Georgia-Pacific Corporation

Hudson Pulp & Paper Corp.
A wholly-owned subsidiary

P.O. Box 919
Palatka, Florida 32077
Telephone (904) 325-2001

February 27, 1985

Mr. Bruce Mitchell
State of Florida
Department of Environmental Regulation
Bureau of Air Quality
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301

Dear Bruce:

Enclosed are 3 copies each of permit applications for adding particulate control devices to our No. 4 Combination Boiler and the No. 5 Oil Fired Power Boiler.

If there are any questions please contact me.

Sincerely,

Bob Wilson

W. R. Wilson
Environmental Supt.

mg
enclosures

cc W. L. Baxter
John Brown, FDER, Jacksonville

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

NORTHEAST DISTRICT

3426 BILLS ROAD
JACKSONVILLE, FLORIDA 32207

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: STEAM POWER BOILER OIL-FIRED [ ] New[1] [X] Existing[1]

APPLICATION TYPE: [ ] Construction [X] Operation [ ] Modification (TO A054-45320)

COMPANY NAME: GEORGIA-PACIFIC CORPORATION COUNTY: PUTNAM

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) NO. 5 POWER BOILER STACK

SOURCE LOCATION: Street STATE ROAD 216 (NORTH SIDE) City PALATKA

UTM: East 434.0 North 3283.4

Latitude 29° 41' 00"N Longitude 81° 40' 45"W

APPLICANT NAME AND TITLE: GEORGIA-PACIFIC CORPORATION

APPLICANT ADDRESS: P.O. BOX 919, PALATKA, FLORIDA 32077

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of GEORGIA-PACIFIC CORP.

I certify that the statements made in this application for a AIR EMISSION 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: _____

Name and Title (Please Type)

Date: _____ Telephone No. _____

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

This is to certify that the engineering features of this pollution control project have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that

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

the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signed Harold L Culp

Harold L. Culp, PE
Name (Please Type)

Ford, Bacon & Davis, Inc.
Company Name (Please Type)

P.O. Box 1894, Monroe, LA 71210
Mailing Address (Please Type)

Florida Registration No. 29275 Date: March 21, 1980 Telephone No. (318) 323-9000

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.

(See Attached Supplementary Report)

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

Start of ~~Construction~~ February 28, 1986 Completion of ~~Construction~~ November 28, 1986
Modification-Addition of Control Equipment

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.)

Estimated cost of multi-cell electrostatic precipitator, ducting, ash removal and vertical stack with all installed appurtenances = $2,000,000

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

Permit No. A054-45320 dated January 22, 1982, expires September 30, 1986.

Consent Order OGC File No. 83-0803 - Florida Dept. of Environmental Regulation dated January 7, 1985.

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

if power plant, hrs/yr 8760; if seasonal, describe: N/A

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

1. Is this source in a non-attainment area for a particular pollutant? NO

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

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

   c. If yes, list non-attainment pollutants. --

2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. NO

3. Does the State "Prevention of Significant Deterioriation" (PSD) requirement apply to this source? If yes, see Sections VI and VII. NO

4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? NO

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.

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

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

Not Applicable Per Definition - Rule 17-2.100 (127), Process Weight

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

B. Process Rate, if applicable: (See Section V, Item 1) For Information Only

1. Total Process Input Rate (lbs/hr): To 31,550 lbs/hr No. 6 Oil plus Combustion Air

2. Product Weight (lbs/hr): 475,000 lbs/hr, 1275 psig, 900°F Superheated Steam Maximum

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	Requested Allowable[3] Emission lbs/hr	Potential[4] Emission		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr *			lbs/yr	T/yr *	
Particulates	56.8	248.8	0.1 lbs/MBTU	56.8	497,568	248.8	Stack
SO_2	1564	6850	2.75lbs/MBTU	1564	13,814,520	6907	Stack
Fuel NO(As NO	200	876	N/A	N/A	1,752,000	876	Stack
• CO	0.15	0.66	N/A	N/A	1314	0.66	Stack
• Methane Hydrocarbons	7.6	33.3	N/A	N/A	66,751	33.3	Stack
Opacity	20%, 40% 2M		20%, 40% 2M	20%, 40% 2M	30%		Stack

[1]See Section V, Item 2. *At 8760 hrs/yr • No Sampling data - factored from AP-42 Chap. 1 Tabl

[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)
Electrostatic Pre-	Particulates	Up to 90%	1-100	Cost Effective
cipitator (Not				Design Basis
Selected From Vendor				
Yet. Equipment Bids -				
Guaranteed Performance				
Data Not Yet Received)				

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
No. 6 Fuel Oil	2750 ±	3810	568.9

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

Fuel Analysis: (See Attached Report)

Percent Sulfur: 2 ½ Percent Ash: 0.15±

Density: 8.28 (10.9°API) lbs/gal Typical Percent Nitrogen: 0.54

Heat Capacity: 18,350 BTU/lb 151,938 BTU/gal

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

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

Annual Average -- Maximum --

Unknown-Paper and Pulp Mill

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

35-50 lbs/hr ash to be collected and disposed of in a controlled landfill.

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

Stack Height: 232 Above Grade ft. Stack Diameter: 9 ft.

Gas Flow Rate: 231,500 ACFM 118,500 DSCFM Gas Exit Temperature: 445 °F.

Water Vapor Content: 10-12 % Velocity: 60.6 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 N/A

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:

N/A

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

N/A

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

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?

[ ] Yes [X] No

Contaminant	Rate or Concentration

B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy)

[ ] Yes [X] No

Contaminant	Rate or Concentration

C. What emission levels do you propose as best available control technology?

Contaminant	Rate or Concentration
N/A	

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:

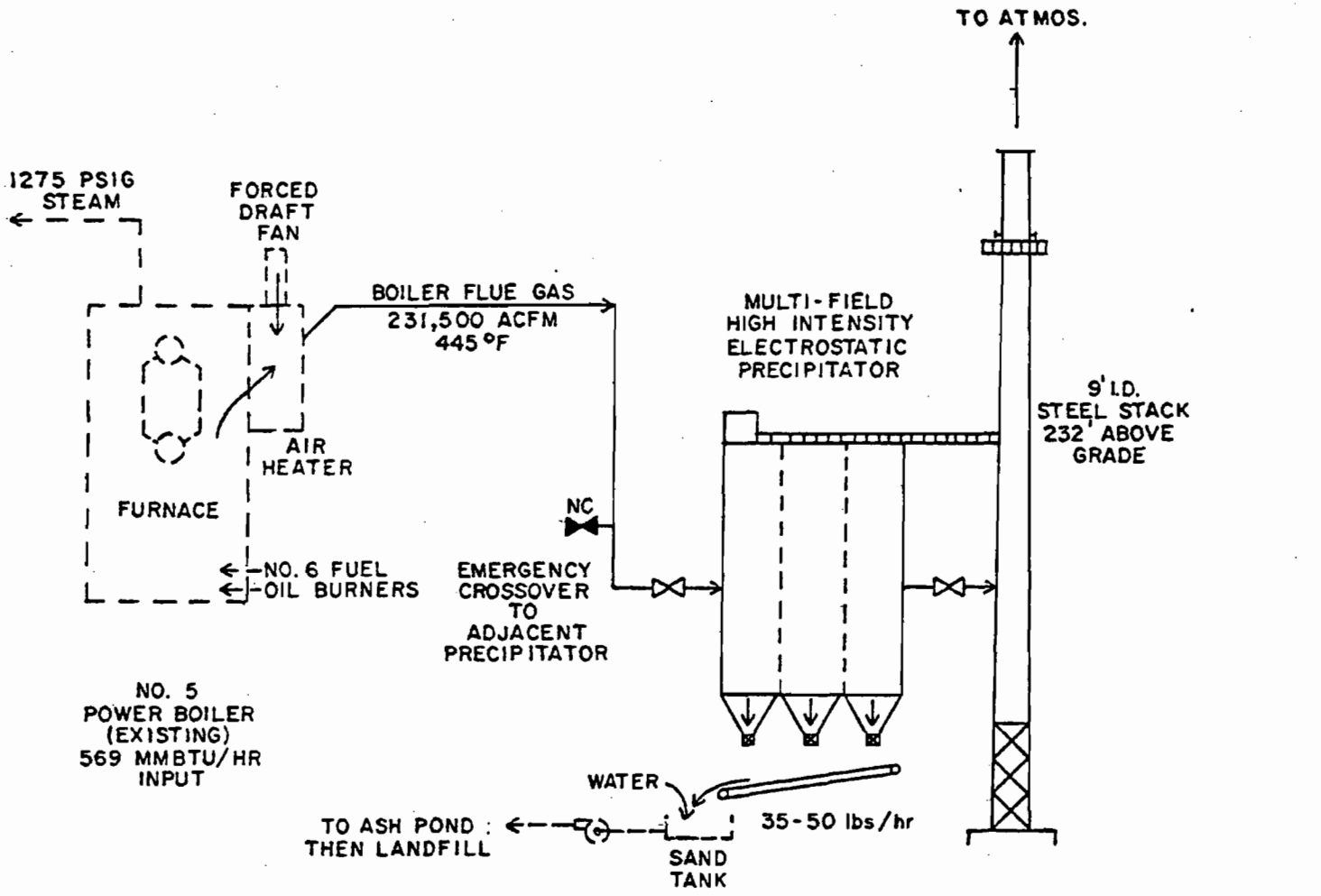
a. (1) Company:

(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.



SCALE NONE

DRAWN R.E.B. DATE 2-8-85

CHECKED DATE

APPROVED DATE

APPROVED DATE

Ford, Bacon & Davis Incorporated
MONROE, LOUISIANA

GEORGIA - PACIFIC CORPORATION
PALATKA, FLORIDA

DRAWING TITLE
NO. 5 POWER BOILER FLUE GAS PRECIPITATOR - PROPOSED

DWG. NO. SK-C-1712-1

(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

1. _____no. sites _____ TSP _____( ) SO^{2}* N/A _____ 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).

SUPPLEMENTAL REPORT

INSTALLATION OF AN ELECTROSTATIC PRECIPITATOR ON THE NUMBER 5 POWER BOILER AT THE PALATKA, FLORIDA MILL OF GEORGIA-PACIFIC CORPORATION.

Background

The Number 5 boiler was erected in 1965 and is certified by an existing Operating Permit. The boiler fires Number 6 residual fuel oil exclusively and to date is not equipped with any emission control equipment. Permit-wise (A054-45320) the boiler has been rated at a maximum heat input rate of 465 MM BTU/Hr, thus its current emission rate is limited by this value.

The boiler has essentially met necessary emission criteria over the years but it's been found difficult to meet existing requirements using standard grades of Bunker C oils. Specific lower ash-sulfur oils have been purchased lately for the boiler enabling it to meet requirements on a more consistent basis.

Due to stack sampling difficulties and some alleged violations, various mutually acceptable solutions were arrived at recently by the Company and the Florida Department of Environmental Regulation which were contained in a January 1985 Consent Order. The Company has submitted a schedule for installing new emission control equipment on the boiler along with various intervals of stack monitoring and reportings of performance.

Proposed Project

Despite the knowledge that particulate removal equipment for oil based boiler flue gas streams is not always required to meet current emission standards (0.1 lbs/MM BTU/hr input) the Company has unilaterally decided to employ the best available control technology on this boiler at this time. This will allow the Company greater latitude in the selection of available, commercially plentiful and economic oil supplies without concern for random firing conditions that could encroach on current emission limits.

The Company has initiated the necessary engineering, planning, bid selection and procurement work necessary to install a high intensity, multi-field, rigid frame electrostatic precipitator on this boiler per a schedule previously approved by the Department of Environmental Regulation.

Facility Details

A study of the present steaming facilities is underway including a computerized analysis of combustion conditions (see Exhibit 1). With

TABLE I

TYPICAL FUEL OIL ANALYSIS OF SUPPLIES USED BY GEORGIA-PACIFIC PALATKA MILL*

Degrees API at 60°F	10.9
Specific Gravity at 60°F	0.99
Flash Point, °F	178
BS & W, %	1.65
Viscosity, SFS at 122°F	275
Asphaltene, %	9.9
Ash, %	0.15
Carbon, %	85.7
Hydrogen, %	10.6
Nitrogen, %	0.54
Sulfur, %	2.5
Oxygen, %	0.6
Vanadium, ppm	550
BTUs per pound	18,350

*Analyzed by Fuel Engineering Company of New York in Thornwood, New York in 1984.

fuel oil, the unit has been found to demonstrate the following combustion design related characteristics:

1275 psig steam at 900°F = 1437.4 BTU/lb
Feedwater at 445°F saturated = -424.1 BTU/lb

1013.3 BTU/lb

Heat Input $\frac{1013.3 \times 475,000 \text{ lbs/hr maximum firing capacity}}{84.6\% \text{ efficiency}}$

= 568,933,220 BTU/hr heat input with gross fuel requirement of 31,550 lbs/hr.

As noted in Section III (p.4) of the attached Application, under current Florida Regulations, the boiler particulate emission allowable is 56.8 lbs/hr rather than the 46.5 lbs/hr cited in the original permit.

Similarly SO_2 allowables (2.75 lbs/MM BTU/hr input) are 1564 lbs/hr contrasted to the former 1279 lbs/hr allowed. NO, CO and methane hydrocarbon values are also listed in Section III for Departmental purposes.

Despite these more applicable allowables, the Company is requiring that precipitator suppliers-bidders meet a particulate requirement of 0.08 lbs/MM BTU/hr at a flue gas flow of 267,000 acfm or about 15 percent over that derived from the combustion evaluation.

A simplified schematic of the proposed installation is depicted by Sketch C-1712-1 attached. The general plot plan of the entire mill is shown in Sketch C-1712-2 and the immediate boiler area layout is illustrated by Sketch C-1712-3.

An adjacent, similarly sized modern precipitator will be ducted together with this boiler (serving Number 4 combination fuel boiler certified by a separate Permit) for standby treatment purposes. The precipitator serving this boiler will be equipped with isolation dampers, a complete ash removal system and a separate 232 foot (above grade) stack outfitted with the necessary platforms, sampling ports, monoralls, etc. required for monitoring purposes.

A typical analysis of the fuel oil expected to be used in this service is listed in Table I. This and similar grades of oil will be purchased and should fall within the ranges shown.

2. Instrumentation, Field and Laboratory

a. Was instrumentation EPA referenced or its equivalent? [ ] Yes [ ] No

b. Was instrumentation calibrated in accordance with Department procedures?

[ ] Yes [ ] No [ ] Unknown

B. Meteorological Data Used for Air Quality Modeling

1. _____ Year(s) of data from ____/____/____ to ____/____/____
month day year month day year

2. Surface data obtained from (location)_____

3. Upper air (mixing height) data obtained from (location)_____

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

C. Computer Models Used

1. _____ Modified? If yes, attach description.

2. _____ Modified? If yes, attach description.

3. _____ Modified? If yes, attach description.

4. _____ Modified? If yes, attach description.

Attach copies of all final model runs showing input data, receptor locations, and principle output tables.

D. Applicants Maximum Allowable Emission Data

Pollutant	Emission Rate	
TSP	_____	grams/sec
SO^2	_____	grams/sec

E. Emission Data Used in Modeling

Attach list of emission sources. Emission data required is source name, description of point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time.

F. Attach all other information supportive to the PSD review.

G. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources.

H. Attach scientific, engineering, and technical material, reports, publications, journals, and other competent relevant information describing the theory and application of the requested best available control technology.

NO = 15.77 t/hr oil X 0.54% X 2.14 X 0.55
(NO_x is 95% NO) (N→NO) (Conversion)
(CE 4-34)

$= \frac{10.02}{100} = 0.100$ tons/hr NO

= 200 lbs/hr NO

Potential emission, uncontrolled = 200 lbs/hr X 8760 hr/yr
= 1,752,000 lbs/yr or
= 876 tons/yr of fuel derived NO.

CO

As taken from EPA AP-42 Chap. 1 data.
0.04 (3.81 M gal/hr oil) = 0.15 lbs/hr
= 1314 lbs/yr or
0.66 tons/yr of CO
Same for potential emission, uncontrolled.

Methane Hydrocarbons

As taken from EPA AP-42 Chap. 1 data.
2(3.81 M gal/hr oil) = 7.62 lbs/hr
= 66,751 lbs/yr or
33.3 tons/yr of m. hydrocarbons
Same for potential emission, uncontrolled.

Opacity

Per current State of Florida Regulations.

Other elements in the fuel oil will be converted through combustion to their basic oxidative states.

During operations, stack emissions will be analyzed per Permit requirements. EPA Standard Reference Methods (Method 1, 2, 3, 4, 5, 6, 7, 9, 10, 17, etc) would be utilized as may be required and applicable.

Closure

Georgia-Pacific Corporation intends to employ the best available control technology at this time to reduce particulate and related emissions from their Number 5 Power Boiler. A field erected, rigid frame electrostatic precipitator will be used. Internal collector (gas) velocities, specific (plate) collection area, wire length, rapper parameters and power inputs will be selected for the equipment to ensure appropriate design sizing. Full compliance with current State emissions requirements will be ensured.

Per attached Exhibit I the Company requests the appropriate heat input rating (BTU/hr) be established for this boiler and the related, allowable emission rates per Rule 17-2 be authorized as contained within the submitted Application Form 17-1.202(1).

cs/D985/A

Air Emissions

Although hydrocarbon-based particulate capture is more rigorous than inorganic ash removal using charged electrode technology, it is expected this technical application will ensure complete compliance with present particulate emission limits. Up to 90% removals under this low loading regime is expected.

Some minor SO_2 removals will also be experienced as some 5% of the carbonaceous sulfur based residue will be removed along with the captured ash agglomerates. Visual opacity levels will also be positively affected.

Derivation of various values used to develop the Table in Section III (C) of the Application are as follows:

Particulates

568.9 MM BTU/hr input at 0.1 lbs/MM BTU = 56.8 lbs/hr
Ash = 31,550 lbs/hr oil X $\frac{0.15\%}{100}$ ash = 47.3 lbs/hr plus soot blows

Precipitator to remove up to 90%
Potential emission, uncontrolled = 56.8 lbs./hr X 8760 hrs/yr
= 497.568 lbs/yr or
248.8 tons/yr

SO_2

568.9 MM BTU/hr input at 2.75 lbs/MM BTU = 1564 lbs/hr
$SO_2 = \frac{31,550}{2,000}$ t/hr oil X 2.5% S X 2 x .95
($S \rightarrow SO_2$) (5% in ash dropout)

$= \frac{74.9}{100} = 0.749$ tons/hr SO_2

= 1498 lbs/hr SO_2

and 1577 lbs/hr SO_2 with no ash dropout.

Potential emission, uncontrolled = 1577 lbs/hr X 8760 hrs/yr
= 13,814,520 lbs/yr or
6907 tons/yr of SO_2

Fuel NO (excludes thermal NO)

Federal Criteria 0.3 lbs/MM BTU = 170.6 lbs/hr
as NO_x
($NO + NO_2$)

****
* FAN SIZING *
****

TOTAL HEAD FOR FD FAN (INCHES H2O)	19.2000	
PERCENT EFFICIENCY OF FD FAN	81.6000	
PERCENT LEAKAGE FOR FD FAN	0.5000	
PERCENT SAFETY FACTOR FOR FD FAN	10.0000	
TOTAL VOLUME OF COMBUSTION AIR (CFM)	134102.0625	
HORSEPOWER FOR FORCED DRAFT FAN	496.3350	
TOTAL HEAD FOR ID FAN (INCHES H2O)	10.0000	- NO ID FAN REQUIRED
PERCENT EFFICIENCY OF ID FAN	71.5000	
PERCENT LEAKAGE FOR ID FAN	0.5000	
PERCENT SAFETY FACTOR FOR ID FAN	10.0000	
TOTAL VOLUME OF FLUE GAS (CFM) — ACTUAL	231439.8125	
HORSEPOWER FOR INDUCED DRAFT FAN	509.1672	

BOILER EFFICIENCY

PERCENT COMBUSTIBLE IN ASH	2.0000
EXIT GAS TEMPERATURE (FAHRENHEIT)	425.0000
COMBUSTION AIR TEMPERATURE (FAHRENHEIT)	80.0000
PERCENT RADIATION LOSSES	0.3800
PERCENT MANUFACTURER'S OR UNMEASURED LOSSES	1.0000
ENTHALPY OF WATER VAPOR AT 1 PSIA AND EXIT TEMP	1252.5073
ENTHALPY OF LIQUID WATER AT COMBUSTION GAS TEMP	0148.0000
HEAT LOSS DUE TO DRY GAS	7.5049%
HEAT LOSS DUE TO H2 AND FUEL H2O	8.3184%
HEAT LOSS DUE TO AIR MOISTURE	0.1886%
HEAT LOSS DUE TO COMBUSTIBLE IN REFUSE	0.0023%
HEAT LOSS DUE TO RADIATION	0.3800%
HEAT LOSS DUE TO UNMEASURED LOSSES	1.0000%
TOTAL HEAT LOSSES	15.1922%
BOILER EFFICIENCY	84.8078%

COMBUSTION CALCULATIONS

TOTALS FOR ALL FUELS

TOTAL FUEL RATE (LBS PER HOUR) ——— OIL ———	31554.0000
THEORETICAL COMBUSTION AIR ———	432676.8125
TOTAL (THEORETICAL PLUS EXCESS) COMBUSTION AIR ———	525267.0000
AT TOTAL COMBUSTION AIR:	
TOTAL FLUE DRY GAS ———	526240.5625
TOTAL FLUE PRODUCT H2O ———	37284.2539
TOTAL FLUE PRODUCT CO2 ———	100830.5000
TOTAL FLUE PRODUCT NITROGEN ———	403993.5625
TOTAL FUEL HYDROGEN ———	340783.1299
TOTAL FUEL SULFUR ———	78884.9854
TOTAL FUEL OXYGEN ———	0.0
TOTAL FUEL CARBON ———	2708910.1563

COMBUSTION CALCULATIONS

FUEL NAME: #6 FUEL OIL

FUEL USE RATE AS A WEIGHT PERCENTAGE ---------- 100.0000
BTU'S PER POUND OF FUEL ---------- 18400.0000

CONSTITUENT	FUEL PERCENT
32 SULFUR	2.50%
33 CARBON	85.85%
30 HYDROGEN	10.80%
29 NITROGEN	0.70%
34 ASH	0.15%
TOTAL PERCENTAGE	100.00%

PERCENT EXCESS AIR ---------- 21.4000%

TOTAL AIR (LBS PER POUND FUEL) ---------- 16.6456
THEORETICAL AIR (LBS PER POUND FUEL) ---------- 13.7100

AT 121.40% THEORETICAL AIR:
TOTAL DRY GAS (LBS PER POUND FUEL) ---------- 16.6775
FLUE PRODUCT H2O (LBS PER POUND FUEL) ---------- 1.1816
PRODUCT CO2 (LBS PER POUND FUEL) ---------- 3.1555
FLUE PRODUCT NITROGEN (LBS PER POUND FUEL) ---------- 12.3404

PERCENT FUEL HYDROGEN ---------- 10.8000
PERCENT FUEL SULFUR ---------- 2.5000
PERCENT FUEL OXYGEN ---------- 0.0
PERCENT FUEL CARBON ---------- 85.8500

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**********************************************
*                                            *
*  C O M B U S T I O N   C A L C U L A T I O N S  *
*                                            *
*        B O I L E R   E F F I C I E N C Y   *
*                                            *
*              F A N   S I Z I N G           *
*                                            *
**********************************************

        JOB NUMBER ---------- C1712
       CLIENT NAME ---------- GEORGIA PACIFIC - PALATKA, FL
     USER INITIALS ---------- AJF
      DATE OF RUN ----------- 02/20/88
      TIME OF RUN ----------- 11:29:30
```

NO. 5 POWER BOILER

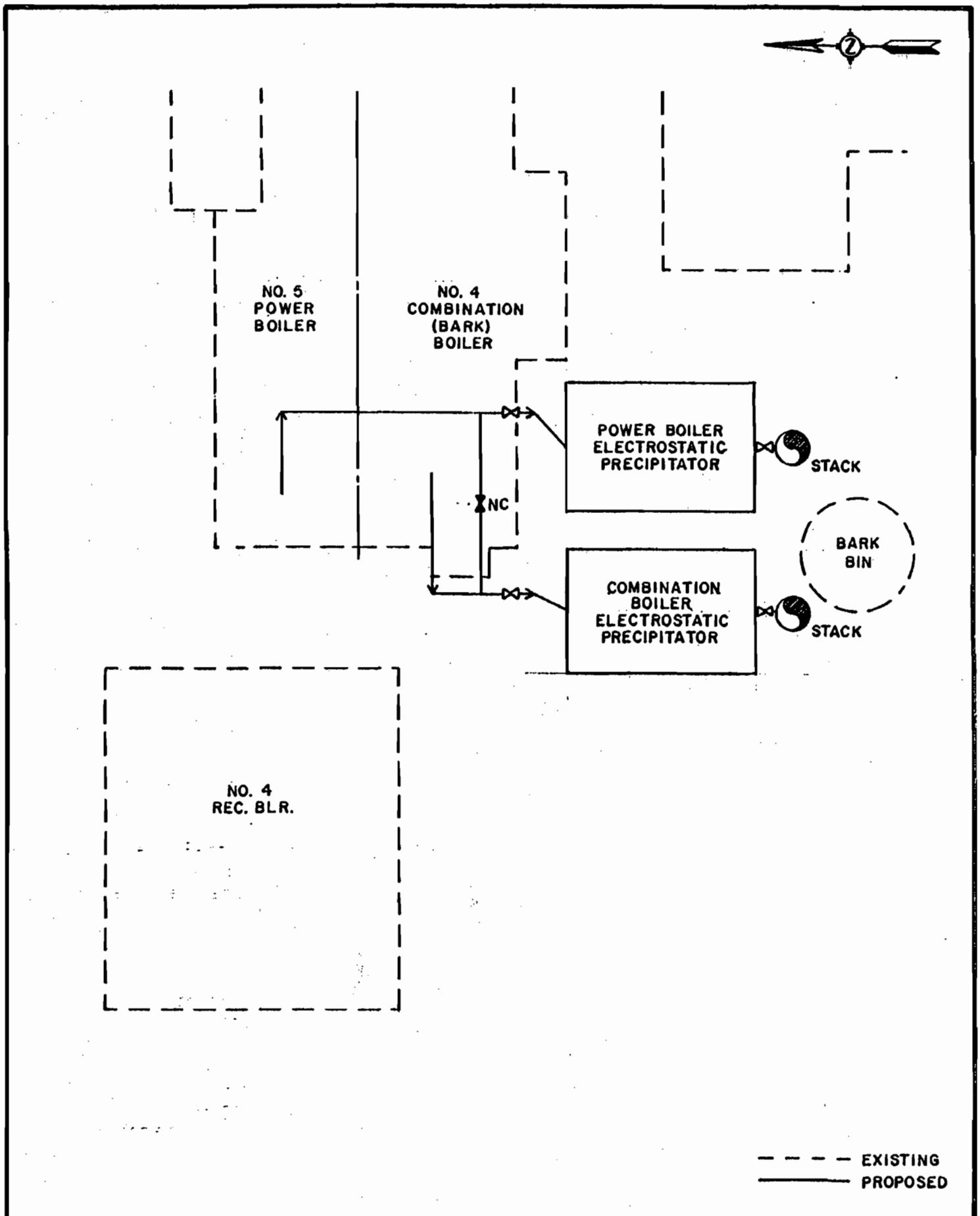
USING NO. 6 FUEL OIL AT

MAXIMUM LOAD RATING

OF 475,000 lbs/HR

EXHIBIT "I"

MONROE, LA.



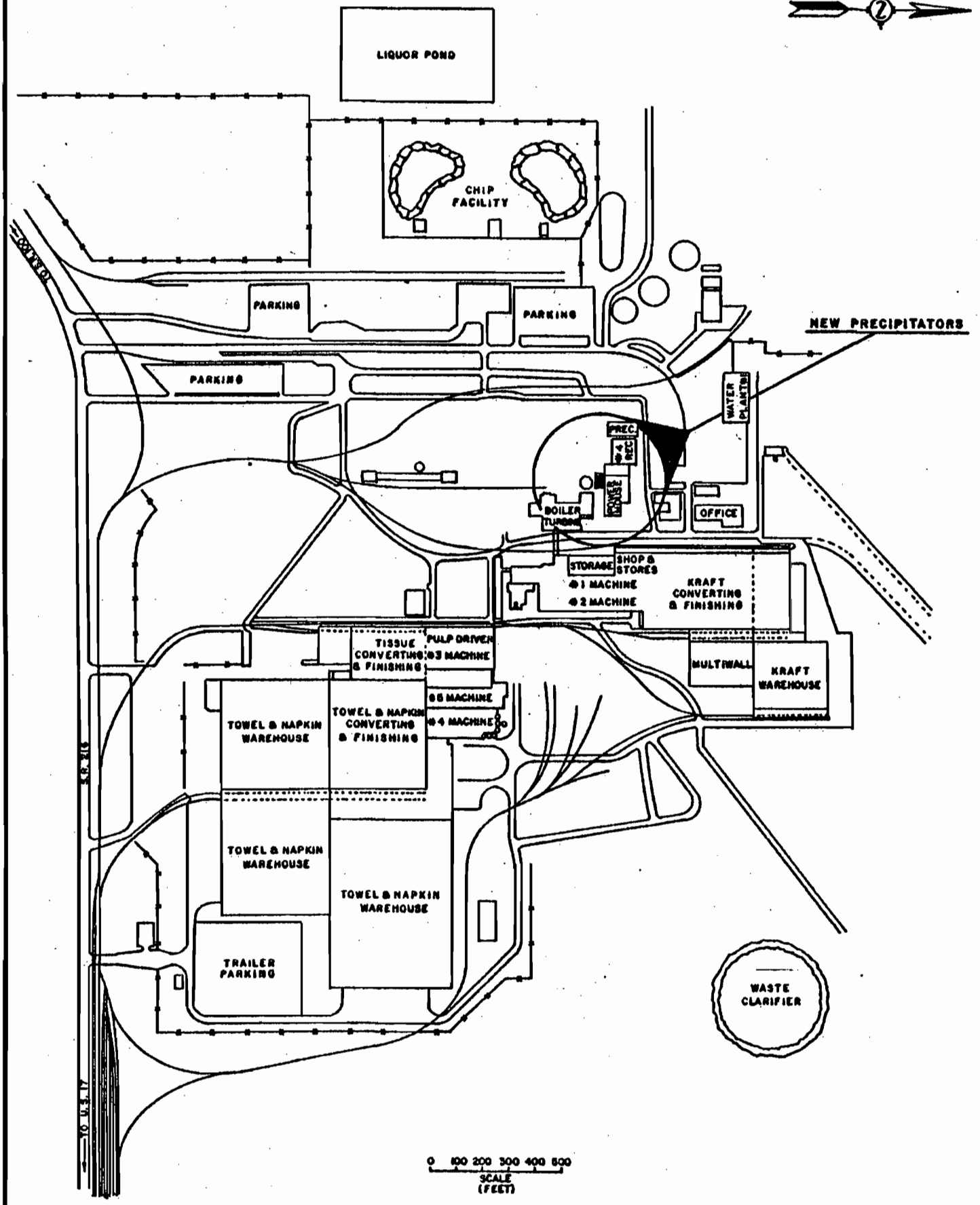
SCALE	NONE		
DRAWN	R.E.B.	DATE	2-11-85
CHECKED	RPS	DATE	
APPROVED		DATE	
APPROVED		DATE	

Ford, Bacon & Davis
Incorporated
MONROE, LOUISIANA

GEORGIA - PACIFIC
CORPORATION
PALATKA, FLORIDA

DRAWING TITLE
PLOT PLAN
OF
EQUIPMENT LAYOUT

DWG. NO. SK-C-1712-3



SCALE	NOTED	Ford, Bacon & Davis Incorporated MONROE, LOUISIANA	DRAWING TITLE OVERALL PLOT PLAN OF MILL LOCATION
DRAWN	R.E.B.	DATE 2 - 7 - 85	
CHECKED	RPS	DATE	
APPROVED		DATE	
APPROVED		DATE	
		GEORGIA-PACIFIC CORPORATION PALATKA, FLORIDA	DWG. NO. SK-C-1712-2

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

NORTHEAST DISTRICT

3426 BILLS ROAD
JACKSONVILLE, FLORIDA 32207

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Combination Fuel Steam Power Boiler [ ] New[1] [X] Existing[1]

APPLICATION TYPE: [ ] Construction [X] Operation [ ] Modification (To A054-58340)

COMPANY NAME: Georgia-Pacific Corporation COUNTY: Putnam

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) No. 4 Combination Power Boiler Stack

SOURCE LOCATION: Street State Road 216 (North Side) City Palatka

UTM: East 434.0 North 3283.4

Latitude 29° 41' 00"N Longitude 81° 40' 45"W

APPLICANT NAME AND TITLE: Georgia-Pacific Corporation

APPLICANT ADDRESS: P.O. Box 919 Palatka, Florida 32077

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Georgia-Pacific Corp.

I certify that the statements made in this application for a Air Emission 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: _____

Name and Title (Please Type)

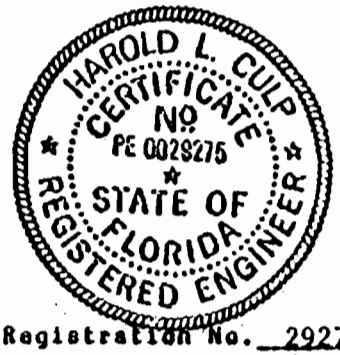
Date: _____ Telephone No. _____

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

This is to certify that the engineering features of this pollution control project have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that

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

the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.



Signed Harold L Culp

Harold L. Culp, PE
Name (Please Type)

Ford, Bacon & Davis, Inc.
Company Name (Please Type)

P.O. Box 1894, Monroe, LA 71210
Mailing Address (Please Type)

Florida Registration No. 29275 Date: March 21, 1980 Telephone No. (318) 323-9000

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.

(See Attached Supplementary Report)

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

Start of ~~Construction~~ February 28, 1986 Completion of ~~Construction~~ November 28, 1986
Modification-Addition of Control Equipment

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.)

Estimated cost of multi-cell electrostatic precipitator, ducting, ash removal and vertical stack with all installed appurtenances = $2,150,000

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

Permit No. A054-58340 Dated December 8, 1982, expires September 30, 1987.

Consent Order OGC File No. 83-0803 - Florida Dept. of Environmental Regulation dated January 7, 1985

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

if power plant, hrs/yr 8760; if seasonal, describe: N/A

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

1. Is this source in a non-attainment area for a particular pollutant? No

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

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

   c. If yes, list non-attainment pollutants. --

2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. No

3. Does the State "Prevention of Significant Deterioriation" (PSD) requirement apply to this source? If yes, see Sections VI and VII. No

4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? No

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.

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

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

Not Applicable Per Definition - Rule 17-2.100 (127), Process Weight

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

B. Process Rate, if applicable: (See Section V, Item 1) For Information Only

1. Total Process Input Rate (lbs/hr): To 97,900 lbs/hr Bark and/or 26,426 lbs/hr No. 6 Oil Plus Combustion Air

2. Product Weight (lbs/hr): 360,000 lbs/hr, 1275 psig, 900°F Superheated Steam

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	Requested Allowable[3] Emission lbs/hr	Potential[4] Emission		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr *			lbs/yr	T/yr *	
Particulates	(Oil) 43.3	190	0.1 lbs/MM BTU	43.3	379,308	190	Stack
Particulates	(Bark) 130.1	570	0.3 lbs/MM BTU	130.1	1,314,000	657	Stack
SO_2 (Oil)	1254	5492	2.751bs/MBTU	1254	11,571,960	5786	Stack
Fuel NO(As NO)	168	736	N/A	N/A	1,471,680	736	Stack
CO (Bark)	97.9	429	N/A	N/A	857,604	429	Stack
Methane Hydrocarbons	97.9	429	N/A	N/A	857,604	429	Stack
Opacity	30%, 40% 2m		30%, 40% 2m	30%, 40% 2m	40%		Stack

[1] See Section V, Item 2. *At 8760 hrs/hr △ No Sampling Data - factored from AP-42 Chap. 1 Tables

[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)
• SO_2-From oil only - used very infrequently, no SO_2 from bark.

[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)
Electrostatic	Particulates	Up to 95%	1/2 - 60	Cost Effective
Precipitator				Design Basis
(Not Selected Yet,				
Bids-Guaranteed				
Performance Data Not				
Yet Received)				

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
No. 6 Fuel Oil	Supplemental - Varies	3192	433.8
Bark (Wood)	80,000 ±	97,900	433.7

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

Fuel Analysis: (See Attached Report)

Percent Sulfur: 2 1/2 (oil) 0 (Bark) Percent Ash: 0.15±(oil), 2.0±(Bark)

Density: 8.28 (oil), 21 lbs/cf (Bark) lbs/gal Typical Percent Nitrogen: 0.54 (oil), 0.1 (Bark)

Heat Capacity: 18,350(oil), 4500(Bark) BTU/lb 151,938 (oil) BTU/gal

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

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

Annual Average -- Maximum --

Unknown Paper and Pulp Mill

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

100-900 lbs/hr ash to be collected from the precipitator (excluding mechanical dust collectors) and disposed of in a controlled landfill.

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

Stack Height: 232 Above Grade ft. Stack Diameter: 9 ft.

Gas Flow Rate: 198,000 ACFM 87,000 DSCFM Gas Exit Temperature: 440 °F.

Water Vapor Content: 18-21 % Velocity: 51.9 FPS

SECTION IV: INCINERATOR INFORMATION

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 N/A

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: N/A

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

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 appliceble 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

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?

[ ] Yes [X] No

Contaminant	Rate or Concentration

B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy)

[ ] Yes [X] No

Contaminant	Rate or Concentration

C. What emission levels do you propose as best available control technology?

Contaminant	Rate or Concentration
N/A	

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. _____ Year(s) of data from ____/____/____ to ____/____/____
month day year month day year

2. Surface data obtained from (location)_____

3. Upper air (mixing height) data obtained from (location)_____

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

C. Computer Models Used

1. _____ Modified? If yes, attach description.

2. _____ Modified? If yes, attach description.

3. _____ Modified? If yes, attach description.

4. _____ Modified? If yes, attach description.

Attach copies of all final model runs showing input data, receptor locations, and principle output tables.

D. Applicants Maximum Allowable Emission Data

Pollutant	Emission Rate	
TSP	_____	grams/sec
SO^2	_____	grams/sec

E. Emission Data Used in Modeling

Attach list of emission sources. Emission data required is source name, description of point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time.

F. Attach all other information supportive to the PSD review.

G. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources.

H. Attach scientific, engineering, and technical material, reports, publications, journals, and other competent relevant information describing the theory and application of the requested best available control technology.

SUPPLEMENTAL REPORT

INSTALLATION OF AN ELECTROSTATIC PRECIPITATOR ON THE NUMBER 4 COMBINATION POWER BOILER AT THE PALATKA, FLORIDA MILL OF GEORGIA-PACIFIC CORPORATION.

Background

The Number 4 boiler was erected in 1965 and is certified by an existing operating permit. The boiler fires a combination of Number 6 residual fuel oil and bark (wood). The major fuel used in this boiler is bark due to its economic availability. The flue gas is treated for particulate removal at the present time through the use of three sets of mechanical collectors in series. Despite their pressure drops these have been found to be effective devices. Permit-wise (A054-58340) the boiler has been rated at a maximum heat input rate of 425 MM BTU/hr on bark (per original permit of December 8, 1982) and 360 MM BTU/hr on oil thus its current emission rate is limited by these values.

The boiler has essentially met necessary emission criteria over the years but it's been found difficult to meet existing requirements when operating at maximum capacity on bark, despite its multiple set of mechanical collectors.

Due to stack sampling difficulties and some alleged violations, various mutually acceptable solutions were arrived at recently by the Company and the Florida Department of Environmental Regulation which were contained in a January 1985 Consent Order. The Company has submitted a schedule for installing additional emission control equipment on the boiler along with various intervals of stack monitoring and reportings of performance.

Proposed Project

To ensure reliable, continuous removals of bark related sands and char the Company has decided to employ the best available control technology on this boiler at this time. This will allow the Company greater latitude in the selection of available bark and commercially plentiful oil supplies without concern for random firing conditions that could encroach on current emission limits.

The Company has initiated the necessary engineering, planning, bid selection and procurement work necessary to install a high intensity, multi-field, rigid frame electrostatic precipitator on this boiler per a schedule previously approved by the Department of Environmental Regulation.

Facility Details

A study of the present steaming facilities is underway including a computerized analysis of combustion conditions (see Exhibit I and II). With bark and fuel oil, the unit has been found to demonstrate the following combustion design related characteristics:

1275 psig steam at 900°F = 1437.4 BTU/lb
Feedwater at 445°F saturated = -424.1 BTU/lb

1013.3 BTU/lb

Bark Heat Input $\frac{1013.3 \times 300{,}000 \text{ lbs/hr capacity on bark only}}{70.09\% \text{ efficiency}}$

= 433,713,000 BTU/hr heat input with gross fuel requirement of 97,900 lbs/hr.

Fuel Oil Heat Input $\frac{1013.3 \times 360{,}000 \text{ lbs/hr capacity on oil only}}{84.08\% \text{ efficiency}}$

= 433,858,230 BTU/hr heat input with gross fuel requirement of 26,426 lbs/hr

As noted in Section III (p.4) of the attached Application, under current Florida regulations, the boiler particulate emission allowable firing bark is 130.1 lbs/hr rather than the maximum 114 lbs/hr cited in the present permit.

Similarly SO_2 allowables from oil (2.75 lbs/MM BTU/hr input) are 1192.9 lbs/hr contrasted to the 962.5 lbs/hr permit limit. NO, CO and methane hydrocarbon values are also listed in Section III for Departmental purposes.

Despite these more applicable allowables, the Company is requiring that precipitator suppliers-bidders meet a particulate requirement of 0.25 lbs/MM BTU/hr at a flue gas flow of 30 percent over the base flow of 198,000 acfm derived from the combustion evaluation. However to allow appropriate standby capacity for the adjacent power boiler a peak design flow of 267,000 acfm is being used.

A simplified schematic of the proposed installation is depicted by Sketch C-1712-1 attached. The general plot plan of the entire mill is shown in Sketch C-1712-2 and the immediate boiler area layout is illustrated by Sketch C-1712-3.

An adjacent, similarly sized modern precipitator will be ducted together with this boiler (serving Number 5 power boiler certified by a separate Permit) for standby treatment purposes. The precipitator serving this

boiler will be equipped with isolation dampers, a complete ash removal system and a separate 232 foot (above grade) stack outfitted with the necessary platforms, sampling ports, monorails, etc. required for monitoring purposes.

A typical analysis of the wood waste (bark) and fuel oil expected to be used in this service is listed in Table I. These and similar grades of fuel will be purchased and should fall within the ranges shown.

TABLE I

TYPICAL FUEL OIL ANALYSIS OF SUPPLIES USED BY GEORGIA-PACIFIC PALATKA MILL*

Degrees API at 60°F	10.9
Specific Gravity at 60°F	0.99
Flash Point, °F	178
BS & W, %	1.65
Viscosity, SFS at 122°F	275
Asphaltene, %	9.9
Ash, %	0.15
Carbon, %	85.7
Hydrogen, %	10.6
Nitrogen, %	0.54
Sulfur, %	2.5
Oxygen, %	0.6
Vanadium, ppm	550
BTUs per pound	18,350

*Analyzed by Fuel Engineering Company of New York in Thornwood, New York in 1984.

TABLE I (CONTINUED)

TYPICAL WOOD (HOGGED BARK) ANALYSIS OF SUPPLIES RECEIVED BY GEORGIA-PACIFIC PALATKA MILL*

Weight, lbs/cf	21 ±
Dry Ash, %	2 +
Fixed Carbon, %	25.2
Hydrogen, %	3.1
Moisture, %	50.0
Oxygen, %	21.5
Volatile Matter, %	79
Nitrogen, %	0.1
Sulfur, %	0
Heating Value As Fired, BTU/lb	4500

* Analyzed By Georgia-Pacific Corporation

Air Emissions

With the main particulate loading comprised of inorganic sand and carbonaceous char, it is expected this technical application will ensure complete compliance with present particulate emission limits. Up to 95% removals under this loading regime are expected.

Some minor SO_2 removals (when oil is burned) will also be experienced as about 5% of the carbonaceous sulfur based residue will be removed along with the captured ash agglomerates. Visual opacity levels will also be positively affected.

Derivation of various values used to develop the Table in Section III (C) of the Application are as follows:

Particulates (Using Bark)

433.7 MM BTU/hr input at 0.3 lbs/MM BTU = 130.1 lbs/hr
Ash = 97,900 lbs/hr bark $\times \frac{2\%}{100}$ ash = 1958 lbs/hr plus soot blows

Precipitator to remove up to 95% leaving 98-124 lbs/hr
Potential emission, uncontrolled = 150 lbs./hr X 8760 hrs/yr
(Using existing triple set = 1,314,000 lbs/yr or
of installed mechanical 657 tons/yr
collectors.
Without collectors = 8760 tons/yr)
Ash = 26,426 lbs/hr oil $\times \frac{0.15\%}{100}$ ash = 39.6 lbs/hr $<$ 43.3 lbs/hr allowed.

SO_2 (Using No. 6 Fuel Oil)

433.8 MM BTU/hr input at 2.75 lbs/MM BTU = 1192.9 lbs/hr
$SO_2 = \frac{26,426}{2,000}$ t/hr oil X 2.5% S X 2 x .95
($S \rightarrow SO_2$) (5% in ash dropout)

$= \frac{62.7}{100\%} = 0.627$ tons/hr SO_2
$= 1254$ lbs/hr SO_2

and 1321 lbs/hr SO_2 with no ash dropout.

Potential emission, uncontrolled = 1321 lbs/hr X 8760 hrs/yr
= 11,571,960 lbs/yr or
5786 tons/yr of SO_2

Fuel NO (excludes thermal NO using oil)

Federal Criteria 0.3 lbs/MM BTU = 130.1 lbs/hr
as NO_x ($NO + NO_2$)

NO = 13.21 t/hr oil X 0.54% N X 2.14 X 0.55
(NO_x is 95% NO) (N→NO) (Conversion) (CE4-34)

$= \frac{8.39}{100} = 0.084$ tons/hr NO

= 168 lbs/hr NO

Potential emission, uncontrolled = 168 lbs/hr X 8760 hr/yr
= 1,471,680 lbs/yr or
= 736 tons/yr of fuel derived NO.

CO, Methane Hydrocarbons (Using Bark)

As taken from EPA AP-42 Chap. 1 data. Same factor for both emissions.

$\frac{97,900}{2,000}$ tons/hr (2 lbs/ton) = 97.9 lbs/hr
= 857,604 lbs/yr or
= 429 tons/yr of CO and
429 tons/yr of Methane Hydrocarbons

Opacity

Per current State of Florida Regulations.

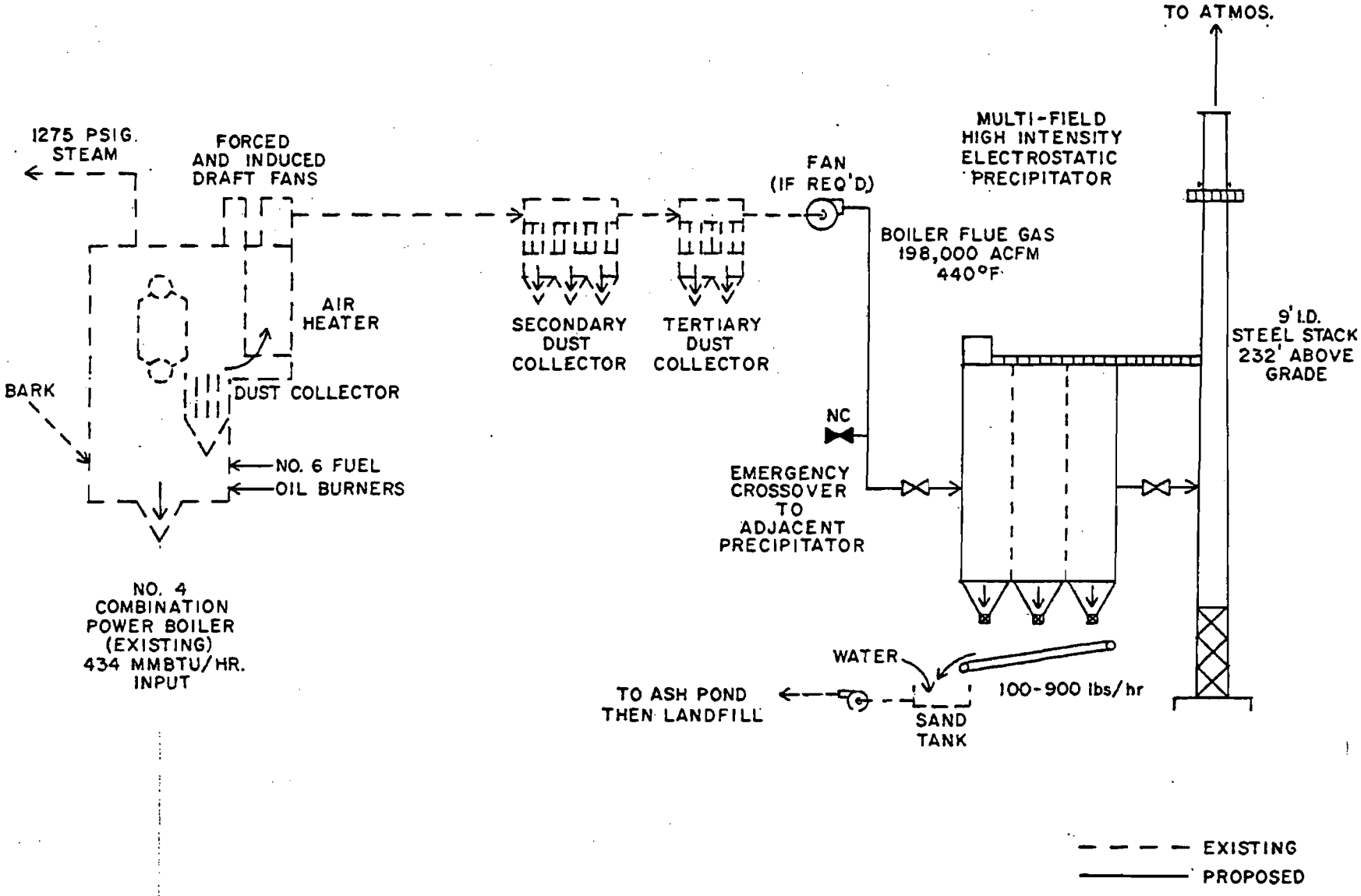
Other elements in the fuel will be converted through combustion to their basic oxidative status.

During operations stack emissions will be analyzed per Permit requirements. EPA Standard Reference Methods (Method 1, 2, 3, 4, 5, 6, 7, 9, 10, 17, etc) would be utilized as may be required and applicable.

Closure

Georgia-Pacific Corporation intends to employ the best available control technology at this time to reduce particulate and related emissions from their Number 4 Combination Boiler. A field erected, rigid frame electrostatic precipitator will be used. Internal collector (gas) velocities, specific (plate) collection area, wire length, rapper parameters and power inputs will be selected for the equipment to ensure appropriate design sizing. Full compliance with current State emission requirements will be ensured.

Per attached Exhibit I and II the Company requests the appropriate heat input rating (BTU/hr) be established for this boiler and the related, allowable emission rates per Rule 17-2 be authorized as contained within the submitted Application Form 17-1.202(1).



SCALE NONE

DRAWN R.E.B. DATE 2-8-85

CHECKED RS DATE

APPROVED DATE

Ford, Bacon & Davis Incorporated MONROE, LOUISIANA

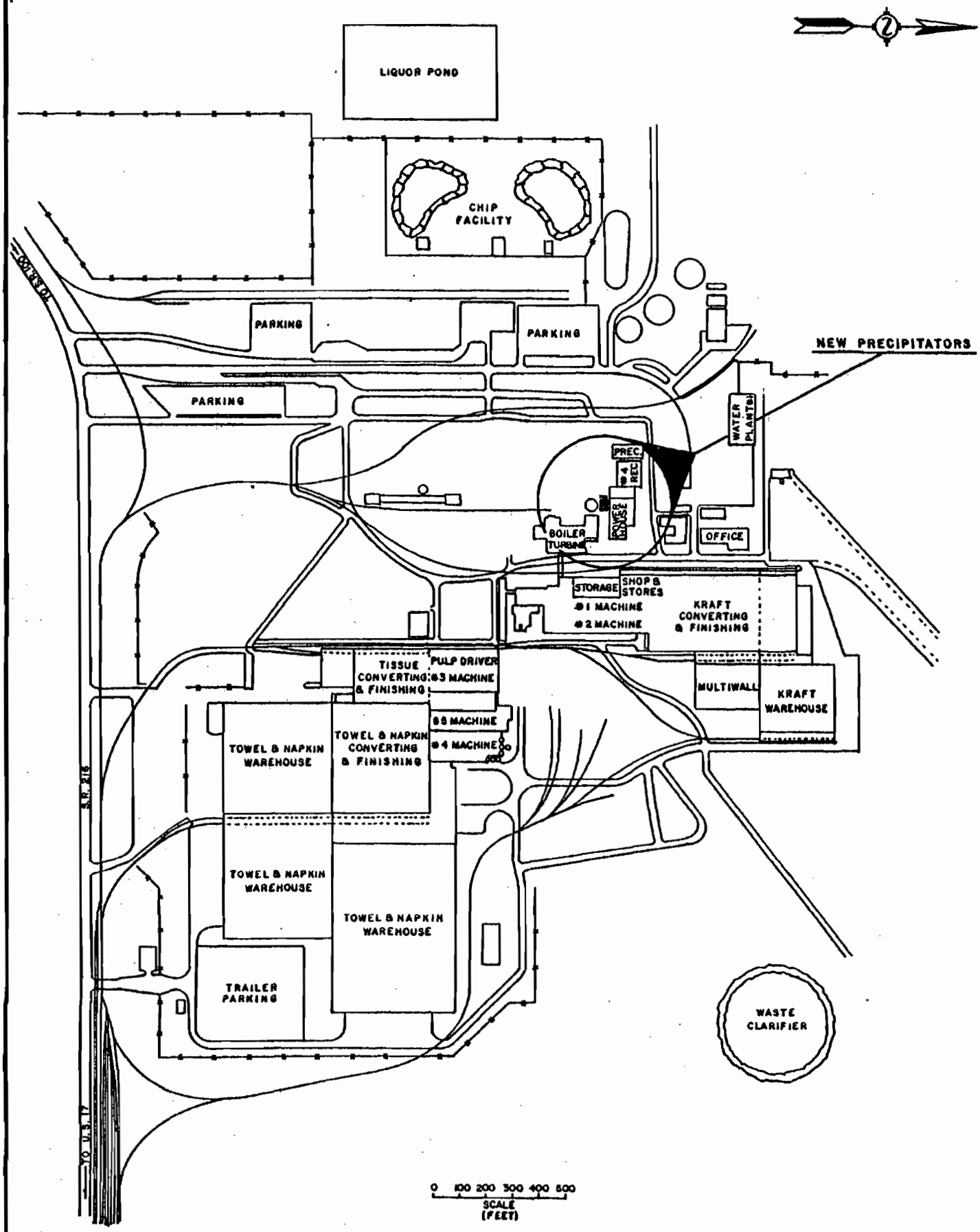
GEORGIA-PACIFIC CORPORATION

PALATKA, FLORIDA

DRAWING TITLE

NO. 4 COMBINATION POWER BOILER FLUE GAS PRECIPITATOR-PROPOSED

DWG. NO. SK-C-1712-1



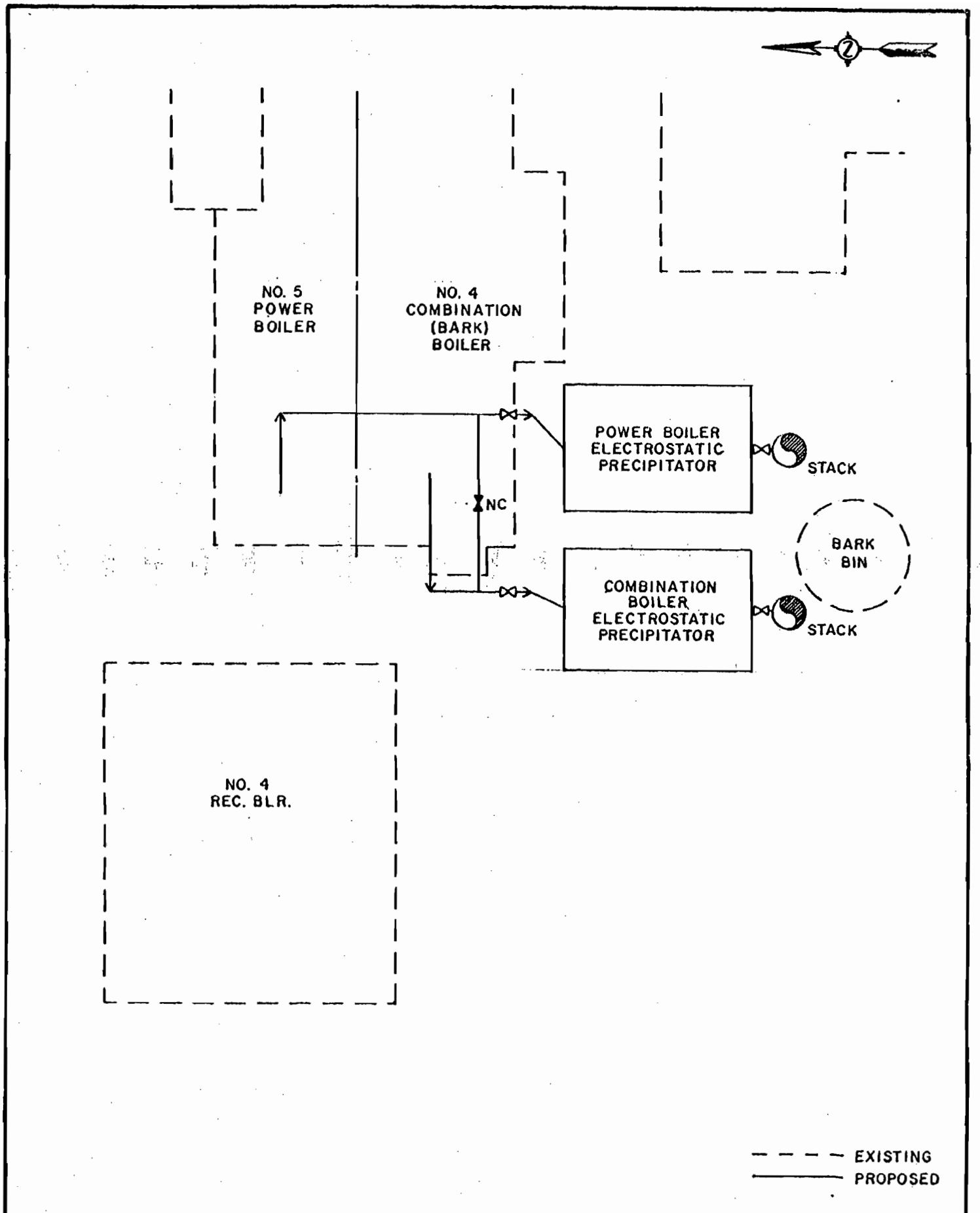
SCALE	NOTED	
DRAWN	R.E.B.	DATE 2 - 7 - 85
CHECKED		DATE
APPROVED		DATE
APPROVED		DATE

Ford, Bacon & Davis
Incorporated
MONROE, LOUISIANA

GEORGIA - PACIFIC CORPORATION
PALATKA, FLORIDA

DRAWING TITLE
OVERALL PLOT PLAN OF MILL LOCATION

DWG. NO. SK - C - 1712 - 2



SCALE	NONE	Ford, Bacon & Davis Incorporated MONROE, LOUISIANA	DRAWING TITLE PLOT PLAN OF EQUIPMENT LAYOUT
DRAWN	R. E. B.	DATE 2 - 11 - 85	
CHECKED	RDS	DATE	
APPROVED		DATE	
APPROVED		DATE	
		GEORGIA - PACIFIC CORPORATION PALATKA, FLORIDA	DWG. NO. SK - C - 1712 - 3

NO. 4 COMBINATION BOILER
USING NO. 6 FUEL OIL ONLY
AT FULL LOAD RATING OF
360,000 lbs/hr.

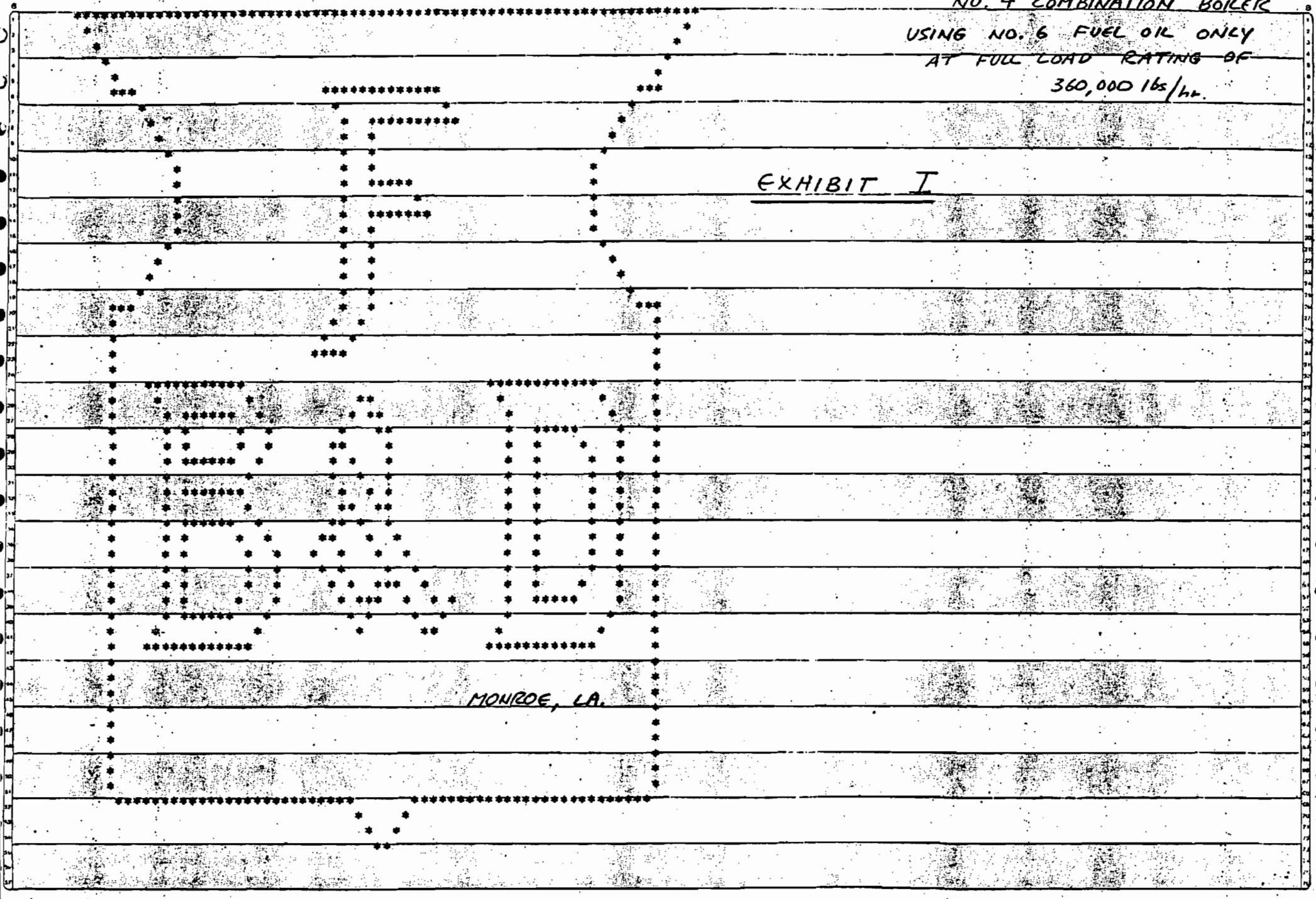


EXHIBIT I

MONROE, LA.

****
* COMBUSTION CALCULATIONS *
* BOILER EFFICIENCY *
* FAN SIZING *
****

JOB NUMBER ---------- C1712
CLIENT NAME ---------- GEORGIA PACIFIC. PALATKA, FL
USER INITIALS ---------- ADS
DATE OF RUN ---------- 02/06/85
TIME OF RUN ---------- 09:38:05

****
* COMBUSTION CALCULATIONS *
****

FUEL NAME: OIL #6

FUEL USE RATE AS A WEIGHT PERCENTAGE ---------- 100.0000
BTU'S PER POUND OF FUEL ---------- 18400.0000

	CONSTITUENT	FUEL PERCENT
32	SULFUR	2.50%
33	CARBON	85.85%
30	HYDROGEN	10.80%
29	NITROGEN	0.70%
34	ASH	0.15%
	TOTAL PERCENTAGE	100.00%

PERCENT EXCESS AIR ---------- 21.4000%

TOTAL AIR (LBS PER POUND FUEL) ---------- 16.6466
THEORETICAL AIR (LBS PER POUND FUEL) ---------- 13.7122

AT 121.40% THEORETICAL AIR:
TOTAL DRY GAS (LBS PER POUND FUEL) ---------- 16.6775
FLUE PRODUCT H2O (LBS PER POUND FUEL) ---------- 1.1816
PRODUCT CO2 (LBS PER POUND FUEL) ---------- 3.1955
FLUE PRODUCT NITROGEN (LBS PER POUND FUEL) ---------- 12.8032

PERCENT FUEL HYDROGEN ---------- 10.8000
PERCENT FUEL SULFUR ---------- 2.5000
PERCENT FUEL OXYGEN ---------- 0.0
PERCENT FUEL CARBON ---------- 85.8500

COMBUSTION CALCULATIONS

TOTALS FOR ALL FUELS

TOTAL FUEL RATE (LBS PER HOUR)	20426.0000
THEORETICAL COMBUSTION AIR	362358.6250
TOTAL (THEORETICAL PLUS EXCESS) COMBUSTION AIR	439903.1875
AT TOTAL COMBUSTION AIR:	
TOTAL FLUE DRY GAS	440718.5000
TOTAL FLUE PRODUCT H2O	31225.0000
TOTAL FLUE PRODUCT CO2	84444.0000
TOTAL FLUE PRODUCT NITROGEN	338338.5000
TOTAL FUEL HYDROGEN	285400.7324
TOTAL FUEL SULFUR	68064.9902
TOTAL FUEL OXYGEN	0.0
TOTAL FUEL CARBON	2268671.4844

BOILER EFFICIENCY

PERCENT COMBUSTIBLE IN ASH	2.0000
EXIT GAS TEMPERATURE (FAHRENHEIT)	425.0000
COMBUSTION AIR TEMPERATURE (FAHRENHEIT)	80.0000
PERCENT RADIATION LOSSES	0.4000
PERCENT MANUFACTURER'S OR UNMEASURED LOSSES	1.5000
ENTHALPY OF WATER VAPOR AT 1 PSIA AND EXIT TEMP	1252.5073
ENTHALPY OF LIQUID WATER AT COMBUSTION GAS TEMP	48.0000
HEAT LOSS DUE TO DRY GAS	7.5049%
HEAT LOSS DUE TO H2 AND FUEL H2O	6.3184%
HEAT LOSS DUE TO AIR MOISTURE	0.1866%
HEAT LOSS DUE TO COMBUSTIBLE IN REFUSE	0.0023%
HEAT LOSS DUE TO RADIATION	0.4000%
HEAT LOSS DUE TO UNMEASURED LOSSES	1.5000%
TOTAL HEAT LOSSES	15.9122%
BOILER EFFICIENCY	84.0878%

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* F A N S I Z I N G *
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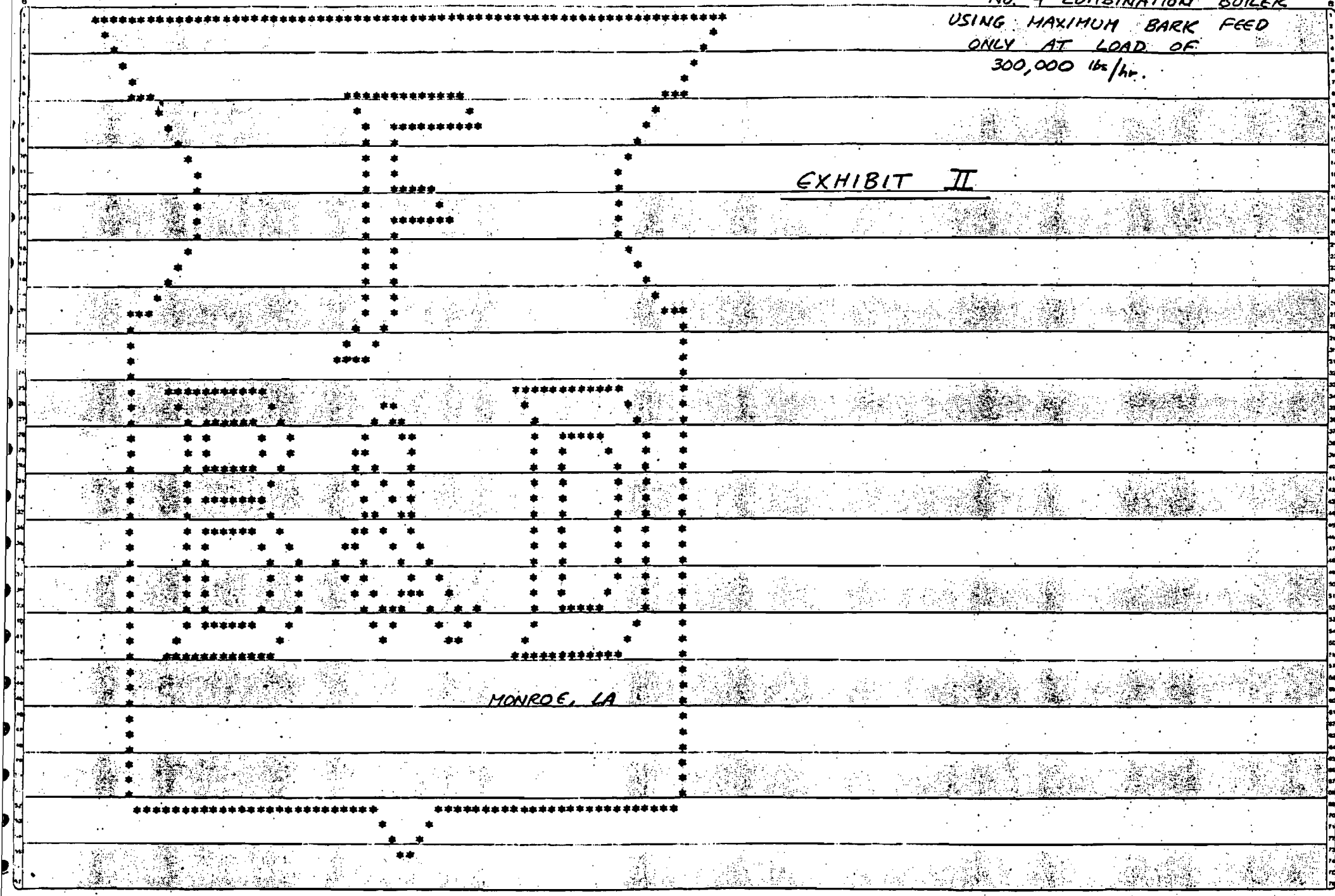
TOTAL HEAD FOR FD FAN (INCHES H20)	7.5000
PERCENT EFFICIENCY OF FD FAN	81.6000
PERCENT LEAKAGE FOR FD FAN	0.5000
PERCENT SAFETY FACTOR FOR FD FAN	10.0000
TOTAL VOLUME OF COMBUSTION AIR (CFM)	112332.1875
HORSEPOWER FOR FORCED DRAFT FAN	162.4067
TOTAL HEAD FOR ID FAN (INCHES H20)	10.0000
PERCENT EFFICIENCY OF ID FAN	71.5000
PERCENT LEAKAGE FOR ID FAN	0.5000
PERCENT SAFETY FACTOR FOR ID FAN	10.0000
TOTAL VOLUME OF FLUE GAS (CFM) ACTUAL	193827.1875
HORSEPOWER FOR INDUCED DRAFT FAN	426.4197

(NEGLECTING 3 STAGE COLLECTORS)

NO. 4 COMBINATION BOILER
USING MAXIMUM BARK FEED
ONLY AT LOAD OF
300,000 lbs/hr.



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* COMBUSTION CALCULATIONS *
* BOILER EFFICIENCY *
* FAN SIZING *
****

JOB NUMBER ——— C1712
CLIENT NAME ——— GEORGIA PACIFIC PALATKA, FL
USER INITIALS ——— AOS
DATE OF RUN ——— 02/05/85
TIME OF RUN ——— 09:28:01

****
COMBUSTION CALCULATIONS
****

FUEL NAME: BARK (WOOD)

FUEL USE RATE AS A WEIGHT PERCENTAGE	100.0000
BTU'S PER POUND OF FUEL	4500.0000

CONSTITUENT	FUEL PERCENT
28 WATER VAPOR	50.00%
33 CARBON	23.40%
30 HYDROGEN	3.10%
31 OXYGEN	21.50%
34 ASH	2.00%
TOTAL PERCENTAGE	100.00%

PERCENT EXCESS AIR	28.1000%
TOTAL AIR (LBS PER POUND FUEL)	3.6321
THEORETICAL AIR (LBS PER POUND FUEL)	2.8353

AT 128.10% THEORETICAL AIR:

TOTAL DRY GAS (LBS PER POUND FUEL)	3.8336
FLUE PRODUCT H2O (LBS PER POUND FUEL)	0.8243
PRODUCT CO2 (LBS PER POUND FUEL)	0.8574
FLUE PRODUCT NITROGEN (LBS PER POUND FUEL)	2.7920

PERCENT FUEL HYDROGEN	3.1000
PERCENT FUEL SULFUR	0.0
PERCENT FUEL OXYGEN	21.5000
PERCENT FUEL CARBON	23.4000

****
COMBUSTION CALCULATIONS
****

****
TOTALS FOR ALL FUELS
****

TOTAL FUEL RATE (LBS PER HOUR)	97900.0000
THEORETICAL COMBUSTION AIR	277378.6875
TOTAL (THEORETICAL PLUS EXCESS) COMBUSTION AIR	355578.0000
AT TOTAL COMBUSTION AIR:	
TOTAL FLUE DRY GAS	375311.0000
TOTAL FLUE PRODUCT H2O	80695.3750
TOTAL FLUE PRODUCT CO2	83937.0625
TOTAL FLUE PRODUCT NITROGEN	273332.7500
TOTAL FUEL HYDROGEN	303489.9170
TOTAL FUEL SULFUR	0.0
TOTAL FUEL OXYGEN	2104849.6094
TOTAL FUEL CARBON	2290858.9844

BOILER EFFICIENCY

PERCENT COMBUSTIBLE IN ASH	2.0000
EXIT GAS TEMPERATURE (FAHRENHEIT)	420.0000
COMBUSTION AIR TEMPERATURE (FAHRENHEIT)	80.0000
PERCENT RADIATION LOSSES	0.4000
PERCENT MANUFACTURER'S OR UNMEASURED LOSSES	1.5000
ENTHALPY OF WATER VAPOR AT 1 PSIA AND EXIT TEMP	1250.1426
ENTHALPY OF LIQUID WATER AT COMBUSTION GAS TEMP	48.0000
HEAT LOSS DUE TO DRY GAS	6.9516%
HEAT LOSS DUE TO H2 AND FUEL H2O	20.7582%
HEAT LOSS DUE TO AIR MOISTURE	0.1641%
HEAT LOSS DUE TO COMBUSTIBLE IN REFUSE	0.1278%
HEAT LOSS DUE TO RADIATION	0.4000%
HEAT LOSS DUE TO UNMEASURED LOSSES	1.5000%
TOTAL HEAT LOSSES	29.9017%
BOILER EFFICIENCY	70.0983%

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* F A N S I Z I N G *
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TOTAL HEAD FOR FD FAN (INCHES H20)	6.4000
PERCENT EFFICIENCY OF FD FAN	81.6000
PERCENT LEAKAGE FOR ED FAN	0.5000
PERCENT SAFETY FACTOR FOR FD FAN	10.0000
TOTAL VOLUME OF COMBUSTION AIR (CFM)	90562.4375
HORSEPOWER FOR FORCED DRAFT FAN	111.7292
TOTAL HEAD FOR ID FAN (INCHES H20)	12.0000
PERCENT EFFICIENCY OF ID FAN	71.5000
PERCENT LEAKAGE FOR ID FAN	0.5000
PERCENT SAFETY FACTOR FOR ID FAN	10.0000
TOTAL VOLUME OF FLUE GAS (CFM) ACTUAL	197681.0000
HORSEPOWER FOR INDUCED DRAFT FAN (NEGLECTING 3 STAGE COLLECTORS)	521.8777