29-981

State of Florida
Department of Air and Water Pollution Control

RECEIVED
FEB 26 1971
DEPT. OF A.W.P.C.
WEST CENTRAL REGION
WINTER HAVEN

Application For Permit to Operate Air Pollution Control Facilities

Applicant (Owner or authorized agent): H. A. Moshell, Jr.
General Manager of Production
(Name and Title)

Name of Establishment: TAMPA ELECTRIC COMPANY
F. J. Gannon Station - No. 6 Boiler
(Corporation, Company, Political SD, Firm, etc.)

Mailing Address: P.O. Box 111 Tampa, Florida 33601

Location of Pollution Source: Port Sutton Road (Number and Street) Tampa (City)
Hillsborough (County)

Nature of Industrial Operation: Generation of Electricity

Permit Applied For Operating:

- New Source ☐
- Existing Source ☒
- Existing Source after modification ☐
- Existing Source after Expansion ☐
- Existing Source After relocation, expansion or reconstruction ☐

Project Engineer: ~~Unit #6~~ Unit #6

B. D. Kitching
Name

TAMPA ELECTRIC COMPANY
Firm

P.O. Box 111, Tampa, Florida 33601
Mailing Address

B. D. Kitching
Signature

6503
Florida Registration Number

For Department's Use Only Permit No. #6 Date:

1-D

The undersigned owner or authorized representative* of TAMPA ELECTRIC COMPANY is fully aware that the statements made in this form and the attached exhibits and statements constitute the application for a Operating Permit from the Florida Department of Air and Water Pollution Control and certifies that the information in this application is true, correct and complete to the best of his knowledge and belief. Further, the undersigned agrees to comply with the provisions of Chapter 403 Florida Statutes and all the rules and regulations of the Department or revisions thereof. He also understands that the Permit is non transferable and, if granted a permit, will promptly notify the Department upon sale or legal transfer of the permitted establishment.

H. A. Moshell, Jr.

Signature of owner or agent.

H. A. Moshell, Jr.
General Manager of Production

Name and Title

Date: 2/25/71

*Attach letter of authorization.

Information Regarding Pollution Sources
and Proposed Control Facilities

1. Estimated cost of proposed control facilities $ 1,594,000.

2. Prepare and attach an 8½" x 11" flow diagram, without revealing trade secrets, identifying the individual operations and/or processes. Indicate where raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particulates are evolved and where finished products are obtained.
P. 3-D1

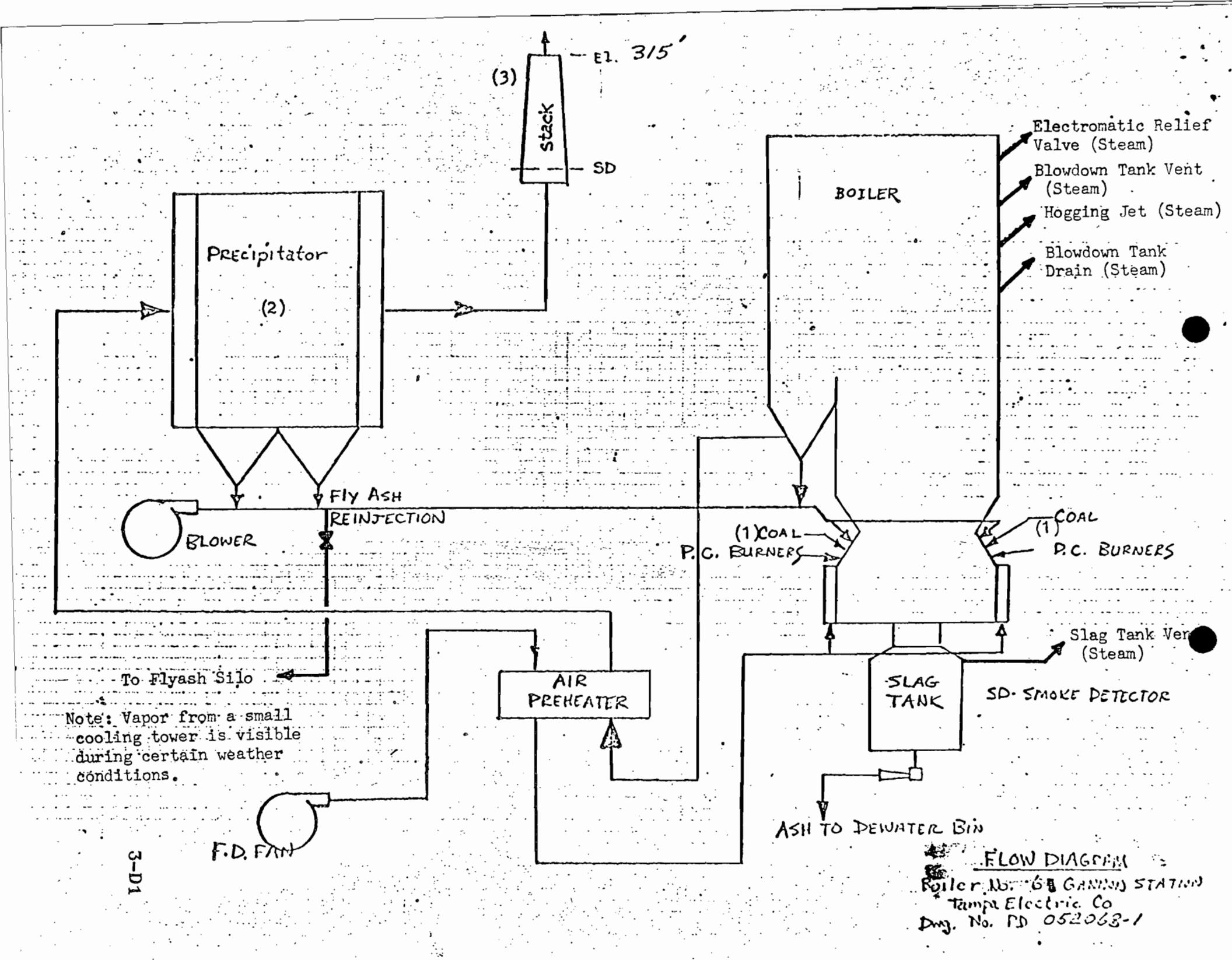
3. Include an 8½" x 11" plot plan showing location of manufacturing processes and location of outlets for airborne emissions. Relate all flows to the flow diagram.
P. 3-D2

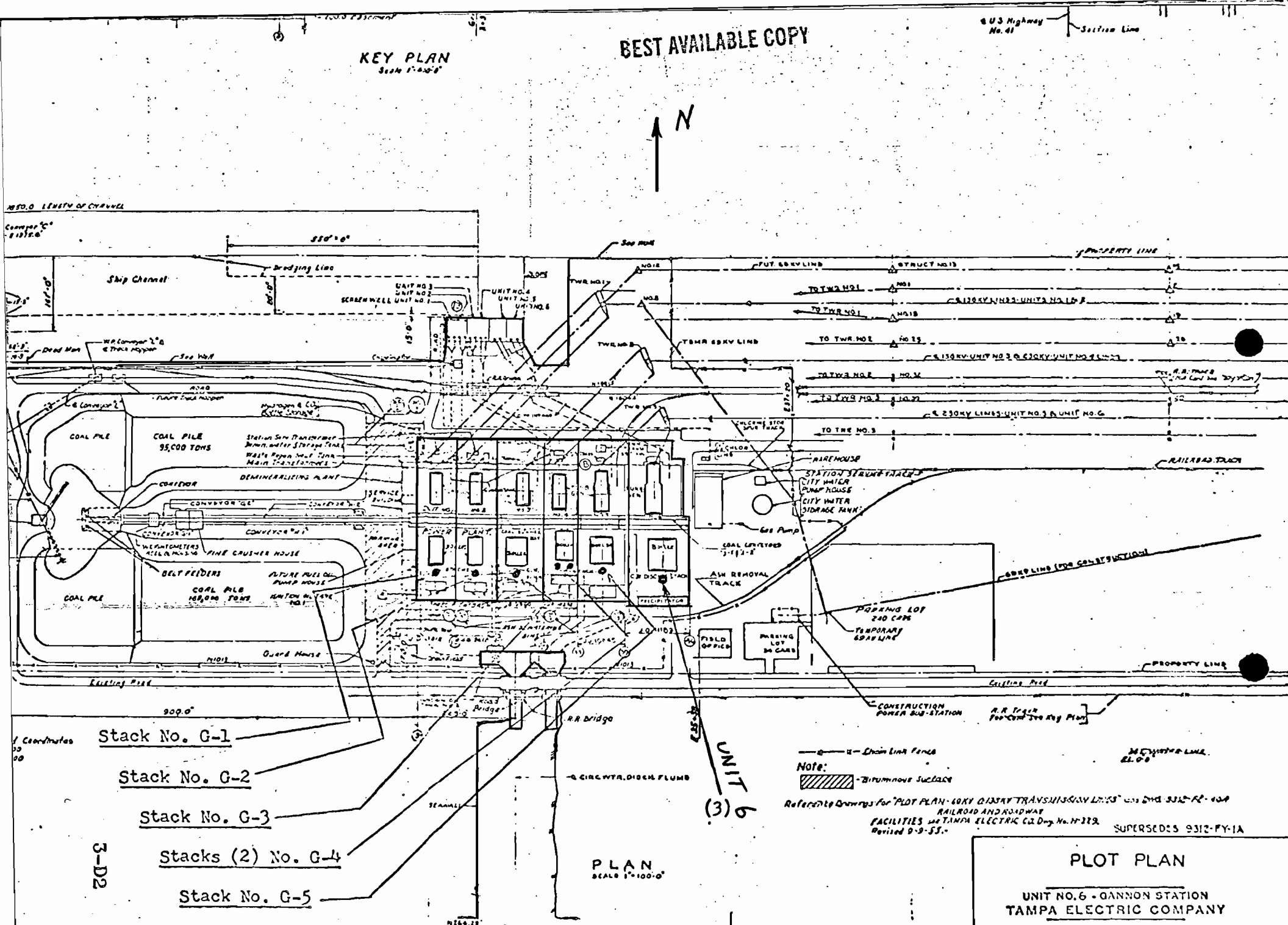
4. Submit an 8½" x 11' plot plan showing the exact location of the establishment and points of discharge in relation to the surrounding area, residences and other permanent structures and roadways.
P. 3-D3

I General

A. Raw Materials and Chemicals Used.

Description	Utilization Tons/day, Lbs./day, etc.	Approximate Contaminant Content		Relate to Flow Diagram
		Type	Percent Dry Weight	
None				


(3)
El. 315'
Stack
SD
Precipitator
(2)
BOILER
Electromatic Relief Valve (Steam)
Blowdown Tank Vent (Steam)
Hogging Jet (Steam)
Blowdown Tank Drain (Steam)
Fly Ash
REINJECTION
BLOWER
(1) COAL P.C. BURNERS
(1) COAL P.C. BURNERS
Slag Tank Vent (Steam)
To Flyash Silo
AIR PREHEATER
SLAG TANK
SD- SMOKE DETECTOR
Note: Vapor from a small cooling tower is visible during certain weather conditions.
F.D. FAN
ASH TO DEWATER BIN
3-D1
FLOW DIAGRAM
Boiler No. 6 GANNON STATION
Tampa Electric Co
Dwg. No. FD 052068-1



Referenced Drawings for "PLOT PLAN - 69 KV & 13.8 KV TRANSMISSION LINES" and "PLOT PLAN - RAILROAD AND ROADWAY FACILITIES" for TAMPA ELECTRIC CO. Dwg. No. M-332 Revised 9-9-55.

SUPERSEDES 9312-FY-1A

3-D2

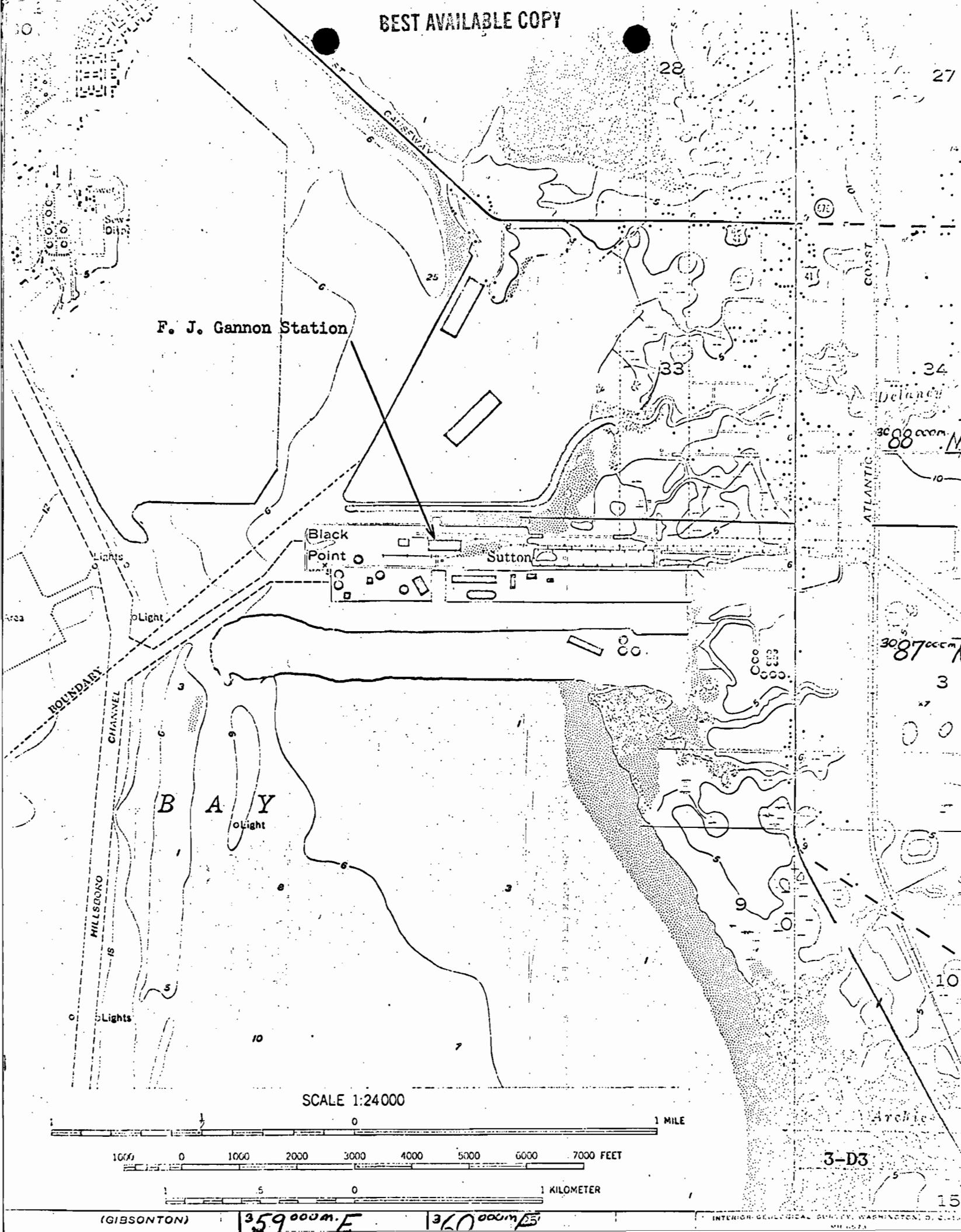
PLOT PLAN

UNIT NO. 6 - GANNON STATION
TAMPA ELECTRIC COMPANY

STONE & WEBSTER ENGINEERING CORPORATION

DRAWING NUMBER 10845-FY-1A

ISSUE	DESCRIPTION	ISSUE	DESCRIPTION	ISSUE	DESCRIPTION	ISSUE	DESCRIPTION
				2	ISSUED FOR J.O. 11109	1	ORIGINAL ISSUE



B. Fuels

Type (Be Specific)	Daily Consumption	Gross Maximum Heat Output	Relate to Flow Diagram
Coal	4,440,000 lb/day	5.05×10^{10} BTU/day 2105 hr.	(1)

C. Products

Description	Average Daily Production (Tons/Day. Lbs/Hr. etc.)
Electricity	5,110 MWH/day 213 MW

D. Normal operation: Hours/Day 24 hr/day Day and Week 7 days/wk

If operation or process is seasonal, describe: _____

II Identification of Air Contaminants

Compounds of:		Also —			
Chlorine	☐	Hydrocarbons	☐	Acid Mists	☐
Flourine	☐	Smoke	☐	Odors	☐
Nitrogen	☐	Fly Ash	☒	Radioisotopes	☐
Sulfur	☒	Dusts	☐	Other _____	☐

Specific Compounds SO_2, SO_3

III Air Pollution Control Devices

Contaminant	Control Device	Relate to Flow Diagram	Note 1 Operating Efficiency	Conditions (Particle Size Range, Temp. etc.)
Ash	Electrostatic Precipitator	(2)	98.5%	49.9 ft/sec 291° F
SO_x	Stack	(3)	N. A.	Same as above

Provide a brief description of the control device or treatment system. Attach separate sheets giving details regarding principle of operation, manufacturer, model, size, type and capacity of control/treatment device and the basis for calculating its efficiency. Show any bypasses of the control device and specify when such bypasses are to be used and under what conditions.

This piece of equipment is designed to remove solid particulate matter from the flue gases leaving the boiler.

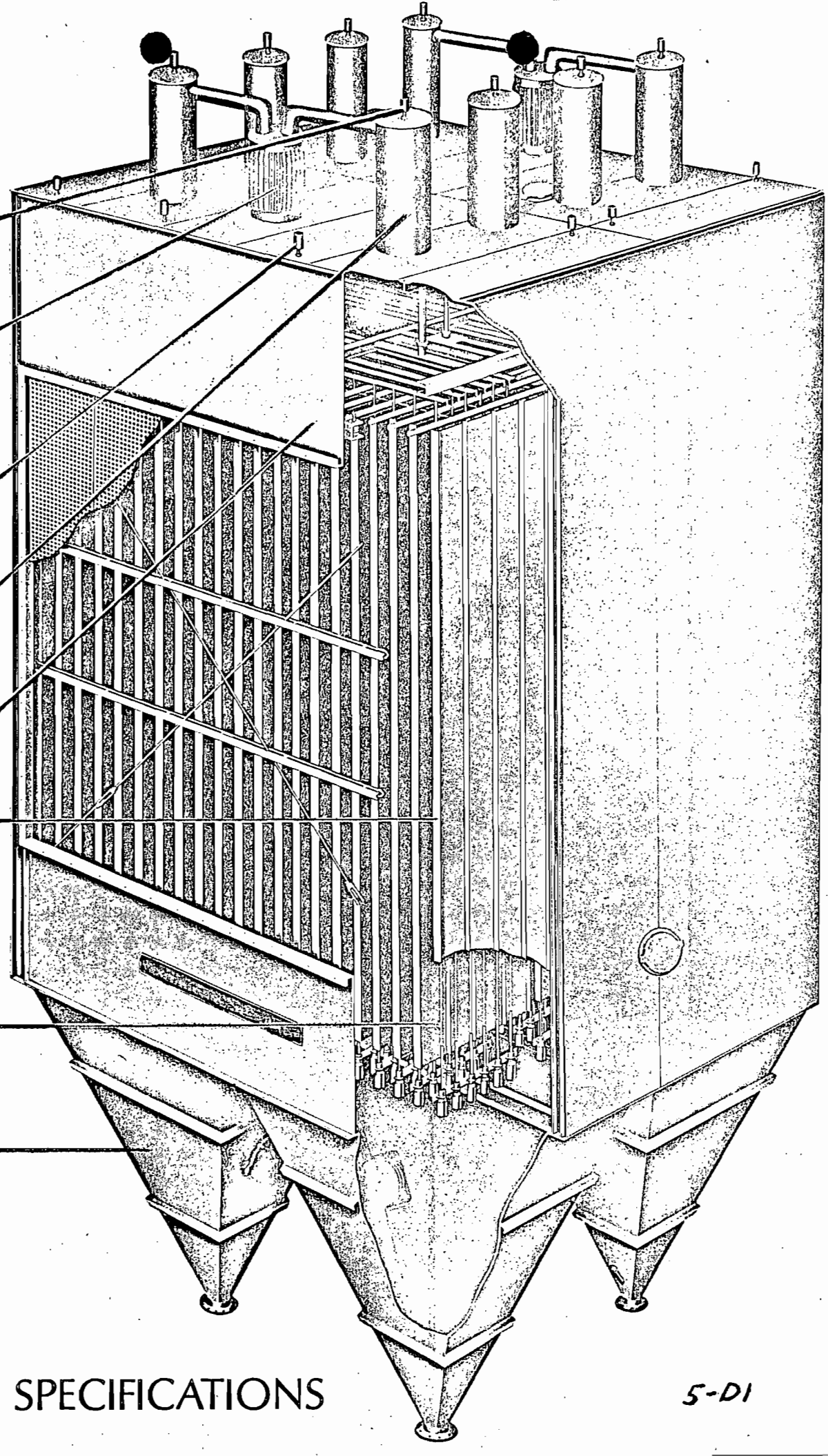
A cutaway view of a typical electrostatic precipitator is shown on Page 5-D1. Gas flow through the precipitator is between the parallel plates designated as "collecting surfaces".

The operating principle and basis for calculating the efficiency are shown on page 5-D2 and 5-D3 respectively. Some additional information regarding the precipator for this unit follows.

Manufacturer - American Standard

Design air flow - 1,080,000 CFM
Guaranteed removal efficiency - 98.5%
at design conditions

There are no by-passes of the precipitator.



Discharge electrode rappers—choice of pneumatic or electrical in a weather enclosure; separate control system allows full flexibility of intensity and cycling.

High Voltage Power Supply
Transformer—full range KVA, depending on size and specified efficiency of precipitator

Rectifier—silicon type, oil immersed; connected by bridge circuit; full or half wave DC output

Collecting surface rappers—choice of pneumatic or electrical in a weather enclosure, with flexible cycling and intensity controls.

Insulator compartments—house insulators and electrode rappers; fabricated of mild steel; can be equipped with heaters to minimize condensation.

Casing—column and beam construction with shell fabricated of mild steel.

Collecting surfaces—flat plate design with roll-formed pockets improves clean-plate sparking voltages, provides less duct turbulence for maximum efficiency, improves rappability.

Discharge electrodes—coppered, stainless or mild steel; carried on steel frames; supported on insulators; tensioned by cast iron weights

Hoppers—pyramidal, fabricated of mild steel; baffled to prevent gas sneak-by; can be equipped with vibrators

GENERAL SPECIFICATIONS

OPERATING PRINCIPLE OF ELECTROSTATIC PRECIPITATOR

Particles suspended in a gaseous medium enter the precipitator, passing through ionized zones around high voltage electrode wires. These high voltage electrodes, through a corona effect, emit negatively charged ions into the gases surrounding the electrode.

The negatively charged gas field around each electrode wire ionizes passing particulates, causing the particulates to migrate to the electrode of opposite polarity, the collector plates.

The charged particulates gather on the grounded collector plates and lose their charge. Rappers shake loose the agglomerate which fall into the collection hoppers for removal.

BASIS FOR CALCULATING PRECIPITATOR EFFICIENCY

A method similar to ASME Power Test Code - 27 is used to determine dust loadings. Very briefly the method is as follows:

1. Unit is base loaded for 2 to 4 hours (steady load).

2. Velocity profile of the inlet and outlet ducts is determined using a pitot tube, draft gauge, and thermocouple.

3. Inlet and outlet ducts are sampled simultaneously and isokinetically using alundum thimbles as the filtering medium.

4. Amount of dust per unit time is obtained and efficiency is arrived at by using the following formula:

$$\frac{\text{Inlet dust concentration} - \text{Outlet dust concentration}}{\text{Inlet dust concentration}} \times 100 = \text{efficiency}$$

IV. Contaminant Balance

From contaminant content in raw materials, waste products, and manufactured products, summarize daily contaminant flow:

	Pounds Contaminant per Day	
	Input	Output
List Raw Materials:		
Coal Ash	523,000	
Coal Sulfur	170,000	
List Manufactured Products:		
Electricity		
List Solid Wastes:		
Bottom Slag		517,820
List Liquid Wastes:		
None		
Totals	693,000	517,820
Airborne Wastes (Total input minus total output)	175,180	

Note: If more than one contaminant, specify each
Contaminants recovered in control devices should be shown as either a liquid or a solid waste.

V. Discharged Emmissions to Atmosphere

A. Discharge Points and Design Conditions

Discharge Point Description	Relate to Flow Diagram	Height above Ground (ft.)	Cross Sect. Area (sq. ft.)	Periods of Flow (Note 2) Hrs./ Day	Days/ Year	Temp. of Discharge (°F)
Stack	(3)	306	254	21.3	119	291

B. Tabulation of Discharged Contaminants

Note 3

	Discharge Point – Relate to Flow Diagram	Flow Rate at Std. Cond. (cfm)	Total Contaminants Discharged: Particulates Gr/ft3 (Std.Cond.)	Particulates lbs./ Day	Other Contaminants (~~XX~~, SO_2, ~~NOxxxx~~) Gr/ft3 (Std. Cond.)	Other Contaminants lbs/ Day	Other Contaminants Gr/ft3 (Std.Cond)	Other Contaminants lbs/ Day
Avg. Cond.	Stack – (3)	534,500	0.053	5,180	3.82	340,000		
Peak Cond.	Stack – (3)	941,000	0.053	–	3.82	–		
	Totals							

NOTE: Standard conditions used are 20° C and 1 atm.

VI. Treatment and Disposal of Liquid and Solid Waste

1. Identify the contaminants which will be discharged as liquid or solid wastes.

   Bottom slag (ash)

2. Describe the treatment and disposal of liquid and solid wastes. Indicate the concentrations and volume of individual contaminants in treated wastes before disposal.

   There is 517,820 lb/day of bottom slag produced.

The bottom slag is tapped from the bottom of the furnace as a molten liquid. It falls into a tank of water where it rapidly cools and shutters into small pieces (approximately 1/4" in diameter). This water - solid mixture is pumped to a dewatering bin where the water is drained off.

The slag is then carried off by truck to a stockpiling area on the power plant site.

The solid slag is hard, glassy, insoluble in water, and chemically inert. A typical mineral analysis of slag is as follows:

SiO_2 - 41.06%, Fe_2O_3 - 27.46%, Al_2O_3 - 17.00%, CaO - 5.47%, SO_3 - 4.91%, K_2O - 1.88%, TiO_2 - 0.83%, MgO - 0.67%, P_2O_5 - 0.37%, Na_2O - 0.25%, Undetermined - 0.10%.

NOTE 1: The operating efficiency shown for the electrostatic precipitator is the efficiency obtained by tests which were conducted in April, 1958. These tests were conducted at the designed maximum continuous load on the boiler. Tests are scheduled and due to be completed by December 31, 1971, which will reflect current efficiencies at the average operating condition. This information will be forwarded to the department as soon as the tests have been completed.

The test method to be used will be similar to the method adopted by the Department of Air and Water Pollution Control for the sampling of solid particulate matter from power plant stack gases.

NOTE 2: The hrs/day figure shown was arrived at by dividing the hours per year that the boiler was in operation for the year 1969 by the number of days in 1969 that the boiler operated.

NOTE 3: The grain loading shown for the average operating condition and the peak emission condition is the grain loading that was obtained by test at the design maximum continuous load on the boiler. This means that, theoretically, the grain loading for the average operating condition should be less than that shown and the grain loading for the peak emission condition could be greater than that shown. Tests are scheduled to obtain what the values actually are.

SUPPLEMENTAL INFORMATION

A flyash silo has been installed as part of the flyash handling system for use with Nos. 4, 5, and 6 Boilers.

No credit has been taken for the possible reduction of flyash to the atmosphere due to a decreased load on the precipitator while the silo system is in service.

One phase of our Test Program will include the use of this equipment to document anticipated improvement in flyash emissions, especially during peak load operation.

We expect to utilize the silo system during times that will yield the maximum environmental effects.

APPROVED
MAR 29 1976

A029-2470
0040
06

Tampa Electric Company
Gannon Station
No. 6 Boiler

RECEIVED
H. C. E. P. C.
AUG 5 1975

H.C.E.P.C.

D.E.R.
APR 5 1976
SOUTH WEST DISTRICT
ST. PETERSBURG

STATE OF FLORIDA
DEPARTMENT OF POLLUTION CONTROL

APPLICATION TO OPERATE/CONSTRUCT POLLUTION SOURCES

SECTION I – GENERAL INFORMATION FOR ALL POLLUTION SOURCES
I TO BE FILLED IN BY APPLICANT

Source Type: Air Pollution
Type application: [XX] Operation [ ] Temporary Operation [ ] Construction
Status Source: [ ] New [XX] Existing [ ] Modification

Source Name: F. J. Gannon Station No. 6 Boiler County: Hillsborough

Source Location: Street: Port Sutton Road City: Tampa
(Water Source Only) Lat: ____° ____' ____" Long: ____° ____' ____"
(Air Source Only) UTM: East 360,000m North 3,087,500m

Appl. Name and Title: Tampa Electric Company
Appl. Address: P.O. Box 111, Tampa, Florida 33601

II TO BE FILLED IN BY REGION (*BY BUREAU OF PERMITTING)

Control No: Region ____ County ____ Type ____ *Project ____

Type Permit	Date Rec'd	*Permit No.	*Issue Date	*Compl. Date	*Exp. Date

Source Description: ____
Control Equipment: ____

Water Permits

Receiving Body Code: ____ Surface Water Code: ____
Station No.: Influent: ____ Effluent: ____

Effluent:	Average	Design	% Reduction
Flow rate, MGD			
BOD, lbs/day			
Susp. Sol., lbs/day			
Other:			

Air Permits

Operating Time: [ ] Continuous [ ] Intermittent
Fuel: Type ____ M-BTU/hr. In Put ____
Incinerator: Capacity, tons/day ____ Type Waste ____
Mfg. & Model ____

Pollutant Emissions, lbs/day	Actual	Design	Allowable
Particulate			
Sulfur Oxides			
Other:			

Implementation: Estimated Appl. Filing Date ____
Estimated Start of Const. ____ Estimated Compliance Date ____

DESCRIPTION OF PROPOSED PROJECT

A. Describe the nature and extent of the proposed project. Refer to existing pollution control facilities, DPC permits, conditions, orders and notices, expected improvement in performance of the facilities and state whether the proposed project will result in full compliance of the source. Attach additional sheet if necessary.

The boiler was recently converted to low sulfur coal to allow compliance with applicable SO_2 emission regulations and the precipitator was recently upgraded to allow compliance with particulate regulations.

B. Schedule of Project Covered in this Application (Construction Permit Application Only). N/A

Federally or State Financed Projects only:

Planning Complete _____

Financing Program Complete _____

Indicate other local, state and/or federal agency approvals and dates _____

All projects:

Start of Construction _____

Completion of Construction _____

C. Costs of Construction (Show a breakdown of costs for individual components/units of the proposed project serving pollution control purpose only). Information on actual costs shall be furnished with the application for operation permit.

Precipitator Upgrade: $7,144,000 latest revised estimate

D. Indicate any previous DPC permits, issuance dates, and expiration dates.

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

AIR POLLUTION SOURCES & CONTROL DEVICES

A. Identification of Air Contaminants

1) [XX] Particulates
   a) [ ] Dust b) [XX] Fly Ash c) [ ] Smoke d) [ ] Other (Identify)

2) [XX] Sulfur Compounds
   a) [XX] SO_x as SO_2 b) [ ] Reduced Sulfur as H_2S c) [ ] Other (Identify)

3) [XX] Nitrogen Compounds
   a) [XX] NO_x as NO_2 b) [ ] NH_3 c) [ ] Other (Identify)

4) [ ] Flourides 5) [ ] Acid Mist 6) [ ] Odor

7) [ ] Hydrocarbons 8) [ ] Volatile Organic Compounds

9) [ ] Other (Specify): _____

B. Raw Materials and Chemicals Used (Be Specific)

Description	Utilization Tons/day, lbs./day, etc.	Approximate Contaminant Content		Relate to Flow Diagram
		Type	% Wt.	
NONE				

C. Process Weight:

1) Total Process Weight Rate N/A lbs./hr. [See Sec. 17-2.04(2)]
2) Product ~~Weight~~ electricity ~~lb./hr.~~ expressed as 5,608 MWH/day 235mw
3) Normal Operating Time 24hr/day, 7 days/wk, if seasonal describe: N/A

D. Airborne Contaminants Discharged:

Name of Contaminant	Actual Discharge	Discharge Criteria*	Allowable Discharge*	Relate Location to Flow Diagram
Sulfur dioxide	2.4 max., 2.2avg	lbs/MM BTU	2.4	(3)
Particulates	0.1	lbs/MM BTU	0.1	(3)

* Refer to Chapter 17-2 Florida Administrative Code
(Discharge Criteria: Process Weight Rate, #/ton P_2O_5, #/M BTU/hr etc.)

E. Control Devices:

Name	Eff.	Conditions of Operation, Particle Size Range, etc.	Relate to Flow Diagram
Electrostatic Precipitator	99.8	See below	(2)

F. Fuels:

Type (Be specific)	Daily Consumption	Heat Input BTU/hr.	Relate to Flow Diagram
Coal (1.3% S)	206,049 $\frac{\#}{hr.}$ (avg.)	2.47×10^9	(1)
	302,800 $\frac{\#}{hr.}$ (max.)	3.63×10^9	(1)

G. Describe briefly, without revealing trade secrets, the unit processes/operations generating the airborne emissions identified in this application:

Coal is burned to generate steam which is used to generate electricity.

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

Collected fly ash is pneumatically transferred to a storage silo where it is sold and loaded into truck or rail cars.

Bottom slag is tapped from the bottom of the furnace as a molten liquid which falls into a tank of water where it rapidly cools and shatters into small pieces (approx. 1/4" diameter). This water-solid mixture is pumped to a dewatering bin where the water is drained off. The slag is then carried off by truck to a stockpiling area on the power plant site. From there it is sold and carried off by either truck or barge. The slag is hard, glassy, insoluble in water, and chemically inert.

Stack parameters:

Height: 306'
Diameter: 17.6
Temperature. 291°F @ 100% load
Flow: 1,120,000 ACFM @ 100% load

STATEMENTS BY APPLICANT AND ENGINEER

A. Applicant

The undersigned owner or authorized representative of * Tampa Electric Company is fully aware that the statements made in this application for an Operation of Air Pollution Source permit are true, correct and complete to the best of his knowledge and belief. Further, the undersigned agrees to maintain and operate the pollution source and pollution control facilities in such a manner as to comply with the provisions of Chapter 403 Florida Statutes and all the rules and regulations of the Department or revisions thereof. He also understands that a permit, if granted by the Department, will be non-transferable and he will promptly notify the Department upon sale or legal transfer of the permitted establishment.

Signature of the Owner or Authorized Representative

Alex Kaiser, Director of Power Plant Engineering & Environmental Planning
Name and Title (Please Type)

Date: August 1, 1975 Telephone No.: 813/876-4111

* Attach a letter of authorization

B. Professional Engineer Registered in Florida:

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 control and discharge of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that the pollution source(s) with appropriate control facilities, when properly maintained and operated, will comply 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 the applicant a set of instructions for the proper maintenance and operation of the installation covered in this application.

Signature

Name: B. D. Kitching
(please type)

Mailing Address: Tampa Electric Company
P.O. Box 111
Tampa, Florida 33601

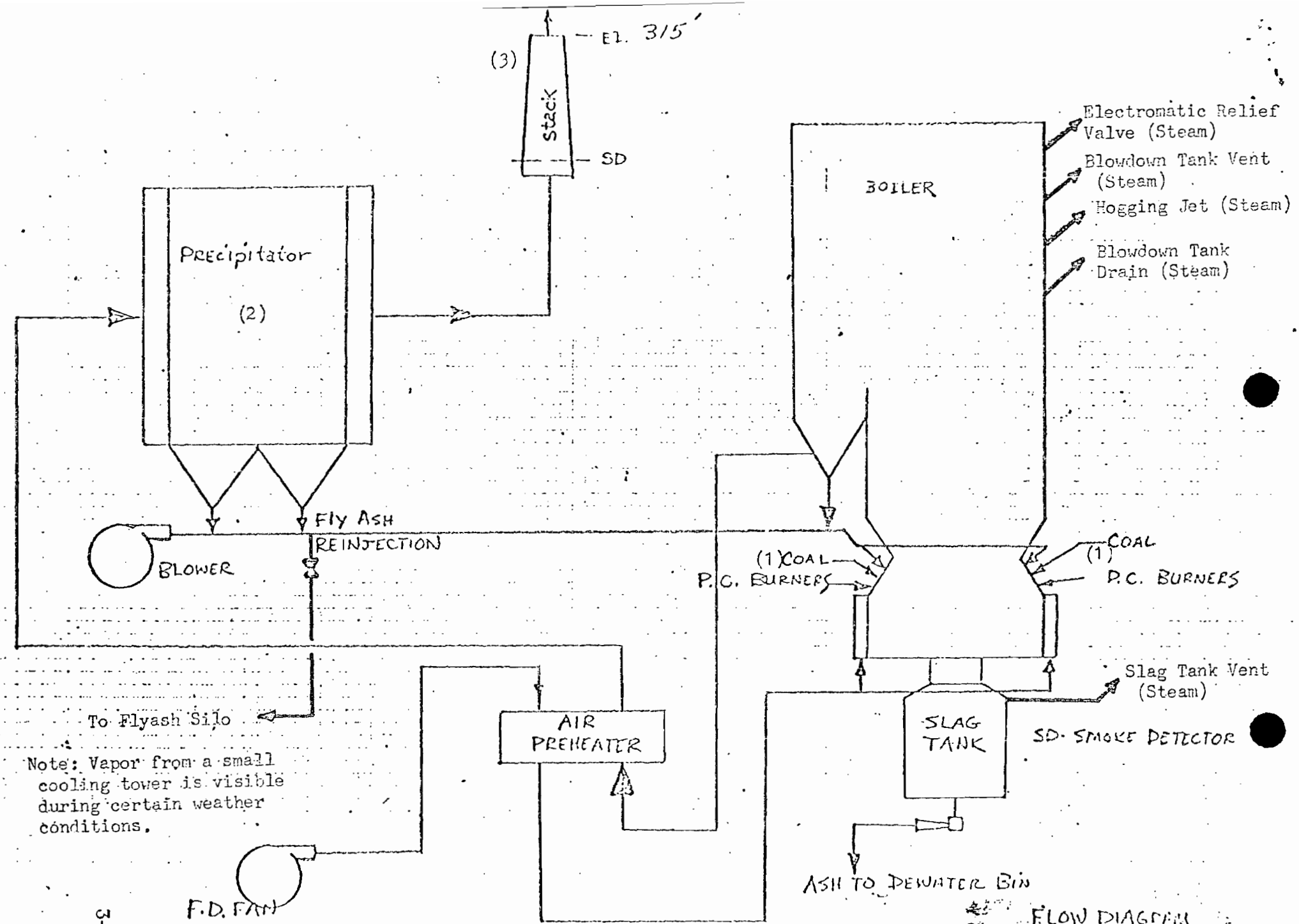
Telephone No.: 813/876-4111

Florida Registration Number 6503

Date: 8-26-75

(Please affix seal)

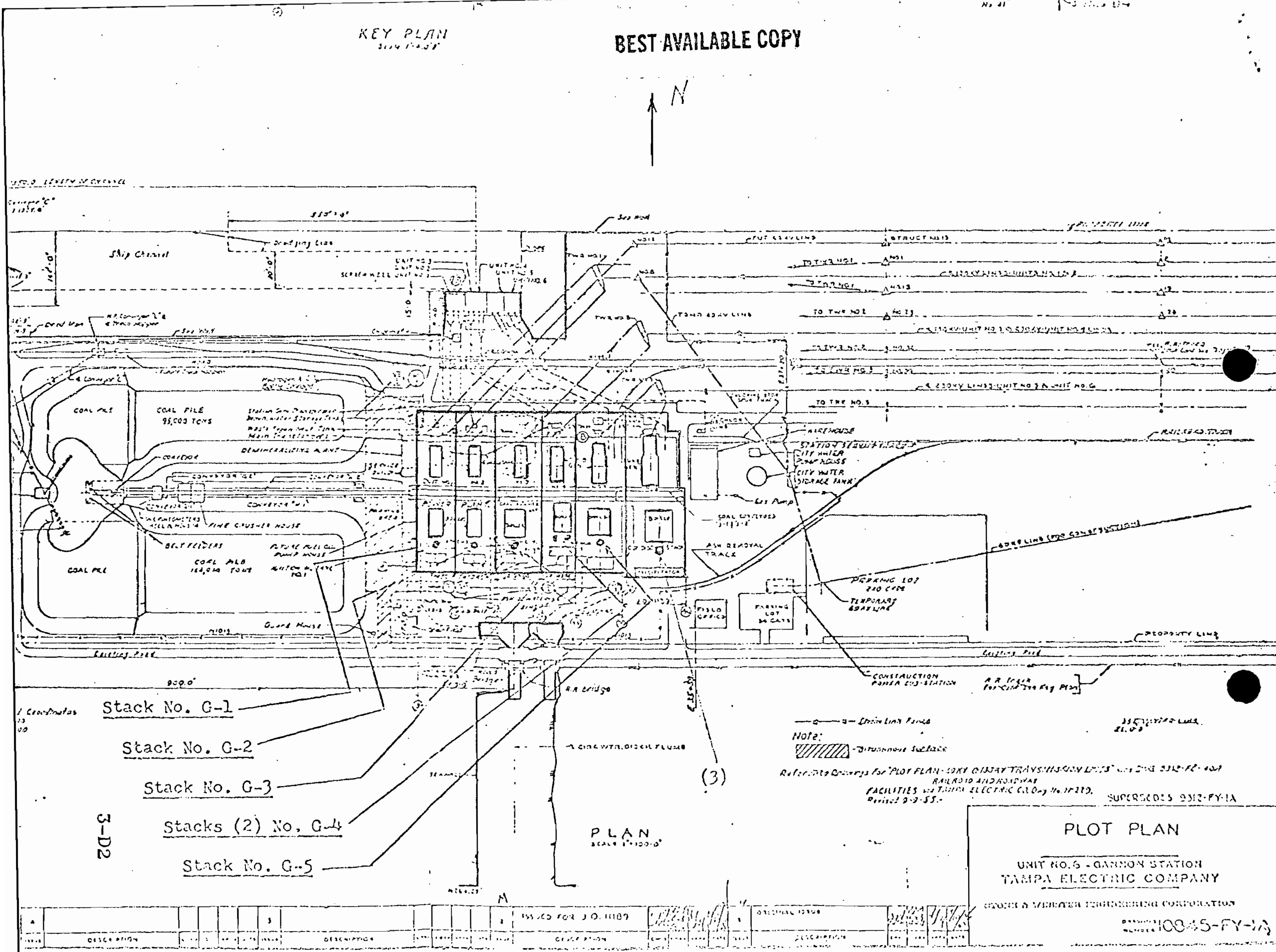
BERNARD D. KITCHING CERTIFICATE NO. 6503 STATE OF FLORIDA REGISTERED ENGINEER

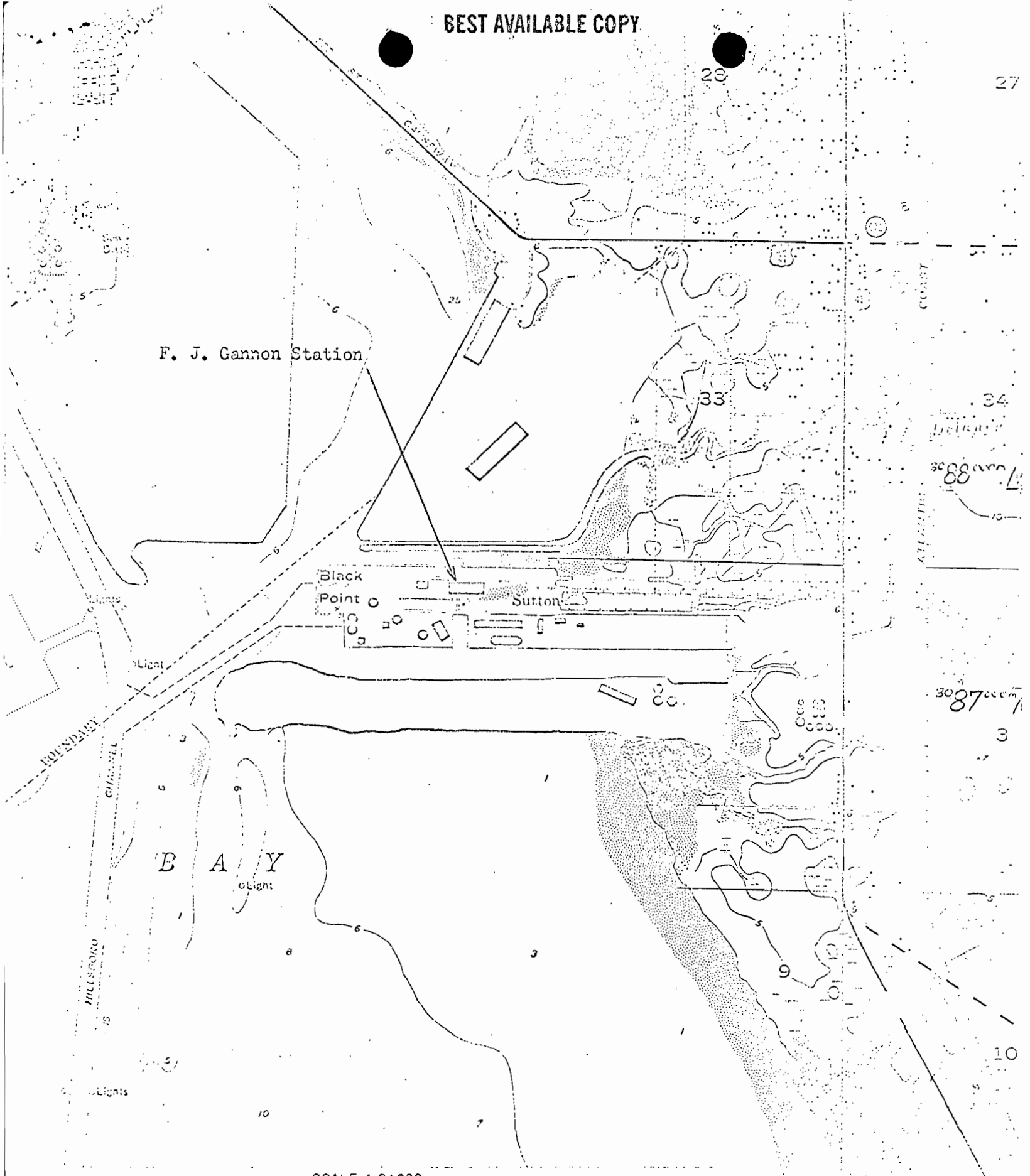


FLOW DIAGRAM
Boiler No. 6 GANNON STATION
Tampa Electric Co
Dwg. No. FD 052063-1

3-D1

BEST AVAILABLE COPY





3-D3

(GIBSONTON) 359 000m. E. 360 000m. E

State of Florida
Department of Air and Water Pollution Control

Lee Kerner requested comments for Ed Deary

Application For Permit to Construct Air Pollution Sources

(Upgrading of existing particulate removal device)

Applicant
(Owner or authorized agent): R. D. Welch, Director, Power Plant Engr. & Const.
(Name and Title)

Name of Establishment: Tampa Electric Company
F. J. Gannon Station - No. 6 Boiler
(Corporation, Company, Political SD, Firm, etc.)

Mailing Address: P. O. Box 111, Tampa, Florida 33601

Location of Pollution Source: Port Sutton Road, Tampa
(Number and Street) (City)

Hillsborough
(County)

Nature of Industrial Operation: Electric Utility

Permit Applied For:

New Source ☐

Existing Source after modification ☒
Upgrading of existing particulate removal device

Existing Source ☐

Relocation, expansion or reconstruction ☐

Project Engineer: AC-419

William E. Hopkins
Name

Stone & Webster Engineering Corporation
Firm

P. O. Box 2325, Boston, Massachusetts 02107
Mailing Address

William E. Hopkins
Signature

5851
Florida Registration Number

APPROVED BY
FLORIDA DEPARTMENT
OF
AIR AND WATER POLLUTION CONTROL
V. D. PATTON, EXECUTIVE DIRECTOR

Date

Serial No.

Chief, Permitting Bureau

NOTE: This Approval is not intended to cover structural display.

For Department's Use Only Permit No. AC 29-419 Date: MAR 1

1-C

The undersigned owner or authorized representative* of Tampa Electric Company is fully aware that the statements made in this form and the attached exhibits and statements constitute the application for a Construction Permit from the Florida Department of Air and Water Pollution Control and certifies that the information in this application is true, correct and complete to the best of his knowledge and belief. Further, the undersigned agrees to comply with the provisions of Chapter 403, Florida Statutes and all the rules and regulations of the Department or revisions thereof. He also understands that the Permit is non transferable and, if granted a permit, will promptly notify the Department upon sale or legal transfer of the permitted establishment.

R D Welch

Signature of owner or agent.

R. D. Welch, Director, Power Plant Engr. & Const.

Name and Title

Date: 3/1/72

*Attach letter of authorization.

Estimated Schedule of
Construction of the Project

Estimated Start of Construction - April 1972

Finish - May 1973

Information Regarding Pollution Sources and Proposed Control Facilities

1. Estimated cost of proposed control facilities $ 4,956,000* .

2. Prepare and attach an 8½" x 11" flow diagram, without revealing trade secrets, identifying the individual operations and/or processes. Indicate where raw materials enter, where solid and liquid waste exit where gaseous emissions and/or airborne particulates are involved and where finished products are obtained.

   See Attached Sheet 3C-1

3. Include an 8½" x 11" plot plan showing location of manufacturing processes and location of outlets for airborne emissions. Relate all flows to the flow diagram.

   See Attached Sheet 3C-2

4. Submit an 8½" x 11' plot plan showing the exact location of the establishment and points of discharge in relation to the surrounding area, residences and other permanent structures and roadways.

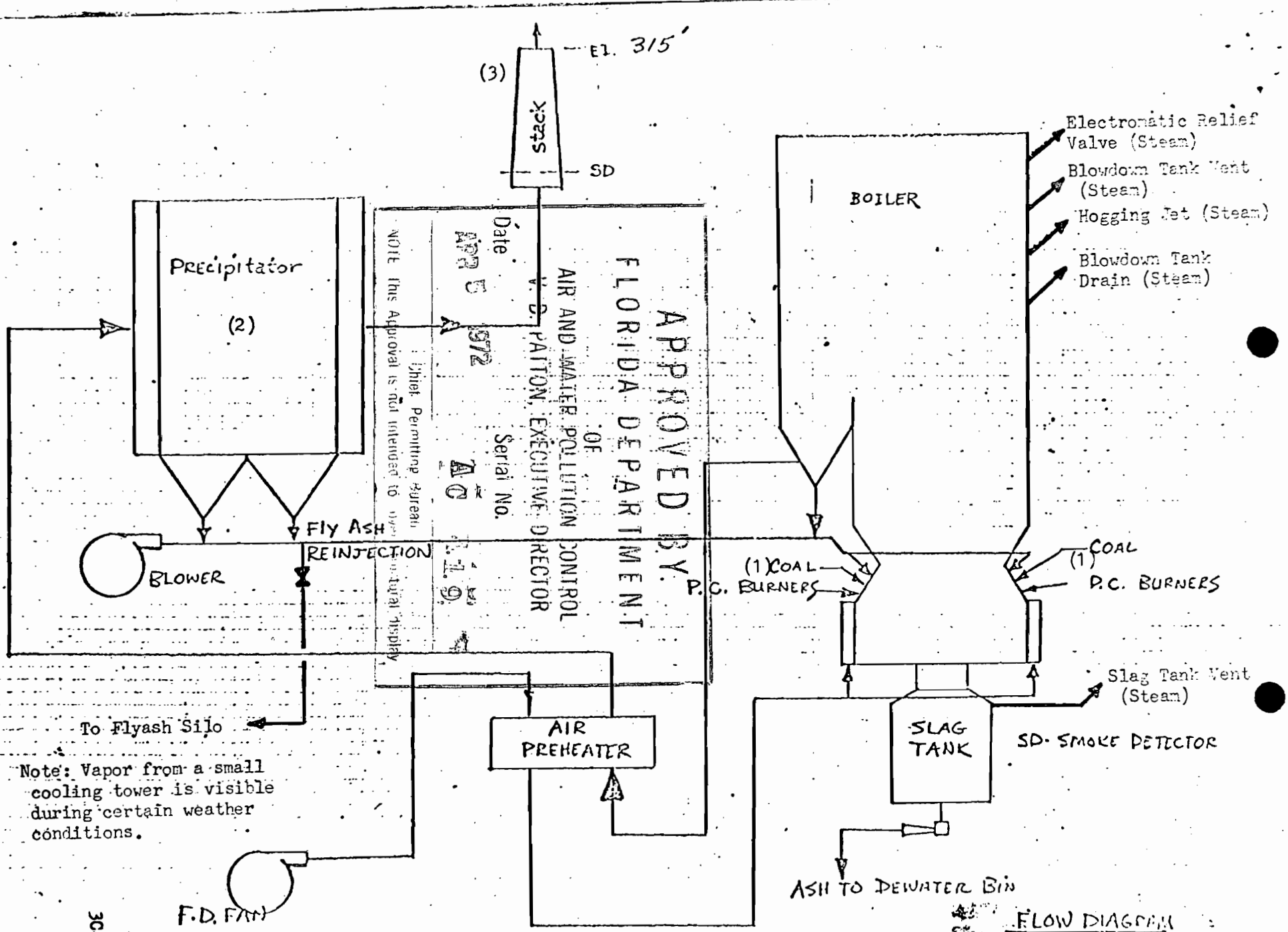
   See Attached Sheet 3C-3

I General

A. Raw Materials and Chemicals Used.

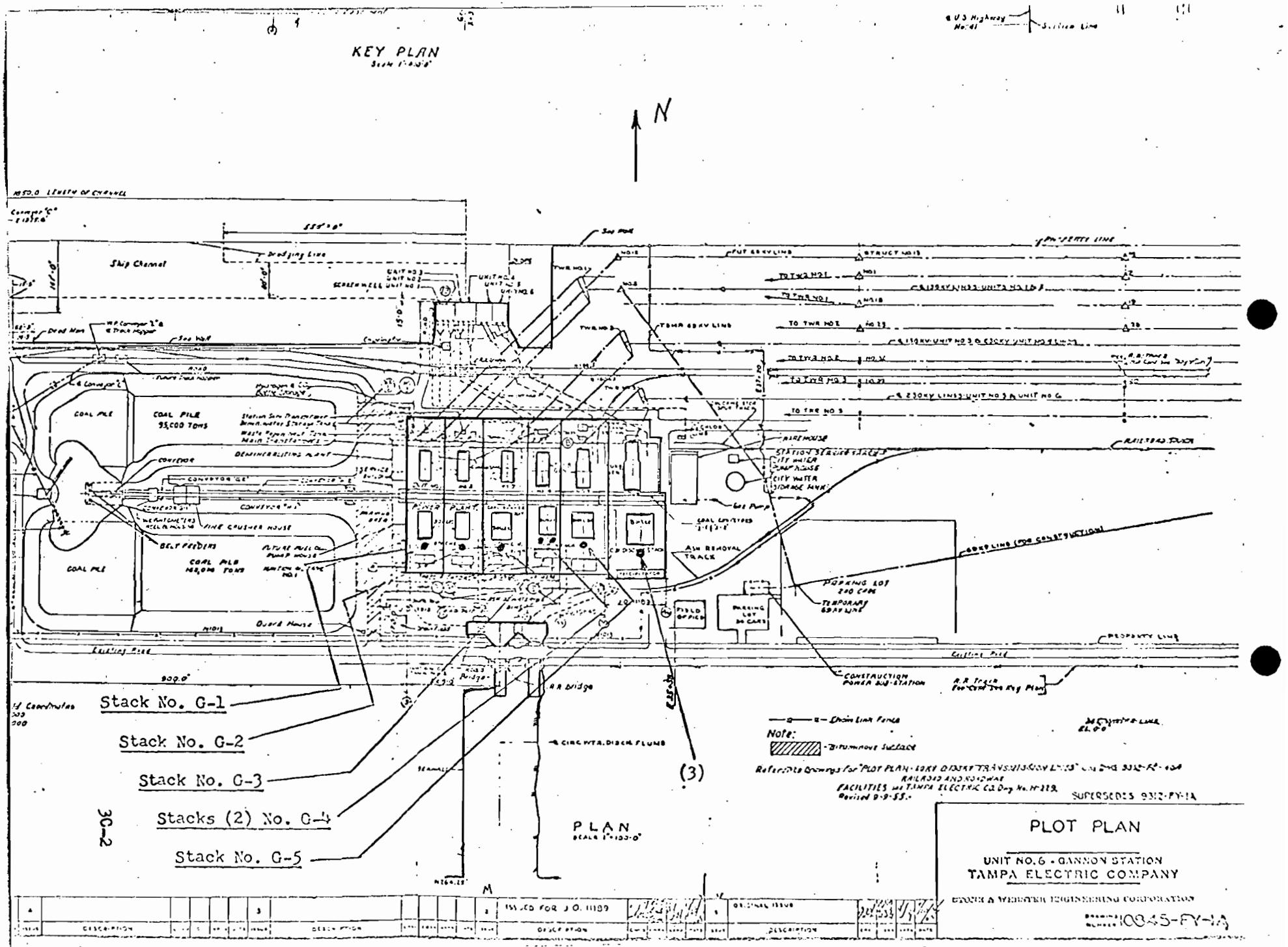
Description	Utilization Tons/day, Lbs./day, etc.	Approximate Contaminant Content		Relate to Flow Diagram
		Type	Percent Dry Weight	

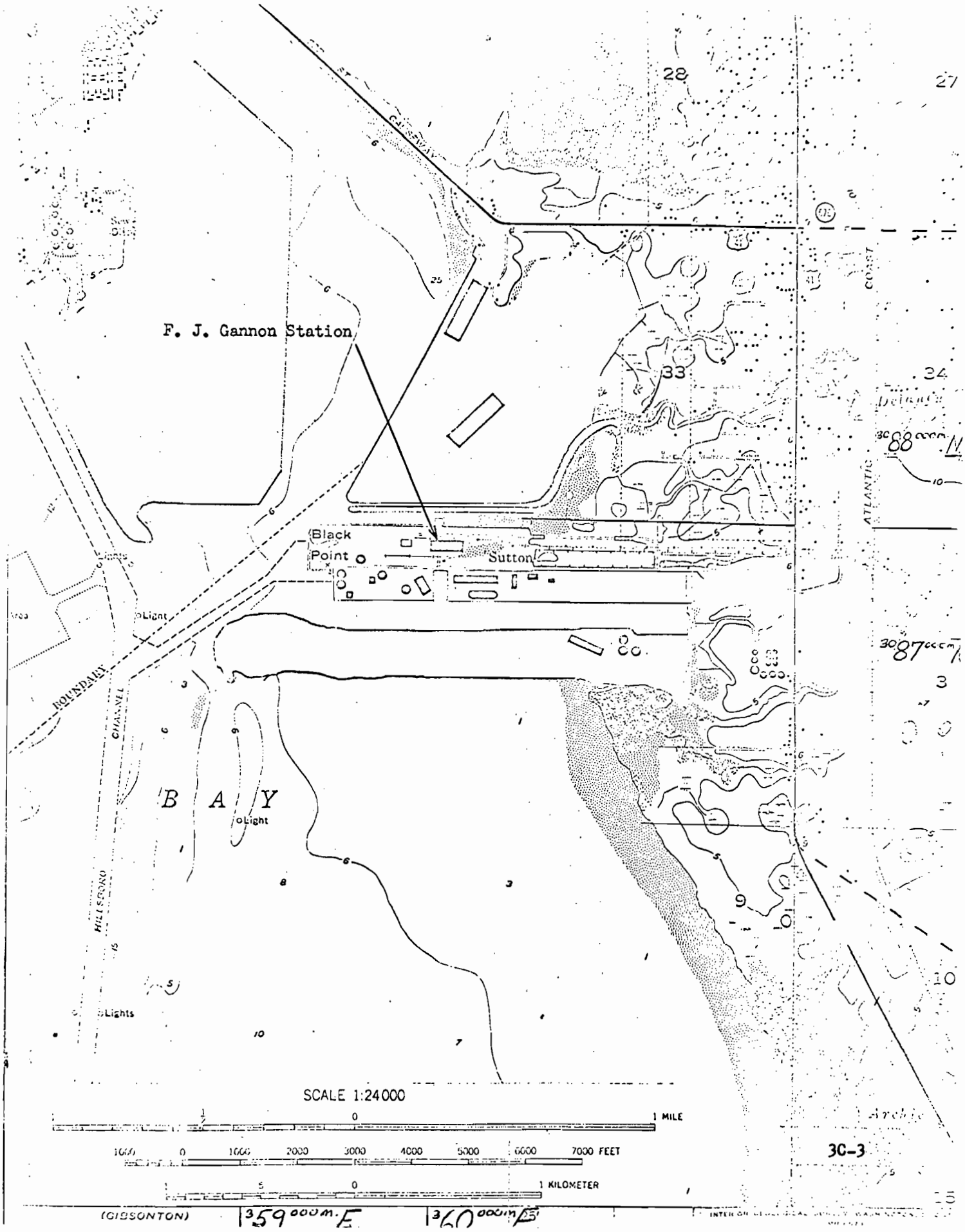
*Includes direct and indirect costs, plus client charges.



FLOW DIAGRAM
Boiler No. 6 GANNON STATION
Tampa Electric Co
Dwg. No. PD 052063-1

Best Available Copy





B. Fuels

Type (Be Specific)	Daily Consumption	Gross Maximum Heat Output	Relate to Flow Diagram
Coal	5.20 x 10^6 lb	5.85 x 10^{10} Btu/day	1

C. Products

Description	Average Daily Production (Tons/Day. Lbs/Hr. etc.)
Electricity	5,760 Mwhr/day

D. Normal operation: Hours/Day 24 hr/day Day/Week 7 days/week

If operation or process is seasonal, describe: Not Seasonal

allowable part 5850 #/day

II Identification of Air Contaminants

Compounds of:		Also –			
Chlorine	☐	Hydrocarbons	☐	Acid Mists	☐
Fluorine	☐	Smoke	☐	Odors	☐
Nitrogen	☐	Fly Ash	☒	Radioisotopes	☐
Sulfur	☐	Dusts	☐	Other _____	☐

Specific Compounds This application is for upgrading of existing particulate removal equipment only.

III Air Pollution Control Devices

Contaminant	Control Device	Relate to Flow Diagram	Operating Efficiency	Conditions (Particle Size Range, Temp. etc.)
Fly Ash	Electrostatic Precipitator	2	Greater than 99%	55.5 fps @ 291 F (1)

Provide a brief description of the control device or treatment system. Attach separate sheets giving details regarding principle of operation, manufacturer, model, size, type and capacity of control treatment device and the basis for calculating its efficiency. Show any bypasses of the control device and specify when such bypasses are to be used and under what conditions.

The electrostatic precipitator is designed to remove solid particulate matter from the flue gas leaving the boiler. A cutaway view of a typical precipitator is shown on page 5-C1.

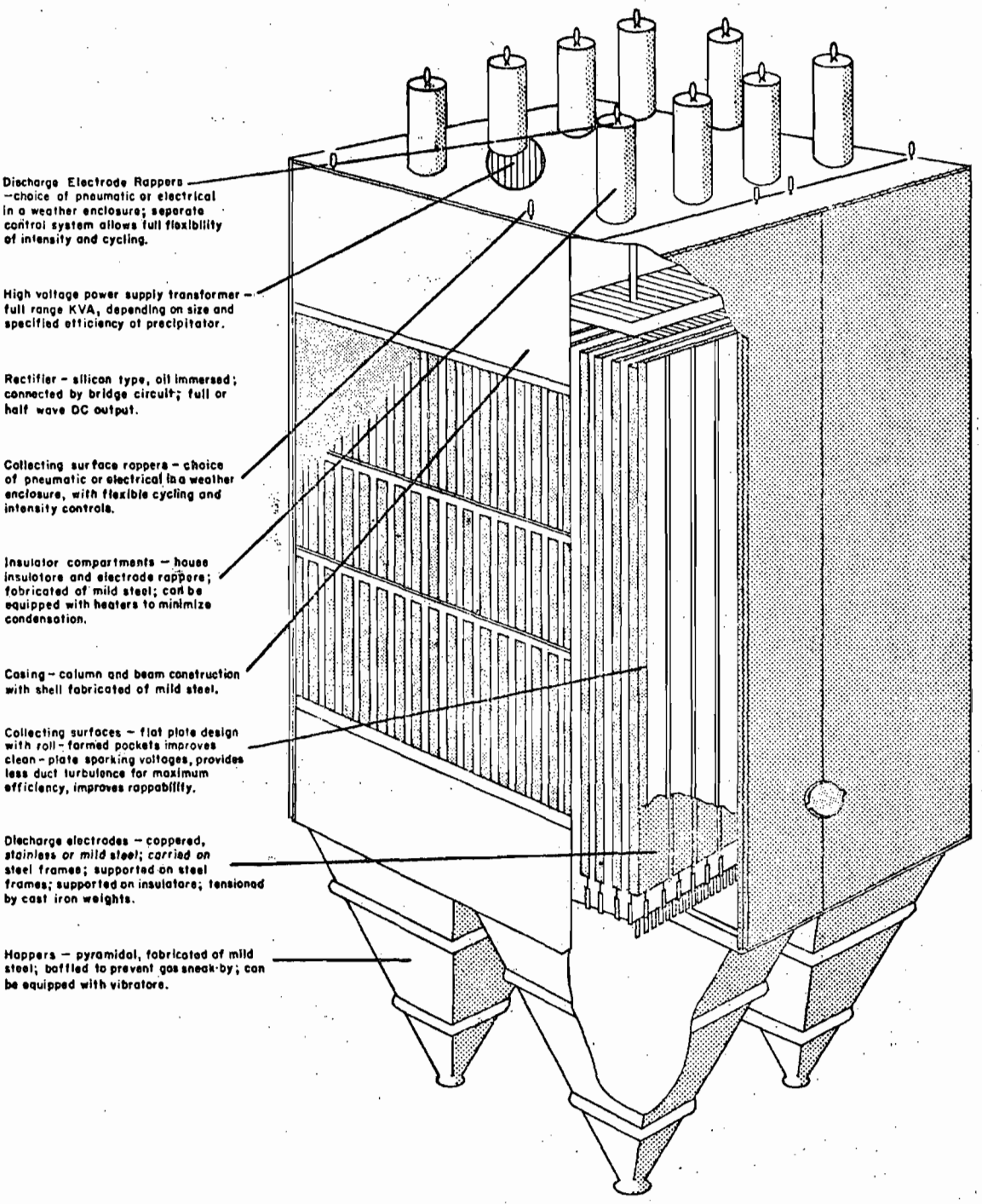
The operating principle and basis for calculation are shown on page 5-C2.

The major specifications for the precipitator are given on page 5-C3.

Notes:

(1) Exit velocity is based on average operating condition (790,000 acfm at 291 F) and a stack diameter of 17'7" ft.

Exit velocity at full load would be 88 ft/sec.



ELECTROSTATIC PRECIPITATOR

GANNON STATION - UNIT 6

TAMPA ELECTRIC COMPANY

STONE & WEBSTER ENGINEERING CORPORATION

5-C1

OPERATING PRINCIPLE OF ELECTROSTATIC PRECIPITATOR

Particles suspended in a gaseous medium enter the precipitator, passing through ionized zones around high voltage electrodes. These high voltage electrodes, through a corona effect, emit negatively charged ions into the gases surrounding the electrode.

The negatively charged gas field around each electrode ionizes passing particulates, causing the particulates to migrate to the electrode at opposite polarity.

The charged particulates gather on the grounded collector plates and lose their charge. Rappers shake loose the agglomerate, which falls into the collection hoppers for removal.

BASIS FOR CALCULATING PRECIPITATOR EFFICIENCY

A method similar to ASME Power Test Code 27 is used to determine dust loadings. Very briefly, the method is as follows:

1. Unit is based loaded (static system).

2. Velocity profile of the inlet and outlet ducts is determined using a Pitot tube, draft gage, and thermocouple.

3. Inlet and outlet ducts are sampled simultaneously and isokinetically, using Alundum thimbles as the filtering medium.

4. Amount of dust per unit time is obtained and efficiency is arrived at by using the following formula:

$$\frac{\text{Inlet dust concentration} - \text{Outlet dust concentration}}{\text{Inlet dust concentration}} \times 100 = \text{Efficiency}$$

MAJOR PRECIPITATOR SPECIFICATIONS

The precipitator shall be supplied by Research-Cottrell, Inc. It shall consist of two sections, installed in series with an existing precipitator and located between the air preheater and the existing precipitator.

The precipitator shall be sized and designed so that under any operating condition that reasonably can exist, and with one electrical section of the precipitator out of service across the entire width of the precipitator, the outlet dust loading will not exceed 0.02 grs/acf.

IV. Contaminant Balance

From contaminant content in raw materials, waste products, and manufactured products, summarize daily contaminant flow:

	Pounds Contaminant per Day	
	Input	Output
List Raw Materials:		
Ash - 13.2% fuel content as received	685,000	
List Manufactured Products:		
Electricity	N/A	N/A
List Solid Wastes:		
Ash from precipitator, economizer and slag tank		679,280
List Liquid Wastes:		
None		
Totals	685,000 679,280 5720	679,280

Airborne Wastes (Total input minus total output)

685,000 - 678,280 = 5,720 lb/day

Note: If more than one contaminant, specify each
Contaminants recovered in control devices should be shown as either a liquid or a solid waste.

V. Discharged Emissions to Atmosphere

A. Discharge Points and Design Conditions

Discharge Point Description	Relate to Flow Diagram	Height above Ground (ft.)	Cross Sect. Area (sq. ft.)	Periods of Flow Hrs./ Day	Hrs./ Wk.	Temp. of Discharge (°F)
Stack	3	306	254	24	168	291
Silo Air Vent		110	N/A	24	168	200
Steam Safety Valves		15 @ 200 3 @ 120	N/A	Emergency only		212
Blow-off Tank Steam Vent		118	N/A	24	168	212
Cooling Tower		115	N/A	24	168	Ambient
Slag Tank Air Vent		2 @ 210	N/A	24	168	160

B. Tabulation of Discharged Contaminants

Discharge Point — Relate to Flow Diagram	Flow Rate* at Std. Cond. (cfm)	Total Contaminants Discharged: Particulates Gr/ft3 (Std.Cond.)*	Particulates lbs./ Day	Other Contaminants (F^-, SO_X, NO_X etc.) Gr/ft3 (Std. Cond.)*	Other Contaminants lbs/ Day	Other Contaminants Gr/ft3 (Std.Cond)	Other Contaminants lbs/ Day
Stack-A							
Avg. Oper.Cond. with Reinjection	556,000	< .05	<5,720				
Peak Load with Reinjection	941,000	< .05					
Totals				As Requested by Permit Division lb Contaminate/10^6 Btu Particulates .098			

*Standard conditions are 20 C (68F) and 1 atm.

VI. Treatment and Disposal of Liquid and Solid Waste

1. Identify the contaminants which will be discharged as liquid or solid wastes.
   a. Dry fly ash to ash silo from precipitator.
   b. Bottom slag (ash) from furnace.
2. Describe the treatment and disposal of liquid and solid wastes. Indicate the concentrations and volume of individual contaminants in treated wastes before disposal.

   a. Dry fly ash is stored in ash silo and trucked from site.

   b. The bottom slag is tapped from the bottom of the furnace as a molten liquid. It falls into a tank of water where it rapidly cools and shatters into small pieces (approximately $\frac{1}{4}$ in. in diameter). This water-solid mixture is pumped to a dewatering bin where the water is drained off.

      The slag is then carried off by truck to a stackpiling area on the power plant site.

      The solid slag is hard, glassy, insoluble in water, and chemically inert. A typical mineral analysis of slag is as follows:

      SiO_2 - 41.06%, Fe_2O_3 - 27.46%, Al_2O_3 - 17.00%

      CaO - 5.47%, SO_3 - 4.91%, K_2O - 1.88%

      TiO_2 - .83%, M_gO - .67%, P_2O_5 - .37%

      Na_2O - 0.25%, Undetermined - .10%

      The solid wastes originating from precipitator, economizer and slag tank total 679,280 lb/day.

Permit File Scanning Request from Lynn

Priority: ☐-ASAP (Public Records Request, etc.) ☑-Place in Normal Scanning Queue

Facility ID	Project#	Type	PSD #	Submittal Date	Batch #
0570040	001	AC			

☑ File Approved For Disposal ☐ Correspondence ☐ Intent ☐ Permit ☐ Draft (Title V)
☐ Return File to BAR ☐ Amendment ☑ Application ☐ OGC ☐ Proposed (Title V)

Document Date 10-10-91, 10-10-86, 9-17-81, 8-28-78

STATE OF FLORIDA
DEPARTMENT OF AIR AND WATER POLLUTION CONTROL

CONSTRUCTION PERMIT

FOR Tampa Electric Co.
P. O. Box 111
Tampa, Fla. 33601

PERMIT NO. AC-419 DATE April 5, 1972

PURSUANT TO THE PROVISION OF SECTION 403.061 (16) OF CHAPTER 403, FLORIDA STATUTES AND CHAPTER 17-4 FLORIDA ADMINISTRATIVE CODE, THIS PERMIT IS ISSUED TO:
R. D. Welch, Director, Power Plant Engineering and Construction

FOR THE CONSTRUCTION OF THE FOLLOWING:
Upgrading of Electrostatic Precipitator Serving Unit No. 6 to Include Two New Research-Cottrell, Inc. Precipitator Sections in Series with Existing Precipitator.

LOCATED AT: F. J. Gannon Station, Port Sutton Rd., Tampa. ~~17.0360~~ 7360100 .2-3087.5 km

IN ACCORDANCE WITH THE APPLICATION DATED Mar. 1, 1972
AND IN CONFORMITY WITH THE STATEMENTS AND SUPPORTING DATA ENTERED THEREIN, ALL OF WHICH ARE FILED WITH THE DEPARTMENT AND ARE CONSIDERED A PART OF THIS PERMIT.

THIS PERMIT SHALL BE EFFECTIVE FROM THE DATE OF ITS ISSUANCE UNTIL Nov. 15, 1973 AND SHALL BE SUBJECT TO ALL APPLICABLE LAWS OF THE STATE AND THE RULES AND REGULATIONS OF THE DEPARTMENT.

XXXXXXXXXXXXXXXX
W. E. Linne, Acting Chief
BUREAU OF PERMITTING

Vincent D. Patton
VINCENT D. PATTON
EXECUTIVE DIRECTOR

FORM 1-J

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301

AO29-203512

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

APPLICATION FOR RENEWAL OF PERMIT TO OPERATE AIR POLLUTION SOURCE(S)

If major alterations have occurred, the applicant should complete the Standard Air Permit Application Form.

Source Type: Air Pollution Renewal of DER Permit No. A029-125992

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; Peaking Unit No. 2, Gas Fired):

Gannon Station Unit Six

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.

1. Attach a check made payable to the Department of Environmental Regulation in accordance with operation permit fee schedule set forth in Florida Administrative Code Rule 17-4.05. Attached.

2. Have there been any alterations to the plant since last permitted? [ ] Yes [X] No
If minor alterations have occurred, describe on a separate sheet and attach.

3. Attach the last compliance test report required per permit conditions if not submitted previously. Submitted 6/7/91

4. Have previous permit conditions been adhered to? [X] Yes [ ] No If no, explain on a separate sheet and attach.

5. Has there been any malfunction of the pollution control equipment during tenure of current permit? [X] Yes [ ] No If yes, and not previously reported, give brief details and what action was taken on a separate sheet and attach. Previously addressed in quarterly reports.

6. Has the pollution control equipment been maintained to preserve the collection efficiency last permitted by the Department? [X] Yes [ ] No

7. Has the annual operating report for the last calendar year been submitted? [X] Yes [ ] No If no, please attach.

A. Raw Materials and Chemical Used in Your Process: ● Applicable

Description	Contaminant Type	Contaminant Wt %	Utilization Rate lbs/hr

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

C. Fuels

Type (Be Specific)	Consumption* Avg/hr*	Consumption* Max/hr**	Maximum Heat Input (MMBTU/hr)
Coal	242396*	302,800	3798

D. Normal Equipment Operating Time: hrs/day 24; days/wk 7; wks/yr 52; hrs/yr (power plants only) 8760; if seasonal, describe _____

* Average value, 1989 and 1990 emissions inventory

The undersigned owner or authorized representative*** of Tampa Electric Company is fully aware that the statements made in this application for a renewal of a permit to operate an air pollution source are true, correct and complete to the best of his knowledge and belief. Further, the undersigned agrees to maintain and operate the pollution source and pollution control facilities in such a manner as to comply with the provisions of Chapter 403, Florida Statutes, and all the rules and regulations of the Department. He also understands that a permit, if granted by the Department, will be non-transferable and he will promptly notify the Department upon sale or legal transfer of the permitted facility.

*During actual time of operation.
**Units: Natural Gas-MMCF/hr; Fuel Oils-barrels/hr; Coal-lbs/hr.
***Attach letter of authorization if not previously submitted

Lynn F. Robinson
Signature, Owner or Authorized Representative (Notarization is mandatory)

Lynn F. Robinson, Manager, Environmental Planning
Typed Name and Title

P.O. Box 111
Address

Tampa FL 33601-0111
City State Zip

10/04/91 (813) 228-4841
Date Telephone No.

ER Form 17-1.202(4)
Effective November 30, 1982

STATE OF FLORIDA
COUNTY OF HILLSBOROUGH

Sworn to and subscribed before me this 4th day of October, 1991.

Diana C. Burleigh
Notary Public
Commission Expires:

NOTARY PUBLIC STATE OF FLORIDA
MY COMMISSION EXP. DEC. 4, 1993
BONDED THRU GENERAL INS. UND.

Professional Engineer in Florida (as required by Subsection 17-4.05(3), F.A.C.)

This is to certify that the engineering features of this air 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 judgement, that the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statuates of the State of Florida and the rules and the 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 maintainance and operation of the pollution control facilities and, if applicable, pollution sources.

Signed _____

Date: 10-2-91 Telephone No. 228-4111

David W. Ross
Name (Please type)

Tampa Electric Company
Company Name (Please type)

P.O. Box 111, Tampa, FL 33601-0111
Mailing Address (Please Type)

Affix seal here

Florida Registration No. 42720

This certification is only applicable for the permit renewal application of Tampa Electric Company's F.J. Gannon Station Unit 6.

F.J. Gannon Station - Unit #6

Operation and Maintenance Plan for the
Processing System and Particulate Control/Collection System

INTRODUCTION

F.J. Gannon Station is owned and operated by Tampa Electric Company. The station is located on the eastern shore of Hillsborough Bay at Port Sutton. The station consists of six coal fired, steam electric generating units.

Unit 6 was placed in service in 1967. The boiler was manufactured by the Riley Stoker Corporation and is of the "wet" bottom, opposed firing type. Boiler exhaust gases pass through an electrostatic precipitator prior to discharge through a 306 foot stack.

PROCESS SYSTEM PERFORMANCE PARAMETERS

The Unit 6 boiler burns low sulfur pulverized coal. The design fuel consumption at maximum continuous rating is 151.4 tons/hr., operating pressure is 2600 psi and operating temperature is 1000°F. Pressure and temperature are continuously monitored and recorded on control room charts.

The maximum design steam capacity of the boiler is 2,700,000 pounds per hour. Steam flow is recorded on a continuous basis.

PARTICULATE CONTROL EQUIPMENT DATA

Gannon Unit 6 is equipped with an electrostatic precipitator for the control of particulate emissions. The precipitator, model number G.O. 3118 was manufactured by Research Cottrell, Inc. Fly ash collected by the precipitator is either pneumatically transported to a storage silo for sale or reinjected into the boiler. Fly ash is reinjected into the boiler when the silo approaches its maximum storage capacity. Important design information and data applicable to the particulate control system are listed below.

Precipitator Data	G.O. 3129
Design Flow Rate	1,350,000 cfm
Primary Voltage	430-480 volts
Primary Current	241 amps
Secondary Voltage	53.5 kilovolts
Secondary Current	1500 milliamps
Design Efficiency	98.5%
Pressure Drop	0.5 inches of H_2O (avg.)
Static Pressure	+15 inches of H_2O (avg.)
Rapper Frequency	1/2.0 minutes (avg.)
Rapper Duration	Impact
Temperature	293°F (avg.)

Precipitator (ESP) performance parameters are recorded routinely on a daily basis. The information recorded includes primary voltage, primary current and secondary current. Fly ash hopper high levels are alarmed in the control room.

MAINTENANCE AND INSPECTION SCHEDULES

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. Typically, planned outages are scheduled during non-peak load periods such as the spring or fall.

The Unit 6 particulate control system receives regular preventive maintenance. The following preventive maintenance procedures are performed on an monthly basis.

- Inspect penthouse pressurizing fan filters. Replace as needed.
- Check rapper and transformer/rectifier controls.

The following preventive maintenance procedures are performed on a daily basis.

- Inspection of system controls. Make minor adjustments as needed.
- Rapper operation is checked daily through automated system controls.

Should these procedures indicate repairs are necessary, maintenance job requests are initiated. All records are maintained for a minimum of two years.

TAMPA ELECTRIC
A TECO ENERGY COMPANY

TO WHOM IT MAY CONCERN:

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

Very Truly Yours,

William N. Cantrell
Vice President
Energy Resources Planning

sn/GG398

RECD
OCT 07 1991
ENV.

TAMPA ELECTRIC COMPANY
P.O. Box 111 Tampa, Florida 33601-0111 (813) 228-4111

TAMPA ELECTRIC
A TECO ENERGY COMPANY

October 8, 1986

RE: Gannon Station Unit No. 6 - Air Operations Permit Renewal Application

TO WHOM IT MAY CONCERN:

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

Very truly yours,

Heywood A. Turner
Senior Vice President
Generation

WAT/ff

TAMPA ELECTRIC COMPANY
P.O. Box [illegible]

PAID OCT 10 1986

A029-125992

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301

RECEIVED
OCT 9 1986
D.E.R.

BOB GRAHAM
GOVERNOR

VICTORIA TSCHINKEL
SECRETARY

OCT 10 1986

SOUTH WEST DISTRICT
TAMPA

APPLICATION FOR RENEWAL OF PERMIT TO OPERATE AIR POLLUTION SOURCE(S)

If major alterations have occurred, the applicant should complete the Standard Air Permit Application Form.

Source Type: Air Pollution Renewal of DER Permit No. A029-47727

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; Peaking Unit No. 2, Gas Fired):

Gannon Station Unit 6

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.

1. Attach a check made payable to the Department of Environmental Regulation in accordance with operation permit fee schedule set forth in Florida Administrative Code Rule 17-4.05.

2. Have there been any alterations to the plant since last permitted? [ ] Yes [X] No
If minor alterations have occurred, describe on a separate sheet and attach.

3. Attach the last compliance test report required per permit conditions if not submitted previously. Submitted 7/31/86

4. Have previous permit conditions been adhered to? [X] Yes [ ] No If no, explain on a separate sheet and attach.

5. Has there been any malfunction of the pollution control equipment during tenure of current permit? [X] Yes [ ] No If yes, and not previously reported, give brief details and what action was taken on a separate sheet and attach. Previously addressed in quarterly reports.

6. Has the pollution control equipment been maintained to preserve the collection efficiency last permitted by the Department? [X] Yes [ ] No

7. Has the annual operating report for the last calendar year been submitted? [X] Yes [ ] No If no, please attach.

5. Please provide the following information if applicable:

A. Raw Materials and Chemical Used in Your Process: Not Applicable

Description	Contaminant Type	%Wt	Utilization Rate	lbs/hr

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

C. Fuels

Type (Be Specific)	Consumption* Avg/hr*	LBS/HR Max/hr**	Maximum Heat Input (MMBTU/hr)
Coal	234,500*	302,800	3798

D. Normal Equipment Operating Time: hrs/day 24; days/wk 7; wks/yr 52; hrs/yr (power plants only) 8760; if seasonal, describe _____

*Average value, 1984 and 1985 emissions inventories.

The undersigned owner or authorized representative*** of Tampa Electric Company is fully aware that the statements made in this application for a renewal of a permit to operate an air pollution source are true, correct and complete to the best of his knowledge and belief. Further, the undersigned agrees to maintain and operate the pollution source and pollution control facilities in such a manner as to comply with the provisions of Chapter 403, Florida Statutes, and all the rules and regulations of the Department. He also understands that a permit, if granted by the Department, will be non-transferable and he will promptly notify the Department upon sale or legal transfer of the permitted facility.

*During actual time of operation.
**Units: Natural Gas-MMCF/hr; Fuel Oils-barrels/hr; Coal-lbs/hr.
***Attach letter of authorization if not previously submitted

A. Spencer Autry

Signature, Owner or Authorized Representative
(Notarization is mandatory)

A. Spencer Autry, Manager, Environmental Planning
Typed Name and Title

P.O. Box 111
Address

Tampa Florida 33601
City State Zip

10/8/86 813/228-4111
Date Telephone No.

Sworn to and subscribed before me this 8th day of October, 19 86.

Diana P. Hofer
NOTARY PUBLIC STATE OF FLORIDA
MY COMMISSION EXP. NOV 14,1989
BONDED THRU GENERAL INS. UND.

F.J. GANNON STATION - UNIT #6

Operation and Maintenance Plan for the
Processing System and Particulate Control/Collection System

INTRODUCTION

F.J. Gannon Station is owned and operated by Tampa Electric Company. The station is located on the eastern shore of Hillsborough Bay at Port Sutton. The station consists of six coal fired, steam electric generating units.

Unit 6 was 235 MW placed in service in 1967. The boiler was manufactured by the Riley Stoker Corporation and is of the "wet" bottom, opposed firing type. Boiler exhaust gases pass through an electrostatic precipitator prior to discharge through a 306 foot stack.

PROCESS SYSTEM PERFORMANCE PARAMETERS

The Unit 6 boiler burns low sulfur pulverized coal. The design fuel consumption at maximum continuous rating is 151.4 tons/hr., operating pressure is 2600 psi and operating temperature is 1000°F. Pressure and temperature are continuously monitored and recorded on control room charts.

The maximum design steam capacity of the boiler is 2,700,000 pounds per hour. Steam flow is recorded on a continuous basis.

PARTICULATE CONTROL EQUIPMENT DATA

Gannon Unit 6 is equipped with an electrostatic precipitator for the control of particulate emissions. The precipitator, model number G.O. 3118 was manufactured by Research Cottrell, Inc. Fly ash collected by the precipitator is either pneumatically transported to a storage silo for sale or reinjected into the boiler. Fly ash is reinjected into the boiler when the silo approaches its maximum storage capacity. Important design information and data applicable to the particulate control system are listed below.

Precipitator Data	G.O. 3118
Design Flow Rate	1,350.000 cfm
Primary Voltage	430-480 volts
Primary Current	241 amps
Secondary Voltage	53.5 kilovolts
Secondary Current	1500 milliamps
Design Efficiency	98.5%
Pressure Drop	0.5 inches of H_2O (average)
Static Pressure	+15 inches of H_2O (average)
Rapper Frequency	1/2.0 minutes (average)
Rapper Duration	Impact
Temperature	290°F (average)

Precipitator (ESP) performance parameters are recorded routinely on a daily basis. The information recorded includes primary voltage, primary current and secondary current. This information is kept in the precipitator technician's office. Fly ash hopper high levels are alarmed in the control room.

MAINTENANCE AND INSPECTION SCHEDULES

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. Typically, planned outages are scheduled during non-peak load periods such as the spring or fall.

The Unit 6 particulate control system receives regular preventive maintenance. The following preventive maintenance procedures are performed on a monthly basis.

- Inspect penthouse pressurizing fan filters. Replace as needed.
- Observe operation of all rappers and vibrators. Check rapper and transformer/rectifier controls.

The following preventive maintenance procedures are performed on a daily basis.

- Inspection of system controls. Make minor adjustments as needed.

Should these procedures indicate repairs are necessary, maintenance job requests are initiated. All records are maintained for a minimum of two years.

267724

CHECK NO: 67724

63-27
631

TAMPA ELECTRIC
A TECO ENERGY COMPANY

POST OFFICE BOX 111
TAMPA, FLORIDA 33601

PAY:

DATE 10 08 86

FIVE HUNDRED AND NO/100 DOLLARS ****** $ ********500.00

TO THE ORDER OF FLORIDA DEPT OF ENVIRONMENTAL REGULATION

J. Y. Woodward

ONLY ONE SIGNATURE REQUIRED ON CHECKS OF $2500.00 OR LESS

NCNB NATIONAL BANK OF FLORIDA • TAMPA, FLORIDA

[redacted]

THE ACCOMPANYING CHECK IS IN FULL PAYMENT OF ITEMS BELOW - DETACH BEFORE CASHING

INVOICE NO.	DATE	VOUCHER	GROSS AMOUNT	DISCOUNT	NET AMOUNT
100686A	100686	226889	PERMIT 500.00		500.00

CHECK NO.	DATE	VENDOR NO.	VENDOR NAME	TOTAL AMOUNT
-S- 67724	100886	FL0004	FLORIDA DEPT OF ENVIR	500.00

TAMPA ELECTRIC COMPANY • P.O. BOX 111 TAMPA, FL. 33601 • (813) 228-4111

67727
CHECK NO.
67727

TAMPA ELECTRIC
A TECO ENERGY COMPANY

POST OFFICE BOX 111
TAMPA, FLORIDA 33601

63-27
631

PAY:

DATE 10 08 86

THREE HUNDRED FORTY FIVE AND NO/100 ** $ ********345.00
DOLLARS **********

TO THE ORDER OF HILLSBOROUGH COUNTY BOARD OF COUNTY COMMISSIONERS

J. Y. Woodward

ONLY ONE SIGNATURE REQUIRED ON CHECKS OF $2500.00 OR LESS

NCNB NATIONAL BANK OF FLORIDA • TAMPA, FLORIDA

[redacted]

THE ACCOMPANYING CHECK IS IN FULL PAYMENT OF ITEMS BELOW - DETACH BEFORE CASHING

INVOICE NO.	DATE	VOUCHER	GROSS AMOUNT	DISCOUNT	NET AMOUNT
100686A	100686	226887	PERMIT 345.00		345.00

CHECK NO.	DATE	VENDOR NO.	VENDOR NAME	TOTAL AMOUNT
-S- 67727	100886	HIL076	HILLSBOROUGH COUNTY B	345.00

TAMPA ELECTRIC COMPANY • P.O. BOX 111 TAMPA, FL. 33601 • (813) 228-4111

Best Available Copy

A029-47727

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

PAID SEP 1 7 1981

SEP 15 1981
H.C.E.P.C.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

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 6

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 a coal fired boiler which generates steam to drive a turbine and produce electricity. An electrostatic precipitator and low sulfur coal are utilized to achieve compliance.

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.)

Precipitator Upgrade	$7,453,000
Conversion to Low Sulfur Coal	$ 755,000

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

A029-2470	Apr. 5, 1976 - Apr. 5, 1978
A029-12601	Oct. 23, 1978 - Oct. 15, 1983

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-F

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	9115	20,261	2.4 lbs/MMBTU	9115	9115	39925	Fig 1
Particulates	379.8	189.4	0.1 lbs/MMBTU	379.8	189900	831762	

*From 1980 Emission Inventory

D. Control Devices: (See Section V, Item 4)

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles[5] Size Collected (in microns)	Basis for Efficiency (Sec. V, It[5]
Electrostatic Precipitator	Particulate	99.8	N.A.	Design

[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

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
Coal	241,080	302,800	3798

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

Fuel Analysis:

Percent Sulfur: 1.3% Percent Ash: 9.5

Density: Not Applicable lbs/gal Typical Percent Nitrogen: 1.3

Heat Capacity: 12,500 BTU/lb Not Applicable 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.

Fly Ash- Collected and Pneumatically transferred to a storage silo for sale or reinjected into the boiler. Slag - Hydraulically sluiced to dewatering bins for sale.

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

Stack Height: 306 ft. Stack Diameter: 17.6 ft.

Gas Flow Rate: 1,120,000 ACFM Gas Exit Temperature: 292 °F.

Water Vapor Content: 5.2 % Velocity: 76.7 FPS

SECTION IV: INCINERATOR INFORMATION

Not Applicable

Type of Waste	Type 0 (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 (°F)
			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.

(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.

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.

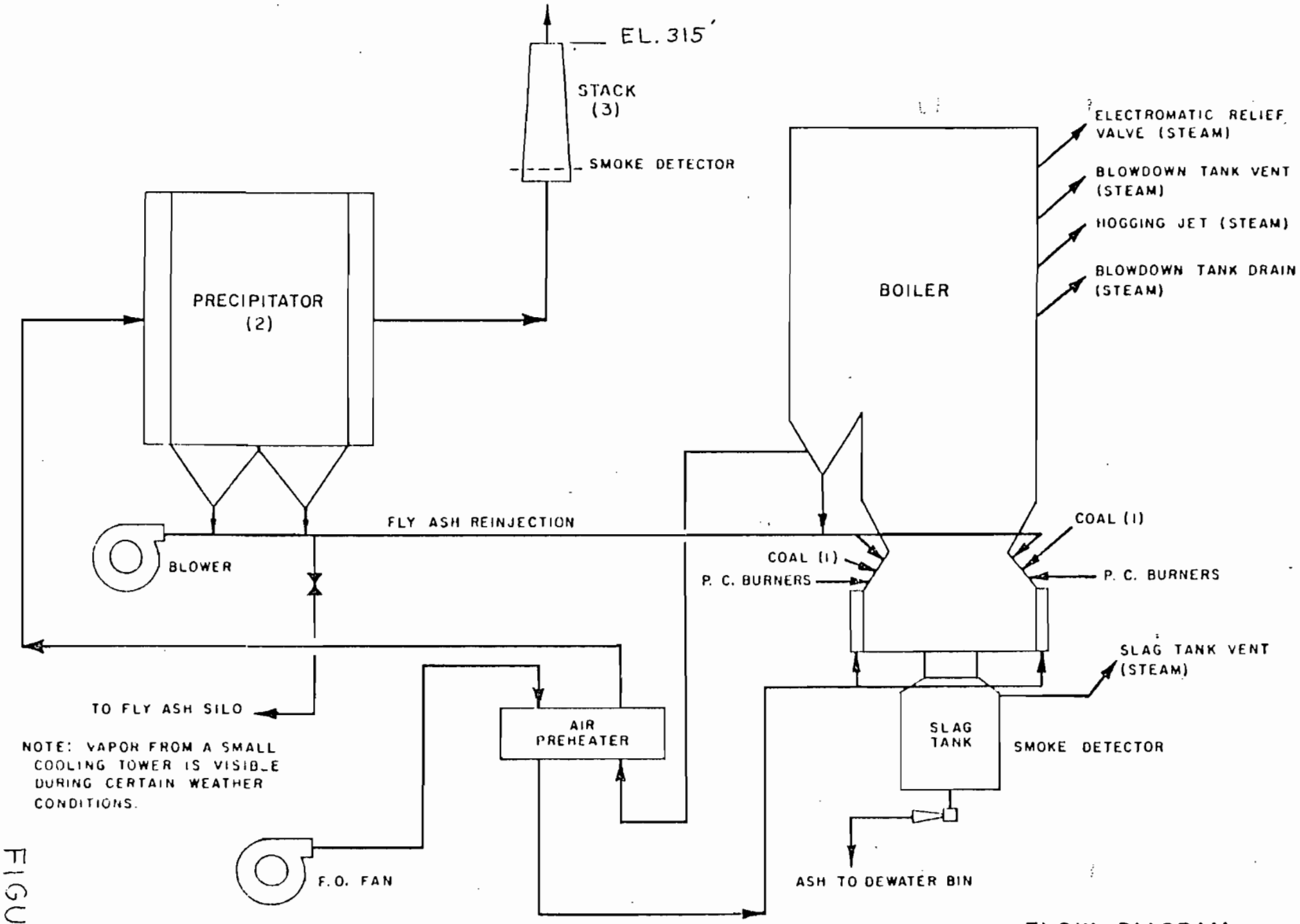


FIGURE 1

FLOW DIAGRAM
GANNON STATION-UNIT 6
TAMPA ELECTRIC COMPANY

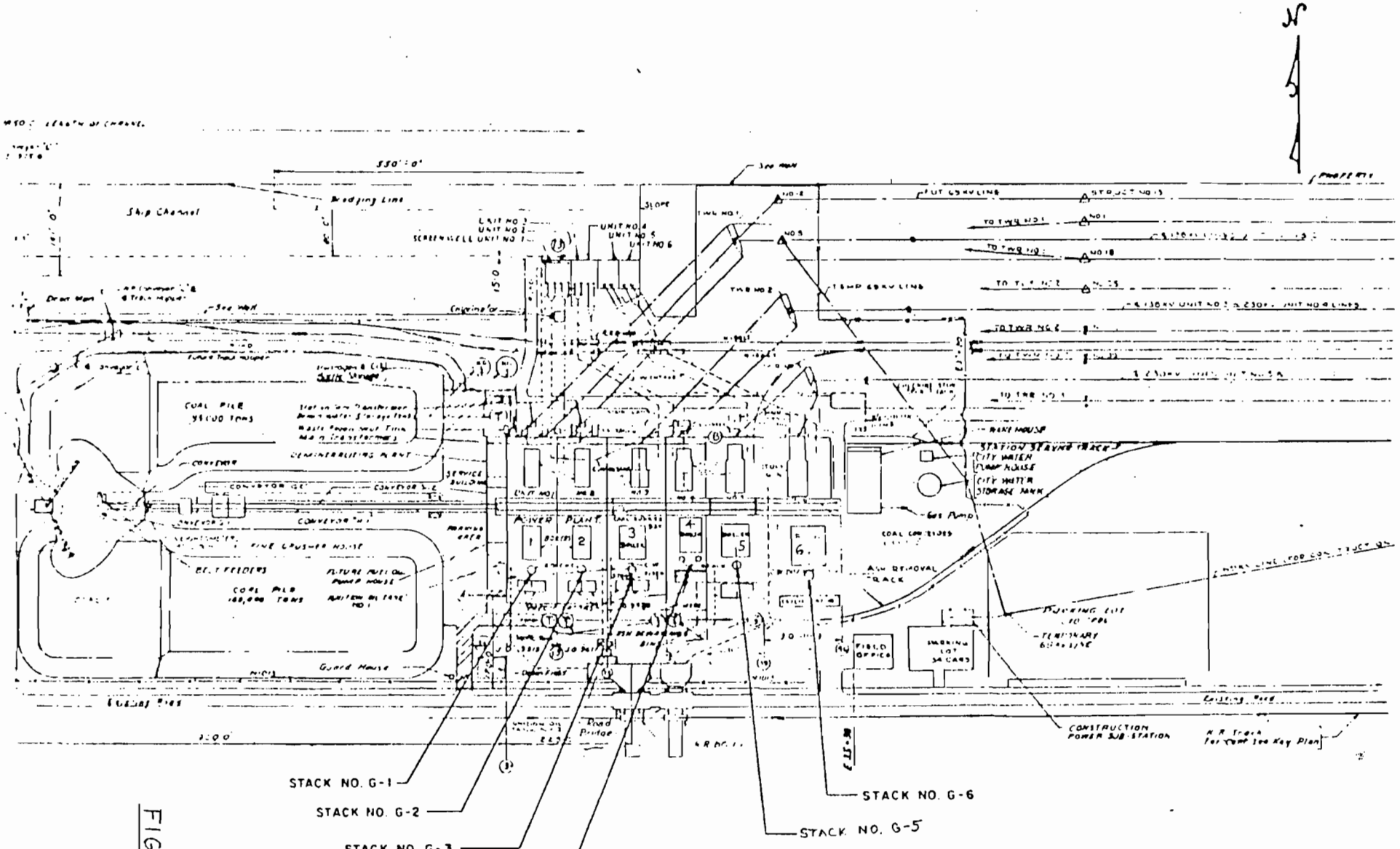


FIGURE 2

PLOT PLAN
GANNON STATION
TAMPA ELECTRIC COMPANY
STONE & WEBSTER ENGINEERING CORPORATION
3-C2

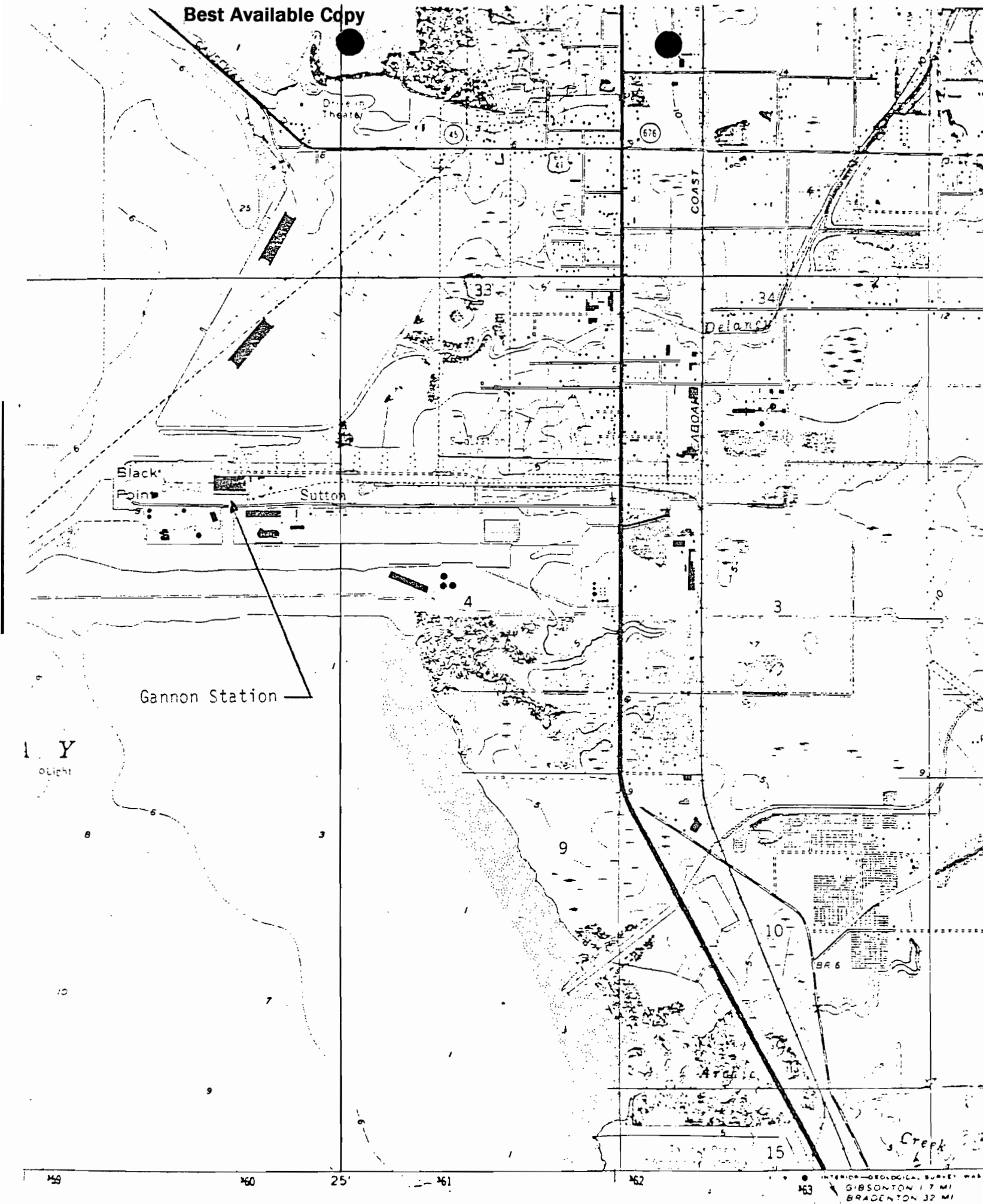


FIGURE 3

ATTACHMENT

GANNON 6

CALCULATIONS

- Maximum/Allowable Emissions

SO_2 $\frac{2.4 \text{ lbs. } SO_2}{\text{MMBTU}} \times \frac{3798 \text{ MMBTU}}{\text{HOUR}} = 9115 \frac{\text{lbs. } SO_2}{\text{HOUR}}$

Particulate $\frac{0.1 \text{ lbs}}{\text{MMBTU}} \times \frac{3798 \text{ MMBTU}}{\text{HOUR}} = 379.8 \frac{\text{lbs. Part}}{\text{HOUR}}$

- Potential Emissions

SO_2 $\frac{\text{lbs. } SO_2}{\text{HOUR}} \times \frac{8760 \text{ Hour}}{\text{YEAR}} \times \frac{1 \text{ Ton}}{2000 \text{ lbs.}} = 39{,}925 \frac{\text{Tons } SO_2}{\text{YEAR}}$

Particulate

$$\frac{379.8 \text{ lbs. Part.}}{\text{HOUR}} \times \frac{8760 \text{ Hour}}{\text{YEAR}} \times \frac{1 \text{ Ton}}{2000 \text{ lbs.}} \times \frac{1}{1-0.998}$$

$$= 831{,}762 \frac{\text{Tons Part.}}{\text{YEAR}} \text{ or } \frac{189{,}900 \text{ lbs.}}{\text{HOUR}}$$

- 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 - UNIT 6

Operation and Maintenance Plan For The Processing System and Particulate Control/Collection Systems

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.

Unit 6 was placed in service in 1967 with a generator nameplate capacity of 414MW. The boiler was manufactured by the Riley Stoker Corporation and is of the "wet" bottom, opposed firing type. Boiler exhaust gases pass through an electrostatic precipitator prior to discharge through a 306' high stack.

Process System Performance Parameters

The Unit 6 boiler burns low sulfur pulverized coal. The design fuel consumption at 100% rating is 151.4 tons per hour. Actual fuel input is monitored on a daily basis.

The maximum design steam capacity of the boiler is 2,700,000 pounds per hour. Steam flow is recorded on a continuous basis.

Particulate Control Equipment Data

Gannon Unit 6 is equipped with an electrostatic precipitator for the control of particulate matter emissions. The precipitator, model number G.O.3118, was manufactured by Research Cottrell Incorporated. Flyash collected by the precipitator is either reinjected into the boiler or pneumatically transported to a storage silo for sale. Important design information and data applicable to the particulate control system are listed below:

Design Flow Rate	1,350,000 cfm
Primary Voltage	430-480 volts
Primary Current	241 amps
Secondary Voltage	53.5 volts
Secondary Current	1500 milliamps
Design Efficiency	98.5%
Pressure Drop	0.5 inches of H_2O
Static Pressure	±15 inches of H_2O
Rapper Frequency	1/2 minutes
Rapper Duration	Impact
Temperature	290° F

Particulate Control Equipment Data Performance Parameters

Precipitator performance parameters are recorded routinely on a daily basis. The information recorded includes primary voltage, primary current, secondary current, and spark rate. This information is logged for each section of the precipitator.

Maintenance and Inspection Schedules

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.

The Unit 6 particulate control system receives regular preventive maintenance. The following preventive maintenance procedures are performed on a weekly basis:

- Inspect penthouse pressurizing fan filters. Replace as needed.
- Observe operation of all rappers and vibrators weekly. Check lift of rappers, intensity of vibrators and sequence of operation.

The following preventive maintenance procedures are performed on a daily basis:

- Inspect system controls. Make minor adjustments as needed.
- Check operation of inlet duct distribution plate rappers.

Should these procedures indicate repairs are necessary, maintenance job requests are initiated.

F.J. GANNON STATION - UNIT 6

Operation and Maintenance Plan For The Processing System and Particulate Control/Collection Systems

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Rapper Duration	Impact
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The following preventive maintenance procedures are performed on a daily basis:

- Inspect system controls. Make minor adjustments as needed.
- Check operation of inlet duct distribution plate rappers.

Should these procedures indicate repairs are necessary, maintenance job requests are initiated.

D.E.R.
AUG 29 1978
SOUTHWEST DISTRICT
TAMPA

8-29-78 RC
AO29-12601

RECEIVED
AUG 28 1978
H.C.E.P.C.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

Source Type: Air Pollution [XX] Incinerator [ ]
Type application: [XX] Operation [ ] Construction
Source Status: [ ] New [XX] Existing [ ] Modification

Source Name: F. J. Gannon Station No. 6 County: Hillsborough

Source Location: Street: Port Sutton Road City: Tampa

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

Appl. Name and Title: Tampa Electric Company
Appl. Address: P. O. Box 111, Tampa, Florida 33601

STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

The undersigned owner or authorized representative of * Tampa Electric Company is fully aware that the statements made in this application for a operating permit are true, correct and complete to the best of his knowledge and belief. Further, the undersigned agrees to maintain and operate the pollution control source and pollution control facilities in such a manner as to comply with the provisions of Chapter 403, Florida Statutes, and all the rules and regulations of the Department or revisions thereof. He also understands that a permit, if granted by the Department, will be non-transferable and he will promptly notify the Department upon sale or legal transfer of the permitted establishment.

William J. Johnson
Signature of the Owner or Authorized Representative

Date: August 25 1978 Telephone No.: 813/879-4111

*Attach a letter of authorization. If applicant is a corporation, a Certificate of Good Standing must be submitted with application. This may be obtained, for a $5.00 charge, from the Secretary of State, Bureau of Corporate Records, Tallahassee, Florida 32304.

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA

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 profesional 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 the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signature: William J. Johnson
Name: William J. Johnson (Please Type)
Company Name: Tampa Electric Company
Florida Registration Number: 12142
(Affix Seal)

Mailing Address: P. O. Box 111
Tampa, Fla. 33601
Telephone No.: 813/879-4111
Date: August 25, 1978

DETAILED DESCRIPTION OF SOURCE

A. Describe the nature and extent of the project. Refer to existing pollution control facilities, expected improvement in performance of the facilities and state whether the project will result in full compliance. Attach additional sheet if necessary.

B. Schedule of Project Covered in this Application (Construction Permit Application Only).

Start of Construction _____

Completion of Construction _____

C. Costs of Construction (Show a breakdown of costs for individual components/units of the project serving pollution control purpose only). Information on actual costs shall be furnished with the application for operation permit.

Precipitator Upgrade $7,453,000 latest revised estimate

Conversion to low sulfur coal $755,000

D. For this source indicate any previous DER permit: issuance dates, and expiration dates; and orders and notices.

AO29-2470 issued April 5, 1976
expires April 5, 1978

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 ...XX.No

AIR POLLUTION SOURCES & CONTROL DEVICES
(other than incinerators)

A. Identification of Air Contaminants

1) [XX] Particulates
   a) [ ] Dust b) [XX] Fly Ash c) [ ] Smoke d) [ ] Other (Identify)

2) [XX] Sulfur Compounds
   a) a) [XX] SO_x as SO_2 b) [ ] Reduced Sulfur as H_2S c) [ ] Other (Identify)

3) [XX] Nitrogen Compounds
   a) [XX] NO_x as NO_2 b) [ ] NH_3 c) [ ] Other (Identify)

4) [ ] Flourides 5) [ ] Acid Mist 6) [ ] Odor

7) [ ] Hydrocarbons 8) [ ] Volatile Organic Compounds

9) [ ] Other (Specify) _____

B. Raw Materials and Chemicals Used (Be Specific)

Description	Utilization Rate lbs./hr.	Approximate Contaminant Content		Relate to Flow Diagram
		Type	% Wt.	
N/A				

C. Process Rate:

1) Total Process input Rate* N/A Units.
2) Product Weight* electricity (megawatts) Units.
3) Normal Operating Time 24 hrs/day, 7 days/week, if seasonal describe: N/A
   hrs./day _____ days/wk. _____ wks/yr. _____

D. Airborne Contaminants Discharged:

Name of Contaminant	Actual** Discharge lbs./hr(1)	Actual** Discharge T/yr(1)	Discharge Criteria Rate*	Allowable Discharge Lbs./hr. (1)	Relate to Flow Diagram
Sulfur dioxide	7410	22,541	2.4 lbs/MMBTU	9360	(3)
Particulates	78	237	0.1 lbs/MMBTU	390	(3)
NOTE: (1) Calculated from source test data and fuel analysis of May 3, 1978.					

*Refer to Chapter 17-2.04(2), Florida Administrative Code.
(Discharge Criteria: Rate=#/ton P_2O_5. #/M BTU/hr.. etc.)
**Estimate only if this is an application to construct.

D. Airborne Contaminants Discharged. (Cont'd.)

Name of Contaminant	Hourly Emission (XXXXX lbs/MMBTU	Daily Emission (lb./day)	Yearly Emission (T/yr.)	Basis for Emission Estimate (Test Data, Material Balance)
Sulfur dioxide	1.90	See previous page		Source test data from May 3, 1978 test
Particulate	0.02	See previous page		Source test data from May 3, 1978 test

E. Control Devices:

Name and Type (Model and Serial No.)	Contaminant	Efficiency*	Conditions of Operations	Basis for Efficiency Operational Data, Test, Design, Data)
Electrostatic precipitator	Particulates	99.8	Max. load	Test performed on 8/3/74

*See required supplement.
(Include any test data and/or design data for efficiency substantiation)

F. Fuels

Type (Be Specific, includes %S, etc.)	Daily Consumption * (1) tons/hr		Maximum Heat Input MBTU/hr.
	Avg./hr.	Max./hr.	
Coal (1.3% S average)	115.15	151.40	3798

NOTE: (1) From 1977 HCEPC Emission Inventory

* Units: Natural Gas—MCF/hr.; Fuel Oils, Coal—lbs./hr.

Fuel Analysis:

Percent Sulfur 1.25 Percent Ash 9.61

Density N/A lb./gal.

Heat Capacity 12,430 BTU/lb. N/A BTU/gal.

Other Fuel Contaminants

G. Describe briefly, without revealing trade secrets, the processes/operations generating the airborne emissions identified in this application.

Coal is burned in a boiler to generate steam which is used to generate electricity.

H. Indicate liquid or solid wastes generated and method of disposal. Collected fly ash is pneumatically transferred to a storage silo where it is sold and loaded into truck or rail cars. Bottom slag is tapped from the bottom of the furnace as a molten liquid which falls into a tank of water where it rapidly cools and shatters into small pieces. This water solid mixture is then pumped to a dewatering bin where the water is drained off. (SEE BELOW)

I. Emission Stack Geometry and Flow Characteristics, (Provide Date for each Stack).

Stack Height 306 ft, Stack Diameter 17.6 ft.

Gas Flow Rate 1,120,000 (max.) 838,000 (avg.) ACFM, Gas Exit Temperature 292 °F

J. Required Supplements:

1. Total process input rate and product weight – show deviation. Maximum heat input to boiler is 3798 MMBTU/hr. Operating range is from 35 to 100% load.
2. Efficiency Estimation.
   N/A
3. An 8½" x 11" flow diagram, which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate whether raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particulates are evolved and where finished products are obtained.
   See Figure 3-C1
4. An 8½" x 11" plot plan showing the exact location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.
   See Figure 3-C2
5. An 8½" x 11" plot plan showing the exact location of the establishment, and points of airborne emissions in relation to the surrounding area, residences and other permanent structures and roadways.
   See Figure 3-C3
6. If applicable, provide a brief description of the control device or treatment system serving the discharge point for airborne contaminants identified in this application. Include details of the manufacturer, model, size, type and capacity for control/treatment device and the features of the discharge point (height above ground, diameter, period(s) of discharge and discharge temperature).
   See Figure 5-C1
7. Plans for storm water control during and after construction.
   All wastewater from the station will be transported to an evaporation/percolation pond for treatment and disposal. Storm water will not be treated.

H. (continued): The slag is then carried off by truck to a stockpiling area on the plant site. From there it is sold and carried off by either truck or barge. This slag is hard, glossy, insoluble in water and chemically inert.

INCINERATOR INFORMATION

Type of Waste	Type O (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Patho-logical)	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 _____ Model No.: _____

Date Constructed: _____

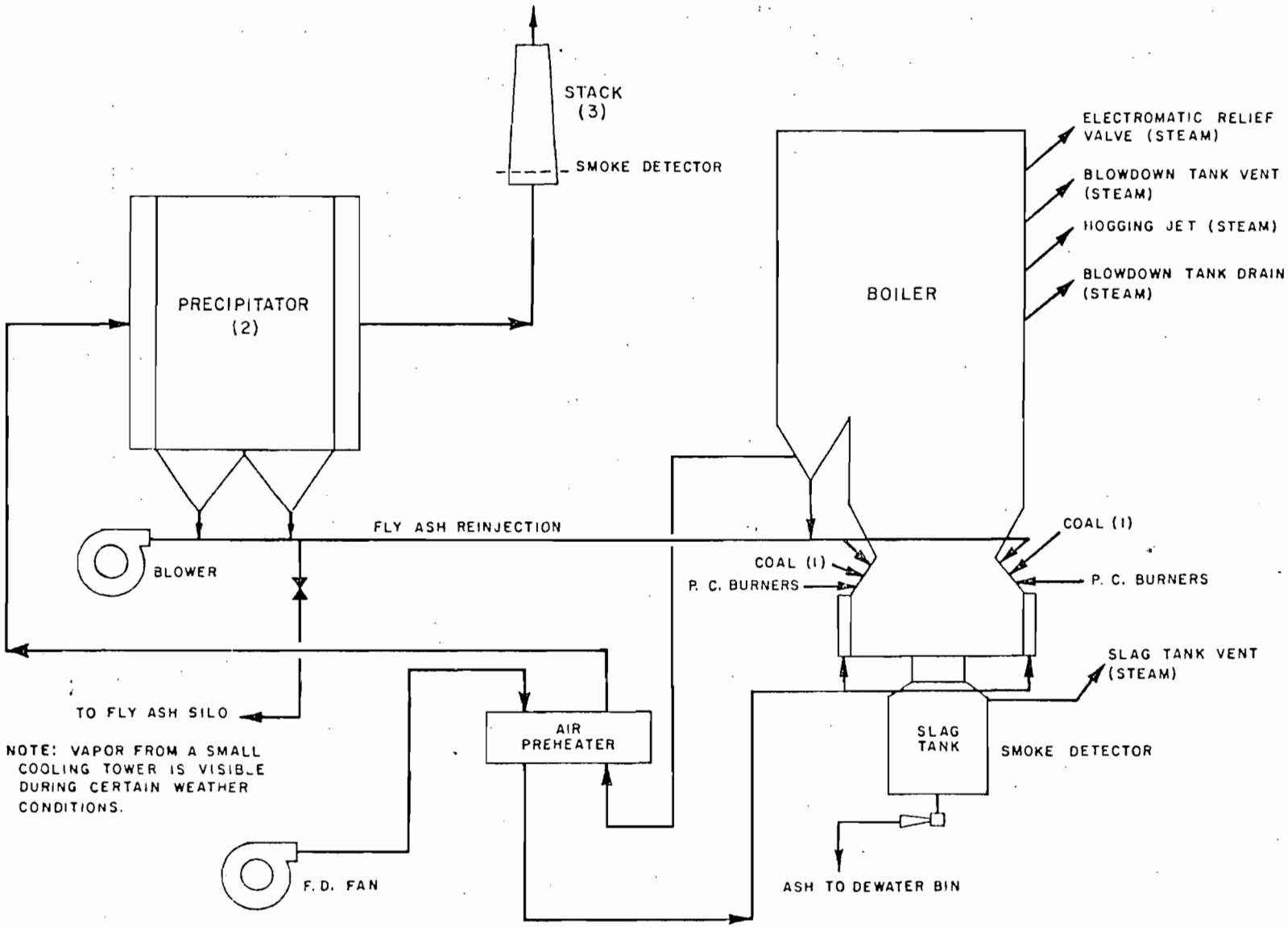
	Volume (ft. *)³	Heat Release (BTU/hr.)	Fuel		Temp. (° F)
			Type	BTU/hr.	
Primary Chamber					
Secondary Chamber					

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

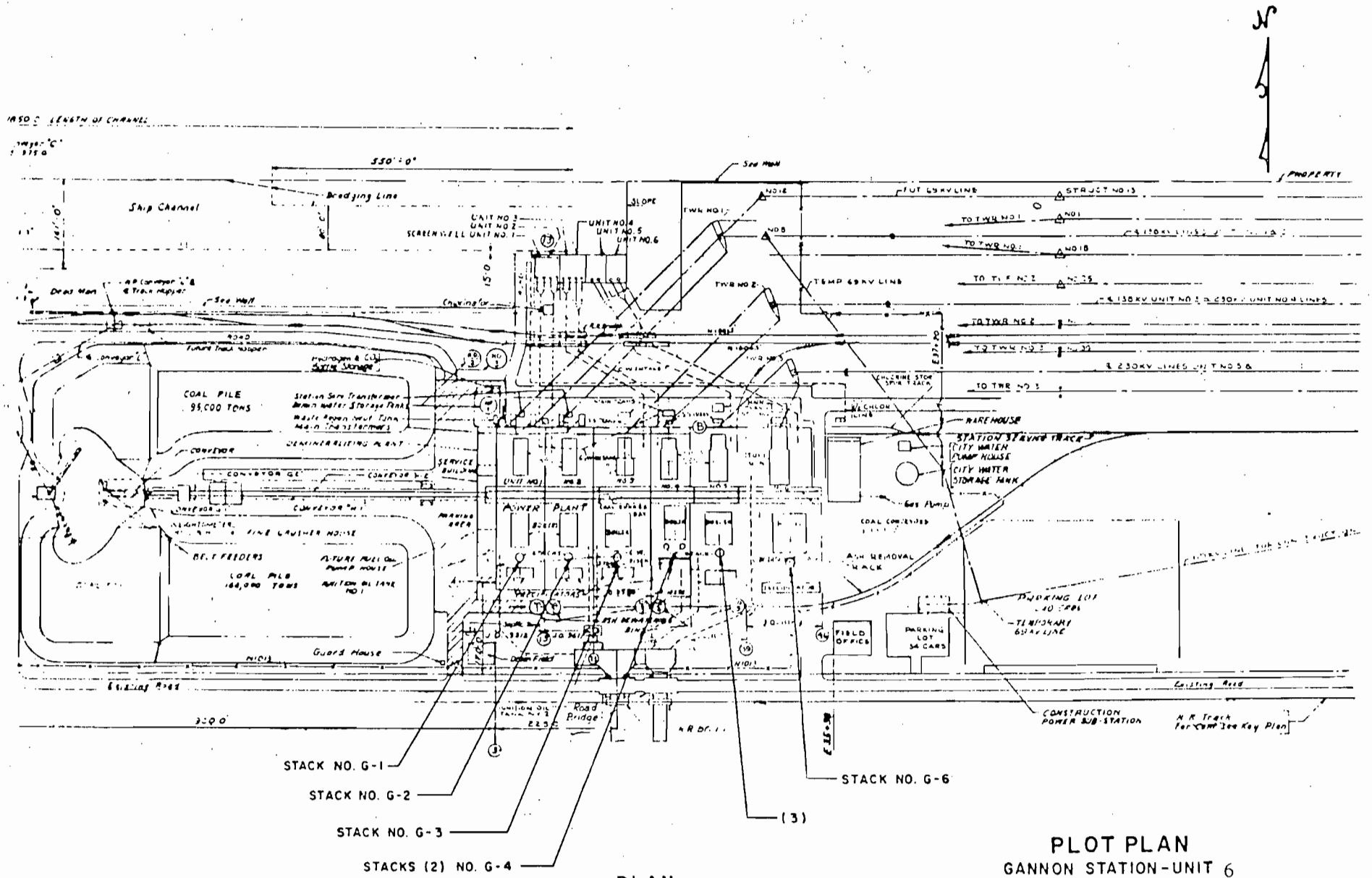
Type of Pollution Control Device [ ] Cyclone [ ] Wet scrubber [ ] Afterburner
[ ] Other (Specify): _____

Brief Description of Operating Characteristics of Control Device: _____

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



FLOW DIAGRAM
GANNON STATION-UNIT 6
TAMPA ELECTRIC COMPANY



PLAN

PLOT PLAN

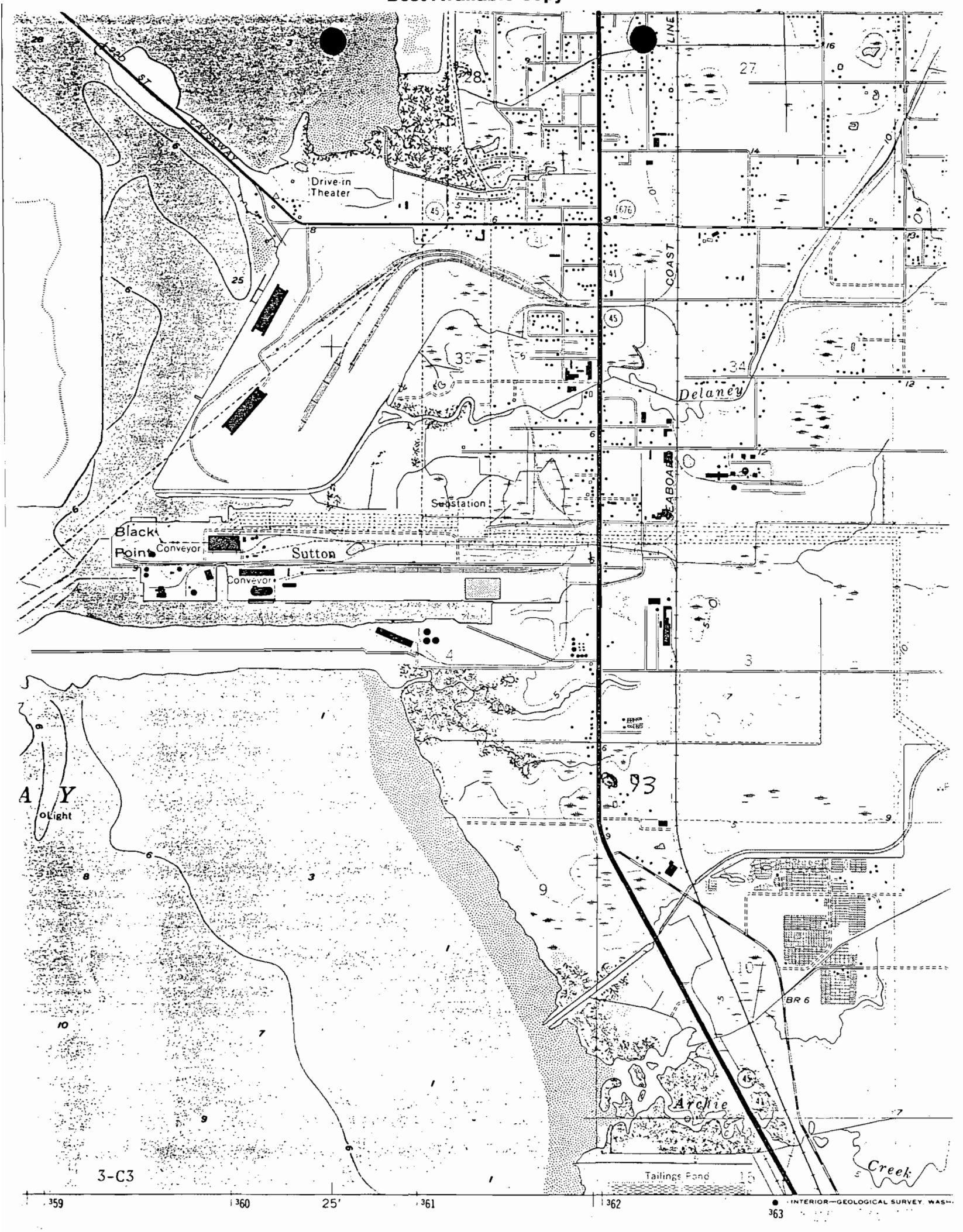
GANNON STATION - UNIT 6

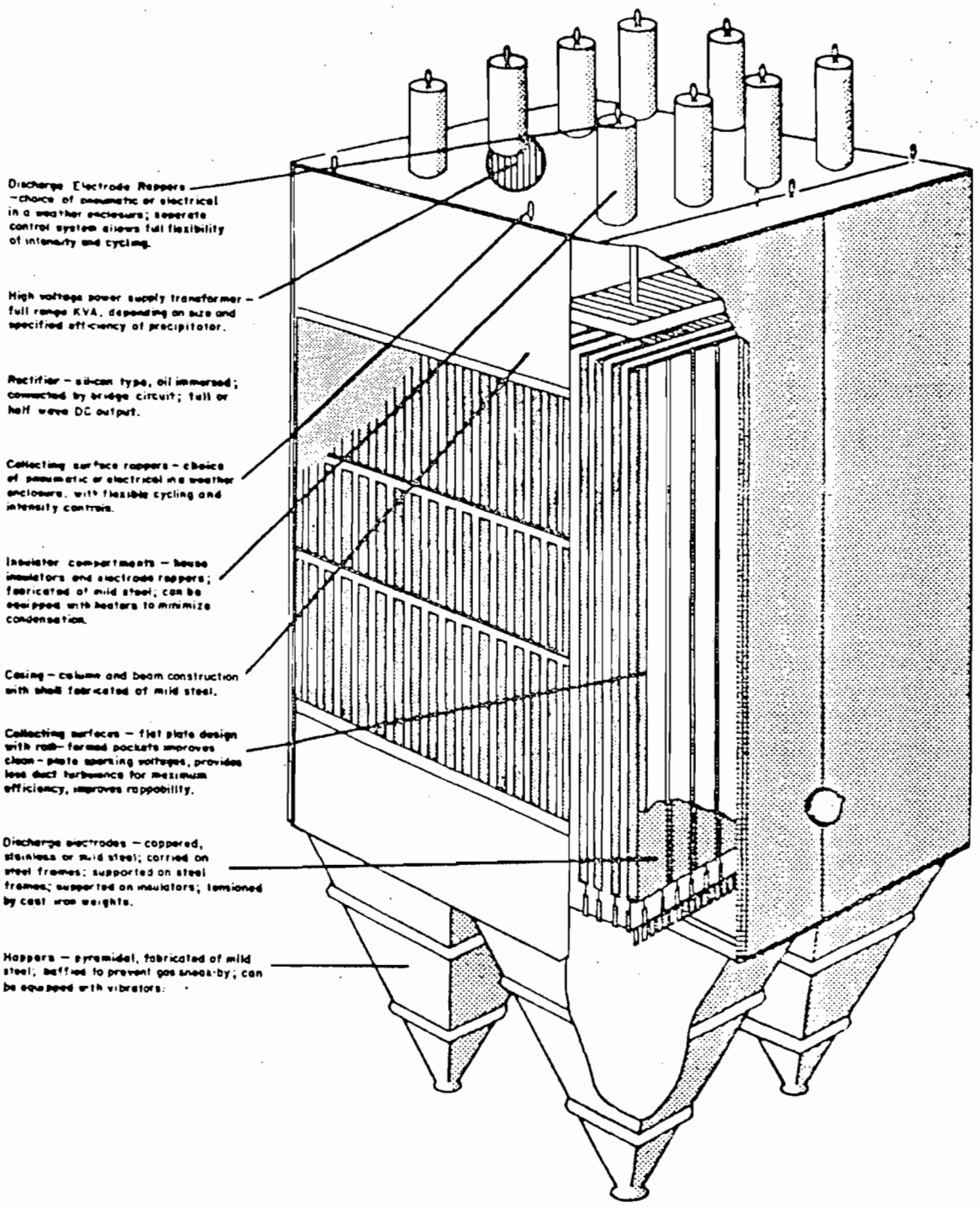
TAMPA ELECTRIC COMPANY

STONE & WEBSTER ENGINEERING CORPORATION

3-C2

Best Available Copy





ELECTROSTATIC PRECIPITATOR

GANNON STATION-UNIT 6

TAMPA ELECTRIC COMPANY

STONE & WEBSTER ENGINEERING CORPORATION

5-C1

GANNON NO. 6
PERMIT CALCULATIONS

ACTUAL DISCHARGE

SO_2 $\quad \frac{1.90 \text{ lbs.} SO_2}{\text{MMBTU}} \times \frac{3900 \text{ MMBTU}}{\text{Hour}} = 7410 \frac{\text{lbs.} SO_2}{\text{Hour}}$

$\frac{7410 \text{ lbs.} SO_2}{\text{Hour}} \times \frac{1 \text{ ton}}{2{,}000 \text{ lbs}} \times \frac{6084 \text{ hrs}}{\text{Year}} = 22{,}541 \frac{\text{tons } SO_2}{\text{Year}}$

Part. $\quad \frac{0.02 \text{ lbs. part}}{\text{MMBTU}} \times \frac{3900 \text{ MMBTU}}{\text{Hour}} = \frac{78.0 \text{ lbs. part}}{\text{Hour}}$

$\frac{78 \text{ lbs}}{\text{Hour}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} \times \frac{6084 \text{ hrs.}}{\text{Year}} = 237 \frac{\text{tons part.}}{\text{Year}}$

ALLOWABLE DISCHARGE

SO_2 $\quad 2.4 \frac{\text{lbs } SO_2}{\text{MMBTU}} \times \frac{3900 \text{ MMBTU}}{\text{Hour}} = \frac{9360 \text{ lbs}}{\text{Hour}}$

Part. $\quad \frac{0.1 \text{ lbs. part}}{\text{MMBTU}} \times \frac{3900 \text{ MMBTU}}{\text{Hour}} = 390 \frac{\text{lbs}}{\text{hour}}$