JEFFERSON SMURFIT CORPORATION

Containerboard Mill Division
1915 WIGMORE STREET
P.O. BOX 150
JACKSONVILLE, FL 32201
TELEPHONE: 904/353-3611

OVERNIGHT DELIVERY - AIRBORNE EXPRESS

July 14, 1993

Mr. Clair H. Fancy, P.E., Chief
Bureau of Air Regulation
Division of Air Resources Management
Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400

SUBJECT: NO. 10 COAL/BARK BOILER
PERMIT NO. AO16-185036
JEFFERSON-SMURFIT CORPORATION
JACKSONVILLE MILL

Dear Mr. Fancy:

In response to your letter of January 22, 1993, please accept the enclosed package as an application to modify the construction and operation permits for the subject boiler. The package includes the cover letter explaining the modification and responding to the questions of your previous letter; a completed application form and supporting calculations; results of the modeling; and the application fee, Check No. 1131073 in the amount of $7,500.00.

First, the responses to the questions in your previous letter:
* There have been no physical modifications or reconstructions to the No. 10 Boiler since the original construction was completed.
* The proposed modification will not affect the operation or emissions of any other source at this facility. The increase in the heat input rate will allow a greater use of bark, which is a more economical and an available fuel. Also, the increased heat input rate will allow a small increase in the steam production rate of the boiler which will result in an increase in electrical power generation which will reduce the need to purchase that power from outside the company.

As instructed by your office, this application package, including the modeling, has been prepared based on the premise of "past actuals vs. future allowables". For the hours of operation, the two years selected from the AORs submitted to DEP as representative from the last five are 1988 (8,488 hours) and 1992 (8,455 hours). The past actual emissions of each pollutant were then calculated using stack tests results accepted by DEP (copies included). Following is a pollutant-by-pollutant description of the permit modification application.

For **particulate matter** (PM-10), Jefferson-Smurfit Corporation (JSC) proposes to accept an emission limit of 24.3 lb/hr and 106.5 t/yr. Since this annual emission rate represents an increase of less than 15 t/yr above the past actual annual rate, further new source review requirements are not necessary. This new limit can be met under current operating conditions, as demonstrated by all previous stack tests; however, if necessary, the scrubber liquid to the venturi scrubber can be adjusted to insure continuous compliance.

For **sulfur dioxide** (SO_2), JSC proposes new emission limits of 217 lb/hr and 950.5 t/yr. This represents a reduction of almost 315 t/yr; however, it is still an increase of 97.5 t/yr above the past actual annual rate. Modeling of this emission rate does not result in a significant impact on ambient concentrations in Duval County, or in any Class I areas within 100 km. JSC requests that this rate be accepted as BACT bacause: the existing caustic scrubber represents state-of-the-art SO_2 control equipment; the scrubbing liquid rate to the caustic scrubber can be adjusted to insure continuous compliance; and, the new, lower emission rate results in an improvement in air quality when compared to existing allowable emissions.

For **nitrogen oxides** (NOx), JSC proposes to retain the existing allowables of 308.7 lb/hr and 1352.1 t/yr. While this is an increase of 188.1 t/yr above the past actual emission rate, modeling indicates that it does not result in a significant impact on ambient concentrations in Duval County, or in any Class I area within 100 km. For this reason, and because this rate was determined to be BACT for this type and model boiler in the original determination, JSC requests that the existing allowables be accepted as BACT.

For **volatile organic compounds** (VOC), JSC proposes emission limits of 38.6 lb/hr and 168.9 t/yr. While this is an increase of 24.9 t/yr above the existing allowable rate, it is an increase of 39.9 t/yr above the existing actual annual emission rate. Since the increase does not exceed the significant emissions increase threshold, no further new source requirements are necessary.

For **carbon monoxide** (CO), JSC proposes emission limits of 65 lb/hr and 269.9 t/yr. The hourly emission limit remains unchanged from the past allowable rate. The annual emission rate increases by 99.9 t/yr, but this is below the 100 t/yr threshold, and, therefore, no further new source review requirements apply. No emission tests for CO have been required by DEP in the last five years; therefore, according to FAC 17-212.200(2)(b), past actuals are presumed to equal past allowables.

Attached for convenience is a tabulation of current actual and allowable emission rates. Also, as requested in your letter, we are providing the summary performance specification sheet of the boiler.

We believe this will provide the information you need to process the permit modification. If further data is required or if you have any questions, please let me know.

Very truly yours,

Hollis H. Elder

Hollis H. Elder
Vice President &
General Manager

Enclosure

cc: G. Cole, NE Dist
R. Robinson, Duval Co.
G. Harper, EPA
G. Bunyak, NPS

CURRENT ALLOWABLE EMISSIONS

Pollutant	#/hr	t/yr	Other
Particulate	44.1	152	0.1 #/MMBtu
SO_2	289.5	1265	
NOx	308.7	1352.1	0.7 #/MMBtu
VOC	61.0	144	
CO	65.0	170	

CURRENT ACTUAL EMISSIONS

Pollutant	#/hr	t/yr	Date determined
Particulate	21.63	91.6	2/27/91
SO_2	201.11	852	3/16/92
NOx	274.89	1164	2/27/91
VOC	30.44	129	6/27/90

* Representative hours of operation are for 1988 and 1992.
* No test data for CO; therefore, according to FAC17-212.200(2)(b), presume actual = allowable.

80-0990
815

JSC/CCA
JEFFERSON SMURFIT CORPORATION AND
CONTAINER CORPORATION OF AMERICA
401 Alton Street, P.O. Box 276, Alton, IL 62002-2276

No.1131073

SCOTT CITY BANK & TRUST
A CORRESPONDENT OF BOATMEN'S BANK

DATE 7-14-93

PLANT NO.
13

The sum of 7500dls00cts

PAY TO THE ORDER OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
2600 BLAIR STONE ROAD
TALLAHASSEE, FL 32399-2400

THIS CHECK NOT VALID UNLESS PRESENTED FOR PAYMENT WITHIN 180 DAYS FROM DATE OF ISSUE.

****7,500.00*****
AMOUNT

JEFFERSON SMURFIT CORPORATION

2ND SIGNATURE REQUIRED
IF OVER $5,000

2ND SIGNATURE

1ST SIGNATURE

⑈1131073⑈ ⑆081509902⑆ 01006103371⑈

#1500 pd.
7-16-93
Rcpt. # 180878

DER Form #
Form Title
Effective Date
DER Application No
Filled in by DER?

Florida Department of Environmental Regulation
Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

AC16-234532
PSD-FL-207

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Power Boiler-Combined Fuel [ ] New[1] [X] Existing[1]

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

COMPANY NAME: Jefferson-Smurfit Corporation COUNTY: Duval

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) #10 Coal/Bark Boiler

SOURCE LOCATION: Street 1915 Wigmore Street City Jacksonville

UTM: East 7439.500 North 3359.100

Latitude 30 ° 22 ' 00 "N Longitude 81 ° 37 ' 30 "W

APPLICANT NAME AND TITLE: Hollis H. Elder, Vice President and General Manager

APPLICANT ADDRESS: Post Office Box 150, Jacksonville, Florida 32201

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Jefferson-Smurfit Corporation

I certify that the statements made in this application for a modification to construction 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: Hollis H. Elder

Hollis H. Elder, Vice President and General Manager
Name and Title (Please Type)

Date: 7/14/93 Telephone No. 904/353-3611

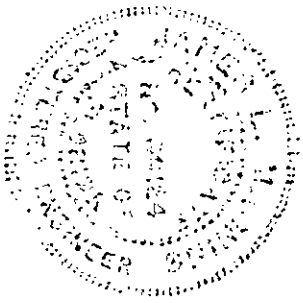
B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

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)

Northwest District 160 Governmental Center Pensacola, Florida 32501-5794 904-436-8300
Northeast District 3426 Bills Rd. Jacksonville, Florida 32207 904-798-4200
Central District 3319 Maguire Blvd. Suite 232 Orlando, Florida 32803-3767 407-894-7555
Southwest District 4520 Oak Fair Blvd. Tampa, Florida 33610-7347 813-623-5561
South District 2269 Bay St. Fort Myers, Florida 33901-2896 813-332-2667
Southeast District 1900 S. Congress Ave. Suite A West Palm Beach, Florida 33406 407-964-6666

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 James L. Manning

James L. Manning, P.E.
Name (Please Type)

Jones, Edmunds & Associates, Inc.
Company Name (Please Type)

730 North Waldo Road, Gainesville, Florida 32601
Mailing Address (Please Type)

Florida Registration No. 36124 Date: 7/11/93 Telephone No. 904/377-5821

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.

Modify the existing Construction Permit to increase the maximum heat input to the boiler from 441 MMBtu to 540 MMBtu.

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

Start of Construction N/A Completion of Construction

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

N/A

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

Construction Permit No.: AC16-33885; issued February 3, 1981; expired January 31, 1984

Operation Permit No.: A016-185036; issued October 24, 1990; expires September 30, 1995

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

if power plant, hrs/yr_____; if seasonal, describe:_____

F. If this is a new source or major modification, answer the following questions. (Yes or No)

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

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

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

   c. If yes, list non-attainment pollutants. Ozone, particulate*

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

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

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

5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? No

H. Do "Reasonably Available Control Technology" (RACT) requirements apply to this source? No

   a. If yes, for what pollutants?_____

   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.

* Duval County was non-attainment for TSP when the original application was submitted. At that time LAER was established and offsets were provided.

** All applicability determinations were made in the original Construction Permit.

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

A. Raw Materials and Chemicals Used in your Process, if applicable: N/A

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

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

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	
PM-10	24.3	106.5	0.1 #/10^6Btu	24.3	1536.8	6,731	
SO_2	217	950.5	289.5 #/hr	217	548.3	2,401.5	
NOx	308.7	1352.1	0.70 #/10^6Btu	308.7	308.7	1,352.1	
VOC	38.6	168.9	No std.	38.6	38.6	168.9	
CO	65	269.9	No.std.	65	65	269.9	

[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)
(See original Construction Permit Application)				

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
Coal	30,600	30,600	397.0
Bark	35,000	35,000	143.5

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

Fuel Analysis: Coal/Bark

Percent Sulfur: 0.913/0.05 Percent Ash: 8.2/1.5

Density: _____ lbs/gal Typical Percent Nitrogen: 1.5/0.3

Heat Capacity: 13,005/4,100 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 -0- Maximum _____

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

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

Stack Height: 200 ft. Stack Diameter: 10 ft.

Gas Flow Rate: 204,000 ACFM 167,690 DSCFM Gas Exit Temperature: 140 °F.

Water Vapor Content: 17.8 % Velocity: 43.3 FPS

SECTION IV: INCINERATOR INFORMATION N/A

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)]

2. To a construction application, attach basis of emission estimate (e.g., design calculations, design drawings, pertinent manufacturer's test data, etc.) and attach proposed methods (e.g., FR Part 60 Methods 1, 2, 3, 4, 5) to show proof of compliance with applicable standards. To an operation application, attach test results or methods used to show proof of compliance. Information provided when applying for an operation permit from a construction permit shall be indicative of the time at which the test was made.

3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test).

4. With construction permit application, include design details for all air pollution control systems (e.g., for baghouse include cloth to air ratio; for scrubber include cross-section sketch, design pressure drop, etc.)

5. With construction permit application, attach derivation of control device(s) efficiency. Include test or design data. Items 2, 3 and 5 should be consistent: actual emissions = potential (1-efficiency).

6. An 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.

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).

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.

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 N/A

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

A. Company Monitored Data N/A

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. 5 Year(s) of data from 01 / 01 / 83 to 12 / 31 / 87
month day year month day year

2. Surface data obtained from (location) Jacksonville, Station No. 13889

3. Upper air (mixing height) data obtained from (location) Waycross, Station No. 13861

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

C. Computer Models Used

1. ISCST 2 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	3.06	grams/sec
SO^2	27.4	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.

Particulate (PM-10)

Past Actuals =

$$\frac{8472 \times 21.63}{2000} = 91.6 \text{ tons/yr}$$

Future allowable = $(91.6 + 14.9) \times \frac{2000}{8760} = 24.3$ lb/hr

Potential emissions (AP-42) =

$$\left[\frac{17 \text{ lb}}{\text{ton}} \times \frac{17.5 \text{ tons}}{\text{hr}}\right] + \left[\frac{10 \times 8.1 \text{ lb}}{\text{ton}} \times \frac{15.3 \text{ tons}}{\text{hr}}\right] = 1536.8 \frac{\text{lb}}{\text{hr}}$$

$$= 6731 \frac{\text{tons}}{\text{yr}}$$

SO_2

Future allowables determined by computer modelling.

Potential emissions =

$$\left[\frac{39\ (0.913) \text{ lb}}{\text{ton}} \times 15.3 \frac{\text{tons}}{\text{hr}}\right] + \left[\frac{0.2 \text{ lb}}{\text{ton}} \times \frac{17.5 \text{ tons}}{\text{hr}}\right] = 548.3 \frac{\text{lb}}{\text{hr}}$$

$$= 2{,}401.5 \frac{\text{tons}}{\text{yr}}$$

NOx

Retain existing allowables

VOC

Past Actuals = $\frac{8472}{2000} \times \frac{30.44\ lb}{hr} = \frac{129\ tons}{yr}$

Future Allowable = $\left[129 + \frac{39.9\ tons}{yr}\right] \times \frac{2000}{8760} = \frac{38.6\ lb}{hr}$

Potential Emissions = Future allowables, based on stack test.

CO

No stack test has been required by DEP, ∴ past actuals equal past allowables, according to FAC 17-212.200(2)(b).

Future allowables =

$$\frac{170\ t}{y} + \frac{99.9\ t}{y} = 269.9\ t/y$$

$$\left[\frac{15.3\ t}{hr} \times \frac{0.6\ lb}{t}\right] + \left[\frac{17.5\ t}{hr} \times \frac{3.19\ lb}{t}\right] = \frac{65\ lb}{hr}$$

SOURCE TEST REPORT
for
PARTICULATE, OXIDES OF NITROGEN,
SULFUR DIOXIDE, AND VISIBLE EMISSIONS

NUMBER 10 COMBINATION

FDER PERMIT NUMBER AO16-185036
FDER I.D. NUMBER 31-16-0003-13

MARCH 6, 1992

Prepared for:

JEFFERSON-SMURFIT CORPORATION
1915 WIGMORE STREET
POST OFFICE BOX 150
JACKSONVILLE, FLORIDA 32201

Prepared by:

AIR CONSULTING AND ENGINEERING, INC.
2106 N.W. 67TH PLACE, SUITE 4
GAINESVILLE, FLORIDA 32606
(904) 335-1889

199-92-01

2.0 SUMMARY AND DISCUSSION OF RESULTS

The Number 10 Combination Boiler was found to be operating within the emission compliance limits for particulate, NO_x, SO_2, and visible emissions. Results are summarized in Table 1.

Particulate emissions averaged 10.09 pounds per hour (lbs/Hr) and 0.0214 pounds per million BTUs (lbs/MMBTU) of heat input to the boiler. This is well within the compliance limits of 44.0 lbs/Hr and 0.1 lbs/MMBTU.

Oxides of nitrogen emissions averaged 264.25 lbs/Hr and 0.5592 lbs/MMBTU, also well within the compliance limits of 308.7 lbs/Hr and 0.7 lbs/MMBTU.

Sulfur dioxide emissions averaged 201.11 lbs/Hr and 0.4256 lbs/MMBTU compared to compliance limits of 289.5 lbs/Hr and 1.2 lbs/MMBTU.

Visible emissions averaged 0.0 percent opacity for the highest six minute period of the test. Compliance is 20 percent opacity for the highest six minute period.

Computer printouts are presented in Appendix A. Field data sheets and strip charts are in Appendix B. Laboratory data are provided in Appendix C and visible emission data are located in Appendix F.

Table 1 Emission Summary
Number 10 Combination Boiler
Jefferson-Smurfit Corporation
Jacksonville, Florida
March 6, 1992

Run Number	Time	Volumetric Flow SCFMD	O_2 %	H_2O %	Stack Temperature °F	Particulate		Emissions NO_x			SO_2		
						lb/Hr	lb/MMBTU	ppm Dry	lb/Hr	lb/MMBTU	ppm Dry	lb/Hr	lb/MMBTU
1	1132-1235	148115	7.6	21.2	143	10.48	0.0222	298.7	316.87	0.6706	164.5	242.79	0.5138
2	1323-1426	141174	7.9	21.6	144	10.04	0.0212	241.6	244.29	0.5170	136.3	191.68	0.4057
3	1456-1600	138539	8.1	21.2	143	9.76	0.0207	233.4	231.59	0.4901	122.3	168.87	0.3574
Average	-----	142609	7.9	21.3	143	10.09	0.0214	257.9	264.25	0.5592	141.0	201.11	0.4256

Emission Calculations:

lb/MMBTU = lb/Hr ÷ 472.5 MMBTU/Hr

SO_2 - NO_2 lb/Hr = (2.595×10^{-9}) (MW) (ppm) (SCFMD) (60)

MW (NO_x) = 46
MW (SO_2) = 64

3.0 PROCESS DESCRIPTION AND OPERATION

The Number 10 Boiler at Jefferson-Smurfit produces steam for the paper making equipment. The average heat input to the boiler was provided by Mr. Tonn as follows:

Heat Input from Coal = 286.8 MMBTUH
Heat Input from Bark = 185.7 MMBTUH
Total heat input = 472.5 MMBTUH

This is within ±10% of the permitted maximum heat input of 441 MMBTUH.

Fuel rate calculations are provided in Appendix F.

HEAT INPUT CALCULATIONS FOR

NO. 10 COAL/BARK BOILER, AO16-185036

JEFFERSON SMURFIT CORPORATION

JACKSONVILLE MILL

HEAT INPUT CALCULATIONS FOR COMPLIANCE TESTS ON 3-6-92

FUEL VALUE OF COAL

$$\frac{13005 \text{ BTU/\#COAL} \times \left(1 - .0542 \frac{\%\text{moist.}}{\#}\right) \times 2000 \text{ \#/TON}}{1{,}000{,}000 \text{ BTU/MMBTU}} = 24.6 \text{ MMBTU/TON}$$

TOTAL CO_2 = 142,609 SDCF/MIN. X 60 MIN/HR X .102 CO_2 = 872767 ft^3CO_2

CO_2 FROM COAL = 11.66 TONS COAL/HR X 24.6 MMBTU/TON X 1800 ft^3CO_2/MMBTU = - 516305 ft^3CO_2/h

CO_2 FROM BARK 356462 ft^3CO_2

MMBTU/HR FROM BARK = $\frac{356462 \text{ ft}^3\text{CO}_2/\text{hr}}{1920 \text{ ft}^3\text{CO}_2/\text{MMBTU BARK}}$ = 185.7 MMBTU

MMBTU/HR FROM COAL = 11.66 TON COAL/HR X 24.6 MMBTU/TON = 286.8 MMBTU/

TOTAL MMBTUs/hr. INTO FURNACE = 472.5 MMBTU/

% OF PERMITTED HEAT INPUT:

$\frac{472.5 \text{ MMBTU/hr} \times 100}{441 \text{ MMBTU/HR}} = 107.1\%$

E.T.TONN
SENIOR ENVIRONMENTAL ENGINEER
td:\envtests\heatinpt.env

SOURCE TEST REPORT
for
PARTICULATE, OXIDES OF NITROGEN,
SULFUR DIOXIDE AND VISIBLE EMISSIONS

JEFFERSON-SMURFIT CORPORATION
JACKSONVILLE, FLORIDA

NUMBER 10 COMBINATION BOILER

FDER PERMIT NUMBER AO16-185036
FDER I.D. NUMBER 31-16-0003-13

FEBRUARY 27, 1991

Prepared for:

JEFFERSON-SMURFIT CORPORATION
1915 WIGMORE STREET
JACKSONVILLE, FLORIDA 32201

Prepared by:

AIR CONSULTING AND ENGINEERING, INC.
2106 N.W. 67th PLACE, SUITE 4
GAINESVILLE, FLORIDA 32606
(904) 335-1889

199-91-02

2.0 SUMMARY AND DISCUSSION OF RESULTS

The Number 10 Combination Boiler was found to be operating within the emission compliance limits for particulate, NO_x, SO_2, and visible emissions. Results are summarized in Table 1.

Particulate emissions averaged 21.63 pounds per hour (lb/Hr) and 0.0504 pounds per million BTUs (lb/MMBTU) of heat input to the boiler. This is well within the compliance limits of 44.0 lb/Hr and 0.1 lb/MMBTU.

Oxides of nitrogen emissions averaged 274.89 lb/Hr and 0.6425 lb/MMBTU, also well within the compliance limits of 308.7 lb/Hr and 0.7 lb/MMBTU.

Sulfur dioxide emissions averaged 314.15 lb/Hr and 0.7319 lb/MMBTU compared to compliance limits of 289.5 lb/Hr and 1.2 lb/MMBTU.

The SO_2 results are not totally accurate because of matrix interferences. It was impossible to get a clear end point while titrating. Therefore, the SO_2 laboratory results are bias higher than the SO_2 results obtained with the continuous emission monitor.

Visible emissions averaged 3.75 percent opacity for the highest six minute period of the test. Compliance is 20 percent opacity for the highest six minute period.

Table 1 Emission Summary
Number 10 Combination Boiler
Jefferson-Smurfit Corporation
Jacksonville, Florida
February 27, 1991

Run Number	Time	Volumetric Flow SCFMD	O_2 %	H_2O %	Stack Temperature °F	Emissions: Particulate lb/Hr	Particulate lb/MMBTU	NO_x ppm Dry	NO_x lb/Hr	NO_x lb/MMBTU	SO_2 ppm Dry	SO_2 lb/Hr	SO_2 lb/MMBTU
1	0824-0935	166534	10.4	16.1	138	29.89	0.0696	232	276.72	0.6446	192.4	319.29	0.7438
2	1018-1120	166518	10.1	17.8	138	17.42	0.0406	232	276.69	0.6446	183 4	304.24	0.7088
3	1158-1300	170018	10.6	17.6	137	17.57	0.0409	225	273.98	0.6383	188.3	318.94	0.7430
Average	-----	167690	10.4	17.8	138	21.63	0.0504	230	274.89	0.6425	188.0	314.15	0 7319

Emission Calculations:

lb/MMBTU = lb/Hr ÷ 429.26 MMBTU/Hr

SO_2 - NO_2 lb/Hr = (2.595×10^{-9}) (MW) (ppm) (SCFMD) (60)

MW (NO_x) = 46
MW (SO_2) = 64

The average heat input to the boiler was provided by Mr. Tonn as follows:

Heat Input from Coal = 340.52 MMBTUH

Heat Input from Bark = 88.74 MMBTUH

Total heat input = 429.26 MMBTUH

This is within ±10% of the permitted maximum heat input of 441 MMBTUH.

Fuel rate calculations are provided in Appendix F. Particulate emission data. NO_x and SO_2 emission summary and strip chart copies. field data sheets. and laboratory data sheets are provided in Appendices A. B. C. and D. respectively. Visible emission data and observers' certification are presented in Appendix F.

HEAT INPUT CALCULATIONS FOR

NO. 10 COAL/BARK BOILER, AO16-86317

JEFFERSON SMURFIT CORPORATION

JACKSONVILLE MILL

FEBRUARY 27, 1991

FUEL VALUE OF COAL

$$\frac{13{,}775 \text{ BTU/\#COAL} \times \left(1 - 0.0551 \frac{\%H_2O}{\text{COAL}}\right) \times 2000 \text{ \#/TON}}{1{,}000{,}000 \text{ BTU/MMBTU}} = 27.55 \text{ MMBTU/TON}$$

HEAT INPUT FROM COAL

12.36 TONS COAL/HR X 27.55 MMBTU/TON = 340.52 MMBTU/HR.

HEAT INPUT FROM BARK:

$$\frac{314{,}992 \text{ \#STEAM/HR} \times 0.001102 \text{ MMBTU/\#STEAM} - 340.52 \frac{\text{mmBTU COAL}}{\text{HR.}} \times 0.85 \text{ EFF.}}{0.65 \text{ EFF. ON BARK}}$$

= 88.74 mmBTU/HR.

TOTAL HEAT INPUT:

340.52 MMBTU/HR FROM COAL
88.74 MMBTU/HR FROM BARK
429.26 MMBTU/HR TOTAL

% OF PERMITTED LOAD:

$$\frac{429.26 \text{ MMBTU/HR} \times 100}{441 \text{ MMBTU/HR}} = 97.3\%$$

E.T.TONN
SENIOR ENVIRONMENTAL ENGINEER

SOURCE TEST REPORT
for
PARTICULATE, OXIDES OF NITROGEN,
SULFUR DIOXIDE, AND VISIBLE EMISSIONS

NUMBER 10 COMBINATION

FDER PERMIT NUMBER AO16-185036
FDER I.D. NUMBER 31-16-0003-13

MARCH 6, 1992

Prepared for:

JEFFERSON-SMURFIT CORPORATION
1915 WIGMORE STREET
POST OFFICE BOX 150
JACKSONVILLE, FLORIDA 32201

Prepared by:

AIR CONSULTING AND ENGINEERING, INC.
2106 N.W. 67TH PLACE, SUITE 4
GAINESVILLE, FLORIDA 32606
(904) 335-1889

199-92-01

2.0 SUMMARY AND DISCUSSION OF RESULTS

The Number 10 Combination Boiler was found to be operating within the emission compliance limits for particulate, NO_x, SO_2, and visible emissions. Results are summarized in Table 1.

Particulate emissions averaged 10.09 pounds per hour (lbs/Hr) and 0.0214 pounds per million BTUs (lbs/MMBTU) of heat input to the boiler. This is well within the compliance limits of 44.0 lbs/Hr and 0.1 lbs/MMBTU.

Oxides of nitrogen emissions averaged 264.25 lbs/Hr and 0.5592 lbs/MMBTU, also well within the compliance limits of 308.7 lbs/Hr and 0.7 lbs/MMBTU.

Sulfur dioxide emissions averaged 201.11 lbs/Hr and 0.4256 lbs/MMBTU compared to compliance limits of 289.5 lbs/Hr and 1.2 lbs/MMBTU.

Visible emissions averaged 0.0 percent opacity for the highest six minute period of the test. Compliance is 20 percent opacity for the highest six minute period.

Computer printouts are presented in Appendix A. Field data sheets and strip charts are in Appendix B. Laboratory data are provided in Appendix C and visible emission data are located in Appendix F.

Table 1 Emission Summary
Number 10 Combination Boiler
Jefferson-Smurfit Corporation
Jacksonville, Florida
March 6, 1992

Run Number	Time	Volumetric Flow SCFMD	O_2 %	H_2O %	Stack Temperature °F	Particulate lb/Hr	Particulate lb/MMBTU	NO_x ppm Dry	NO_x lb/Hr	NO_x lb/MMBTU	SO_2 ppm Dry	SO_2 lb/Hr	SO_2 lb/MMBTU
								MW 46 Emissions			MW 64		
1	1132-1235	148115	7.6	21.2	143	10.48	0.0222	298.7	316.87	0.6706	164.5	242.79	0.5138
2	1323-1426	141174	7.9	21.6	144	10.04	0.0212	241.6	244.29	0.5170	136.3	191.68	0.4057
3	1456-1600	138539	8.1	21.2	143	9.76	0.0207	233.4	231.59	0.4901	122.3	168.87	0.3574
Average	-----	142609	7.9	21.3	143	10.09	0.0214	257.9	264.25 ~~263.48~~	0.5592 ~~.5575~~	141.0	201.11	0.4256

Emission Calculations:

lb/MMBTU = lb/Hr ÷ 472.5 MMBTU/Hr

SO_2 - NO_2 lb/Hr = (2.595×10^{-9}) (MW) (ppm) (SCFMD) (60)

MW (NO_x) = 46
MW (SO_2) = 64

$\frac{E}{hr} = .0026 \cdot (ppm)(SCFM)$

3.0 PROCESS DESCRIPTION AND OPERATION

The Number 10 Boiler at Jefferson-Smurfit produces steam for the paper making equipment. The average heat input to the boiler was provided by Mr. Tonn as follows:

Heat Input from Coal = 286.8 MMBTUH 61% COAL
Heat Input from Bark = 185.7 MMBTUH 39% BARK
Total heat input = 472.5 MMBTUH

This is within ±10% of the permitted maximum heat input of 441 MMBTUH.

Fuel rate calculations are provided in Appendix F.

Capacity Factor = $\frac{286.8 \text{ MMBTU/hr} \mid 8472}{286.8 \mid 8670}$

$\frac{(.9)}{(.6)}$

441

$\frac{(.5)}{540}$

201.11 $\frac{\#}{h.}$

HEAT INPUT CALCULATIONS FOR

NO. 10 COAL/BARK BOILER, AO16-185036

JEFFERSON SMURFIT CORPORATION

JACKSONVILLE MILL

HEAT INPUT CALCULATIONS FOR COMPLIANCE TESTS ON 3-6-92

FUEL VALUE OF COAL

$$\frac{13005 \text{ BTU/\#COAL} \times \left(1 - .0542 \frac{\text{\%moist.}}{\text{\#}}\right) \times 2000 \text{ \#/TON}}{1{,}000{,}000 \text{ BTU/MMBTU}} = 24.6 \text{ MMBTU/TON}$$

TOTAL CO_2 = 142,609 SDCF/MIN. X 60 MIN/HR X .102 CO_2 = 872767 ft^3CO_2

CO_2 FROM COAL = 11.66 TONS COAL/HR X 24.6 MMBTU/TON X 1800 ft^3CO_2/MMBTU = - 516305 ft^3CO_2/hr

CO_2 FROM BARK 356462 ft^3CO_2

$$\text{MMBTU/HR FROM BARK} = \frac{356462 \text{ ft}^3\text{CO}_2/\text{hr}}{1920 \text{ ft}^3\text{CO}_2\text{/MMBTU BARK}} = 185.7 \text{ MMBTU}$$

MMBTU/HR FROM COAL = 11.66 TON COAL/HR X 24.6 MMBTU/TON = 286.8 MMBTU

TOTAL MMBTUs/hr. INTO FURNACE = 472.5 MMBTU

% OF PERMITTED HEAT INPUT:

$$\frac{472.5 \text{ MMBTU/hr} \times 100}{441 \text{ MMBTU/HR}} = 107.1\%$$

E.T.TONN
SENIOR ENVIRONMENTAL ENGINEER
td:\envtests\heatinpt.env

SOURCE TEST REPORT
for
VOLATILE ORGANIC COMPOUND EMISSIONS

NUMBER 10 COMBINATION BOILER

FDER PERMIT NUMBER
AO 16-86317

JUNE 27, 1990

Prepared for:

JEFFERSON-SMURFIT CORPORATION
1915 WIGMORE STREET
POST OFFICE BOX 150
JACKSONVILLE, FLORIDA 32201

Prepared by:

AIR CONSULTING AND ENGINEERING, INC.
2106 N.W. 67th PLACE, SUITE 4
GAINESVILLE, FLORIDA 32606
(904) 335-1889

199-90-05

2.0 SUMMARY AND DISCUSSION OF RESULTS

Results of the emission testing are summarized in Table 1. Complete emission data are provided in the appendices.

Total VOC emissions as carbon averaged 30.44 pounds per hour for the three run test period.

The boiler was fired on a combination of coal and bark at a rate of 432.1 million BTU per hour or 98% of permitted capacity. These calculations are presented in Appendix D.

Table 1 Volatile Organic Compound Emissions Summary
Number 10 Combination Boiler
Jefferson-Smurfit Corporation
June 27, 1990

Run Number	Time	C_3H_8 ppm_{wet}	Stack Moisture %	C_3H_8 ppm_{dry}*	Volumetric Flow (SCFMD)	VOC lb/Hr** as Carbon
1	0935-1035	34	20.5	43	126233	30.42
2	1057-1157	31	21.0	39	126784	27.72
3	1214-1314	36	21.6	46	128697	33.18
Average	-----	34	21.0	43	127238	30.44

* $ppm_d = ppm_w/FDA$
Where FDA = Fraction Dry Air

** ppm C_3H_{8dry} X = ppm C
lb/Hr = (ppm C)(3.114 X 10^{-8})(SCFMD)(60)

HEAT INPUT CALCULATIONS FOR
#10 UTILITY BOILER, A016-86317
FOR V.O.C.
RUN ON JUNE 27, 1990
JEFFERSON SMURFIT CORPORATION
JACKSONVILLE, FLORIDA

Fuel value of coal on 6/27/90:

$$\frac{13259 \text{ BTU/\#coal} \times 1 - .0566 \frac{\text{\# moist.}}{\text{\#}} \times 2000 \text{ \#/ton}}{1{,}000{,}000 \text{ BTU/MMBTU}} = 25.0 \text{ MMBtu/hr.}$$

Heat input from coal:

12.16 tons coal/hr. X 25.0 MMBtu/ton coal = 304.0 MMBtu/hr.

Heat input from bark:

$$\frac{310{,}060 \text{ \#steam/hr.} \times .001102 \text{ Btu/\#stm.} - 304.0 \frac{\text{MMBtu Coal}}{\text{hr.}} \times .85 \text{ eff.on coal}}{.65 \text{ eff. on bark}}$$

$$= 128.1 \text{ MMBtu/hr.}$$

Total heat input: 432.1 MMBtu/hr.

% of Permitted load:

$$\frac{432.1 \text{ MMBtu/hr.} \times 100}{441 \text{ MMBtu/hr.}} = 98.0\%$$

J. Norman Davis
Environmental Engineer
Quality Management Facilitator

td/HEATINPT

ALTON PACKAGING CORPORATION
JACKSONVILLE, FLORIDA
1 TYPE VU-40 BOILER
C-E CONTRACT 25781

PREDICTED PERFORMANCE*

Fuel		NO. 6 OIL	PULV. COAL
Evaporation	lb/hr	350,000	350,000
Feedwater Temperature	°F	360	360
Superheater Outlet Temperature	°F	850	850
Superheater Outlet Pressure	psig	900	900
Boiler Outlet Pressure	psig	958	958
Superheater Pressure Drop	psi	58	58
Economizer Pressure Drop	psi	27	27
Efficiency	%	87.20	87.43
Fuel Fired	lb/hr	23,580	35,380
Excess Air Leaving Boiler	%	15	20
Gas Leaving Boiler	lb/hr	401,300	425,100
Gas Temp. Leaving Boiler	°F	870	900
Gas Temp. Leaving Economizer	°F	615	630
Gas Temp. Leaving Air Heater	°F	340	360
Ambient Air			
Temperature	°F	80	80
Relative Humidity	%	60	60
Air to Air Heater	°F	80	80
Air Temperature Leaving Air Heater	°F	410	450
Air Leaving Air Heater	lb/hr	377,800	394,700
Pressure Drop**			
Windbox	"wg	4.00	3.10
Air Heater, Air Side	"wg	2.57	2.25
Air Ducts	"wg	0.57	0.50
Steam Air Heater	"wg	0.63	0.63
Total	"wg	7.77	6.48
Draft Loss**			
Furnace	"wg	0.10	0.10
Boiler & Superheater	"wg	0.32	0.37
Economizer	"wg	1.02	1.17
Air Heater, Gas Side	"wg	1.95	2.19
Gas Ducts	"wg	0.57	0.50
Dust Collector (Mech. & Scrubber)	"wg	23.70	23.80
Total	"wg	27.66	28.13

*NOTES: *These performance figures are predicted only and are not to be construed as being guaranteed except where the points coincide with the guarantees.
**Pressure & Draft Losses are at 30 ft elev.
The fuel specifications on which the performance is based are as follows. The source of analysis is derived from customer's dry analysis.

No. 6 Oil - % by wgt.	
C	85.75
H_2	11.00
O_2	0.40
N_2	0.35
S	2.50
	100.00

HHV = 18,690 Btu/lb

Coal - % By Weight	
Fixed Carbon	67.80
H_2	4.80
O_2	7.50
N_2	1.60
H_2O	3.00
ASH	13.40
S	1.90
	100.00

HHV = 12,590 Btu/lb

11-1-82

CE POWER SYSTEMS
COMBUSTION ENGINEERING, INC

BOILER VALVE & TRIM LIST

FOR

Date 9-12-81

ALTON PACKAGING CORPORATION

Ultimate User ALTON PACKAGING CORP. Consul. Engr. REYNOLDS, SMITH & HILLS

Plant Location JACKSONVILLE, FLORIDA Purchaser P.O. No. 13-J-9601

Plant Elevation 10'-6" C-E, Inc. Contract No. 25781

Installation OUTDOOR

Boiler Type VU-40

Units on Contract ONE Furn. Width 21'-11" Furn. Depth 23'-11"

Drum Centers 16'-0" Upper Drum Dia. 60" Blr. Tube Dia. 2"

Heating Surface – Ft^2: Boiler 11,065 Water Wall 8,355 Economizer 6,970

Furnace Volume – Cu. Ft. 31,590

Pressure – psig: Design 1025 Operating 900 Future Operating —

Capacity – lb/hr.: 350,000 Peak 385,000 Future —

Air Temperature – °F: 80° T.S.T. 850° Future T.S.T. —

Feedwater Temperature – °F: ——— Economizer Inlet 360°

Fuel(s): Primary PULV. COAL H.V. 12,590 BTU/LB. Sec. N°. 6 OIL H.V. 18,690 BTU/L

Sec. WOODWASTE H.V. 4,220 BTU/LB.

RHF/TB 9/17/81
M.a. 9/17/81

REV: 2 PAGE 1

25781-ESS-1