STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

DER

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

DEC 21 1983

SOUTHWEST DISTRICT
TAMPA

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

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; Peaking Unit No. 2, Gas Fired) Gannon Station Units 5-6 Flyash Silo

SOURCE LOCATION: Street Port Sutton Road City Tampa

UTM: East 360,061 North 3,087,459

Latitude 27 ° 54 ' 23 "N Longitude 82 ° 25 ' 18 "W

APPLICANT NAME AND TITLE: Tampa Electric Company

APPLICANT ADDRESS: P. O. Box 111, Tampa, FL 33601 ATTN: Environmental Planning Dept.

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 operation 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: John B. Ramil

John B. Ramil, P.E., Manager
Name and Title (Please Type)

Date: 12-16-83 Telephone No. (813)228-4838

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

[1] See Florida Administrative Code Rule 17-2.100(57) and (104)

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 _____

John B. Ramil, P.E.
Name (Please Type)

Tampa Electric Company
Company Name (Please Type)

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

Florida Registration No. 32663 Date: 12-16-83 Telephone No. (813)228-4838

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.

Gannon Station Units 5 & 6 Flyash Silo

See Attachment A

B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction N/A Completion of Construction N/A

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.)

Bag type dust collectors $33,325.00 (1973 Dollars)

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

DER Permit #A029-47728, issued March 11, 1982, expires January 25, 1987

DER Permit #A029-47727, issued March 11, 1982, expires January 25, 1987

E. Requested permitted equipment operating time: hrs/day 24 ; days/wk 7 ; wks/yr 52 ;

if power plant, hrs/yr 8760; if seasonal, describe: Not Applicable

F. 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) requirement 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? -

H. Do "Reasonably Available Control Technology" (RACT) requirements apply to this source? Yes*

   a. If yes, for what pollutants? Particulate Matter

   b. If yes, in addition to the information required in this form, any information requested in Rule 17-2.650 must be submitted.

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

*Pursuant to Florida Administrative Code 17-2.650(2)(a)1.; "Any existing source that emits particulate matter and is located in a particulate non-attainment area or in the area of influence of such a non-attainment area except a source which has received a determination of Best Available Control Technology pursuant to 17-2.630 or received a permit in connection with 17-2.500 or 17-2.510, shall limit the emission of particulate matter through the application of Reasonably Available Control Technology (RACT) . . . ."

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) Not Applicable

1. Total Process Input Rate (lbs/hr): _____

2. Product Weight (lbs/hr): _____

C. Airborne Contaminants Emitted: (Information in this table must be submitted for each emission point, use additional sheets as necessary)

Name of Contaminant	Emission[1]		Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission lbs/hr	Potential[4] Emission		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/yr	T/yr	
Particulate	2.07	Not Applic.	See Attach B	Not Applicable	2065	Not Applic.	Fig. 1

[1]See Section V, Item 2.

[2]Reference applicable emission standards and units (e.g. Rule 17-2.600(5)(b)2. Table II, E. (1) - 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).

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

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles Size Collected (in microns) (If applicable)	Basis for Efficiency (Section V Item 5)
Bag Type Collector (Mikro Pulsaire #1F3-24)	Particulate	99.9	1 and above	Equip Data

E. Fuels Not Applicable

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	

*Units: Natural Gas--MMCF/hr; Fuel Oils--gallons/hr; Coal, wood, refuse, other--lbs/hr.

Fuel Analysis: Not Applicable

Percent Sulfur: _____ Percent Ash: _____

Density: _____ lbs/gal Typical Percent Nitrogen: _____

Heat Capacity: _____ BTU/lb _____ BTU/gal

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

F. If applicable, indicate the percent of fuel used for space heating.

Annual Average Not Applicable Maximum Not Applicable

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

Flyash - Reinjected to boiler or trucked to offsite cement manufacturer.

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

Stack Height: - ft. Stack Diameter: - ft.

Gas Flow Rate: 11,300 ACFM - DSCFM Gas Exit Temperature: - °F.

Water Vapor Content: - % Velocity: - 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.)
Actual lb/hr Incinerated							
Uncontrolled (lbs/hr)							

Description of Waste _____

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

Approximate Number of Hours of Operation per day _____ day/wk _____ wks/yr. _____

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 Diamter: _____ 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.):

NOTE: Items 2, 3, 4, 6, 7, 8, and 10 in Section V must be included where applicable.

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

1. Total process input rate and product weight -- show derivation [Rule 17-2.100(127)]
   Not Applicable
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. See attached visible emissions test - See Attachment D.
3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test).
   See Attachment C
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, design pressure drop, etc.) Not Applicable
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). See Attachment C
6. An 8 1/2" 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 8 1/2" 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 2
8. An 8 1/2" 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 3

9. The appropriate application fee in accordance with Rule 17-4.05. 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:

*Explain method of determining

5. Useful Life:

6. Operating Costs:

7. Energy:

8. Maintenance Cost:

9. Emissions:

Contaminant	Rate or Concentration

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:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

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:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

[1]Explain method of determining efficiency.
[2]Energy to be reported in units of electrical power - KWH design rate.

j. Applicability to manufacturing processes:

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

3.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

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:

4.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Costs:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

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:[1]

3. Capital Cost:

4. Useful Life:

5. Operating Cost:

6. Energy:[2]

7. Maintenance Cost:

8. Manufacturer:

9. Other locations where employed on similar processes:

a. (1) Company:

(2) Mailing Address:

(3) City:

(4) State:

[1]Explain method of determining efficiency.
[2]Energy to be reported in units of electrical power - KWH design rate.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

b. (1) Company:

(2) Mailing Address:

(3) City: (4) State:

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

10. Reason for selection and description of systems:

[1]*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.

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

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 of 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.

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.

ATTACHMENT A

Section II A.

The source is a flyash silo for Gannon Station Units 5 & 6. Flyash will be pneumatically conveyed in a pipe from the individual unit precipitators to the silo for temporary storage. From the silo, the flyash will be trucked to an offsite consumer, and will be used as an ingredient in the manufacturing of cement.

A roof mounted, bag type dust collector will be utilized to control emissions.

ATTACHMENT B

Section III C.

Allowable emission rate per Florida Administrative Code 17-2.650(2)(c)11b

:Visible emissions = 5%

ATTACHMENT C
Gannon Units 5 & 6 Flyash Silo

Section V 3. & 5.

(A) Maximum Potential Emissions

Maximum potential emissions = maximum expected emissions generated within the silo.

Assume: Maximum conditions occur at combined maximum production rate, that is, both precipitator hoppers emptying simultaneously.

: Flyash dusting characteristics within Units 5 & 6 silo, similar to flyash dusting characteristics within Units 1-4 flyash silo.

: Settling characteristics within silo dependent on plan area of silo.

Known Data

Unit 5 flyash production rate (full load) = 5.08 tons/hr
Unit 6 flyash production rate (full load) = 7.97 tons/hr

maximum throughput rate = 5.08 + 7.97 = 13.05 tons/hr

	Units 1-4 flyash silo	Units 5 & 6 flyash silo
Silo diameter (ft)	30	25
Silo plan area (ft^2)	707	491
Throughput to silo (tons/hr)	14.4	13.05
Baghouse efficiency	99.8	99.9
Expected emissions (lbs/hr)	1.32	To be calculated
Potential emissions (lbs/hr)	660	To be calculated
Baghouse capacity (Acfm)	4696	11300

$$\frac{\text{1-4 silo throughput}}{\text{silo plan area}} = \frac{14.4 \text{ tons/hr}}{707 \text{ ft}^2} = \frac{0.02037 \text{ tons}}{\text{hr. ft}^2}$$

$$\frac{\text{5 \& 6 silo throughput}}{\text{silo plan area}} = \frac{13.05 \text{ tons/hr}}{491 \text{ ft}^2} = \frac{0.02658 \text{ tons}}{\text{hr. ft}^2}$$

∴ Ratio of dust loading expected =

0.02037 : 0.02658 = 1:1.3

1-4 silo, calculated potential emissions (within silo)

= 660 lbs/hr per 4696 Acfm

$$= \left[660 \frac{\text{lbs}}{\text{hr}}\right] \left[\frac{1 \text{ hr}}{60 \text{ min}}\right] \left[\frac{1 \text{ min}}{4696 \text{ Acf}}\right] = 0.00234 \frac{\text{lbs}}{\text{Acf}}$$

∴ 5 & 6 silo, estimated potential emissions (within silo)

$$= \left[0.00234 \frac{\text{lbs}}{\text{Acf}}\right] \left[11300 \frac{\text{Acf}}{\text{min}}\right] \left[60 \frac{\text{min}}{\text{hr.}}\right] [1.3] = 2065 \frac{\text{lbs}}{\text{hr.}}$$

(B) Maximum Emissions

Potential emissions = Maximum emissions ÷ (1 - baghouse efficiency)

Maximum emissions = Potential emissions (1 - baghouse efficiency)

= (2065) x (1-0.999)

= 2.07 lbs/hr.

GANNON STATION UNITS 1-4 FLYASH SILO

EMISSION CALCULATIONS

(A.) Maximum Expected Emissions:

Maximum expected emissions = maximum baghouse emissions = 0.03 gr/dscf (Design)
Capacity of baghouses (2) = 4696 Acfm (Total)

$$dscfm = (Acfm)(FDA)\frac{(528)}{(T_A)}\frac{(P_A)}{(29.92)}$$

where: Acfm = Actual cubic feet per minute
dscfm = dry standard cubic feet per minute
FDA = Fraction dry air (max = 1.0)
T_A = Absolute gas temp. (^oR)
P_A = Absolute pressure (in. Hg.)

$$dscfm = (Acfm)(1.0)\frac{(528)}{(810^oR)}\frac{(50.3\ in.\ Hg.)}{(29.92)} = (1.10)(Acfm)$$

$$\therefore\ 4696\ Acfm = (4696)(1.10\ \frac{dscfm}{Acfm}) = 5146\ dscfm$$

Thus, maximum expected emissions:

$$= \left[5146\ \frac{dscf}{min.}\right]\left[0.03\ \frac{gr}{dscf}\right]\left[0.002285\ \frac{oz}{gr}\right]\left[\frac{1}{16}\ \frac{lb}{oz}\right]\left[60\ \frac{min}{hr.}\right]$$

$$= 1.32\ \frac{lbs}{hr}$$

(B) Potential Emissions

= maximum emissions ÷ (1-baghouse efficiency)
= 1.32 ÷ (1-.998)
= 660 $\frac{lbs}{hr}$

ATTACHMENT D

TECO
TAMPA ELECTRIC COMPANY

RECORD OF VISIBLE EMISSIONS

Plant Gannon Station Date November 15, 1983 Wind Direction and Speed North 5-10 mph

Stack Unit 5-6 Baghouse Time 1400 Observer Martin Duff

sec. / min.	0	15	30	45
0	0	0	0	0
1	0	0	0	0
2	0	0	0	0
3	0	0	0	0
4	0	0	0	0
5	0	0	0	0
6	0	0	0	0
7	0	0	0	0
8	0	0	0	0
9	0	0	0	0
10	0	0	0	0
11	0	0	0	0
12	0	0	0	0
13	0	0	0	0
14	0	0	0	0
15	0	0	0	0
16	0	0	0	0
17	0	0	0	0
18	0	0	0	0
19	0	0	0	0
20	0	0	0	0
21	0	0	0	0
22	0	0	0	0
23	0	0	0	0
24	0	0	0	0
25	0	0	0	0
26	0	0	0	0
27	0	0	0	0
28	0	0	0	0
29	0	0	0	0

sec. / min.	0	15	30	45
30	0	0	0	0
31	0	0	0	0
32	0	0	0	0
33	0	0	0	0
34	0	0	0	0
35	0	0	0	0
36	0	0	0	0
37	0	0	0	0
38	0	0	0	0
39	0	0	0	0
40	0	0	0	0
41	0	0	0	0
42	0	0	0	0
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52	0	0	0	0
53	0	0	0	0
54	0	0	0	0
55	0	0	0	0
56	0	0	0	0
57	0	0	0	0
58	0	0	0	0
59	0	0	0	0

Sum of # Recorded 0

Total # of Readings 240

Opacity = Sum of # Recorded / Total # of Readings = 0

Remarks

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

THIS IS TO CERTIFY THAT

Martin Duff, has completed the STATE OF FLORIDA visible emissions evaluation training and is a qualified observer of visible emissions as specified by EPA reference method 9.

This certificate expires on March 15, 1984

Judi Sears
Certification Officer

Bearer's signature

DER Form PERM 5-9 (Jun 79)

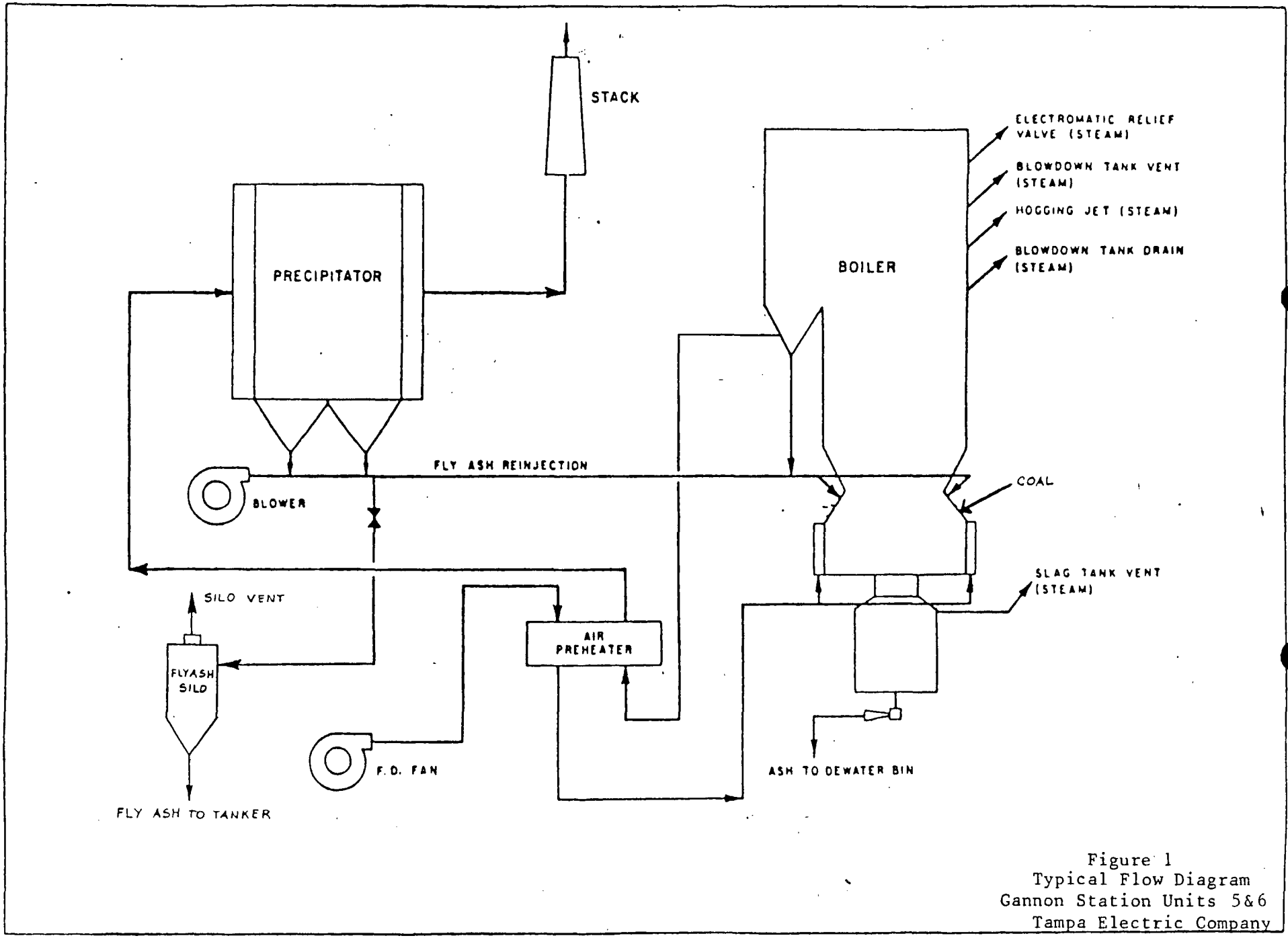

Figure 1
Typical Flow Diagram
Gannon Station Units 5&6
Tampa Electric Company

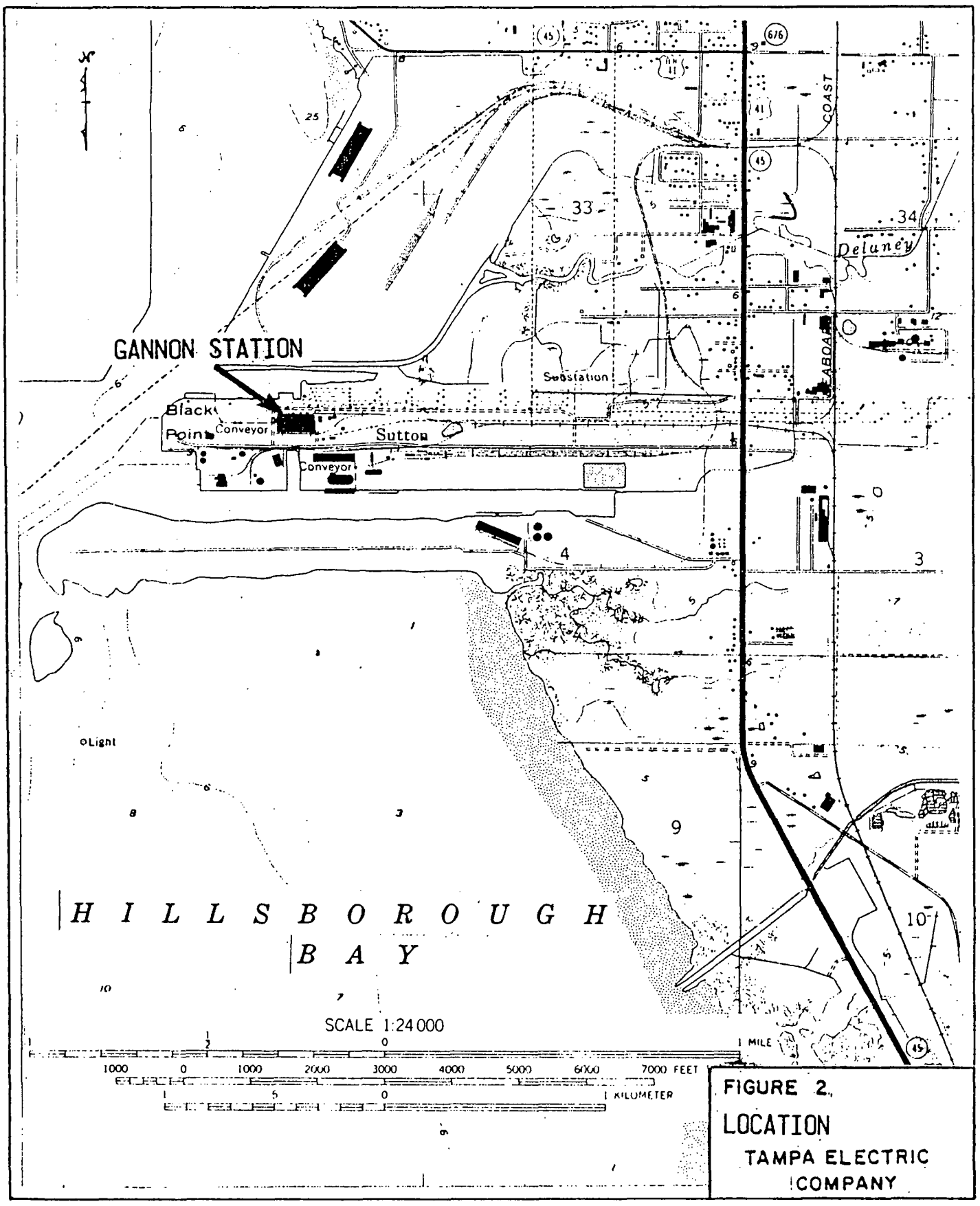

FIGURE 2.
LOCATION
TAMPA ELECTRIC
COMPANY

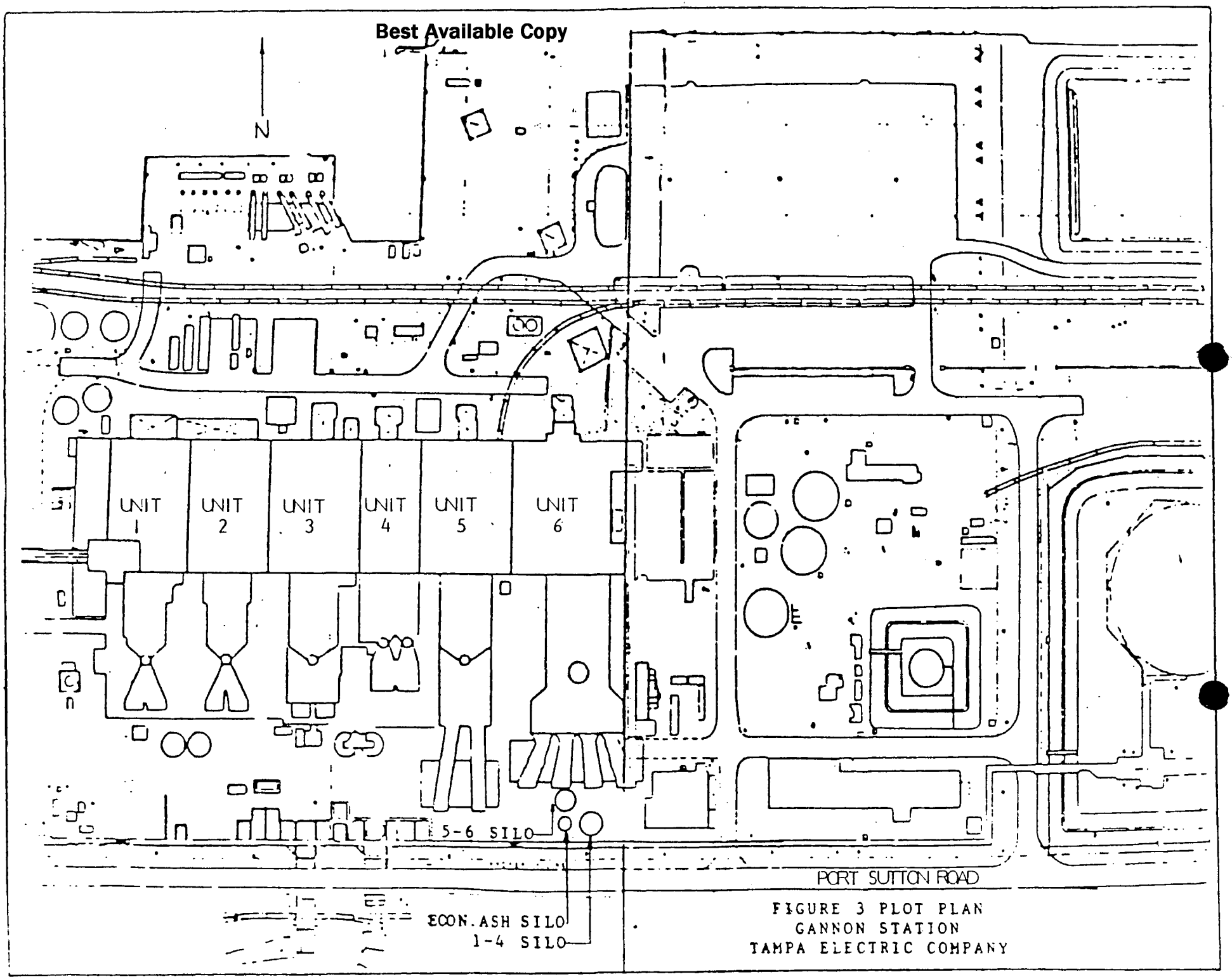

FIGURE 3 PLOT PLAN
GANNON STATION
TAMPA ELECTRIC COMPANY

F.J. GANNON STATION

Operation and Maintenance Plan Units 5 and 6
Flyash Silo and Particulate Control/Collection System

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 and consists of three oil-fired and three coal-fired units; Units 1 thru 3 are presently oil-fired but will be reconverted to burn low sulfur coal in 1984, 1985 and 1986 for units 3, 2 and 1 respectively. Units 4, 5 and 6 are coal-fired with Units 4 being recently reconverted from oil to coal. All six boilers have electrostatic precipitators (ESP) to control particulate emissions.

The steel flyash silo for Units 5 & 6 is an integral part of the particulate control/collection system. Flyash that is collected from Units 5 and 6 ESP hoppers, is transferred dry to the 25 feet diameter, 50 feet high silo. The silo acts as a temporary storage for the flyash prior to being fed into tanker type trucks, thence transported to an offsite consumer.

Gannon's flyash is used as an ingredient in the manufacturing of cement.

PARTICULATE CONTROL EQUIPMENT DATA

Units 5 and 6 flyash silo is equipped with a bag-type dust collector for the control of particulate matter. The dust collector is automatically actuated during conveying, aerating or unloading operations.

Important design information and data applicable to the particulate control system are listed below:

BAGHOUSE DATA

Manufacturer	United States Filter Corporation
Model name and number	Mikro-Pulsaire Unit #1F3-24
Design flow rate (ACFM)	11,300
Efficiency (% by weight)	99.9
Pressure drop (inch H_2O)	2 (Clean), 5 (Dirty)
Gas Temperature (^oF)	300
Air to cloth ratio	5:1
Bag material	Polyester HCE
Filter cleaning method	Pulse Jet

BAG FILTER CLEANING

Dust which accumulates on the bags is removed by a timed pulse of compressed air supplied at 18.4 scfm and 100 psig.

The filters are cleaned in sequence on a continuous basis whenever the baghouse is being operated, that is, whenever aeration is provided or dust is entering the silo.

Filters are changed whenever the pressure drop between inlet and outlet of the bag filter is approximately 5 inches of water.

SILO SYSTEM PERFORMANCE PARAMETERS

The following is a list of operating conditions that can be monitored from the flyash silo control panel:

1. Conveying blower high differential temperature
2. Conveying blower filter clogged
3. Flyash system high pressure
4. Silo filter bag failure
5. Silo level
6. Airlock sequency failure

The pressure drop between the inlet and outlet of the baghouse is measured with a manometer that is connected to the baghouse.

MAINTENANCE AND INSPECTION SCHEDULES

Routine on-line preventive maintenance, daily checks for leakage, daily checks on baghouse pressure drops and monitoring of the control panel for abnormal operating conditions, ensure proper operations of the silo system. Should these procedures indicate repairs are necessary, maintenance job requests are initiated. All repair information is stored for future reference.

The pressure differential between the inlet and outlet of the bag filter is read 3 times daily. These readings are recorded in an operator's log book kept in the control room, and are retained for at least 2 years.

FLYASH CHARACTERISTICS

Ash Analysis	% By Weight
Ferric Oxide	9.74
Lime	7.04
Magnesia	1.93
Sodium Oxide	1.37
Potassium Oxide	0.90
Silica	53.19
Alumina	17.85
Titania	0.75
Phos. Pentoxide	0.11
Sulfur Trioxide	6.69

The temperature range of the ash will be approximately 290°F to 310°F in the precipitator hoppers.