HILLSBOROUGH COUNTY ENVIRONMENTAL PROTECTION COMMISSION
ANNUAL OPERATING REPORT

Representing Calendar Year 1984
Date Submitted: March 8, 1985

SECTION I - GENERAL INFORMATION

Plant, Institution or Establishment Name: Tampa Electric Company (F.J. Gannon Station)
Plant Address: P.O. Box 111 (Street) Tampa (City) Florida (State) 33601 (Zip)
Telephone: (813) 228-4838

Person to Contact Regarding This Report A. Spencer Autry Title Manager, Environmental Planning
Mailing Address: P.O. Box 111 (Street) Tampa (City) Florida (State) 33601 (Zip)

Actual Operating Hours: 24 hrs/day 7 days/wk 52 wks/yr

SECTION II - FUEL COMBUSTION FOR GENERATION OF HEAT OR STEAM

Source Code	Type of Fuel a	Quantity c X 1,000	Annual Consumption b — Percent Distribution by Season: Spring March/May	Summer June/Aug	Fall Sept/Nov	Winter Dec/Feb	Hourly Consumption: Maximum	Average	Heat Content BTU/Quan	Percent Sulfur d	Percent Ash d
Gan 1	No. 6 Oil	10,602	18.98	35.57	24.60	20.85	8,044	4,354	149,319	0.95	NA
Gan 2	No. 6 Oil	12,392	22.64	26.49	30.95	19.92	8,044	4,626	149,319	0.95	NA
Gan 3	No. 6 Oil Bitum Coal	7,627/ 154	6.85	28.26	42.12	22.77	10,846 65	6,997/ 43.5	149,319 12,596	0.95 1.18	NA 7.85
Gan 4	Bitum. Coal	371	26.87	20.50	29.26	23.37	80	52.1	12,361	2.09	8.04

a. Coke, bituminous, anthracite, or lignite coal No. 1, 2, 3, 4, 5, or 6 Fuel Oil, Nat. Gas, LPG; Refinery or Coke Oven Gas Etc. Indicate if two or more fuels are burned in the same boiler and provide all data pertinent to each fuel type.

b. Fuel Data Reported on 'as burned' Basis

c. Solid Fuel: Tons, Liquid Fuel: Gals.: Gaseous Fuel: 1000 ft^3

d. If unknown, please give name and address of fuel supplier.

SECTION III - AIR CLEANING EQUIPMENT

Source Code	Type of Air Cleaning Equipment a,b	Pollutant Removed c	Inlet Gas Temp °F	Inlet Gas Flow Rate ACFM	Maximum Pressure Drop PSI d	Efficiency e	
						Design Percent	Operating Percent
Gan 1	Not Applicable						
Gan 2	Not Applicable						
Gan 3	Electrostatic Precipitator	Particulate	250±55	574,000	1.60	99.07	99.25
Gan 4	Electrostatic Precipitator	Particulate	330	700,000	1.58	99.05	99.81

b. Wet scrubber, electrostatic precipitator, fabric filter, etc.

Please list future equipment separately

c. Pollutants to be covered in this survey are specified in the accompanying instructions.

d. Give maximum normal operating pressure drop across air cleaning system.

e. Give efficiency in terms of pollutant removed.

SECTION IV - STACK AND POLLUTANT EMISSIONS DATA

Stack Data					Estimate of Pollutant Emissions				
Source Code	Height Above Grade Ft.	Inside Diameter at top ft	Exit Gas Velocity ft/sec	Exit Gas Temp °F	Pollutant	Technique	Quantity tons/yr	Average lb/hr	Maximum lb/hr
Gan 1	306	10.0	47.53	309	Particulate Sulf.Dioxide	Stack Test Fuel Anal.	23.7 823.2	19.5 676.1	37.7 1,307.3
Gan 2	306	10.0	50.49	309	Particulate Sulf.Dioxide	Stack Test Fuel Anal.	37.0 962.2	27.6 718.3	50.3 1,307.3
Gan 3	306	10.6	59.18	266	Particulate Sulf.Dioxide	Stack Test Fuel Anal.	73.0 4,063.2	30.6 1,774.2	95.9 2,862.2
Gan 4	2 Stacks 306(ea)	9.6(ea)	43.48(ea)	286	Particulate Sulf.Dioxide	Stack Test Fuel Anal.	45.9 8,401.9	12.9 2,357.0	18.8 3,433.1

HILLSBOROUGH COUNTY ENVIRONMENTAL PROTECTION COMMISSION
AIR POLLUTANT EMISSION REPORT

Representing Calender Year 1984
Date submitted: March 1, 1985

SECTION I - GENERAL INFORMATION

Plant, institution, or establishment name: Tampa Electric Company (Big Bend Station)
Plant, institution, or establishment address: P.O. Box 111 (Street or Box Number) Tampa (City) Florida (State) 33601 (Zip)
Person to contact regarding this report: A. Spencer Autry Title: Environmental Planning Manager Telephone: 228-4838
Mailing address: P.O. Box 111 (Street or Box Number) Tampa (City) Florida (State) 33601 (Zip)

NOT APPLICABLE

SECTION II - PROCESS/OPERATIONS EMISSIONS

Normal operating schedule: _____ Hours per day _____ Days per week _____ Weeks per year _____ Hours per year.
Seasonal and/or peak operation period: _____
Dates of annually occurring shutdowns of operations: _____ Additional operating info. enclosed

Source Code[a,b]	Processes or Operations Releasing Pollutants to the Atmosphere[c,d]	Raw Materials Used for Processes or Operations,				Products of Processes or Operations,				Intermittent Operation Only
		Type	Quantity Hourly Process Rate, lbs.			Type	Quantity Hourly Process Rate, lbs.			
			Annual Average[f]	Design	Maximum		Annual Average[f]	Design	Maximum	Average Hours/Week[h]

a. List a separate code number to represent each source(e.g.,IV-a,IV-b,IV-c,etc.) then enter required data on this page and for the same code number sources in Section III. IV, and V.
b. Multiple sources may be grouped if similar in size and type.
c. Sulfuric acid-contact:aluminum smelting-crucible furnace;cement manufacturing-dry process; etc (See instruction for examples and use approximate identification numbers): other non-listed processes and operations (specify).
d The pollutants to be covered in this report are listed in the accompanying instructions.
e. Sulfur burned:pig, foundry returns, or scrap aluminum melted;limestone, cement rock, clay,iron ore used; etc.
f. Pounds, tons, gallons, barrels, etc.
g. Sulfuric acid produced; aluminum ingots produced; etc.
h. For intermittent processes, indicate average number of hours per week of operation so that estimates of yearly emissions may be obtained.

GANNON STATION 1994

GANNON 1-4 FLYASH SILO

EMISSION = $\left(1.32 \frac{LB}{hr}\right)\left(\frac{8021 \text{ hrs op.}}{yr}\right)\left(\frac{1 \text{ TON}}{2000 \text{ LBS}}\right) = 5.29 \text{ TONS/yr.}$

GANNON 5+6 FLYASH SILO

EMISSION = $\left(\frac{\text{DESIGN}}{2.07 \frac{LB}{hr}}\right)\left(\frac{8021 \text{ hrs. op.}}{yr}\right)\left(\frac{1 \text{ TON}}{2000 \text{ LBS}}\right) = 8.58 \text{ TONS/yr.}$

GANNON 4 ECONOMIZER ASH SILO

EMISSION = $\left(\frac{\text{DESIGN}}{0.14 \frac{LB}{hr}}\right)\left(\frac{7133 \text{ hrs op.}}{yr}\right)\left(\frac{1 \text{ TON}}{2000 \text{ LBS}}\right) = 0.50 \text{ TONS/yr}$

GANNON STATION

GAS TURBINE — 1994
FUEL CONSUMED

TOTAL CONSUMPTION = 3174.11 BBLS = 133,313 GALS.
TOTAL GENERATED = 885,000 KWH

AVG % Sulfur = 0.37
AVG Btu/lb = 19,468
AVG Density (lb/gal) = 7.121

AVG HOURLY CONSUMPTION = $\frac{133{,}313 \text{ gal oil } 1994}{120 \text{ hrs. operation}} = 1111 \frac{\text{gal}}{\text{hr}}$

$V = (133{,}313 \text{ gals})(7.121 \frac{\text{lb}}{\text{gal}})(\frac{1 \text{ yr}}{120 \text{ hrs. op.}})(\frac{1}{3600 \text{ sec}})(\frac{.039 \text{ ft}^3}{\text{lb oil}})(\frac{1470°\text{R}}{492°\text{R}})(\frac{1}{95.7 \text{ ft}^3}) =$
16.40 fps

Flow (AVG) $= (16.40 \text{ fps})(95.7 \text{ ft}^3)(60 \frac{\text{sec}}{\text{min}}) = 94{,}169$ cfm

SULFUR DIOXIDE (AVG)

$(133{,}313 \frac{\text{gal}}{\text{yr}})(7.121 \frac{\text{lb}}{\text{gal}})(.0037 \frac{\text{TON S}}{\text{TON oil}})(1.9 \frac{\text{TON SO}_2}{\text{TON S}})(\frac{1 \text{ TON}}{2000 \text{ lb}}) = 3.3 \frac{\text{TON}}{\text{YR}}$

$(1111 \frac{\text{gal}}{\text{hr}})(7.121 \frac{\text{lb}}{\text{gal}})(.0037 \frac{\text{TON S}}{\text{TON oil}})(1.9) = 55.6 \frac{\text{lb}}{\text{hr}}$

SULFUR DIOXIDE (MAX)

$(1885 \frac{\text{gal}}{\text{hr}})(7.121 \frac{\text{lb}}{\text{gal}})(.0037 \frac{\text{TON S}}{\text{TON oil}})(1.9 \frac{\text{TON SO}_2}{\text{TON S}}) = 94.4 \frac{\text{lb}}{\text{hr}}$

PARTICULATE (AVG)

$(133{,}313 \frac{\text{gal}}{\text{yr}})(7.121 \frac{\text{lb}}{\text{gal}})(19468 \frac{\text{Btu}}{\text{lb}})(\frac{0.1 \text{ lb}}{\text{mm Btu}})(\frac{1 \text{ TON}}{2000 \text{ lbs}}) = 0.921 \frac{\text{TON}}{\text{YR}}$

$(1111 \text{ gal/hr})(7.121 \frac{\text{lb}}{\text{gal}})(19{,}468 \frac{\text{Btu}}{\text{lb}})(\frac{0.1 \text{ lb}}{\text{mm Btu}}) = 15.4 \frac{\text{lb}}{\text{hr}}$

PARTICULATE (MAX)

$(1885 \frac{\text{gal}}{\text{hr}})(7.121 \frac{\text{lb}}{\text{gal}})(19468 \frac{\text{Btu}}{\text{lb}})(\frac{0.1 \text{ lb}}{\text{mm Btu}}) = 26.1 \frac{\text{lb}}{\text{hr}}$

BIG BEND

UNIT: 1 YEAR 1984

$$138 \frac{\text{TONS}}{\text{HR}} \times \frac{2{,}000 \text{ lbs.}}{\text{TON}} \times \frac{11{,}664 \text{ BTU}}{\text{lb.}} = 3219 \frac{\text{MM BTU}}{\text{HR.}} \quad \text{(AVG)}$$

$$\text{DESIGN} = 4{,}037 \frac{\text{MMBTU}}{\text{HR.}} \text{ (MAX)}$$

$$972{,}138 \frac{\text{TONS}}{\text{YR.}} \times \frac{2{,}000 \text{ lbs.}}{\text{TON}} \times \frac{11{,}664 \text{ BTU}}{\text{lb.}} = 22{,}678{,}035 \frac{\text{MM BTU}}{1984} \quad \text{(ACTUAL)}$$

PARTICULATE EMISSIONS

$$0.03 \frac{\text{lbs. PART.}}{\text{MM BTU}} \times 3219 \frac{\text{MMBTU}}{\text{HR.}} = 96.6 \frac{\text{lbs. PART.}}{\text{HR.}} \quad \text{(AVG)}$$

$$0.03 \frac{\text{lbs PART}}{\text{MM BTU}} \times 4037 \frac{\text{MMBTU}}{\text{HR}} = 121.1 \frac{\text{lbs. PART.}}{\text{HR.}} \quad \text{(MAX)}$$

$$0.03 \frac{\text{lbs. PART.}}{\text{MM BTU}} \times 22{,}678{,}035 \frac{\text{MM BTU}}{1984} \times \frac{1 \text{ TON}}{2{,}000 \text{ lb}} = 340.2 \frac{\text{TONS PART.}}{1984}$$

SULFUR DIOXIDE EMISSIONS

$$4.92^{*} \frac{\text{lbs. } SO_2}{\text{MM BTU}} \times 3219 \frac{\text{MMBTU}}{\text{HR}} = 15837 \frac{\text{lbs. } SO_2}{\text{HR.}} \quad \text{(AVG)}$$

$$4.92^{*} \frac{\text{lbs } SO_2}{\text{MM BTU}} \times 4037 \frac{\text{MMBTU}}{\text{HR}} = 19862 \frac{\text{lbs } SO_2}{\text{HR}} \quad \text{(MAX)}$$

$$4.92^{*} \frac{\text{lbs. } SO_2}{\text{MM BTU}} \times 22{,}678{,}035 \frac{\text{MMBTU}}{1984} \times \frac{1 \text{ TON}}{2{,}000 \text{ lb}} = 55{,}788 \frac{\text{TONS } SO_2}{1984}$$

* $\frac{\text{lbs. } SO_2}{\text{MM BTU}}$ value of 4.92 is a weighted average for 1984.

D. E. A.

MAR 11 1985

SOUTH WEST DISTRICT
TAMPA

GANNOW STATION

UNIT: 1 YEAR 1984

4354 GAL/HR × 149,319 BTU/GAL = 650.1 MM BTU/HR. (AVG)

DESIGN = 1257 MM BTU/HR. (MAX)

10,602,414 GAL OIL/YR. × 149,319 BTU/GAL = 1,583,147 MM BTU/1984 (ACTUAL)

PARTICULATE EMISSIONS

0.03 lbs. PART./MM BTU × 650.1 MMBTU/HR. = 19.5 lbs. PART./HR. (AVG)

0.03 lbs PART./MM BTU × 1,257 MMBTU/HR = 37.7 lbs. PART./HR. (MAX)

0.03 lbs. PART./MM BTU × 1,583,147 MM BTU/1984 × 1 TON/2,000 lb = 23.7 TONS PART./1984

SULFUR DIOXIDE EMISSIONS

1.04* lbs. SO_2/MM BTU × 650.1 MMBTU/HR = 676.1 lbs. SO_2/HR. (AVG)

1.04* lbs SO_2/MM BTU × 1,257 MMBTU/HR = 1,307.3 lbs SO_2/HR (MAX)

1.04* lbs. SO_2/MM BTU × 1,583,147 MMBTU/1984 × 1 TON/2,000 lb = 823.2 TONS SO_2/1984

* lbs. SO_2/MM BTU value of 1.04 is a weighted average for 1984.

D. E. A.

MAR 11 1985

SOUTH WEST DISTRICT
TAMPA

SECTION III - FUEL COMBUSTION FOR GENERATION OF HEAT, STEAM, AND/OR POWER

Source Code[a]	Type of Fuel[b]	Annual Consumption[c]	Percent Distribution by Season				Hourly Consumption[c]		Heat Content BTU/Quan.[d]	Percent Sulfur[e]	Percent Ash (Solid) Fuel Only[e]
		Quantity[d] X 1,000	Spring March/ May	Summer June/ Aug.	Fall Sept./ Nov.	Winter Dec./ Febr	Maximum	Average Quantity			
GT 1	#2 Oil	107.1	12.48	21.95	12.78	52.78	1,885	1,231	19,449	0.35	NA
GT 2	#2 Oil	1,545.6	17.70	31.14	17.09	34.07	6,600	4,329	19,449	0.35	NA
GT 3	#2 Oil	917.0	29.75	18.77	1.48	50,00	6,600	4,246	19,449	0.35	NA

a. List code numbers corresponding to each emissions source reported in Section II.
b. Coke, bituminous coal, anthracite coal, lignite; No. 1, 2, 4, 5, and 6 fuel oil; natural gas; LPG; refinery or coke oven gas; etc. (Note: Indicate if two or more fuels are burned in the same boiler and provide all data pertinent to each fuel type).
c. Fuel data are to be reported on an "as burned" basis.
d. Solid fuel, tons; liquid fuel, gallons; gaseous fuel, 1000 cubic feet.
e. If unknown, please give name and address of fuel supplier.

SECTION IV - AIR CLEANING EQUIPMENT

Source Code	Type of Air Cleaning Equipment[a,b]	Pollutant Removed[c]	Inlet Gas Temperature °F	Inlet Gas Flow Rate ACFM	Maximum Pressure Drop, PSI.	Efficiency[d]	
						Design Percent	Operating Percent
GT 1	Not Applicable						
GT 2	Not Applicable						
GT 3	Not Applicable						

a. Wet scrubber, electrostatic precipitator, fabric filter, etc.
b. Please list future equipment separately.
c. The pollutants to be covered in this survey are specified in the accompanying instructions.
d. Give efficiency in terms of pollutant removed.
e. Give maximum normal operating pressure drop across air cleaning system.

SECTION V - STACK AND POLLUTANT EMISSIONS DATA

STACK DATA					ESTIMATE OF POLLUTANT EMISSIONS				
Source Code[a]	Height Above Grade ft.	Inside Diameter at Top ft.	Exit Gas Velocity ft./sec.[b]	Exit Gas Temperature °F.[c]	Pollutant[d]	Technique[f]	Quantity tons/yr.	Average lb/hr.	Maximum lb/hr.
BB1	490	24	72.8	269	Particulate	Stack Test	340	97	121
					Sulf. Dioxide	Fuel Anal.	55,788	15,837	19,862
BB2	Common	Stack with	Unit 1		Particulate	Stack Test	364	97	120
					Sulf. Dioxide	Fuel Anal.	58,650	15,711	19,341
BB3	490	24	40.0	279	Particulate	Stack Test	685	182	206
					Sulf. Dioxide	Fuel Anal.	43,013	11,470	12,921

a. List code numbers corresponding to each emissions source reported in Section II, III, and IV.
b. Values should be representative of average flow conditions for hours of operation.
c. At actual flow conditions.
d. The pollutants to be covered in this survey are specified in the accompanying instructions.
e. Give stack test data if available (indicate stack sampling method used), otherwise, specify basis used. If unknown, please do not complete these columns.
f. Note technique used to arrive at estimation; AP-42, stack test, etc.

SECTION V - STACK AND POLLUTANT EMISSIONS DATA

STACK DATA					ESTIMATE OF POLLUTANT EMISSIONS				
Source Code[a]	Height Above Grade ft.	Inside Diameter at Top ft.	Exit Gas Velocity ft./sec.[b]	Exit Gas Temperature °F.[c]	Pollutant[d]	Technique[f]	Quantity tons/yr.	Average lb/hr.	Maximum lb/hr.
GT 1	35	95.7(1)	18.2	1,010	Particulate	Fuel Anal.	0.74	17.0	26.1
					Sulf. Dioxide	Fuel Anal.	2.5	30.6	94.2
GT 2	75	215.6(1)	26.8	928	Particulate	Fuel Anal.	10.7	59.8	91.3
					Sulf. Dioxide	Fuel Anal.	36.5	107.7	329.8
GT 3	75	215.6(1)	26.3	928	Particulate	Fuel Anal.	6.3	58.7	91.3
					Sulf. Dioxide	Fuel Anal.	21.7	105.6	329.8

a. List code numbers corresponding to each emissions source reported in Section II, III, and IV.
b. Values should be representative of average flow conditions for hours of operation.
c. At actual flow conditions.
d. The pollutants to be covered in this survey are specified in the accompanying instructions.
e. Give stack test data if available (indicate stack sampling method used), otherwise, specify basis used. If unknown, please do not complete these columns.
f. Note technique used to arrive at estimation; AP-42, stack test, etc.

(1) Exit Area (ft^2)

SECTION V - STACK AND POLLUTANT EMISSIONS DATA

STACK DATA					ESTIMATE OF POLLUTANT EMISSIONS				
Source Code[a]	Height Above Grade ft.	Inside Diameter at Top ft.	Exit Gas Velocity ft./sec.[b]	Exit Gas Temperature °F.[c]	Pollutant[d]	Technique[f]	Quantity tons/yr.	Average lb/hr.	Maximum lb/hr.
1 & 2 Flyash Silo	102	5.0(1)	51.7	250	Particulate	Calculated	12.9	2.95	2.95
Unit 3 Flyash Silo	112.5	2.0(1)	129.6	250	Particulate	Calculated	11.0	2.95	2.95

a. List code numbers corresponding to each emissions source reported in Section II, III, and IV.
b. Values should be representative of average flow conditions for hours of operation.
c. At actual flow conditions.
d. The pollutants to be covered in this survey are specified in the accompanying instructions.
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f. Note technique used to arrive at estimation; AP-42, stack test, etc.

(1) Exit Area (ft^2)

GANNOW STATION

UNIT: 1 YEAR 1984

4354 GAL/HR × 149,319 BTU/GAL = 650.1 MMBTU/HR. (AVG)

DESIGN = 1257 MMBTU/HR. (MAX)

10,602,414 GAL. OIL/YR. × 149,319 BTU/GAL = 1,583,147 MMBTU/1984 (ACTUAL)

PARTICULATE EMISSIONS

0.03 lbs. PART./MM BTU × 650.1 MMBTU/HR. = 19.5 lbs. PART./HR. (AVG)

0.03 lbs. PART./MM BTU × 1,257 MMBTU/HR = 37.7 lbs. PART./HR. (MAX)

0.03 lbs. PART./MM BTU × 1,583,147 MMBTU/1984 × 1 TON/2,000 lb = 23.7 TONS PART./1984

SULFUR DIOXIDE EMISSIONS

1.04* lbs. SO_2/MM BTU × 650.1 MMBTU/HR = 676.1 lbs. SO_2/HR. (AVG)

1.04* lbs. SO_2/MM BTU × 1,257 MMBTU/HR = 1,307.3 lbs SO_2/HR (MAX)

1.04* lbs. SO_2/MM BTU × 1,583,147 MMBTU/1984 × 1 TON/2,000 lb = 823.2 TONS SO_2/1984

* lbs. SO_2/MMBTU value of 1.04 is a weighted average for 1984.

HILLSBOROUGH COUNTY ENVIRONMENTAL PROTECTION COMMISSION
ANNUAL OPERATING REPORT

(Corrected Copy)

Representing Calendar Year 1984
Date Submitted: March 8, 1985

SECTION I - GENERAL INFORMATION

Plant, Institution or Establishment Name: Tampa Electric Company (F.J. Gannon Station)
Plant Address: P.O. Box 111 (Street) Tampa (City) Florida (State) 33601 (Zip)
Telephone: (813) 228-4838

Person to Contact Regarding This Report A. Spencer Autry Title Manager, Environmental Plannir
Mailing Address: P.O. Box 111 (Street) Tampa (City) Florida (State) 33601 (Zip)

Actual Operating Hours: 24 hrs/day 7 days/wk 52 wks/yr

SECTION II - FUEL COMBUSTION FOR GENERATION OF HEAT OR STEAM

Source Code	Type of Fuel a	Quantity c X 1,000	Annual Consumption b Percent Distribution by Season: Spring March/May	Summer June/Aug	Fall Sept/Nov	Winter Dec/Feb	Hourly Consumption: Maximum	Average	Heat Content BTU/Quan	Percent Sulfur d	Percent Ash d
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Gan 3	No. 6 Oil Bitum Coal	7,627/ 154	6.85	28.26	42.12	22.77	10,846 65	6,997/ 43.5	149,319 12,596	0.95 1.18	NA 7.85
Gan 4	Bitum. Coal	371	26.87	20.50	29.26	23.37	80	52.1	12,361	1.19	8.04

a. Coke, bituminous, anthracite, or lignite coal No. 1, 2, 3, 4, 5, or 6 Fuel Oil, Nat. Gas, LPG; Refinery or Coke Oven Gas Etc. Indicate if two or more fuels are burned in the same boiler and provide all data pertinent to each fuel type.

b. Fuel Data Reported on 'as burned' Basis

c. Solid Fuel: Tons, Liquid Fuel: Gals.: Gaseous Fuel: 1000 ft^3

d. If unknown, please give name and address of fuel supplier.