the department and revisions thereof. I also understand that a permit, if granted by the department, will be non-transferable and I will promptly notify the department upon sale or legal transfer of the permitted establishment.

*Attach letter of authorization

Signed: Jerry L. Williams

Jerry L. Williams, Manager Environmental Planning
Name and Title (Please Type)

Date: 9-15-81 Telephone No. 813/228-4111

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

This is to certify that the engineering features of this pollution control project have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signed: William N. Cantrell

William N. Cantrell
Name (Please Type)

(Affix Seal)

Tampa Electric Company
Company Name (Please Type)

P. O. Box 111, Tampa, Florida 33601
Mailing Address (Please Type)

Florida Registration No. 23494 Date: 9-15-81 Telephone No. 813/228-4111

[1]See Section 17-2.02(15) and (22), Florida Administrative Code, (F.A.C.)

SECTION II: GENERAL PROJECT INFORMATION

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

The source is an oil fired boiler which generates steam to drive a turbine and produce electricity. The generating unit operates in compliance with applicable emission limits.

B. Schedule of project covered in this application (Construction Permit Application Only) Not Applicable

Start of Construction _____ Completion of Construction _____

C. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

Oil Conversion (Units 1-4) $19,566,000*

Stack Extensions (Units 1-5) $ 2,337,000*

* Individual Unit Costs Not Available

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

A029-2191 May 25, 1973 - July 1, 1975

A029-7136 Sept. 27, 1978 - July 1, 1983

AC29-41943 Aug. 7, 1981 - Mar. 15, 1987

E. Is this application associated with or part of a Development of Regional Impact (DRI) pursuant to Chapter 380, Florida Statutes, and Chapter 22F-2, Florida Administrative Code? ____ Yes __X__ No

F. Normal equipment operating time: hrs/day 24 ; days/wk 7 ; wks/yr 52 ; if power plant, hrs/yr * ;

if seasonal, describe: Not Applicable

G. If this is a new source or major modification, answer the following questions. (Yes or No) Not Applicable

1. Is this source in a non-attainment area for a particular pollutant? _____

   a. If yes, has "offset" been applied? _____

   b. If yes, has "Lowest Achievable Emission Rate" been applied? _____

   c. If yes, list non-attainment pollutants.

2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. _____

3. Does the State "Prevention of Significant Deterioriation" (PSD) requirements apply to this source? If yes, see Sections VI and VII. _____

4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? _____

5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? _____

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

* Variable

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

A. Raw Materials and Chemicals Used in your Process, if applicable: Not Applicable

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): See Section III-E

2. Product Weight (lbs/hr): Not Applicable

C. Airborne Contaminants Emitted:

Name of Contaminant	Emission[1]		Allowed Emission[2] Rate per Ch. 17-2, F.A.C.	Allowable[3] Emission lbs/hr	Potential Emission[4]		Relate to Flow Diagram
	Maximum lbs/hr	Actual* T/yr			lbs/hr	T/yr	
Sulfur Dioxide	1382.7	1,761	1.1 lbs/MMBTU	1382.7	1382.7	6056	Fig 1
Particulates	125.7	16.8	0.1 lbs/MMBTU	125.7	125.7	550.6	

*From 1980 Emission Inventory

D. Control Devices: (See Section V, Item 4) Not Applicable (1)

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles[5] Size Collected (in microns)	Basis for Efficiency (Sec. V, It[5]

[1]See Section V, Item 2.

[2]Reference applicable emission standards and units (e.g., Section 17-2.05(6) Table II, E. (1), F.A.C. – 0.1 pounds per million BTU heat input)

[3]Calculated from operating rate and applicable standard

[4]Emission, if source operated without control (See Section V, Item 3)

[5]If Applicable

(1) Existing precipitator originally installed while burni coal; it is not required to achieve compliance while burning oil.

E. Fuels - From 1980 Emission Inventory

Type (Be Specific)	Consumption* GAL/HR		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
Fuel Oil	4,811	8,044	1257

*Units Natural Gas, MMCF/hr; Fuel Oils, barrels/hr; Coal, lbs/hr

Fuel Analysis:

Percent Sulfur: 0.94 Percent Ash: N.A.

Density: N.A. lbs/gal Typical Percent Nitrogen: N.A.

Heat Capacity: _____ BTU/lb 141,283 BTU/gal

Other Fuel Contaminants (which may cause air pollution): _____

F. If applicable, indicate the percent of fuel used for space heating. Annual Average N.A. Maximum N.A.

G. Indicate liquid or solid wastes generated and method of disposal.

None

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):

Stack Height: 306 ft. Stack Diameter: 10.0 ft.

Gas Flow Rate: 500,000 ACFM Gas Exit Temperature: 329 °F.

Water Vapor Content: 5.2 % Velocity: 106.3 FPS

SECTION IV: INCINERATOR INFORMATION

NOT APPLICABLE

Type of Waste	Type O (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq & Gas By-prod.)	Type VI (Solid By-prod.)
Lbs/hr Incinerated							

Description of Waste _____

Total Weight Incinerated (lbs/hr) _____ Design Capacity (lbs/hr) _____

Approximate Number of Hours of Operation per day _____ days/week _____

Manufacturer _____

Date Constructed _____ Model No. _____

	Volume $(ft)^3$	Heat Release (BTU/hr)	Fuel		Temperature (^oF)
			Type	BTU/hr	
Primary Chamber					
Secondary Chamber					

Stack Height: _____ ft. Stack Diameter _____ Stack Temp. _____

Gas Flow Rate: _____ ACFM _____ DSCFM* Velocity _____ FPS

*If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air.

Type of pollution control device: [ ] Cyclone [ ] Wet Scrubber [ ] Afterburner [ ] Other (specify) _____

Brief description of operating characteristics of control devices: _____

Ultimate disposal of any effluent other than that emitted from the stack (scrubber water, ash, etc.):

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

1. Total process input rate and product weight — show derivation.
2. To a construction application, attach basis of emission estimate (e.g., design calculations, design drawings, pertinent manufacturer's test data, etc.,) and attach proposed methods (e.g., FR Part 60 Methods 1, 2, 3, 4, 5) to show proof of compliance with applicable standards. To an operation application, attach test results or methods used to show proof of compliance. Information provided when applying for an operation permit from a construction permit shall be indicative of the time at which the test was made.
3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test).
4. With construction permit application, include design details for all air pollution control systems (e.g., for baghouse include cloth to air ratio; for scrubber include cross-section sketch, etc.).
5. With construction permit application, attach derivation of control device(s) efficiency. Include test or design data. Items 2, 3, and 5 should be consistent: actual emissions = potential (1-efficiency).
6. An 8½" x 11" flow diagram which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate where raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particles are evolved and where finished products are obtained. SEE FIGURE 1
7. An 8½" x 11" plot plan showing the location of the establishment, and points of airborne emissions, in relation to the surrounding area, residences and other permanent structures and roadways (Example: Copy of relevant portion of USGS topographic map). SEE FIGURE 3
8. An 8½" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram. SEE FIGURE 2

9. An application fee of $20, unless exempted by Section 17-4.05(3), F.A.C. The check should be made payable to the Department of Environmental Regulation.

10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit.

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

NOT APPLICABLE

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?
[ ] Yes [ ] No

Contaminant	Rate or Concentration

B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy) [ ] Yes [ ] No

Contaminant	Rate or Concentration

C. What emission levels do you propose as best available control technology?

Contaminant	Rate or Concentration

D. Describe the existing control and treatment technology (if any).

1. Control Device/System:
2. Operating Principles:
3. Efficiency:*
4. Capital Costs:
5. Useful Life:
6. Operating Costs:
7. Energy:
8. Maintenance Cost:
9. Emissions:

Contaminant	Rate or Concentration

*Explain method of determining D 3 above.

10. Stack Parameters

a. Height: ft. b. Diameter: ft.

c. Flow Rate: ACFM d. Temperature: °F

e. Velocity: FPS

E. Describe the control and treatment technology available (As many types as applicable, use additional pages if necessary).

1.

a. Control Device:

b. Operating Principles:

c. Efficiency*: d. Capital Cost:

e. Useful Life: f. Operating Cost:

g. Energy*: h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

2.

a. Control Device:

b. Operating Principles:

c. Efficiency*: d. Capital Cost:

e. Useful Life: f. Operating Cost:

g. Energy**: h. Maintenance Costs:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

*Explain method of determining efficiency.

**Energy to be reported in units of electrical power – KWH design rate.

3.

a. Control Device:

b. Operating Principles:

c. Efficiency*: d. Capital Cost:

e. Life: f. Operating Cost:

g. Energy: h. Maintenance Cost:

*Explain method of determining efficiency above.

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space and operate within proposed levels:

4.

a. Control Device

b. Operating Principles:

c. Efficiency*:

d. Capital Cost:

e. Life:

f. Operating Cost:

g. Energy:

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

F. Describe the control technology selected:

1. Control Device:

2. Efficiency*:

3. Capital Cost:

4. Life:

5. Operating Cost:

6. Energy:

7. Maintenance Cost:

8. Manufacturer:

9. Other locations where employed on similar processes:

a.

(1) Company:

(2) Mailing Address:

(3) City:

(4) State:

(5) Environmental Manager:

(6) Telephone No.:

*Explain method of determining efficiency above.

(7) Emissions*:

Contaminant	Rate or Concentration

(8) Process Rate*:

b.

(1) Company:

(2) Mailing Address:

(3) City:

(4) State:

*Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

SECTION VII – PREVENTION OF SIGNIFICANT DETERIORATION

NOT APPLICABLE

A. Company Monitored Data

1. _____ no sites _____ TSP _____ ( ) SO^2* _____ Wind spd/dir

Period of monitoring ____/____/____ to ____/____/____
month day year month day year

Other data recorded _____

Attach all data or statistical summaries to this application.

2. Instrumentation, Field and Laboratory

a) Was instrumentation EPA referenced or its equivalent? _____ Yes _____ No

b) Was instrumentation calibrated in accordance with Department procedures? _____ Yes _____ No _____ Unknown

B. Meteorological Data Used for Air Quality Modeling

1. _____ Year(s) of data from ____/____/____ to ____/____/____
month day year month day year

2. Surface data obtained from (location) _____

3. Upper air (mixing height) data obtained from (location) _____

4. Stability wind rose (STAR) data obtained from (location) _____

C. Computer Models Used

1. _____ Modified? If yes, attach description.

2. _____ Modified? If yes, attach description.

3. _____ Modified? If yes, attach description.

4. _____ Modified? If yes, attach description.

Attach copies of all final model runs showing input data, receptor locations, and principle output tables.

D. Applicants Maximum Allowable Emission Data

Pollutant	Emission Rate
TSP	_____ grams/sec
SO^2	_____ grams/sec

E. Emission Data Used in Modeling

Attach list of emission sources. Emission data required is source name, description on point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time.

F. Attach all other information supportive to the PSD review.

*Specify bubbler (B) or continuous (C).

G. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources.

H. Attach scientific, engineering, and technical material, reports, publications, journals, and other competent relevant information describing the theory and application of the requested best available control technology.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions*:

Contaminant	Rate or Concentration

(8) Process Rate*:

10. Reason for selection and description of systems:

*Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

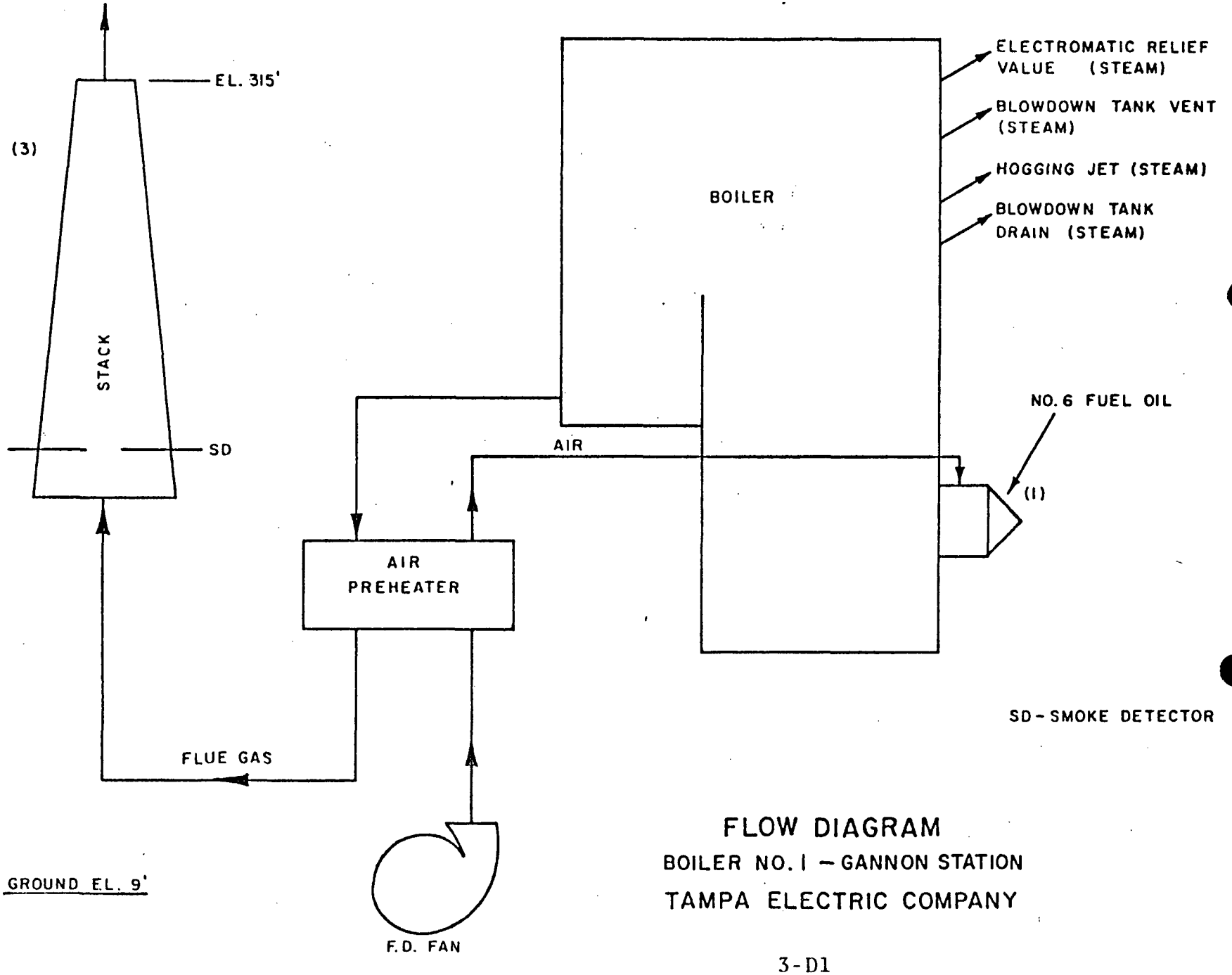

FIGURE 1

FLOW DIAGRAM

BOILER NO. 1 – GANNON STATION

TAMPA ELECTRIC COMPANY

Best Available Copy

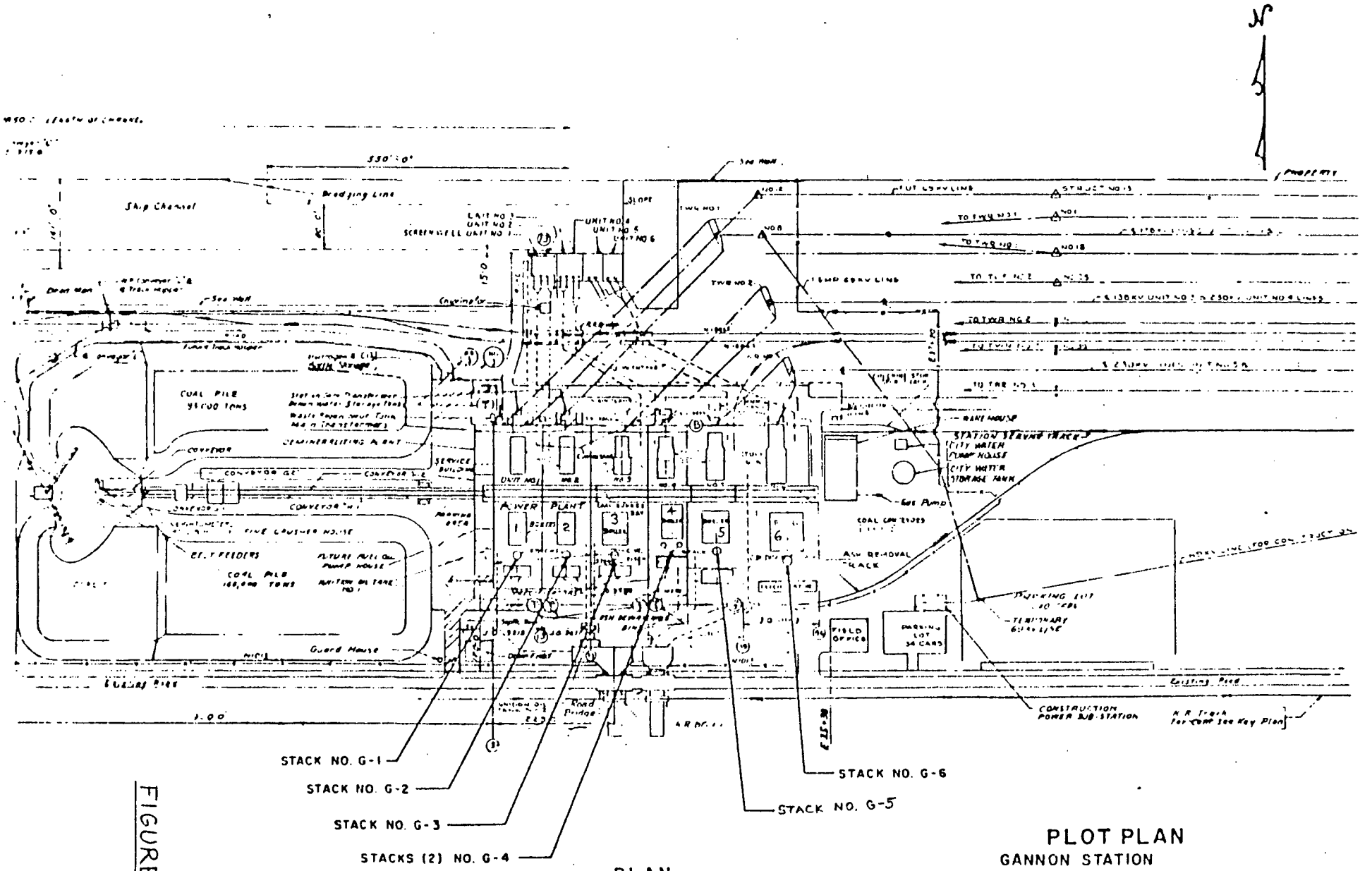

FIGURE 2

PLAN

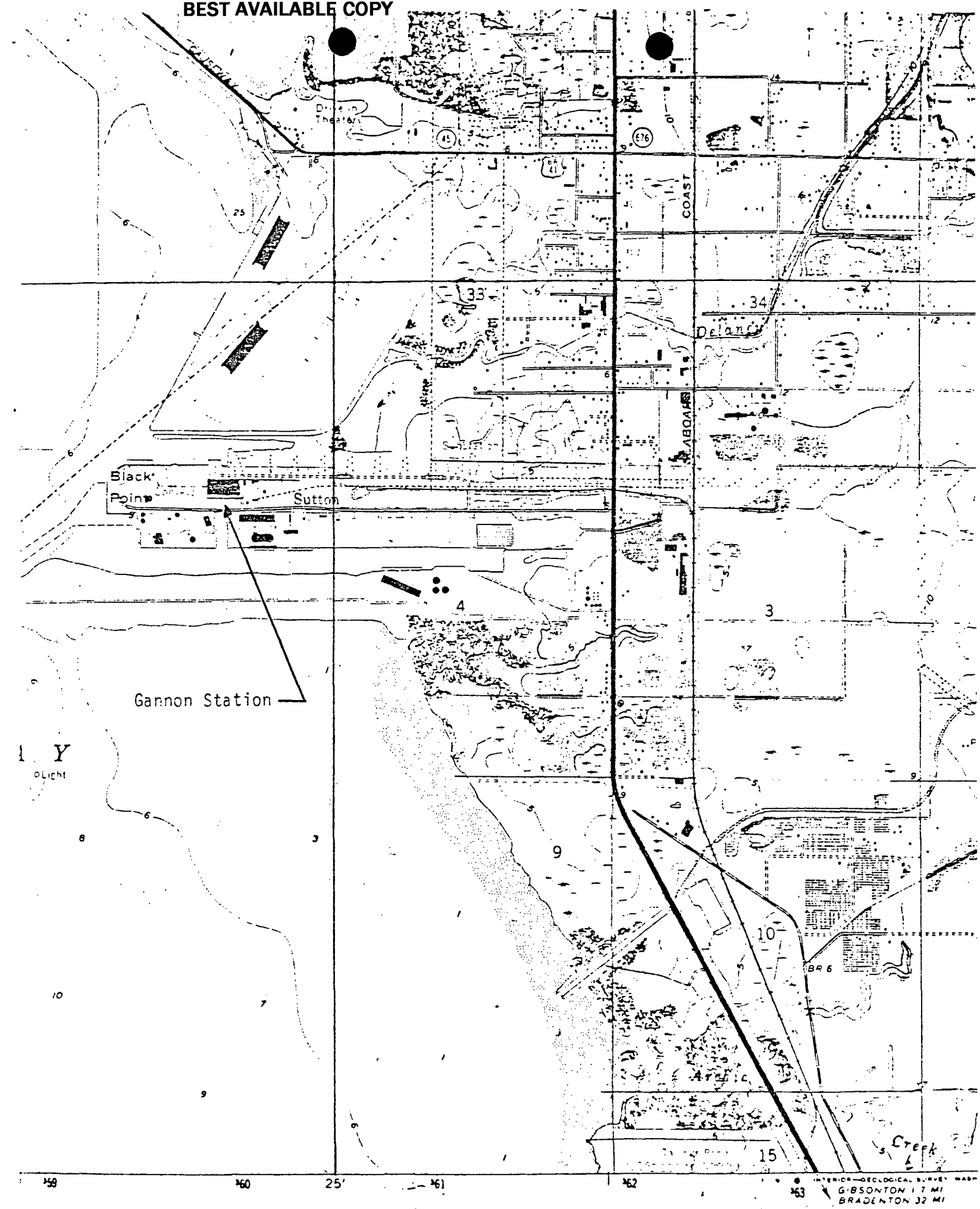

FIGURE 3

ATTACHMENT

GANNON 1

CALCULATIONS

- Maximum/Allowable Emissions

SO_2 $\frac{1.1 \text{ lbs. } SO_2}{\text{MMBTU}} \times \frac{1257 \text{ MMBTU}}{\text{HOUR}} = 1382.7 \frac{\text{lbs. } SO_2}{\text{HOUR}}$

Particulate $\frac{0.1 \text{ lbs.}}{\text{MMBTU}} \times \frac{1257 \text{ MMBTU}}{\text{HOUR}} = 125.7 \frac{\text{lbs. Part}}{\text{HOUR}}$

- Potential Emissions

SO_2 $\frac{1382.7 \text{ lbs. } SO_2}{\text{HOUR}} \times \frac{8760 \text{ Hour}}{\text{YEAR}} \times \frac{1 \text{ Ton}}{2000 \text{ lbs.}} = 6056 \frac{\text{Tons } SO_2}{\text{YEAR}}$

Particulate $\frac{125.7 \text{ lbs.}}{\text{HOUR}} \times \frac{8760 \text{ Hour}}{\text{YEAR}} \times \frac{1 \text{ Ton}}{2000 \text{ lbs.}} = \frac{550.6 \text{ Tons}}{\text{YEAR}}$

- Test Methods for Compliance

SO_2 - Fuel Analysis

Particulate - EPA Reference Method 17

TECO
TAMPA ELECTRIC COMPANY

POST OFFICE BOX 111 TAMPA, FLORIDA 33601 TELEPHONE (813) 879-4111

September 8, 1981

TO WHOM IT MAY CONCERN:

Please be advised that Jerry L. Williams, Manager of Environmental Planning, is the authorized representative of Tampa Electric Company concerning matters with which this permit application deals.

Very truly yours,

Alex Kaiser
Vice President
Energy Supply

F.J. GANNON STATION - UNITS 1 THROUGH 4

Operation and Maintenance Plan

Introduction

F.J. Gannon Station is owned and operated by Tampa Electric Company. The plant is located on the eastern shore of Hillsborough Bay at Port Sutton. The plant consists of six steam electric generating units. Units 1 through 4 are oil fired while Units 5 and 6 fire coal.

Gannon Station Units 1 through 4 boilers were manufactured by the Babcock and Wilcox Company and are cyclone type furnaces. The boilers were originally designed to burn coal but have been converted to burn oil. The date each unit was placed in service and the generator nameplate capacities are listed below.

Unit No.	Year	Nameplate Capacity, MW
1	1957	125
2	1958	125
3	1960	179.52
4	1963	187.5

Boiler exhaust gases from these units are exhausted through stacks at an elevation of 306 feet.

Process System Performance Parameters

Units 1 through 4 burn low sulfur No. 6 fuel oil. Fuel oil quality is monitored upon delivery. In addition, daily samples are taken for a monthly composite analysis. The design fuel consumption and steam flow rates are listed below:

Unit No.	Design Fuel Consumption	Design Steam Flow
1	201 BBL./HR	950,000 lbs./HR
2	201 BBL./HR	950,000 lbs./HR
3	258 BBL./HR	1,250,000 lbs./HR
4	307 BBL./HR	1,386,000 lbs./HR

Actual fuel input to the boilers is monitored on a daily basis. Steam flow is monitored continuously. Fuel oil to the boilers is maintained at optimum temperatures and pressures, and recorded hourly. Excess air is monitored and maintained at levels to produce efficient fuel combustion. — continuously? yes

Maintenance and Inspection

All generating units of the Tampa Electric Company system are regularly scheduled for periodic maintenance. The schedule for planned maintenance outages is affected by system load and forced outage requirements.

During major outages, the boilers, controls, auxileries, and duct work are inspected and repaired as necessary. On-going procedures include burner inspections and cleanings, burner tip replacements and maintenance of optimum flame patterns to achieve efficient fuel combustion.

Spring & Fall good for outages
5-8 AM, 4-10 PM high peak loads

Hookers Point used as a peaking plant

→ daily maintainance done during these hours.