# Florida Department of Environmental Regulation

Twin Towers Office Bldg. ● 2600 Blair Stone Road ● Tallahassee, Florida 32399-2400

Lawton Chiles, Governor

Carol M. Browner, Secretary


April 22, 1991

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. Henry Hirschman, General Manager
Georgia-Pacific Corporation
P. O. Box 919
Palatka, Florida 32078-0919

Dear Mr. Hirschman:

Attached is one copy of the Technical Evaluation and Preliminary Determination and proposed permits for Georgia-Pacific Corporation to implement modifications/enhancements on the No. 4 recovery Boiler (RB) and No. 4 Lime Kiln, which have the potential to increase their total process input and product rates and potential pollutant emissions. The No. 4 Smelt Dissolving Tanks (North and South units) will also have the potential to increase the total process input rate of smelt and the potential pollutant emissions due to the increase of black liquor solids burned in the No. 4 RB. The proposed modification will result in new source review for Prevention of Significant Deterioration for the pollutants PM (particulate matter), $PM_{10}$, NOx (nitrogen oxides), CO (carbon monoxide), and VOC (volatile organic compounds) pursuant to F.A.C. Rule 17-2.500(5).

Please submit any written comments you wish to have considered concerning the Department's proposed action to Mr. Barry Andrews of the Bureau of Air Regulation.

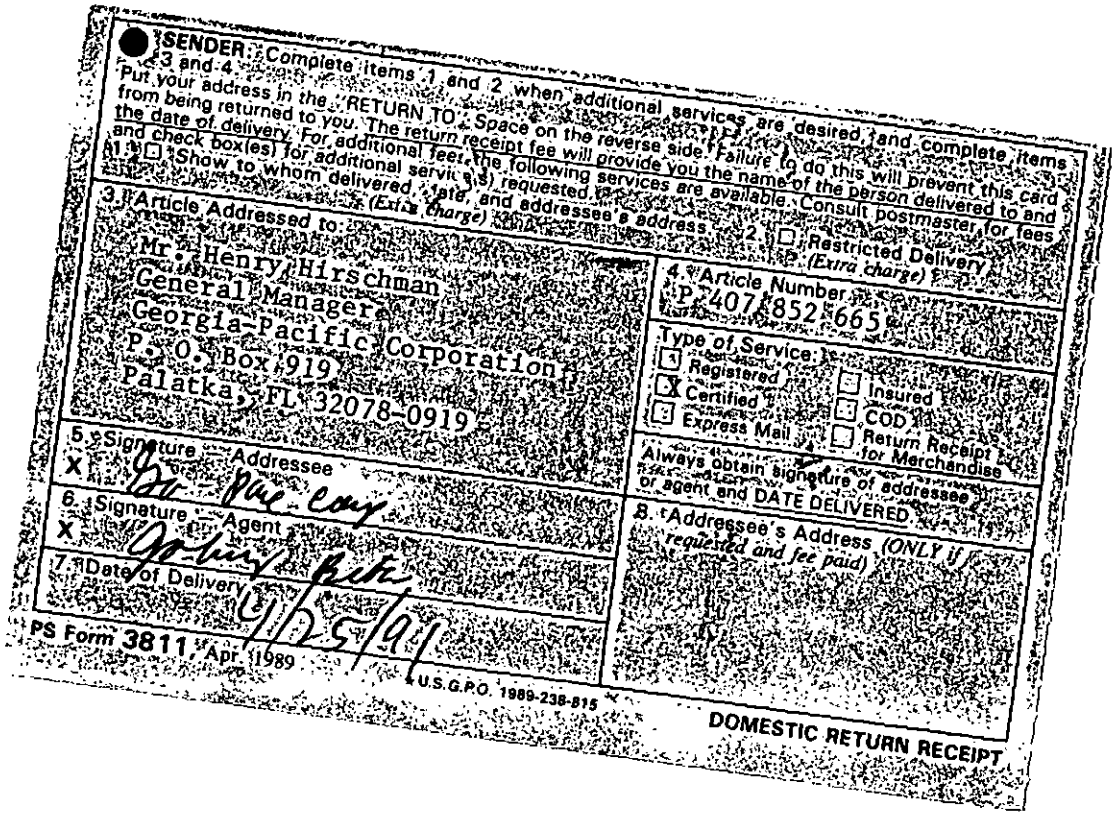
Sincerely,

C. H. Fancy, P.E.
Chief
Bureau of Air Regulation

CHF/BM/plm

Attachments

c: J. Harper, EPA
A. Kutyna, NE District
D. A. Buff, P.E., KBN
V. L. Adams, G-PC



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Mr. Henry Hirschman
General Manager
Georgia-Pacific Corporation
P. O. Box 919
Palatka, FL 32078-0919

4. Article Number
P 407 852 665

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P 407 852 665

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PS Form 3800, June 1985 * U.S.G.P.O. 1989-234-555

Georgia-Pacific Corporation

Palatka Operations
Southern Pulp & Paper
P.O. Box 919
Palatka, Florida 32178-0919
Telephone (904) 325-2001

April 13, 1992

Mr. James K. Pennington, P.E.
Administrator
Air Compliance and Enforcement Section
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Fl. 32399-2400

Re: Georgia-Pacific Corporation, Palatka, Fl. - Request for Exception and Approval of an Alternate Sampling Procedure for Measurement of Volatile Organic Compounds (VOC) Emissions from the No. 4 Recovery Furnace and No. 4 Lime Kiln

Dear Mr. Pennington:

The purpose of this letter is to provide the basis for requesting approval from the Florida Department of Environmental Regulation (FDER) of an alternate sampling procedure (ASP) when conducting VOC emission testing on the No. 4 Recovery Furnace and the No. 4 Lime Kiln at the Georgia-Pacific Corporation (G-P) mill in Palatka, Florida. This ASP request is in accordance with Rule 17-2.700(3), F.A.C.

1. Sources and Permit Numbers

| | |
|---|---|
| No. 4 Recovery Furnace | AC 54-192550 |
| No. 4 Lime Kiln | AC 54-192551 |

2. Current Regulations and Requested Exception

Section 17-2.700 F.A.C., pertains to source emission test procedures to be used for emission compliance testing. The No. 4 Recovery Furnace and the No. 4 Lime Kiln are by rule and specific conditions of the permits, subject to the source sampling methods of Section 17-2.700, F.A.C., i.e., EPA Reference Method 25 for the measurement of VOC emissions.

Exception is being sought to change the VOC emission test methodology as required in the permits from EPA Reference Method 25, to EPA Reference Method 25A.

USA

Exhibit 1

3. Basis for Exception

Roy F. Weston, Inc. (WESTON®)conducted emission testing on the No. 4 Recovery Furnace and No. 4 Lime Kiln in accordance with G-P's permit requirements. WESTON recommended that EPA Method 25A be used in lieu of Method 25 for determining compliance with VOC emission limitations because of the expected high $H_2O$ and $CO_2$ concentrations and low VOC concentrations of the gas streams. A mutual decision was made between G-P and WESTON to conduct the emission testing using both methods in parallel in order to compare the results of both methods.

A. The use of EPA Reference Method 25 on combustion sources with high carbon dioxide and moisture concentrations is not appropriate. Section 1.1 of EPA Reference Method 25 states that $CO_2$ and water vapor can produce a positive bias, if the product of water vapor concentration and carbon dioxide concentration in the gas stream is greater than 100. Test results produced the following results:

| Source | $H_2O$ (%) | $CO_2$ (%) | Product |
|---|---|---|---|
| No. 4 Recovery Furnace | 24 | 14 | 336 |
| No. 4 Lime Kiln | 36 | 18 | 648 |

Therefore, the high results obtained with Method 25 were expected based on all known information. These results include significant positive interference from the $CO_2$ trapped in the ice of the cold trap. During preliminary testing, extra traps were collected for analysis by EPA Reference Method 25. Two of the traps (one from the No. 4 Lime Kiln and one from the No. 4 Recovery Furnace) were warmed to ice bath temperatures and purged with dry nitrogen to remove the moisture and $CO_2$. Then the VOC measured in the trap was lower by a factor of 10. This procedure demonstrates that in fact $CO_2$ was entrapped in the dry ice trap. The results obtained by EPA Reference Method 25 were, therefore, inaccurate. The results by EPA Reference Method 25A are representative of the source emissions.

B. EPA Method 25 was developed for use in the coatings industry where volatile solvents are measured. The gas streams are normally ambient air with unsaturated moisture conditions. Concentrations normally range from 1000 - 5000 mg C/$M^3$. The method does not have adequate detection limits for measuring less than 100 mg C/$M^3$.

EPA has subsequently recommended that combustion sources with expected low VOC concentration be analyzed by EPA Reference Method 25A (See Attachment A). Even though the reported detectable minimum concentration for EPA Reference Method 25 is 50 ppm, a practical limit for a combustion source is 100 to 200 ppm. The Method 25A test results indicated a VOC emission concentration (as carbon) of 7 ppm for the No. 4 Recovery Furnace and 6 ppm for the No. 4 Lime Kiln. It is recommended that EPA Method 25A be used to demonstrate compliance on these combustion sources.

C. The National Council for Air and Stream Improvement (NCASI), the research organization of the pulp and paper industry, has long recognized that Method 25 is not applicable for measuring VOC emissions from combustion sources, such as recovery furnaces and lime kilns due to the reasons mentioned above. Their research indicates that, Method 25A is more appropriate for measuring VOC emissions from kraft mill sources such as lime kilns and recovery furnaces.

4. Test Results

In compliance with your request in your January 9, 1992, correspondence with me, simultaneous test results for Methods 25 and 25A on the No. 4 Recovery Furnace and No. 4 Lime Kiln are presented in the two enclosed emission test reports. All emission testing was conducted in accordance with the provisions of Section 17-2.700, F.A.C., and G-P's permits. All pertinent information required by Rule 17-2.700 (7), F.A.C. is included in each emission test report. Notification of testing was provided to Mr. Andrew Kutyna (letters of February 10 and 20, 1992). EPA Method 25 audit gases provided by Messers. Mort Benjamin and Stan Mazer of the Department were used.

Since the product of the water vapor concentration and carbon dioxide concentration (as determined by EPA Methods 1, 2, 3 and 4) in the flue gas was greater than 100, a positive interference was expected according to EPA Method 25. This interference was additionally proven in our test reports by simultaneous testing, employing both Methods 25 and 25A. These results indicate that Method 25A is the appropriate method to use to demonstrate compliance with the emission limits set forth in G-P's permits.

Very truly yours,

Anthony D. Dumas

jd

ATTACHMENT A

ATTACHMENT A

EMISSION MEASUREMENT TECHNICAL INFORMATION CENTER
GUIDELINE DOCUMENT

# Applicability of Methods 25 and 25A

## SUMMARY

State regulations sometimes require testers to measure VOC emissions from sources where the concentration of VOC is less than 50 ppm as carbon. We recommend that Method 25A be used to measure the concentration of VOC emissions from these kind of sources.

## DISCUSSION

There are three EPA test methods that are appropriate for measuring total VOC emissions. These are Methods 25, 25A, and 25B. Method 25 is designed to measure the destruction efficiency of incinerators used to control VOC emissions from coating sources. While it would be generally applicable to any source, it has a relatively high minimum detectable level of 50 ppm, as carbon. This would limit its usefulness at sources where VOC emissions are less than 50 ppm.

We recommend that testers use Method 25A for measuring VOC emissions from sources that have VOC emissions that are below the minimum detectable level of Method 25. This approach is not without problems. When Method 25A is used to measure unknown VOC emissions, there is a potential negative bias in the results. In addition, if methane is present in the source emissions, a separate method would be required to measure the methane and subtract it from total organic emissions measured by Method 25A to determine VOC. Despite these problems, Method 25A is the only EPA procedure that can measure total VOC at the levels present at some sources.

Prepared by Gary McAlister, Emission Measurement Branch
Technical Support Division, OAQPS, EPA

EMTIC GD-011
January 23, 1991

TABLE 2.5. VOC EMISSION DATA -
NO. 4 RECOVERY FURNACE

| | RUN 1 | RUN 2 | RUN 3 | MEAN |
|---|---|---|---|---|
| Date | 03/13/92 | 03/13/92 | 03/13/92 | --- |
| Time Began | 1147 | 1311 | 1432 | --- |
| Time Ended | 1250 | 1415 | 1535 | --- |
| Stack Gas | | | | |
| Temperature, °F | 430 | 433 | 432 | 432 |
| Velocity, ft/sec | 54.6 | 54.7 | 54.2 | 54.5 |
| Moisture, % | 23.2 | 21.9 | 22.2 | 22.4 |
| $CO_2$ Concentration, % | 14.6 | 14.6 | 14.8 | 14.7 |
| $O_2$ Concentration, % | 4.0 | 4.2 | 4.2 | 4.1 |
| Volumetric Flow Rate | | | | |
| At Stack Conditions, x $10^5$ $ft^3$/min | 4.46 | 4.47 | 4.43 | 4.45 |
| At Standard Conditions[a], x $10^5$ $ft^3$/min | 2.03 | 2.07 | 2.04 | 2.05 |
| Production Rate, ton BLS[b]/hr | 96.6 | 97.1 | 97.4 | 97.0 |
| Volatile Organic Compounds[c] | | | | |
| Concentration, ppmvd @ 8% $O_2$ | | | | |
| EPA 25 | 602.4 | 34.9 | 54.3 | 230.6 |
| EPA 25A | 8.1 | 7.1 | 4.2 | 6.5 |
| Emission Rate, lb/hr | | | | |
| EPA 25 | 299.0 | 17.5 | 26.8 | 114.4 |
| EPA 25A | 4.0 | 3.6 | 2.1 | 3.2 |
| Emission Rate, lb/ton BLS[b] | | | | |
| EPA 25 | 3.10 | 0.18 | 0.28 | 1.19 |
| EPA 25A | 0.04 | 0.04 | 0.02 | 0.03 |
| Permit Limit, lb/hr | --- | --- | --- | 54.6 |
| Permit Limit, lb/ton BLS[b] | --- | --- | --- | 0.52 |

[a]68°F, 29.92 in. Hg.
[b]Black liquor solids.
[c]As carbon.

TABLE 2.3. $NO_x$, CO, AND VOC EMISSION DATA - NO. 4 LIME KILN

| | RUN 1 | RUN 2 | RUN 3 | MEAN |
|---|---|---|---|---|
| Date | 02/05/92 | 02/05/92 | 02/05/92 | --- |
| Time Began | 1915 | 2052 | 2315 | --- |
| Time Ended | 2016 | 2152 | 0043 | --- |
| Stack Gas | | | | |
| Temperature, °F | 164 | 166 | 161 | 164 |
| Velocity, ft/sec | 60.9 | 60.0 | 60.5 | 60.5 |
| Moisture, % | 35.9 | 37.6 | 33.5 | 35.7 |
| $CO_2$ Concentration, % | 18.0 | 18.1 | 17.7 | 17.9 |
| $O_2$ Concentration, % | 5.8 | 5.8 | 6.0 | 5.9 |
| Volumetric Flow Rate | | | | |
| At Stack Conditions, x $10^4$ $ft^3$/min | 5.60 | 5.52 | 5.56 | 5.56 |
| At Standard Conditions[a], x $10^4$ $ft^3$/min | 3.00 | 2.87 | 3.11 | 2.99 |
| Nitrogen Oxides | | | | |
| Concentration, ppmvd @ 10% $O_2$ | 69 | 108 | 65 | 80 |
| Emission Rate, lb/hr | 20.4 | 30.6 | 19.6 | 23.6 |
| Permit Limit, ppmvd @ 10% $O_2$ | --- | --- | --- | 290 |
| Permit Limit, lb/hr | --- | --- | --- | 50.3 |
| Carbon Monoxide | | | | |
| Concentration, ppmvd @ 10% $O_2$ | 12 | 11 | 11 | 11 |
| Emission Rate, lb/hr | 2.2 | 1.9 | 2.0 | 2.0 |
| Permit Limit, ppmvd @ 10% $O_2$ | --- | --- | --- | 69 |
| Permit Limit, lb/hr | --- | --- | --- | 7.3 |
| Volatile Organic Compounds[b] | | | | |
| Concentration, ppmvd @ 10% $O_2$ | | | | |
| EPA 25 | 601 | 673 | 532 | 602 |
| EPA 25A | 15 | 1 | 3 | 6 |
| Emission Rate, lb/hr | | | | |
| EPA 25 | 46.6 | 49.9 | 42.2 | 46.2 |
| EPA 25A | 1.1 | 0.1 | 0.3 | 0.5 |
| Permit Limit, ppmvd @ 10% $O_2$ | --- | --- | --- | 185 |
| Permit Limit, lb/hr | --- | --- | --- | 17.2 |

[a]68°F, 29.92 in Hg.
[b]As carbon.

Exhibit 3

Attachments Available Upon Request

Georgia-Pacific Corporation *Palatka Operations*
*Southern Pulp & Paper Division*
*P.O. Box 919*
*Palatka, Florida 32078-0919*
*Telephone (904) 325-2001*

March 21, 1991



Mr. Clair H. Fancy, P.E.
Florida Department of
Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dear Mr. Fancy:

We have received your letter of March 15, 1991 regarding the completeness review of our applications to modify our existing No. 4 Recovery Boiler, Smelt Dissolving Tanks and No. 4 Lime Kiln. We will address each of your concerns below.

The majority of the information requested in item No. 1 of your letter was supplied in our letter to Bruce Mitchell of March 15th. The process flow rate was supplied in the application. The compliance test protocol for the smelt dissolving tanks has varied throughout the years with the mill striving to satisfy the district office. We believe the most appropriate test protocol is to either test both stacks simultaneously and call it one test or to test the two stacks back to back and add the emissions together to get the results for one test.

Item No. 2 of your letter stated that the kiln was not capable of accommodating the increased capacity without the proposed physical modification and may be subject to NSPS. We disagree, the kiln is capable of accommodating the increased capacity and in fact is currently permitted for the same rate requested in the new permit. An additional analysis of the NSPS applicability is presented on pages 3-18 and 3-19 of the application. The application was submitted due to PSD requirements.

Items Nos. 3 and 4 deal with purchased lime and its use as a supplement to the kiln. The supplemental lime usage will not decrease on a 1 to 1 basis with increased production from the kiln. The production of green liquor at the smelt dissolving tanks will increase and the additional lime from the kiln will be used to process the additional green liquor to white liquor. The amount of purchased lime used at the mill is not pertinent to this permit, purchased lime is not used in the production of the artificial white liquor for the digesters. The usage of artificial white liquor made from NaOH and NaSH will decrease as real white liquor becomes available. The information requested concerning the amount of lime purchased by the mill in each of the last five years is not readily available in that form and my discussions with Bruce Mitchell confirm that the information is not necessary for these permits.

Questions #5 and #6 are asking us to rate each of the systems in the mill on a tons of ADUP basis for the last five years and for the future. We agree this might make life appear simple, but unfortunately life is not that easy. The numbers we have that would allow us to estimate our throughput on a tons of ADUP basis are just estimates and vary widely based on such things as inorganic and organic load within the various systems. For example our estimated pounds of BLS per ton of pulp varied from 3557 to 2630 within one three month period in 1990. The units measuring throughput in the rule are the appropriate units to use and are supplied in the applications. As we have stated before we are not changing throughput on the other units and the emissions will remain the same from the other units.

Item 7 requests that we address all of the concerns in the March 12th letter from EPA. We have addressed these concerns in previous letters to Bruce Mitchell from David Buff and myself dated March 13th and March 15th.

I spoke with Mr. Kutyna concerning the questions addressed in item 8. As addressed on page 2-1 of the application, we are modifying the air distribution system to a more modern design and adding a tertiary forced draft fan. The work which is being done on the precipitator is designed to basically put the unit back into near original condition. The unit is a relatively modern boiler with efficient computer control.

We have noted the change in PM10 modeling as noted in EPA's letter and will apply those changes to future modeling efforts. Previous letters submitted to the Department confirm that the approach we utilized is even more conservative and demonstrates compliance.

If you have any questions or if I can be of further service, please call me at 904-325-2001.

Sincerely,

Vernon L. Adams

Vernon L. Adams
Superintendent of
Environmental Affairs

Seal

David A. Buff

David A. Buff, P.E.
Florida Registration No. 19011

cc: A. Beshire
D. Buff
H. Hirschman
B. Mitchell
W. R. Wilson
C. Holladay
B. Andrews
A. Kutyna, NE Dist
J. Harper, EPA

Georgia-Pacific

Palatka Operations
P.O. Box 919
Palatka, Florida 32178-0919
Telephone: (904) 325-2001

**FAX Number: (904) 328-0014**

## COVER SHEET FOR ALL FAX TRANSMITTALS

**DATE:** 3/21/91

**TO:** Bruce Mitchell

4 **PAGES** = **Total number of pages** (including this cover sheet)

☐ FAX No. (904) 922-6979 ☐ Speed No. _____

**FROM:** Vernon Adams

☐ FAX No. _____ (If different from (904) 328-0014) ☐ Phone No. _____ (If different from (904) 325-2001) ☐ Ext. _____

**Comments:**

_____

_____

_____

_____

**MISSION**

**Palatka Pride,
Dedicated People -
Delivering Quality:
On Time, Every Time!**

Georgia-Pacific Corporation
Palatka Operations
Southern Pulp & Paper Division
P.O. Box 919
Palatka, Florida 32078-0919
Telephone (904) 325-2001

March 21, 1991

Mr. Clair H. Fancy, P.E.
Florida Department of
Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dear Mr. Fancy:

We have received your letter of March 15, 1991 regarding the completeness review of our applications to modify our existing No. 4 Recovery Boiler, Smelt Dissolving Tanks and No. 4 Lime Kiln. We will address each of your concerns below.

The majority of the information requested in item No. 1 of your letter was supplied in our letter to Bruce Mitchell of March 15th. The process flow rate was supplied in the application. The compliance test protocol for the smelt dissolving tanks has varied throughout the years with the mill striving to satisfy the district office. We believe the most appropriate test protocol is to either test both stacks simultaneously and call it one test or to test the two stacks back to back and add the emissions together to get the results for one test.

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If you have any questions or if I can be of further service, please call me at 904-325-2001.

Sincerely,

Vernon L. Adams

Vernon L. Adams
Superintendent of
Environmental Affairs

Seal

David A. Buff

David A. Buff, P.E.
Florida Registration No. 19011

cc: A. Bashire
D. Buff
H. Hirschman
B. Mitchell
W. R. Wilson

File Copy


# Florida Department of Environmental Regulation

Twin Towers Office Bldg. ● 2600 Blair Stone Road ● Tallahassee, Florida 32399-2400

Lawton Chiles, Governor

Carol M. Browner, Secretary


March 18, 1991

Ms. Jewell A. Harper, Chief
Air Enforcement Branch
Air, Pesticides & Toxics Management Division
U.S. EPA, Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Dear Ms. Harper:

Re: Georgia-Pacific Corporation
PSD-FL-171 Addendum

The Department has received an addendum to the above referenced PSD application package. Please attach this document to the application package. Upon receipt of the mill's response to the incompleteness letter of March 15, 1991, we will forward a copy of it for your evaluation.

If you have any questions, please call Bruce Mitchell or Cleve Holladay at (904)488-1344 or write to me at the above address.

Sincerely,

for C. H. Fancy, P.E.
Chief
Bureau of Air Regulation

CHF/BM/rbm

Attachment

c: A. Kutyna, NE District
V. Adams, G-PC

Florida Department of Environmental Regulation
Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400
Lawton Chiles, Governor
Carol M. Browner, Secretary

FAX TRANSMITTAL LETTER

DATE: 3-16-91

TO:

NAME: Vernon Adams
AGENCY: Georgia-Pacific Corp (904) 325-2001

TELEPHONE: 904-328-0014

# OF PAGES (INCLUDE COVER SHEET): 3

FROM:

NAME: Bruce Mitchell

AGENCY: FDER / DARM / BAR

IF ANY PAGES ARE NOT CLEARLY RECEIVED, PLEASE CALL IMMEDIATELY. PHONE NO. (904) 488-1344

SENDER'S NAME: Sam

COMMENTS: Incompleteness Letter
AC 54-192250
-192251
-193841
PSD-FL-171

MESSAGE CONFIRMATION

MAR-16-'91 SAT 10:06
TERM ID: DIV OF AIR RES MGMT P-9999
TEL NO: 904-922-6979

| NO. | DATE | ST. TIME | TOTAL TIME | ID | DEPT CODE | OK | NG |
|---|---|---|---|---|---|---|---|
| 662 | 03-16 | 10:04 | 00°01'59 | 9043280014 | | 03 | 00 |

Florida Department of Environmental Regulation
Twin Towers Office Bldg. ● 2600 Blair Stone Road ● Tallahassee, Florida 32399-2400
Lawton Chiles, Governor
Carol M. Browner, Secretary

March 15, 1991

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Henry Hirschman, General Manager
Georgia-Pacific Corporation
Post Office Box 919
Palatka, Florida 32078-0919

Dear Mr. Hirschman:

Re: Completeness Review of Applications to Modify
AC 54-192250: No. 4 Recovery Boiler
AC 54-192251: No. Lime Kiln
AC 54-193841: No. 4 Smelt Dissolving Tanks (North & South)
PSD-FL-171

The Department has reviewed the above referenced application packages received February 13, 1991. Based on a technical evaluation, the applications are deemed incomplete. Please submit to the Department's Bureau of Air Regulation a response to the following, including all calculations, assumptions and reference material, and the status will, again, be ascertained. Also, all technical responses must be under the seal of the P.E. of Record.

1. Provide a detailed physical and operational description of the North and South No. 4 Smelt Dissolving Tanks (i.e., single/dual operations, raw material throughput rates, compliance testing protocol, etc.).

2. Since the No. 4 Lime Kiln was not capable of accommodating the increased capacity without the proposed physical modification, the subject of NSPS applicability arises. The Department will continue to evaluate this with Region IV, U.S. EPA, and will advise.

3. Will the amount of purchased lime that has been used to supplement the No. 4 lime kiln decrease on a 1 to 1 basis to the amount of the increased lime production projected after the modification is completed? If not, please explain.

4. How much purchased lime, on a per year basis and for the last 5 years, has been obtained to supplement the No. 4 lime kiln?

5. On a per system basis (i.e., batch digester system, multiple effect evaporator systems, lime kilns, recovery boilers, etc.), what are the actual equivalent tons in ADUP that the facility has been producing on a per year basis and for the last 5 years?

6. On a per system basis, what are the proposed production levels in equivalent tons of ADUP that the facility will be at after the modifications are completed?

7. Please address all of the concerns contained in the attached March 12, 1991 letter from Ms. Jewell A. Harper, U.S. EPA, Region IV.

8. As received via FAX, the Department's Northeast District requests that the following be addressed:

   What specific changes are proposed to increase the No. 4 Recovery Boiler's efficiency (e.g. combustion air modifications, black liquor additives, precipitator modifications such as computer control, etc.)?

9. Please note Modeling/Monitoring comment No. 2 in the attached March 12, 1991 letter from Region IV, U.S. EPA. In any future permit applications and if additional PM-10 modeling is required with this analysis, the sixth highest 24-hour concentration (based on 5 full years of 24-hour concentration estimates at the same receptor) for each receptor in the network must be identified for comparison with the PM-10 24-hour standard.

If there are any questions, please call Bruce Mitchell or Cleve Holladay at 904-488-1344 or write to me at the above address.

Sincerely,

C. H. Fancy, P.E.
Chief
Bureau of Air Regulation

CHF/BM/plm

Attachment

c: A. Kutyna, NED
J. Harper, U.S. EPA
V. Adams, G-PC
D. Buff, P.E., KBN

Hand Delivered
3-18-91

File Copy

Georgia-Pacific Corporation *Palatka Operations*
*Southern Pulp & Paper Division*
*P.O. Box 919*
*Palatka, Florida 32078-0919*
*Telephone (904) 325-2001*

March 15, 1991

RECEIVED
MAR 18 1991
DER - BAQM

Mr. Bruce Mitchell
Florida Department of
Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dear Mr. Mitchell:

Pursuant to our conversations yesterday, please find within this letter a description of the smelt dissolving tank system associated with the #4 Recovery Boiler and find attached a response which was prepared by David Buff, to EPA's recent inquiries.

The smelt from the #4 Recovery flow out of the bottom of the unit on both the North and South sides ( see the attached drawing). As it exits the furnace the smelt enters either the North or South smelt dissolving tanks. There is no control on how much smelt goes to which tank, but we believe that the distribution is approximately even. Weak wash can enter the system through either the North or South unit, it then contacts the smelt from the corresponding side of the furnace and continues flowing to the other tank where it contacts the smelt from the other side of the furnace, it is then green liquor.

If you have any questions or if I can be of further service, please call me at 904-325-2001.

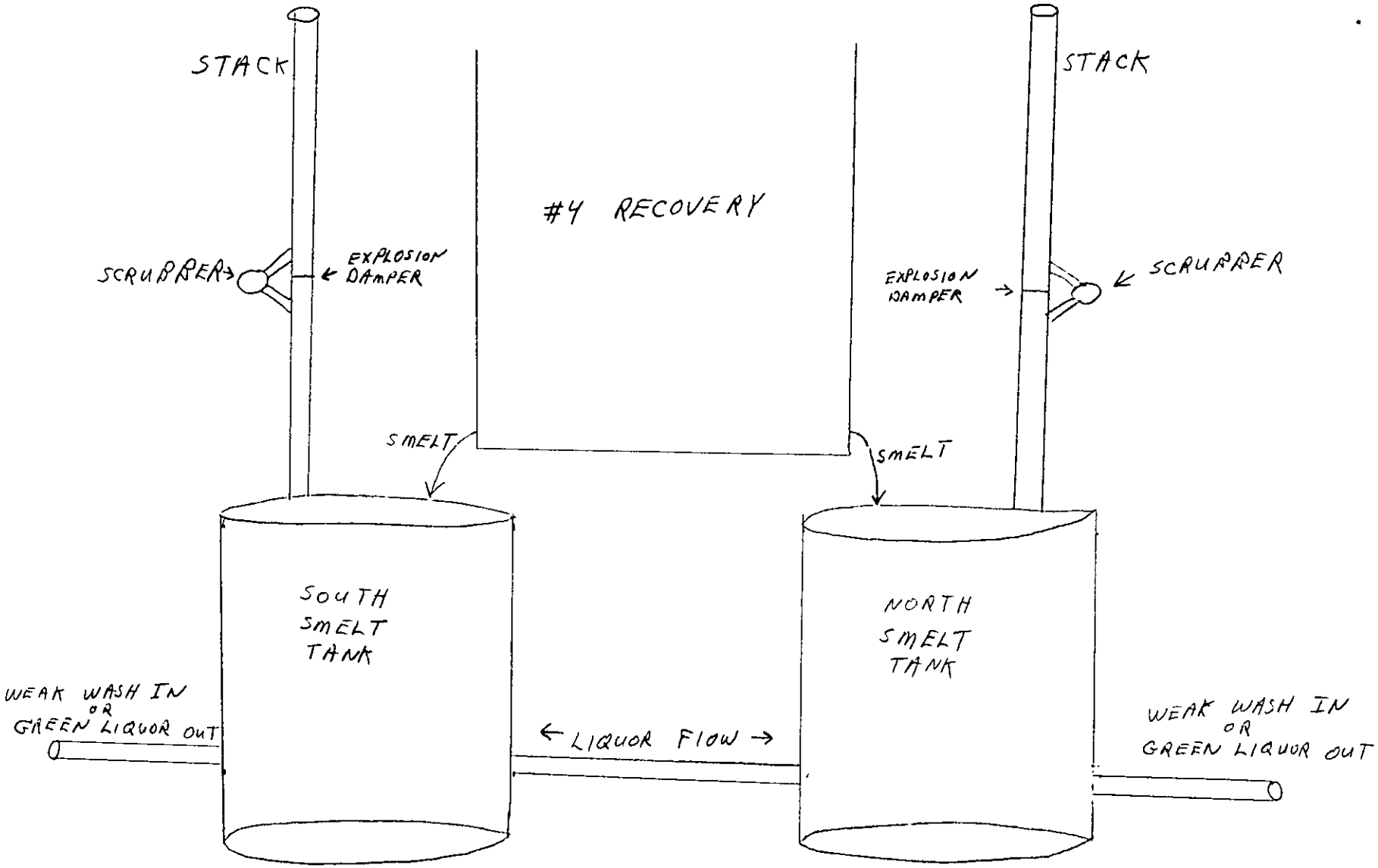
Sincerely,

Vernon L. Adams

Vernon L. Adams
Superintendent of
Environmental Affairs

cc: A. Beshire
D. Buff
H. Hirschman
W. R. Wilson
A. Kutyna, NE Dist.
B. Mitchell
C. Holladay
J. Harper, U.S. EPA, Region IV (attn. Gregg Worley & Lou Negler)

3-18-91 RAM


STACK
#4 RECOVERY
STACK
SCRUBBER
EXPLOSION DAMPER
EXPLOSION DAMPER
SCRUBBER
SMELT
SMELT
SOUTH SMELT TANK
NORTH SMELT TANK
WEAK WASH IN OR GREEN LIQUOR OUT
LIQUOR FLOW
WEAK WASH IN OR GREEN LIQUOR OUT

March 15, 1991

Mr. Bruce Mitchell, P.E.
Bureau of Air Regulation
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida

Re: Georgia-Pacific Corporation
Proposed Recovery Boiler/Lime Kiln Project

Dear Mr. Mitchell:

The purpose of this letter is to address comments that EPA Region IV have made in regard to the Georgia-Pacific Corporation (G-P) air construction permit application for a proposed rate increase for the No. 4 Recovery Boiler (RB4), No. 4 Smelt Dissolving Tank (SDT4), and No. 4 Lime Kiln (LK4). The comments were provided in an EPA Region IV letter to DER dated March 12, 1991. G-P's response to these comments are provided below, under the same topics as listed in the letter.

Modeling/Monitoring

These issues were addressed in G-P's letter to DER dated March 13, 1991. NAAQS modeling for PM10 was performed as part of the original permit application. KBN's use of the highest, second highest 24-hour PM10 concentration results in a higher predicted impact than if the sixth-highest concentration was used.

Netting Calculation
G-P's response to this concern was contained in the March 13 letter to DER.

BACT Analysis
RECOVERY BOILER

1. The black liquor input is shown in Section III.E. of the application and is based on a solids content of 66.3%.

2. Current actual $SO_2$ emissions have been in the range of 7 to 10 ppm for RB4. However, the effect of the changes being implemented in the air and firing systems of the boiler are not known. The boiler vendor has guaranteed an $SO_2$ level of 125 ppm at 8 percent $O_2$. In addition, review of permitted $SO_2$ emission rates for recovery boilers indicates there are only two boilers with $SO_2$ limits less than 75 ppm. Most boilers have permit limits of 150 ppm or higher. Based on these considerations, the proposed limit for RB4 of 75 ppm is reasonable.

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

3. Historic PM emission data from RB4 was presented in the permit application. These data showed that the existing ESP has achieved emission levels ranging from 0.009 to 0.037 gr/dscf, which is below the proposed NSPS level of 0.044 gr/dscf. However, the original design of the ESP was to meet the state of Florida standard of 3 lb/3000 lb BLS. This is equivalent to approximately 0.100 gr/dscf.

Under the current proposal, the gas flow rate through the ESP is projected to increase, and this may slightly lower the effectiveness of the ESP. G-P will be refurbishing the ESP as part of the proposed project, which likely result in improved performance. However, the performance of the ESP, as with any control device, varies over time. The ESP vendor has indicated that the current ESP design is appropriate for RB4, i.e., a new ESP would be designed in a similar manner.

The proposal to refurbish the ESP and agree to a much lower PM emission limit than present represents a significant commitment on the part of G-P.
Although emissions lower than the 0.044 gr/dscf NSPS are expected to be achieved, the NSPS level is a reasonable maximum emission limit.

A review of current permit limits for recovery boilers indicated that there are currently 22 boilers with PM limits set equal to the NSPS. Of these, 15 were BACT determinations.

4. G-P has proposed short-term emission limits for CO and VOC for RB4 (reference pages 6-8 and 6-11 of the permit application). The proposed short-term CO limit is 800 ppm, and the maximum VOC limit not to be exceeded is 0.52 lb/ton BLS. For $NO_x$, G-P is willing to accept a 24-hour average emission limit equal to the annual average limit, i.e., 100 ppmvd corrected to 8 percent $O_2$.

LIME KILN
G-P has proposed the current PM limit for LK4 because only minor changes are being made to the kiln. The maximum permitted throughput of the kiln is not changing. The existing control equipment is working well. The present scrubber is operating within its design conditions. As described in the application, the proposed PM limit is 0.098 gr/dscf, corrected to 10 percent $O_2$ (based on 4 percent oxygen in kiln). This limit is well within the range of previous BACT determinations for other facilities. Considering these aspects, a lower PM emission limit is not warranted.

Please call if you have any questions concerning this information.

Sincerely,

David A. Buff

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

cc: Vernon Adams
Keith Bentley

# Florida Department of Environmental Regulation

Twin Towers Office Bldg. ● 2600 Blair Stone Road ● Tallahassee, Florida 32399-2400

Lawton Chiles, Governor

Carol M. Browner, Secretary


March 15, 1991

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Henry Hirschman, General Manager
Georgia-Pacific Corporation
Post Office Box 919
Palatka, Florida 32078-0919

Dear Mr. Hirschman:

Re: Completeness Review of Applications to Modify
AC 54-192250: No. 4 Recovery Boiler (192550)
AC 54-192251: No. Lime Kiln (192551)
AC 54-193841: No. 4 Smelt Dissolving Tanks (North & South)
PSD-FL-171

The Department has reviewed the above referenced application packages received February 13, 1991. Based on a technical evaluation, the applications are deemed incomplete. Please submit to the Department's Bureau of Air Regulation a response to the following, including all calculations, assumptions and reference material, and the status will, again, be ascertained. Also, all technical responses must be under the seal of the P.E. of Record.

1. Provide a detailed physical and operational description of the North and South No. 4 Smelt Dissolving Tanks (i.e., single/dual operations, raw material throughput rates, compliance testing protocol, etc.).

2. Since the No. 4 Lime Kiln was not capable of accommodating the increased capacity without the proposed physical modification, the subject of NSPS applicability arises. The Department will continue to evaluate this with Region IV, U.S. EPA, and will advise.

3. Will the amount of purchased lime that has been used to supplement the No. 4 lime kiln decrease on a 1 to 1 basis to the amount of the increased lime production projected after the modification is completed? If not, please explain.

4. How much purchased lime, on a per year basis and for the last 5 years, has been obtained to supplement the No. 4 lime kiln?

5. On a per system basis (i.e., batch digester system, multiple effect evaporator systems, lime kilns, recovery boilers, etc.), what are the actual equivalent tons in ADUP that the facility has been producing on a per year basis and for the last 5 years?

6. On a per system basis, what are the proposed production levels in equivalent tons of ADUP that the facility will be at after the modifications are completed?

7. Please address all of the concerns contained in the attached March 12, 1991 letter from Ms. Jewell A. Harper, U.S. EPA, Region IV.

8. As received via FAX, the Department's Northeast District requests that the following be addressed:

   What specific changes are proposed to increase the No. 4 Recovery Boiler's efficiency (e.g. combustion air modifications, black liquor additives, precipitator modifications such as computer control, etc.)?

9. Please note Modeling/Monitoring comment No. 2 in the attached March 12, 1991 letter from Region IV, U.S. EPA. In any future permit applications and if additional PM-10 modeling is required with this analysis, the sixth highest 24-hour concentration (based on 5 full years of 24-hour concentration estimates at the same receptor) for each receptor in the network must be identified for comparison with the PM-10 24-hour standard.

If there are any questions, please call Bruce Mitchell or Cleve Holladay at 904-488-1344 or write to me at the above address.

Sincerely,

C. H. Fancy, P.E.
Chief
Bureau of Air Regulation

CHF/BM/plm

Attachment

c: A. Kutyna, NED
J. Harper, U.S. EPA
V. Adams, G-PC
D. Buff, P.E., KBN

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Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.
1. ☐ Show to whom delivered, date, and addressee's address. (Extra charge) 2. ☐ Restricted Delivery (Extra charge)

3. Article Addressed to:
Henry Hirschman
GA-Pacific Corp.
P.O. Box 919
Palatka, FL 32078-0919

4. Article Number
P 407 852 654

Type of Service:
☑ Registered ☐ Insured
☑ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature — Addressee
X Georgia Pacific Corp

6. Signature — Agent
X S.F. Brown

7. Date of Delivery
3-18-91

8. Addressee's Address (ONLY if requested and fee paid)
AJ

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P 407 852 654

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Street and No. GA-Pacific
P.O. State and ZIP Code Palatka, FL

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|---|---|
| Postage | $ |
| Certified Fee | |
| Special Delivery Fee | |
| Restricted Delivery Fee | |
| Return Receipt showing to whom and Date Delivered | |
| Return Receipt showing to whom, Date, and Address of Delivery | |
| TOTAL Postage and Fees | $ |
| Postmark or Date 3-15-91 | |

AC 54-192250
PSD-FL-171 251 841

PS Form 3800, June 1985 U.S.G.P.O. 1989-234-555

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365



4APT-AEB

MAR 12 1991

Mr. Clair H. Fancy, P.E., Chief
Bureau of Air Regulation
Florida Department of Environmental
Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

RE: Georgia-Pacific Corporation, Palatka (PSD-FL-171)

Dear Mr. Fancy:

This is to acknowledge receipt of an application for a Prevention of Significant Deterioration (PSD) permit for the above referenced facility transmitted by your letter of February 14, 1991. As discussed between Mr. Bruce Mitchell of your staff and Mr. Gregg Worley of my staff on March 7, 1991, we have the following comments and questions on the submittal.

Modelling/Monitoring

The modeling analysis as submitted has been reviewed. The modification will have a significant impact for TSP/PM-10; however, since a previously permitted PSD source at the plant was never constructed, the total increment consumption will be less now than with the prior application. Based on this decrease in overall emissions, further modelling was deemed by the applicant to be unnecessary.

After discussing this point with EPA Headquarters, it was agreed that if there is a significant impact from the new source or modification, a NAAQS review is required. There is no basis in our regulations to exempt further analysis, even if there is no threat to the available increment; we still need to determine what the impact on the NAAQS will be. Our comments are as follows:

1. A NAAQS modeling analysis is necessary for PM-10.

2. The standard for PM-10 is now a statistical standard and the sixth highest 24 hour concentration based on five years of meteorological data is now used instead of the high second highest value.

Netting Calculation

When caluculating the net emissions increase for TRS emissions, GP included an emissions decrease which resulted from complying with Florida's TRS rule. Since the reduction was made to comply with regulations, it does not qualify as a creditable emissions decrease.

BACT Analysis

The BACT analysis does not propose controls other than the existing controls for the emissions units. Questions and comments about the BACT analysis performed by the applicant are as follows:

Recovery Boiler

1. What is the percent dryness of the black liquor solids? (Note that the recent trend for recovery boilers has been to burn drier black liquor solids, about 70 to 75% solids. The increased dryness has an effect both on $SO_2$ emissions and $NO_x$ emissions.)

2. The application states that current actual emissions for $SO_2$ are in the range of 7-9 ppm, yet the requested permit limit is for 75 ppm. Although GP will apparently net out of PSD review for $SO_2$, the allowable emissions should more closely reflect the actual capabilities of the emissions unit.

3. What changes are being made to the ESP? In a recent permit application in Region IV (Hammermill Papers in Alabama) in which an existing recovery boiler was being modified, the efficiency of the existing ESP was evaluated and cost estimates were made on improving the efficiency of the ESP. GP has proposed a PM limit of 0.044 gr/dscf utilizing the existing ESP. Current permits for new recovery boilers are being issued in the range of 0.021 to 0.030 gr/dscf. The Hammermill facility mentioned above has proposed a level of 0.034 gr/dscf based on an economic evaluation. In any case, defaulting to the NSPS level without supporting documentation does not meet the requirements of a BACT analysis.

4. The applicant proposed emissions limits for CO, VOC, and $NO_x$ based on an annual average. This does not meet the requirement of "short-term and specific" limits.

Lime Kiln

Again the applicant did not consider more stringent limits than the existing allowable emissions.

Thank you for the opportunity to review and comment on this application. If you have any questions or comments on the modeling comments, please contact Mr. Lew Nagler at (404) 347-2904. Other questions may be directed to Mr. Gregg Worley of my staff, also at (404) 347-2904.

Sincerely yours,

Jewell A. Harper, Chief
Air Enforcement Branch
Air, Pesticides, and Toxics
Management Division

File Copy

# Florida Department of Environmental Regulation

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

Lawton Chiles, Governor

Carol M. Browner, Secretary

## FAX TRANSMITTAL LETTER

DATE: 3-16-91

TO:

NAME: Vernon Adams

AGENCY: Georgia-Pacific Corp (904) 325-2001

TELEPHONE: 904-328-0014

# OF PAGES (INCLUDE COVER SHEET): 3

FROM:

NAME: Bruce Mitchell

AGENCY: FDER/DARM/BAR

IF ANY PAGES ARE NOT CLEARLY RECEIVED, PLEASE CALL IMMEDIATELY. PHONE NO. (904) 488-1344

SENDER'S NAME: Same

COMMENTS: Incompleteness Letter without Attachment

AC 54-192250

-192251

-193841

PSD-FL-171

MESSAGE CONFIRMATION MAR-16-'91 SAT 10:06

TERM ID: DIV OF AIR RES MGMT P-9999

TEL NO: 904-922-6979

| NO. | DATE | ST. TIME | TOTAL TIME | ID | DEPT CODE | OK | NG |
|---|---|---|---|---|---|---|---|
| 662 | 03-16 | 10:04 | 00°01'59 | 9043280014 | | 03 | 00 |

cc: Reading File
Bruce Mitchell } 3-16-91 BM

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

# Interoffice Memorandum



TO: C.H. Fancy

FROM: Andrew Kutyna

DATE: March 12, 1991

SUBJECT: PSD Application for Ga. Pacific/Putnam County

I have reviewed the PSD application submitted by Georgia Pacific for modifications to the recovery boiler and lime kiln.

The application appears to be complete, in my opinion. However, I do have one question:

What specific chemicals are proposed for [illegible] efficiency (e.g. combustion air additives, precipitator conditioners, scrubber control, etc.)?

# Interoffice Memorandum



TO: C.H. Fancy

FROM: Andrew Bolyn

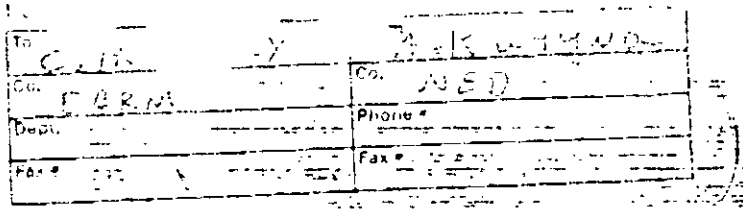
DATE: March 12, 1991

SUBJECT: PSD Application for Ga. Pacific/Tarkan [illegible]

I have reviewed the PSD application submitted by Georgia Pacific for modifications to the recovery boiler and lime kiln.

The application appears to be complete, in my opinion. However, I do have the following questions:

[illegible] details such as fugitive control, etc.)?



KBN

FACSIMILE COVERSHEET

DATE: 3/15/91

RECEIVED
MAR 15 1991
DER - BAQM

TO: Bruce Mitchell

ORGANIZATION: FDER

FAX NUMBER: 904 922-6979 TELEPHONE NUMBER: _____

FROM: D. Buff

TOTAL NUMBER OF PAGES: 5 (including cover page)

MESSAGE/INSTRUCTIONS:

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cc: Project File _____ yes _____ no

KBN Engineering and Applied Sciences, Inc.
1034 NW 57th Street, Gainesville, FL 32605
Phone (904) 331-9000 FAX (904) 332-4189

MAS/FAX

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

BRUCE MITCHELL
FDER

Please find enclosed the following information:

Hammermill Papers PSD APPLICATION
(modified recovery boiler)

Gregg M. Worley
Source Evaluation Unit
Air Enforcement Branch
(404) 347-2904
FTS 257-2904

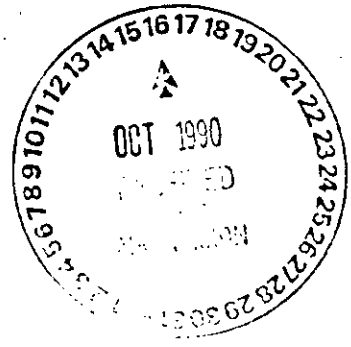
SIMONS

# Hammermill Papers
# Riverdale Mill
# Selma, Alabama

## New Source Review for Mill Expansion

Prepared for the Alabama Department of Environmental Management

Project No. 4032
September 1990




Simons-Eastern Consultants, Inc.

Hammermill Papers
Selma, Alabama
New Source Review for Mill Expansion

Project No. 4032
September 1990

TABLE OF CONTENTS



(continued)

Hammermill Papers
Selma, Alabama
New Source Review for Mill Expansion

Project No. 4032
September 1990

TABLE OF CONTENTS (CONTINUED)



LIST OF FIGURES



(continued)

Hammermill Papers
Selma, Alabama
New Source Review for Mill Expansion

Project No. 4032
September 1990

TABLE OF CONTENTS (CONTINUED)

LIST OF TABLES



(continued)

Hammermill Papers
Selma, Alabama
New Source Review for Mill Expansion

Project No. 4032
September 1990

TABLE OF CONTENTS (CONTINUED)

LIST OF EXHIBITS

Hammermill Papers
Selma, Alabama
New Source Review for Mill Expansion

Project No. 4032
September 1990

## 1. INTRODUCTION

International Paper Incorporated owns and operates Hammermill Papers at Riverdale, Alabama, a bleached kraft pulp and paper mill. The products manufactured are fine papers and bleached kraft market pulp. An expansion is proposed that would significantly increase the mill's output of fine papers by the addition of a new 1000 TPD paper machine. Pulp production will increase by 143 bleached ADTD, or about 11 percent of current production rates.

This report was prepared to accompany applications to the Alabama Department of Environmental Management for permits to construct and operate new and modified sources of air pollutant emissions. It describes the proposed project and addresses all requirements of a new source review as set forth in the regulations of the United States Environmental Protection Agency and those of the Alabama Department of Environmental Management.

## 2. PROJECT DESCRIPTION

### 2.1 PLANT LOCATION

Hammermill Paper's Riverdale mill, now owned by International Paper Company, is located on the Alabama River in Dallas County. The mill site is on Dallas County Highway 78 approximately eight miles east of Selma and four miles southeast of Brownsville. A vicinity map on page 2-2 locates the site.

The facility is situated in a location that is ideal for a pulp and paper operation. There are no major metropolitan areas nearby. The area is used essentially for tree and agricultural farming. Wood is available from virtually all points on the compass, and water supplies are adequate.

### 2.2 PROJECT OVERVIEW

Hammermill Paper's Riverdale mill, which now markets both fine papers and bleached pulp, will upgrade its product line by the addition of a new No. 2 paper machine having a nominal capacity of 1032 finished tons per day. The bleached pulp now sold will gradually be totally diverted to use as furnish for the new machine. Eventually, the

Hammermill Papers
Selma, Alabama
New Source Review for Mill Expansion

Project No. 4032
September 1990

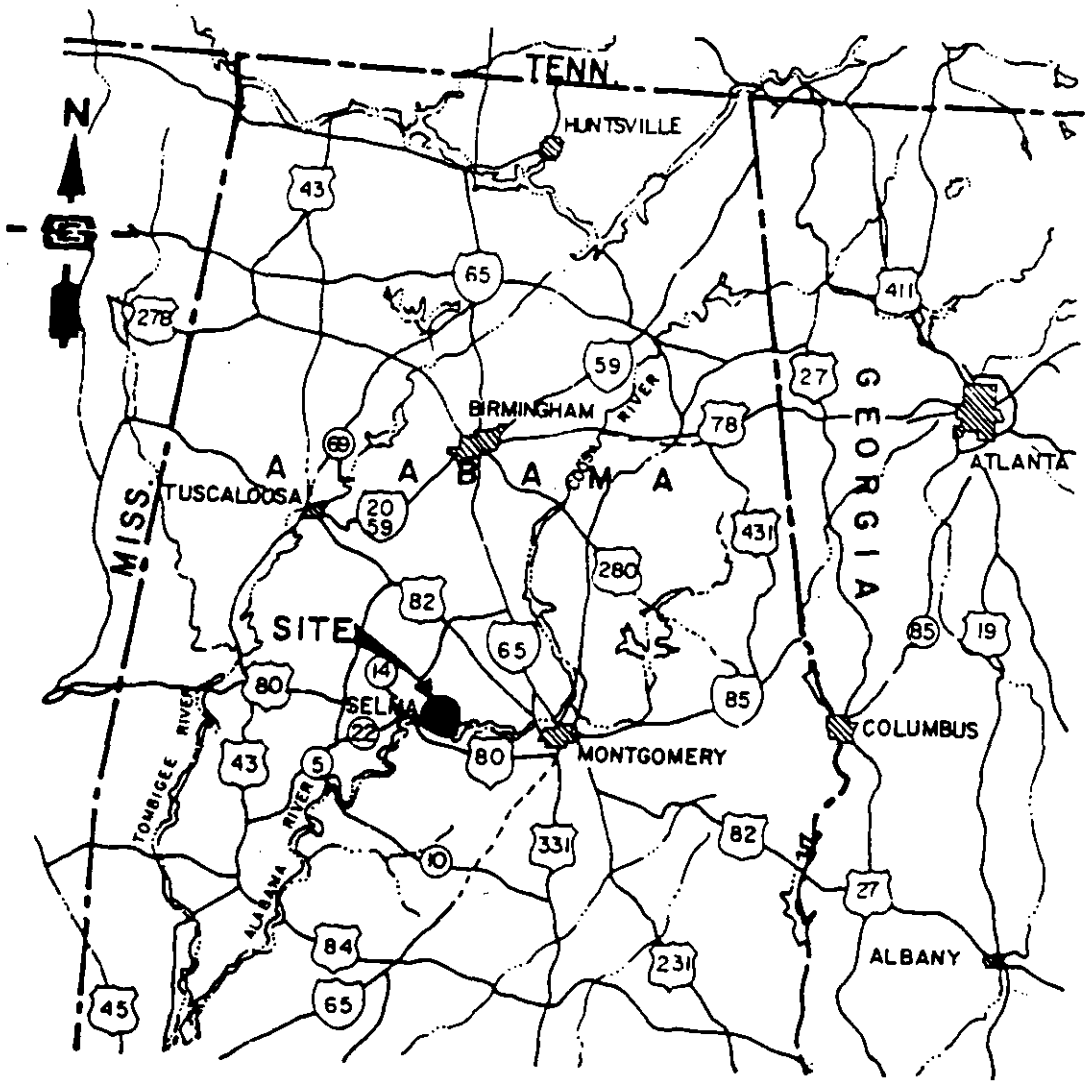



Figure 1: Plant Site Location

combined output of the two paper machines will reach a nominal total of 1782 finished tons per day of fine reprographic papers.

The nominal capacity of the existing pulp mill is 1285 bleached air dry tons per day (1428 unbleached). To support the paper machine operations, a nominal pulp production capacity of 1428 bleached air dry tons per day (1586 unbleached) will be required. The additional tonnage, 143 bleached ADTPD (158 unbleached), will be achieved by changes in the plant which include the addition of certain new facilities, modifications to others, and the continued use of yet others that do not require modification.

Modifications and/or new facilities that will impact existing pollutant emissions will be implemented in the following production areas: digesters, brown stock washing, bleaching, new No. 2 paper machine, No.3 lime kiln, recausticizing, No. 2 black liquor evaporators, No. 2 chemical recovery boiler and smelt tank, and a new No. 2 gas and oil fired power boiler.

Hammermill Papers
Selma, Alabama
New Source Review for Mill Expansion

Project No. 4032
September 1990

A new long log facility will be added to the woodyard operation, but it will not generate process pollutant emissions. This is also the case for a new 40 megawatt steam turbine generator.

It is planned that construction will be initiated in January, 1993 and concluded with start-up of the new gas/oil fired boiler in April, 1995.

Further detail on the proposed changes is provided in the following paragraphs.

## 2.3 DIGESTERS

The required additional pulp production of 158 unbleached air dry tons per day will be achieved by the installation of one new 6300 $ft^3$ batch digester, No. 11. The three existing blow tanks have adequate capacity to accommodate the additional production from the new digester. With the addition of a new 5900 $ft^2$ indirect heat exchanger, the existing blow heat recovery system will also be adequate. All noncondensible gases will be directed to the existing lime kiln, or to the existing back-up incinerator, for thermal destruction.

The total production of softwood pulp will decrease in the expanded mill, so VOC emissions from the turpentine condenser and storage tank will be less than at present. In the absence of previous testing or reliable emissions factors, no effort has been made to quantify credits for the PSD applicability analysis.

## 2.4 BROWN STOCK WASHING

The existing No. 1 and No. 2 brown stock washer lines do not require modification to accommodate the average production increase of 158 unbleached air dry tons per day. It is presumed that there may be an accompanying increase of reduced sulfide emissions, so an allowance for an increase that is proportionate to the production change has been included in the PSD applicability analysis.

## 2.5 BLEACH PLANTS

A project not a part of the expansion program is being planned to modify the sequences of the existing No. 1 and No. 2 bleach plants to effect reductions of chloroform, dioxins, and other chlorinated organics. Scrubbers to remove chlorine and chlorine dioxide from process emissions will be included. Any changes needed to

accommodate the additional tonnage from the expansion program will be addressed as a part of the bleach plant project.

All emissions changes that result from the combined effects of the increased tonnage, the sequence changes, and the scrubber additions will be accounted for when application is made to permit the bleach plant project. It is anticipated that the bleach plant modifications will be complete before the expansion project is operational.

## 2.6 NO. 2 PAPER MACHINE

A new No. 2 paper machine to produce a line of reprographic papers will be installed. With a wire width of 382 inches and a design speed of 4000 fpm, rated nominal production will be 1032 finished tons per day. The product will supplement that from the existing No. 1 paper machine, which has a nominal capacity of 750 tons per day. The new operation will include stock preparation equipment, a new winder, roll finishing, and additional warehouse space.

Bulk chemicals used in paper manufacture that are shipped to the mill in dry form will be transferred to existing storage silos by air conveying systems that exhaust through highly efficient baghouses. Transfer from storage to points of use on the new machine will also be accomplished by air conveyors that exhaust through baghouses.

The unloading and transfer operations occur infrequently and for short durations. Due to the high efficiency of the baghouses, it is judged that any increase of particulate matter to ambient air will be of an insignificant quantity and without measurable impact.

## 2.7 EXISTING NO. 3 LIME KILN

The existing No. 3 lime kiln has sufficient capacity to manufacture the additional reburned lime needed to support the incremental pulp production increase of 158 unbleached air dry tons per day. None of the air pollutants emitted from this operation will increase above the quantities that constitute the current permit limits.

Since the No. 3 kiln is a previously reviewed PSD source to which there will be no modifications, the U.S. EPA and the Alabama Department of Environmental Management have ruled that it need not be included in the current PSD review since future emissions will remain within the constraints of the current permit limits. Therefore, the No. 3 lime kiln is not further addressed in this document.

The existing No. 1 and No. 2 lime kilns will remain in standby service only to be used in the event the No. 3 kiln is down.

## 2.8 RECAUSTICIZING AREA

Additional green liquor clarification capacity is needed, so the existing 85 foot diameter white liquor clarifier will be converted to green liquor use. A new 95 foot white liquor clarifier will be provided. A new 20 foot diameter causticizer tank will also be added.

The existing No. 3 green liquor slaker will accommodate the increased lime production from No. 3 kiln. Additional showers will be placed in the slaker's atmospheric vent line to increase the particulate capture efficiency, thus

ensuring that there will be no increase of pollutant discharged to ambient air from this source. Engineering judgment indicates that there will probably be a PM reduction, but, in the absence of either actual measurements or reasonably good estimates of existing emissions, no credit for reduction has been claimed in the PSD applicability analysis.

## 2.9 NO. 2 BLACK LIQUOR EVAPORATORS

Two sets of evaporators are used to concentrate black liquor for burning in the recovery boilers. No. 1 set will remain in operation unmodified. No. 2 set will be extensively modified to accommodate the increased production and the shift to a greater proportion of hardwood pulp.

The split-body effects will be opened up, external heaters will be added as needed, and the two existing concentrators will be converted to use as a new second effect. Thus, the existing five-body, five effect configuration will be converted to a seven-body, six effect system.

A new two effect concentrator set will be added downstream of the evaporators to further concentrate the black liquor to 75 percent solids. A new heated storage tank will be provided for the strong liquor.

## 2.10 EXISTING NO. 2 CHEMICAL RECOVERY BOILER

The existing No. 2 chemical recovery boiler will be physically modified to optimize its performance and to reconfigure it for higher solids firing. Black liquor is currently fired at 68 percent dry solids; this will increase to an average of 72 percent when 75 percent solids liquor from the modified No. 2 evaporator set is blended with 68 percent liquor from the No. 1 evaporator set.

The modified No. 2 recovery boiler will accommodate the full increase of solids loading that will result from the additional pulp produced. The furnace rating will increase from the current nameplate of 2,700,000 pounds of dry solids per day to a new rating of 3,100,000 pounds per day, producing 426,000 pounds per hour of 1500 psig steam.

The furnace air system will be modified by adding three new fans to increase air flow and to provide three levels of combustion air instead of the current design of two. A new steam coil air heater will be added. New air ports will be installed through the furnace water wall tubes. New ports will also be installed to accommodate the six new stationary guns needed to fire the more concentrated black liquor.

Platen screen assemblies will be added inside the furnace and fitted with new soot blowers to keep the flue gas pathways open. This change is expected to increase the reliability and availability of the furnace to the extent that the operating time between tube wash downs will, hopefully, be as long as six months.

The existing electrostatic precipitator will be modified to minimize particulate emissions from the boiler. The two existing parallel chambers have more than ample volume for the future service. They were originally designed to accommodate a gas flow of 380,000 ACFM, which will not be exceeded in the future due to the lower moisture and oxygen contents of the flue gas.

To effect an increased efficiency of solids capture, the current density will be increased on the electrodes in the outlet half of each chamber. This will be accomplished by the addition of three new transformer rectifiers and controllers. Discharge electrodes throughout the ESP will be replaced in kind.

The bottoms on the precipitator will be changed from the existing wet configuration to dry hoppers, which will serve to better ensure that TRS emissions limits are achieved.

The existing No. 1 chemical recovery boiler will continue to operate at its present load condition and without physical or process modifications. There will, therefore, be no changes of stack conditions nor of pollutant emissions to ambient air.

## 2.11 NO. 2 SMELT DISSOLVING TANK

The existing smelt dissolving tank, and the existing wet scrubber on the vent line, have adequate capacity to accommodate, without modification, the increased smelt

load from the modified No. 2 recovery boiler. Future pollutant emissions will remain within the constraints of the existing PSD permit.

As was the case for the existing No. 3 lime kiln, this previously reviewed PSD source does not require further review since no physical modifications will be made and pollutant emissions will remain within the existing PSD permit limits. Therefore, the No. 2 smelt dissolving tank is not further addressed in this report.

## 2.12 NEW GAS AND OIL FIRED BOILER

A new No. 2 power boiler, rated at 350,000 pounds per hour of 1500 psig steam, will be constructed to supply steam for the new paper machine and for a new 40 megawatt steam turbine generator. It will be designed to be fired at full load with either natural gas or No. 2 fuel oil. The heat input rating will be 512.5 x $10^6$ Btu per hour on either fuel.

No. 2 distillate oil having an $SO_2$ content no greater than 0.5 percent by weight will be utilized for oil

firing. For purposes of PSD applicability, it was assumed that the boiler will operate on oil for no more than the equivalent of 100 days per year.

The new boiler will be located adjacent to the east side of the existing No. 2 wood waste boiler. The stack will be 200 feet tall and approximately eight feet in diameter.

Hammermill Papers
Selma, Alabama
New Source Review for Mill Expansion

Project No. 4032
September 1990

## 3. PSD APPLICABILITY

The Riverdale mill is considered a major stationary source since it is one of the listed 28 industrial categories and emits over 100 tons per year of a regulated pollutant. Dallas County is classified as "attainment" or "nonclassifiable" for all regulated pollutants. Therefore, if a net emissions increase of a pollutant from the mill exceeds its designated "significance" level, a PSD review for the pollutant is required. Applicability to the PSD process is determined on a pollutant-by-pollutant basis.

All increases and decreases of each regulated pollutant throughout the mill that will occur as a result of the project were considered. There were no contemporaneous increases or decreases during the five year period prior to project start-up. Actual emissions during the two year period ending December 31, 1988 were used for the netting calculations. This period is also wholly representative of 1989 and 1990.

Under current PSD regulations, the proposed future total emission of each pollutant from all sources combined is

compared to the current actual total. Records of actual emissions over a recent representative operating period of at least two years is desired. The difference in proposed and actual then becomes the "net emissions increase" that is compared to significance levels.

The regulatory definition of "net emissions increase" states that if an emission increase has already been relied upon in issuing a PSD permit, then the increase is not creditable. Consultation with EPA Region IV and ADEM concerning this project resulted in agreement that the increase in actual emissions from the No. 3 lime kiln and No. 2 smelt tank are not creditable and should not be included in the applicability analysis. This exclusion is based on the facts that these sources have already undergone a PSD review, that they will not be modified or have a change in method of operation, and that the future emissions will not exceed the existing permit limits. The remaining sources that are to be included in the netting calculations are the gas/oil fired boiler, the modified No. 2 chemical recovery boiler, and the existing brown stock washers.

Hammermill Papers
Selma, Alabama
New Source Review for Mill Expansion

Project No. 4032
September 1990

Various sources of information were utilized to generate estimates of emissions. Actual stack testing data for particulate matter was available for the No. 2 recovery boiler. Other information sources that were relied upon were AP-42, the National Council for Air and Stream Improvement (NCASI) technical bulletins, and equipment manufacturer estimates. Whenever more than one means of determining an emissions rate was available, the one thought to be the most representative was utilized. Estimates from manufacturers were used to predict emissions for modified and new equipment.

Table 3.1, on the following page, provides a summary of the changes of emissions rates that will occur as a result of the project. Each emissions rate shown in the table includes a reference to Exhibit A, where an explanation of the basis of the calculation is provided.

Table 3.1 shows that particulates and nitrogen oxides are the only regulated pollutants that exceed their respective significance levels and, hence, the only ones subject to PSD review. For all other pollutants, the modification of

EMISSIONS POINTS

| LOCATION | STATUS | | REF | LEAD | REF | $H_2SO_4$ / ASBESTOS | REF | VINYL CHLORIDE | REF |
|---|---|---|---|---|---|---|---|---|---|
| Existing No. 2 Recovery Boiler | Shut Down | .9 | 19 | $-9x10^{-4}$ | 13 | -- | | -- | |
| Modified No. 2 Recovery Boiler | New | .2 | 20 | $+13.9x10^{-4}$ | 13 | -- | | -- | |
| Gas/Oil Fired Boiler | New | .1 | 21 | $+1.34x10^{-4}$ | 22 | +0.936 | 23 | -- | |
| Incremental Change From Existing Brown Stock Washing | Increase Produc - tion | -- | | -- | | -- | | -- | |
| Net Change | Lbs/Hr | .6 | | $1.83x10^{-4}$ | | 0.936/0 | | None | |
| | Tons/Year | .9 | | $8.0x10^{-3}$ | | 4.1/0 | | None | |
| Significance, TPY | | .0 | | +0.6 | | +7/0.007 | | +1 | |

Note: The absence of an emissi
from the process or to be

*Hourly emissions rates th
downtime. Rates shown fo

the existing equipment provided more than enough reduction credit to offset increased emissions from the new equipment.

Two regulated pollutants, benzene and arsenic, are not listed in Table 3.1. These are subject to NESHAP regulations and do not yet have a defined PSD significance level. They can be present in trace quantities in the products of combustion of fossil fuel, particularly oil and coal. Emissions factors from "Estimating Air Toxics Emission from Coal and Oil Combustion Sources", EPA 450/2/89-001, indicate that combustion of distillate oil may result in an uncontrolled emission rate of arsenic of 4.1 lb per $10^{12}$ Btu. At a peak firing rate of 512.6 mm Btu/hr, the calculated resultant uncontrolled mass emission rate of arsenic from the new power boiler when firing oil could be 0.0022 lb/hr.

A reference on heavy metal emission from chemical recovery units (EPA 600/7-79-015A, Appendix F) indicates that a measurable quantity of arsenic was found in the treated flue gas from one of three units tested, the concentration being 4 micrograms per cubic meter. At the design exhaust

gas flow rate from Hammermill's modified No. 2 recovery boiler of 3684 $DS_{69}m^3$/min, the calculated arsenic emission would be 0.0026 lb/hr.

The total combined emission of arsenic from the new power boiler and the modified No. 2 recovery boiler could be, then, 0.005 lb/hr, primarily in the form of fine particulates.

Industry experience has shown that both baghouses and electrostatic precipitators are better devices for control of fine particulate than are wet scrubbers. Since the application of a baghouse to a recovery boiler is not a technologically feasible option, the choice of an ESP provides the best available technology for control of arsenic.

A simple screening model was used to predict the potential impact of the computed possible arsenic emissions. The indicated calculated maximum ground level concentration would be 0.0095 micrograms per cubic meter, which is 1/21,000th of the TLV.

Hammermill Papers
Selma, Alabama
New Source Review for Mill Expansion

Project No. 4032
September 1990

Information on the potential release of benzene from a kraft mill chemical recovery boiler was sought from three sources:

EPA 450/4-86-010, July 1986, "Toxics Air Emissions Factors for Industrial Sources"

EPA 450/4-86-010a, April 1987, "Preliminary Compilation of Air Pollutant Emission Factors for Selected Air Toxic Compounds"

EPA 450/4-87-023a, December 1987, "Toxic Air Pollutant/Source Crosswalk"

Benzene is addressed in all three documents, but without any indication that it is emitted from a recovery boiler or brown stock washer. The most recent update of "Toxic Air Pollutant Emission Factors - A Compilation for Selected Air Toxic Compounds and Sources", 450/2-88-006a, provides an emission estimate for benzene from natural gas combustion of 4 percent by weight of the total of hydrocarbons emitted during combustion. As appears in Table 3.1 herein, the estimated emission of VOC of

5.1 lb/hr from the gas fired boiler translates to an estimated concurrent benzene emission of 0.204 lb/hr.

A simple screening model was used to predict the impact of the computed potential emission of benzene from the gas/oil fired boiler. The calculated maximum ground level concentration would be 0.39 micrograms per cubic meter, which is about 1/80,000th of the TLV.

Hammermill Papers
Selma, Alabama
New Source Review for Mill Expansion

Project No. 4032
September 1990

## 4. BACT ANALYSES

As determined in Section 3, nitrogen oxides and particulates are the pollutants for which BACT analyses are required. The modified No. 2 chemical recovery boiler and the new gas/oil power boiler are the affected facilities.

To determine BACT for the new power boiler, EPA's "top-down" approach was followed. This method compares demonstrated emission control for similar units in similar applications, with the most restrictive taken as the standard for comparison. If the owner proposes that the emission factor for the new equipment be at least as low as that standard, then the analysis is complete. If a higher unit emissions factor is proposed, then an overriding economic and/or technological justification must be shown.

Similar guidance as to how to conduct a BACT analysis for an existing unit source that will be physically modified has not been provided by EPA. Therefore, Region IV left the determination of a BACT analysis approach for the Hammermill modified recovery boiler to the discretion of

ADEM. Both EPA and ADEM did state, however, that BACT for the modified unit would have to demonstrate, as a minimum, some degree of improved efficiency of pollutant control over that which would be expected if no modification were made to the existing control equipment. ADEM, after considering alternative methods of analysis, decided that BACT should be determined based upon cost per incremental ton of pollutant captured for increasingly stringent levels of control that are above and beyond that provided by the initial modification to improve efficiency.

## 4.1 PARTICULATE MATTER - RECOVERY BOILER

The No. 2 recovery boiler utilizes an existing ESP that is rated to handle 380,000 ACFM. The modified boiler is expected to have a maximum flue gas emission rate of 360,000 ACFM, so the existing precipitator has ample volume to handle the gas flow without adding another chamber. It is estimated that the existing unit with no change would deliver flue gas from the modified boiler at a PM concentration no greater than 0.038 grains per dry standard cubic foot at 8 percent $O_2$.

Hammermill Papers
Selma, Alabama
New Source Review for Mill Expansion

Project No. 4032
September 1990

A logical means to significantly improve collection efficiency is to add three additional transformer-rectifier sets to the existing three sets that serve the back half of the two chambers, which will effectively double the power output to that half. In addition, all barbed and round discharge electrodes throughout the precipitator will be replaced. These two items comprise Option 1 changes. It is expected that the result will be to deliver flue gas at a PM concentration no greater than 0.034 gr/dscf at 8 percent oxygen, compared to 0.038 gr/dscf without the changes. The Option 1 configuration is proposed as BACT for the modified boiler.

To confirm that Option 1 does, in fact, satisfy ADEM's definition of BACT, the cost effectiveness of additional control over and above that provided by Option 1 was considered. The next logical step to provide yet another increment of control (Option 2) would be to install three new transformer-rectifier sets to serve the front half of the two chambers, which would effectively double the power input thereto. In addition, the electronic control of the six existing T/R sets would be upgraded to state-of-the-art technology. The changes would result in flue gas cleansed

to a maximum particulate concentration of 0.030 grains per dry standard cubic foot at 8 percent $O_2$.

Table 4.1 on the following page outlines the details of the determination to evaluate the cost effectiveness of Option 2. As can be seen, the annualized cost per ton of additional pollutant recovered by utilization of this option would be about $3600.

not acceptable

Dispersion modeling predicts that the reduction of the maximum 24 hour average PM concentration in ambient air that would result from implementing Option 2 would be less than 0.25 $\mu g/m^3$. It is judged, therefore, that the high cost to achieve an immeasurably small improvement to ambient air quality is not justified and that BACT for control of PM from the modified No. 2 chemical recovery boiler is well served by the Option 1 modification to the existing electrostatic precipitator as proposed herein.

## 4.2 PARTICULATE MATTER - NEW GAS/OIL FIRED BOILER

The new gas/oil fired boiler proposed for this project will generate minimal emissions of particulate due to the ash free fuels that will be burned, natural gas and No. 2

Hammermill Papers
Selma, Alabama
New Source Review for Mill Expansion

Project No. 4032
September 1990

TABLE 4.1

BACT ANALYSIS FOR CONTROL OF PARTICULATE MATTER FROM NO. 2 RECOVERY BOILER

| | MODIFICATION | | |
|---|---|---|---|
| | NONE | OPTION 1 | OPTION 2 |
| Flue Gas PM Conc., Grains/$ds_{68}cf$ at 8 percent oxygen | 0.038 | 0.034 | 0.030 |
| PM Emission Rate, Lb/Hr | 70.0 | 62.7 | 55.3 |
| T/Yr | 306.8 | 274.5 | 242.2 |
| Additional Saltcake Recovered, TPY | -- | -- | 32.3 |
| Capital Expenditure For Option 2 | -- | -- | 430,000 |
| Annualized Additional Costs For Option 2 | | | |
| Capital Recovery[1] | | | $70,100 |
| Maintenance Labor & Material[2] | | | 17,200 |
| Tax, Insurance, Administration[2] | | | 17,200 |
| Electric Power At 0.045 Per kWh | | | 14,100 |
| Value Of Recovered Saltcake[3] | | | (3,200) |
| Net Annualized Cost For Option 2: | | | $115,400 |
| Net Annualized Cost Per Ton of Pollutant Recovered | | | $ 3,573 |

Notes:

(1) 10 Years Useful Life, 10 percent Interest = 0.163 x Capital Cost

(2) 4 percent Of Capital

(3) Current Market Value - $98/Ton

distillate oil. State-of-the-art combustion controls and furnace design will ensure complete oxidation of the fuels at all times. The installation of continuous flue gas monitors for oxygen and carbon monoxide will ensure that the air to fuel ratio does not become too rich, thus essentially eliminating any possibility of soot formation.

It is generally accepted by regulatory agencies that good furnace design and adequate control of combustion conditions constitutes BACT for boilers that fire natural gas and/or distillate oil. A canvass of boiler manufacturer indicates that the best guarantees that will be available for uncontrolled emissions of particulate matter are 0.005 lbs per $10^6$ Btu for gas firing and 0.05 lbs per $10^6$ Btu for oil firing. As might be expected, these numbers are not wholly in keeping with certain of the entries that appear in the EPA BACT/LAER clearinghouse document.

Particulate - Gas Firing

Table 4.2 on the following page is a presentation of all clearinghouse entries for permitted emissions of particulate matter from boilers fired with natural gas.

TABLE 4.2

COMPLETE BACT/LAER CLEARINGHOUSE LISTING OF
PARTICULATE EMISSIONS FROM GAS FIRED BOILERS

| BACT Listing ID Number | Source | Boiler Size | Emission Rate | Emission Factor |
|---|---|---|---|---|
| OH-0104 | Hale Chrome Service | 1.05 mm Btu/hr | | 0.02 lb/mm Btu |
| OK-0006 | Colorado Interstate Gas | 2.6 mm Btu/hr | 0.011 lb/hr | (0.005 lb/mm Btu) |
| OH-0096A | Baron Drawn Steel | 6 mm Btu/hr | | 0.02 lb/mm Btu |
| OH-0107 | Kaiser Aluminum | 16.8 mm Btu/hr | | 0.02 lb/mm Btu |
| TX-0081 | PPG Industries | 20.9 mm Btu/hr | 0.3 lb/hr | (0.014 lb/mm Btu) |
| TX-0024 | Mapee Alcohol Fuel | 35 mm Btu/hr | | 0.01 lb/mm Btu |
| TX-0079 | Shintech, Inc. | 55 mm Btu/hr | 0.3 lb/hr | (0.005 lb/mm Btu |
| CA-0161A | Shell California Product | 62.5 mm Btu/hr | 0.27 lb/hr | (0.0043 lb/mm Btu) |
| OH-0116B | Sun Refining & Marketing | 68 mm Btu/hr | 5 $lb/ft^3$ | |
| AR-0002A | Arkansas Eastman | 78 mm Btu/hr | 0.4 lb/hr | 0.005 lb/mm Btu |
| OH-0148 | Champion International | 197 mm Btu/hr | | 0.02 lb/mm Btu |
| CA-0161 | Shell California Product | | 4.8 lb/D | |
| WI-0037 | Wisconsin Tissue | 146.4 mm Btu/hr | | 0.09 lb/mm Btu |
| WI-0043 | Wisconsin Tissue | 75 mm Btu/hr | 0.38 lb/hr | 0.005 lb/mm Btu |
| MS-0016 | E.I. Dupont | 231 mm Btu/hr | 0.2 lb/hr | (0.0009 lb/mm Btu) |
| MS-0014 | Newsprint South | 227.4 mm Btu/hr | | 0.005 lb/mm Btu |

Numbers in parentheses did not appear in the document and are those calculated from the boiler sizes and emission rates listed therein.

Two of the entries are lower than the 0.005 proposed as BACT for the Hammermill boiler, one being 0.0043 for a 62.5 x $10^6$ Btu boiler in California and the other 0.0009 for a 231 x $10^6$ Btu unit in Mississippi.

The California regulatory agency states that the emissions rate of 0.27 lbs PM per hour that appears in the listing for permit CA-0161A is in error and that the correct rate is 0.303 lbs per hour. This change would bring the computed emissions factor to 0.0048 lbs per $10^6$ Btu. The owner advises that the emission factor originally used for the computations was the AP-42 listing of 5 lbs PM per $10^6$ cubic feet of gas, which results in a computed factor of 0.0048 if a heat value of 1050 Btu per cubic foot is assumed. For the 1000 Btu gas available to Hammermill, the AP-42 factor results in a calculated emissions rate of 0.005 lbs per $10^6$ Btu input. Since the basis of the computation of the emissions factor for the proposed Hammermill boiler is the same as that used to derive the factor for the California boiler, the Hammermill rate is considered to be just as true a representation of BACT as is the rate for the California boiler. Furthermore, the latter has never been tested, so its rate has not actually been demonstrated.

The second entry of 0.0009 is for a boiler permitted in Mississippi that has not yet been placed in service. No external control equipment will be provided and the emissions limit is not supported by a vendor guarantee. The number was generated by the owner, who has announced his intention to negotiate with the Mississippi regulatory agency for a higher limit. In the absence of a demonstration by either operation or technology transfer, it is judged that this entry is not a valid representation of BACT.

The next lowest entry in the clearinghouse is 0.005 lbs of PM per $10^6$ Btu input, of which there are several. Hammermill proposes to match this factor by providing state-of-the-art boiler design to achieve combustion uniformity and control. The proposed emissions rate and design technology are considered BACT for control of particulate matter when firing natural gas in the new power boiler.

Particulate - Oil Firing

Table 4.3 on the following page is a tabulation of all entries that appear in the EPA BACT/LAER clearinghouse document for power boilers fired with distillate oil. As

TABLE 4.3

COMPLETE BACT/LAER CLEARINGHOUSE LISTINGS OF
PARTICULATE EMISSIONS FROM OIL FIRED BOILERS

| BACT Listing ID Number | Source | Boiler Size | Emission Rate | Emission Factor |
|---|---|---|---|---|
| MA-0003 | Natick Paperboard | 60.1 mm Btu/hr | | 0.1 lb/mm Btu |
| VA-0007 | Anheuser Busch, Inc. | 98 mm Btu/hr | | |
| DE-0004 | Dupont Institute | 37.5 mm Btu/hr | 0.58 lb/hr | |
| AL-0004 | Degussa Chemical Corp. | 205.7 mm Btu/hr | | 0.1 lb/mm Btu |
| GA-0003 | Firestone Tire Co. | 96.4 mm Btu/hr | | 0.16 lb/mm Btu |
| FL-0010 | Sugar Cane Growers Coop. | 240,000 lb/hr | | 0.1 lb/mm Btu |
| NC-0021 | Cranston Print Works | 243 mm Btu/hr | | 0.1 lb/mm Btu |
| NC-0010 | Meredith/Burda, Inc. | 3366 lb/hr paper | 4 lb/hr | |
| FL-0022 | Port St. Joe | 756 mm Btu/hr | 75.6 lb/hr | (0.1 lb/mm Btu) |
| IN-0001 | New Energy Corp. | 176 mm Btu/hr | | 0.02 lb/mm Btu |
| WI-0020 | A O Smith Corp. | | | 0.15 lb/mm Btu |
| OH-0022 | Timken Co. | 40 mm Btu/hr | | 0.02 lb/mm Btu |
| TX-0013 | Houston Lighting & Power | 185 mm Btu/hr | | 0.1 lb/mm Btu |
| LA-0035 | Allied Chemical Corp. | 131 mm Btu/hr | | 0.0015 lb/mm Btu |
| LA-0030 | Shell Chemical Co. | 198.5 mm Btu/hr | | 0.1 lb/mm Btu |
| TX-0080 | Proctor & Gamble | 100 mm Btu/hr | 6.9 lb/hr | (0.069 lb/mm Btu) |
| IA-0003 | Am. Modern Food Energy Sys. | 94.5 mm Btu/hr | | 0.03 lb/mm Btu |
| FL-0012 | Osceola Farms Co. | 1.1 bbl oil/hr | | 0.1 lb/mm Btu |
| CA-0037 | Chevron USA, Inc. | 390 gal/hr | 3.6 lb/hr | (0.066 lb/mm Btu) |
| GA-0013 | W F Hall Printing | 60 mm Btu/hr | | 0.1 lb/mm Btu |
| UT-0024 | Paraho Development Corp. | 14.5 mm Btu/hr | 2 lb/1000 gal | (0.013 lb/106 Btu) |
| ME-0006 | New England Ethanol, Inc. | 175 mm Btu/hr | | |
| NC-0034 | Allied Corporation | 64.2 mm Btu/hr | | 0.12 lb/mm Btu |
| OH-0071 | Delco Moraine Div. | 144 mm Btu/hr | | 0.08 lb/mm Btu |
| VA-0030 | University of Virginia | 103,760 gal/hr | | 0.15 lb/mm Btu |
| VA-0044 | Tultex Corp. | 93.3 mm Btu/hr | 1.33 lb/hr | (0.014 lb/mm Btu) |

(Continued next page)

TABLE 4.3
(Cont'd)

COMPLETE BACT/LAER CLEARINGHOUSE LISTING OF
PARTICULATE EMISSIONS FROM OIL FIRED BOILERS

| BACT Listing ID Number | Source | Boiler Size | Emission Rate | Emission Factor |
|---|---|---|---|---|
| VA-0051 | VA Department of Hiways | 4.2 mm Btu/hr | 0.34 lb/hr | (0.08 lb/mm Btu) |
| OH-0094 | Georgia Pacific Corp. | 118 mm Btu/hr | | 0.09 lb/mm Btu |
| OH-0112 | General Mills | 71.5 mm Btu/hr | | 0.1 lb/mm Btu |
| OH-0117 | Owens-Illinois Inc. | 10.3 mm Btu/hr | | 0.02 lb/mm Btu |
| WI-0037 | Wisconsin Tissue Mills, Inc. | 72.4 mm Btu/hr | | 0.09 lb/mm Btu |
| VA-0141 | Hopewell Cogen. Ltd. Part. | 197 mm Btu/hr | | 0.1 lb/mm Btu |
| VA-0165 | Hadson Power II | 81.58 mm Btu/hr | | 0.04 lb/mm Btu |
| CT-0009 | U.S. Navy Base, North Div. | 98 mm Btu/hr | | 0.05 lb/mm Btu |
| CT-0011 | Mansfield Training School | 4.8/2.9 mm Btu/hr | | 0.048 lb/mm Btu |
| CT-0081 | New England Furniture | 15.2 mm Btu/hr | | 0.047 lb/mm Btu |

Numbers in parenthesis are values calculated from information provided in the document.

will be noted, the permitted emissions factors for about one-fourth of the total entries are lower than the 0.05 lbs per $10^6$ Btu proposed as BACT for the Hammermill boiler.

The lowest of the entries is 0.0015 lbs per $10^6$ Btu for a boiler in Louisiana, permit LA-0035. Flue gas desulfurization is practiced on this unit, so the flue gases are cleansed by a baghouse. The requirement for external particulate control was dictated by the requirement for FGD and not because of a need to remove the particulate generated by combustion of the oil.

Nevertheless, a financial impact analysis was made of adding a baghouse to the Hammermill boiler to control particulate, when firing oil, to a level that would match the Louisiana unit, or 0.0015 lbs/$10^6$ Btu. Table 4.4, on the following page, presents the results of the analysis. As is shown, the annualized cost per ton of particulate matter captured would be greater than $23,000 per ton.

Hammermill Papers
Selma, Alabama
New Source Review for Mill Expansion

Project No. 4032
September 1990

TABLE 4.4

FINANCIAL IMPACT OF ADDING BAGHOUSE FOR CONTROL OF PARTICULATE WHEN FIRING OIL ON THE NEW GAS/OIL BOILER

(Oil Firing 100 Days Per Year Max.)

| | Uncontrolled | With Baghouse |
|---|---|---|
| PM Emission Factors, lbs/$10^6$ Btu | 0.05 | 0.0015 |
| Heat Input, $10^6$ Btu/hr | 512.6 | 512.6 |
| Total Emission, Tons Per Year | 30.76 | 0.92 |
| PM Capture, TPY | 0 | 29.84 |
| Project Total Capital Cost | | $3,549,000 |

| | Annualized Costs |
|---|---|
| Capital Recovery[1] | 465,000 |
| Maintenance Labor and Material[2] | 112,600 |
| Taxes, Insurance, Administration[2] | 112,600 |
| Electric Power[3] | 18,900 |
| Total Annualized Costs | $709,100 |
| Annualized Cost Per Ton Captured = | $ 23,763 |

1- 15 year useful life, 10 percent interest = 0.131 factor
2- 4 percent of project direct costs ($2,814,000)
3- 175 kW at $0.045 per kWh

As shown by dispersion modeling, the favorable ambient impact of capturing the additional 30 tons per year would be so low as to be immeasurable. In view of the prohibitively high cost to provide add-on control equipment, the proposed emissions rate for particulate matter of 0.05 lbs per $10^6$ Btu input from the new power boiler when firing oil is seen as meeting all requirements of BACT.

## 4.3 NITROGEN OXIDES - RECOVERY BOILER

A chemical recovery boiler in a kraft pulp mill serves three important functions:

-- The disposal, by incineration, of waste organics generated during the digestion of wood.

-- The recovery of valuable heat energy that is released during the incineration of waste solids by converting it to high pressure, high temperature steam.

-- The recovery and chemical reduction of valuable inorganic chemicals for reuse in the wood digestion process.

To achieve these varied goals, a recovery boiler is, of necessity, a highly specialized unit operation. As a combustor, it does not have the same flexibilities that are found in a conventional wood or fossil fuel fired boiler.

Hammermill proposes to modify the existing No. 2 chemical recovery boiler so it will accommodate a greater load of black liquor solids that will fired at a higher dryness than at present. These changes will enable the boiler to efficiently serve its intended functions in the expanded mill.

Prior to the 1980's, black liquor was fired to recovery furnaces at dry solids percentages ranging from the low to the mid-sixties. The trend of recent years has been to move to drier solids since the thermal efficiency of the chemical recovery unit is dramatically improved. The higher the thermal efficiency, the lower the quantity of steam that must be produced from the combustion of fossil fuels elsewhere in the mill. The reduced use of fossil fuel results, of course, in less pollution released to ambient air. Thus, the use of a drier black liquor fuel

to the chemical recovery unit is a BACT measure to the extent that pollutant emissions from the use of fossil fuel are reduced. The chemical recovery boiler at Hammermill will be designed to fire black liquor which enters the guns at drynesses up to 75 percent solids.

The firing of black liquor at a lower moisture content results in a higher temperature of the smelt bed. This has the desirable effect of lowering emissions of reduced sulfides and sulfur oxides, accompanied by an undesirable effect of increased nitrogen oxides. On balance, however, the reduction of $SO_2$ emissions over the past decade that has resulted from higher smelt temperatures has far exceeded the increase of $NO_x$ emissions. Ten years ago, boilers were typically being permitted at 300 ppm $SO_2$ and 50 ppm $NO_x$. Today, the numbers are more like 100 ppm $SO_2$ and 100-150 ppm $NO_x$.

The converted recovery boiler at the Riverdale mill will be designed with the latest state-of-the-art technology for minimizing the formation of $NO_x$. Ample furnace volume and heat exchange area are available. Multiple liquor firing guns will be utilized to uniformly

distribute the fuel over the smelt bed, thus reducing possibilities for hot and cold spots. Three levels of combustion air, primary, secondary, and tertiary, each individually controlled, will provide for staged combustion to minimize the formation of $NO_x$ and for better mixing of combustion gasses to eliminate pockets of high temperature. Continuous monitoring of the flue gas will help to maintain oxygen at design concentrations at all times, thus ensuring that excessive oxygen is not present to promote the generation of $NO_x$. All known technically feasible features to minimize $NO_x$ generation will be incorporated into the design of the boiler rebuild.

The available technologies for add-on reduction of $NO_x$ from fossil fuel fired boilers, such as flue gas recycle, thermal de-$NO_x$, and selective catalytic reduction have not been demonstrated as applicable to chemical recovery boilers. In fact, it is probable that none of these would be successful due to the manner in which the unit must be fired and the high sulfate content of the solids that are present in the flue gas.

A canvass of chemical recovery boiler manufacturers indicates that the lowest $NO_x$ guarantee which can be expected for the Riverdale unit is a concentration in the flue gas of 115 ppm dv corrected to 8 percent $O_2$. To the best of Hammermill's knowledge, there is not, at this time, a chemical recovery boiler in the United States that is continuously operating on black liquor at 72 percent solids or higher. The 115 ppm $NO_x$ concentration indicated by some manufacturers as being attainable is based on limited foreign experience and on extrapolations from actual U.S. experience with liquors in the 65 to 70 percent range.

There are no EPA clearinghouse entries that are identifiable as chemical recovery boilers that will be rebuilt. Nor is any other source of information known from which the lowest attainable emissions rates can be identified for this class of equipment. To assess BACT, there is no choice but to rely on the guarantees of manufacturers and to be certain that all technically feasible features to minimize $NO_x$ generation are included in the design. These will be incorporated into the Riverdale unit and include the following:

-- Ample furnace volume

-- Ample heat exchange area

-- Multiple liquor guns for uniform distribution of black liquor over the smelt bed

-- Three levels of independently controlled combustion air for staged combustion and uniform mixing in each combustion zone

-- Continuous monitoring and control of residual oxygen in the flue gas

It is believed that these features constitute BACT for a rebuilt chemical recovery boiler.

4.4 NITROGEN OXIDES - NEW GAS/OIL FIRED BOILER

The new boiler will be designed to fire either natural gas or distillate oil at a design heat input rate of 512.5 x $10^6$ Btu/hr. It is intended that distillate oil having a maximum sulfur content of 0.5 percent will be used as a back-up fuel when gas is unavailable. Computations herein are based on oil being used intermittently for a combined maximum of 2400 hours per year.

Hammermill Papers
Selma, Alabama
New Source Review for Mill Expansion

Project No. 4032
September 1990

Nitrogen Oxides - Gas Firing

A canvass of manufacturers of gas fired boilers that are equipped with low $NO_x$ burners and 10-15 percent flue gas recycle indicates that the best guarantee available for minimum $NO_x$ emissions rates will be no lower than 0.05 lbs per $10^6$ Btu input. This rate is proposed as BACT for the Hammermill boiler when firing natural gas.

Table 4.5 on the following page presents all clearinghouse entries for permitted emissions of nitrogen oxides from gas fired boilers. Eight are lower than the 0.05 lbs rate proposed for the new boiler. These eight were investigated with the following results:

| Permit | Rate lb/$10^6$ Btu | Comment |
|---|---|---|
| TX 0024 | 0.0006 | Mapee Alcohol - never built and the technology never demonstrated, thus eliminated from consideration. |
| OH 0155 | 0.01 | BFT of Ohio - error in computation, actual permit rate is 0.1 which is higher than that proposed for Hammermill. |
| CA 0292 | 0.015 | Equipped with low $NO_x$ burners, flue gas recycle, and selective catalytic reduction - cost analysis required for similar technology with Hammermill boiler. |

TABLE 4.5

COMPLETE BACT/LAER CLEARINGHOUSE LISTINGS OF
$NO_x$ EMISSIONS FROM GAS FIRED BOILERS

| BACT Listing ID Number | Source | Boiler Size | Emission Rate | Emission Factor |
|---|---|---|---|---|
| CA-0149 | Rockwell International | 50 hp (1.67 mm Btu/hr) | 0.04 lb/hr | (0.024 lb/mm Btu)[1] |
| OK-0006 | Colorado Interstate Gas | 2.6 mm Btu/hr | 0.32 lb/hr | 0.12 lb/mm Btu |
| CO-0013 | Rio Blanco | 5 mm Btu/hr | 1 lb/hr | 0.20 lb/mm Btu |
| MS-0003 | Southern Natural Gas | 14000 cf/hr | 37.4 lb/hr | 2.7 lb/mm Btu |
| OH-0107 | Kaiser Aluminum | 16 mm Btu/hr | | 0.1 lb/mm Btu |
| TX-0081 | PPG Industries | 20.92 mm Btu/hr | 4.8 lb/hr | 0.23 lb/mm Btu |
| CA-0193 | Naval Station | 24 mm Btu/hr | | 0.05 lb/mm Btu |
| WY-0014 | Exxon Company | 26 mm Btu/hr | | 0.17 lb/hr Btu |
| WY-0016 | Wycon Chemicals | 26 mm Btu/hr | | 0.23 lb/mm Btu |
| CA-0234 | Ventura Coastal Corp. | 31.4 mm Btu/hr | 25.7 lb/D 30 ppm | (0.034 lb/mm Btu)[2] |
| CA-0231 | Douglas Aircraft | 33.5 mm Btu/hr | 68 lb/D 35 ppm | (0.085 lb/mm Btu) |
| TX-0024 | Mapee Alcohol | 35 mm Btu/hr | | 0.0006 lb/mm Btu |
| CA-0166 | Folsom Prison | 48 mm Btu/hr | 40 ppm at 3% $O_2$ | |
| WY-0011 | CIG | 48.4 mm Btu/hr | | 0.2 lb/mm Btu |
| TX-0079A | Shintech Inc. | 55 mm Btu/hr | | .12 lb/mm |
| CA-0195 | McClellan AFB | 62 mm Btu/hr | | 40 ppm |
| WY-0008 | Amoco Production | 65.5 mm Btu/hr | | 0.20 lb/mm Btu |
| OH-0116B | Sun Refining & Marketing | 68 mm Btu/hr | | 0.12 lb/mm Btu |
| CA-0187A | CA Dept. of Corrections | 71.3 mm Btu/hr | 81.6 lb/D | (0.048 lb/mm Btu) |
| AR-829A | Arkansas Eastman | 78 mm Btu/hr | 13.3 lb/hr | (0.17 lb/mm Btu) |
| LA-0031 | Hill Petroleum Co. | 78.2 mm Btu/hr | | 0.1 lb/mm Btu |
| CA-0122 | Gilroy Energy Co. | 90 mm Btu/hr | 40 ppm at 3% $O_2$ | |
| IL-0020 | Archer Daniels Midland | 90 mm Btu/hr | | 0.17 lb/mm Btu |
| WY-0009 | Chevron | 93.8 mm Btu/hr | | 0.20 lb/mm Btu |
| TX-0037 | Tex-USS | 99 mm Btu/hr | | 0.11 lb/mm Btu |
| WY-0015 | Chevron Co. | 105.6 mm Btu/hr | | 0.20 lb/mm Btu |
| MS-0009 | Newsprint South, Inc. | 137.3 mm Btu/hr | | 0.20 lb/mm Btu |

(Continued next page)

TABLE 4.5
(Cont'd)

| BACT Listing ID Number | Source | Boiler Size | Emission Rate | Emission Factor |
|---|---|---|---|---|
| CA-0249A | BAF Energy | 150 mm Btu/hr | 7.25 lb/hr | (0.048 lb/mm Btu)[3] |
| CA-0097 | Stanislaus Food | 125,000 lb/hr steam | 65 ppm at 3% $O_2$ | |
| PA-0052 | Amtrak | 90 mm Btu/hr | 5.87 lb/hr | (0.065 lb/mm Btu) |
| IN-0027 | I/N Tek | 73.2 mm Btu/hr | | 0.05 lb/mm Btu |
| NC-0051 | Panda Rosemary Corp. | 81.25 mm Btu/hr | 8.1 lb/hr | (0.1 lb/mm Btu) |
| IL-0043 | Natural Gas Pipeline Co. | 8.4 mm Btu/hr | | 0.1 lb/mm Btu |
| CA-0292 | Westinghouse Electric Corp. | 380 mm Btu/hr | 140 lb/day | 0.015 lb/mm Btu |
| IA-0012 | Grain Processing Corp. | 169 mm Btu/hr | | 0.25 lb/mm Btu |
| OH-0148 | Champion International | 197 mm Btu/hr | | 0.20 lb/mm Btu |
| CO-0013 | Rio Blanco Oil Shale | 198 mm Btu/hr | 39.6 lb/hr | (0.20 lb/mm Btu) |
| WV-0003 | PPG Industries, Inc. | 243 mm Btu/hr | | 0.70 lb/mm Btu |
| LA-0014 | BASF Wyandotte Co. | 303 mm Btu/hr | 36.4 lb/hr | 0.12 lb/mm Btu |
| LA-0041B | Georgia Pacific Corp. | 987 mm Btu/hr | | 0.10 lb/mm Btu |
| MI-0013 | Consumers Power Company | 175,000 lb/hr steam | | 0.2 lb/mm Btu |
| VA-0141 | Hopewell Cogeneration | 197 mm Btu/hr | | 0.1 lb/mm Btu |
| WI-0037 | Wisconsin Tissue Mills | 146.4 mm Btu/hr | | 0.38 lb/mm Btu |
| SC-0015 | Williamette Industries | 305 mm Btu/hr | | 0.2 lb/mm Btu |
| MI-0109 | Dow Chemicals Co. | 40.4 mm Btu/hr | | 0.07 lb/mm Btu |
| LA-0060 | Chevron Chemicals | 543 mm Btu/hr | | 0.1 lb/mm Btu |
| OH-0155 | BFI of Ohio and Michigan | 3.3 mm Btu/hr | | 0.01 lb/mm Btu[4] |
| AL-0036 | General Electric | 99.5 mm Btu/hr | 9.9 lb/hr | 0.15 lb/mm Btu |
| CA-0290 | Smud/Campbell Soup Co. | 100 mm Btu/hr | 1734 lb/D | (0.72 lb/mm Btu) |
| CA-0281 | Ventura Coastal Corp. | 27.2 mm Btu/hr | 0.89 lb/hr | (0.033 lb/mm Btu)[2] |
| WI-0043 | Wisconsin Tissue Mills | 75 mm Btu/hr | | 0.30 lb/mm Btu |
| MN-0011 | Boise Cascade | 205 mm Btu/hr | | 0.05 lb/mm Btu |
| AL-0041 | Reynolds Metals Co. | 29 mm Btu/hr | 18 T/yr | (0.14 lb/mm Btu) |
| AL-0045 | Shell Offshore Inc. | 48.2 mm Btu/hr | 42 ppm | 0.1 lb/mm Btu |

(Continued on next page)

TABLE 4.5
(Cont'd)

| BACT Listing ID Number | Source | Boiler Size | Emission Rate | Emission Factor |
|---|---|---|---|---|
| MS-0016 | EI Dupont | 231 mm Btu/hr | 27.7 lb/hr | 0.12 lb/mm Btu |
| MS-0014 | Newsprint South | 227.4 mm Btu/hr | | 0.2 lb/mm Btu |

Parentheses indicate calculated emission factor based on information provided in the document.

1 Utilizes a ceramic duct burner design capable of burning natural gas only (does not work with oil) and which can be utilized for small boilers only.

2 Utilizes flue gas recirculation and oxygen trim. The vendor guarantee of 30 ppm is lower than other vendors using the same technology and is not available in boilers sized larger than $70 \times 10^6$ Btu/hr.

3 This listing is actually a gas turbine and should not appear as a boiler.

4 Incorrectly computed from an AP-42 emission factor, should be listed as 0.1 lb/mm Btu.

| | | |
|---|---|---|
| CA 0149 | 0.024 | The technology is available for very small boilers only ($1.7 \times 10^6$ Btu/hr) and does not work on oil - thus eliminated from consideration. |
| CA 0234 | 0.034 | This is a special technology not available in a boiler larger than $70 \times 10^6$ Btu/hr, thus eliminated from consideration. |
| CA 0281 | 0.033 | Same as CA 0234. |
| CA 0187A | 0.048 | Probably developed from the same basis of technology as that used to compute the 0.05 proposed herein, with the differences attributable to rounding. Therefore, the 0.048 and 0.05 are considered to be equivalent numbers. |
| CA 02492 | 0.048 | The equipment is actually a gas turbine and incorrectly appears in the clearinghouse listing for boilers. |

It is concluded from this analysis that, with but one exception, there is no demonstrated technology available to minimize $NO_x$ emissions from a large field erected high pressure gas fired boiler better than that proposed for the new Hammermill unit. Selective catalytic reduction has been demonstrated as an add-on technology that may hold promise for additional reduction of $NO_x$, so a financial analysis was prepared to determine its economic feasibility for the Hammermill boiler.

The less expensive catalysts that are satisfactory for gas firing fail rapidly when exposed to $SO_2$ and $SO_3$. The Hammermill system would thus require provision to bypass the catalyst chamber when the boiler is being fired with oil. The cost of the bypass system is included as a part of the cost of the SCR system.

Table 4.6 on the following page presents the results of the economic analysis. As is seen, SCR would reduce the $NO_x$ emission by 57 tons per year at an annualized cost of $11,000 per ton. This cost is entirely too high to be justified. The reduction in the average concentration in ambient air would be about 0.2 $\mu g/m^3$, a quantity too small to be measurable.

It is concluded, therefore, that BACT for the new Hammermill power boiler when firing gas is an emissions rate of 0.05 lbs $NO_x$ per $10^6$ Btu heat input. This will be achieved by state-of-the-art boiler design including adequate furnace volume, low $NO_x$ burners, flue gas recycle, and continuous monitoring of the flue gas for oxygen and nitrogen oxides.

Hammermill Papers
Selma, Alabama
New Source Review for Mill Expansion

Project No. 4032
September 1990

TABLE 4.6

FINANCIAL IMPACT OF ADDING SELECTIVE CATALYTIC REDUCTION FOR CONTROL OF NITROGEN OXIDES FROM NEW BOILER WHEN FIRING NATURAL GAS FOR 265 DAYS PER YEAR

| | Uncontrolled | With SCR |
|---|---|---|
| $NO_x$ Emission Factor, lbs/$10^6$ Btu | 0.05 | 0.015 |
| Heat Input, $10^6$ Btu/hr | 512.6 | 512.6 |
| Total Emission, Tons Per Year | 81.5 | 24.5 |
| $NO_x$ Reduction, TPY | -- | 57.0 |
| Project Total Capital Cost | | $2,810,000 |

| | Annualized Costs |
|---|---|
| Capital Recovery[1] | 368,100 |
| Maintenance Labor and Material[2] | 142,300 |
| Taxes, Insurance, Administration[3] | 94,800 |
| Electric Power[4] | 18,900 |
| Ammonia | 2,100 |
| Total Annualized Costs | $626,200 |
| Annualized Cost Per Ton Removed = | $ 11,000 |

1- 15 year useful life, 10 percent interest = 0.131 factor
2- 6 percent of direct costs
3- 4 percent of direct costs
4- 175 kW at $0.045 per kWh

Hammermill Papers
Selma, Alabama
New Source Review for Mill Expansion

Project No. 4032
September 1990

Nitrogen Oxides - Oil Firing

A canvass was made of manufacturers of oil fired boilers who incorporate low $NO_x$ burners and flue gas recycle in the basic design. The result is an indication that the best guarantee for $NO_x$ emissions will be no lower than 0.1 lbs per $10^6$ Btu heat input when firing distillate oil. This emissions rate is proposed as BACT for the Hammermill boiler when firing oil.

Table 4.7 on the following page presents all clearinghouse entries for permitted $NO_x$ emissions from boilers fired with oil. The document provides no indication as to the type of oil for which each boiler is designed.

One number in the listing is lower than the emission rate proposed by Hammermill. It is for General Mills in Ohio and appears as 0.014 lbs per $10^6$ Btu. It was determined from the owner and the state agency that the listing is in error. The boiler is actually gas fired and is permitted at 0.14 lbs $NO_x$ per $10^6$ Btu.

The next lowest number in the listing is 0.1 lb per $10^6$ Btu, the same as the factor proposed by Hammermill.

TABLE 4.7

COMPLETE BACT/LAER CLEARINGHOUSE LISTINGS OF
$NO_x$ EMISSIONS FROM OIL FIRED BOILERS

| BACT Listing ID Number | Source | Boiler Size | Emission Rate | Emission Factor* |
|---|---|---|---|---|
| CA-0089 | HOPCO | 62.5 mm Btu/hr | 7.4 lb/hr | (0.118 lb/mm Btu) |
| OH-0094 | Georgia Pacific Corp. | 118 mm Btu/hr | | 0.3 lb/mm Btu |
| OH-0117 | Owens Illinois | 10.3 mm Btu/hr | | 0.145 lb/mm Btu |
| NY-0003 | N.Y. State Elect. & Gas | 195 mm Btu/hr | | |
| DE-0004 | Dupont Institute | 37.5 mm Btu/hr | 30 lb/hr | (0.8 lb/mm Btu) |
| AL-0004 | Degussa Chemical Corp. | 205.7 mm Btu/hr | | 0.4 lb/mm Btu |
| NC-0021 | Cranston Print Works | 243 mm Btu/hr | | 0.7 lb/mm Btu |
| FL-0022 | Port St. Joe | 756 mm Btu/hr | 228.8 lb/hr | (0.3 lb/mm Btu) |
| IN-0001 | New Energy Corp. | 176 mm Btu/hr | | 0.6 lb/mm Btu |
| OH-0022 | Timken Co. | 40 mm Btu/hr | | 0.25 lb/mm Btu |
| TX-0013 | Houston Lighting & Power | 185 mm Btu/hr | | 0.3 lb/mm Btu |
| LA-0035 | Allied Chemical Corp. | 131 mm Btu/hr | | 0.3 lb/mm Btu |
| LA-0030 | Shell Chemical Co. | 198.5 mm Btu/hr | | 0.3 lb/mm Btu |
| TX-0074 | Anheuser Busch Inc. | 77 mm Btu/hr | 32.1 lb/hr | 0.42 lb/mm Btu |
| TX-0080 | Proctor & Gamble Paper Prod. | 100 mm Btu/hr | 30 lb/hr | 0.3 lb/mm Btu |
| IA-0003 | Am. Modern Food Energy Sys. | 945 mm Btu/hr | | 0.25 lb/mm Btu |
| CA-0007 | Tosco Corp. | 92,700 lb/hr | 41 lb/hr | (0.29 lb/mm Btu) |
| IN-0024 | Northern Indiana Public Serv. | | 75 ppm | |
| UT-0024 | Paraho Development Corp. | 14.5 mm Btu/hr | 22 lb/1000 gal | (0.147 lb/mm Btu) |
| CA-0069 | Angus Petrotech | 62.5 mm Btu/hr | 199 lb/D | (0.13 lb/mm Btu) |
| NC-0034 | Allied Corp. | 64.2 mm Btu/hr | | 0.4 lb/mm Btu |
| CA-0116 | Petro Lewis Corp. | 50 mm Btu/hr | | 0.12 lb/mm Btu |
| CA-0113 | Berry Holding Co. | 31.5 mm Btu/hr | | 0.2 lb/mm Btu |
| CA-0113 | Berry Holding Co. | 62.5 mm Btu/hr | 7.5 lb/hr | 0.12 lb/mm Btu |
| VA-0030 | University of Virginia | 103,760 bal/yr | | 0.45 lb/mm Btu |
| OH-0094 | Georgia Pacific Corp. | 118 mm Btu/hr | | 0.3 lb/mm Btu |
| OH-0112 | General Mills | 71.5 mm Btu/hr | | 0.014 lb/mm Btu (1) |

(Continued-next page)

TABLE 4.7
(Cont'd)

COMPLETE BACT/LAER CLEARINGHOUSE LISTINGS OF
$NO_x$ EMISSIONS FROM OIL FIRED BOILERS

| BACT Listing ID Number | Source | Boiler Size | Emission Rate | Emission Factor |
|---|---|---|---|---|
| WI-0037 | Wisconsin Tissue Mills | 72.4 mm Btu/hr | | 0.38 lb/mm Btu |
| AL-0036 | General Electric | 99.48 mm Btu/hr | 14.9 lb/hr | (0.15 lb/mm Btu) |
| WI-0043 | Wisconsin Tissue | 75 mm Btu/hr | | 0.3 lb/mm Btu |
| LA-0279 | Delano Growers Grape Products | 32 mm Btu/hr | 10.6 lb/hr | (0.33 lb/mm Btu |
| NC-0051 | Panda Rosemary Corp. | 81.25 mm Btu/hr | 9.8 lb/hr | (0.12 lb/mm Btu) |
| VA-0165 | Hadson Power II | 81.6 mm Btu/hr | | 0.1 lb/mm Btu |
| CT-0009 | U.S. Navy Base North Div. | 98 mm Btu/hr | | 0.2 lb/mm Btu |
| CT-0011 | Mansfield Training School | 4.8,2.9,2.2 mm Btu/hr | | 0.379 lb/mm Btu |
| CT-0081 | New England Furniture | 15.2 mm Btu/hr | | 0.367 lb/mm Btu |
| VA-0171 | Mecklenburg Cogen Ltd. | 304.8 mm Btu/hr | | 0.4 lb/mm Btu |



* Numbers in parentheses do not appear as such in the clearinghouse document and were computed from the reported boiler size and mass emission rate.

[1]Erroneously reported - This boiler is actually gas fired and permitted at 0.14 lb/$10^6$ Btu.

SIMONS

SIMONS-EASTERN CONSULTANTS, INC.

Hammermill Papers
Selma, Alabama
New Source Review for Mill Expansion

Project No. 4032
September 1990

This is a BACT emissions rate that will be achieved by state-of-the-art boiler design, including ample furnace volume, low $NO_x$ burners, flue gas recycle, and flue gas monitoring for $NO_x$ and oxygen. The 0.1 lb limit will also satisfy the NSPS requirement.

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ATLANTA

State
GA

ZIP Required
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FDER Twin Towers Bldg.

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State
FL

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32399-2400

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SERVICES (Check only one box)

Priority Overnight Service (Delivery by next business morning†)
11 ☐ YOUR PACKAGING
16 ☐ FEDEX LETTER *
12 ☐ FEDEX PAK *
13 ☐ FEDEX BOX
14 ☐ FEDEX TUBE

Standard Overnight Service (Delivery by next business afternoon†)
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56 ☐ FEDEX LETTER *
52 ☐ FEDEX PAK *
53 ☐ FEDEX BOX
54 ☐ FEDEX TUBE

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Heavyweight Service (for Extra Large or any package over 150 lbs.)
70 ☐ HEAVYWEIGHT **
80 ☐ DEFERRED HEAVYWEIGHT **

†Delivery commitment may be later in some areas
*Declared Value Limit $100
**Call for delivery schedule

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2 ☑ DELIVER WEEKDAY
3 ☐ DELIVER SATURDAY (Extra charge) (Not available to all locations)
4 ☐ DANGEROUS GOODS (Extra charge)
5 ☐
6 ☐ DRY ICE ____ LBS
7 ☐ OTHER SPECIAL SERVICE
8 ☐
9 ☐ SATURDAY PICK-UP (Extra charge)
10 ☐
11 ☐
12 ☐ HOLIDAY DELIVERY (If offered) (Extra charge)

| PACKAGES | WEIGHT In Pounds Only | YOUR DECLARED VALUE |
|---|---|---|
| Total | Total | Total |

DIM SHIPMENT (Chargeable Weight)
☐ ____ lbs

Payment At
1 ☐ Regular Stop 3 ☐ Drop Box
2 ☐ On-Call Stop 4 ☐ BSC 5 ☐ Station

FedEx Emp No

Date/Time

Emp No Date

☐ Cash Received
☐ Return Shipment
☐ Third Party ☐ Chg To Del ☐ Chg To Hold

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City State Zip

Received By.
X

Date/Time Received FedEx Employee Number

5 Release Signature Angela D. Hinton

Date/Time 3-12-91

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Other 1
Other 2
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Georgia-Pacific Corporation *Palatka Operations*
*Southern Pulp & Paper Division*
*P.O. Box 919*
*Palatka, Florida 32078-0919*
*Telephone (904) 325-2001*

RECEIVED

MAR 14 1991

DER-BAQM

March 13, 1991

Hand Delivered

Mr. Bruce Mitchell
Florida Department of
Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dear Mr. Mitchell:

In our recent phone conversation concerning the PSD application for the work scheduled to be performed on our #4 Recovery Boiler and #4 Lime Kiln you stated that your only remaining concerns were the appropriate creditable emission decreases for TRS and EPA's questions regarding PM10.

Georgia-Pacific still believes that the reduction in TRS emissions due to the TRS project are fully creditable. We did however ask David Buff to calculate what allowable TRS emission limit for the #4 Recovery Boiler would be necessary for us to net out of PSD if the final ruling was that the reductions mentioned above were not creditable. A limit of 11.4 ppm TRS corrected to 8% $O_2$ on our #4 Recovery Boiler would allow us to net out of PSD and would be the desired method of handling the situation if the credits are disallowed. A letter from David Buff detailing the calculations is attached.

David Buff spoke with Greg Worley of EPA concerning their questions regarding PM10 and his comments are also summarized in the attached letter. In short EPA did not realize that an AAQS analysis had been done for PM10 and that the analysis we did, which showed compliance, was more conservative than what they were requesting.

If you have any questions or if I can be of further service, please call me at 904-325-2001.

Sincerely,

Vernon L. Adams
Superintendent of
Environmental Affairs

cc: A. Beshire
D. Buff
H. Hirschman
W. R. Wilson
Bruce Mitchell
Clem Holladay
Andy Kutyna: NE District
Jewell Harper / Gary Worley / Lew Nesler: EPA, Region IV
(FAX) (FAX)

3-14-91 RAM

Seal

David A. Buff
David A. Buff
Florida Registration No. 19011

March 13, 1991

Mr. Vernon Adams
Georgia-Pacific Corporation
County Road 216
Palatka, FL 32017

Re: Georgia-Pacific Corporation
Proposed Recovery Boiler/Lime Kiln Project

Dear Mr. Adams:

KBN Engineering and Applied Sciences, Inc. (KBN) was asked to calculate the allowable TRS emissions for Recovery Boiler No. 4 (RB4) in the event that past TRS reductions at the mill are not creditable for PSD purposes. If the past reductions are not creditable, Georgia-Pacific Corporation (G-P) desires to reduce the allowable TRS emissions for RB4 in order to not trigger PSD review.

In conversations with Bruce Mitchell of FDER, Mr. Mitchell stated that FDER would accept the current allowable TRS emission level of 17.5 ppm (along with actual operating hours for the boiler) as the basis for PSD baseline emissions. The operating permit for the boiler allows 21.6 lb/hr TRS, based on the 17.5 ppm limit. The average of actual operating hours for the boiler in 1989 and 1990 was 8,463 hr/yr. The baseline TRS emission rate for RB4, therefore, is as follows:

$$21.6 \text{ lb/hr} \times 8{,}463 \text{ hr/yr} \div 2{,}000 \text{ lb/ton} = 91.4 \text{ TPY}$$

The proposed new level of allowable TRS emissions for RB4 is 17.8 lb/hr and 78.0 TPY. This equates to a level of 11.4 ppm TRS at 8 percent $O_2$ at the higher RB4 production rate. The calculation is provided below:

$V = MRT/P$

$$V_{TRS} = \frac{17.8\ lb_m}{hr} \times \frac{hr}{60\ \text{min}} \times \frac{1{,}545\ ft\text{-}lb_f}{34\ lb_m\text{-}°R} \times \frac{528°R\ ft^2}{2{,}116.8\ lb_f} = 3.36\ scfm$$

$$\text{ppm} = 3.36/210{,}000 \times 10^6 = 16.00 \text{ ppm @ } 2.8\% \ O_2$$

$$\text{ppm @ } 8\% \ O_2 = 16.00/1.40 = 11.4 \text{ ppm @ } 8\% \ O_2$$

The PSD applicability analysis for TRS emissions, based on the above calculations and information provided in the PSD permit application submitted for the project, is presented in the following table.



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

| Source | Current Actual Emissions (TPY) | Future Maximum Emissions (TPY) | Net Change in Emissions (TPY) |
|---|---|---|---|
| No. 4 Recovery Boiler | 91.4 | 78.0 | -13.40 |
| No. 4 Smelt Diss. Tank | 5.3 | 14.7 | 9.40 |
| No. 4 Lime Kiln | 3.6 | 17.5 | 13.90 |
| TOTALS | 100.30 | 110.20 | 9.90 |

As shown, the net increase in TRS emissions is 9.90 TPY, which is below the PSD significant emission rate of 10.0 TPY.

G-P also requested that I investigate FDER's indication that EPA Region IV provided comments relating to the PM10 modeling analysis presented in the permit application. I, therefore, spoke with Greg Worley and Lew Nagler at Region IV. Mr. Nagler stated their concern was that a PM10 AAQS analysis be conducted, even though PSD increment consumption was being expanded for PM10. He also stated that the PM10 standard is now a statistical standard, and when using 5 years of meteorological data, the sixth highest value at each receptor over all 5 years of data should be used to determine compliance.

In regard to the first issue, I pointed out that KBN had indeed presented a PM10 AAQS analysis in the permit application. The analysis showed maximum impacts to be well below the AAQS. Mr. Nagler acknowledged this oversight, and indicated this satisfied their concern.

In regard to the second issue, KBN used the standard modeling approach of using the highest, second-highest model result over the entire 5 years. Using this approach, there can only be five concentrations out of the entire 5 years at a particular receptor that are higher in value than the highest, second-highest value. Therefore, if the highest, second-highest value at a receptor is in compliance with the standards, then the sixth highest value will also be in compliance. Therefore, our approach is conservative.

Please call if you have any questions concerning this information.

Sincerely,

David A. Buff

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

DAB/dmw

PSD-FL-171
AC54-193250

Department of Environmental Regulation

# Routing and Transmittal Slip

To: (Name, Office, Location)

1. Mr Fewell A. Harper, Chief
2. Air Enforcement Branch
3. Air, Pesticides & Toxics Management Division
4. U.S. EPA Region IV

Remarks: Re: Georgia-Pacific Corp.: PSD-FL-171

Please find attached a copy of an amendment submittal to the application package currently under review.

If there are any questions, please call Bruce Mitchell or Clem Holladay or write to me at the above address.

Sincerely,

attn: Gregg Worley
Lew Negler

P.S.: FAX sent 3-14-91 to Gregg Worley / Lew Negler

From R. Bruce Mitchell
for C. H. Fancy

Date 3-14-91

Phone 904-488-1344


Palatka Operations
Southern Pulp & Paper Division
P.O. Box 919
Palatka, Florida 32078-0919
Telephone (904) 325-2001


13, 1991



icerning the PSD
performed on our #4
ed that your only
reditable emission
garding PM10.

the reduction in TRS
ly creditable. We
what allowable TRS
would be necessary
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Recovery Boiler
d be the desired
redits are
ailing the

EPA concerning
omments are also
summarized in the attached letter. In short EPA did not realize that an AAQS analysis had been done for PM10 and that the analysis we did, which showed compliance, was more conservative than what they were requesting.

# Florida Department of Environmental Regulation

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

Lawton Chiles, Governor — Carol M. Browner, Secretary


## FAX TRANSMITTAL LETTER

DATE: 3-14-91

TO:

NAME: Gregg Worley / Lew Negler
AGENCY: Region IV, U.S. EPA

TELEPHONE: (404) 347-5207

# OF PAGES (INCLUDE COVER SHEET): 5

FROM:

NAME: Bruce Mitchell

AGENCY: FDER/DARM/Bureau of Air Regulation

IF ANY PAGES ARE NOT CLEARLY RECEIVED, PLEASE CALL IMMEDIATELY. PHONE NO. (904) 488-1344

SENDER'S NAME: Sam

COMMENTS: Amendment submittal to PSD-FL-171
Georgia-Pacific Corporation

MESSAGE CONFIRMATION MAR-14-'91 THU 09:29

TERM ID: DIV OF AIR RES MGMT P-9999

TEL NO: 904-922-6979

| NO. | DATE | ST. TIME | TOTAL TIME | ID | DEPT CODE | OK | NG |
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| 656 | 03-14 | 09:26 | 00°02'59 | 404 347 5207 | | 05 | 00 |

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY - REGION IV
AIR, PESTICIDES & TOXICS MANAGEMENT DIVISION
345 Courtland Street, N. E.
Atlanta, Georgia 30365
Fax Number:FTS 257-5207 or 404/347-5207



FACSIMILE TRANSMISSION SHEET

DATE: 3/12/91 NUMBER OF PAGES (Including this sheet) _____

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TO: Bruce Mitchell PHONE: (904) 488-1344

ADDRESS: FDER FAX NUMBER: (904) 922-6979

FROM: GREGG WORLEY PHONE: (404) 347-2904

---

If the following pages are received poorly, please call _____ at FTS 257-_____ or 404/347-_____.

SPECIAL INSTRUCTIONS FOR RECEIVER: _____

cc:
Bruce Mitchell (rec'd from BA 3-13-91) ? 3-15-91 BAM
Cleve Holladay
Vernon Adams: G-PC, gave him a copy by hand 3-14-91 BAM

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

4APT-AEB

MAR 12 1991

Mr. Clair H. Fancy, P.E., Chief
Bureau of Air Regulation
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

RE: Georgia-Pacific Corporation, Palatka (PSD-FL-171)

Dear Mr. Fancy:

This is to acknowledge receipt of an application for a Prevention of Significant Deterioration (PSD) permit for the above referenced facility transmitted by your letter of February 14, 1991. As discussed between Mr. Bruce Mitchell of your staff and Mr. Gregg Worley of my staff on March 7, 1991, we have the following comments and questions on the submittal.

Modelling/Monitoring

The modeling analysis as submitted has been reviewed. The modification will have a significant impact for TSP/PM-10; however, since a previously permitted PSD source at the plant was never constructed, the total increment consumption will be less now than with the prior application. Based on this decrease in overall emissions, further modelling was deemed by the applicant to be unnecessary.

After discussing this point with EPA Headquarters, it was agreed that if there is a significant impact from the new source or modification, a NAAQS review is required. There is no basis in our regulations to exempt further analysis, even if there is no threat to the available increment; we still need to determine what the impact on the NAAQS will be. Our comments are as follows:

1. A NAAQS modeling analysis is necessary for PM-10.

2. The standard for PM-10 is now a statistical standard and the sixth highest 24 hour concentration based on five years of meteorological data is now used instead of the high second highest value.

Netting Calculation

When caluculating the net emissions increase for TRS emissions, GP included an emissions decrease which resulted from complying with Florida's TRS rule. Since the reduction was made to comply with regulations, it does not qualify as a creditable emissions decrease.

BACT Analysis

The BACT analysis does not propose controls other than the existing controls for the emissions units. Questions and comments about the BACT analysis performed by the applicant are as follows:

Recovery Boiler

1. What is the percent dryness of the black liquor solids? (Note that the recent trend for recovery boilers has been to burn drier black liquor solids, about 70 to 75% solids. The increased dryness has an effect both on $SO_2$ emissions and $NO_x$ emissions.)

2. The application states that current actual emissions for $SO_2$ are in the range of 7-9 ppm, yet the requested permit limit is for 75 ppm. Although GP will apparently net out of PSD review for $SO_2$, the allowable emissions should more closely reflect the actual capabilities of the emissions unit.

3. What changes are being made to the ESP? In a recent permit application in Region IV (Hammermill Papers in Alabama) in which an existing recovery boiler was being modified, the efficiency of the existing ESP was evaluated and cost estimates were made on improving the efficiency of the ESP. GP has proposed a PM limit of 0.044 gr/dscf utilizing the existing ESP. Current permits for new recovery boilers are being issued in the range of 0.021 to 0.030 gr/dscf. The Hammermill facility mentioned above has proposed a level of 0.034 gr/dscf based on an economic evaluation. In any case, defaulting to the NSPS level without supporting documentation does not meet the requirements of a BACT analysis.

4. The applicant proposed emissions limits for CO, VOC, and $NO_x$ based on an annual average. This does not meet the requirement of "short-term and specific" limits.

Lime Kiln

Again the applicant did not consider more stringent limits than the existing allowable emissions.

Thank you for the opportunity to review and comment on this application. If you have any questions or comments on the modeling comments, please contact Mr. Lew Nagler at (404) 347-2904. Other questions may be directed to Mr. Gregg Worley of my staff, also at (404) 347-2904.

Sincerely yours,

Jewell A. Harper, Chief
Air Enforcement Branch
Air, Pesticides, and Toxics
Management Division

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365



4APT-AEB

MAR 12 1991

Mr. Clair H. Fancy, P.E., Chief
Bureau of Air Regulation
Florida Department of Environmental
Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

RE: Georgia-Pacific Corporation, Palatka (PSD-FL-171)

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After discussing this point with EPA Headquarters, it was agreed that if there is a significant impact from the new source or modification, a NAAQS review is required. There is no basis in our regulations to exempt further analysis, even if there is no threat to the available increment; we still need to determine what the impact on the NAAQS will be. Our comments are as follows:

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2. The application states that current actual emissions for $SO_2$ are in the range of 7-9 ppm, yet the requested permit limit is for 75 ppm. Although GP will apparently net out of PSD review for $SO_2$, the allowable emissions should more closely reflect the actual capabilities of the emissions unit.

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4. The applicant proposed emissions limits for CO, VOC, and $NO_x$ based on an annual average. This does not meet the requirement of "short-term and specific" limits.

Lime Kiln

Again the applicant did not consider more stringent limits than the existing allowable emissions.

Thank you for the opportunity to review and comment on this application. If you have any questions or comments on the modeling comments, please contact Mr. Lew Nagler at (404) 347-2904. Other questions may be directed to Mr. Gregg Worley of my staff, also at (404) 347-2904.

Sincerely yours,

Jewel A. Harper, Chief
Air Enforcement Branch
Air, Pesticides, and Toxics
Management Division

Fed Exp. 016967995 45
Gainesville, FL

File Copy
PSD-FL-191

Georgia-Pacific Corporation *Palatka Operations*
*Southern Pulp & Paper Division*
*P.O. Box 919*
*Palatka, Florida 32078-0919*
*Telephone (904) 325-2001*

RECEIVED
MAR 08 1991
DER-BAQM

March 7, 1991

Mr. Bruce Mitchell
Florida Department of
Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dear Mr. Mitchell:

At our recent meeting concerning the PSD application for the work scheduled to be performed on our #4 Recovery Boiler and #4 Lime Kiln you asked us to address three questions. They dealt with property boundaries, black liquor flow in the concentrator, and contemporaneous reductions in TRS.

The property boundary question dealt with public accessibility. The area detailed on the map which was enclosed in the application is accurate. Public accessibility is controlled in several ways. The boundary closest to the mill is fenced and patrolled by security guards. The other boundaries are secured thru a combination of other means which include gates, posted signs, security patrols, and natural barriers such as thick vegetation. KBN checked the areas just outside the fences in the areas which had the greatest likelihood of having ambient problems and found none (modeling supporting this conclusion is attached).

You questioned whether we needed to apply for a PSD permit for our evaporator system due to possible increased throughput through the concentrators. The multiple effect evaporators are permitted as a system to handle a given amount of black liquor solids. The concentrators are just one component of this permitted system which is currently processing all of the black liquor produced by the mill's digesters. All of the black liquor solids produced by the mill pass through the evaporator system at least one time and some of the solids are processed more than once due to the way the mill's black liquor pond is utilized. The end result is we do not expect an increase in the amount of black liquor solids we are handling in the evaporator system or resultant emissions and we do not need to raise the permitted rate for throughput thus we do not believe we need a PSD permit for the evaporator system.

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QUESTIONS? CALL 800-238-5355 TOLL FREE.

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1011 0169678843

**RECIPIENT'S COPY**

Date 3-7-91

**From (Your Name) Please Print**

1 David A. Buff

Your Phone Number (Very Important) (904) 331-9000

Company KBN ENG & APPLIED SCIENCES

Department/Floor No

Street Address 1034 NW 57TH ST

City GAINESVILLE State FL ZIP Required 3 2 6 0 5

**To (Recipient's Name) Please Print**

2 Bruce Mitchell

Recipient's Phone Number (Very Important) (904) 488-1344

Company Florida Dept. of Environmental Regulation

Department/Floor No

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†Delivery commitment may be later in some areas

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041

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In regard to creditable emission changes for TRS at the mill the question arose as to the creditable status of the prior TRS reductions at the facility due to the TRS control project . It is our position that the reduction in TRS emissions due to the TRS project are fully creditable. This position is supported by the construction permits ( AC54-1422-82, 88, and 91) which were issued on April 29, 1988. In Specific Condition 16 of the permits, it is stated:

> For the purposes of future permits and PSD determinations, the mass emissions of pollutants listed in Table 500-2 and the associated emission changes are:

| | Pre- | | Post- | | Changes | |
|---|---|---|---|---|---|---|
| Pollutant | lbs/hr | TPY | lbs/hr | TPY | lbs/hr | TPY |
| TRS | 637.5 | 1824.3 | 0.1 | 0.5 | -637.4 | -1823.8 |

This specific condition fully documents the TRS reductions, and specifically states that the listed mass emission are to be used for future permitting and PSD determinations.

Our review of the Florida Administrative Code, Rule 17-2.500(2)(e)4 also supports the position that the previous TRS decreases are creditable. This rule states that a decrease in actual emissions is creditable only if:

a. The old level of actual emissions, the old level of federally enforceable allowable emission, or the old level of allowable emissions under Rule 17-2.650, whichever is lowest exceeds the new level of actual emission.

b. The decrease is federally enforceable.

c. The Department or EPA has not relied on it in issuing a PSD permit, demonstrating attainment, defining reasonable further progress, or in issuing a nonattainment permit, or permit requiring RACT.

In our case, there were no federally enforceable allowable TRS emissions limits prior to the decrease, and no allowable TRS emissions limits under Rule 17-2.650. The decrease was federally enforceable through the issued construction permit. The Department has not relied on the TRS decrease in issuing a PSD permit or the other requirements described in c. above. As you are aware, EPA has ruled that a net decrease in emissions for a specific pollutant,

resulting from a modification, is not "relied" upon if PSD is not triggered for that pollutant. Any net decreases are retained for future applicability within the contemporaneous period. The wording in our TRS construction permit supports this position.

If you have any questions or if I can be of further service, please call me at 904-325-2001.

Sincerely,

Vernon L. Adams
Superintendent of
Environmental Affairs

cc: A. Beshire
D. Buff
H. Hirschman
W. R. Wilson

Seal

David A. Buff
Florida Registration No. 19011

cc: B. Mitchell
C. Holladay
B. Andrews
A. Kutyna NE District - 3-13-91 PAR
G. Harper, EPA 3-15-91 @ Inc. letter

Attachment A

## Dispersion Modeling Results at Revised Plant Property Receptors

In the dispersion modeling analysis presented in the permit application, receptors were placed at the extent of Georgia-Pacific property (i.e., at the edge of State Road 216 and U.S. Highway 17) at 10-degree increments from 40 to 200 degrees relative to the TRS incinerator stack. In response to FDER comments, additional dispersion modeling was performed locating plant property receptors at the Georgia-Pacific fence line bordering State Road 26 and U.S. Highway 17. The locations of the revised receptors are presented in Figure A-1. A comparison of the locations of the original and revised plant property receptors is presented in Table A-1. A summary of additional receptors used to provide 100-m resolution in the zone between original and revised plant property receptors is presented in Table A-2.

The significant impact analysis was remodeled to determine if predicted annual $NO_x$ concentrations or 1- and 8-hour CO concentrations were above significant impact levels. The results of the significant impact analysis for CO and $NO_x$ are presented in Table A-3. Only the maximum predicted highest, second-highest 8-hour average CO concentration, 9.3 $\mu g/m^3$, is greater than that predicted in the original analysis. However, this concentration is still well below the 8-hour significance level of 10,000 $\mu g/m^3$ for CO. As before, no additional modeling is required for CO and $NO_x$.

The results of the PM10 AAQS modeling analysis are presented in Table A-4. The maximum annual and highest, second-highest 24-hour PM10 concentrations predicted at the revised receptors were greater than those originally presented, but are still well below the annual and 24-hour AAQS of 50 and 150 $\mu g/m^3$, respectively. No refined analysis is presented because maximum receptor spacing in this analysis is already much less than 100 m.

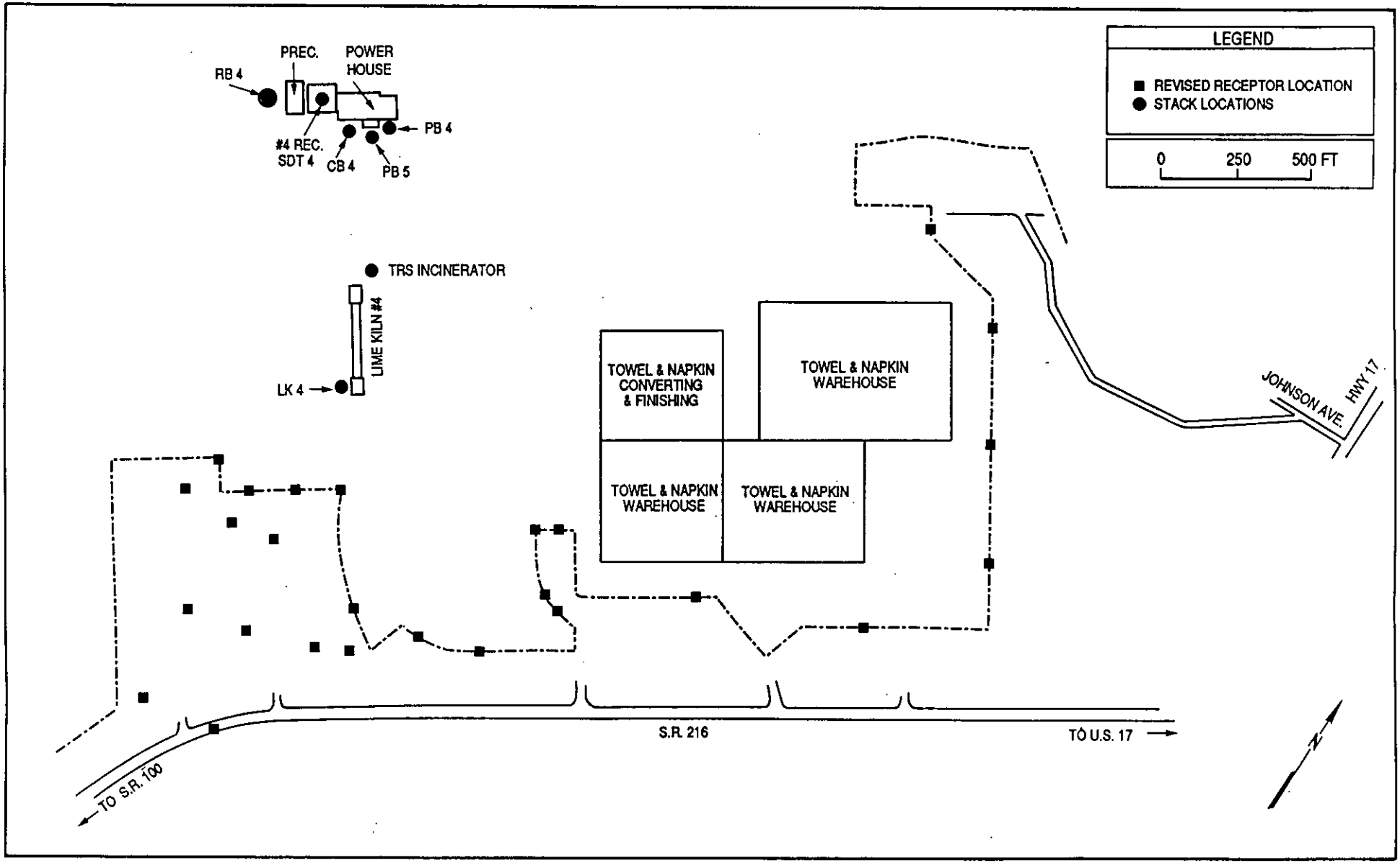


Figure A-1 LOCATIONS OF REVISED PLANT PROPERTY RECEPTORS

KBN

Table A-1. Comparison of Plant Property Receptor Locations Used in Original and Revised Modeling Analysis

| Direction (deg) | Original Downwind Distance[a] (m) | Revised Downwind Distance[a] (m) |
|---|---|---|
| 0-40 | As Presented in Application | No Change |
| 50 | 1,500 | 562 |
| 60 | 1,500 | 633 |
| 70 | 1,500 | 649 |
| 80 | 838 | 694 |
| 90 | 686 | 623 |
| 100 | 533 | 461 |
| 110 | 457 | 319 |
| 115 | - | 304 |
| 120 | 457 | 365 |
| 130 | 457 | 400 |
| 140 | 457 | 380 |
| 150 | 457 | 345 |
| 160 | 488 | 300 |
| 170 | 533 | 238 |
| 180 | 610 | 263 |
| 190 | 750 | 253 |
| 200-350 | As Presented in Application | No Change |

[a]Receptor locations are relative to the location of the TRS incinerator stack.

Table A-2. Summary of Additional (Non-Plant Property) Receptor Locations Used in the Revised Modeling

| Direction (deg) | Downwind Distance[a] (m) |
|---|---|
| 110 | 400 |
| 120 | 400 |
| 150 | 400 |
| 160 | 400 |
| 170 | 300, 400, 500 |
| 180 | 300, 400, 500 |
| 190 | 300 |

[a]Receptor locations are relative to the location of the TRS incinerator stack.

Table A-3. Results of the Significant Impact Analysis for Revised Plant Property and Additional Receptors

| Pollutant | Averaging Period | Predicted Concentration ($\mu g/m^3$) for year: 1983 | 1984 | 1985 | 1986 | 1987 | Maximum Concentration ($\mu g/m^3$) | Significant Impact Level ($\mu g/m^3$) |
|---|---|---|---|---|---|---|---|---|
| Carbon Monoxide | 1-hour | 41 | 41 | 44 | 44 | 43 | 43 | 40,000 |
| | 8-hour | 5.2 | 9.3 | 7.0 | 7.9 | 5.5 | 9.3 | 10,000 |
| Nitrogen Dioxide | Annual | 0.2 | 0.3 | 0.2 | 0.3 | 0.3 | 0.3 | 1.0 |

Table A-4. Results of the PM10 AAQS Analysis for Revised Plant Property and Additional Receptors

| Year | Concentration ($\mu g/m^3$) | | | Receptor | | Period (day) | PM10 AAQS ($\mu g/m^3$) |
|---|---|---|---|---|---|---|---|
| | Background | Modeled | Total | Direction (deg) | Distance (km) | | |
| Annual | | | | | | | |
| 1983 | 21 | 5.5 | 26.5 | 70 | 0.649 | – | |
| 1984 | 21 | 5.2 | 26.2 | 115 | 0.304 | – | |
| 1985 | 21 | 5.3 | 26.3 | 70 | 0.649 | – | 50 |
| 1986 | 21 | 6.2 | 27.2 | 70 | 0.649 | – | |
| 1987 | 21 | 7.0 | 28.0 | 115 | 0.304 | – | |
| 24-Hour | | | | | | | |
| 1983 | 51 | 37 | 88 | 115 | 0.304 | 71 | |
| 1984 | 51 | 39 | 90 | 70 | 0.649 | 155 | |
| 1985 | 51 | 31 | 82 | 115 | 0.304 | 189 | 150 |
| 1986 | 51 | 36 | 87 | 115 | 0.304 | 364 | |
| 1987 | 51 | 52 | 103 | 120 | 0.365 | 1 | |

File Copy

# Florida Department of Environmental Regulation

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

Lawton Chiles, Governor

Carol M. Browner, Secretary

February 14, 1991

Mr. Andy Kutyna, Administrator
Air Programs
Northeast District
7825 Baymeadows Way, Suite B200
Jacksonville, Florida 32256-7577

Dear Mr. Kutyna:

Re: Completeness Review of Application to Modify
Georgia-Pacific Corporation
PSD-FL-171

Enclosed is the above referenced application package for a proposed modification at Georgia-Pacific Corporation's facility located in Palatka, Putnam County, Florida. Please have a technical evaluation of the package conducted and provide the Bureau of Air Regulation (BAR) with comments by March 12, 1991. The BAR's FAX number is (904)922-6979.

If there are any questions, please give Bruce Mitchell or Cleve Holladay a call at (904)488-1344 or write to me at the above address.

Sincerely,

C. H. Fancy, P.E.
Chief
Bureau of Air Regulation

CHF/BM/rbm

Enclosure

c: D. Buff, P.E., KBN
V. Adams, G-PC
Reading File
Bruce Mitchell
Cleve Holladay
Barry Andrews
} 2-14-91 RBM

File Copy


# Florida Department of Environmental Regulation

Twin Towers Office Bldg. ● 2600 Blair Stone Road ● Tallahassee, Florida 32399-2400

Lawton Chiles, Governor

Carol M. Browner, Secretary


February 14, 1991

Ms. Jewell A. Harper, Chief
Air Enforcement Branch
Air, Pesticides & Toxics Management Division
U.S. EPA, Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Dear Ms. Harper:

Re: Completeness Review of Application to Modify
Georgia-Pacific Corporation
PSD-FL-171

Enclosed is the above referenced application package for a proposed modification at Georgia-Pacific Corporation's facility located in Palatka, Putnam County, Florida. Please have a technical evaluation of the package conducted and provide the Bureau of Air Regulation (BAR) with comments by March 12, 1991. The BAR's FAX number is (904)922-6979.

If there are any questions, please give Bruce Mitchell or Cleve Holladay a call at (904)488-1344 or write to me at the above address.

Sincerely,

C. H. Fancy, P.E.
Chief
Bureau of Air Regulation

CHF/BM/rbm

Enclosure

c: A. Kutyna, NE Dist.
D. Buff, P.E., KBN
V. Adams, G-PC
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