LAKELAND
ELECTRIC & WATER

Excellence Is Our Goal, Service Is Our Job

(813) 499-6603

Farzie Shelton
ENVIRONMENTAL COORDINATOR, Ch E.

May 17, 1995

RECEIVED
MAY 18 1995
Bureau of
Air Regulation

VIA HAND DELIVERY

Hamilton S. Oven, Jr., Administrator
Power Plant Siting Section
Florida Department of Environmental Protection
3900 Commonwealth Boulevard
Tallahassee, FL 32399

RE: City of Lakeland; C.D. McIntosh Unit No. 3; Response toMay 5, 1995, Request for Additional Information Regarding Requests to Modify Site Certification (PA-78-06) and PSD Permit (PSD-FL-8)

Dear Buck:

The City of Lakeland very much appreciates the Department of Environmental Protection's timely review of the above-referenced requests to modify the City's Site Certification and Prevention of Significant Deterioration (PSD) permit for the C.D. McIntosh Unit No. 3. The recent meetings between representatives from the Department and the City have been very beneficial, and we appreciate the Department's efforts in responding to the City's modification requests. Al Linero, Administrator of the Division of Air Resources Management's New Source Review Section, recently sent a request for additional information to the City of Lakeland by letter dated May 5, 1995. In response to the May 5 letter, the City is providing the information requested, as described below. We are hopeful that this information will provide the Department with sufficient data to complete its review and issue the requested modifications.

(1) Basic drawings of the scrubber serving Unit 3 along with a short process description, the name of the manufacturer, model number and serial number. The basic operating manual would suffice if it has this information.

Attached please find (as Attachment 1) information on the flue gas desulfurization (FGD) system installed on C.D. McIntosh Unit No. 3. It should be noted that the FGD system, contemplating the Subpart D new source performance standards (NSPS), has two absorber modules rated at approximately 55 percent of total unit output. In contrast, the first two power plants in Florida that were required to meet Subpart Da NSPS have additional scrubbing capability (i.e., absorber modules) which were installed to ensure the units met reliability requirements. The Seminole Electric Cooperative, Inc., coal-fired power plant located in Palatka has five absorber modules per unit. Each module has a capacity of 25 percent of unit output. This plant consists of two 715-MW (nameplate) units. The St. Johns River Power Park, which consists of two 669-MW (nameplate) coal-fired units, has three absorber modules per unit. Each module has the capacity of 50 percent of plant output. The additional modules allow each of these plants to perform maintenance on modules while the plant is operating. If McIntosh Unit No. 3 were required to meet Subpart Da, then both scrubber modules would be required to operate to meet the percent removal specified in these NSPS. This would affect plant reliability since there is no spare module associated with the C.D. McIntosh Unit No. 3 FGD system.

(2) Results of the three most recent annual stack tests for particulate matter, nitrogen oxides, and sulfur dioxide.

The results of the annual stack tests are attached as Attachment 2.

(3) Rationale for Best Available Control Technology (BACT) requested by the City (0.90 lb/MMBtu, 55% minimum scrubber efficiency). This should be expressed in a manner similar to the attached "Least-Cost-Envelope." It should also include the NSPS "D" and NSPS "D(a)" cases as well as the 85% removal case. Details of credits and charges as appropriate should be included for reagencies, water, energy penalties, fuel cost differentials, SO_2 allowances, etc. You may wish to show three curves and sample backup calculations for roughly 1.1% sulfur fuel, as well as 2.2 and 3.3% sulfur fuel.

An economic evaluation of the SO_2 emission limits proposed by the City compared to the emission limitations required by Subpart D and Subpart Da has been performed. The tabulated results of the evaluation are contained in Attachment 3. This attachment also presents the cost envelopes developed from the analysis. In evaluating Subpart Da, the addition of a new absorber module was considered. As indicated above, facilities that have been required to meet Subpart Da include additional absorber capacity in the design of those units to ensure reliability.

The results of the economic evaluation indicate that the emission limitation proposed by the City is the most cost effective (i.e., \$ per ton of SO_2 removed). Although the overall operating costs with the Subpart D limit would be lower than that proposed by the City, there are fixed costs associated with the scrubber operation which increase cost effectiveness; i.e., \$408.34/ton of SO_2 removed for Subpart D to \$345.61/ton of SO_2 removed with the City's proposal. The cost effectiveness meeting Subpart Da is much higher than the City's proposed emission limit whether a new module is considered or not. Without a new absorber module, the cost effectiveness of meeting Subpart Da is about 27 percent higher than the City's proposal. With a new scrubber module, meeting Subpart Da would be about 65 percent higher than the City's proposal. If a new scrubber module is not installed, additional costs would be incurred due to the reduced reliability of the unit (e.g., downtime, purchase of additional power, etc.). <u>It should be noted that no costs associated with reduced reliability have been added to the evaluation.</u>

The evaluation was performed using the sulfur content coal that the City currently uses, i.e., about 1.11 percent sulfur. An economic evaluation of other sulfur coals is problematic since coal price plays an important role in the overall economics. For example, the difference between a 1.5 percent sulfur coal and 2.5 percent sulfur coal is about $1.50/ton. In contrast, the CSI/sludge and scrubber costs associated with the higher sulfur coal is about $3/ton of coal. Thus, it is currently not economical to burn higher sulfur coals.

(4) A tabulation (hard copy or diskette) of the past two years worth of coal data, including sulfur content, SO_2 removal efficiency (or sulfur reduction percentage). There is no need for the individual coal analysis sheets.

Attachment 4 presents SO_2 emissions and removals for 1993 and 1994. The SO_2 removals are based on estimates developed from coal analyses and are believed to be representative of overall SO_2 reductions for the unit. As noted for these data, the overall SO_2 removal has been in the range of the emission limitation requested by the City. Please note that individual coal analyses were submitted to the Department as part of the response to the Department's letter dated January 25, 1995 (i.e., question E-2).

(5) Your proposed method of determining and reporting compliance with the SO_2 emission limit and sulfur reduction (scrubber efficiency) requirement.

As stated in the City's request dated April 6, 1995, we are proposing an SO_2 emissions limit of 0.9 lb/mmBtu based on a 30-day rolling average. Consistent with the approach in Subpart Da, the minimum overall SO_2 removal efficiencies proposed by the City (85 percent whenever high sulfur coal is burned and 60 percent whenever the SO_2 emissions are 0.9 lb/mmBtu or less) are also based on a 30-day rolling average. Attachment 5 presents the proposed approach to determine compliance with the SO_2 emission limit and removal efficiencies requested by the City.

The City would like to thank you and the Department's air staff for your continued cooperation and assistance in this modification process. We hope that the information being provided by the City will be sufficient for the Department to complete its review and issue the requested modifications. If you or any of the Department's air staff has any questions regarding the information being provided, however, please do not hesitate to contact me at (813) 499-6603.

Sincerely,

Farzie Shelton/arm

Farzie Shelton
Environmental Coordinator

cc: Howard Rhodes, FDEP
Clair Fancy, FDEP
Al Linero, FDEP
Martin Costello, FDEP
Ken Kosky, KBN
Angela Morrison, HGSS

ATTACHMENT 1

FLUE GAS DESULFURIZATION (FGD) SYSTEM DESIGN INFORMATION

WET LIMESTONE SCRUBBING SYSTEM

DESCRIPTION OF SYSTEM

This wet limestone scrubbing system is designed to remove sulfur dioxide from the flue gases of City of Lakeland Unit No. 3 at their C. D. McIntosh Jr. Plant. The system designed for this application incorporates features which have been developed over many years of commercial operation and pilot work in the utility flue gas desulfurization, and utilizes the Babcock and Wilcox Company's experience gained from over a hundred years of service to the utility power industry.

Basically, the design consists of the following major components:

- Flue work from the discharge of the I.D. fan to the stack including two bypass streams to allow a direct route for the flue gases to the stack.
- Two gas scrubbing trains in which the SO_2 removal occurs.
- One complete limestone wet ball milling system to pulverize the stone and slurry it for introduction to the gas stream.
- A dewatering system consisting of a thickener and appurtenances to reduce fresh water usage by decanting the spent waste slurry and returning supernatant to the system.

Drawings Number 38707F and 38712F show the arrangement of the scrubbing system.

Flowsheet Drawing No. 151251D details the operating conditions of the system.

SCRUBBING SYSTEM

The flue gas is taken by the SO_2 removal system as it exits the utility's two I.D. fans which are located downstream of an electrostatic precipitator. The flue gas then enters a large system plenum from which the gas proceeds directly to the stack. From the I.D. fans the flue gas is directed to the scrubber trains. Each of the scrubber trains are designed to treat 50% of the total flue gas.

The two gas scrubber trains each consist of two main gas contacting devices; the quencher; the absorber, and the moisture separator, the latter two comprising the absorber tower.

The quencher is of a downflow design. Its objectives are to saturate the gas, thereby lowering the gas temperature and to serve as the first stage of SO_2 removal.

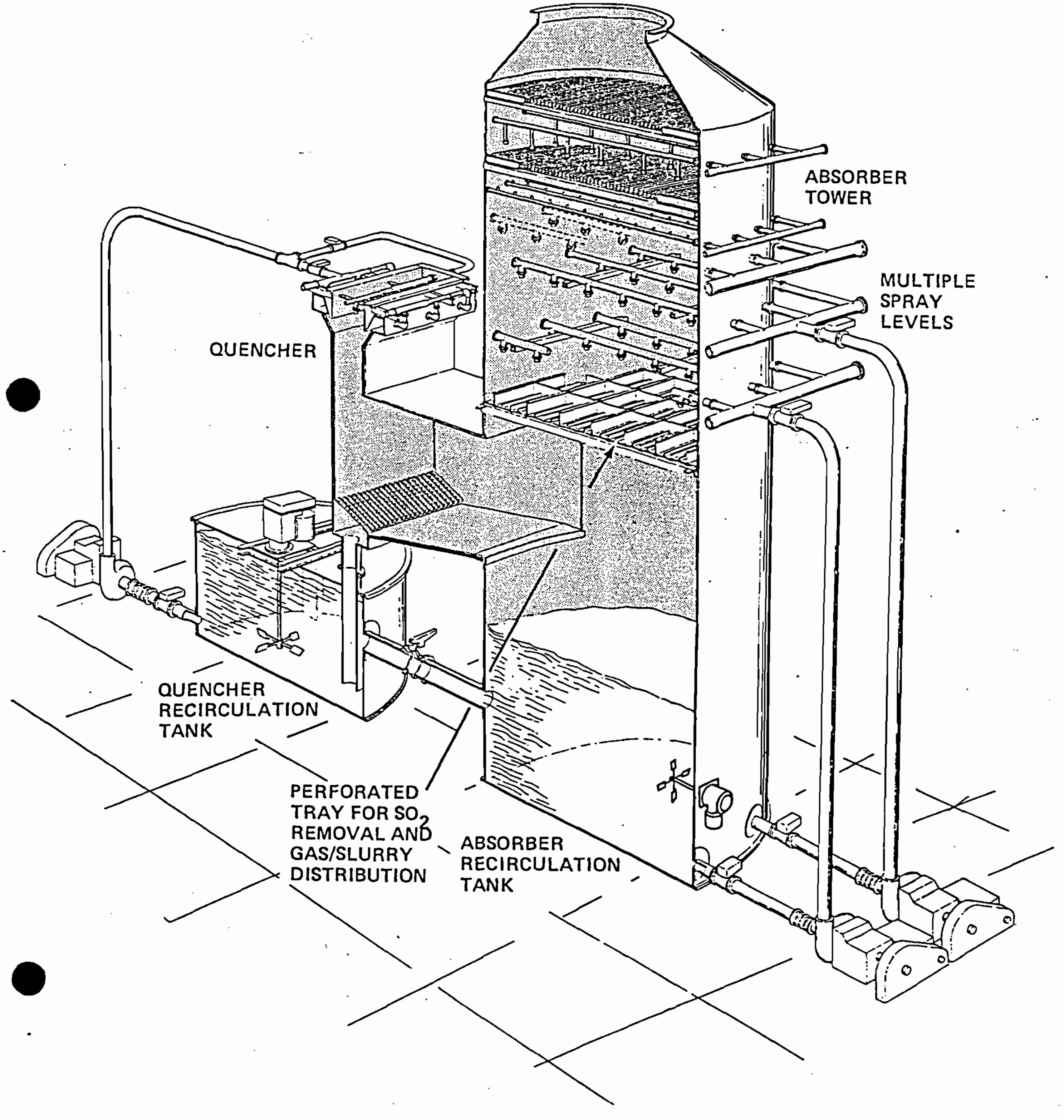
The gases leaving the quencher turn into a sump area which decelerates the gases prior to entry into the absorber tower.

The gases then turn to flow up through the absorber tower. A perforated tray level provides an intimate contact zone for the gases and the limestone slurry being sprayed from above in several separate spray header levels. In addition to its value as a slurry-gas contactor, the tray utilizes its inherent pressure loss to distribute the gases evenly across the cross-section of the tower to improve performance. Further SO_2 removal is achieved as the gases pass through the counter-current limestone slurry spray header levels.

To eliminate excess moisture and slurry droplets in the gases from the absorber section, two levels of moisture separator blades are provided.

After leaving the moisture separator, the flue gas is directed towards a common outlet plenum which enters the stack at an elevated level. After the module outlet fluework has joined together into a common plenum the flue gas enters a reheat mix zone. At this point hot air is mixed with the scrubber flue gas resulting in a temperature rise before entering the stack.

SULFUR DIOXIDE ABSORBER TRAY TOWER MODULE



City of Lakeland

SO_2 Removal System Design Basis

Turbine	350 MW	
Boiler Heat Input	3323 MMBTu/Hr	
Fuel Analysis	Design	Range
Proximate % by Wt.		
Moisture	8.0	5.0 - 8.5
Volatile Matter	33.0	30 - 40
Fixed Carbon	44.0	42 - 49
Ash	15.0	10 - 16
Sulfur	2.5	1.8 - 2.5
Heating, BTu/LB	11,200	11,200 - 12,500
Ultimate (Dry) % by Wt.		
Carbon	68.65	68 - 79
Hydrogen	5.11	4.5 - 5.7
Chlorine	0.24	0.15- 0.30
Sulfur	1.9	1.6 - 2.3
Ash	16.3	8.0 - 17.9
Oxygen	6.26	5.8 - 7.0
Nitrogen	1.54	1.4 - 1.7

Design Inlet SO_2 Loading 4.46 LB SO_2/MKB

Limestone Reactant Analysis

Calcium Carbonate 91.4% by Wt.

Magnesium Carbonate 0.4

Work Index (Bond) 10

SCRUBBING SYSTEM COMPONENT DESIGN

The system offered, as described in the previous pages, consists of several key components of unique design for utility SO_2 removal applications. The characteristics of these components are described in the succeeding pages.

The components noted are the following:

- Quencher
- Absorber Sprays and Tray Design
- Moisture Separator
- Recirculation Tanks

Quencher

Each venturi-type quencher has a throat 27 feet long by 60 inches wide. Exposed wetted parts at the quencher inlet are Type 316L stainless steel. The major portion of the convergent section and all of the divergent section of the quencher walls are 1/4 inch thick carbon steel under 2 inches of Kaocrete HS refractory.

The wall wash nozzles at the quencher inlet are Type 316 stainless steel and the quencher spray nozzles mounted above the throat are Cast TP 316 stainless. All external stiffeners are carbon steel.

Absorber Tray Tower

After adiabatic saturation in the quencher, the gases pass up through the tray tower absorber for removal of sulfur dioxide. A limestone slurry spray is introducted at the top of the absorber from a series of spray headers and flows downward, countercurrent to the gas flow through the slurry retention tray. The size of the absorber is 36 feet in diameter.

The absorber shell and support beams are constructed of Type 316L stainless teel. The two absorber trays and its secondary supports are constructed of Type 316L stainless steel and are modularized for easy installation or removal through access

Absorber Tray Tower (continued)

doors. The spray headers, which are flanged for ease of installation, are constructed of stainless steel. The spray nozzles are flanged and made from refrax material.

All external stiffeners and supports are carbon steel.

Moisture Separator

After the gas leaves the absorber, it enters the moisture separator. The 1/4 inch shell and main internal support beams are constructed of Type 316L stainless steel.

The gas enters the primary moisture separator which is a Zee-shaped chevron made from a reinforced fiberglass material. Below the primary moisture separator are a series of headers and spray nozzles. The piping will be a corrosion resistant material and the nozzles for this continuous wash system are constructed of Type 316 stainless material. Above the primary moisture separator is another series of spray headers. These headers are constructed of a corrosion-resistant material and the spray nozzles are constructed of Type 316 stainless material.

The final stage of the apparatus is a secondary moisture separator which is a similar design to the Zee-shaped primary moisture separator.

Absorber Recirculation Tank

The base of the absorber tray tower is the absorber recirculation tank. The tank volume is mixer agitated and maintains suction for the absorber recirculation pumps. Slurry at a full operating level is approximately 30 feet from the base. It is constructed of stainless steel. It contains overflow and drain connections, instrument connections, an access door, and internal baffling to aid the mixing action.

Quencher Recirculation Tank

This flat bottom mixer agitated tank receives the discharge from the quencher sump and maintains suction for the quencher recirculation pumps. It is constructed of 1/4 inch carbon

Quencher Recirculation Tank (continued)

steel plate with 3/16 inch soft natural rubber lining. It is covered with 3/16 inch externally stiffened carbon steel top which is internally lined with 3/16 inch soft natural rubber. In addition to the inlet and outlet connections, it also contains overflow connection, a drain connection, instrument connections, an access door, and internal baffling. The tank measures 16 feet in diameter and 30 feet high.

Quencher Recirculation Pump

Each module has two (2) 100 percent recirculated slurry horizontal, centrifugal pumps to provide the transportation of reaction products slurry to the quencher spray nozzles and wall wash nozzles.

Absorber Tower Recirculation Pump

Each tower has four (4) recirculated slurry horizontal centrifugal pumps to provide transfer of the limestone reaction products slurry to the absorber spray headers. The pump is soft natural rubber lined and equipped with V-belt drive. One (1) pump of the four total act as a complete spare for redundancy.

ABSORBENT PREPARATION SYSTEM

The SO_2 removal system includes one 15.8 ton per hour capacity wet ball milling systems from silo discharge through the feed slurry recirculation loop. The limestone is discharged from the utility's silo onto a gravimetric weigh-belt feeder. A controlled feed enters the ball mill with makeup water and recycled slurry for wet grinding. The wetted limestone is pulverized in the rotating mill by a charge of steel balls.

The limestone slurry discharges out the end of the mill through a trommel screen into the mill product tank. From the mill product tank the slurry is pumped to a set of cyclone separators where the fine product slurry is separated from that which is not completely ground. The product continues to the slurry storage tank while the unground stone is recycled back to the mill inlet.

The limestone slurry is pumped from the slurry storage tank to the scrubber modules. There is a recycle loop in the feed line which permits a continuing flow at various operating loads. Two 100-percent capacity slurry feed pumps are provided for redundancy.

As the mill will be activated upon a demand signal from the slurry storage tank, the milling circuit will be run intermittently. The slurry storage tank will have a capacity of 8 hours reserve at full load conditions. Therefore, once the tank is filled, at reduced loads the milling system will be operating less as fresh limestone requirements are reduced. By operating the mill at a constant load when required, a more even size of limestone particules in the slurry results. This operating mode is preferred by milling system suppliers, and has been used by B&W in all of its utility applications.

DEWATERING SYSTEM

To reduce fresh make-up water requirements the system includes a spent slurry dewatering system which will yield maximum usage of water intake. Bleed lines from the scrubber slurry recirculating loops withdraw spent liquor from the slurry spray systems. The bleed streams combine and pass on to a 140 foot diameter thickener.

The thickener rakes sweep the bottom twice per revolution, and the resultant sludge will maintain a 30 percent suspended solids by weight. The supernatant overlfows a weir assembly around the thickener perifery and is collected in the clarified recycle tank. Either of two 100 percent capacity recycle pumps return the supernatant to the system. In addition two 100 percent capacity underflow pumps are provided to transport the sludge to further treatment by the utility.

SO_2 PERFORMANCE DESIGN

The criteria used in the optimal design of an SO_2 removal system can be subject to individual interpretation. This is due to the multiple factors which affect SO_2 removal. Among these are L/G, inlet SO_2 concentration, type of contactor, number of spray levels, recirculation tank retention times and limestone fineness and composition. Only by having a large data base can the relative importance of each of these factors be determined.

B&W has acquired this large data from several different sources; they include 3 units operating in the U.S. (Will County Station of Commonwealth Edison, LaCygne Station of Kansas City Power & Light, and Winyah Station of South Carolina Public Service). Babcock-Hitachi, our Japanese affiliate, has been licensed to engineer and build B&W SO_2 removal systems in Japan. Because of the stringent SO_2 emission standards in Japan, eleven Babcock-Hitachi units are already in operation.

Since there are many factors to be studied, we have used pilot plants to study the affects of varying the significant parameters. Two pilot plants were run at our Alliance Research Center. Babcock-Hitachi operated a 2500 ACFM pilot plant for several years in order to determine the performance criteria necessary to achieve high SO_2 removals (99.5% +); they also studied the oxidation of sludge to produce gypsum. The EPA-TVA pilot at Shawnee have been operated over a broad range of operating conditions which adds to B&W's data base. We are currently testing different configurations of liquid-gas contactors and absorbents at the Ft. Martin Station of Allegheny Power System.

In the correlation of the data from various sources, we use the concept of a transfer unit. The transfer unit is commonly used in mass transfer applications. The transfer unit is equal to $-\ln (SO_2\ Out / SO_2\ In)$.

Figure 1 shows the transfer unit versus SO_2 removal efficiency. This is a good representation as it clearly shows that increasing the efficiency from 90-95% would be much more difficult than an increase from 60-65%. Transfer units have a linear relation between them. That is, if a particular scrubber system is capable of 63% efficiency - 1 transfer unit, it will take two such scrubbers in series to obtain 86% removal or 2 transfer units. B&W has used the data from the various commercial and pilot plants to determine how different factors affect SO_2 removal efficiency. Each of these parameters have been related graphically to a relative transfer unit (RTU) and the total system transfer unit (TU) is now defined as:

TU = RTU (SO_2 concentration) x RTU (L/G) x RTU (Slurry Solids) x

RTU (Absorber pH) x RTU (Absorber P) x RTU (Nozzle P) x

RTU (Stoichiometry) x Base Transfer Unit

This total transfer unit can now be related to an SO_2 removal efficiency for the system by using Figure 1 or:

Sources of SO_2 Removal Performance Criteria

Operating Units

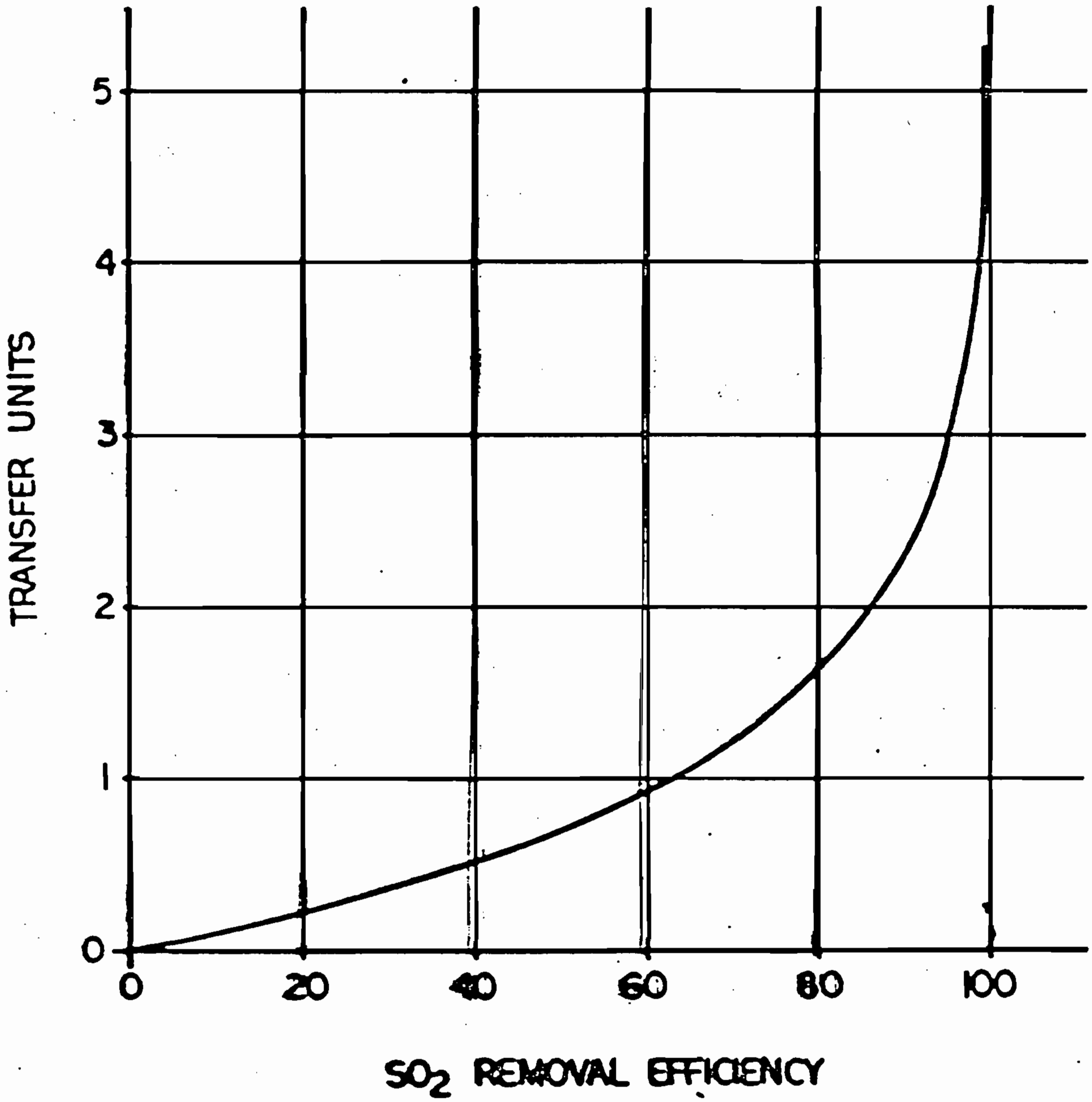
	No	Capacity, MW
United States	3	1304
Japan	11	2246
Total	14	3550

Pilot Plants

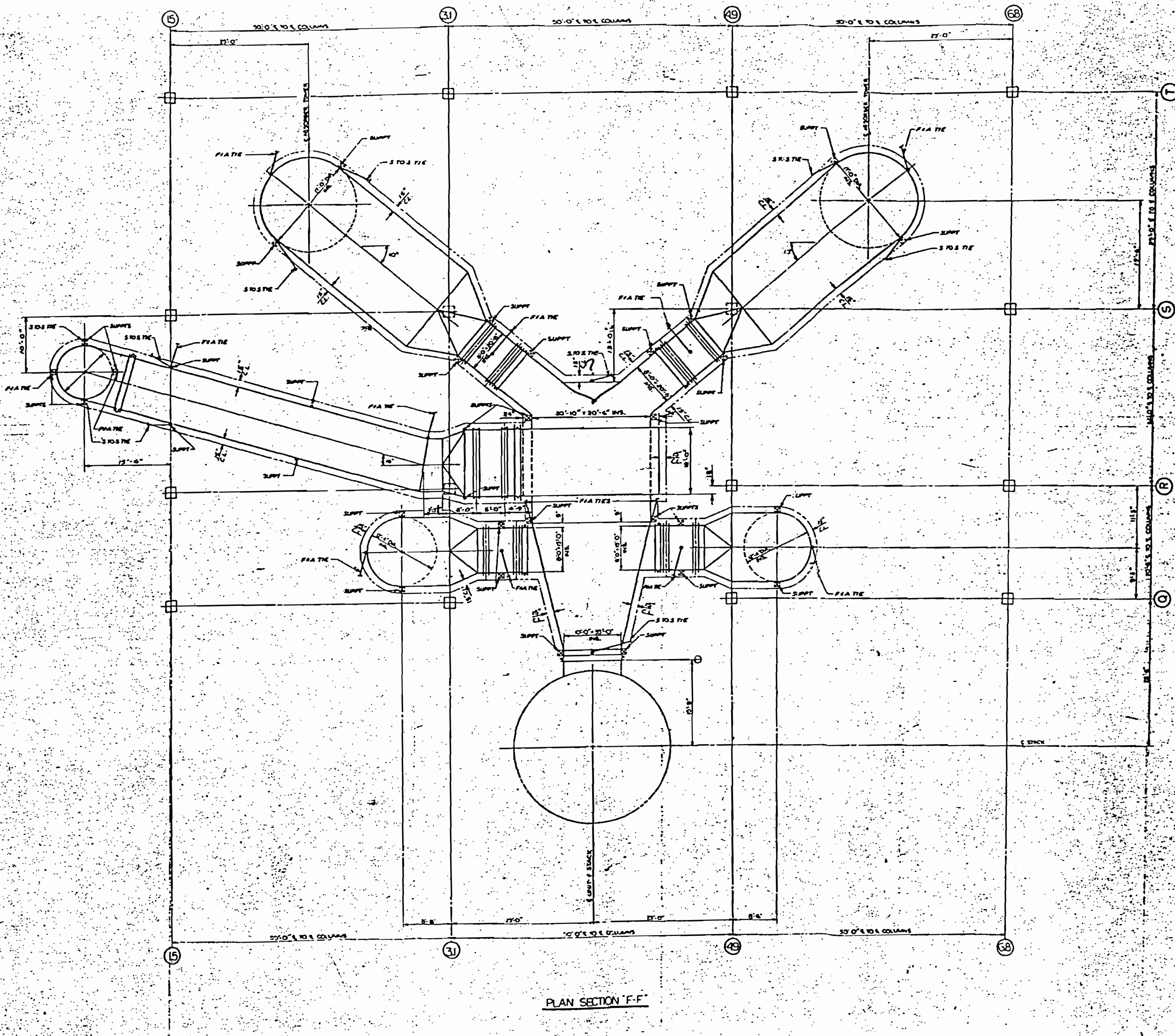
	Capacity, ACFM
Ft. Martin Station	5000
Babcock-Hitachi-Kure Works	2500
TVA-Shawnee Station	30000
B&W-Alliance Research Center	250 & 1250

$$\text{TRANSFER UNIT} = -\ln\left(\frac{SO_2\ \text{OUT}}{SO_2\ \text{IN}}\right)$$

FIGURE 1

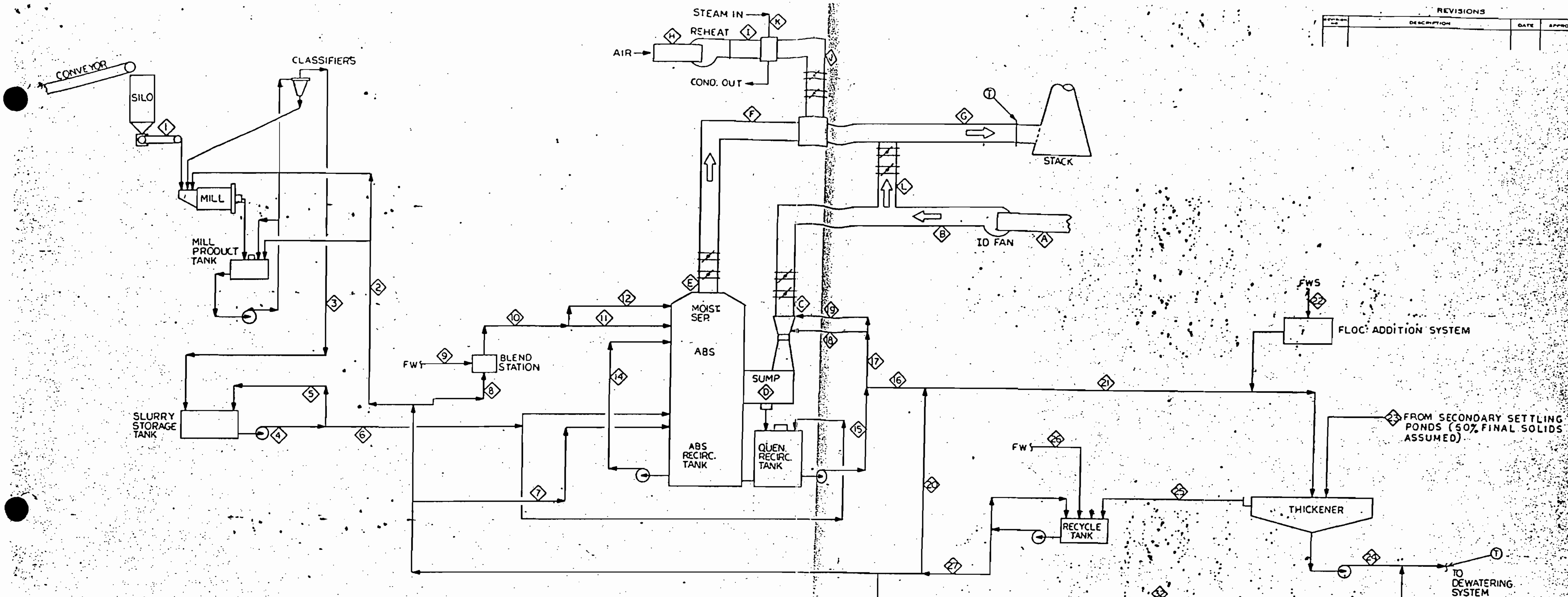


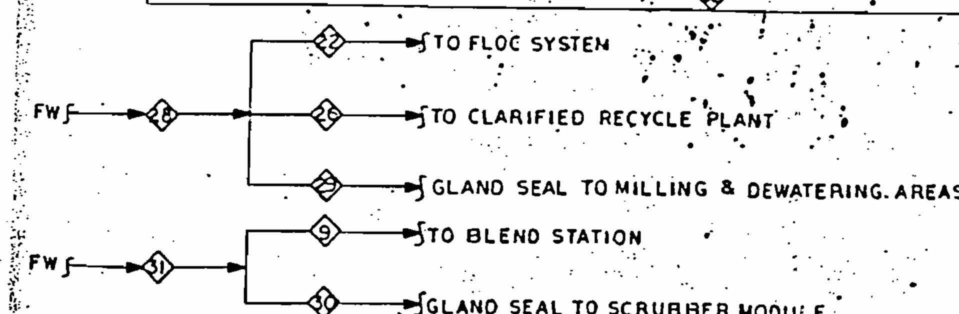
TRANSFER UNITS
VS.
SO_2 REMOVAL EFFICIENCY



DEPARTMENT OF ELECTRIC AND WATER UTILITIES
CITY OF LAKELAND
CHAS. T. MAIN, INC.
C.D. McINTOSH PLANT, UNIT No 3

B&W FLUE GAS SCRUBBER SYSTEM PLAN SECTION "F-F"





GAS SIDE

	UNITS	A	B	C	D	E	F	G	H	I	J	K	L
LOW	ACFM	1233998	1175211	1179973	967329	978411	980330	1260536	162555	159364	278991	—	—
RESSURE	IN WG (PSIA)	−18.40	11.23	9.55	8.35	3.62	2.82	2.0	0.0	15.0	5.5	(133 PSIG)	—
EMPERATURE	DEG. F	292	308	308	127	127	127	157	20.0	28.0	375	590	—
PEC. VOL	FT^3 WG/LBS OF DG	20.57	19.52	19.59	16.07	16.27	16.30	17.22	12.46	12.21	21.38	—	—
ET GAS	LBS/HR	3793800	3793800	3793800	3953277	3950217	3950217	4743414	793197	793197	793197	65099	—
RY GAS	LBS/HR	3613219	3613219	3613219	3611550	3608490	3608490	4391534	783044	783044	783044	—	—
$_2O$	LBS/HR	180581	180581	180581	341727	341727	341727	351880	10153	10153	10153	65099	—
$_2$	LBS/HR	14835	14835	14835	10385	2225	2225	2225	—	—	—	—	—
ARTICULATE	LBS/HR	—	—	—	—	—	—	—	—	—	—	—	—

LIQUOR SIDE

	UNITS	1 (A)(E)	2 (A)(E)	3 (A)(E)	4	5	6	7	8 (A)(B)(E)	9 (A)(F)	10 (A)(E)	11 (A)(E)	12 (A)(E)	13	14	15	16	17	18	19	20 (F)	21	22	23	24	25	26 (E)(A)	27 (E)(F)(G)	28 (E)(F)	29 (E)	30	31 (A)(E)	32 (E)
LOW	GPM	—	112 / 138	140 / 171	321	180	141	78	216 / 216	217 / 217	433 / 453	[illegible]	[illegible]	—	67926	13011	407	12604	9704	2900	0	407	0.14	114	184	333	67 / 200	422 / — / 407 / —	82 / 30 / 72	14.5 / 12.58 / 4.5	63.0	280 / 280 / —	0
LOW	LBS/HR	[illegible]	[illegible]	[illegible]	197612	110534	85978	38943	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	—	37532647	7183532	224667	6954365	5361954	1502491	0	224557	68	55917	113084	169313	33497 / 100100	[illegible] / 203567 / [illegible]	40922 / 39911 / 35317	7257 / 6346 / 2252	31532	139990 / 139890 / —	0
$_2O$	LBS/HR	[illegible]	[illegible]	[illegible]	138842	77732	51110	38943	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	—	31902750	6110677	190967	5919710	4557665	1352041	0	190357	68	55917	79384	169319	33497 / 100100	[illegible] / 203567 / [illegible]	40822 / 39911 / 35817	7257 / 6346 / 2252	31532	139990 / 139890 / —	0
OTAL SOLIDS	LBS/HR	[illegible]	[illegible]	[illegible]	58770	32902	25868	0	0	0	0	0	0	—	5623897	1071355	33700	1044655	804235	240361	0	33700	0.34	0	33700	0	0	0	0	0	0	0	0
OLIDS	%	100	0	30	29.74	29.74	29.74	0	0	0	0	0	0	—	15	15	15	15	15	15	0	15	0.5	0	29.30	0	0	0	0	0	0	0	0
MESTONE (INERTS)	LBS/HR	[illegible]	—	[illegible]	5034	2829	2225	—	—	—	—	—	—	—	—	—	2225	—	—	—	—	2225	—	—	2225	—	—	—	0	0	0	0	0
CO_3	LBS/HR	[illegible]	—	[illegible]	53716	30073	23643	—	—	—	—	—	—	—	—	—	3940	—	—	—	—	3940	—	—	3940	—	—	—	—	—	—	—	—
$SO_3 \cdot \frac{1}{2}H_2O$	LBS/HR	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	19063	—	—	—	—	19063	—	—	19063	—	—	—	—	—	—	—	—
$SO_4 \cdot 2H_2O$	LBS/HR	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8472	—	—	—	—	8472	—	—	8472	—	—	—	—	—	—	—	—
O OF HYD. O	LBS/HR	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3103	—	—	—	—	3103	—	—	3103	—	—	—	—	—	—	—	—

A. INTERMITTENT FLOW
B. AVERAGE FLOW
C. INCLUDED IN DRY GAS
D. INCLUDED IN SOLIDS
E. MILL OPERATING/AVERAGE/MILL NOT OPERATING
G. MIST ELIMINATOR WASH ON/OFF
H. MIST ELIMINATOR WASH ON/AVG/OFF

E MAXIMUM FLOW

STREAM	GPM	STREAM	GPM
8	390	28	225
9	433	31	496
20	135	32	100
22	10		
27	966		

DESIGN GAS FLOW
2.5% S. COAL
11,200 BTU/LB COAL

STOICHOMETRY	1.2
MODULE IN OPERATION	2
QUENCHER L/G	10.03
ABSORBER L/G	70.22
MODULE SOLIDS	15

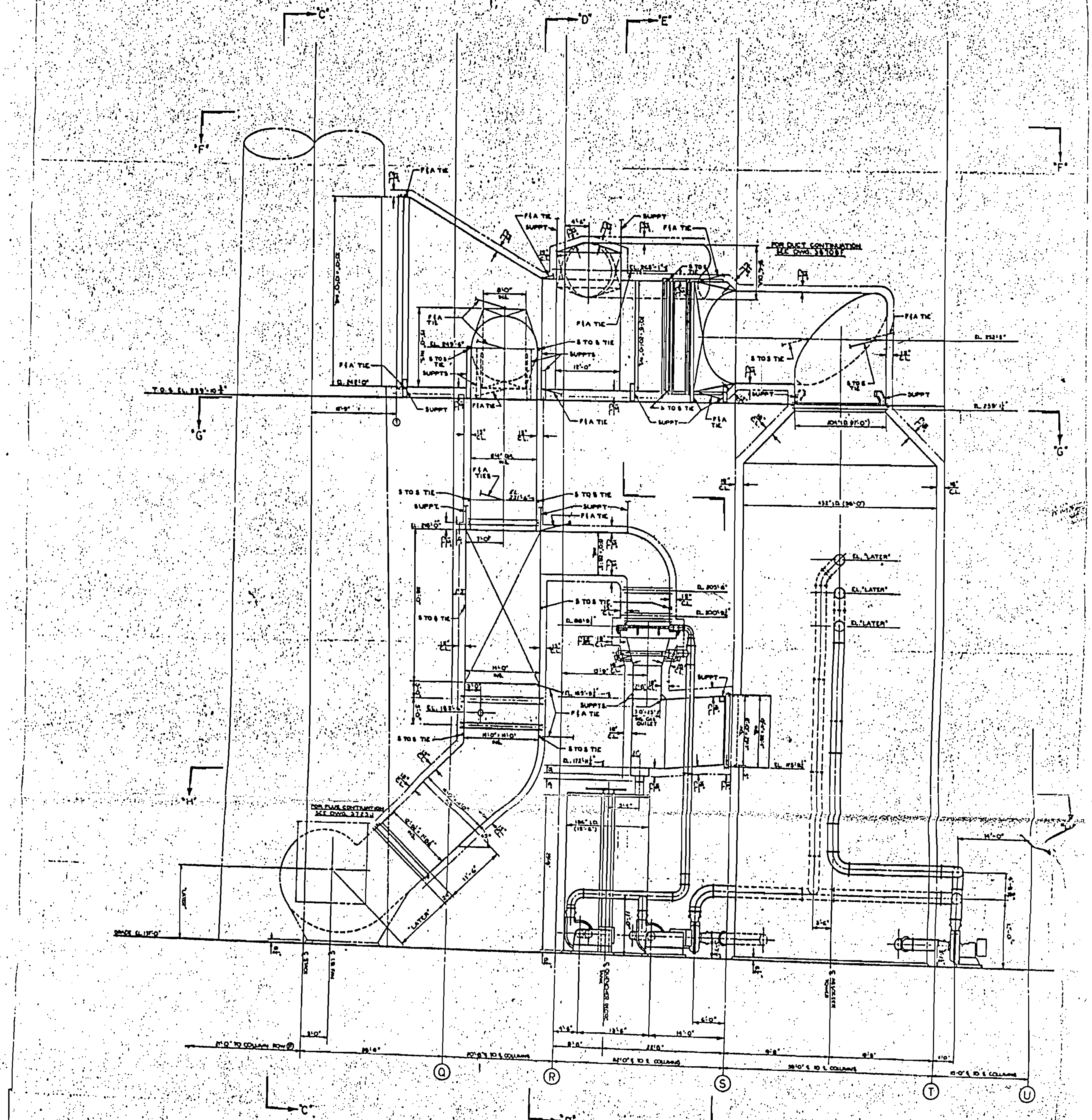
DWN. BY J. DORBIN
CHKD. BY
PASSED BY
APPVD. BY
STD. | SPL. | DATE
568-0011

WET SCRUBBING SYSTEM
FLOW DIAGRAM

SCALE ~

THE BABCOCK & WILCOX CO.
POWER GENERATION GROUP

DWG. NO. 151251 D
REV.



SIDE VIEW "A-A"

DEPARTMENT OF ELECTRIC AND WATER UTILITIES
CITY OF LAKELAND
CHAS. T. MAIN, INC.
C.D. McINTOSH PLANT, UNIT No 3

ATTACHMENT 2

COMPLIANCE TEST RESULTS

Table 3-1 Summary of Particulate Emissions Test Results: City of Lakeland McIntosh Power Plant, Unit #3 June 9, 1992

Run	Flow Rate (dscfm)	Stack Temp. (°F)	H_2O (%)	O_2 (%)	Particulate Matter Rate: Concentration (gr/dscf)	Particulate Matter Rate: Actual (lb/MMBtu)	Particulate Matter Rate: Allowable (lb/MMBtu)
Non-Soot Blowing							
1	790,506	176	10.86	6.1	0.014	0.027	0.10
4	759,639	193	12.36	6.3	0.027	0.054	0.10
5	765,167	195	11.15	6.2	0.025	0.049	0.10
Avg	771,771	188	11.46	6.2	0.022	0.043	0.10
Average Opacity						0.0%	20%
Soot Blowing							
2	780,529	177	11.22	6.1	0.066	0.130	0.30
3	786,746	188	10.59	6.4	0.062	0.125	0.30
6	765,264	195	11.39	6.1	0.061	0.121	0.30
Avg	777,513	187	11.1	6.2	0.063	0.125	0.30
Average Opacity						0.0%	20%

Source: ESE, 1992

Table 3-2 NO_x and SO_2 Compliance Test Results:
City of Lakeland McIntosh Power Plant, Unit #3
June 9, 1992

Run #	O_2 (%V)	NO_x (ppmV)	SO_2 (ppmV)	NO_x (lb/MMBtu)	SO_2 (lb/MMBtu)
1	5.7	207.2	287.5	0.333	0.642
2	5.8	201.4	295.7	0.326	0.647
3	5.9	192.8	281.2	0.314	0.636
Averages	5.8	200.5	288.1	0.324	0.647

Table 3-1 Summary of Particulate Emissions Test Results: City of Lakeland McIntosh Power Plant, Unit #3 June 23 and 24, 1993

Run	Flow Rate (dscfm)	Stack Temp. (°F)	H_2O (%)	O_2 (%)	Particulate Matter Rate: Concentration (gr/dscf)	Particulate Matter Rate: Actual (lb/MMBtu)	Particulate Matter Rate: Allowable (lb/MMBtu)
Non-Soot Blowing							
1	843,601	162	10.77	7.30	0.0031	0.0067	0.10
4	830,263	165	11.90	7.25	0.0043	0.0091	0.10
6A	868,255	165	9.90	7.30	0.0119	0.0256	0.10
Avg	847,373	164	10.86	7.28	0.0064	0.0138	0.10
Average Opacity						0.0%	20%
Soot Blowing							
2	827,364	163	10.94	7.3	0.0025	0.0054	0.30
3	821,523	165	12.89	7.3	0.0045	0.0097	0.30
5	853,008	165	10.28	7.3	0.0021	0.0045	0.30
Avg	833,965	164	11.37	7.3	0.0030	0.0065	0.30
Average Opacity						0.0%	20%

Source: ESE, 1993

Table 3-2 NO_x and SO_2 Compliance Test Results:
City of Lakeland McIntosh Power Plant, Unit #3
June 23, 1993

Run #	O_2 (%V)	NO_x (ppmV)	SO_2 (ppmV)	NO_x (lb/MMBtu)	SO_2 (lb/MMBtu)
1	7.0	264.1	147.7	0.464	0.361
2	7.0	272.0	143.7	0.478	0.351
3	7.0	271.1	143.9	0.476	0.351
Averages	7.0	269.1	145.1	0.473	0.354

Source: ESE, 1993

Table 3-1 Summary of Particulate Emissions Test Results:
City of Lakeland McIntosh Power Plant, Unit #3
June 9, 1994

Run	Flow Rate (dscfm)	Stack Temp. (°F)	H_2O (% V)	O_2 (%V, (dry)	Particulate Matter Rate: Concentration (gr/dscf)	Particulate Matter Rate: Actual (lb/MMBtu)	Particulate Matter Rate: Allowable (lb/MMBtu)
Non-Soot Blowing							
1	827,104	176	12.62	6.9	0.003	0.007	0.10
4	770,300	181	12.35	6.8	0.009	0.019	0.10
5	817,291	183	11.53	7.0	0.010	0.022	0.10
Avg	804,898	180	12.17	6.9	0.007	0.016	0.10
Average Opacity						0.0%	20%
Soot Blowing							
2	830,480	176	13.09	6.8	0.004	0.008	0.30
3	826,356	178	13.60	7.0	0.003	0.007	0.30
6	797,014	181	14.38	7.0	0.005	0.010	0.30
Avg	817,917	178	13.69	6.9	0.004	0.008	0.30
Average Opacity						0.0%	20%

Source: ESE, 1994

Table 3-2 NO_x and SO_2 Compliance Test Results:
City of Lakeland McIntosh Power Plant, Unit #3
June 9, 1994

Run #	O_2 (%V)	NO_x (ppmV)	SO_2 (ppmV)	NO_x (lb/MMBtu)	SO_2 (lb/MMBtu)
1	6.9	250.0	247.9	0.436	0.601
2	7.0	247.9	244.2	0.435	0.596
3	6.9	247.4	269.4	0.431	0.652
Averages	6.9	248.4	253.8	0.434	0.616

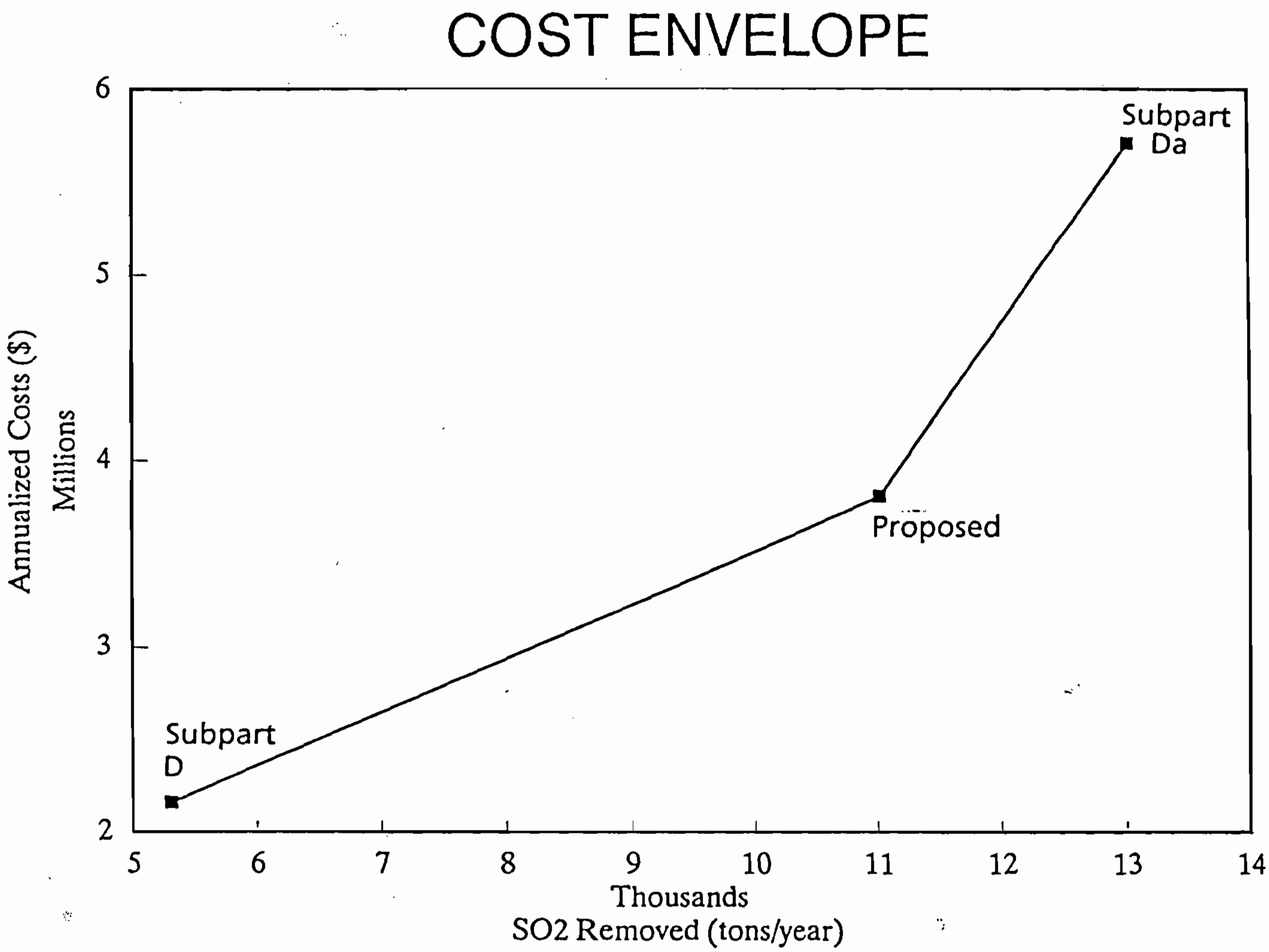
Note: All concentrations are expressed on a dry basis.

ATTACHMENT 3

ECONOMIC EVALUATION

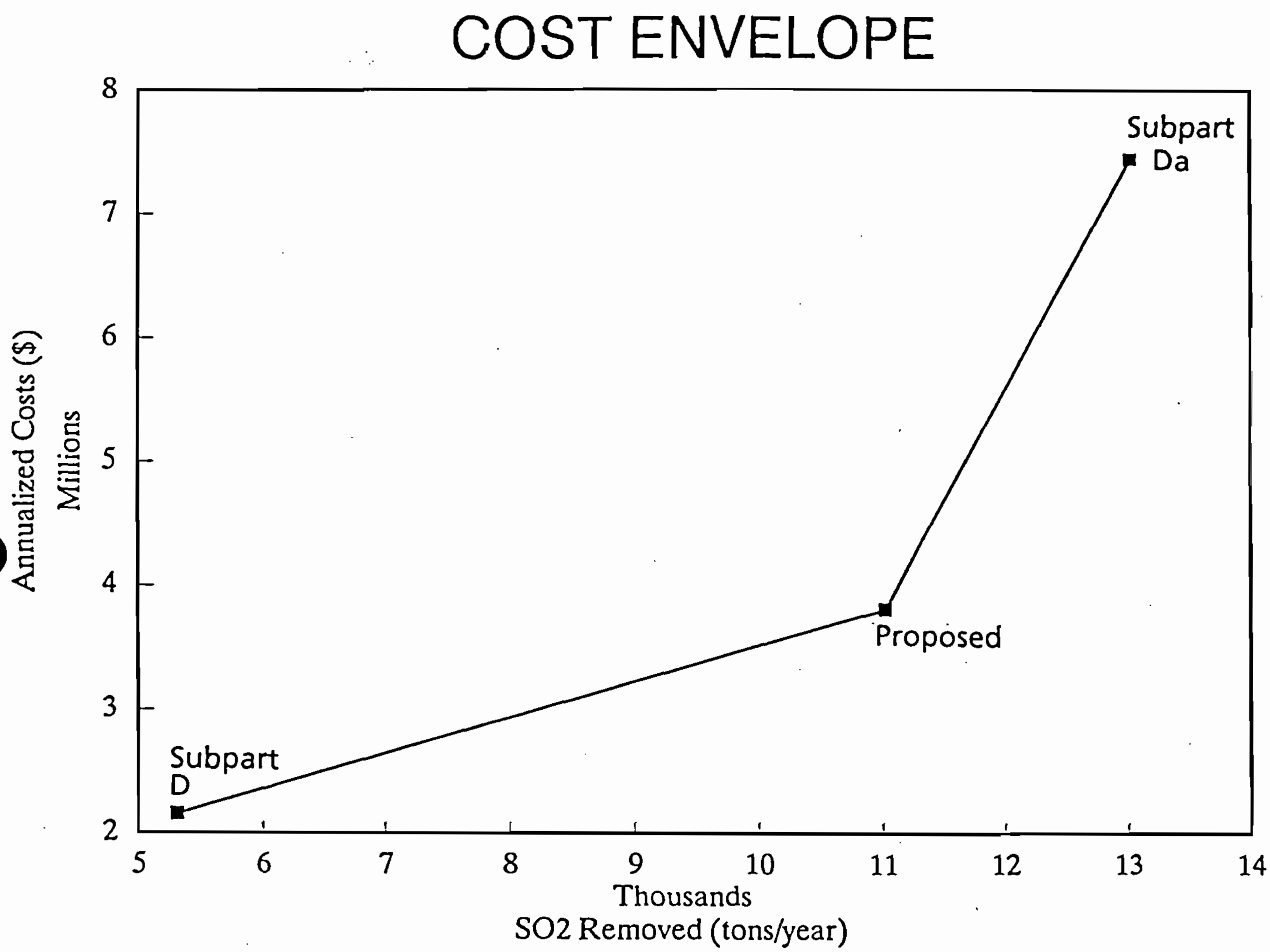
Cost Effectiveness Calculations for Lakeland McIntosh Unit 3

	Scrubber Efficiency		
	26.5%	55.0%	65.0%
Scenario	Subpart D	Proposed	Subpart Da
SO2 Emissions to FGD System			
lb/mmBtu	1.63	1.63	1.63
tons	20,036	20,036	20,036
SO2 Emissions from Stack			
lb/mmBtu	1.2	0.73	0.57
tons	14,735	9,016	7,012
SO2 Removed (tons)	5,301	11,020	13,023
Differential	(5,719)		2,004
Scrubber Sludge (tons)	15,671	32,576	38,499
Difference	(16,905)		5,923
Scrubber Module			
Total Capital Investment	NA	NA	$75,754,451
New Module			$15,150,890
Annualized Cost			$1,737,807
Operating Costs			
CSI/Sludge	$1,397,236	$2,372,822	$2,602,709
Scrubber O&M	$767,350	$1,435,625	$2,167,869
Reheat Energy	$0	$0	$937,983
Total:	$2,164,586	$3,808,447	$5,708,561
Difference from Proposed	($1,643,861)	--	$1,900,114
	-43.16%		49.89%
Total Annualized Costs:			
Operating Costs (only)	$2,164,586	$3,808,447	$5,708,561
	-43.16%		49.89%
with New Scrubber Module	$2,164,586	$3,808,447	$7,446,368
	-43.16%		95.52%
CSI/Sludge ($/ton sludge)	$89.16	$72.84	$67.60
Scrubber ($/ton SO2 removed)	$144.76	$130.28	$166.46
Lost Energy ($/ton SO2 removed)	$0.00	$0.00	$72.02
Differential Operating Costs			
CSI and Scrubber	($1,643,861)	Base	$1,900,114
Re Heat-Energy Cost	$0.00	$0.00	$937,983
MWhr (fan only)			6,336
MWhr (reheat-lost efficiency)			10,120
Cost Effectivness ($/ton of SO2 removed)			
Total:	$408.34	$345.61	$438.34
	18.15%		26.83%
Incremental from Proposed:	$287.5		$948.4
Cost Effectivness ($/ton of SO2 removed) w/Scrubber Module			
Total:	$408.34	$345.61	$571.78
	18.15%		65.44%
Incremental:			$1,815.74



Cost Envelope for Operating Costs (Only)

KBN



Cost Envelope for Operating Costs and New Scrubber Module for Meeting Subpart Da

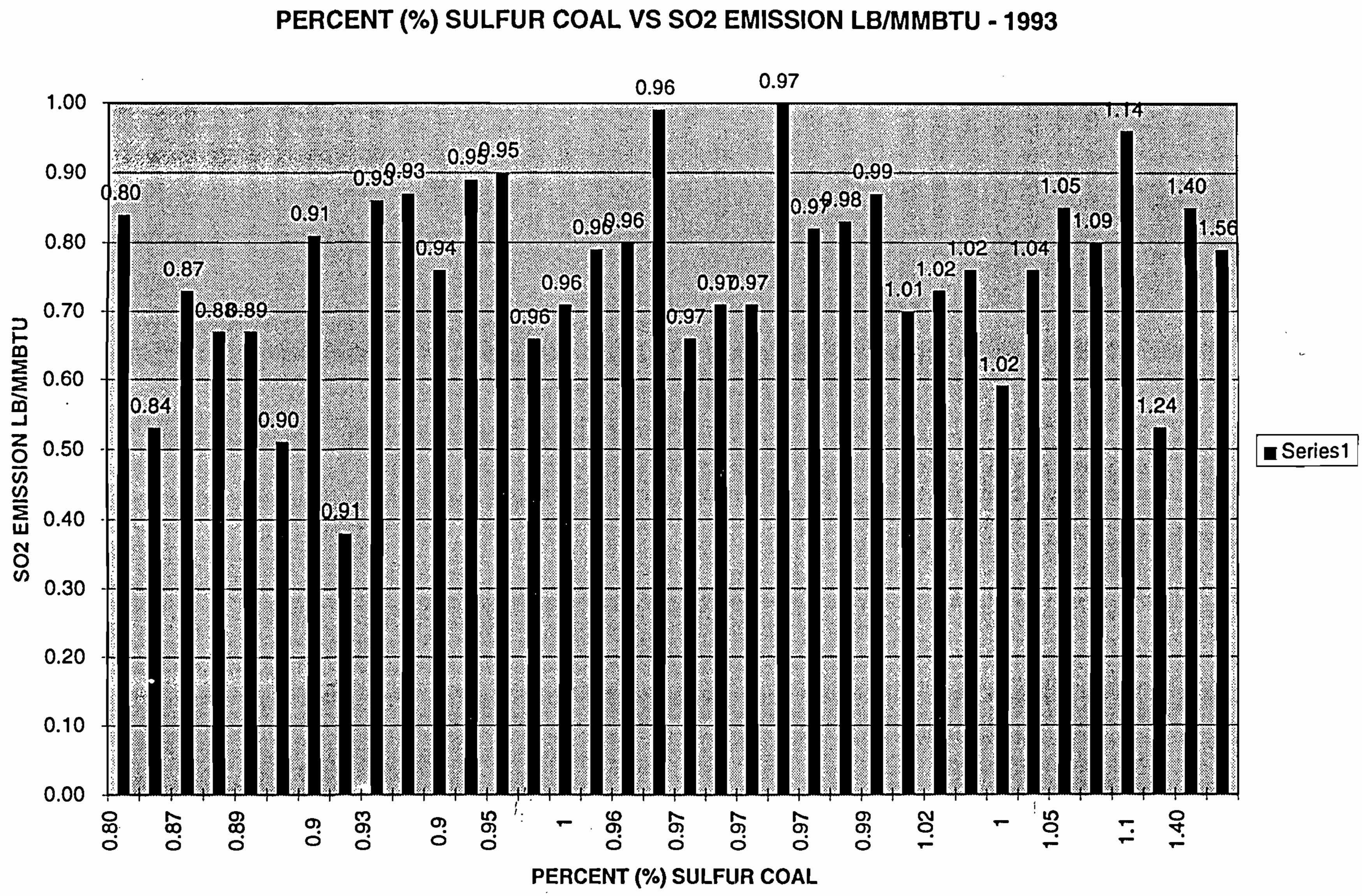
KBN

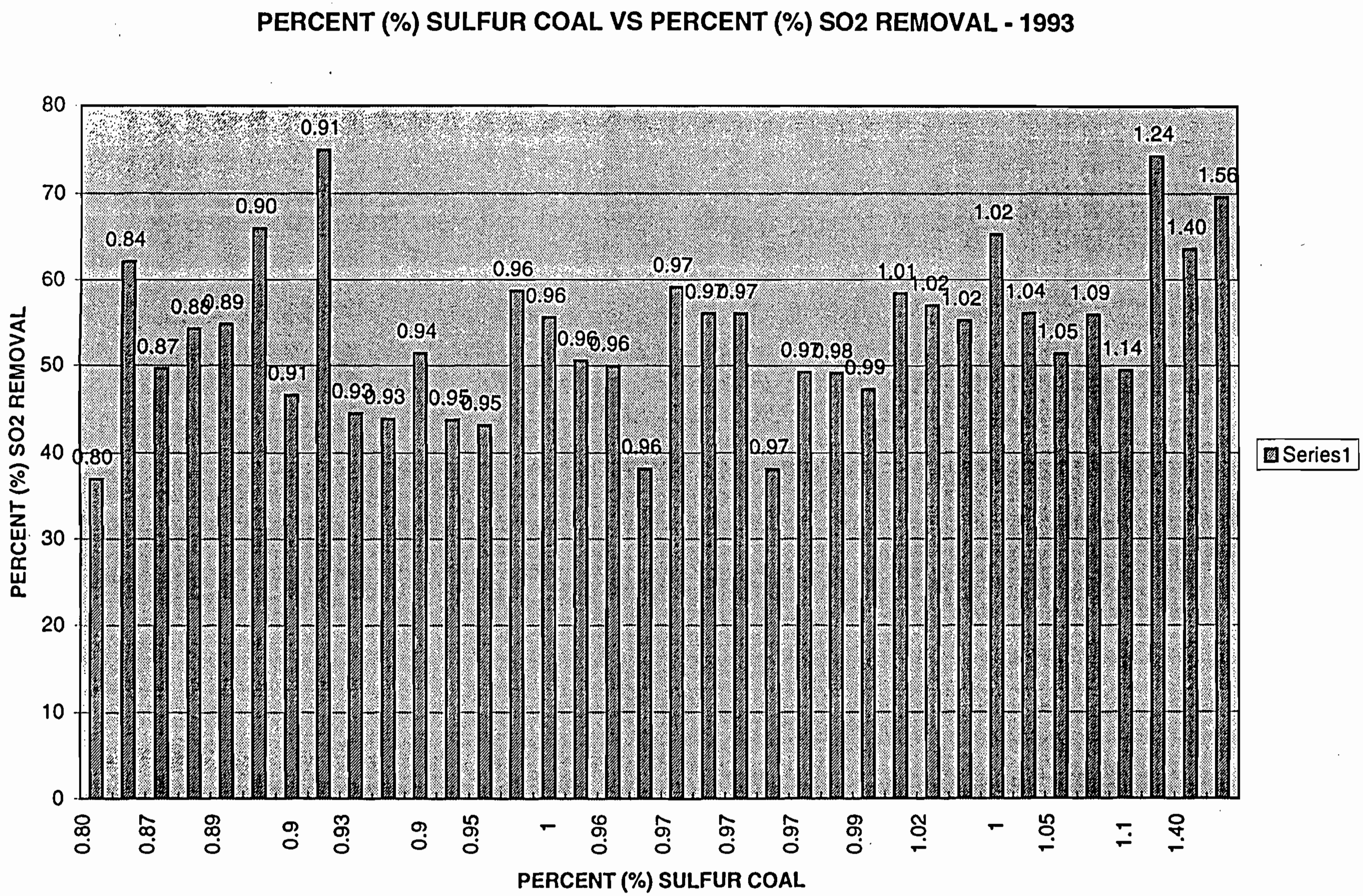
ATTACHMENT 4

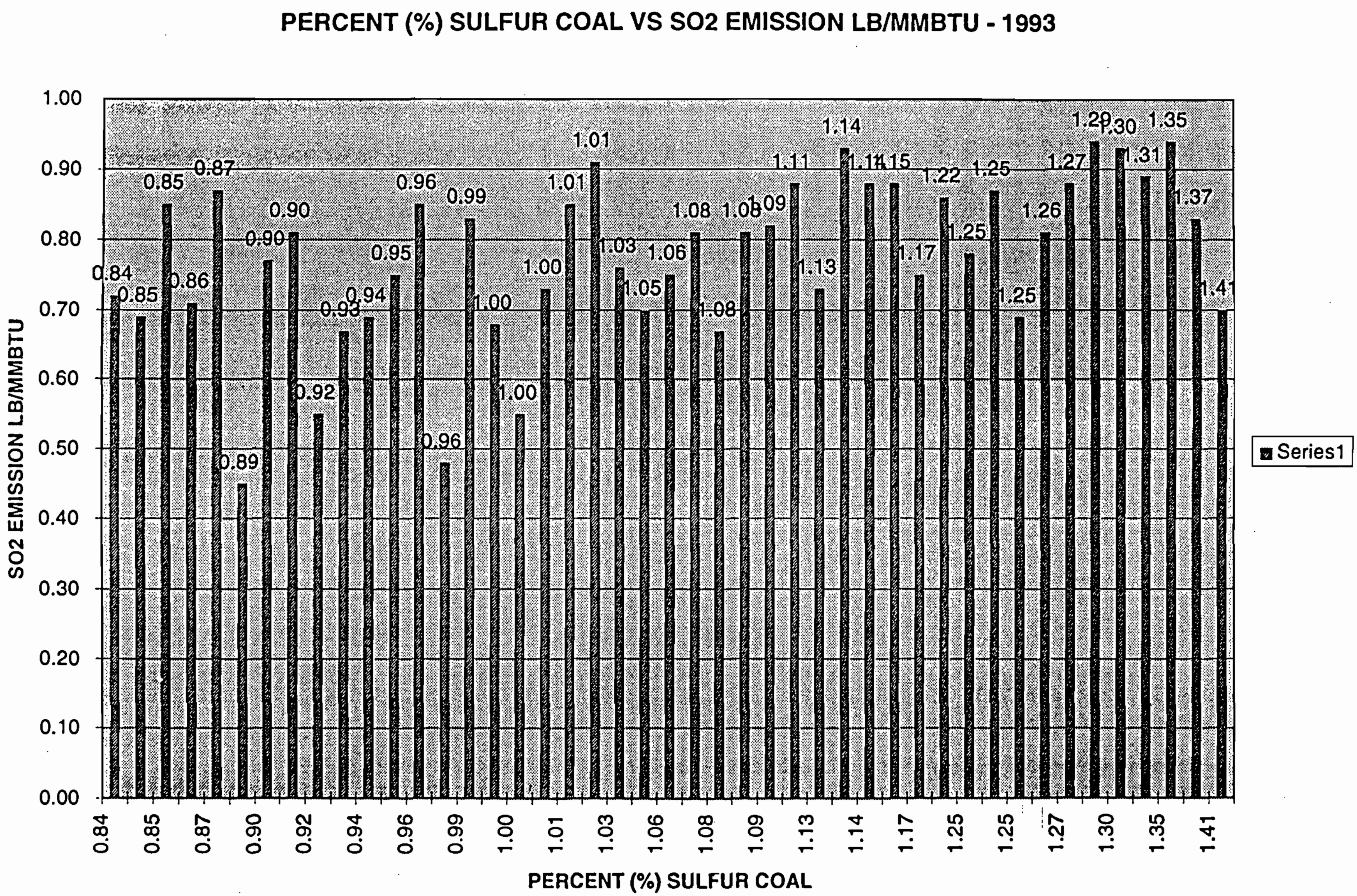
SUMMARY OF 1993 AND 1994 SO_2 REMOVAL EFFICIENCY

CHART SUMMARIES

(1) SO_2 EMISSIONS (LB/MMBTU) VS. COAL SULFUR CONTENT (PERCENT)
(2) SO_2 REMOVAL (PERCENT) VS. COAL SULFUR CONTENT (PERCENT)

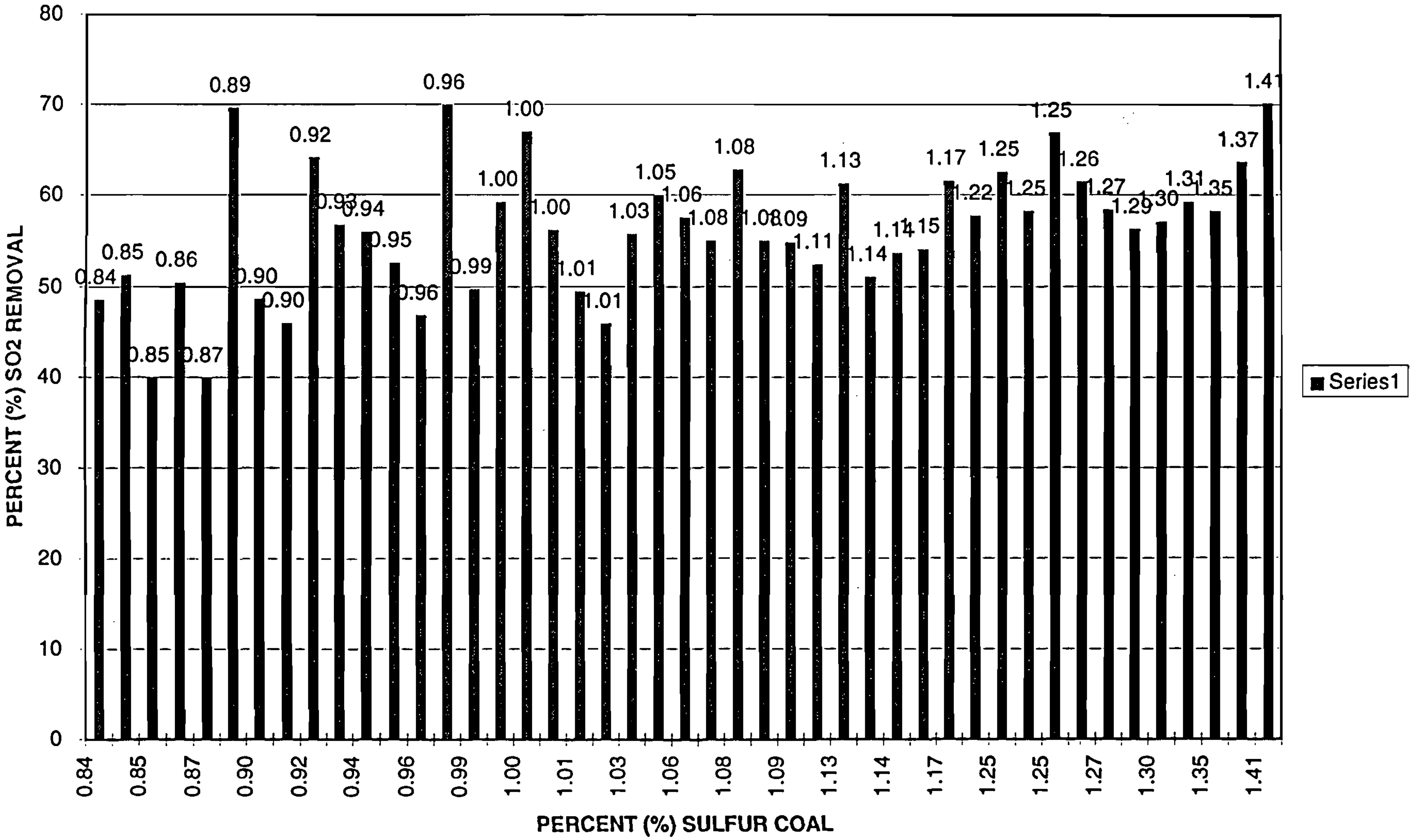

PERCENT (%) SULFUR COAL VS SO2 EMISSION LB/MMBTU - 1993
SO2 EMISSION LB/MMBTU
PERCENT (%) SULFUR COAL
Series1


PERCENT (%) SULFUR COAL VS PERCENT (%) SO2 REMOVAL - 1993
PERCENT (%) SO2 REMOVAL
PERCENT (%) SULFUR COAL
Series1
0
10
20
30
40
50
60
70
80
0.80
0.84
0.87
0.88
0.89
0.90
0.91
0.91
0.93
0.93
0.94
0.95
0.95
0.96
0.96
0.96
0.96
0.96
0.97
0.97
0.97
0.97
0.97
0.98
0.99
1.01
1.02
1.02
1.02
1.04
1.05
1.09
1.14
1.24
1.40
1.56
0.80
0.87
0.89
0.9
0.93
0.9
0.95
1
0.96
0.97
0.97
0.97
0.99
1.02
1
1.05
1.1
1.40



PERCENT (%) SULFUR COAL VS SO2 EMISSION LB/MMBTU - 1993
SO2 EMISSION LB/MMBTU
PERCENT (%) SULFUR COAL
Series1
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
0.84
0.85
0.87
0.90
0.92
0.94
0.96
0.99
1.00
1.01
1.03
1.06
1.08
1.09
1.13
1.14
1.17
1.25
1.25
1.27
1.30
1.35
1.41

PERCENT (%) SULFUR COAL VS PERCENT (%) SO2 REMOVAL - 1994



TABULATED DATA FOR 1993 AND 1994 CHART SUMMARIES

UNIT 3 SO2 EMISSION DATA - 1993

DATE	AVERAGE DAILY LB/MMBTU	7 DAY ROLLING AVERAGE	Hours On-line for Day	30 DAY ROLLING AVERAGE	AS REC'D BTU/LB	AS REC'D %SULFUR
1 - 2 - 93	0.73	0.73	24	0.81	13295	1.02
1 - 9 - 93	0.66	0.70	24	0.77	12909	0.96
1 - 22 - 93	0.66	0.68	24	0.77	13015	0.97
1 - 26 - 93	0.81	0.72	24	0.76	12936	0.91
2 - 4 - 93	0.71	0.71	24	0.73	13462	0.97
2 - 10 - 93	0.71	0.71	24	0.73	13100	0.96
2 - 27 - 93	0.76	0.72	24	0.71	12734	0.94
3 - 5 - 93	0.67	0.71	24	0.70	12689	0.88
3 - 12 - 93	0.79	0.73	24	0.71	12791	0.96
3 - 19 - 93	0.96	0.77	24	0.75	12902	1.14
6 - 7 - 93	0.76	0.77	24	0.77	13062	1.02
6 - 15 - 93	0.59	0.75	24	0.76	13355	1.02
6 - 29 - 93	0.38	0.70	24	0.67	12948	0.91
7 - 10 - 93	0.76	0.70	24	0.64	12943	1.04
7 - 18 - 93	0.71	0.71	24	0.63	13304	0.97
7 - 25 - 93	0.70	0.69	24	0.63	12790	1.01
8 - 1 - 93	0.85	0.68	24	0.72	13038	1.05
8 - 8 - 93	0.86	0.69	24	0.76	12876	0.93
8 - 15 - 93	0.87	0.73	24	0.80	12882	0.99
8 - 23 - 93	0.83	0.80	24	0.84	13019	0.98
9 - 10 - 93	0.89	0.82	24	0.84	13246	0.95
9 - 17 - 93	0.87	0.84	24	0.83	13006	0.93
9 - 24 - 93	0.51	0.81	24	0.78	12827	0.90
10 - 2 - 93	0.80	0.80	24	0.74	13042	1.09
10 - 9 - 93	0.79	0.79	24	0.76	12401	1.56
10 - 16 - 93	0.53	0.75	24	0.70	13281	0.84
10 - 23 - 93	0.67	0.72	24	0.67	13263	0.89
11 - 2 - 93	0.80	0.71	24	0.70	12476	0.96
11 - 9 - 93	0.84	0.71	24	0.70	12635	0.8
11 - 16 - 93	0.85	0.75	24	0.76	12893	1.40
11 - 24 - 93	0.53	0.72	24	0.78	13087	1.24
12 - 1 - 93	1.00	0.75	24	0.80	13159	0.97
12 - 8 - 93	0.99	0.81	24	0.84	13204	0.96
12 - 16 - 93	0.82	0.83	24	0.85	13207	0.97
12 - 23 - 93	0.73	0.82	24	0.86	13161	0.87
12 - 31 - 93	0.90	0.83	24	0.89	13106	0.95

UNIT 3 SO2 EMISSION DATA - 1993

DATE	COAL %SULFUR	AVERAGE DAILY LB/MMBTU	SO2 PERCENT REMOVAL
11 - 9 - 93	0.80	0.84	37
10 - 16 - 93	0.84	0.53	62
12 - 23 - 93	0.87	0.73	50
3 - 5 - 93	0.88	0.67	54
10 - 23 - 93	0.89	0.67	55
9 - 24 - 93	0.90	0.51	66
1 - 26 - 93	0.91	0.81	47
6 - 29 - 93	0.91	0.38	75
8 - 8 - 93	0.93	0.86	44
9 - 17 - 93	0.93	0.87	44
2 - 27 - 93	0.94	0.76	51
9 - 10 - 93	0.95	0.89	44
12 - 31 - 93	0.95	0.90	43
1 - 9 - 93	0.96	0.66	59
2 - 10 - 93	0.96	0.71	56
3 - 12 - 93	0.96	0.79	51
11 - 2 - 93	0.96	0.80	50
12 - 8 - 93	0.96	0.99	38
1 - 22 - 93	0.97	0.66	59
2 - 4 - 93	0.97	0.71	56
7 - 18 - 93	0.97	0.71	56
12 - 1 - 93	0.97	1.00	38
12 - 16 - 93	0.97	0.82	49
8 - 23 - 93	0.98	0.83	49
8 - 15 - 93	0.99	0.87	47
7 - 25 - 93	1.01	0.70	58
1 - 2 - 93	1.02	0.73	57
6 - 7 - 93	1.02	0.76	55
6 - 15 - 93	1.02	0.59	65
7 - 10 - 93	1.04	0.76	56
8 - 1 - 93	1.05	0.85	51
10 - 2 - 93	1.09	0.80	56
3 - 19 - 93	1.14	0.96	49
11 - 24 - 93	1.24	0.53	74
11 - 16 - 93	1.40	0.85	64
10 - 9 - 93	1.56	0.79	70

UNIT 3 SO2 EMISSION DATA - 1994

Date	AVG DAILY LB/MMBTU	7 DAY RUNNING AVERAGE	Hours On-line for Day	30 DAY ROLLING AVERAGE	AS REC'D BTU/LB	AS REC'D %SULFUR
1 - 1 - 94	0.85	0.85	24	0.88	13120	0.96
1 - 8 - 94	0.68	0.77	24	0.82	13249	1.00
1 - 15 - 94	0.69	0.74	24	0.78	13057	0.94
1 - 22 - 94	0.45	0.67	24	0.73	13266	0.89
1 - 29 - 94	0.55	0.64	24	0.67	12182	0.92
2 - 5 - 94	0.87	0.68	24	0.66	12352	0.87
2 - 13 - 94	0.89	0.71	24	0.71	13141	1.31
2 - 20 - 94	0.70	0.69	24	0.74	12996	1.41
3 - 20 - 94	0.70	0.70	24	0.83	13165	1.05
3 - 27 - 94	0.85	0.72	24	0.86	13020	1.01
4 - 11 - 94	0.69	0.75	24	0.82	13134	0.85
4 - 19 - 94	0.48	0.74	24	0.78	13045	0.96
4 - 26 - 94	0.77	0.73	24	0.74	12847	0.90
5 - 4 - 94	0.72	0.70	24	0.72	12965	0.84
5 - 12 - 94	0.81	0.72	24	0.72	12950	0.90
5 - 20 - 94	0.67	0.71	24	0.73	12973	0.93
5 - 27 - 94	0.71	0.69	24	0.72	12857	0.86
6 - 6 - 94	0.55	0.67	24	0.67	12884	1.00
6 - 13 - 94	0.73	0.71	24	0.64	13280	1.00
6 - 21 - 94	0.75	0.71	24	0.64	12920	1.17
6 - 28 - 94	0.78	0.71	24	0.69	12960	1.25
7 - 4 - 94	0.81	0.71	24	0.74	12672	1.08
7 - 14 - 94	0.93	0.75	24	0.83	12954	1.14
7 - 21 - 94	0.86	0.77	24	0.88	12772	1.22
7 - 30 - 94	0.75	0.80	24	0.89	12544	1.06
8 - 7 - 94	0.88	0.82	24	0.88	13162	1.15
8 - 14 - 94	0.67	0.81	24	0.82	13078	1.08
8 - 22 - 94	0.94	0.83	24	0.80	12940	1.35
8 - 30 - 94	0.91	0.85	24	0.78	13316	1.01
9 - 6 - 94	0.88	0.84	24	0.81	12961	1.11
9 - 13 - 94	0.75	0.83	24	0.81	13162	0.95
9 - 20 - 94	0.83	0.84	24	0.84	12661	0.99
9 - 27 - 94	0.85	0.83	24	0.83	12563	0.85
10 - 10 - 94	0.83	0.86	24	0.80	12713	1.37
10 - 17 - 94	0.88	0.85	24	0.81	12808	1.27
10 - 24 - 94	0.87	0.84	24	0.81	13106	1.25
10 - 31 - 94	0.73	0.82	24	0.80	12891	1.13
11 - 7 - 94	0.81	0.83	24	0.80	13127	1.26
11 - 14 - 94	0.94	0.84	24	0.79	13041	1.29
11 - 23 - 94	0.76	0.83	24	0.77	12983	1.03
11 - 30 - 94	0.93	0.85	24	0.78	12684	1.30
12 - 7 - 94	0.69	0.82	24	0.80	12849	1.25
12 - 14 - 94	0.82	0.81	24	0.80	12941	1.09
12 - 20 - 94	0.81	0.82	24	0.80	12870	1.08
12 - 31 - 94	0.88	0.83	24	0.81	13380	1.14

Unit 3 SO2 EMISSION DATA - 1994

DATE	percent sulfur coal	AVG DAILY LB/MMBTU	percent so2 removal
5 - 4 - 94	0.84	0.72	49
4 - 11 - 94	0.85	0.69	51
9 - 27 - 94	0.85	0.85	40
5 - 27 - 94	0.86	0.71	50
2 - 5 - 94	0.87	0.87	40
1 - 22 - 94	0.89	0.45	70
4 - 26 - 94	0.90	0.77	49
5 - 12 - 94	0.90	0.81	46
1 - 29 - 94	0.92	0.55	64
5 - 20 - 94	0.93	0.67	57
1 - 15 - 94	0.94	0.69	56
9 - 13 - 94	0.95	0.75	53
1 - 1 - 94	0.96	0.85	47
4 - 19 - 94	0.96	0.48	70
9 - 20 - 94	0.99	0.83	50
1 - 8 - 94	1.00	0.68	59
6 - 6 - 94	1.00	0.55	67
6 - 13 - 94	1.00	0.73	56
3 - 27 - 94	1.01	0.85	49
8 - 30 - 94	1.01	0.91	46
11 - 23 - 94	1.03	0.76	56
3 - 20 - 94	1.05	0.70	60
7 - 30 - 94	1.06	0.75	58
7 - 4 - 94	1.08	0.81	55
8 - 14 - 94	1.08	0.67	63
12 - 20 - 94	1.08	0.81	55
12 - 14 - 94	1.09	0.82	55
9 - 6 - 94	1.11	0.88	52
10 - 31 - 94	1.13	0.73	61
7 - 14 - 94	1.14	0.93	51
12 - 31 - 94	1.14	0.88	54
8 - 7 - 94	1.15	0.88	54
6 - 21 - 94	1.17	0.75	62
7 - 21 - 94	1.22	0.86	58
6 - 28 - 94	1.25	0.78	63
10 - 24 - 94	1.25	0.87	58
12 - 7 - 94	1.25	0.69	67
11 - 7 - 94	1.26	0.81	61
10 - 17 - 94	1.27	0.88	58
11 - 14 - 94	1.29	0.94	56
11 - 30 - 94	1.30	0.93	57
2 - 13 - 94	1.31	0.89	59
8 - 22 - 94	1.35	0.94	58
10 - 10 - 94	1.37	0.83	64
2 - 20 - 94	1.41	0.70	70

TABULATED DAILY, 7 DAY, AND 30 DAY RUNNING AVERAGES FOR SO_2 EMISSIONS (LB/MMBTU) AND AVAILABLE COAL HEAT AND SULFUR CONTENT

UNIT 3 SO2 EMISSION DATA

DATE	AVG DAILY LB/MMBTU	7 DAY RUNNING AVERAGE	AS REC'D BTU/LB	AS REC'D %SULFUR	30 DAY ROLLING AVERAGE
1 - 1 - 93	0.71	0.81			0.80
1 - 2 - 93	0.73	0.79	13295	1.02	0.81
1 - 3 - 93	0.80	0.77	13252	1.04	0.81
1 - 4 - 93	0.70	0.75	13250	1.01	0.81
1 - 5 - 93	0.63	0.72	13209	1.02	0.80
1 - 6 - 93	0.61	0.70	13289	0.96	0.79
1 - 7 - 93	0.62	0.69	13312	0.97	0.78
1 - 8 - 93	0.71	0.69	13322	0.92	0.77
1 - 9 - 93	0.66	0.68	12909	0.96	0.77
1 - 10 - 93	0.72	0.66	12771	1.03	0.77
1 - 11 - 93	0.75	0.67	12607	1.02	0.77
1 - 17 - 93	0.75	0.69			0.77
1 - 18 - 93	0.81	0.72			0.78
1 - 19 - 93	0.81	0.74			0.78
1 - 20 - 93	0.89	0.77			0.78
1 - 21 - 93	0.81	0.79			0.77
1 - 22 - 93	0.66	0.78	13015	0.97	0.77
1 - 23 - 93	0.66	0.77			0.76
1 - 24 - 93	0.65	0.76	13500	0.91	0.76
1 - 25 - 93	0.74	0.75			0.76
1 - 26 - 93	0.81	0.75	12936	0.91	0.76
1 - 27 - 93	0.87	0.74			0.76
1 - 29 - 93	0.69	0.73			0.76
1 - 31 - 93	0.67	0.73			0.75
2 - 1 - 93	0.74	0.74			0.75
2 - 2 - 93	0.77	0.76			0.74
2 - 3 - 93	0.75	0.76			0.74
2 - 4 - 93	0.71	0.74	13462	0.97	0.73
2 - 5 - 93	0.71	0.72	13536	1.01	0.73
2 - 6 - 93	0.68	0.72	13569	0.95	0.73
2 - 8 - 93	0.85	0.74	12606	1.13	0.73
2 - 9 - 93	0.74	0.74	13004	1.02	0.73
2 - 10 - 93	0.71	0.74	13100	0.96	0.73
2 - 12 - 93	0.63	0.72			0.73
2 - 13 - 93	0.68	0.71			0.73
2 - 14 - 93	0.74	0.72			0.73
2 - 15 - 93	0.75	0.73			0.73
2 - 16 - 93	0.68	0.70			0.74
2 - 17 - 93	0.67	0.69			0.73
2 - 18 - 93	0.72	0.70			0.74
2 - 19 - 93	0.65	0.70			0.73
2 - 20 - 93	0.61	0.69			0.73
2 - 21 - 93	0.57	0.66			0.72
2 - 22 - 93	0.65	0.65			0.72
2 - 23 - 93	0.59	0.64			0.71
2 - 24 - 93	0.73	0.65			0.71
2 - 25 - 93	0.80	0.66			0.71
2 - 26 - 93	0.74	0.67			0.71
2 - 27 - 93	0.76	0.69	12734	0.94	0.71
2 - 28 - 93	0.80	0.72	12733	0.92	0.72
3 - 1 - 93	0.78	0.74	12920	0.88	0.72
3 - 2 - 93	0.68	0.76	13134	0.9	0.71

UNIT 3 SO2 EMISSION DATA

DATE	AVG DAILY LB/MMBTU	7 DAY RUNNING AVERAGE	AS REC'D BTU/LB	AS REC'D %SULFUR	30 DAY ROLLING AVERAGE
3 - 3 - 93	0.68	0.75	13063	0.96	0.71
3 - 4 - 93	0.62	0.72	12204	0.94	0.71
3 - 5 - 93	0.67	0.71	12689	0.88	0.71
3 - 6 - 93	0.76	0.71			0.71
3 - 7 - 93	0.71	0.70			0.70
3 - 8 - 93	0.72	0.69			0.70
3 - 9 - 93	0.73	0.70	13000	0.93	0.70
3 - 10 - 93	0.81	0.72	12997	0.98	0.71
3 - 11 - 93	0.84	0.75	12973	1.03	0.71
3 - 12 - 93	0.79	0.77	12791	0.96	0.71
3 - 13 - 93	0.78	0.77	13403	0.98	0.71
3 - 14 - 93	0.92	0.80			0.72
3 - 15 - 93	0.89	0.82			0.73
3 - 16 - 93	0.77	0.83			0.73
3 - 17 - 93	0.79	0.83	13159	1.01	0.73
3 - 18 - 93	0.97	0.84	13016	1.01	0.74
3 - 19 - 93	0.96	0.87	12902	1.14	0.75
5 - 28 - 93	0.43	0.82			0.74
5 - 31 - 93	0.79	0.80			0.74
6 - 3 - 93	0.87	0.80	13141	1.03	0.75
6 - 4 - 93	0.75	0.79	12700	0.87	0.75
6 - 5 - 93	0.75	0.79	12718	0.87	0.76
6 - 6 - 93	0.82	0.77	12886	0.88	0.76
6 - 7 - 93	0.76	0.74	13062	1.02	0.77
6 - 8 - 93	0.66	0.77	13115	1.05	0.77
6 - 9 - 93	0.61	0.75	13378	1.01	0.76
6 - 10 - 93	0.66	0.72	13485	1.03	0.76
6 - 11 - 93	0.70	0.71	13298	1.01	0.76
6 - 12 - 93	0.77	0.71	12817	1.11	0.76
6 - 13 - 93	0.75	0.70	12823	1.08	0.76
6 - 14 - 93	0.71	0.69			0.76
6 - 15 - 93	0.59	0.68	13355	1.02	0.75
6 - 20 - 93	0.50	0.67			0.75
6 - 23 - 93	0.34	0.62	13227	0.99	0.74
6 - 24 - 93	0.35	0.57	13330	0.90	0.73
6 - 26 - 93	0.36	0.51	13404	0.88	0.71
6 - 27 - 93	0.35	0.46	12994	0.87	0.70
6 - 28 - 93	0.34	0.40	12986	0.89	0.69
6 - 29 - 93	0.38	0.37	12948	0.91	0.68
6 - 30 - 93	0.46	0.37	12958	0.90	0.66
7 - 3 - 93	0.59	0.40	12853	0.94	0.66
7 - 5 - 93	0.67	0.45	13011	1.07	0.65
7 - 7 - 93	1.05	0.55			0.66
7 - 8 - 93	0.92	0.63			0.66
7 - 9 - 93	0.62	0.67			0.65
7 - 10 - 93	0.76	0.72	12943	1.04	0.65
7 - 11 - 93	0.67	0.75	13320	0.99	0.64
7 - 12 - 93	0.78	0.78	13236	1.12	0.64
7 - 13 - 93	0.75	0.79	13143	1.03	0.65
7 - 14 - 93	0.70	0.74	12874	0.97	0.64
7 - 16 - 93	0.74	0.72	13091	0.96	0.64
7 - 17 - 93	0.74	0.73	13263	0.98	0.64

UNIT 3 SO2 EMISSION DATA

DATE	AVG DAILY LB/MMBTU	7 DAY RUNNING AVERAGE	AS REC'D BTU/LB	AS REC'D %SULFUR	30 DAY ROLLING AVERAGE
7 - 18 - 93	0.71	0.73	13304	0.97	0.64
7 - 19 - 93	0.72	0.73	13320	0.94	0.64
7 - 20 - 93	0.72	0.73	13237	0.91	0.63
7 - 21 - 93	0.76	0.73	13186	0.94	0.64
7 - 22 - 93	0.66	0.72	12875	0.84	0.64
7 - 23 - 93	0.67	0.71	12597	0.83	0.64
7 - 24 - 93	0.68	0.70	12700	0.82	0.64
7 - 25 - 93	0.70	0.70	12790	1.01	0.64
7 - 26 - 93	0.81	0.71	12940	1.02	0.64
7 - 27 - 93	0.80	0.73	12947	1.02	0.64
7 - 28 - 93	0.80	0.73	12706	0.92	0.65
7 - 29 - 93	0.77	0.75	12621	0.91	0.66
7 - 30 - 93	0.83	0.77			0.67
7 - 31 - 93	0.88	0.80			0.69
8 - 1 - 93	0.85	0.82	13038	1.05	0.71
8 - 2 - 93	0.84	0.82	13097	1.03	0.72
8 - 3 - 93	0.86	0.83	13031	1.03	0.74
8 - 4 - 93	0.82	0.84	13192	1.04	0.75
8 - 5 - 93	0.85	0.85			0.77
8 - 6 - 93	0.80	0.84			0.77
8 - 7 - 93	0.76	0.83	13248	0.98	0.77
8 - 8 - 93	0.86	0.83	12876	0.93	0.77
8 - 9 - 93	0.89	0.83			0.77
8 - 10 - 93	0.87	0.84			0.78
8 - 11 - 93	0.84	0.84	13056	0.91	0.78
8 - 12 - 93	0.82	0.83			0.78
8 - 13 - 93	0.83	0.84			0.78
8 - 14 - 93	0.90	0.86	13041	1.01	0.79
8 - 15 - 93	0.87	0.86	12882	0.99	0.80
8 - 16 - 93	0.86	0.86	12790	0.99	0.80
8 - 18 - 93	0.86	0.85	12899	1.12	0.80
8 - 19 - 93	0.88	0.86			0.81
8 - 20 - 93	0.94	0.88	12916	1.03	0.82
8 - 21 - 93	0.92	0.89	12894	1.14	0.82
8 - 22 - 93	0.86	0.88	13013	0.98	0.83
8 - 23 - 93	0.83	0.88	13019	0.98	0.83
8 - 24 - 93	0.89	0.88	13090	1.06	0.84
9 - 5 - 93	0.66	0.85	12644	1.07	0.84
9 - 6 - 93	0.67	0.82	13012	1.10	0.84
9 - 7 - 93	0.73	0.79	13304	0.99	0.83
9 - 8 - 93	0.82	0.78	13233	0.96	0.83
9 - 9 - 93	0.85	0.78	13050	0.94	0.84
9 - 10 - 93	0.89	0.79	13246	0.95	0.84
9 - 11 - 93	0.88	0.79	13404	0.94	0.84
9 - 12 - 93	0.80	0.81	13423	0.90	0.84
9 - 13 - 93	0.72	0.81	12944	0.74	0.83
9 - 14 - 93	0.74	0.81	12872	0.74	0.83
9 - 15 - 93	0.76	0.81	13095	0.79	0.83
9 - 16 - 93	0.86	0.81	12718	0.87	0.83
9 - 17 - 93	0.87	0.80	13006	0.93	0.83
9 - 18 - 93	0.83	0.80	12730	0.92	0.83
9 - 19 - 93	0.85	0.80	12963	0.95	0.83

UNIT 3 SO2 EMISSION DATA

DATE	AVG DAILY LB/MMBTU	7 DAY RUNNING AVERAGE	AS REC'D BTU/LB	AS REC'D %SULFUR	30 DAY ROLLING AVERAGE
9 - 20 - 93	0.83	0.82	12941	0.87	0.83
9 - 21 - 93	0.45	0.78	12762	0.90	0.82
9 - 22 - 93	0.44	0.73	12737	0.90	0.80
9 - 23 - 93	0.44	0.67	12870	0.92	0.79
9 - 24 - 93	0.51	0.62	12827	0.90	0.78
9 - 25 - 93	0.50	0.57	12925	0.91	0.77
9 - 27 - 93	0.84	0.57	12600	1.56	0.77
9 - 28 - 93	0.70	0.55	12464	1.80	0.76
9 - 29 - 93	0.85	0.61	12744	1.67	0.76
9 - 30 - 93	0.75	0.66	12706	1.78	0.76
10 - 1 - 93	0.72	0.70	13046	1.30	0.75
10 - 2 - 93	0.80	0.74	13042	1.09	0.75
10 - 3 - 93	0.77	0.78	12923	1.11	0.75
10 - 4 - 93	0.76	0.76	13105	0.94	0.74
10 - 5 - 93	0.76	0.77			0.74
10 - 6 - 93	0.84	0.77			0.74
10 - 7 - 93	1.07	0.82	11948	2.23	0.75
10 - 8 - 93	0.89	0.84	12016	2.22	0.76
10 - 9 - 93	0.79	0.84	12401	1.56	0.76
10 - 10 - 93	0.64	0.82	12734	1.07	0.75
10 - 11 - 93	0.62	0.80	12717	0.98	0.75
10 - 12 - 93	0.56	0.77	12706	1.09	0.74
10 - 13 - 93	0.50	0.72	13264	0.93	0.72
10 - 14 - 93	0.48	0.64	13477	0.94	0.71
10 - 15 - 93	0.52	0.59	13289	0.85	0.71
10 - 16 - 93	0.53	0.55	13281	0.84	0.70
10 - 17 - 93	0.55	0.54	12968	0.94	0.69
10 - 18 - 93	0.56	0.53	13251	0.88	0.68
10 - 19 - 93	0.58	0.53	13060	0.88	0.68
10 - 20 - 93	0.59	0.54	13316	0.90	0.67
10 - 21 - 93	0.62	0.56	13291	0.98	0.66
10 - 22 - 93	0.65	0.58	13353	0.95	0.65
10 - 23 - 93	0.67	0.60	13263	0.89	0.66
10 - 24 - 93	0.75	0.63	13264	0.89	0.67
10 - 25 - 93	0.75	0.66	13092	0.96	0.68
10 - 29 - 93	0.80	0.69	12686	1.12	0.69
10 - 30 - 93	0.78	0.72	12814	1.42	0.70
10 - 31 - 93	0.90	0.76	12816	1.42	0.70
11 - 1 - 93	0.72	0.77	12789	1.18	0.70
11 - 2 - 93	0.80	0.79	12476	0.96	0.70
11 - 3 - 93	0.71	0.78	12464	1.01	0.70
11 - 4 - 93	0.81	0.79	12691	1.01	0.70
11 - 5 - 93	0.79	0.79	13235	0.84	0.70
11 - 6 - 93	0.80	0.79	13150	0.87	0.70
11 - 7 - 93	0.93	0.79	13200	0.90	0.71
11 - 8 - 93	0.91	0.82	12903	0.96	0.71
11 - 9 - 93	0.84	0.83	12635	0.8	0.71
11 - 10 - 93	0.88	0.85	12672	1.11	0.71
11 - 11 - 93	0.87	0.86	12823	1.36	0.71
11 - 12 - 93	0.76	0.86			0.71
11 - 13 - 93	0.94	0.88	12092	1.48	0.72
11 - 14 - 93	0.90	0.87	12319	2.01	0.72

UNIT 3 SO2 EMISSION DATA

DATE	AVG DAILY LB/MMBTU	7 DAY RUNNING AVERAGE	AS REC'D BTU/LB	AS REC'D %SULFUR	30 DAY ROLLING AVERAGE
11 - 15 - 93	0.94	0.88			0.74
11 - 16 - 93	0.85	0.88	12893	1.40	0.75
11 - 17 - 93	0.84	0.87	12812	1.66	0.76
11 - 18 - 93	0.66	0.84	13205	1.28	0.76
11 - 19 - 93	0.58	0.82	13207	1.01	0.77
11 - 20 - 93	0.69	0.78	12951	1.25	0.77
11 - 21 - 93	0.77	0.76	12730	1.46	0.78
11 - 22 - 93	0.47	0.69	13244	0.88	0.77
11 - 24 - 93	0.53	0.65	13087	1.24	0.77
11 - 25 - 93	0.47	0.60	13391	0.89	0.77
11 - 26 - 93	0.87	0.63	13376	0.94	0.77
11 - 27 - 93	0.86	0.67	13326	0.85	0.78
11 - 28 - 93	0.93	0.70	13319	0.92	0.79
11 - 29 - 93	0.91	0.72	13308	0.94	0.79
11 - 30 - 93	1.01	0.80	13194	0.93	0.80
12 - 1 - 93	1.00	0.86	13159	0.97	0.80
12 - 2 - 93	0.92	0.93	12624	0.96	0.81
12 - 3 - 93	0.89	0.93	13181	0.93	0.81
12 - 4 - 93	0.94	0.94	12412	0.91	0.82
12 - 5 - 93	0.90	0.94	13223	0.88	0.82
12 - 6 - 93	1.00	0.95	13244	0.94	0.83
12 - 7 - 93	1.00	0.95	13248	0.93	0.83
12 - 8 - 93	0.99	0.95	13204	0.96	0.84
12 - 9 - 93	0.95	0.95	13233	1.02	0.84
12 - 10 - 93	0.87	0.95	13200	0.88	0.84
12 - 11 - 93	0.94	0.95	13131	0.84	0.84
12 - 12 - 93	1.02	0.97			0.85
12 - 13 - 93	0.96	0.96	13218	0.85	0.85
12 - 15 - 93	0.78	0.93	13239	0.90	0.85
12 - 16 - 93	0.82	0.91	13207	0.97	0.85
12 - 17 - 93	0.81	0.89			0.84
12 - 18 - 93	0.80	0.88			0.84
12 - 19 - 93	0.83	0.86	12913	0.98	0.84
12 - 20 - 93	0.84	0.83	12973	1.02	0.84
12 - 21 - 93	0.86	0.82	13046	0.92	0.85
12 - 22 - 93	0.84	0.83	13058	1.01	0.85
12 - 23 - 93	0.73	0.82	13161	0.87	0.86
12 - 24 - 93	0.76	0.81	13191	0.89	0.85
12 - 25 - 93	0.86	0.82	13186	1.03	0.87
12 - 26 - 93	0.88	0.82	13187	0.99	0.88
12 - 28 - 93	0.83	0.82			0.89
12 - 29 - 93	0.77	0.81			0.89
12 - 30 - 93	0.87	0.81	13067	0.94	0.89
12 - 31 - 93	0.90	0.84	13106	0.95	0.89
1 - 1 - 94	0.85	0.85	13120	0.96	0.88
1 - 2 - 94	0.80	0.84	13119	0.87	0.88
1 - 3 - 94	0.90	0.85	12848	0.96	0.87
1 - 4 - 94	0.92	0.86			0.87
1 - 5 - 94	0.77	0.86			0.87
1 - 6 - 94	0.65	0.83	12619	0.88	0.86
1 - 7 - 94	0.67	0.79	12743	0.85	0.85
1 - 8 - 94	0.68	0.77	13249	1.00	0.84

UNIT 3 SO2 EMISSION DATA

DATE	AVG DAILY LB/MMBTU	7 DAY RUNNING AVERAGE	AS REC'D BTU/LB	AS REC'D %SULFUR	30 DAY ROLLING AVERAGE
1 - 9 - 94	0.74	0.76	13124	1.02	0.84
1 - 10 - 94	0.69	0.73	12860	0.94	0.83
1 - 11 - 94	0.65	0.69	12947	0.95	0.82
1 - 12 - 94	0.66	0.68	13128	0.95	0.81
1 - 13 - 94	0.73	0.69	13187	1.02	0.80
1 - 14 - 94	0.71	0.69	13201	0.92	0.79
1 - 15 - 94	0.69	0.70	13057	0.94	0.78
1 - 16 - 94	0.77	0.70	12238	1.12	0.78
1 - 17 - 94	0.70	0.70	12030	1.03	0.78
1 - 18 - 94	0.71	0.71	11922	1.13	0.78
1 - 19 - 94	0.68	0.71	11880	0.96	0.77
1 - 20 - 94	0.53	0.68	12964	0.98	0.76
1 - 21 - 94	0.46	0.65			0.75
1 - 22 - 94	0.45	0.61	13266	0.89	0.74
1 - 23 - 94	0.44	0.57	13083	0.95	0.72
1 - 25 - 94	0.46	0.53	12603	0.93	0.72
1 - 26 - 94	0.50	0.50	12405	0.88	0.71
1 - 27 - 94	0.50	0.48	12005	1.01	0.70
1 - 28 - 94	0.49	0.47	11967	0.95	0.68
1 - 29 - 94	0.55	0.48	12182	0.92	0.67
1 - 30 - 94	0.56	0.50			0.67
1 - 31 - 94	0.79	0.55	12761	0.81	0.66
2 - 1 - 94	0.82	0.60	12667	0.84	0.66
2 - 2 - 94	0.86	0.65	12383	0.96	0.66
2 - 3 - 94	0.91	0.71	12388	0.92	0.67
2 - 4 - 94	0.89	0.77			0.67
2 - 5 - 94	0.87	0.81	12352	0.87	0.66
2 - 6 - 94	0.81	0.85	13000	0.93	0.67
2 - 7 - 94	0.73	0.84	13131	0.89	0.67
2 - 8 - 94	0.99	0.87	12323	1.59	0.68
2 - 9 - 94	1.00	0.89	11911	2.49	0.69
2 - 11 - 94	0.84	0.88			0.69
2 - 12 - 94	0.92	0.88			0.70
2 - 13 - 94	0.89	0.88	13141	1.31	0.71
2 - 14 - 94	0.85	0.89	13293	1.45	0.71
2 - 15 - 94	0.88	0.91	12991	1.51	0.72
2 - 16 - 94	0.91	0.90	12962	1.54	0.72
2 - 17 - 94	0.85	0.88	12497	1.32	0.73
2 - 18 - 94	0.88	0.88	12902	1.32	0.73
2 - 19 - 94	0.87	0.88	12664	1.46	0.74
2 - 20 - 94	0.70	0.85	12996	1.41	0.74
2 - 21 - 94	0.85	0.85	13089	0.95	0.74
2 - 22 - 94	0.99	0.86	12905	0.97	0.76
2 - 23 - 94	0.93	0.87	12844	1.04	0.77
2 - 24 - 94	0.99	0.89	12867	1.19	0.79
2 - 25 - 94	0.89	0.89	12534	0.94	0.81
3 - 19 - 94	0.76	0.76	12994	1.08	0.82
3 - 20 - 94	0.70	0.73	13165	1.05	0.82
3 - 21 - 94	0.75	0.74	13241	1.04	0.83
3 - 22 - 94	0.82	0.76	13230	1.02	0.84
3 - 23 - 94	0.84	0.77	13199	1.01	0.85
3 - 24 - 94	0.80	0.78	13016	1.09	0.86

UNIT 3 SO2 EMISSION DATA

DATE	AVG DAILY LB/MMBTU	7 DAY RUNNING AVERAGE	AS REC'D BTU/LB	AS REC'D %SULFUR	30 DAY ROLLING AVERAGE
3 - 25 - 94	0.78	0.78	13068	1.05	0.86
3 - 26 - 94	0.83	0.79	13000	1.00	0.86
3 - 27 - 94	0.85	0.81	13020	1.01	0.86
3 - 28 - 94	0.80	0.82	13105	1.03	0.85
3 - 29 - 94	0.78	0.81	13064	1.07	0.85
3 - 30 - 94	0.76	0.80	13029	1.06	0.85
3 - 31 - 94	0.78	0.80	13123	1.07	0.85
4 - 1 - 94	0.76	0.79	12848	1.00	0.85
4 - 2 - 94	0.83	0.79	13187	0.89	0.84
4 - 10 - 94	0.59	0.76			0.83
4 - 11 - 94	0.69	0.74	13134	0.85	0.82
4 - 12 - 94	0.70	0.73	13141	0.81	0.82
4 - 13 - 94	0.73	0.73	13038	0.98	0.81
4 - 14 - 94	0.71	0.72	13043	0.95	0.81
4 - 16 - 94	0.76	0.72	12989	0.98	0.80
4 - 17 - 94	0.81	0.71	12928	1.04	0.80
4 - 18 - 94	0.61	0.72	13075	1.00	0.79
4 - 19 - 94	0.48	0.69	13045	0.96	0.78
4 - 20 - 94	0.49	0.66	13150	0.93	0.77
4 - 21 - 94	0.48	0.62	12830	1.02	0.76
4 - 22 - 94	0.83	0.64	12819	0.97	0.76
4 - 23 - 94	0.82	0.65	12925	0.96	0.75
4 - 24 - 94	0.80	0.64	12887	1.03	0.75
4 - 25 - 94	0.77	0.67	12862	1.00	0.74
4 - 26 - 94	0.77	0.71	12847	0.90	0.74
4 - 27 - 94	0.88	0.76	12924	1.08	0.74
4 - 28 - 94	0.85	0.82	12956	1.16	0.75
4 - 29 - 94	0.70	0.80	12988	1.23	0.75
4 - 30 - 94	0.65	0.77	13059	0.92	0.74
5 - 2 - 94	0.64	0.75			0.73
5 - 3 - 94	0.70	0.74	13071	0.86	0.73
5 - 4 - 94	0.72	0.73	12965	0.84	0.73
5 - 5 - 94	0.75	0.72			0.73
5 - 7 - 94	0.77	0.70	12946	0.96	0.72
5 - 8 - 94	0.72	0.71	13084	1.02	0.72
5 - 9 - 94	0.75	0.72			0.72
5 - 10 - 94	0.76	0.74	13265	0.93	0.72
5 - 11 - 94	0.76	0.75	12932	0.95	0.72
5 - 12 - 94	0.81	0.76	12950	0.90	0.72
5 - 13 - 94	0.82	0.77	13022	0.99	0.72
5 - 14 - 94	0.82	0.78	13067	1.01	0.73
5 - 15 - 94	0.80	0.79			0.73
5 - 16 - 94	0.81	0.80	13122	0.95	0.73
5 - 17 - 94	0.79	0.80	13287	0.96	0.74
5 - 18 - 94	0.80	0.81	13004	0.86	0.74
5 - 20 - 94	0.67	0.79	12973	0.93	0.74
5 - 21 - 94	0.70	0.77	13009	0.89	0.73
5 - 22 - 94	0.74	0.76			0.74
5 - 23 - 94	0.69	0.74			0.74
5 - 24 - 94	0.56	0.71			0.75
5 - 25 - 94	0.20	0.62	12763	0.81	0.74
5 - 26 - 94	0.59	0.59			0.73

UNIT 3 SO2 EMISSION DATA

DATE	AVG DAILY LB/MMBTU	7 DAY RUNNING AVERAGE	AS REC'D BTU/LB	AS REC'D %SULFUR	30 DAY ROLLING AVERAGE
5 - 27 - 94	0.71	0.60	12857	0.86	0.73
5 - 28 - 94	0.71	0.60	12860	0.83	0.72
5 - 30 - 94	0.58	0.58	11083	0.72	0.72
6 - 2 - 94	0.45	0.54	12929	0.76	0.71
6 - 3 - 94	0.34	0.51	12835	0.78	0.69
6 - 4 - 94	0.43	0.54	12955	0.94	0.68
6 - 5 - 94	0.48	0.53	12823	0.90	0.67
6 - 6 - 94	0.55	0.51	12884	1.00	0.67
6 - 7 - 94	0.61	0.49	12380	1.07	0.66
6 - 8 - 94	0.75	0.52	13175	1.19	0.67
6 - 9 - 94	0.66	0.55	12847	1.26	0.66
6 - 10 - 94	0.53	0.57			0.66
6 - 11 - 94	0.49	0.58	13086	1.07	0.65
6 - 12 - 94	0.69	0.61	13191	1.09	0.65
6 - 13 - 94	0.73	0.64	13280	1.00	0.65
6 - 14 - 94	0.76	0.66	13212	0.96	0.65
6 - 15 - 94	0.84	0.67	13158	0.96	0.65
6 - 16 - 94	0.82	0.69	12860	1.05	0.65
6 - 17 - 94	0.76	0.73	12962	0.94	0.65
6 - 18 - 94	0.80	0.77	12762	1.16	0.65
6 - 20 - 94	0.87	0.80	12850	1.44	0.65
6 - 21 - 94	0.75	0.80	12920	1.17	0.65
6 - 22 - 94	0.79	0.80	12736	1.16	0.65
6 - 23 - 94	0.83	0.80	12934	1.21	0.65
6 - 24 - 94	0.92	0.82	12955	1.21	0.66
6 - 25 - 94	0.97	0.85	13074	1.32	0.66
6 - 26 - 94	0.87	0.86	13137	1.43	0.67
6 - 27 - 94	0.77	0.84	13065	1.27	0.67
6 - 28 - 94	0.78	0.85	12960	1.25	0.68
6 - 29 - 94	0.78	0.85	13063	1.04	0.70
6 - 30 - 94	0.95	0.86	12968	1.41	0.71
7 - 1 - 94	0.98	0.87	12758	1.40	0.72
7 - 3 - 94	0.86	0.86	12694	1.11	0.72
7 - 4 - 94	0.81	0.85	12672	1.08	0.73
7 - 8 - 94	0.94	0.87			0.75
7 - 9 - 94	0.90	0.89			0.76
7 - 10 - 94	0.95	0.91			0.78
7 - 11 - 94	0.93	0.91			0.79
7 - 12 - 94	0.92	0.90	12887	1.05	0.81
7 - 13 - 94	0.90	0.91	12801	1.11	0.82
7 - 14 - 94	0.93	0.92	12954	1.14	0.82
7 - 15 - 94	0.96	0.93	13104	1.25	0.83
7 - 16 - 94	0.93	0.93	13131	1.27	0.84
7 - 17 - 94	0.93	0.93	13068	1.12	0.86
7 - 18 - 94	0.90	0.92	13061	1.02	0.87
7 - 19 - 94	0.92	0.92	13002	1.09	0.87
7 - 20 - 94	1.01	0.94	12836	1.18	0.88
7 - 21 - 94	0.86	0.93	12772	1.22	0.88
7 - 24 - 94	0.98	0.93			0.89
7 - 25 - 94	0.94	0.93	13092	1.34	0.89
7 - 26 - 94	0.84	0.92	13035	1.18	0.89
7 - 27 - 94	0.86	0.92	12894	1.29	0.89

UNIT 3 SO2 EMISSION DATA

DATE	AVG DAILY LB/MMBTU	7 DAY RUNNING AVERAGE	AS REC'D BTU/LB	AS REC'D %SULFUR	30 DAY ROLLING AVERAGE
7 - 28 - 94	0.86	0.91	12900	1.24	0.90
7 - 29 - 94	0.79	0.88			0.90
7 - 30 - 94	0.75	0.86	12544	1.06	0.89
7 - 31 - 94	0.69	0.82	13260	0.98	0.89
8 - 1 - 94	0.75	0.79	13211	0.97	0.88
8 - 2 - 94	0.78	0.78	13123	1.03	0.88
8 - 4 - 94	0.84	0.78	12929	1.10	0.88
8 - 5 - 94	0.86	0.78	13036	1.10	0.88
8 - 6 - 94	0.92	0.80			0.89
8 - 7 - 94	0.88	0.82	13162	1.15	0.88
8 - 8 - 94	0.85	0.84	13044	1.16	0.88
8 - 9 - 94	0.86	0.86			0.88
8 - 10 - 94	0.85	0.87			0.88
8 - 11 - 94	0.34	0.79	12930	1.25	0.86
8 - 12 - 94	0.20	0.70	13088	1.08	0.84
8 - 13 - 94	0.70	0.67	13294	0.94	0.83
8 - 14 - 94	0.67	0.64	13078	1.08	0.82
8 - 15 - 94	0.84	0.64	12946	1.33	0.82
8 - 18 - 94	0.82	0.63	12908	1.19	0.82
8 - 19 - 94	0.84	0.63	12942	1.23	0.81
8 - 20 - 94	0.81	0.70	12835	1.17	0.81
8 - 21 - 94	0.78	0.78			0.80
8 - 22 - 94	0.94	0.81	12940	1.35	0.80
8 - 23 - 94	0.89	0.85			0.80
8 - 24 - 94	0.85	0.85	13056	1.15	0.80
8 - 25 - 94	0.80	0.84	12833	1.19	0.79
8 - 27 - 94	0.81	0.84			0.79
8 - 28 - 94	0.82	0.84			0.79
8 - 29 - 94	0.80	0.84			0.78
8 - 30 - 94	0.91	0.84	13316	1.01	0.79
8 - 31 - 94	0.81	0.83			0.78
9 - 1 - 94	0.89	0.83	13124	1.06	0.79
9 - 2 - 94	0.88	0.85	13011	1.09	0.79
9 - 3 - 94	0.90	0.86	13163	1.09	0.79
9 - 4 - 94	0.95	0.88	13053	1.14	0.80
9 - 5 - 94	0.95	0.90	12966	1.19	0.81
9 - 6 - 94	0.88	0.89	12961	1.11	0.81
9 - 7 - 94	0.86	0.90	13072	1.00	0.81
9 - 8 - 94	0.86	0.90			0.81
9 - 9 - 94	0.82	0.89	12806	0.99	0.81
9 - 10 - 94	0.83	0.88	13198	0.97	0.81
9 - 11 - 94	0.82	0.86	13151	1.04	0.81
9 - 12 - 94	0.76	0.83	12969	0.96	0.80
9 - 13 - 94	0.75	0.81	13162	0.95	0.80
9 - 14 - 94	0.78	0.80	12670	1.02	0.81
9 - 15 - 94	0.78	0.79			0.83
9 - 16 - 94	0.78	0.79	13136	1.03	0.83
9 - 17 - 94	0.80	0.78	12963	1.01	0.84
9 - 18 - 94	0.85	0.79			0.84
9 - 19 - 94	0.83	0.80	13236	1.03	0.84
9 - 20 - 94	0.83	0.81	12661	0.99	0.84
9 - 21 - 94	0.80	0.81			0.84

UNIT 3 SO2 EMISSION DATA

DATE	AVG DAILY LB/MMBTU	7 DAY RUNNING AVERAGE	AS REC'D BTU/LB	AS REC'D %SULFUR	30 DAY ROLLING AVERAGE
9 - 22 - 94	0.73	0.80			0.84
9 - 23 - 94	0.78	0.80			0.83
9 - 24 - 94	0.84	0.81			0.83
9 - 25 - 94	0.84	0.81			0.83
9 - 26 - 94	0.86	0.81			0.83
9 - 27 - 94	0.85	0.81	12563	0.85	0.83
9 - 28 - 94	0.88	0.83			0.84
9 - 29 - 94	0.85	0.84	12732	0.86	0.84
9 - 30 - 94	0.78	0.84			0.83
10 - 4 - 94	0.63	0.81			0.83
10 - 5 - 94	0.66	0.79	13284	0.88	0.82
10 - 6 - 94	0.82	0.78			0.82
10 - 8 - 94	0.74	0.77			0.81
10 - 9 - 94	0.76	0.75			0.81
10 - 10 - 94	0.83	0.75	12713	1.37	0.80
10 - 11 - 94	0.80	0.75			0.80
10 - 12 - 94	0.81	0.77	12963	1.14	0.80
10 - 13 - 94	0.81	0.80	13106	1.16	0.80
10 - 14 - 94	0.88	0.80	13023	1.10	0.80
10 - 15 - 94	0.86	0.82	13085	1.12	0.80
10 - 16 - 94	0.93	0.85	12930	1.38	0.80
10 - 17 - 94	0.88	0.85	12808	1.27	0.81
10 - 18 - 94	0.79	0.85	12968	1.08	0.81
10 - 19 - 94	0.83	0.85	12986	1.02	0.81
10 - 20 - 94	0.71	0.84	13034	1.12	0.81
10 - 21 - 94	0.75	0.82	12993	1.10	0.81
10 - 22 - 94	0.85	0.82	13022	1.17	0.81
10 - 23 - 94	0.85	0.81	13065	1.07	0.81
10 - 24 - 94	0.87	0.81	13106	1.25	0.81
10 - 25 - 94	0.84	0.81	13092	1.28	0.81
10 - 26 - 94	0.69	0.79			0.81
10 - 27 - 94	0.77	0.80	13173	1.13	0.81
10 - 28 - 94	0.80	0.81			0.81
10 - 29 - 94	0.79	0.80	12917	1.19	0.81
10 - 30 - 94	0.85	0.80	12905	1.22	0.81
10 - 31 - 94	0.73	0.78	12891	1.13	0.80
11 - 1 - 94	0.67	0.76	12986	1.05	0.80
11 - 2 - 94	0.71	0.76	13011	1.06	0.79
11 - 3 - 94	0.75	0.76	12858	1.10	0.79
11 - 4 - 94	0.73	0.75	12880	1.05	0.79
11 - 5 - 94	0.80	0.75	12937	1.18	0.79
11 - 6 - 94	0.85	0.75	13281	1.23	0.80
11 - 7 - 94	0.81	0.76	13127	1.26	0.80
11 - 8 - 94	0.64	0.76	12944	1.13	0.79
11 - 9 - 94	0.61	0.74			0.79
11 - 10 - 94	0.68	0.73			0.79
11 - 11 - 94	0.76	0.74	13159	1.08	0.78
11 - 12 - 94	0.92	0.75	12953	1.33	0.79
11 - 13 - 94	0.85	0.75	13015	1.14	0.79
11 - 14 - 94	0.94	0.77	13041	1.29	0.79
11 - 15 - 94	0.90	0.81	12958	1.32	0.79
11 - 17 - 94	0.82	0.84	12614	1.12	0.79

UNIT 3 SO2 EMISSION DATA

DATE	AVG DAILY LB/MMBTU	7 DAY RUNNING AVERAGE	AS REC'D BTU/LB	AS REC'D %SULFUR	30 DAY ROLLING AVERAGE
11 - 18 - 94	0.67	0.84	13179	0.97	0.78
11 - 19 - 94	0.64	0.82	12972	0.99	0.78
11 - 21 - 94	0.75	0.80	13086	0.94	0.77
11 - 22 - 94	0.78	0.79	13037	1.01	0.78
11 - 23 - 94	0.76	0.76	12983	1.03	0.78
11 - 24 - 94	0.84	0.75	13029	1.25	0.78
11 - 25 - 94	0.76	0.74	13084	1.18	0.77
11 - 26 - 94	0.70	0.75	12971	1.11	0.77
11 - 27 - 94	0.92	0.79	13082	1.33	0.77
11 - 28 - 94	0.84	0.80	13033	1.26	0.78
11 - 29 - 94	0.78	0.80	13175	1.23	0.78
11 - 30 - 94	0.93	0.82	12684	1.30	0.78
12 - 1 - 94	0.87	0.83	12781	1.30	0.78
12 - 2 - 94	0.82	0.84	12982	1.32	0.78
12 - 3 - 94	0.93	0.87	12824	1.43	0.79
12 - 4 - 94	0.98	0.88	12817	1.63	0.80
12 - 5 - 94	0.96	0.90	12895	1.62	0.81
12 - 6 - 94	0.70	0.88	12804	1.28	0.80
12 - 7 - 94	0.69	0.85	12849	1.25	0.80
12 - 8 - 94	0.87	0.85	12809	2.01	0.81
12 - 9 - 94	0.74	0.84	12866	1.74	0.80
12 - 10 - 94	0.78	0.82	12746	1.69	0.80
12 - 11 - 94	0.54	0.75	12692	1.66	0.80
12 - 12 - 94	0.59	0.70	12845	0.99	0.80
12 - 13 - 94	0.81	0.72	12893	1.14	0.80
12 - 14 - 94	0.82	0.74	12941	1.09	0.80
12 - 15 - 94	0.89	0.74	12873	1.16	0.80
12 - 16 - 94	0.87	0.76	12814	1.25	0.80
12 - 17 - 94	0.80	0.76	12668	1.15	0.80
12 - 18 - 94	0.71	0.78	13053	1.01	0.79
12 - 19 - 94	0.74	0.81	12813	1.08	0.79
12 - 20 - 94	0.81	0.81	12870	1.08	0.79
12 - 22 - 94	0.69	0.79			0.80
12 - 23 - 94	0.82	0.78			0.80
12 - 24 - 94	0.88	0.78			0.80
12 - 25 - 94	0.81	0.78	13100	1.21	0.80
12 - 26 - 94	0.67	0.77	13267	1.01	0.80
12 - 29 - 94	0.76	0.78			0.80
12 - 30 - 94	0.81	0.78			0.80
12 - 31 - 94	0.88	0.80	13380	1.14	0.80
					0.80

ATTACHMENT 5

PROPOSED METHOD FOR DETERMINING COMPLIANCE

May 15, 1995

Mr. A. A. Linero, P.E.
Administrator
New Source Review Section
Department of Environmental Protection
Twin Towers Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dear Mr. Linero:

Re: Requests from letter dated May 5, 1995 to Ms. Farzie Shelton

Enclosed please find the information you requested in your letter to Ms. Shelton dated May 5, 1995. We have included basic drawings for the scrubber serving McIntosh Unit 3 along with a brief process description.

The last item you requested was a proposed method of determining and reporting compliance for the SO_2 emission limit and sulfur reduction requirement.

The following procedure is proposed:

The City of Lakeland will monitor SO_2 emissions by calculating the total pounds of SO_2 produced using AP 42 emission factor. The reference material for the calculations will be a daily coal analysis. The City of Lakeland has in place an ASTM certified automatic coal sampler which produces a representative sample for the entire lot of coal burned. Samples are collected daily and analyzed for moisture, btu/lb, sulfur, and ash content on an as received basis. The total pounds of coal burned will be determined by calibrated stock feeder scales.

The City of Lakeland will maintain a spreadsheet type file on computer which will document daily the overall SO_2 removal and emissions based on coal analysis and emissions leaving the stack. The spreadsheet will also maintain a 30 day rolling average for overall SO_2 removal and SO_2 emissions. The 30 day rolling average will have a minimum of 60% overall SO_2 removal and a maximum of 0.9 lb/mmbtu of SO_2 emissions.

Sincerely,

Timothy C Bates

Timothy C. Bates, P.E.
City of Lakeland
Departement of Electric & Water
McIntosh Power Plant Manager