KBN

May 30, 1990

Mr. Clair H. Fancy, Chief
Bureau of Air Regulation
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Re: Container Corporation of America Fernandina Beach Mill
Batch Digester and Brown Stock Washer Construction Permit Applications

Dear Mr. Fancy:

On behalf of Container Corporation of America (CCA), I am submitting construction permit applications for construction of an additional batch digester and additional brown stock washer. Four copies of each application are provided. Also enclosed is a $400 permit application fee ($200 for each application since potential emissions, after control, are 25 tons per year or less for each source).

Sincerely,

David A. Buff

David A. Buff, M.E., P.E.
Principal Engineer

DAB/dpy

Enclosures
cc: B. Mitchell
A. Kutyna, NED

RECEIVED
MAY 31 1990
BAQM

90017A1/3

KBN ENGINEERING AND APPLIED SCIENCES, INC.
1034 Northwest 57th Street Gainesville, Florida 32605 904/331-9000 FAX: 904/332-4189

$200 pd
5-31-90
Recpt. #151131

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

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MAY 31 1990

DER - BAQM

AC 45-181406

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Batch Digester System [ ] New[1] [X] Existing[1]*

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

COMPANY NAME: Container Corporation of America COUNTY: Nassau

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) Batch Digester #8

SOURCE LOCATION: Street North 8th Street City Fernandina Beach

UTM: East 17-456.2 North 3394.2

Latitude 30 ° 40 ' 53 "N Longitude 81 ° 27 ' 26 "W

APPLICANT NAME AND TITLE: Wayne Barlow, Vice President and General Manager

APPLICANT ADDRESS: North 8th Street, Fernandina Beach, FL 32034

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Container Corporation of America

I certify that the statements made in this application for a 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: Wayne Barlow

Wayne Barlow, Vice President and General Manager
Name and Title (Please Type)

Date: 5/29/90 Telephone No. (904) 261-5551

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 judgement, that

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

*Modification of existing batch digester system to add an additional batch digester.

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 David A. Buff

David A. Buff
Name (Please Type)

KBN Engineering and Applied Sciences, Inc.
Company Name (Please Type)

1034 NW 57th Street, Gainesville, FL 32605
Mailing Address (Please Type)

Florida Registration No. 19011 Date: 5/30/90 Telephone No. (904) 331-9000

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 Attachment A

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

Start of Construction upon permit issuance Completion of Construction 2 years after permit issuance

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.)

Tie in to TRS incineration system: $265,000

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

Present Batch Digester System:	A045-115842	AC45-141872
	Issued 09/10/86	Issued 04/18/88
	Expires 05/12/89	Expires 10/14/90

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? 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 Deterioration" (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? 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.

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

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

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		
Wood chips			392,305 (dry)	1
Black/white liquor			819,918	2

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

1. Total Process Input Rate (lbs/hr): 1,212,223

2. Product Weight (lbs/hr): 203,000 (air dried pulp)

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/hr	T/yr	
TRS*	1,066	2,658	2.600(4)(c)1	Incineration	1,066	2,658	3,4

[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).

*TRS will be incinerated in the No. 4 Lime Kiln. Emissions shown are maximum uncontrolled emissions from the existing batch digester system prior to incineration. There will be no increase in emissions due to the additional digester.

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)
Incineration in No. 4	TRS	99.99%	N/A	Design
Lime Kiln				

E. Fuels
Not Applicable

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

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

Fuel Analysis:

Percent Sulfur:_____ Percent Ash:_____

Density: _____ lbs/gal Typical Percent Nitrogen:_____

Heat Capacity:_____ BTU/lb _____ BTU/gal

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

_____

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

Annual Average Not Applicable Maximum _____

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

All liquid and solid wastes are reused in the process.

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):
Not Applicable (refer to No. 4 Lime Kiln)

Stack Height: _____ ft. Stack Diameter: _____ ft.

Gas Flow Rate: _____ ACFM _____ DSCFM Gas Exit Temperature: _____ °F.

Water Vapor Content: _____ % Velocity: _____ FPS

SECTION IV: INCINERATOR INFORMATION
Not Applicable

Type of Waste	Type 0 (Plastics)	Type II (Rubbish)	Type III (Refuse)	Type IV (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 devices: [ ] 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 ½" 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 ½" 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 (Examples: Copy of relevant portion of USGS topographic map).

8. An 8 ½" 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

Not Applicable

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

[ ] Yes [ ] No

Contaminant	Rate or Concentration

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

[ ] Yes [ ] No

Contaminant	Rate or Concentration

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

Contaminant	Rate or Concentration

D. Describe the existing control and treatment technology (if any).

1. Control Device/System:
2. Operating Principles:
3. Efficiency:*
4. Capital Costs:

*Explain method of determining .

5. Useful Life:

6. Operating Costs:

7. Energy:

8. Maintenance Cost:

9. Emissions:

Contaminant	Rate or Concentration

10. Stack Parameters

a. Height: ft.

b. Diameter ft.

c. Flow Rate: ACFM

d. Temperature: °F.

e. Velocity: FPS

E. Describe the control and treatment technology available (As many types as applicable, use additional pages if necessary).

1.

a. Control Devices:

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 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:

F. Describe the control technology selected:

1. Control Device:

2. Efficiency:[1]

3. Capital Cost:

4. Useful Life:

5. Operating Cost:

6. Energy:[2]

7. Maintenance Cost:

8. Manufacturer:

9. Other locations where employed on similar processes:

a. (1) Company:

(2) Mailing Address:

(3) City:

(4) State:

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

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

b. (1) Company:

(2) Mailing Address:

(3) City: (4) State:

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

10. Reason for selection and description of systems:

[1]Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

SECTION VII - PREVENTION OF SIGNIFICANT DETERIORATION

Not Applicable

A. Company Monitored Data

1. _____ no. sites _____ TSP _____( ) SO^{2*} _____ Wind spd/dir

Period of Monitoring _____/_____/_____ to _____/_____/_____
month day year month day year

Other data recorded _____

Attach all data or statistical summaries to this application.

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

2. Instrumentation, Field and Laboratory

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

b. Was instrumentation calibrated in accordance with Department procedures?

[ ] Yes [ ] No [ ] Unknown

B. Meteorological Data Used for Air Quality Modeling

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

2. Surface data obtained from (location)_____

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

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

C. Computer Models Used

1. _____ Modified? If yes, attach description.

2. _____ Modified? If yes, attach description.

3. _____ Modified? If yes, attach description.

4. _____ Modified? If yes, attach description.

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

D. Applicants Maximum Allowable Emission Data

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

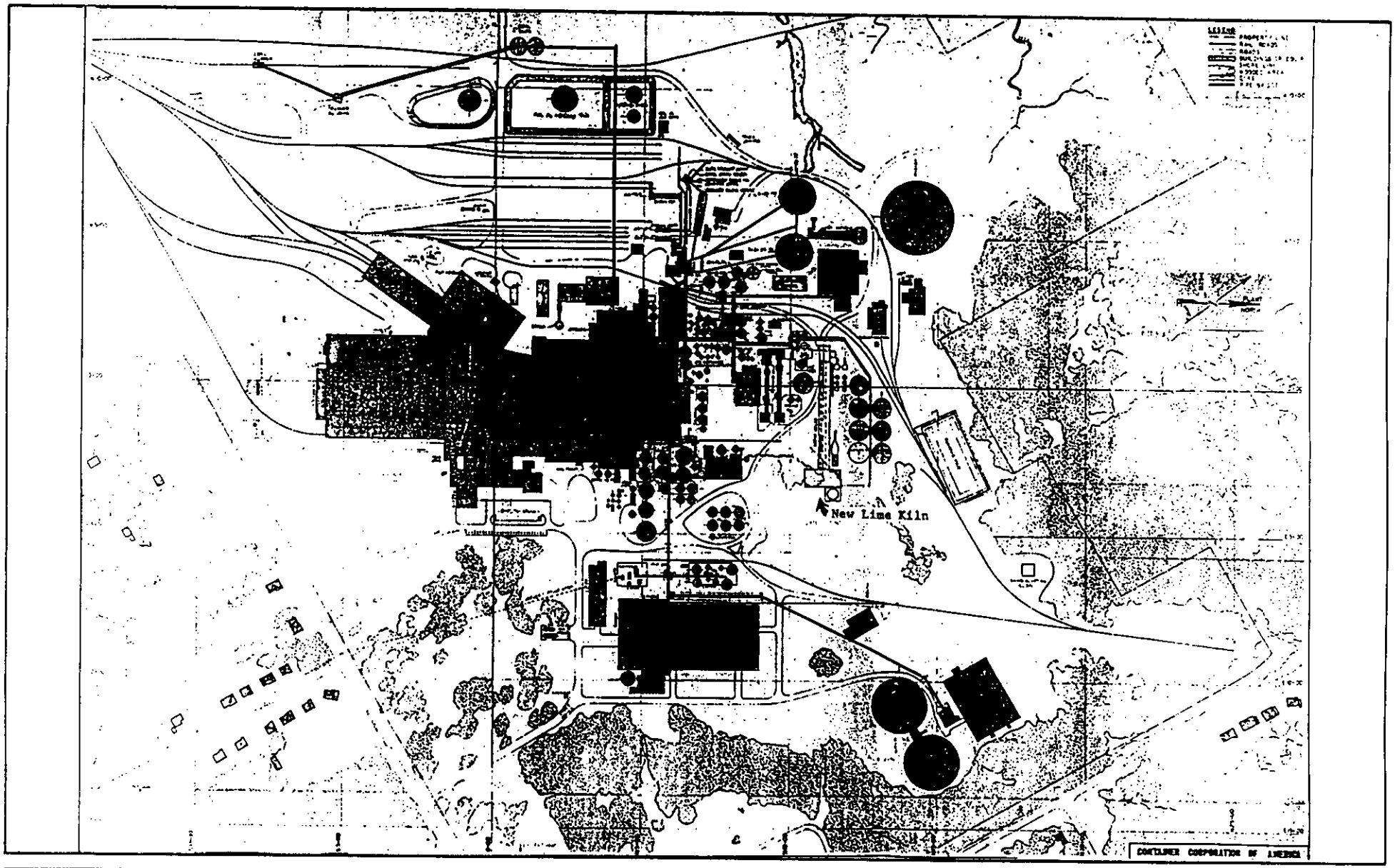
E. Emission Data Used in Modeling

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

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

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

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



Plot Plan of CCA Mill

KBN

ATTACHMENT A

PROCESS DESCRIPTION

Container Corporation of America (CCA) currently operates a batch pulp digesting process at its Fernandina Beach mill. The batch digesting system currently consists of seven batch digesters, two blow tanks, and a turpentine recovery system. Wood chips and white and black liquor are fed to the batch digesters. The wood chips are "digested" by the liquors and the cooked pulp is then discharged to the blow tanks. Digesters 1, 2, and 3 blow to Blow Tank A, while Digesters 5, 6, and 7 blow to Blow Tank B. Digester 4 can blow to either blow tank. From the blow tanks, the pulp and black liquor are sent to process.

Currently, total reduced sulfur (TRS) gases from the batch digesting system at CCA vent directly to the atmosphere from the two blow tanks and from the turpentine recovery system. Florida's TRS regulations [Chapter 17-2.600(4)(c)1., F.A.C.] require that these gases be incinerated or otherwise controlled. In order to comply with the TRS regulations, CCA submitted a construction permit application to modify the existing system to collect and transport the noncondensible TRS gases to the new No. 4 Lime Kiln for incineration. The construction permit was approved and issued on April 18, 1988. CCA is now in the process of making these modifications and constructing the TRS collection/incineration system. The noncondensible TRS gases will be routed to the No. 4 Lime Kiln for incineration.

The existing batch digester system is capable of operating, and is permitted to operate, at a maximum rate of 101.5 tons per hour (TPH) air dried pulp (ADP). For Prevention of Significant Deterioration (PSD) purposes, the maximum production rate of the batch digester system is 1,391 tons per day (TPD) ADP. These rates are the permitted rates for the system under the TRS construction permit (AC45-141872). However, it is difficult to sustain this rate on a continuous basis with the existing seven digesters. In order to allow the entire batch digester system to operate more effectively and to reduce the stress on existing equipment when

operating under these maximum rates, CCA is proposing to add an eighth batch digester (No. 8) to the existing digester system. The two existing blow tanks will not be modified except for tie-in to the additional digester. A flow diagram of the digester system, including the new digester, is shown in Figure A-1.

The additional batch digester, although providing more efficient operation, will not increase the maximum pulp production capability of the system. Maximum pulp production will remain at 101.5 TPH ADP and 1,391 TPD ADP. As a result, there will be no increase in uncontrolled TRS emissions from the system. Process input and product rates for the entire batch digester system are presented in Attachment B. These are the same rates contained in the TRS construction permit (AC45-141872) for the batch digester system.

TRS emission estimates are presented in Attachment C. Since there will be no increase in maximum uncontrolled TRS emissions from the batch digester system as a result of this change, there will be no increase in TRS emissions or sulfur dioxide (SO_2) emissions from the No. 4 Lime Kiln. Further, since the TRS emissions are not yet being incinerated in the new No. 4 Lime Kiln, the kiln's future actual emissions are equal to its current permitted allowable emissions, which are:

TRS- 8 ppmvd @ 10 percent O_2
2.63 lb/hr, 11.5 TPY
SO_2- 26.8 lb/hr, 117.1 TPY

Incineration of the TRS gases from the new batch digester will satisfy the requirements of federal New Source Performance Standards (NSPS). The NSPS require incineration in a lime kiln which meets the NSPS for lime kilns. The new No. 4 Lime Kiln will meet the NSPS requirements. These will be achieved when the TRS control system for the mill is completed in June 1990.

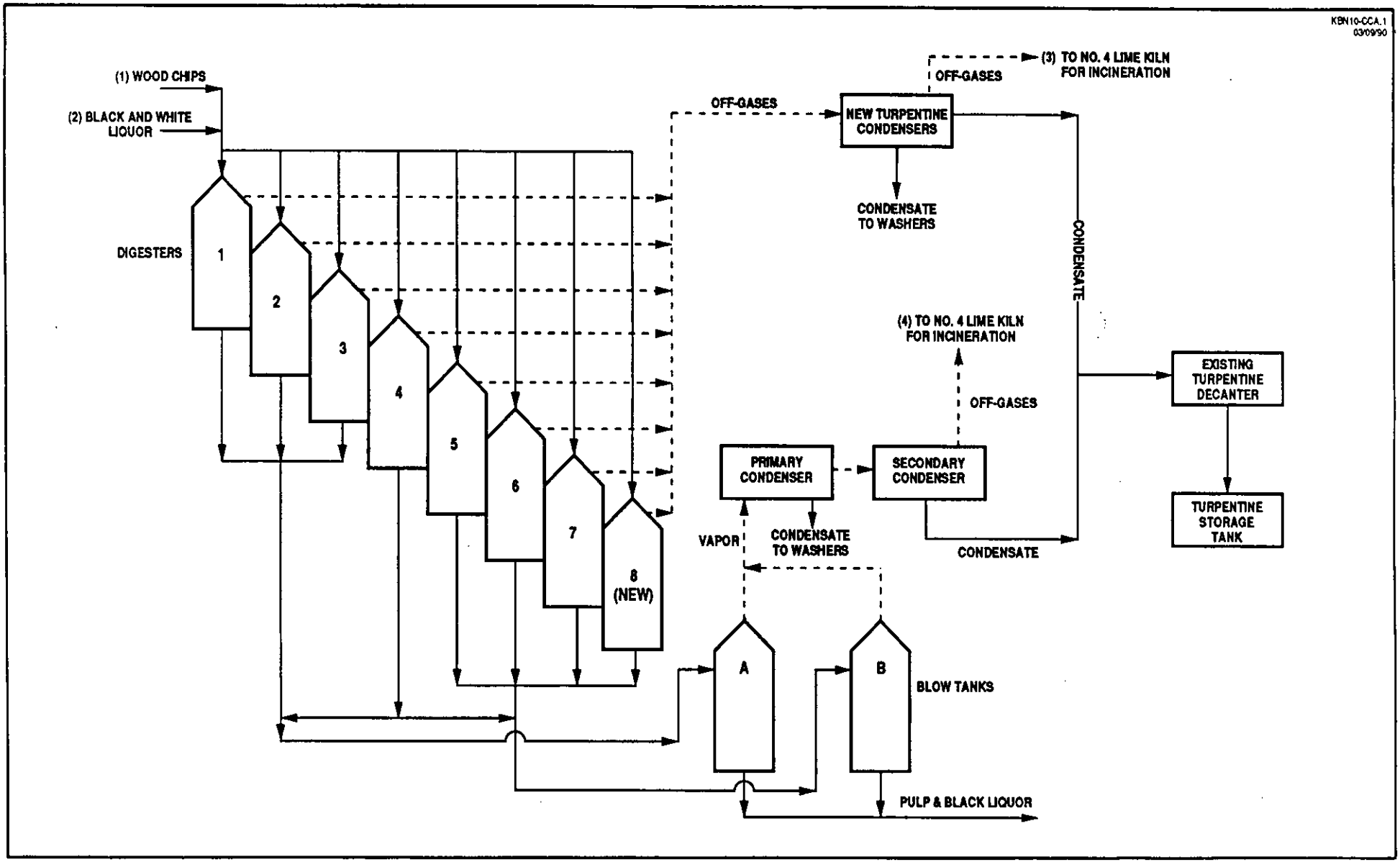


Figure A-1 FLOW DIAGRAM OF CCA BATCH DIGESTER SYSTEM WITH NEW BATCH DIGESTER NO. 8

ATTACHMENT B

DERIVATION OF PROCESS RATES

I. BATCH DIGESTER INPUT RATES

A. Maximum Hourly

Basis: 101.5 TPH ADP = 203,000 lb/hr ADP

203,000 lb/hr ADP / 1.07 = 189,720 lb/hr dry pulp

= 94.86 TPH dry pulp

Liquid/dry wood ratio = 2.09

Yield factor = 48.36 percent

Dry wood input = 189,720 lb/hr / 0.4836 = 392,305 lb/hr (dry)

Black/white liquor = 392,305 lb/hr X 2.09 lb liq/lb wood

= 819,918 lb/hr

Total input rate = 392,305 lb/hr + 819,918 lb/hr = 1,212,223 lb/hr

B. Maximum Daily for PSD Purposes

Basis: 1,391 TPD ADP

1,391 TPD ADP / 1.07 = 1,300 TPD dry pulp

Liquid/dry wood ratio = 2.09

Yield factor = 48.36 percent

Dry wood input = 1,300 TPD / 0.4836 = 2,690 TPD (dry)

Black/White Liquor

= 2,690 TPD (dry) x 2.09 tons liq/tons chips

= 5,622.1 TPD

Total Input Rate

Wood chips and liquor = 2,690 TPD + 5,622.1 TPD = 8,312.1 TPD

II. BATCH DIGESTER PRODUCTION RATES

A. Maximum Hourly

101.5 TPH ADP (see above calculations)

B. Maximum Daily For PSD Purposes

1,391 TPD ADP (see above calculations)

Note: Process input and product rates reflect rates in current TRS construction permit (AC45-141872) for the batch digester system.

ATTACHMENT C

EMISSION ESTIMATES

The best available estimate of uncontrolled TRS emissions from the existing and modified digester system is based on emission factors contained in the EPA publication entitled "Kraft Pulping: Control of TRS Emissions from Existing Mills" (EPA-450/2-78-003b, March 1979). The highest emission factor for digester systems is 10.5 lb/ton ADP.

Maximum hourly:

101.5 TPH ADP x 10.5 lb/ton = 1,066 lb/hr

Maximum annual:

1,391 TPD ADP X 10.5 lb/ton X 364 days/yr / 2,000 lb/ton
= 2,658 TPY

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

#900 pd. 5-31-90 Receipt #15131

RECEIVED

AC 45-181407

MAY 31 1990

DER - BAQM

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Brown Stock Washer System [X] New[1] [ ] Existing[1]

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

COMPANY NAME: Container Corporation of America COUNTY: Nassau

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) C-Line Brown Stock Washer

SOURCE LOCATION: Street North 8th Street City Fernandina Beach

UTM: East 17-456.2 North 3394.2

Latitude 30 ° 40 ' 53 "N Longitude 81 ° 27 ' 26 "W

APPLICANT NAME AND TITLE: Wayne Barlow, Vice President and General Manager

APPLICANT ADDRESS: North 8th Street, Fernandina Beach, FL 32034

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A. APPLICANT

I am the undersigned owner or authorized representative* of Container Corporation of America

I certify that the statements made in this application for a 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: Wayne Barlow

Wayne Barlow, Vice President and General Manager
Name and Title (Please Type)

Date: 5/29/90 Telephone No. (904) 261-5551

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 judgement, that

[1]See Florida Administration 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 David A. Buff

David A. Buff
Name (Please Type)

KBN Engineering and Applied Sciences, Inc.
Company Name (Please Type)

1034 NW 57th Street, Gainesville, FL 32605
Mailing Address (Please Type)

Florida Registration No. 19011 Date: 5/30/90 Telephone No. (904) 331-9000

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See Attachment A

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

Start of Construction upon permit issuance Completion of Construction 2 years after permit issuance

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.)

Wet scrubber system or equivalent: $250,000

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

Not Applicable

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? 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 Deterioration" (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? 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.

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

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

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		
Pulp (bone dry)	N/A	N/A	51,000	1
Black liquor solids	TRS	Variable	76,739	1

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

1. Total Process Input Rate (lbs/hr): 127,739

2. Product Weight (lbs/hr): 51,000 lb/hr pulp (bone dry)

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/hr	T/yr	
TRS	0.2	0.88	5 ppm (NSPS)	0.2	0.2	0.88	2

[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)
Wet scrubber system or equivalent--not yet	TRS	94%	N/A	See Attachment A
selected				

E. Fuels

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

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

Fuel Analysis:

Percent Sulfur:_____ Percent Ash:_____

Density: _____ lbs/gal Typical Percent Nitrogen:_____

Heat Capacity:_____ BTU/lb _____ BTU/gal

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

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

Annual Average Not Applicable Maximum _____

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

All liquids and solids are used in process.

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

Stack Height: 70 ft. Stack Diameter: 2.0 ft.

Gas Flow Rate: 7,130 ACFM 6,170 DSCFM Gas Exit Temperature: 120 °F.

Water Vapor Content: 5 % Velocity: 38 FPS

SECTION IV: INCINERATOR INFORMATION

Type of Waste	Type 0 (Plastics)	Type II (Rubbish)	Type III (Refuse)	Type IV (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 Diameter: _____ 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 devices: [ ] 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 ½" 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 ½" 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 (Examples: Copy of relevant portion of USGS topographic map).

8. An 8 ½" 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 [ ] 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 Devices:

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 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:

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

1. _____ no. sites _____ TSP _____ ( ) SO^{2*} _____ Wind spd/dir

Period of Monitoring _____/_____/_____ to _____/_____/_____
month day year month day year

Other data recorded _____

Attach all data or statistical summaries to this application.

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

2. Instrumentation, Field and Laboratory

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

b. Was instrumentation calibrated in accordance with Department procedures?

[ ] Yes [ ] No [ ] Unknown

B. Meteorological Data Used for Air Quality Modeling

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

2. Surface data obtained from (location)_____

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

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

C. Computer Models Used

1. _____ Modified? If yes, attach description.

2. _____ Modified? If yes, attach description.

3. _____ Modified? If yes, attach description.

4. _____ Modified? If yes, attach description.

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

D. Applicants Maximum Allowable Emission Data

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

E. Emission Data Used in Modeling

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

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

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

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

ATTACHMENT A

I. PROJECT DESCRIPTION

Container Corporation of America (CCA) is proposing to add a new brown stock washer. The new washer will be known as the "C" line brown stock washer system. The purpose of the new washer will be to alleviate the strain on the existing washer system.

A flow diagram of the new washer line is presented in Figure A-1. Pulp and black liquor from the "B" blow tank of the existing batch digester system passes through existing, relocated fibrilizers and refiners, and then to a new surge tank. From the surge tank, the pulp enters a new screen, then a new rotary drum vacuum washer, and finally a new diffusion washer. The washers will utilize fresh water for washing. The washed pulp is then sent to high density storage.

Liquid filtrate from the new rotary drum vacuum washer is sent to a new filtrate tank (C1), while liquid filtrate from the new diffusion washer is sent to a second new filtrate tank (C2). Filtrate from the C2 filtrate tank is used as washwater for the rotary drum vacuum washer. Filtrate from the C1 filtrate tank is sent to the multiple effect evaporators.

The rotary drum vacuum washer has a hood which vents off-gases from the washer. The two filtrate tanks each have vents. These vents are all relatively high volume gas streams with low concentrations of total reduced sulfur (TRS). TRS emissions from these sources will be controlled by a wet scrubber system or equivalent. Detailed design has not yet been conducted on the scrubber system, and therefore design information is not yet available. However, the scrubber system will be designed to reduce TRS emissions to 5 ppm, dry basis. This is the emission level required by federal New Source Performance Standards (NSPS) for Kraft Pulp Mills (40 CFR 60, Subpart BB). Design information for the scrubber system will be provided to the Florida Department of Environmental Regulation prior to beginning installation.

The maximum permitted production rates for the existing batch digester system and multiple effect evaporators (MEEs) at CCA will not increase as a result of this change. As a result, no change in the maximum production rates specified in the batch digester system permit (AC45-141872) and the MEEs permit (AC45-141873) is being requested at this time. These sources will continue to operate within the limits in the current permits.

II. PROCESS INPUT AND PRODUCT RATES

The maximum process input rate to the new "C"-Line brown stock washer system will be 51,000 lb/hr pulp, bone dry basis, plus 76,739 lb/hr black liquor solids (BLS) for a total of 127,739 lb/hr total process input. Maximum product weight is 51,000 lb/hr pulp, bone dry basis, or 54,570 lb/hr pulp, air dried basis (9.3 percent moisture).

III. EMISSION ESTIMATES

A. Uncontrolled TRS Emissions

U.S. Environmental Protection Agency (EPA) Publication AP-42 presents uncontrolled TRS emissions from brown stock washers as follows: 0.02 lb/ton air-dried pulp (ADP) for hydrogen sulfide, and 0.1 lb/ton ADP for reduced sulfur compounds when washing with fresh water. The total TRS uncontrolled emission factor is therefore 0.12 lb/ton ADP.

The total pulp production in the new brown stock water system is 54,570 lb/hr pulp, or 27.29 tons/hr ADP. Uncontrolled TRS emissions are therefore:

27.29 tons/hr x 0.12 lb/ton = 3.27 lb/hr

B. Controlled TRS Emissions

Controlled TRS emissions are based upon the federal NSPS which allows 5 ppm, dry basis, at the actual oxygen content of the gas stream. Florida does not have a TRS emission limiting standard for brown stock washers. The gas flows from the rotary drum washer and the two filtrate tanks are estimated as follows.

Rotary drum washer = 3,500 acfm at 160°F, 5 percent H_2O

C1 filtrate tank = 4,000 acfm at 180°F, 5 percent H_2O

C2 filtrate tank = 1,000 acfm at 160°F, 5 percent H_2O

Combined flow into scrubber = 8,500 acfm at 170°F, 5 percent H_2O

Flow out of scrubber = 7,130 acfm at 120°F, 5 percent H_2O

= 6,775 acfm at 120°F, dry

Allowable TRS emissions (as H_2S):

$PV = mRT$

$m = PV/RT$

Molecular weight H_2S = ~~36~~ 34

R = ~~42.92~~ 45.44 $ft\text{-}lb_f/lb_m\text{-}°R$

$$m = \frac{2{,}116.8\ lb_f}{ft^2} \times \frac{6{,}775\ ft^3}{min} \times \frac{60\ min}{hr} \times \frac{lb_m\text{-}°R}{42.92\ ft\text{-}lb_f}$$

$$\times \frac{1}{580\ °R} \times \frac{5}{10^6} = 0.2\ lb/hr\ as\ H_2S$$

0.2 lb/hr x 8,760 hr/yr / 2,000 lb/ton = 0.88 tons/yr

C. Scrubber Efficiency

TRS in = 3.27 lb/hr

TRS out = 0.2 lb/hr

Efficiency = [(3.27 - 0.2)/3.27] x 100 = 94 percent

D. Monitoring of Emissions and Operations

The federal NSPS for Kraft Pulp Mills, 40 CFR 60, Subpart BB, requires that a continuous monitoring system be installed to continuously monitor and record the concentration of TRS emissions in the gases discharged to the atmosphere from a brown stock washer system. In addition, the NSPS requires that the oxygen content of the gas stream be continuously monitored and recorded. These monitoring requirements are not used for the purpose of determining compliance under NSPS. Compliance is determined by conducting performance tests using Methods 16, 16A, or 16B.

Because of the high cost of continuous TRS monitoring systems and the very low emissions from the CCA brown stock washer system, CCA is requesting an alternative to the continuous monitoring requirements of the NSPS. Alternative monitoring procedures are allowed under 40 CFR 60.13(i), if approved by the Administrator, and by Florida Administrative Code, Rule 17-2.700(3).

A continuous TRS monitor measuring the exhaust gases on the wet scrubber system of the brown stock washer is estimated to cost approximately $150,000 for equipment, installation and initial certification. Annual operation and maintenance would add further to this expense. Such a large expense is not warranted in light of the maximum TRS emissions of only 0.2 lb/hr and 0.88 tons/year.

Surrogate parameters can be utilized to adequately measure the operation of the wet scrubber. The proposed surrogate parameters are as follows:

- Scrubber liquid supply pressure
- Gas stream pressure drop across scrubber

These parameters are consistent with the continuous monitoring requirements for scrubbing systems for lime kilns and smelt dissolving tanks under NSPS. During the initial performance tests on the unit, these surrogate parameters can be measured and correlated with the TRS emissions. Minimum operating limits for each parameter can then be established based upon the test data. These parameters will be measured on a continuous basis and serve as the indicators of compliance.

Because the TRS standard for brown stock washers is based on the actual oxygen content of the exhaust gas stream, an oxygen monitor on the unit is not necessary. It is therefore requested that the requirement for a continuous oxygen monitor be deleted.

KBN 10/CCA.2
3/15/90ph

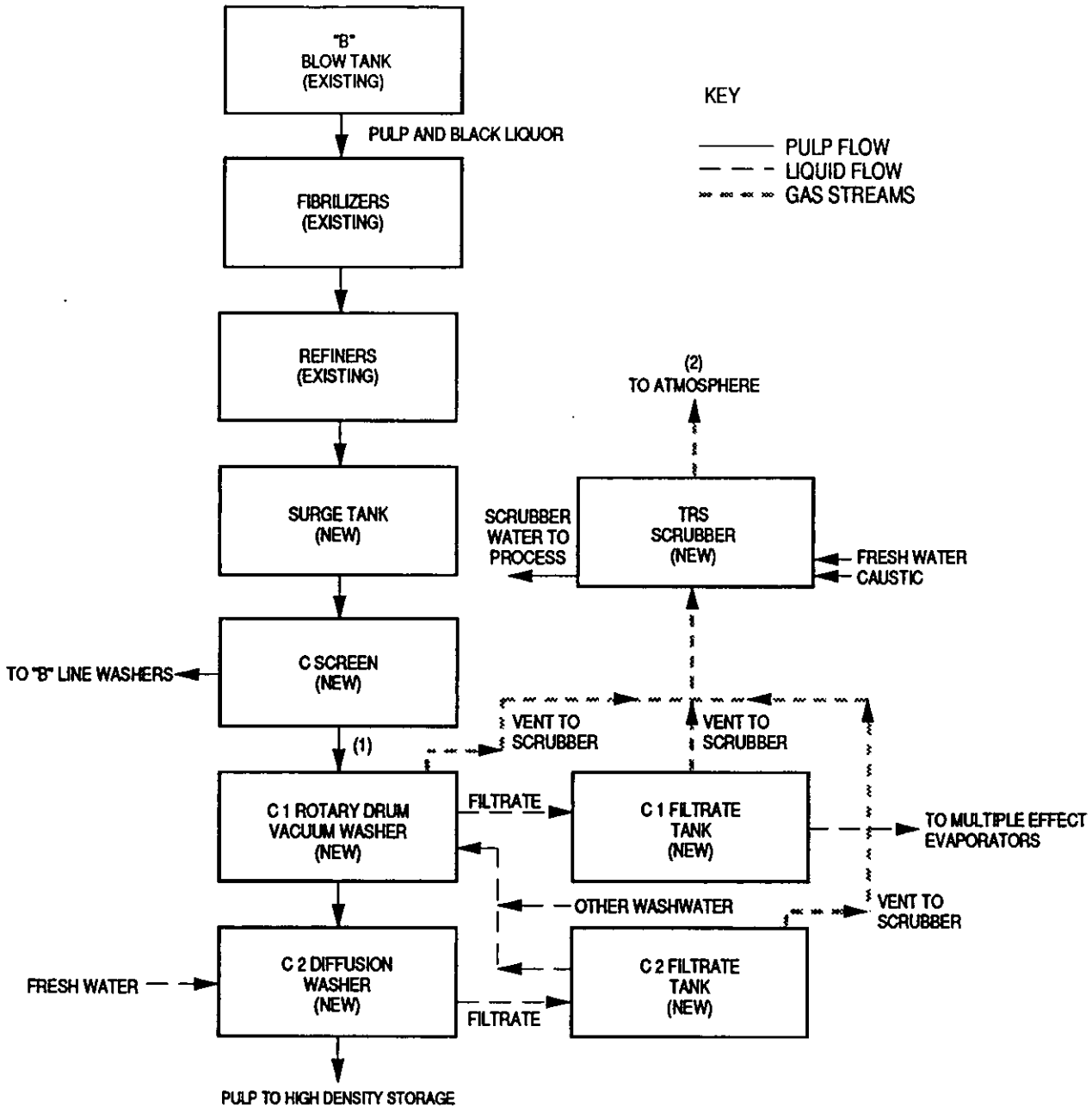

Figure A-1 BROWN STOCK WASHER "C"– LINE
SIMPLIFIED PROCESS FLOW DIAGRAM

TABLE 10.1-1. EMISSION FACTORS FOR KRAFT PULPING[a]

EMISSION FACTOR RATING: A

Source	Type of control	Particulate		Sulfur dioxide (SO_2)		Carbon monoxide (CO)		Hydrogen sulfide ($S^=$)		RSH, RSR, RSSR ($S^=$)	
		kg/Mg	lb/ton	kg/Mg	lb/ton	kg/Mg	lb/ton	kg/Mg	lb/ton	kg/Mg	lb/ton
Digester relief and blow tank	Untreated[b]	-	-	-	-	-	-	0.02	0.03	0.6	1.2
Brown stock washer	Untreated[b]	-	-	-	-	-	-	0.01	0.02	0.2[c]	0.4[c]
Multiple effect evaporator	Untreated[b]	-	-	-	-	-	-	0.55	1.1	0.05	0.1
Recovery boiler and direct evaporator	Untreated[d]	90	180	3.5	7	5.5	11	6[e]	12[e]	1.5[e]	3[e]
	Venturi scrubber[f]	24	48	3.5	7	5.5	11	6[e]	12[e]	1.5[e]	3[e]
	ESP	1	2	3.5	7	5.5	11	6[e]	12[e]	1.5[e]	3[e]
	Auxiliary scrubber	1.5-7.5[g]	3-15[g]					6[e]	12[e]	1.5[e]	3[e]
Noncontact recovery boiler without direct contact evaporator	Untreated	115	230	-	-	5.5	11	0.05[h]	0.1[h]	-	-
	ESP	1	2	-	-	5.5	11	0.05[h]	0.1[h]	-	-
Smelt dissolving tank	Untreated	3.5	7	0.1	0.2	-	-	0.1[j]	0.2[j]	0.15[j]	0.3[j]
	Mesh pad	0.5	1	0.1	0.2	-	-	0.1[j]	0.2[j]	0.15[j]	0.3[j]
	Scrubber	0.1	0.2	-	-	-	-	0.1[j]	0.2[j]	0.15[j]	0.3[j]
Lime kiln	Untreated	28	56	0.15	0.3	0.05	0.1	0.25[m]	0.5[m]	0.1[m]	0.2[m]
	Scrubber or ESP	0.25	0.5	-	-	0.05	0.1	0.25[m]	0.5[m]	0.1[m]	0.2[m]
Turpentine condenser	Untreated	-	-	-	-	-	-	0.005	.01	0.25	0.5
Miscellaneous[n]	Untreated	-	-	-	-	-	-	-	-	0.25	0.5

[a]References 8-10. Factors expressed in unit weight of air dried unbleached pulp (ADP). RSH = Methyl mercaptan. RSR = Dimethyl sulfide. RSSR = Dimethyl disulfide. ESP = Electrostatic precipitator. Dash = No data.

[b]If noncondensible gases from these sources are vented to lime kiln, recovery furnace or equivalent, the reduced sulfur compounds are destroyed.

[c]Apply with system using condensate as washing medium. When using fresh water, emissions are 0.05 (0.1).

[d]Apply when cyclonic scrubber or cascade evaporator is used for direct contact evaporation, with no further controls.

[e]Usually reduced by 50% with black liquor oxidation and can be cut 95 - 99% when oxidation is complete and recovery furnace is operated optimally.

[f]Apply when venturi scrubber is used for direct contact evaporation, with no further controls.

[g]Use 7.5 (15) when auxiliary scrubber follows venturi scrubber, and 1.5 (3) when it follows ESP.

[h]Apply when recovery furnace is operated optimally to control total reduced sulfur (TRS) compounds.

[j]Usually reduced to 0.01 g/kg (0.02 lb/ton) ADP when water low in sulfides is used in smelt dissolving tank and associated scrubber.

[m]Usually reduced to 0.015 g/kg (0.03 lb/ton) ADP with efficient mud washing, optimal kiln operation and added caustic in scrubbing water. With only efficient mud washing and optimal process control, TRS compounds reduced to 0.04 g/kg (0.08 lb/ton) ADP.

[n]Includes knotter vents, brownstock seal tanks, etc. When black liquor oxidation is included, emissions are 0.3 (0.6).