STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NOTICE OF PERMIT

In the matter of an
Application for Permit by:

DEP File No. AC 17-223343
Escambia County

Mr. F. Doug Owenby
Vice President/Operations Manager
Champion International Corporation
375 Muscogee Road
Cantonment, Florida 32533

Enclosed is Permit Number AC 17-223343 to allow modifications to be made to the existing pulp mill located in Cantonment, Escambia County, Florida. This permit is issued pursuant to Section(s) 403, Florida Statutes.

Any party to this Order (permit) has the right to seek judicial review of the permit pursuant to Section 120.68, Florida Statutes, by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date this Notice is filed with the Clerk of the Department.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

C. H. Fancy, P.E., Chief
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400
904-488-1344

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this NOTICE OF PERMIT and all copies were mailed before the close of business on April 5, 1994 to the listed persons.

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to §120.52(11), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Barbara J. Boutwell (Clerk) 4/5/94 (Date)

Copies furnished to:

- E. Middleswart, NW District
- J. Harper, EPA
- J. Braswell, OGC
- T. Cole, OHF&C
- D. Smith, P.E., CE
- J. Bunyak, NPS
- G. Golson, ADEM
- K. Moore, CIC

Final Determination

Champion International Corporation
Escambia County
Cantonment, Florida

Construction Permit No.
AC 17-223343
PSD-FL-200

Department of Environmental Protection
Division of Air Resources Management
Bureau of Air Protection

March 25, 1994

Final Determination

Champion International Corporation

Escambia County

AC 17-223343: Mill Modification
PSD-FL-200

The construction permit application package and supplementary material have been reviewed by the Department. Public Notice of the Department's Intent to Issue was published in the Pensacola News Journal on March 13, 1993. The Revised Technical Evaluation and Preliminary Determination was distributed on March 10, 1993, and available for public inspection at the Department's Northwest District office and the Department's Bureau of Air Regulation office.

During the public notice period, petitions for an administrative hearing were received (OGC Case Nos.: 93-0913, 93-1065, 93-1066 and 93-1067; DOAH Case Nos.: 93-2053, 93-2054, 93-2055, 93-2056 and 93-2057). On January 27, 1994, DOAH Hearing Officer P. Michael Ruff issued and signed an Order of the Hearing Officer granting Motions to Dismiss Petitions. Based on the Motions to Dismiss, the Department's Secretary Virginia B. Wetherell signed a Final Order on March 9, 1994, directing the Department's Bureau of Air Regulation to issue the construction permit upon the terms and conditions set forth in the Department's Intent to Issue and draft permit issued March 10, 1993.

Attachments to be incorporated: AC 17-223343 and PSD-FL-200

- o Proof of Publication of the Department's Intent to Issue in the Pensacola News Journal issue of March 13, 1993.
- o <u>Verified Petition for a Formal Hearing</u> pursuant to Section 120.57, Florida Statutes, received March 23, 1993, by the Department's OGC.
- o Mr. Brian Beals' letter dated April 13, 1993.
- o <u>Motion to Dismiss Petitions</u> done and ordered on January 27, 1994, by the DOAH Hearing Officer.
- o <u>Final Order</u> done and ordered by Secretary Virginia B. Wetherell on March 9, 1994.
- o Final Determination dated March 25, 1994.

Based on the closing of OGC Cases 93-0913, 93-1065, 93-1066 and 93-1067, it is recommended that the construction permit, No. AC 17-223343 and PSD-FL-200, be issued as drafted, with the above referenced attachments incorporated.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JACQUELINE M. LANE, FRED GARTH, NELSON BETHUNE, THORNTON GARTH, and PERDIDO BAY ENVIRONMENTAL ASSOCIATION, INC.,	OGC Case Nos. 93-0913 93-1065 93-1066 93-1067
Petitioners,	
vs.	DOAH Case Nos. 93-2053 93-2054 93-2055 93-2056 93-2057
CHAMPION INTERNATIONAL CORPORATION and STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION,	
Respondents. /	

FINAL ORDER

On January 27, 1994, a Hearing Officer from the Division of Administrative Hearings submitted an Order which the Department of Environmental Protection ("Department"), previously known as the Department of Environmental Regulation, treats as a Recommended Order. A copy of the Recommended Order is attached as Exhibit A. On February 4, 1994, Petitioner JACQUELINE M. LANE filed exceptions to the Recommended Order. On February 21, 1994, Respondent CHAMPION INTERNATIONAL CORPORATION ("Champion") filed responses thereto. The matter thereupon came before me as Secretary of the Department for final agency action.

BACKGROUND

On or about March 10, 1993, the Department gave notice of its intent to issue an air construction permit to Champion for construction of modifications to an existing pulp mill located in

Cantonment, Escambia County, Florida. The permit application was filed in concert with a Consent Order entered by the Department on December 1, 1989. The Consent Order was the subject of a formal administrative hearing which resulted in the entry of a Final Order governing the Consent Order and other permits and variances pertaining to the construction, operation and modification of Champion's pulp mill. As a result of the Final Order, the Department issued Temporary Operating Permit ("TOP") #IT 17-156163 to Champion for operation of a wastewater plant and for discharge of treated effluent to waters of the state. Champion currently operates the pulp mill under the terms of the Consent Order and TOP. In accordance with the Consent Order, the proposed air construction permit authorizes construction of a new No. 6 Power Boiler, the modification of the existing Lime Kiln's mud handling system, the modification of the existing A and B Bleach Plant Lines and their operations, the modification of the No. 2 Multiple Effect Evaporator set by adding new effects, the construction of a new methanol storage tank, and the surrender of the operation permits for the existing Nos. 1 and 2 Power Boilers.

On March 23, 1993, Petitioner JACQUELINE M. LANE ("Lane") filed a petition challenging the issuance of the proposed permit. On March 26, 1993, Petitioners FRED GARTH ("F. Garth"), NELSON BETHUNE ("Bethune"), THORNTON GARTH ("T. Garth") and PERDIDO BAY ENVIRONMENTAL ASSOCIATION ("PBEA") filed their petitions challenging the issuance of the proposed permit. The individual Petitioners Lane, F. Garth, Bethune and T. Garth are the owners of property in the vicinity of the mill. The Petitioner PBEA is a non-profit corporation incorporated in the State of Alabama to preserve property around Perdido Bay, in the vicinity of the mill.

Following receipt of the petitions for formal administrative proceedings, the matter was referred to the Division of Administrative Hearings for assignment of a Hearing Officer. Champion subsequently filed motions in opposition to the petitions based in large part on the grounds that Petitioners did not substantially comply with the requirements for a petition for administrative hearing as set forth in Rule 17-103.155(4), Florida Administrative Code. After a hearing on Champion's motions, the Hearing Officer entered an Order on May 14, 1993 consolidating the five related cases and dismissing all of the petitions with leave for the Petitioners to file amended petitions. The Petitioners served their amended petitions on June 2, 1993.

On June 28, 1993, Champion filed motions in opposition to the amended petitions alleging the continued deficiency of the petitions. Following a motion hearing and consideration of several post-hearing submissions by Lane, Champion and the Department, the Hearing Officer entered an order on August 8, 1993 dismissing the petitions with leave for the Petitioners to file second amended petitions. The Hearing Officer's Order incorporated detailed instructions to the Petitioners explaining the specific pleading requirements to establish standing to initiate formal proceedings before the Division of Administrative Hearings.

In August of 1993, Petitioners timely filed second amended petitions. Champion subsequently filed motions in opposition to the second amended petitions. A hearing on Champion's motions was held on November 29, 1993. Upon consideration of the motions and responses thereto and oral argument of the parties, the Hearing Officer concluded that, despite being afforded three opportunities over a period of six months, the Petitioners had failed to demonstrate that they have substantial interests which will be affected or injured by the activity proposed to be permitted different from the interests of the general public. Accordingly, the Hearing Officer entered an Order dismissing the second amended petitions, with prejudice.

RULINGS ON EXCEPTIONS

Exception No. 1

In Lane's first exception to the Recommended Order, she contends that the Hearing Officer erred in finding that "much of the content of the petitions amounted to speculation regarding potential harmful effects which will result from granting the proposed permits." Lane contends that there is ample scientific evidence to support the Petitioners' allegations.

Lane's exception is based on the erroneous conclusion that the Hearing Officer's statement amounts to an evidentiary determination. Rather, the Hearing Officer, in addressing the motions to dismiss, found that as a matter of law the statements themselves failed to establish a proper basis for standing and therefore the Petitioners were ineligible for a hearing on the factual evidence.

Lane apparently misunderstands the purpose of the proceedings on the motions to dismiss, which is to test the sufficiency of the Petitioners' allegations regarding standing. I concur with the Hearing Officer's finding that the allegations of harm in the petitions do not constitute specific factual allegations concerning particular harm caused to these Petitioners as required by Rules 17-103.155, 28-5.103 and 60Q-2.004(3), Florida Administrative Code. Absent the requisite allegations of standing, the Hearing Officer properly dismissed the petitions. The exception is denied.

Exception No. 2

Lane's second exception alleges that the Hearing Officer erred in finding her not to be a substantially affected party. Lane specifically contends that the Hearing Officer ignored statements of the Petitioners that they were affected substantially more than the general public, and that Rules 17-210.350(2)(h) and 275.800(2), Florida Administrative Code, provide that anyone who lives within a 100 kilometer radius of the mill would be a substantially affected party.

Lane's exception is another attempt to reargue the allegations of harm which the Hearing Officer continuously found inadequate. In determining that the Petitioners failed to establish standing in this matter, the Hearing Officer applied the two-prong test set forth in Agrico Chemical Co. v. DER, 406 So. 2d 478 (Fla. 2d DCA 1981), rev. denied, 415 So. 2d 1359 (Fla. 1982). The Agrico test requires a petitioner to show:

> 1) that he will suffer injury in fact which is of sufficient immediacy to entitle him to a section 120.57 hearing, and 2) that his

> substantial injury is of a type or nature which the proceeding is designed to protect. The first aspect of the test deals with the degree of injury. The second deals with the nature of the injury.

Agrico, 406 So. 2d at 482. The Hearing Officer also explained that, to meet the Agrico test, the Petitioners must allege special injury that is different, more specific, and greater than that to be experienced by the public generally. See Florida Home Builders Association v. Department of Labor and Employment Security, 412 So. 2d 351 (Fla. 1982). I concur with the Hearing Officer's finding that the Petitioners' allegations of injury fail in this regard. Much of the content of the petitions amounts to speculation regarding potential harmful effects the Petitioners fear will result to the general public from the proposed permit, rather than specific factual allegations concerning harm particular to these Petitioners. The Hearing Officer properly found that Petitioners were not "substantially affected" parties entitled to an administrative proceeding in this matter.

Further, the provisions cited by Lane have no relevance to these proceedings and Lane's reliance on them is misplaced. Rule 17-175.800(2), Florida Administrative Code, describes those federally designated Class I areas outside of Florida but within 100 kilometers of the state. Rule 17-210.350(2)(h), Florida Administrative Code, provides for notice to the EPA and to the Federal Land Manager of any construction application for a proposed new or modified source which would be located within 100 kilometers of any Federal Class I area or whose emissions may affect any Federal Class I area. These rules do not designate a "zone of interest" for the purpose of instituting an administrative proceeding and therefore do not confer standing on the Petitioners. Lane's second exception is denied.

Exception No. 3

In Lane's final exception, she contends that the Hearing Officer's decision denies the Petitioners due process because this is the last point of entry into these proceedings. It is, of course, well established that persons whose substantial interests may be affected by agency action must be provided a clear point of entry to file petitions for formal proceedings. See, e.g., Florida Optometric Association v. Department Professional Regulation, Board of Opticianry, 567 So. 2d 928 (Fla. 1990). Petitioners were afforded a point of entry to contest the subject permit prior to its issuance, and Petitioners have, in fact, availed themselves of such point of entry. The procedural history of this case is that in addition to the original petitions, the Petitioners were granted two additional opportunities to adequately allege standing in this matter. In the second order dismissing the petitions herein, the Hearing Officer went to the extent of offering extensive instructions as to the matters needed to be included in petitions for formal administrative proceedings. However, the petitions continued to be deficient.

I conclude that, under the circumstances presented, the Petitioners were afforded due process. The Petitioners were given ample opportunity to properly establish standing to challenge the proposed permit. It is not a lack of due process, but rather Petitioners' failure to meet the requirements for establishing standing which precludes the Petitioners from proceeding to hearing. For this reason, Lane's third exception is denied.

Accordingly, it is

ORDERED:

1. The Recommended Order of the Hearing Officer is adopted in its entirety and is incorporated herein by reference.

2. The Second Amended Petitions filed by Petitioners are hereby dismissed with prejudice.

3. The application of CHAMPION INTERNATIONAL CORPORATION for air construction permit AC 17-223343; PSD-FL-200 is GRANTED. The Department's Bureau of Air Regulation is directed to issue the permit upon the terms and conditions set forth in the Department's Intent to Issue and draft permit issued March 10, 1993.

Any party to this Order has the right to seek judicial review of the Order pursuant to Section 120.68, Florida Statutes, by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400; and, by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within thirty (30) days from the date this Order is filed with the Clerk of the Department.

DONE AND ORDERED this 9th day of March, 1994, in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

Virginia B. Wetherell

VIRGINIA B. WETHERELL
Secretary

2600 Blair Stone Rd
Tallahassee FL 32399-2400

FILING AND ACKNOWLEDGEMENT

FILED, on this date, pursuant to S120.52 Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

[signature] 3/09/94

Clerk Date

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the foregoing Final Order has been furnished by U.S. Mail to the following:

Jacqueline M. Lane
10738 Lillian Hwy
Pensacola FL 32506

Fred Garth
14110 Perdido Key Dr
Pensacola FL 32507

Nelson Bethune
7 South Warrington Rd
Pensacola FL 32507

Thornton Garth
P O Box 424
Lillian AL 36549

Thomas O. Bear, Esq.
P O Box 1238
Foley AL 35536

Segundo J. Fernandez, Esq.
Oertel, Hoffman, et al.
P O Box 6507
Tallahassee FL 32314-6507

and by Hand Delivery to:

P. Michael Ruff
Hearing Officer
Division of Administrative Hearings
The DeSoto Bldg
1230 Apalachee Pkwy
Tallahassee FL 32399-1550

Jefferson M. Braswell, Esq.
Assistant General Counsel
Department of Environmental Protection
2600 Blair Stone Rd
Tallahassee FL 32399-2400

Ann Cole, Clerk
Division of Administrative Hearings
The DeSoto Bldg
1230 Apalachee Pkwy
Tallahassee FL 32399-1550

this 10th day of March, 1994.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

Lanette M. Price

LANETTE M. PRICE
Assistant General Counsel
2600 Blair Stone Rd
Tallahassee FL 32399-2400
(904) 488-9314

STATE OF FLORIDA
DIVISION OF ADMINISTRATIVE HEARINGS

JACQUELINE M. LANE, Petitioner, vs. CHAMPION INTERNATIONAL CORPORATION and DEPARTMENT OF ENVIRONMENTAL REGULATION, Respondents.	CASE NO. 93-2053
FRED GARTH, Petitioner, vs. CHAMPION INTERNATIONAL CORPORATION and DEPARTMENT OF ENVIRONMENTAL REGULATION, Respondents.	CASE NO. 93-2054
NELSON BETHUNE, Petitioner, vs. CHAMPION INTERNATIONAL CORPORATION and DEPARTMENT OF ENVIRONMENTAL REGULATION, Respondents.	CASE NO. 93-2055
THORNTON GARTH, Petitioner, vs. CHAMPION INTERNATIONAL CORPORATION and DEPARTMENT OF ENVIRONMENTAL REGULATION, Respondents.	CASE NO. 93-2056

EXHIBIT A

PERDIDO BAY ENVIRONMENTAL ASSOCIATION, INC.,

Petitioner,

vs.

CHAMPION INTERNATIONAL CORPORATION and DEPARTMENT OF ENVIRONMENTAL REGULATION,

Respondents.

CASE NO. 93-2057

ORDER

THIS CAUSE comes before the undersigned upon Motions to Dismiss the above-named Petitioners' Second Amended Petitions filed in this cause pursuant to Order of the Hearing Officer granting a second Motion to Dismiss each of the Petitions and giving the Petitioners a second opportunity to amend their Petitions. The procedural history of this case is as outlined in the Motions in Opposition to Amended Petitions, culminating in the filing of the subject motions, responses thereto, and the conduct of oral argument by the Hearing Officer on November 29, 1993 in Tallahassee, Florida.

The Hearing Officer has carefully considered the motions, responses thereto, and the oral argument of the parties in support of and in opposition to the motions. Despite being accorded three opportunities over a period of approximately six (6) months after this case was filed with the Hearing Officer, the Perdido Bay Environmental Association, Inc., Thornton Garth, Fred Garth, Nelson Bethune, and Jacqueline M. Lane have failed to establish sufficient substantial interests affected by the application and the project proposed to be permitted which are sufficient to invoke a right to a formal administrative proceeding in this forum. The allegations of the Petitioners upon this third opportunity to submit Petitions which might demonstrate entitlement to a formal proceeding involve a misapplication of rules, a misapprehension of the import of certain rules, and still fail to establish that the Petitioners will suffer any substantial injury peculiar unto themselves and different from any condition which the general public is or will be exposed to by the subject project sought to be permitted. Much of the content of the Petitions amounts to speculation regarding potential harmful effects the Petitioners fear will result from the proposed permits grant, rather than specific factual allegations concerning particular harm caused to these Petitioners by alleged violations of the statutes and rules pertaining to the subject matter of the application. The Petitioners' Second Amended Petitions, as was the case with the original and the First Amended Petitions, fail to satisfy the requirements of Rules 17-103.155, 28-5.103, and 60Q-2.004(3), Florida Administrative Code, which provide detailed advice as to matters required to be included in such Petitions for formal proceedings.

The Petitioners, in order to show that their substantial interests will be affected by the agency action proposed, must show that an injury, in fact, will be suffered which is of such sufficient immediacy to entitle the Petitioners to a hearing and that the Petitioners' substantial injuries alleged are of a type and nature which a Section 120.57(1),

<u>Florida Statutes</u>, proceeding dealing with the substantive law embodied in Chapter 403, <u>Florida Statutes</u>, and related rules, contained in Title 17, <u>Florida Administrative Code</u>, is designed to protect. <u>Agrico Chemical Co. v. DER</u>, 406 S.2d 478 (Fla. 2d DCA 1981). Moreover, such Petitions must contain allegations of an injury or injuries that are different, more specific, greater than, and peculiar to the Petitioners, such that their injuries rise to a different level and are more specific to them than those merely expected to be experienced by the public generally. See, <u>Florida Home Builders Association v. Department of Labor and Employment Security</u>, 412 S.2d 351 (Fla. 1982).

Upon the Hearing Officer determining that the original Petitions and the First Amended Petitions failed to meet these requirements for establishing standing to initiate a formal proceeding before the Division of Administrative Hearings, the Hearing Officer entered a quite detailed Order on August 9, 1993 providing extensive instructions to the Petitioners, explaining in detailed fashion the specific pleading requirements for establishing substantial injury within the zone of interest involved in the putative proceeding and providing examples of how such specific 'substantial interest-zone of interest' standing pleading could be accomplished. Despite these detailed instructions and after three opportunities, the Petitioners have failed to file Petitions which persuade the Hearing Officer that they have substantial interests which will be affected or injured by the activity proposed to be permitted different from the interests of the general public. The Department itself is charged by statute with protecting the interests of the general public through its regulation and review of such jurisdictional activities as those proposed by the applicant, which may not be the basis for standing of individual, private Petitioners situated as the subject Petitioners.

The Petitioners have not persuaded the Hearing Officer that their interests are different from that of the general public merely by the fact that they live a certain number of miles from the mill and proposed installation. The mileage of Petitioners' residence proximate to the mill was not definitely related to a specific rule or rules which might assist in establishing their standing and substantial interests to be more specific than that of the general public, even had the totality of their allegations otherwise shown specific injury to substantial interests, which they did not. In accordance with the remaining arguments raised in the Motions to Dismiss the Second Amended Petitions and the Respondent's oral arguments in support thereof, all of which are more persuasive and adopted herein, it is, therefore, concluded after long and careful reflection, since the motion hearing of November 29, 1993, that the Second Amended Petitions must be dismissed with prejudice.

DONE AND ORDERED this 27th day of January, 1994, at Tallahassee, Leon County, Florida.

P. Michael Ruff

P. MICHAEL RUFF
Hearing Officer
Division of Administrative Hearings
The DeSoto Building
1230 Apalachee Parkway
Tallahassee, Florida 32399-1550
(904) 488-9675

Filed with the Clerk of the Division of Administrative Hearings this 27th day of January, 1994.

Copies furnished to:

Jacqueline M. Lane
10738 Lillian Highway
Pensacola, FL 32506

Fred Garth
14110 Perdido Key Drive
Pensacola, FL 32507

Nelson Bethune
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Pensacola, FL 32507

Thornton Garth
P.O. Box 424
Lillian, AL 36549

Thomas O. Bear, Esq.
P.O. Box 1238
Foley, AL 36536

Jefferson M. Braswell, Esq.
Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Segundo J. Fernandez, Esq.
OERTEL, HOFFMAN, ET AL.
P.O. Box 6507
Tallahassee, FL 32314-6507

Florida Department of Environmental Protection

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Lawton Chiles
Governor

Virginia B. Wetherell
Secretary

PERMITTEE:

Champion International Corporation
375 Muscogee Road
Cantonment, FL 32533

Permit Number: AC 17-223343
PSD-FL-200
Expiration Date: Dec. 31, 1995
County: Escambia
Latitude/Longitude: 30°36'30"N
87°19'13"W
Project: Mill Modification

This permit is issued under the provisions of Chapter 403, Florida Statutes (F.S.); Florida Administrative Code (F.A.C.) Chapters 17-210 thru 17-297 and 17-4; and, 40 CFR (July, 1991 version). The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawings, plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

For the permitting of a mill modification in concert with the mill's wastewater Consent Order, to include the construction of a new natural gas fired No. 6 Power Boiler (PB), the surrendering of the operation permits for the existing Nos. 1 and 2 Power Boilers, modification to both the A and B Bleach Plants, construction of a new methanol storage tank, modification of the No. 2 Multiple Effect Evaporator set by installing new effects, and modification of the Lime Kiln's mud handling system. The UTM coordinates of the existing facility are Zone 17, 469.0 km East and 3386.0 km North.

The Standard Industrial Codes are:

- o Major Group No. 26 - Paper and Allied Products
- o Industry Group No. 2611 - Pulp Mills

The facility shall be constructed/modified in accordance with the permit application, plans, documents, amendments and drawings, except as otherwise noted in the General and Specific Conditions.

Attachments to be Incorporated:

1. Application to Construct/Modify Air Pollution Sources, DER Form 17-1.202(1), received 12/21/92.
2. Technical Evaluation and Preliminary Determination (TE&PD) dated 2/25/93.
3. Comments received on 3/4/93, in a meeting.
4. Comment received 3/8/93, via FAX.
5. Revised TE&PD dated 3/8/93.
6. Proof of Publication of the Department's Intent to Issue in the Pensacola News Journal issue of 3/13/93.

Attachments cont.:

7. Verified Petition for a Formal Hearing pursuant to Section 120.57, F.S., received 3/23/93, by the Department's OGC.
8. Mr. Brian Beals' letter dated 4/13/93.
9. Motion to Dismiss Petitions done and ordered on 1/27/94, by the DOAH Hearing Officer.
10. Final Order done and ordered by Secretary Virginia B. Wetherell on 3/9/94.
11. Final Determination dated 3/25/94.

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, F.S. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

3. As provided in Subsections 403.087(6) and 403.722(5), F.S., the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgement of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of F.S. and Department rules, unless specifically authorized by an order from the Department.

6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance

GENERAL CONDITIONS:

with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:

a. Have access to and copy any records that must be kept under the conditions of the permit;

b. Inspect the facility, equipment, practices, or operations regulated or required under this permit; and,

c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

a. A description of and cause of non-compliance; and,

b. The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the F.S. or Department rules, except where such use is proscribed by Sections 403.73 and 403.111, F.S. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

GENERAL CONDITIONS:

10. The permittee agrees to comply with changes in Department rules and F.S. after a reasonable time for compliance, provided, however,the permittee does not waive any other rights granted by F.S. or Department rules.

11. This permit is transferable only upon Department approval in accordance with F.A.C. Rules 17-4.120 and 17-30.300, as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

12. This permit or a copy thereof shall be kept at the work site of the permitted activity.

13. The permittee shall comply with the following:

a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.

b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.

c. Records of monitoring information shall include:

- The date, exact place, and time of sampling or measurements;
- The person responsible for performing the sampling or measurements;
- The dates analyses were performed;
- The person responsible for performing the analyses;
- The analytical techniques or methods used; and,
- The results of such analyses.

14. This permit constitutes compliance with:
a. New Source Performance Standards (NSPS), 40 CFR 60, Subparts Db and Kb;
b. Prevention of Significant Deterioration; and,
c. Best Available Control Technology (BACT).

GENERAL CONDITIONS:

15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

SPECIFIC CONDITIONS:

A. No. 6 Power Boiler (PB)

1. The No. 6 PB may operate continuously (i.e., 8760 hrs/yr).

2. The No. 6 PB is permitted to fire natural gas only, with a maximum heat input of 533 MMBtu per hour, yielding a maximum steam product of 385,000 lbs/hr (2-hour average).

3. The No. 6 PB will be an ABB/CE boiler.

4. The Source Classification Code (SCC) is:

1-02-006-01 Ext. Combustion Boiler-Industrial 10^6 $ft.^3$ Burned

5. The No. 6 PB is subject to all applicable standards of 40 CFR 60, Subpart Db (July, 1991 version).

6. The No. 6 PB is subject to all applicable standards of F.A.C. Rule 17-296.405(2).

7. The No. 6 PB's pollutant emissions shall not exceed:

NOx*	0.06 lb/MMBtu (32.0 lbs/hr, 140.1 TPY)
CO*	0.1 lb/MMBtu (53.3 lbs/hr, 233.5 TPY)
PM/PM_{10}	2.67 lbs/hr, 11.7 TPY
SO_2	Not Applicable: Natural gas usage (for PSD tracking purposes: 2.2 TPY projected potential emissions)
VOC*	0.01 lb/MMBtu (5.33 lbs/hr, 23.4 TPY)
VE	$\leq$ 20 % opacity (6-min avg), except for one 6-min period/hr @ $\leq$ 27% opacity

* 24-hour average

8. Any required compliance testing shall be conducted using the following test methods in accordance with F.A.C. Rule 17-297 and 40 CFR 60, Subpart Db and Appendix A (July, 1991 version):

a) EPA Method 5, Determination of Particulate Emissions from Stationary Sources.

SPECIFIC CONDITIONS:

b) EPA Method 7D or 7E, for Determining Nitrogen Oxide Concentrations at Fossil Fuel Fired Steam Generators.
c) EPA Method 9, Visual Determination of the Opacity of Emissions from Stationary Sources.
d) EPA Method 10, Determination of Carbon Monoxide Emissions from Stationary Sources.
e) EPA Method 25A, Determination of Total Gaseous Organic Concentration Using a Flame Ionization Analyzer.
f) Upon initial start-up, testing shall be conducted for NO_x, CO, VOC, and VE.

Note: Other reference methods may be used with prior written approval received from the Department in accordance with F.A.C. Rule 17-297.620.

9. Emission monitoring for nitrogen oxides shall be in accordance with 40 CFR 48b (July, 1991 version).

10. Reporting and recordkeeping requirements shall be in accordance with 40 CFR 60.46b (July, 1991 version).

B. Lime Kiln - Mud Dryer System (LK-MDS)

1. Operation permit No. AO 17-181738 is incorporated by reference except for the following changes and/or additions:

a. the LK-MDS may operate continuously (i.e., 8760 hrs/yr);

b. a new lime mud drier system will be constructed as an addition to the existing lime kiln operation;

c. the pollutant emissions from the LK-MDS will be vented to a new electrostatic precipitator, which will be vented in series to a modified packed column wet scrubber using NaOH as the scrubbing media;

d. after construction/modification is completed, Champion will develop a testing protocol which includes a proposed test schedule to establish scrubber operating parameters and monitoring methods to meet the applicable SO_2 and TRS limits for the LK-MDS.

e. the test protocol will be submitted to the Department's Northwest District office prior to conducting the test program; and,

f. the maximum allowable operating rate of lime product (90% CaO) will be increased from 13.67 to 20.83 tons per hour.

SPECIFIC CONDITIONS:

g. the pollutant emissions from the LK-MDS shall not exceed:

NOx*	No. 6 fuel oil:	200 ppmvd @ 10% O_2 (49.3 lbs/hr, 215.9 TPY)
	Natural Gas:	175 ppmvd @ 10% O_2 (43.1 lbs/hr, 188.8 TPY)
PM/PM_{10}	10.9 lbs/hr, 47.7 TPY	
CO*	45 ppmvd @ 10% O_2 (6.75 lbs/hr, 29.6 TPY)	
VOC*	104 ppmvd @ 10% O_2 (as propane) (24.5 lbs/hr, 107.3 TPY)	
TRS**	8 ppmvd @ 10% O_2 (1.46 lbs/hr, 6.4 TPY)	
SO_2	6.49 lbs/hr, 28.4 TPY	
VE	< 20% opacity	

* 24-hour average
** 12-hour average

Note:
- o Maximum of 500 tons/day lime product (90% CaO);
- o Maximum sulfur content of the No. 6 Fuel Oil is 1.0%, by weight; and,
- o Concentration limits and allowable pound per hour emission rates are based on a maximum design volumetric flowrate of 34,383 dscfm.

h. while firing No. 6 fuel oil, initial and subsequent annual compliance tests shall be conducted using the following test methods in accordance with F.A.C. Rule 17-297 and 40 CFR 60, Appendix A (July, 1991 version):

1) EPA Method 5, Determination of Particulate Emissions from Stationary Sources.
2) EPA Method 7D or 7E, for Determining Nitrogen Oxide Concentrations at Fossil Fuel Fired Steam Generators.
3) EPA Method 8, Determination of Sulfuric Acid Mist and Sulfur Dioxide Emissions from Stationary Sources; or, EPA Method 6C, Determination of Sulfur Dioxide Emissions from Stationary Sources, may be used;
4) EPA Method 9, Visual Determination of the Opacity of Emissions from Stationary Sources.
5) EPA Method 10, Determination of Carbon Monoxide Emissions from Stationary Sources.
6) EPA Method 25A, Determination of Total Gaseous Organic Concentration Using a Flame Ionization Analyzer.

Note: Other reference methods may be used with prior written approval received from the Department in accordance with F.A.C. Rule 17-297.620.

SPECIFIC CONDITIONS:

i. while firing natural gas, initial and subsequent compliance tests shall be conducted using the following test methods in accordance with F.A.C. Rule 17-297 and 40 CFR 60, Appendix A (July, 1991 version):

1) EPA Method 5, Determination of Particulate Emissions from Stationary Sources.
2) EPA Method 7D or 7E, for Determining Nitrogen Oxide Concentrations at Fossil Fuel Fired Steam Generators.
3) EPA Method 8, Determination of Sulfuric Acid Mist and Sulfur Dioxide Emissions from Stationary Sources; or, EPA Method 6C, Determination of Sulfur Dioxide Emissions from Stationary Sources, may be used.
4) EPA Method 9, Visual Determination of the Opacity of Emissions from Stationary Sources.
5) EPA Method 10, Determination of Carbon Monoxide Emissions from Stationary Sources.
6) EPA Method 25A, Determination of Total Gaseous Organic Concentration Using a Flame Ionization Analyzer.

Note: Other reference methods may be used with prior written approval received from the Department in accordance with F.A.C. Rule 17-297.620.

C. <u>Chlorine Dioxide (ClO_2) Generator</u>

1. Operation permit No. AO 17-219596 is incorporated by reference except for the following changes and/or additions:

a. the existing chlorine gas handling system will be eliminated;

b. the generating process will be modified from a R3H process to a R8/R10 process, which will use methanol, sulfuric acid, and sodium chlorate to generate ClO_2;

c. the maximum allowable operating rate will be increased from 16 tons/day ClO_2 to 37.4 tons/day;

d. a third ClO_2 storage tank will be installed and the existing chlorine absorption towers will be converted to ClO_2 absorption towers;

e. the ClO_2 storage tanks will vent to the existing two ClO_2 storage tank chilled water scrubbers;

SPECIFIC CONDITIONS:

f. the existing two ClO_2 storage tank scrubbers will be vented to the tail gas scrubber, which will be modified by adding an additional 10 feet of tower and the scrubbing media will be changed from sodium hydroxide to white liquor (sodium hydroxide and sodium sulfide);

g. a new 21,880 gallon methanol storage tank and handling system will be installed and is subject to all applicable standards pursuant to 40 CFR 60, Subpart Kb (July, 1991 version); for PSD tracking purposes, the projected potential VOC emissions are 2.2 TPY; also, the tank will be nitrogen blanketed and equipped with a conservation vent;

SCC: 4-07-008-15	Meth. Tank-Breathing Loss	10^3 gals. storage cap.
4-07-008-16	Meth. Tank-Working Loss	10^3 gals. storage cap.

h. the existing salt unloading and storage system will be shut down and dismantled;

i. the pollutant emissions shall not exceed:

R8/R10 ClO_2 Generator: 37.4 TPD
Tail Gas Scrubber

Cl_2	0.1 lb/hr, 0.44 TPY
ClO_2	0.25 lb/hr, 1.1 TPY

j. initial compliance testing on the Tail Gas Scrubber for chlorine and chlorine dioxide will be conducted using NCASI (EPA Modified Method 6) test protocols.

Note: A post-test evaluation for rule applicability will be conducted to see if additional emissions evaluation is required.

D. A and B Bleach Plant Lines

1. Operation permit No. AO 17-219600 is incorporated by reference except for the following changes and/or additions:

a. both lines may operate continuously (i.e., 8760 hrs/yr);

b. the bleaching sequence will be changed from CED to DED;

c. a storage and handling system for the enzyme xylanase may be installed;

d. a storage and handling system for hydrogen peroxide will be installed;

SPECIFIC CONDITIONS:

e. the existing chlorine gas handling system will be eliminated;

f. the pollutant emissions shall not exceed:

1) A-Line Bleach Plant:	888 air dried tons per day, maximum	
a) E_O Washer	$CHCl_3$	0.038 lb/hr, 0.16 TPY
b) A-Line Scrubber	Cl_2	1.45 lbs/hr, 6.4 TPY
	ClO_2	0.45 lb/hr, 2.0 TPY
	$CHCl_3$	0.34 lb/hr, 1.5 TPY
2) B-Line Bleach Plant:	830 air dried tons per day, maximum	
a) E_O Washer	$CHCl_3$	0.038 lb/hr, 0.16 TPY
b) B-Line Scrubber	Cl_2	1.0 lb/hr, 4.38 TPY
	ClO_2	0.45 lb/hr, 2.0 TPY
	$CHCl_3$	0.34 lb/hr, 1.5 TPY

3) A-Line and B-Line Bleach Plants: average 1500 air dried tons per calendar day, maximum combined total

h. after construction/modification is completed, a meeting to establish the testing protocol shall be held with the Department, at which the following information shall be provided:

1) identification of all sources and their associated waste streams to be evaluated;

2) proposed sampling procedures/methods and analysis for determining $CHCl_3$; and,

3) proposed testing dates.

Note: A post-test evaluation for rule applicability will be conducted to see if additional emissions evaluation is required.

i. after construction/modification is completed, initial compliance testing on the Bleach Plant Scrubbers (A-Line and B-Line) and E_O Washers for chlorine and chlorine dioxide will be conducted using NCASI (EPA Modified Method 6) test protocols.

Note: A post-test evaluation for rule applicability will be conducted to see if additional emissions evaluation is required.

E. Nos. 1 and 2 Multiple Effect Evaporator (MEE) Sets, Batch and Continuous Digester Systems, and Foul Condensate Steam Stripper System

1. Operation permit No. AO 17-212422 is incorporated by reference except for the following changes and/or additions:

SPECIFIC CONDITIONS:

a. the No. 2 MEE set will be modified to include the addition of new effects, which will be vented to the non-condensible gas (NCG) handling system, which will increase the allowable maximum operating rate from 97,000 to 181,000 lbs/hr dry BLS (black liquor solids) and determined by measuring solids and flow into the system; however, the following operational scenarios are applicable to both of the Nos. 1 and 2 MEE sets:

1) when the Nos. 1 and 2 MEE sets are operated simultaneously, the maximum operating rate shall be 278,000 lbs/hr as a total combined input to them (24-hour average) and determined by measuring solids and flow into the systems;

2) when only one MEE set is in operation, the maximum operating rate shall be 181,000 lbs/hr dry BLS and determined by measuring solids and flow into the system (24-hour average); and,

3) actual total annual dry BLS from the Nos. 1 and 2 MEE sets, as determined by measuring solids and flow into the systems, shall not exceed the average for the years 1991 and 1992 (see AORs).

b. a storage and handling system may be installed for water-transported anthraquinone, an organic catalyst, which may be used in both the batch and continuous digester systems; both systems vent to the NCG handling system; and,

c. an additional foul condensate steam stripper will be installed and will be vented to the lime kiln or calciner for incineration.

F. <u>General</u>

1. The facility shall be in compliance with all applicable standards/limitations of F.A.C. Rules 17-210 thru 297, 17-4, and 40 CFR (July, 1991 version).

2. The permittee is subject to the applicable provisions of F.A.C. Rules 17-4.130: Plant Operation-Problems; 17-210.650: Circumvention; and, 17-210.700: Excess Emissions.

3. Objectionable odors shall not be allowed off plant property in accordance with F.A.C. Rule 17-296.320(2).

SPECIFIC CONDITIONS:

4. The Department's Northwest District office shall be notified in writing at least 15 days prior to source testing pursuant to F.A.C. Rule 17-297.340. Written reports of the tests shall be submitted to the Department's Northwest District office within 45 days of the test completion in accordance with F.A.C. Rule 17-297.450.

5. Any change in the method of operation, raw materials, equipment, operating hours, etc., pursuant to F.A.C. Rule 17-212.200, Definitions-Modification, the permittee shall submit an application and the appropriate processing fee to the Department's Bureau of Air Regulation (BAR) office.

6. The permittee, for good cause, may request that this construction permit be extended. Such a request shall be submitted to the Department's BAR prior to 60 days before the expiration date of the permit (F.A.C. Rule 17-4.090).

7. An application for an operation permit must be submitted to the Department's Northwest District office at least 90 days prior to the expiration date of this construction permit. To properly apply for an operation permit, the applicant shall submit the appropriate application form, fee, certification that construction was completed noting any deviations from the conditions in the construction permit, and compliance test reports as required by this permit (F.A.C. Rules 17-4.055 and 17-4.220).

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

Virginia B. Wetherell

Virginia B. Wetherell
Secretary

Best Available Control Technology (BACT) Determination
Champion International Corporation
Escambia County

PSD-FL-200

The applicant proposes to modify its existing pulp mill, which includes the installation of a natural gas fired power boiler rated at a maximum heat input of 533 MMBtu/hr [385,000 lbs/hr steam (2-hour average)] and the modification of the existing lime kiln and the A and B Bleach Plants. The steam will be used in the processes undergoing modifications in concert with the mill's wastewater Consent Order.

The applicant has indicated the maximum annual tonnage of regulated air pollutants emitted from the facility based on 100 percent capacity and type of fuel fired to be as follows:

Pollutant	Emissions (TPY)	PSD Significant Emission Rate (TPY)
NO_x	138.8	40
SO_2	28.2	40
PM/PM_{10}	-1.3	25/15
CO	189.0	100
VOC	85.5	40
TRS	-1.9	10

Florida Administrative Code (F.A.C.) Rule 17-212.400(2)(f) requires a BACT review for all regulated pollutants emitted in an amount equal to or greater than the significant emission rates listed in the previous table.

<u>Date of Receipt of a BACT Application</u>

December 21, 1992

BACT Determination Requested by the Applicant

Source	Pollutant	Determination
#6 Power Boiler	NO_x*	0.06 lb/MMBtu (32.0 lbs/hr, 140.1 TPY)
	CO*	0.1 lb/MMBtu (53.3 lbs/hr, 233.5 TPY) Combustion Control
	VOCs*	0.01 lb/MMBtu (5.33 lbs/hr, 23.4 TPY) Combustion Control
Lime Kiln-Mud Dryer	NOx*	#6 fuel oil: 200 ppmvd @ 10% O_2 (49.3 lbs/hr, 215.9 TPY) Natural Gas: 175 ppmvd @ 10% O_2 (43.1 lbs/hr, 188.8 TPY)
	CO*	45 ppmvd @ 10% O_2 (6.75 lbs/hr, 29.6 TPY
	VOCs*	104 ppmvd @ 10% O_2 (as propane) (24.5 lbs/hr, 107.3 TPY)

* 24-hour average

BACT Determination Procedure

In accordance with Florida Administrative Code Chapter 17-212, Stationary Sources - Preconstruction Review, this BACT determination is based on the maximum degree of reduction of each pollutant emitted which the Department, on a case by case basis, taking into account energy, environmental and economic impacts, and other costs, determines is achievable through application of production processes and available methods, systems, and techniques. In addition, the regulations state that in making the BACT determination the Department shall give consideration to:

(a) Any Environmental Protection Agency determination of Best Available Control Technology pursuant to Section 169, and any emission limitation contained in 40 CFR Part 60 (Standards of Performance for New Stationary Sources) or 40 CFR Part 61 (National Emission Standards for Hazardous Air Pollutants).

(b) All scientific, engineering, and technical material and other information available to the Department.

(c) The emission limiting standards or BACT determinations of any other state.

(d) The social and economic impact of the application of such technology.

The EPA currently stresses that BACT should be determined using the "top-down" approach. The first step in this approach is to determine for the emission source in question the most stringent control available for a similar or identical source or source category. If it is shown that this level of control is technically or economically infeasible for the source in question, than the next most stringent level of control is determined and similarly evaluated. This process continues until the BACT level under consideration cannot be eliminated by any substantial or unique technical, environmental, or economic objections.

The air pollutant emissions from the No. 6 Power Boiler can be grouped into categories based upon what control equipment and techniques are available to control emissions from these facilities. Using this approach, the emissions can be classified as follows:

- o Combustion Products (e.g., particulates). Controlled generally by efficient combustion of clean fuels.
- o Products of Incomplete Combustion (e.g., CO). Control is largely achieved by proper combustion techniques.
- o Acid Gases (e.g., NOx). Controlled generally by gaseous control devices.

Grouping the pollutants in this manner facilitates the BACT analysis because it enables the equipment available to control the type or group of pollutants emitted and the corresponding energy, economic, and environmental impacts to be examined on a common basis. Although all of the pollutants addressed in the BACT analysis may be subject to a specific emission limiting standard as a result of PSD review, the control of "nonregulated" air pollutants is considered in imposing a more stringent BACT limit on a "regulated" pollutant (i.e., particulates, sulfur dioxide, fluorides, sulfuric acid mist, etc,), if a reduction in "nonregulated" air pollutants can be directly attributed to the control device selected as BACT for the abatement of the "regulated" pollutants.

Combustion/Incomplete Combustion Products

The projected emissions of carbon monoxide and volatile organic compounds from the proposed modification to Champion International Corporation's facility exceed the significant emission rates given in Florida Administrative Code Table 17-212.400-2.

CO and VOCs:

For CO and VOCs, the data base does not list any sources incorporating any add-on controls for these type of sources. Due to the interrelationship between these combustion related pollutants, it is generally acceptable to utilize good combustion practices and process controls to minimize these pollutants. Therefore, the limits requested are considered reasonable as BACT.

Acid Gas Products

The projected emissions of nitrogen oxides from the proposed modification to Champion International Corporation's facility exceed the significant emission rates given in Florida Administrative Code Table 17-212.400-2.

NOX:

For NOx, the proposed BACT limits for both the No. 6 Power Boiler and the Lime Kiln-Mud Dryer System are within the range of similar sources in the BACT/LAER clearinghouse data base.

For the No. 6 Power Boiler, there have been limited cases of SCR impositions, but the cost evaluation of such technology is prohibitive for this project. Costs and process parameters rule out the use of other technologies, such as Selective Catalytic Reduction (SCR), Selective Noncatalytic Reduction (SNCR), and Flue Gas Denitrification (FGDN). The proposal to use Coen low-NOx burners together with flue gas recirculation to the combustion zone for minimizing NOx emissions is considered as BACT. However, available space will be made for the potential retrofit of a control system to control NOx.

For the Lime Kiln-Mud Dryer, the application of SCR, SNCR, or FGDN, have never been applied to a lime kiln system due to process variables. Therefore, the proposal to use good operational practices and proper combustion, along with the proposed emission limitations, is considered BACT.

Adverse Environmental Impact Analysis

The predominant adverse environmental impacts associated with the potential use of add-on control technology (SCR, SNCR or FGDN) are the emissions of other pollutants (i.e., ammonia, urea, hazardous waste from catalysts, etc.) used in the process for NOx control. Although the use of add-on controls do have some positive environmental benefits, the disadvantages may outweigh the benefits provided by reducing NO_X emissions.

From the evaluation of natural gas combustion, toxics are projected to be emitted in very small amounts. Although the emissions of toxic pollutants could be controlled by particulate control devices, such as a baghouse or scrubber system, the amount of emission reductions would not warrent the added expense. Consequently, the Department does not believe that the BACT determination would be affected by the emissions of the toxic polutants associated with the firing of natural gas.

BACT Determination by DEP

NOx Control

For the No. 6 Power Boiler, the information that the applicant presented indicates that the incremental cost of controlling NOx is high compared to the guidelines. Based on the information presented by the applicant and the evaluation conducted, the Department believes that the use of add-on controls NOx control is not justifiable as BACT. Therefore, the Department will accept the Coen low-NOx burners together with flue gas recirculation to the combustion zone as NOx control when firing natural gas.

For the Lime Kiln-Mud Dryer, there has not been an application of NOx add-on controls for this type of source contained in the data base. Therefore, there will not be any add-on controls required for NOx for this source.

CO and VOC Control

For CO and VOCs, the data base does not list any sources incorporating any add-on controls for these type of sources. Due to the interrelationship between these combustion related pollutants, it is generally acceptable to utilize good combustion practices and process controls to minimize these pollutants. Therefore, there will not be any add-on controls Required for CO or VOCs for both the No. 6 Power Boiler and the Lime Kiln-Mud Dryer.

The BACT limits for the proposed modification of the Champion International Corporation's facility are thereby established as follows:

Source	Pollutant	Emission Standard/Limitation
#6 Power Boiler	NO_x*	0.06 lb/MMBtu (32.0 lbs/hr, 140.1 TPY)
	CO*	0.1 lb/MMBtu (53.3 lbs/hr, 233.5 TPY) Combustion Control
	VOCs*	0.01 lb/MMBtu (5.33 lbs/hr, 23.4 TPY) Combustion Control
Lime Kiln-Mud Dryer	NOx*	#6 fuel oil: 200 ppmvd @ 10% O_2 (49.3 lbs/hr, 215.9 TPY)
		Natural Gas: 175 ppmvd @ 10% O_2 (43.1 lbs/hr, 188.8 TPY)
	CO*	45 ppmvd @ 10% O_2 (6.75 lbs/hr, 29.6 TPY)
	VOCs*	104 ppmvd @ 10% O_2 (as propane) (24.5 lbs/hr, 107.3 TPY)

* 24-hour average

Note: The maximum sulfur content of the #6 fuel oil is 1.0%, by weight.

Details of the Analysis May be Obtained by Contacting:

Bruce Mitchell, Environmental Administrator
Department of Environmental Protection
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Recommended by:

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

3/28 1994
Date

Approved by:

Virginia B. Wetherell
Virginia B. Wetherell, Secretary
Dept. of Environmental Protection

3-31 1994
Date

Florida Department of Environmental Regulation

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

Lawton Chiles, Governor

Virginia B. Wetherell, Secretary

March 8, 1993

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. F. Doug Owenby
Vice President/Operations Manager
Champion International Corporation
375 Muscogee Road
Cantonment, Florida 32533

Dear Mr. Owenby:

Attached is one copy of the Revised Technical Evaluation and Preliminary Determination (original draft dated February 25, 1993) and proposed permit to allow modifications to be made to the existing pulp mill in concert with the mill's wastewater Consent Order, including the construction of a new No. 6 Power Boiler, the modification of the existing Lime Kiln's mud handling system, the modification of the existing A and B Bleach Plant Lines and their operations, the modification of the No. 2 Multiple Effect Evaporator set by adding new effects, the construction of a new methanol storage tank, and the surrender of the operation permits for the existing Nos. 1 and 2 Power Boilers.

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

Sincerely,

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

CHF/BM/rbm

Attachments

c: E. Middleswart, NWD
J. Harper, EPA
J. Braswell, Esq., DER
T. Cole, Esq., OHF&C
D. Smith, P.E., CE
J. Bunyak, NPS
G. Golson, ADEM
K. Moore, CIC

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

CERTIFIED MAIL

In the Matter of
Applications for Permit by:

DER File Nos. AC 17-223343
PSD-FL-200
Escambia County

Champion International Corporation
375 Muscogee Road
Cantonment, FL 32533
_______________________________/

INTENT TO ISSUE

The Department of Environmental Regulation gives notice of its intent to issue a permit (copies attached) for the proposed project as detailed in the applications specified above, for the reasons stated in the attached Revised Technical Evaluation and Preliminary Determination (original draft dated February 25, 1993).

The applicant, Champion International Corporation, applied on December 21, 1992, to the Department of Environmental Regulation for permits to be allowed to make modifications to the existing pulp mill in concert with the mill's wastewater Consent Order, including the construction of a new No. 6 Power Boiler, the modification of the existing Lime Kiln's mud handling system, the modification of the existing A and B Bleach Plant Lines and their operations, the modification of the No. 2 Multiple Effect Evaporator set by adding new effects, the construction of a new methanol storage tank, and the surrender of the operation permits for the existing Nos. 1 and 2 Power Boilers. The existing pulp mill is located at 375 Muscogee Road, Cantonment, Escambia County, Florida.

The Department has permitting jurisdiction under the provisions of Chapter 403, Florida Statutes (F.S.) and Florida Administrative Code (F.A.C.) Chapters 17-210 thru 17-297, and 17-4. The project is not exempt from permitting procedures. The Department has determined that a construction permit is required for the proposed work.

Pursuant to Section 403.815, F.S., and Rule 17-103.150, F.A.C., you (the applicant) are required to publish at your own expense the enclosed Notice of Intent to Issue Permits. The notice shall be published one time only within 30 days in the legal ad section of a newspaper of general circulation in the area affected. For the purpose of this rule, "publication in a newspaper of general circulation in the area affected" means publication in a newspaper meeting the requirements of Sections 50.011 and 50.031, F.S., in the county where the activity is to take place. Where there is more than one newspaper of general circulation in the county, the newspaper used must be the one with significant circulation in the area that may be affected by the permitting action. If you are uncertain that a newspaper meets these requirements, please contact the Department at the address or telephone number listed below. The applicant shall provide proof of publication to the Department's Bureau of Air Regulation, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400 (904-488-1344), within seven days of publication. Failure to publish the notice and provide proof of publication within the allotted time may result in the denial of the permit.

The Department will issue the permit with the attached conditions unless a petition for an administrative proceeding (hearing) is filed pursuant to the provisions of Section 120.57, F.S.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Petitions filed by the permit applicant and the parties listed below must be filed within 14 days of receipt of this intent. Petitions filed by other persons must be filed within 14 days of publication of the public notice or within 14 days of their receipt of this intent, whichever first occurs. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, F.S.

The Petition shall contain the following information;

(a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;
(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;
(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;
(d) A statement of the material facts disputed by Petitioner, if any;
(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;

(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and,

(g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this intent. Persons whose substantial interests will be affected by any decision of the Department with regard to the applications have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of receipt of this intent in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

C. H. Fancy, P.E., Chief
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399
904-488-1344

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CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this INTENT TO ISSUE and all copies were mailed by certified mail before the close of business on 3-10-93 to the listed persons.

Clerk Stamp

FILING AND ACKNOWLEDGMENT
FILED, on this date, pursuant to §120.52(11), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

[signature] 3-10-93

Clerk Date

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
NOTICE OF INTENT TO ISSUE PERMIT

Champion International Corporation

AC 17-223343

PSD-FL-200

The Department of Environmental Regulation gives notice of its intent to issue a permit to Champion International Corporation, 375 Muscogee Road, P. o. Box 87, Cantonment, Florida 32533, to allow modifications to be made to the existing pulp mill in concert with the mill's wastewater Consent Order, including the construction of a new No. 6 Power Boiler, the modification of the existing Lime Kiln's mud handling system, the modification of the existing A and B Bleach Plant Lines and their operations, the modification of the No. 2 Multiple Effect Evaporator set by adding new effects, the construction of a new methanol storage tank, and the surrender of the operation permits for the existing Nos. 1 and 2 Power Boilers. A determination of Best Available Control Technology (BACT) was required. The proposed project is subject to the Prevention of Signification Deterioration (PSD) regulations. Approximately 10 percent of the annual NOx PSD increment will be consumed. The Department is issuing this Intent to Issue for the reasons stated in the Revised Technical Evaluation and Preliminary Determination (original draft dated February 25, 1993).

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes (F.S.). The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within 14 days of publication of this notice. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, F.S.

The Petition shall contain the following information;

(a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;
(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;
(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;
(d) A statement of the material facts disputed by Petitioner, if any;

(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;
(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and,
(g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this Notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the applications have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

The applications are available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Department of Environmental Regulation
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Department of Environmental Regulation
Northwest District
160 Government Center
Penscaola, Florida 32501-5794

Any person may send written comments on the proposed action to Mr. Preston Lewis at the Department's Tallahassee address. All comments received within 30 days of the publication of this notice will be considered in the Department's final determination. Further, a public hearing can be requested by any person. Such requests must be submitted within 30 days of this notice.

Revised
Technical Evaluation
and
Preliminary Determination

Champion International Corporation
Escambia County, Florida

Permit Numbers: AC 17-223343
PSD-FL-200

Department of Environmental Regulation
Division of Air Resources Management
Bureau of Air Regulation

March 8, 1993

I. Application

A. Applicant

Champion International Corporation
375 Muscogee Road
Cantonment, FL 32533

B. Project Description and Location

The applicant proposes to modify the existing pulp mill in concert with the mill's wastewater Consent Order, including the construction of a new No. 6 Power Boiler, the modification of the existing Lime Kiln's mud handling system, the modification of the existing A and B Bleach Plant Lines and their operations, the modification of the No. 2 Multiple Effect Evaporator set by adding new effects, the construction of a new methanol storage tank, and the surrender of the operation permits for the existing Nos. 1 and 2 Power Boilers. Also, the applicant stated that this activity will not result in a mill production increase, thereby eliminating the need to address actual emissions from other mill sources (source annual operation reports will be used to verify).

The existing facility is located in Escambia County, Florida. The UTM coordinates are Zone 17, 469.0 km East and 3,385.8 km North.

C. Process and Controls

1. General

The kraft cooking process is used to separate the lignin and wood fiber to produce brown pulp from wood chips (see Figure 2-3). After the wood chips have been cooked with an alkaline liquor in the batch digesters (hard wood) and the continuous digester (soft wood) and washed, the pulp is screened to separate rejects. The pulp is then further delignified in separate oxygen delignification reactors, washed, and sent to the A and B Bleach Plants, where it is reacted with various chemicals in a sequence for purification, brightening and viscosity control. Chemicals are added in retention towers, and reactants are removed in washers. After being bleached, the pulp is dried on the Nos. 3 and 5 Paper Machines and finished for customer specifications. Market pulp is dried on a pulp drying machine as bales or rolls for final sale.

2. Chemical Cooking

Improved delignification in the cooking processes is proposed for the soft wood chips, which are cooked in the continuous digester, by an extended modified continuous cooking. By adding cooking liquor at different stages and using different cooking conditions, the proposed process is expected to produce a pulp which is easier to wash and, therefore, improving lignin extraction. The continuous digester system is a sealed system and its emissions are collected and transported to an incinerator system (i.e., lime kiln: primary; calciner: backup) for control. No increase in throughput should occur due to the proposed changes to the continuous digester system.

The project may include the installation of storage and handling equipment for anthraquinone (AQ), which is water soluble; and, therefore, Champion proposes to utilize a system designed for transporting and storing water-soluble anthraquinone. AQ is an organic catalyst which accelerates and increases the selectivity of the wood cooking chemicals in the delignification of the pulp fiber. It may be used in both the batch digester system and the continuous digester system for the purpose of reducing the organic loading, the color, and the conductivity in the bleach plant effluent.

It is believed that emissions from the digesters should not change following implementation of these new methods. Since feed rate to the digesters will not change, the material flow rate from the digesters to the brown stock washers will also be unchanged. No net change in black liquor solids to the recovery boilers is anticipated.

As is the continuous digester system, the batch digester system is a closed system and its emissions are collected and transported to an incinerator system (i.e., lime kiln or calciner) for control.

3. O_2 Delignification

The washed brown pulp from the cooking processes goes through further delignification in O_2 reactors on each line (i.e., soft wood and hard wood). If the proposed improvements in the digester cooking processes occur, then less fiber may be wasted, which could result in an increase in the fiber processed through the O_2 delignification systems. Since there could also be reduced levels of lignin in the brown pulp, the actual emissions from the pre- and post-O_2 washers and the O_2 blow tank are not expected to change, even if fiber throughput increases.

4. A and B Bleach Plants

The existing A and B Bleach Plants are identical and use a three stage bleaching sequence commonly referred to as CED (C: a chlorination stage with chlorine dioxide added; E: an oxidative caustic extraction stage; and, D: a final chlorine dioxide bleaching stage). The final bleaching sequence will be referred to as DED (see Figure 1).

The chlorine dioxide (ClO_2) is manufactured on site in a chemical generator employing the R3H process, which reacts salt, sulfuric acid, hydrochloric acid, and sodium chlorate to form a chlorine dioxide/chlorine gas mixture that is absorbed in chilled water and stored in storage tanks for use by both plants.

There are five vent sources associated with the ClO_2 generator, which includes a tail gas scrubber using a sodium hydroxide media to control ClO_2, two ClO_2 storage tanks using chilled water scrubbers to control ClO_2, and two salt unloading/pneumatic transfer systems using separate water spray towers to control particulate emissions.

The proposal will eliminate the existing chlorine gas handling system, add a hydrogen peroxide handling system, add a methanol storage tank, and modify the ClO_2 generator. In addition, enzymes (i.e., xylanase) may be added to the high density storage tanks between the oxygen delignification systems and the bleach plants.

The mill will eliminate the use of molecular chlorine as a bleaching agent, and the first stage of each plant will be 100% ClO_2, which will require a modification to the existing ClO_2 generator. The generator will be modified to an R8/R10 process (see Figure 2), which uses methanol, sulfuric acid, and sodium chlorate to generate ClO_2. The modified reactor's capacity will be increased from 16 tons per day to 37.4 tons per day of ClO_2. A third ClO_2 storage tank will be installed and the existing chlorine absorption towers will be converted to ClO_2 absorption towers.

The storage tank scrubbers will continue to vent the existing two tanks and will also vent the new storage tank. The exhaust from the two tank vent scrubbers will be directed to the tail gas scrubber. The tail gas scrubber will be modified by installing an extra 10 feet of tower and the scrubbing media will be changed from sodium hydroxide to white liquor (sodium hydroxide plus sodium sulfide).

A hydrogen peroxide storage and handling system will be installed. Hydrogen peroxide is an oxidizing agent that works optimally in alkaline conditions and is typically applied to the pulp in a 50% solution. The peroxide is applied in the oxidative extraction stage and is completely reacted. There are no emissions associated with the use of hydrogen peroxide.

The proposal to use the enzyme, xylanase, as a bleach boosting technique is not completely proven. By adding the enzyme prior to pulp bleaching, it is hoped that it will modify the chemical structure to make subsequent bleach stages more efficient and resulting in fewer non-desirable by-products, improved process yields, and significant reductions in ClO_2 required to bleach pulp. Installation of enzyme storage and handling facilities will be required. Since enzymes are water soluble, there will be no air emissions associated with these systems.

A new 21,880 gallon methanol storage tank will be installed. The tank will be nitrogen blanketed and equipped with a conservation vent.

The existing salt unloading and handling system will be shut down and dismantled.

The existing bleach plant scrubbers are equally effective for Cl_2 and ClO_2 removal, and the scrubber systems have adequate capacity for the expected emissions. Therefore, no changes are planned for these scrubber systems.

5. Nos. 1 and 2 Multiple Effect Evaporator (MEE) Sets

Additional loading (i.e., ~ 50%) is expected on the No. 2 MEE set by the processing of reclaimed sewer effluent. This will be accomplished by the addition of new evaporator effects to the existing No. 2 MEE set, which will increase the allowable maximum operating rate from 97,000 to 181,000 lbs/hr dry BLS (black liquor solids) and determined by measuring the solids and flow into the system; and, when both sets are operated simultaneously, the maximum allowable operating rate shall be 278,000 lbs/hr dry BLS and determined by measuring the solids and flow into the systems. However, the actual total combined maximum annual dry BLS from the Nos. 1 and 2 MEE sets, as determined by measuring the solids and flow into the systems, shall not exceed the average for the years 1991 and 1992 [see AORs (Annual Operation Reports)].

Although the color and B.O.D. reclaimed represents a significant portion of the wastewater load, the associated solids contribution to the chemical recovery system is insignificant. Therefore, the recovery boilers and associated equipment are not impacted. This will be verified by the use of the AORs and, where necessary, other operational data.

6. Foul Condensate Stripper System

An upgrade of the existing contaminated condensate stripper and the installation of an additional steam stripper is planned . With added stripper capacity, initial estimates have shown that the mill effluent B.O.D. load to the wastewater treatment plant could be reduced by as much as 15%. Since a steam stripper directly reduces volatile organic compounds (VOCs) released from the digester steam after the cooking of wood chips, this will decrease the amount of VOCs previously released to the wastewater treatment system. The existing emissions, as well as the new emissions, from the condensate stripper system will be collected and transported to an incinerator (i.e., lime kiln) for control.

7. Lime Kiln-Mud Dryer

The lime kiln and calciner cannot process all of the lime mud produced by the causticizing system, thus discharging the excess mud to the sewer in a weak wash solution. This sewered lime mud with settled mill sludge is collected and landfilled from decanting basins, with the resulting weak wash alkaline solution requiring neutralization using CO_2 injection. The alkaline solution does increase mill effluent conductivity.

The proposal will add a lime mud dryer system (see Figure 3) in order to eliminate the sewering of the excess lime mud in weak wash solution from the causticizing process, reduce landfilling requirements, and reduce conductivity by about 20%.

The upgrade will increase the capacity to 500 tons/day of lime product (90% CaO). A new multifield electrostatic precipitator will be installed between the lime kiln and the existing caustic scrubber will be modified to provide SO_2 scrubbing capability (the packed column will utilize recirculating NaOH as the scrubbing medium). Champion is committed to conducting a test program to determine the scrubber operating conditions required to meet the applicable SO_2 and TRS emission limits. Appropriate process and/or emissions monitoring parameters will be established during the testing program.

A slight increase in non-condensible gases (i.e., total reduced sulfur compounds) will be burned in the lime kiln, resulting in an increase in SO_2 emissions. These SO_2 emissions will be subjected to the lime mud in the lime kiln and a caustic scrubber system. Projected emissions are not significant. A performance test will be required to substantiate this.

8. New No. 6 Power Boiler

Added steam capacity will be required to support the proposed process modifications. The specific added steam demand will come from an increase in evaporation and contaminated condensate stripping capacity, black liquor heaters, the cooking modifications, and bleach plant load reduction technologies.

The new No. 6 Power Boiler will be permitted to fire only natural gas as a fuel, with a maximum heat input of 533 MMBtu/hr. The new boiler will permit the retirement of the existing Nos. 1 and 2 Power Boilers. The new boiler will provide 385,000 pounds per hour of steam product.

D. The Standard Industrial Codes are:

Major Group No. 26 - Paper and Allied Products
Industry Group No. 2611 - Pulp Mills

II. Rule Applicability

The proposed project is subject to preconstruction review in accordance with Chapter 403, Florida Statutes; Florida Administrative Code (F.A.C.) Chapters 17-210 thru 17-297, and 17-4; and, the 40 CFR (July, 1991 version).

The application package was deemed complete on January 20, 1993.

The plant is located in an area designated as attainment for all pollutants in accordance with F.A.C. Rule 17-275.400.

The existing mill is a major emitting facility in accordance with F.A.C. Rule 17-212.200, Definitions, for the pollutants particulate matter (PM/PM10), sulfur dioxide (SO_2), nitrogen oxides (NOx), carbon monoxide (CO), TRS, and volatile organic compounds (VOCs).

The proposed mill modification will result in a net significant increase for the pollutants NOx, CO and VOCs (see Tables 1 & 2), thus requiring new source review for Prevention of Significant Deterioration (PSD) in accordance with F.A.C. Rule 17-212.400. This review consists of a determination of Best Available Control Technology (BACT) pursuant to F.A.C. Rule 17-212.410 and an analysis of the air quality impact of the increased emissions. The review also includes an analysis of the project's impacts on soils, vegetation and visibility, along with air quality impacts resulting from associated commercial, residential and industrial growth.

The proposed new sources and modified sources shall be in compliance with all applicable provisions of F.A.C. Chapters 17-210 thru 17-297 and 17-4; and, the 40 CFR (July, 1991 version). The proposed source shall be in compliance with all applicable provisions of F.A.C. Rules 17-210.650: Circumvention; 17-210.700: Excess Emissions; 17-296.800: Standards of Performance for New Stationary Sources (NSPS); 17-297: Stationary Point Source Emission Test Procedures; and, 17-4.130: Plant Operation-Problems.

This proposed new No. 6 Power Boiler shall be in compliance with the NSPS for Industrial Steam Generating Units, 40 CFR 60, Subpart Db, and BACT.

The new methanol storage tank shall be in compliance with the NSPS for Storage Vessels for Petroleum Liquids, 40 CFR 60, Subpart Kb.

As a first tier level of review, the pollutants chlorine, chlorine dioxide, and chloroform, were evaluated with considerations given to carcinogenicity and toxicity using risk assessment guidelines. Through these considerations, initial property line acceptable ambient concentrations were established for each pollutant along with the appropriate averaging times.

Since neither State nor Federal ambient standards for chlorine, chlorine dioxide, and chloroform have yet been adopted, post-modification performance tests will be required to quantify the emissions, which might result in additional rule evaluation requirements.

III. Emission Limitations and Impact Analysis

A. Emission Limitations

The proposed project is subject to emission limitations for the pollutants NOx, SO2, CO, VOC, TRS, and PM/PM10. Applicable visible emission (VE) standards will also be imposed. The following table will reflect the allowable emission standards/limitations:

Table A

Source	Pollutant	Allowable Emission Standard/Limitation
1. No. 6 Power Boiler:		maximum 533 MMBtu/hr heat input
	NOx*	0.06 lb/MMBtu (32.0 lbs/hr, 140.1 TPY)
	CO*	0.1 lb/MMBtu (53.3 lbs/hr, 233.5 TPY)
	PM/PM_{10}	2.67 lbs/hr, 11.7 TPY
	SO_2	Not Applicable: Natural gas usage (for PSD tracking purposes: 2.2 TPY projected potential emissions)
	VOC*	0.01 lb/MMBtu (5.33 lbs/hr, 23.4 TPY)
	VE	$\leq$ 20 % opacity (6-min avg), except for one 6-min period/hr @ $\leq$ 27% opacity

* 24-hour average

Source	Pollutant	Allowable Emission Standard/Limitation
2. Lime Kiln-Mud Dryer System:		maximum 500 TPD CaO; 34,383 dscfm
	NOx*	No. 6 fuel oil: 200 ppmvd @ 10% O_2 (49.3 lbs/hr, 215.9 TPY)
		Natural Gas: 175 ppmvd @ 10% O_2 (43.1 lbs/hr, 188.8 TPY)
	PM/PM_{10}	10.9 lbs/hr, 47.7 TPY
	CO*	45 ppmvd @ 10% O_2 (6.75 lbs/hr, 29.6 TPY)
	VOC*	104 ppmvd @ 10% O_2 (as propane) (24.5 lbs/hr, 107.3 TPY)
	TRS**	8 ppmvd @ 10% O_2 (1.46 lbs/hr, 6.4 TPY)
	SO_2	6.49 lbs/hr, 28.4 TPY
	VE	< 20% opacity

* 24-hour average
** 12-hour average

Table A cont.:

3. A-Line Bleach Plant		
a. E_O Washer	$CHCl_3$	0.038 lb/hr, 0.16 TPY
b. A-Line Scrubber	CL_2	1.45 lbs/hr, 6.4 TPY
	ClO_2	0.45 lb/hr, 2.0 TPY
	$CHCl_3$	0.34 lb/hr, 1.5 TPY
4. B-Line Bleach Plant		
a. E_O Washer	$CHCl_3$	0.038 lb/hr, 0.16 TPY
b. B-Line Scrubber	Cl_2	1.0 lbs/hr, 4.38 TPY
	ClO_2	0.45 lb/hr, 2.0 TPY
	$CHCl_3$	0.34 lb/hr, 1.5 TPY

5. R8/R10 ClO_2 Generator: 37.4 TPD
Tail Gas Scrubber
Cl_2 0.1 lb/hr, 0.44 TPY
ClO_2 0.25 lb/hr, 1.1 TPY

6. Methanol Storage Tank: 21,880 gallons - horizontal fixed roof
VOC Not Applicable (for PSD tracking purposes: 2.2 TPY projected potential emissions)

NOTE:
1. Natural gas usage only in the No. 6 PB.
3. Hours of operation at 8760 per year.
3. Maximum heat input:
 a. No. 6 PB: 533 MMBtu/hr.
 b. Lime kiln: 165 MMBtu/hr.
4. Steam production:
 a. No. 6 PB: 385,000 pounds per hour.
5. Pollutant basis: #6 PB and Lime Kiln-Mud Dryer
 a. NOx: BACT
 b. CO: BACT
 c. PM/PM_{10}: #6 PB: AP-42 Emission Factors, Table 1.4-1
 LK-MD: vendor guarantee of 0.037 gr/dscf
 d. VOC: BACT
6. The maximum sulfur content of the No. 6 Fuel Oil is 1.0%, by weight.

The following table will present the initial property line acceptable ambient concentrations and their averaging times for chloroform, chlorine, and chlorine dioxide:

Table B

Chemical	Acceptable Ambient Conc.	Averaging Time
1. Chloroform	0.043 ug/m^3	annual
2. Chlorine	15.0 ug/m^3 (5 ppb)	8-hour
	3.57 ug/m^3 (1.2 ppb)	24-hour

Table B cont.:

3. Chlorine Dioxide	3.0 ug/m^3	(1 ppb)	8-hour
	0.71 ug/m^3	(0.24 ppb)	24-hour

Note:

1. Since chloroform is a carcinogen with an EPA unit risk value (a measure of its carcinogenic potency) and the facility will continuously emit this chemical, the initial acceptable ambient concentration is based on providing protection from the long-term exposure to chloroform. The level of protection, that corresponds to a one-in-a-million increased risk of developing cancer from continuous exposure to chloroform, is calculated by dividing 1.0E-6 by 2.3E-5 (the unit risk factor for chloroform). The resulting quotient (0.043 ug/m^3) is the initial acceptable ambient concentration. Since the health concern is for long-term exposure (and the unit risk factor reflects a 70-year exposure), the averaging time should be on an annual basis.

2. Chlorine is not a carcinogen, but has an occupational exposure level (TLV) of 0.5 ppm (1.5 mg/m^3). The initial acceptable ambient concentration is based on providing two orders of magnitude below the occupational level. The two orders of magnitude represent protection for the differences between healthy workers and the more sensitive public, and the public's potential exposure to multiple chemicals, which may exert synergistic effects, or may produce exposures through other environmental media.

   The first ambient guideline is based on an 8-hour average concentration, as is the occupational exposure level. An additional protection factor which takes into account the public's continuous exposure, compared to a worker's exposure, which ceases in 8 hours, is provided by the longer-term 24-hour guideline. For the 24-hour guideline, the 8-hour guideline is divided by 4.2, which is the ratio between a 168-hour week of public exposure to a continuous emission and a worker's exposure to 40 hours of the toxic. The 24-hour guideline does not need to be used for batch operations or processes which operate for less than 8 hours. If a process can pass the 8-hour ambient guideline and does not operate more than 8 hours, then its average ambient concentration for 24 hours will be well below the 24-hour guideline.

3. The initial acceptable ambient concentration for chlorine dioxide* is derived by the same methodology as was used for chlorine. The occupational exposure level is 0.3 mg/m^3 (0.1 ppm). Dividing the TLV by 100 gives the 8-hour acceptable

ambient concentration, and dividing the TLV by 420 gives the 24-hour concentration.

* Facility representatives indicated that chlorine dioxide is very reactive and rapidly breaks down to chlorine in the atmosphere. Therefore, an acceptable ambient concentration guideline may not be appropriate for chlorine dioxide.

4. Testing will be required to verify the emissions from all sources.

B. Air Quality Impact Analysis

1. Introduction

The proposed No.6 Power Boiler and the modification of the Lime Kiln-Mud Dryer will emit three pollutants in PSD-significant amounts. These pollutants include the criteria pollutants carbon monoxide (CO), nitrogen oxides (NOx), and ozone (O3) (as volatile organic compounds). (see Table 1)

The air quality impact analysis required by the PSD regulations for these pollutants includes:

* An analysis of existing air quality;
* A PSD increment analysis (for NO2);
* An Ambient Air Quality Standards (AAQS) analysis;
* An analysis of impacts on soils, vegetation, and visibility and of growth-related air quality impacts; and,
* A "Good Engineering Practice" (GEP) stack height determination.

The analysis of existing air quality generally relies on preconstruction monitoring data collected with EPA-approved methods. The PSD increment and AAQS analysis depends on air quality dispersion modeling carried out in accordance with EPA guidelines.

Based on the required analyses, the Department has reasonable assurance that the proposed mill modification, as described in this report and subject to the conditions of approval proposed herein, will not cause or contribute to a violation of any ambient air quality standard or PSD increment. A discussion of the modeling methodology and required analysis follows.

2. Analysis of Existing Air Quality

Preconstruction ambient air quality monitoring is required for all pollutants subject to PSD review.

An exemption to the monitoring requirement can be obtained if the maximum air quality impact, as determined by air quality modeling, is less than a pollutant-specific "de minimus" concentration.

The predicted ambient impact of the the proposed project for those pollutants subject to the PSD review is listed in Table 2.

The predicted maximum impacts for CO and NO2 are less than their respective de minimus impact levels. Therefore, no additional monitoring is required for these pollutants.

Preconstruction monitoring review is not required for ozone concentrations either, because the maximum potential VOC emissions from the proposed plant are less than 100 TPY.

However, a background NO_2 concentration of 22.5 ug/m3 annual average was developed by the Department for use in the ambient air quality analysis. This value was based on data from sites in Jacksonville and Tarpon Springs both about equally distant from Champion. There were no quality assured NO_2 monitoring sites in the Pensacola area.

3. Modeling Methodology

The modeling analysis included both screening and refined EPA-approved models. Screening models were used to determine the "worst case" loaded conditions associated with the No.6 Power Boiler and to evaluate the No.6 Power Boiler and Lime Kiln-Mud Dryer impacts due to CO emissions. The EPA-approved Industrial Source Complex Long-Term (ISCLT2) dispersion model was used to evaluate NO_2 impacts. All recommended EPA default options were used. Direction-specific downwash parameters were used because the stacks were less than the GEP stack height.

Meteorological data used in the modeling consisted of five years (1985-1989) of hourly surface and upper air meteorological data taken at Pensacola, Florida. These data were input into the National Climatic Data Center (NCDC) stability array (STAR) preprocessor program for use as input to the ISCLT2 model. The STAR program converts the hourly data into the joint frequency of occurrence of wind direction, wind speed, and atmospheric stability. The STAR program can produce monthly, seasonal and annual stability arrays of input into ISCLT2.

The highest predicted yearly impact from the proposed NOx emissions was compared with the standards.

4. Modeling Results

The applicant performed screening modeling to determine the "worst case" load conditions for the proposed boiler. The worst case ambient impacts were predicted to occur during the 100% load condition. Based on the results above, all refined modeling included the 100% load emission parameters and emission rates for the No.6 Power Boiler.

The Screening model was also used to demonstrate that the CO impacts from the No.6 Power Boiler and the modification to the Lime Kiln were below the 1-hour and 8-hour significance levels of 2,000 ug/m3 and 500 ug/m3, respectively. The maximum combined impact from these two sources was 413.7 ug/m3 on a 1-hour basis. The 8-hour impact was 289.6 ug/m3. Therefore, since the proposed mill modification will not result in a significant ambient CO air quality impact, no further air quality modeling for CO is required. The proposed facility is located in a Class II area. The applicant evaluated the potential increases in ambient ground-level concentrations associated with the project and determined that the maximum projected ambient concentration increase would be greater than the PSD significant level for NO_2, thus requiring the applicant to perform a full impact analysis for NO_2. The significant impact area was determined to be 2.4 km and an emissions inventory for NOx sources was developed for the Champion mill and other major sources.

A combination of polar coordinate receptors and rectangular coordinate receptors was established for the ISCLT2 modeling. The polar grid was centered on the location of the No.5 Boiler stack. The following downwind receptor rings for every 10 degrees of arc from 0 degrees to 360 degrees were included: 4250m, 4500m, 4750m, 5000m, 6000m, 7000m, 8000m, and 10,000m. Due to the narrow boundary of Champion's property, an extensive network of discrete receptors along the boundary was used to supplement the polar grid. Since the polar receptor grid was centered on the No.5 Boiler, additional discrete receptors were required to adequately fill in the area between the property and the start of the grid. These additional receptors included points at 100m spacing out to 1000m and 250m spacing from 1000m to 4500m where the full polar grid started. Receptors were also placed at approximately 100m intervals along the perimeter of the facility boundary.

Atmospheric dispersion modeling, as previously described, was performed to quantify the amount of PSD increment consumed. The modeling results are summarized in Table 3. Based on these modeling results, the impacts from the proposed facility will not violate any of the Class II increments.

No PSD Class I increment analysis was done since the project is located more than 160 km from the nearest Class I area.

For the pollutants subject to an AAQS review, the total impact on ambient air is obtained by adding a "background" concentration to the maximum modeled concentration. This "background" concentration takes into account all sources of a particular pollutant that are not explicitly modeled. The "background" concentrations are taken from areas that are much more industrialized than the proposed facilities location. Therefore, these background values are considered to be conservative. A background NO_2 concentration of 22.5 ug/m3 annual average was developed by the Department based on the data from sites in Jacksonville and Tarpon Springs.

Given existing air quality in the area of the proposed facility, emissions from the proposed facility are not expected to cause or contribute to a violation of an AAQS. The results of the AAQS analysis are summarized in Table 4.

There is currently no acceptable method to model VOCs for ozone formation. Consequently, the control of the VOC emissions are addressed in the BACT review.

Chlorine, chlorine dioxide, and chloroform do not have an AAQS. However, for sources with quantifiable emission rates for these pollutants, a modeling analysis was conducted and the results compared to the Department's current draft air toxics reference concentrations. Table 5 summarizes the results of this analysis. The predicted concentrations for each of these pollutants are less than their respective reference concentrations.

5. Additional Impacts Analysis

a. Impacts on Soils and Vegetation

The maximum ground-level concentration predicted to occur for each pollutant as a result of the proposed project, including a background concentration, will be below the applicable AAQS including the national secondary standards developed to protect public welfare-related values. As such, this project is not expected to have a harmful impact on soils and vegetation.

b. Impact on Visibility

The mill modifications are estimated to result in a decrease in annual particulate matter emissions and an increase of less than 28 tons of SO2. Hence, it is not anticipated that any perceptible reduction in visibility will occur due to the emission of primary or secondary aerosols by the proposed mill modification. And the ambient ground level concentration of nitrogen oxides (in the form of NO_2) is anticipated to decrease due to the shutdown and removal of the No.1 and No.2 Power Boilers. Hence, visibility impairment should not occur.

c. Growth-Related Air Quality Impacts

The proposed facility is not expected to significantly change employment, population, housing or commercial or industrial development in the area to the extent that an air quality impact will result.

IV. CONCLUSION

Based on the information provided by Champion International Corporation, the Department has reasonable assurance that the proposed mill modification, as described in this evaluation, and subject to the conditions proposed herein, will not cause or contribute to a violation of any air quality standard, PSD increment, or any other technical provision of Chapters 17-210 thru 17-297 of the Florida Administrative Code.

FIGURE 2-3: CONSENT ORDER AIR PERMITTING PLAN - MILL LAYOUT

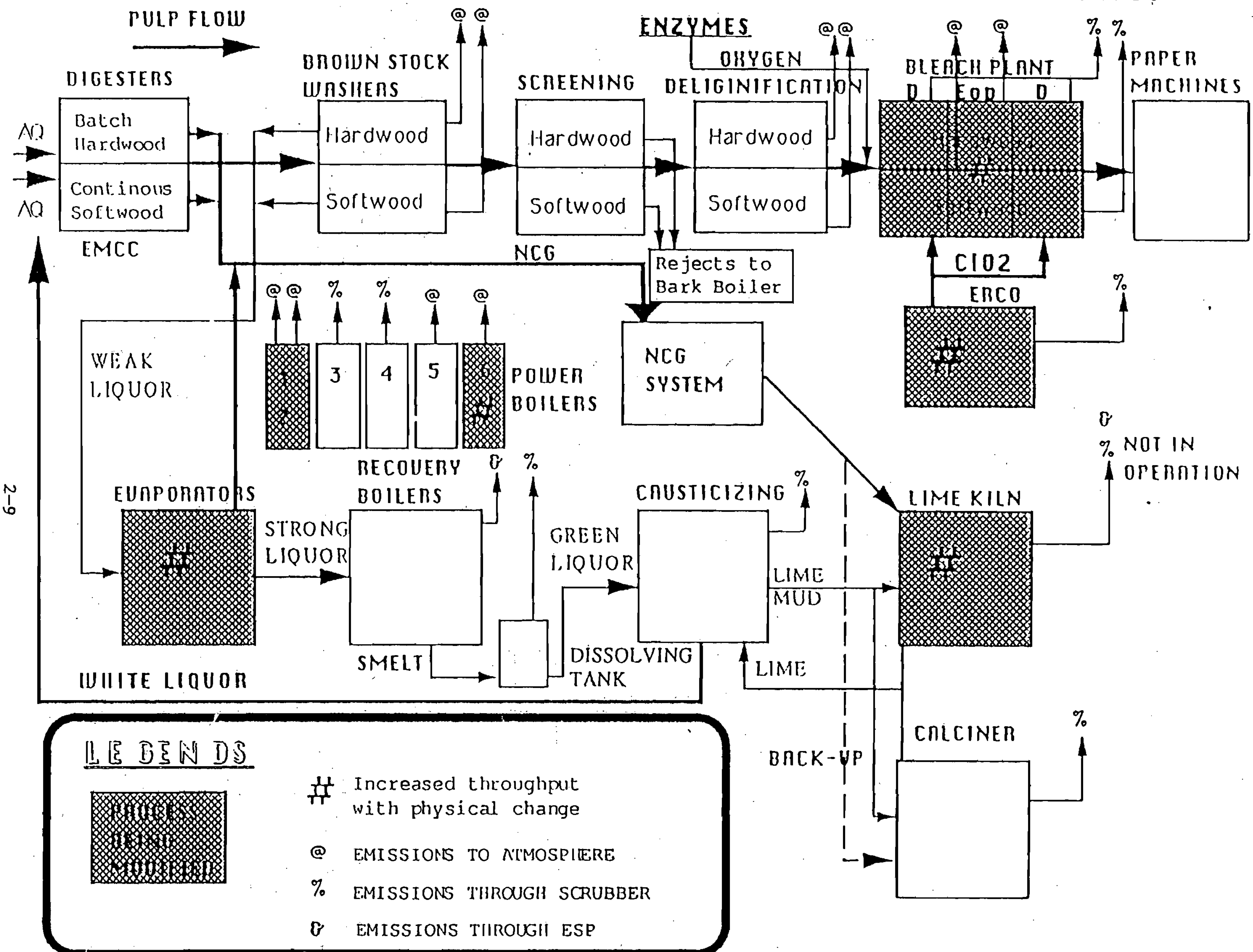
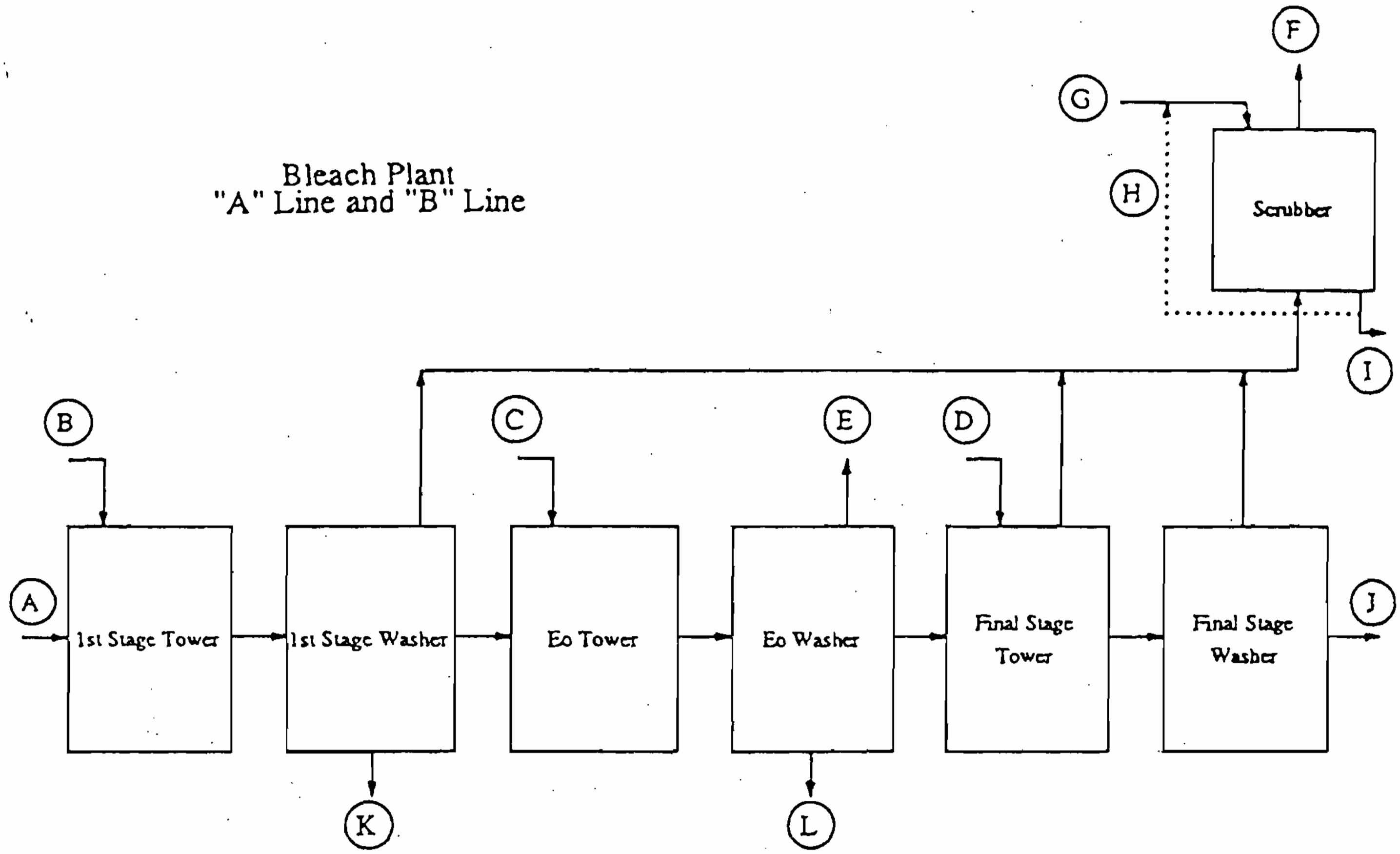


Figure 1

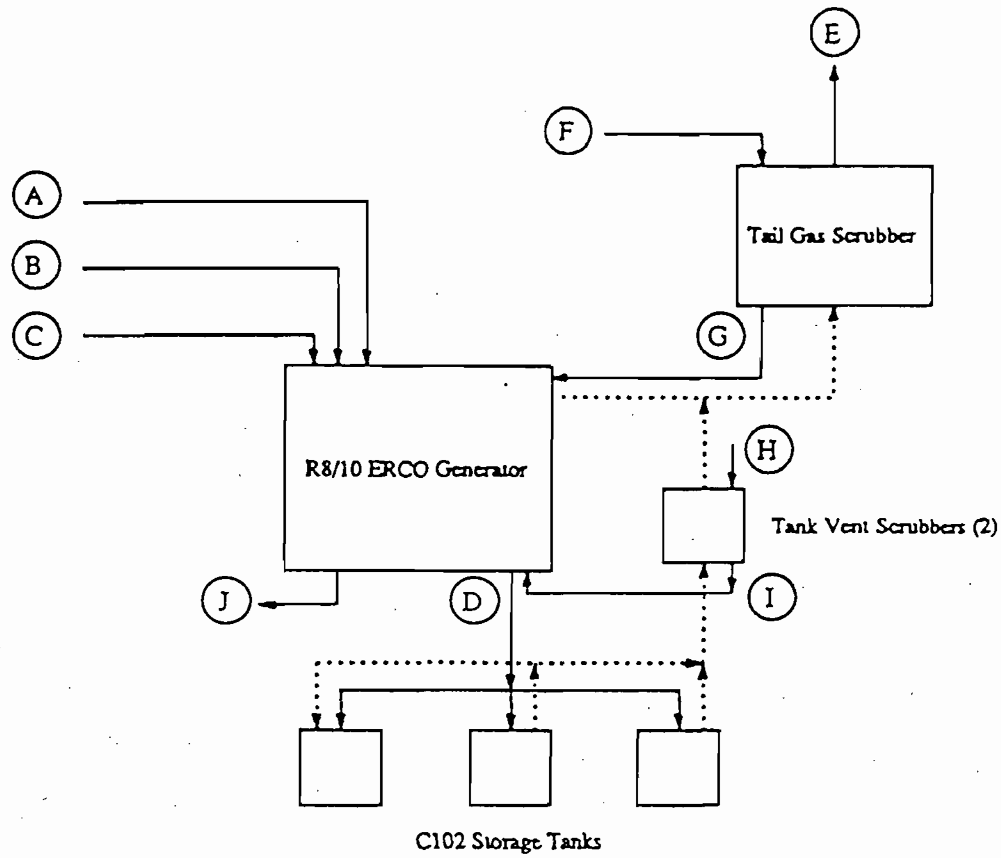


		"A" Line	"B" Line
A	Unbleached Pulp	910.8 ADT/D	851.3 ADT/D
B	CLO2	10.7 T/D	6.3 T/D
C	Peroxide	3.3 T/D	3.1 T/D
D	CLO2	8.2 T/D	5.0 T/D
E	Eo Washer Vent Gas	13,812 ACFM	8,227 ACFM
F	Scrubber Vent Gas	10,200 ACFM	7,350 ACFM
G	Scrubber Makeup Flow	1.1 GPM	.2 GPM
H	Scrubber Recirculation	225 GPM	190 GPM
I	Scrubber Blowdown	2 GPM	1 GPM
J	Bleached Pulp	888 ADT/D	830 ADT/D
K	Acidic Effluent	3.5 MGD	3.5 MGD
L	Alkaline Effluent	2.3 MGD	2.3 MGD

Process Flow Diagram 4
Bleach Plant

Chmp04-D19

Figure 2

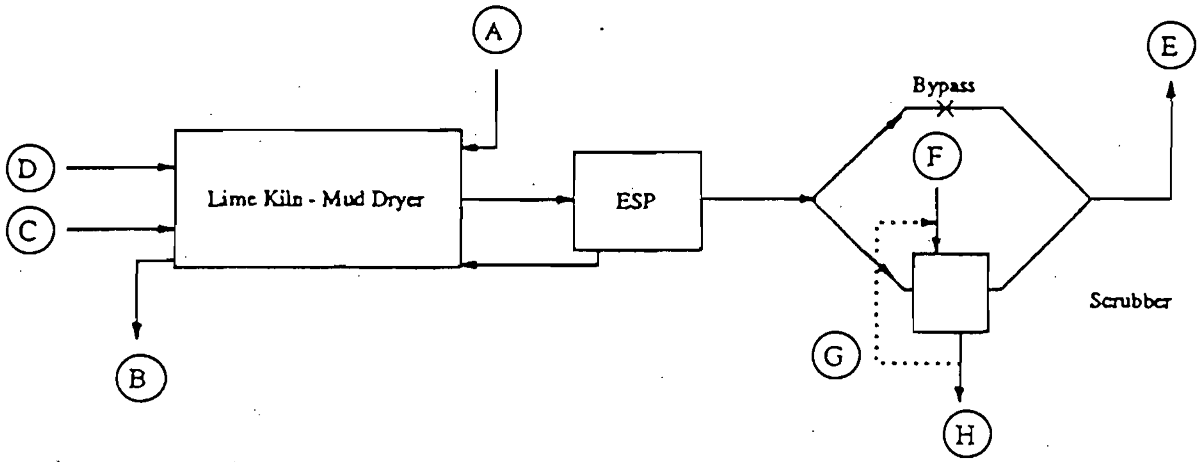


(A)	Methanol	5.6 T/D
(B)	Sulfuric Acid	29.6 T/D
(C)	Sodium Chlorate	61.3 T/D
(D)	Chlorine Dioxide	37.4 T/D
(E)	Stack Effluent	1,321.0 ACFM
(F)	Makeup White Liquor to Scrubber	<1.0 GPM
(G)	Scrubber Discharge	1.0 GPM
(H)	Water to Tank Vent Scrubbers	79.1 GPM
(I)	Tank Vent Scrubber Discharge	79.1 GPM
(J)	Saltcake Generation	33.6 T/D

Process Flow Diagram 3
Chlorine Dioxide Generator

Cmp03-D19

Figure 3



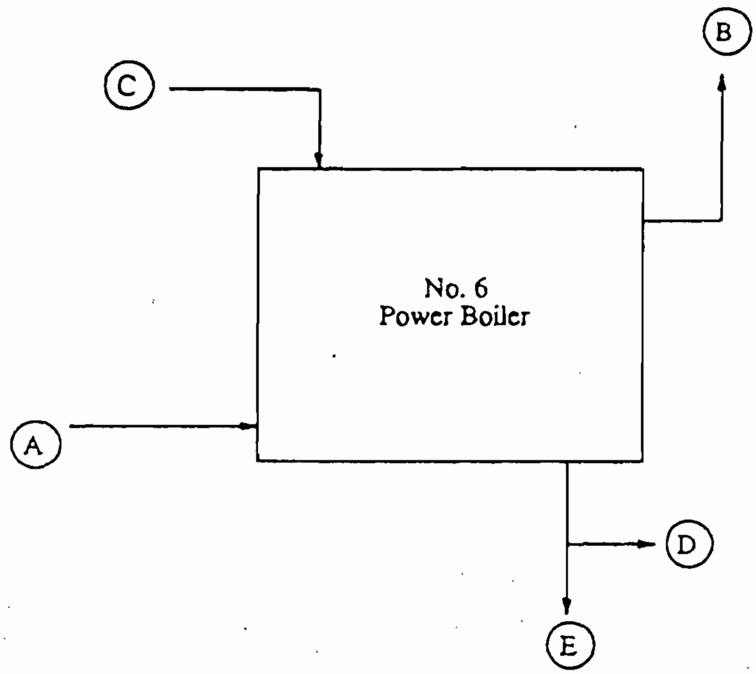
(A)	Lime Mud	893 T/D
(B)	Product Lime	500 T/D
(C)	Fuel - Natural Gas - No. 6 Oil	144.231 MCFH 1,000 GPH
(D)	NCGs	358 lb/hr *
(E)	Stack Effluent	57,208 ACFM
(F)	Scrubber Makeup	25 GPM
(G)	Scrubber Recirculation	1,700 GPM
(H)	Scrubber Blowdown	5 GPM

* Based on 1,718 ADBT/D

Process Flow Diagram 2
Lime Kiln - Mud Dryer

Cmmp02-D19

Figure 4



A	Natural Gas	533 MCFH
B	Stack Effluent	161,000 ACFM
C	Feed Water	6,667 lb/min
D	Steam	384 KPPH
E	Blow Down	266.7 lb/min

Process Flow Diagram 1
No. 6 Power Boiler

Camp01-D19

Table 1: Siginificant and Net Emission Rates (Tons per Year)

Pollutant	Significant Emission Rate	Proposed Net Emissions	Applicable Pollutant (Yes/No)
CO	100	189	Yes
NO_x	40	138.8	Yes
SO_2	40	28.2	No
PM	25	-1.3	No
PM10	15	-1.3	No
O_3 (VOC)	40	85.5	Yes
TRS	10	-1.9	No

Table 2. Maximum Air Quality Impacts for Comparison to the Significant and De Minimus Ambient Levels.

Pollutant	Avg. Time	Predicted Impact (ug/m_3)	Significant Imapct Level (ug/m_3)	De Minimus Level (ug/m_3)
CO	1-hour	413.7	2000.0	N/A
	8-hour	289.6	500.0	575.0
NO_2	Annual	2.4	1.0	14.0
VOC	Annual	85.5 TPY	N/A	100 TPY

Table 3. PSD Class II Increment Analysis

Pollutant	Averaging Time	Max. Predicted Impact (ug/m^3)	Allowable Increment (ug/m^3)
NO_2	Annual	2.4	25

Table 4. Ambient Air Quality Impact

Pollutant and Averaging Time	Major Sources Imapct (ug/m^3)	Background Conc. (ug/m^3)	Total Impact (ug/m^3)	Florida AAQS (ug/m^3)
NO_2 (Annual)	42.0	22.5	64.5	100

Table 5. Air Toxics Analysis

Pollutant	Averaging Time	Max. Predicted Impact (ug/m^3)	Air Toxics Reference Conc. (ug/m^3)
Chloroform	Annual	0.026	0.043
Chorine Dioxide	Annual	0.198	0.20
Chlorine	Annual	0.0384	0.40

Florida Department of Environmental Regulation

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

Lawton Chiles, Governor

Virginia B. Wetherell, Secretary

PERMITTEE:

Champion International Corporation
375 Muscogee Road
Cantonment, FL 32533

Permit Number: AC 17-223343
PSD-FL-200
Expiration Date: Dec. 31, 1995
County: Escambia
Latitude/Longitude: 30°36'30"N
87°19'13"W
Project: Mill Modification

This permit is issued under the provisions of Chapter 403, Florida Statutes; Florida Administrative Code (F.A.C.) Chapters 17-210 thru 17-297 and 17-4; and, 40 CFR (July, 1991 version). The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawings, plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

For the permitting of a mill modification in concert with the mill's wastewater Consent Order, to include the construction of a new natural gas fired No. 6 Power Boiler (PB), the surrendering of the operation permits for the existing Nos. 1 and 2 Power Boilers, modification to both the A and B Bleach Plants, construction of a new methanol storage tank, modification of the No. 2 Multiple Effect Evaporator set by installing new effects, and modification of the Lime Kiln's mud handling system. The UTM coordinates of the existing facility are Zone 17, 469.0 km East and 3386.0 km North.

The Standard Industrial Codes are:

- o Major Group No. 26 - Paper and Allied Products
- o Industry Group No. 2611 - Pulp Mills

The facility shall be constructed/modified in accordance with the permit application, plans, documents, amendments and drawings, except as otherwise noted in the General and Specific Conditions.

Attachments to be Incorporated:

1. Application to Construct/Modify Air Pollution Sources, DER Form 17-1.202(1), received December 21, 1992.
2. Technical Evaluation and Preliminary Determination dated February 25, 1993.
3. Comments received on March 4, 1993, in a meeting.
4. Comment received March 8, 1993, via FAX.
5. Revised Technical Evaluation & Preliminary Determination dated March 8, 1993.

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, F.S. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

3. As provided in Subsections 403.087(6) and 403.722(5), F.S., the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgement of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of F.S. and Department rules, unless specifically authorized by an order from the Department.

6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

GENERAL CONDITIONS:

7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:

a. Have access to and copy any records that must be kept under the conditions of the permit;

b. Inspect the facility, equipment, practices, or operations regulated or required under this permit; and,

c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

a. a description of and cause of non-compliance; and,

b. the period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the F.S. or Department rules, except where such use is proscribed by Sections 403.73 and 403.111, F.S. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

10. The permittee agrees to comply with changes in Department rules and F.S. after a reasonable time for compliance, provided, however,

GENERAL CONDITIONS:

the permittee does not waive any other rights granted by F.S. or Department rules.

11. This permit is transferable only upon Department approval in accordance with F.A.C. Rules 17-4.120 and 17-30.300, as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

12. This permit or a copy thereof shall be kept at the work site of the permitted activity.

13. The permittee shall comply with the following:

   a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.

   b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.

   c. Records of monitoring information shall include:

      - the date, exact place, and time of sampling or measurements;
      - the person responsible for performing the sampling or measurements;
      - the dates analyses were performed;
      - the person responsible for performing the analyses;
      - the analytical techniques or methods used; and,
      - the results of such analyses.

14. This permit constitutes compliance with:
   a. New Source Performance Standards (NSPS), 40 CFR 60, Subparts Db and Kb;
   b. Prevention of Significant Deterioration; and,
   c. Best Available Control Technology (BACT).

GENERAL CONDITIONS:

15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

SPECIFIC CONDITIONS:

A. No. 6 Power Boiler (PB)

1. The No. 6 PB may operate continuously (i.e., 8760 hrs/yr).

2. The No. 6 PB is permitted to fire natural gas only, with a maximum heat input of 533 MMBtu per hour, yielding a maximum steam product of 385,000 lbs/hr (2-hour average).

3. The No. 6 PB will be an ABB/CE boiler.

4. The Source Classification Code (SCC) is:

1-02-006-01 Ext. Combustion Boiler-Industrial 10^6 $ft.^3$ Burned

5. The No. 6 PB is subject to all applicable standards of 40 CFR 60, Subpart Db (July, 1991 version).

6. The No. 6 PB is subject to all applicable standards of F.A.C. Rule 17-296.405(2).

7. The No. 6 PB's pollutant emissions shall not exceed:

NOx*	0.06 lb/MMBtu (32.0 lbs/hr, 140.1 TPY)
CO*	0.1 lb/MMBtu (53.3 lbs/hr, 233.5 TPY)
PM/PM_{10}	2.67 lbs/hr, 11.7 TPY
SO_2	Not Applicable: Natural gas usage (for PSD tracking purposes: 2.2 TPY projected potential emissions)
VOC*	0.01 lb/MMBtu (5.33 lbs/hr, 23.4 TPY)
VE	$\leq$ 20 % opacity (6-min avg), except for one 6-min period/hr @ $\leq$ 27% opacity

* 24-hour average

8. Any required compliance testing shall be conducted using the following test methods in accordance with F.A.C. Rule 17-297 and 40 CFR 60, Subpart Db and Appendix A (July, 1991 version):

a) EPA Method 5, Determination of Particulate Emissions from Stationary Sources.

SPECIFIC CONDITIONS:

b) EPA Method 7D or 7E, for Determining Nitrogen Oxide Concentrations at Fossil Fuel Fired Steam Generators.
c) EPA Method 9, Visual Determination of the Opacity of Emissions from Stationary Sources.
d) EPA Method 10, Determination of Carbon Monoxide Emissions from Stationary Sources.
e) EPA Method 25A, Determination of Total Gaseous Organic Concentration Using a Flame Ionization Analyzer.
f) Upon initial start-up, testing shall be conducted for NO_x, CO, VOC, and VE.

Note: Other reference methods may be used with prior written approval received from the Department in accordance with F.A.C. Rule 17-297.620.

9. Emission monitoring for nitrogen oxides shall be in accordance with 40 CFR 48b (July, 1991 version).

10. Reporting and recordkeeping requirements shall be in accordance with 40 CFR 60.46b (July, 1991 version).

B. <u>Lime Kiln - Mud Dryer System</u> (LK-MDS)

1. Operation permit No. AO 17-181738 is incorporated by reference except for the following changes and/or additions:

a. the LK-MDS may operate continuously (i.e., 8760 hrs/yr);

b. a new lime mud drier system will be constructed as an addition to the existing lime kiln operation;

c. the pollutant emissions from the LK-MDS will be vented to a new electrostatic precipitator, which will be vented in series to a modified packed column wet scrubber using NaOH as the scrubbing media;

d. after construction/modification is completed, Champion will develop a testing protocol which includes a proposed test schedule to establish scrubber operating parameters and monitoring methods to meet the applicqble SO_2 and TRS limits for the LK-MDS.

e. the test protocol will be submitted to the Department's Northwest District office prior to conducting the test program; and,

f. the maximum allowable operating rate of lime product (90% CaO) will be increased from 13.67 to 20.83 tons per hour.

SPECIFIC CONDITIONS:

g. the pollutant emissions from the LK-MDS shall not exceed:

NOx*	No. 6 fuel oil:	200 ppmvd @ 10% O_2 (49.3 lbs/hr, 215.9 TPY)
	Natural Gas:	175 ppmvd @ 10% O_2 (43.1 lbs/hr, 188.8 TPY)
PM/PM_{10}	10.9 lbs/hr, 47.7 TPY	
CO*	45 ppmvd @ 10% O_2 (6.75 lbs/hr, 29.6 TPY)	
VOC*	104 ppmvd @ 10% O_2 (as propane) (24.5 lbs/hr, 107.3 TPY)	
TRS**	8 ppmvd @ 10% O_2 (1.46 lbs/hr, 6.4 TPY)	
SO_2	6.49 lbs/hr, 28.4 TPY	
VE	< 20% opacity	

* 24-hour average
** 12-hour average

Note:
- o Maximum of 500 tons/day lime product (90% CaO);
- o Maximum sulfur content of the No. 6 Fuel Oil is 1.0%, by weight; and,
- o Concentration limits and allowable pound per hour emission rates are based on a maximum design volumetric flowrate of 34,383 dscfm.

h. while firing No. 6 fuel oil, initial and subsequent annual compliance tests shall be conducted using the following test methods in accordance with F.A.C. Rule 17-297 and 40 CFR 60, Appendix A (July, 1991 version):

1) EPA Method 5, Determination of Particulate Emissions from Stationary Sources.
2) EPA Method 7D or 7E, for Determining Nitrogen Oxide Concentrations at Fossil Fuel Fired Steam Generators.
3) EPA Method 8, Determination of Sulfuric Acid Mist and Sulfur Dioxide Emissions from Stationary Sources; or, EPA Method 6C, Determination of Sulfur Dioxide Emissions from Stationary Sources, may be used;
4) EPA Method 9, Visual Determination of the Opacity of Emissions from Stationary Sources.
5) EPA Method 10, Determination of Carbon Monoxide Emissions from Stationary Sources.
6) EPA Method 25A, Determination of Total Gaseous Organic Concentration Using a Flame Ionization Analyzer.

Note: Other reference methods may be used with prior written approval received from the Department in accordance with F.A.C. Rule 17-297.620.

SPECIFIC CONDITIONS:

i. while firing natural gas, initial and subsequent compliance tests shall be conducted using the following test methods in accordance with F.A.C. Rule 17-297 and 40 CFR 60, Appendix A (July, 1991 version):

1) EPA Method 5, Determination of Particulate Emissions from Stationary Sources.
2) EPA Method 7D or 7E, for Determining Nitrogen Oxide Concentrations at Fossil Fuel Fired Steam Generators.
3) EPA Method 8, Determination of Sulfuric Acid Mist and Sulfur Dioxide Emissions from Stationary Sources; or, EPA Method 6C, Determination of Sulfur Dioxide Emissions from Stationary Sources, may be used.
4) EPA Method 9, Visual Determination of the Opacity of Emissions from Stationary Sources.
5) EPA Method 10, Determination of Carbon Monoxide Emissions from Stationary Sources.
6) EPA Method 25A, Determination of Total Gaseous Organic Concentration Using a Flame Ionization Analyzer.

Note: Other reference methods may be used with prior written approval received from the Department in accordance with F.A.C. Rule 17-297.620.

C. <u>Chlorine Dioxide (ClO_2) Generator</u>

1. Operation permit No. AO 17-219596 is incorporated by reference except for the following changes and/or additions:

a. the existing chlorine gas handling system will be eliminated;

b. the generating process will be modified from a R3H process to a R8/R10 process, which will use methanol, sulfuric acid, and sodium chlorate to generate ClO_2;

c. the maximum allowable operating rate will be increased from 16 tons/day ClO_2 to 37.4 tons/day;

d. a third ClO_2 storage tank will be installed and the existing chlorine absorption towers will be converted to ClO_2 absorption towers;

e. the ClO_2 storage tanks will vent to the existing two ClO_2 storage tank chilled water scrubbers;

SPECIFIC CONDITIONS:

f. the existing two ClO_2 storage tank scrubbers will be vented to the tail gas scrubber, which will be modified by adding an additional 10 feet of tower and the scrubbing media will be changed from sodium hydroxide to white liquor (sodium hydroxide and sodium sulfide);

g. a new 21,880 gallon methanol storage tank and handling system will be installed and is subject to all applicable standards pursuant to 40 CFR 60, Subpart Kb (July, 1991 version); for PSD tracking purposes, the projected potential VOC emissions are 2.2 TPY; also, the tank will be nitrogen blanketed and equipped with a conservation vent;

SCC: 4-07-008-15 Meth. Tank-Breathing Loss 10^3 gals. storage cap.
4-07-008-16 Meth. Tank-Working Loss 10^3 gals. storage cap.

h. the existing salt unloading and storage system will be shut down and dismantled;

i. the pollutant emissions shall not exceed:

R8/R10 ClO_2 Generator: 37.4 TPD
Tail Gas Scrubber

Cl_2	0.1 lb/hr, 0.44 TPY
ClO_2	0.25 lb/hr, 1.1 TPY

j. initial compliance testing on the Tail Gas Scrubber for chlorine and chlorine dioxide will be conducted using NCASI (EPA Modified Method 6) test protocols.

Note: A post-test evaluation for rule applicability will be conducted to see if additional emissions evaluation is required.

D. <u>A and B Bleach Plant Lines</u>

1. Operation permit No. AO 17-219600 is incorporated by reference except for the following changes and/or additions:

a. both lines may operate continuously (i.e., 8760 hrs/yr);

b. the bleaching sequence will be changed from CED to DED;

c. a storage and handling system for the enzyme xylanase may be installed;

d. a storage and handling system for hydrogen peroxide will be installed;

SPECIFIC CONDITIONS:

e. the existing chlorine gas handling system will be eliminated;

f. the pollutant emissions shall not exceed:

1) A-Line Bleach Plant:	888 air dried tons per day, maximum	
a) E_O Washer	$CHCl_3$	0.038 lb/hr, 0.16 TPY
b) A-Line Scrubber	CL_2	1.45 lbs/hr, 6.4 TPY
	ClO_2	0.45 lb/hr, 2.0 TPY
	$CHCl_3$	0.34 lb/hr, 1.5 TPY
2) B-Line Bleach Plant:	830 air dried tons per day, maximum	
a) E_O Washer	$CHCl_3$	0.038 lb/hr, 0.16 TPY
b) B-Line Scrubber	Cl_2	1.0 lb/hr, 4.38 TPY
	ClO_2	0.45 lb/hr, 2.0 TPY
	$CHCl_3$	0.34 lb/hr, 1.5 TPY

3) A-Line and B-Line Bleach Plants: average 1500 air dried tons per calendar day, maximum combined total

h. after construction/modification is completed, a meeting to establish the testing protocol shall be held with the Department, at which the following information shall be provided:

1) identification of all sources and their associated waste streams to be evaluated;

2) proposed sampling procedures/methods and analysis for determining $CHCl_3$; and,

3) proposed testing dates.

Note: A post-test evaluation for rule applicability will be conducted to see if additional emissions evaluation is required.

i. after construction/modification is completed, initial compliance testing on the Bleach Plant Scrubbers (A-Line and B-Line) and E_O Washers for chlorine and chlorine dioxide will be conducted using NCASI (EPA Modified Method 6) test protocols.

Note: A post-test evaluation for rule applicability will be conducted to see if additional emissions evaluation is required.

E. Nos. 1 and 2 Multiple Effect Evaporator (MEE) Sets, Batch and Continuous Digester Systems, and Foul Condensate Steam Stripper System

1. Operation permit No. AO 17-212422 is incorporated by reference except for the following changes and/or additions:

SPECIFIC CONDITIONS:

a. the No. 2 MEE set will be modified to include the addition of new effects, which will be vented to the non-condensible gas (NCG) handling system, which will increase the allowable maximum operating rate from 97,000 to 181,000 lbs/hr dry BLS (black liquor solids) and determined by measuring solids and flow into the system; however, the following operational scenarios are applicable to both of the Nos. 1 and 2 MEE sets:

   1) when the Nos. 1 and 2 MEE sets are operated simultaneously, the maximum operating rate shall be 278,000 lbs/hr as a total combined input to them (24-hour average) and determined by measuring solids and flow into the systems;

   2) when only one MEE set is in operation, the maximum operating rate shall be 181,000 lbs/hr dry BLS and determined by measuring solids and flow into the system (24-hour average); and,

   3) actual total annual dry BLS from the Nos. 1 and 2 MEE sets, as determined by measuring solids and flow into the systems, shall not exceed the average for the years 1991 and 1992 (see AORs).

b. a storage and handling system may be installed for water-transported anthraquinone, an organic catalyst, which may be used in both the batch and continuous digester systems; both systems vent to the NCG handling system; and,

c. an additional foul condensate steam stripper will be installed and will be vented to the lime kiln or calciner for incineration.

F. <u>General</u>

1. The facility shall be in compliance with all applicable standards/limitations of F.A.C. Rules 17-210 thru 297, 17-4, and 40 CFR (July, 1991 version).

2. The permittee is subject to the applicable provisions of F.A.C. Rules 17-4.130: Plant Operation-Problems; 17-210.650: Circumvention; and, 17-210.700: Excess Emissions.

3. Objectionable odors shall not be allowed off plant property in accordance with F.A.C. Rule 17-296.320(2).

PERMITTEE: **Permit Number: AC 17-223343**
PSD-FL-200

Champion International Corp. Expiration Date: Dec. 31, 1995

SPECIFIC CONDITIONS:

4. The Department's Northwest District office shall be notified in writing at least 15 days prior to source testing pursuant to F.A.C. Rule 17-297.340. Written reports of the tests shall be submitted to the Department's Northwest District office within 45 days of the test completion in accordance with F.A.C. Rule 17-297.450.

5. Any change in the method of operation, raw materials, equipment, operating hours, etc., pursuant to F.A.C. Rule 17-212.200, Definitions-Modification, the permittee shall submit an application and the appropriate processing fee to the Department's Bureau of Air Regulation (BAR) office.

6. The permittee, for good cause, may request that this construction permit be extended. Such a request shall be submitted to the Department's BAR prior to 60 days before the expiration date of the permit (F.A.C. Rule 17-4.090).

7. An application for an operation permit must be submitted to the Department's Northwest District office at least 90 days prior to the expiration date of this construction permit. To properly apply for an operation permit, the applicant shall submit the appropriate application form, fee, certification that construction was completed noting any deviations from the conditions in the construction permit, and compliance test reports as required by this permit (F.A.C. Rules 17-4.055 and 17-4.220).

Issued this ______ day
of _______________, 1993

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

____
Virginia B. Wetherell
Secretary

Best Available Control Technology (BACT) Determination
Champion International Corporation
Escambia County

PSD-FL-200

The applicant proposes to modify its existing pulp mill, which includes the installation of a natural gas fired power boiler rated at a maximum heat input of 533 MMBtu/hr [385,000 lbs/hr steam (2-hour average)] and the modification of the existing lime kiln and the A and B Bleach Plants. The steam will be used in the processes undergoing modifications in concert with the mill's wastewater Consent Order.

The applicant has indicated the maximum annual tonnage of regulated air pollutants emitted from the facility based on 100 percent capacity and type of fuel fired to be as follows:

Pollutant	Emissions (TPY)	PSD Significant Emission Rate (TPY)
NO_x	138.8	40
SO_2	28.2	40
PM/PM_{10}	-1.3	25/15
CO	189.0	100
VOC	85.5	40
TRS	-1.9	10

Florida Administrative Code (F.A.C.) Rule 17-212.400(2)(f) requires a BACT review for all regulated pollutants emitted in an amount equal to or greater than the significant emission rates listed in the previous table.

Date of Receipt of a BACT Application

December 21, 1992

BACT Determination Requested by the Applicant

Source	Pollutant	Determination
#6 Power Boiler	NO_x*	0.06 lb/MMBtu (32.0 lbs/hr, 140.1 TPY)
	CO*	0.1 lb/MMBtu (53.3 lbs/hr, 233.5 TPY) Combustion Control
	VOCs*	0.01 lb/MMBtu (5.33 lbs/hr, 23.4 TPY) Combustion Control

Lime Kiln-Mud Dryer	NOx*	#6 fuel oil: 200 ppmvd @ 10% O_2 (49.3 lbs/hr, 215.9 TPY) Natural Gas: 175 ppmvd @ 10% O_2 (43.1 lbs/hr, 188.8 TPY)
	CO*	45 ppmvd @ 10% O_2 (6.75 lbs/hr, 29.6 TPY
	VOCs*	104 ppmvd @ 10% O_2 (as propane) (24.5 lbs/hr, 107.3 TPY)

* 24-hour average

BACT Determination Procedure

In accordance with Florida Administrative Code Chapter 17-212, Stationary Sources - Preconstruction Review, this BACT determination is based on the maximum degree of reduction of each pollutant emitted which the Department, on a case by case basis, taking into account energy, environmental and economic impacts, and other costs, determines is achievable through application of production processes and available methods, systems, and techniques. In addition, the regulations state that in making the BACT determination the Department shall give consideration to:

(a) Any Environmental Protection Agency determination of Best Available Control Technology pursuant to Section 169, and any emission limitation contained in 40 CFR Part 60 (Standards of Performance for New Stationary Sources) or 40 CFR Part 61 (National Emission Standards for Hazardous Air Pollutants).

(b) All scientific, engineering, and technical material and other information available to the Department.

(c) The emission limiting standards or BACT determinations of any other state.

(d) The social and economic impact of the application of such technology.

The EPA currently stresses that BACT should be determined using the "top-down" approach. The first step in this approach is to determine for the emission source in question the most stringent control available for a similar or identical source or source category. If it is shown that this level of control is technically or economically infeasible for the source in question, than the next most stringent level of control is determined and similarly evaluated. This process continues until the BACT level under consideration cannot be eliminated by any substantial or unique technical, environmental, or economic objections.

The air pollutant emissions from combined cycle power plants can be grouped into categories based upon what control equipment and techniques are available to control emissions from these facilities. Using this approach, the emissions can be classified as follows:

- o Combustion Products (e.g., particulates). Controlled generally by efficient combustion of clean fuels.
- o Products of Incomplete Combustion (e.g., CO). Control is largely achieved by proper combustion techniques.
- o Acid Gases (e.g., NOx). Controlled generally by gaseous control devices.

Grouping the pollutants in this manner facilitates the BACT analysis because it enables the equipment available to control the type or group of pollutants emitted and the corresponding energy, economic, and environmental impacts to be examined on a common basis. Although all of the pollutants addressed in the BACT analysis may be subject to a specific emission limiting standard as a result of PSD review, the control of "nonregulated" air pollutants is considered in imposing a more stringent BACT limit on a "regulated" pollutant (i.e., particulates, sulfur dioxide, fluorides, sulfuric acid mist, etc,), if a reduction in "nonregulated" air pollutants can be directly attributed to the control device selected as BACT for the abatement of the "regulated" pollutants.

Combustion/Incomplete Combustion Products

The projected emissions of carbon monoxide and volatile organic compounds from the proposed modification to Champion International Corporation's facility surpass the significant emission rates given in Florida Administrative Code Table 17-212.400-2.

CO and VOCs:

For CO and VOCs, the data base does not list any sources incorporating any add-on controls for these type of sources. Due to the interrelationship between these combustion related pollutants, it is generally acceptable to utilize good combustion practices and process controls to minimize these pollutants. Therefore, the limits requested are considered reasonable as BACT.

Acid Gas Products

The projected emissions of nitrogen oxides from the proposed modification to Champion International Corporation's facility surpass the significant emission rates given in Florida Administrative Code Table 17-212.400-2.

NOX:

For NOx, the proposed BACT limits for both the No. 6 Power Boiler and the Lime Kiln-Mud Dryer System are within the range of similar sources in the BACT/LAER clearinghouse data base.

For the No. 6 Power Boiler, there have been limited cases of SCR impositions, but the cost evaluation of such technology is prohibitive for this project. Costs and process parameters rule out the use of other technologies (i.e., SNCR and FGDN). The proposal to use Coen low-NOx burners together with flue gas recirculation to the combustion zone for minimizing NOx emissions is considered as BACT. However, available space will be made for the potential retrofit of a control system to control NOx.

For the Lime Kiln-Mud Dryer, the application of SCR, SNCR, or FGDN, have never been applied to a lime kiln system due to process variables. Therefore, the proposal to use good operational practices and proper combustion, along with the proposed emission limitations, is considered BACT.

Adverse Environmental Impact Analysis

The predominant adverse environmental impacts associated with the potential use of add-on control technology (SCR, SNCR or FGDN) are the emissions of other pollutants (i.e., ammonia, urea, hazardous waste from catalysts, etc.) used in the process for NOx control. Although the use of add-on controls do have some positive environmental benefits, the disadvantages may outweigh the benefits provided by reducing NO_x emissions.

From the evaluation of natural gas combustion, toxics are projected to be emitted in very small amounts. Although the emissions of toxic pollutants could be controlled by particulate control devices, such as a baghouse or scrubber system, the amount of emission reductions would not warrent the added expense. Consequently, the Department does not believe that the BACT determination would be affected by the emissions of the toxic polutants associated with the firing of natural gas.

BACT Determination by DER

NOx Control

For the No. 6 Power Boiler, the information that the applicant presented indicates that the incremental cost of controlling NOx is high compared to the guidelines. Based on the information presented by the applicant and the evaluation conducted, the Department believes that the use of add-on controls NOx control is not justifiable as BACT. Therefore, the Department will accept the Coen low-NOx burners together with flue gas recirculation to the combustion zone as NOx control when firing natural gas.

For the Lime Kiln-Mud Dryer, there has not been an application of NOx add-on controls for this type of source contained in the data base. Therefore, there will not be any add-on controls required for NOx for this source.

CO and VOC Control

For CO and VOCs, the data base does not list any sources incorporating any add-on controls for these type of sources. Due to the interrelationship between these combustion related pollutants, it is generally acceptable to utilize good combustion practices and process controls to minimize these pollutants. Therefore, there will not be any add-on controls required for CO or VOCs for both the No. 6 Power Boiler and the Lime Kiln-Mud Dryer.

The BACT limits for the proposed modification of the Champion International Corporation's facility are thereby established as follows:

Source	Pollutant	Emission Standard/Limitation
#6 Power Boiler	NO_x*	0.06 lb/MMBtu (32.0 lbs/hr,140.1 TPY)
	CO*	0.1 lb/MMBtu (53.3 lbs/hr, 233.5 TPY) Combustion Control
	VOCs*	0.01 lb/MMBtu (5.33 lbs/hr, 23.4 TPY) Combustion Control
Lime Kiln-Mud Dryer	NOx*	#6 fuel oil: 200 ppmvd @ 10% O_2 (49.3 lbs/hr, 215.9 TPY) Natural Gas: 175 ppmvd @ 10% O_2 (43.1 lbs/hr, 188.8 TPY)
	CO*	45 ppmvd @ 10% O_2 (6.75 lbs/hr, 29.6 TPY)
	VOCs*	104 ppmvd @ 10% O_2 (as propane) (24.5 lbs/hr, 107.3 TPY)

* 24-hour average

Note: The maximum sulfur content of the #6 fuel oil is 1.0%, by weight.

Details of the Analysis May be Obtained by Contacting:

Bruce Mitchell, Engineer IV
Department of Environmental Regulation
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Recommended by:	Approved by:
______________________	______________________
C. H. Fancy, P.E., Chief Bureau of Air Regulation	Virginia B. Wetherell, Secretary Dept. of Environmental Regulation
______________________ 1993 Date	______________________ 1993 Date

Attachment 1

(Available Upon Request)

Attachment 2

(Available Upon Request)

Attachment 3

Modifications to the "Technical Evaluation and Preliminary Determination" dated 25 February 1993.

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Division of Air Resources Management

Page 2

"The project will include the installation of storage and ..."
"It will be used in both the batch digester system and ..."

Modify to Read:

> *The project may include the installation of storage and ...*
> *It may be used in both the batch digester system and ...*

Page 4

"This will be accomplished by the addition of two new evaporator effects to the Existing No. 2 MEE System."

Modify to Read:

> *This will be accomplished by the addition of new evaporator effects to the existing No. 2 MEE System*

Page 5

"A minimum PH of 8 will be maintained."

Modify to Read:

> *Champion is committed to conducting a test program to determine the scrubber operating conditions required to meet the applicable SO_2 and TRS emission Limits. Appropriate process and/or emissions monitoring parameters will be established during the test program.*

"The new boiler will provide 350,000 pounds per hour of steam product."

Modify to Read:

> *The new boiler will provide a maximum of 385,000 pounds per hour (two hour average) of steam product.*

Table A includes "Allowable Emission Standards/Limitations"

Modify Table as noted below:

1. *No. 6 Power Boiler: Maximum 533 MMBtu/hr heat input*

NO_x^*	(No change to limits)
CO^*	"
PM/PM_{10}	"
SO_2^*	"
VOC^*	"
VE	"

* 24-hour average

2. *Lime Kiln - Mud Dryer*

NO_x^*	(No change to limits)
PM/PM_{10}^*	"
CO^*	"
VOC^*	"
TRS^{**}	"
SO_2^*	"
VE	"

* 24-hour average
** 12-hour average

3. *A-Line Bleach Plant*

a.	E_o Washer	(No change to limits)
b.	A-Line Scrubber	"

4. *B-Line Bleach Plant*

   a. *E_o Washer* — *(No change to limits)*

   b. *B-Line Scrubber* — *Cl_2 1.0 lb/hr 4.38 TPY*

      ClO_2 (No change to limits)

      $CHCl_3$ "

5. *R-8/R-10 ClO_2 Generator: 37.4 TPD*

   (No other changes)

6. *(No changes)*

Note:

1 *(No change)*
2 *"*
3 *Maximum heat input*

   a) *(No changes)*
   b) *Lime Kiln 165 MMBtu/hr*

4 *Steam Production:*
   a) *No. 6 PB: 385,000 pounds per hour (two hour average)*

5 a) *(No Change)*
   b) *(No Change)*
   c) *PM/PM10: #6 PB:AP-42 Emission Factor Table 1.4-1*
      LK-MD: Vendor Guarantee of 0.037 gr/dscf @ 10% O_2
   d) *VOC: BACT*

6 *The maximum sulfur content of No. 6 fuel oil is 2.5%, by weight*

(No other changes)

Page 13

"Chlorine, chlorine dioxide, and chloroform do not have an AAQS. However, these pollutants were modeled and the results were compared to the Department's air toxics reference concentrations. Table 5 summarizes the results of this analysis. The predicted concentrations for each of these pollutants is less than their respective reference concentrations."

Modify to Read:

> *Chlorine, chlorine dioxide, and chloroform do not have an AAQS. However, for sources with quantifiable emissions rates for these pollutants a modeling analysis was conducted and the results compared to the Department's current draft air toxics reference concentrations. Table 5 summarizes the results of this analysis. The predicted concentrations for each of these pollutants is less than their respective reference concentrations.*

Page 19

Table 1: Significant and Net Emission Rates (tons per year)

> *Change:* *SO_2 proposed net emissions from 27.4 to 28.2.*

Specific Conditions:

[Add the following specific condition]

Operating and emission limits contained in the "PSD Permit applications for proposed Pulp Mill Modifications" submitted in December 1992, supersede any limits contained in permits issued previously by the department for existing sources.

Modify to Read:

A. *No. 6 Power Boiler PB*

1 *(No change)*

2 *The No. 6 PB is permitted to fire natural gas only, with a maximum heat input of 533 MMBtu per hour, yielding a maximum steam product of 385,000 lb/hr (two-hour average)*

3 *(No change)*

4 *"*

5 *"*

6 *"*

7 *The No. 6 PB's pollutant emission shall not exceed:*

NO_x*	*(No change to limits)*
CO*	"
PM/PM_{10}	"
SO_2	"
VOC*	"
VE	"

* *24-hour average*

8 *Any required testing shall be conducted using the following test methods in accordance with F.A.C. Rule 17-297 and 40 CFR 60, Subpart Db and Appendix A (July, 1991 version):*

a) *(No change)*

b) *EPA Method 7D or 7E for Determining Nitrogen Oxide Concentrations at Fossil Fuel Fired Steam Generator*

c) *(No change)*

d) "

e) "

f) *Upon initial start-up testing shall be conducted for NO_x, CO, VOC, and VE.*

Note: *(No change)*

<u>Page 6 of 11</u>

B. *Lime Kiln - Mud dryer System (LK-MDS)*

c. *the pollutant emission from the LK-MDS will be vented to a new electrostatic precipitator, which will be vented in series to a modified packed column wet scrubber using NaOH as the scrubbing media.*

d. *After construction/modification is completed Champion will develop a testing protocol which includes a proposed test schedule to establish scrubber operating parameters and monitoring methods to meet the applicable SO_2 and TRS limits for the LK-MDS.*

e. *the test protocol will be submitted to the department for review and approval prior to conducting the test program.*

f. *the maximum allowable operating rate of lime product (90% CaO) will be increased from 13.67 to 20.83 tons per hour.*

f. The pollutant emission from the LK-MDS shall not exceed:

NO_x*	(No change to limits)
PM/PM_{10}*	"
CO*	"
VOC*	"
TRS**	"
SO_2*	"
VE	"

* 24-hour average
** 12-hour average

Note:
- *(No change)*
- *Maximum sulfur content of the NO. 6 Fuel oil is 2.5%, by weight.*
- *Concentration limits and allowable pound per hour emission rates are based on a maximum design volumetric flowrate of 34,383 dscfm.*

g. *While firing No. 6 fuel oil, initial and subsequent annual compliance tests shall be conducted using the following test methods in accordance with F.A.C. Rule 17-297 and 40 CFR 60, Appendix A (July, 1991 version):*

1) *(No change)*

2) *EPA Method 7D or 7E for Determining Nitrogen Oxide Concentrations at Fossil Fuel Fired Steam Generator*

3) *EPA Method 8, Determination of Sulfuric Acid Mist and Sulfur Dioxide Emissions From Stationary Sources; EPA Method 6C, Determination of Sulfur Dioxide Emissions From Stationary Sources may alternatively be used;*

4) *(No change)*

5) *"*

6) *"*

Note: (No change)

h. *While firing Natural Gas, initial and subsequent annual compliance tests shall be conducted using the following test methods in accordance with F.A.C. Rule 17-297 and 40 CFR 60, Appendix A (July, 1991 version):*

1) *(No change)*

2) *EPA Method 7D or 7E for Determining Nitrogen Oxide Concentrations at Fossil Fuel Fired Steam Generator*

3) *EPA Method 8, Determination of Sulfuric Acid Mist and Sulfur Dioxide Emissions From Stationary Sources; EPA Method 6C, Determination of Sulfur Dioxide Emissions From Stationary Sources may alternatively be used;*

4) *(No change)*

5) "

6) "

Note: (No change)

Page 8 of 11

"1. Operation permit No. AC 17-219596 is incorporated by reference except for the following changes and/or additions:"

Modify to Read:

1. *Operation permit No. AO 17-219596 is incorporated by reference except for the following changes and/or additions:*

Page 9 of 11

Modify to Read:

i. *the pollutant emission shall not exceed:*

R8/R10 ClO_2 generator: 37.4 TPD
(No other changes)

Delete all of "j" as written and insert new condition "j" as follows:

j. *Initial compliance testing on the Tail Gas Scrubber for chlorine and chlorine dioxide will be conducted using NCASI (EPA Modified Method 6) test protocols.*

D. *A and B Bleach Plant Lines*

1. *a* *(No change)*
b "
c *a storage and handling system for the enzyme xylanase* ***may*** *be installed.*
d *(No change)*
e "
f *The pollutant emissions shall not exceed:*

1) *A-Line Bleach Plant*

E_o Washer	*(No change in emission rate)*
A-Line Scrubber	*(No change in emission rates)*

2) *B-Line Bleach Plant*

E_o Washer	*(No change in emission rate)*
B-Line Scrubber	*Cl_2 1.0 lb/hr 4.38 TPY*
	ClO_2 (No change in emission rate)
	$CHCl_3$ "

h) *(No change)*

1) *(No change)*
2) *proposed sampling procedures/methods and analysis for determining $CHCl_3$; and*
3) *(No change)*

Note: *(No change)*

[Add the specific condition]

i) *After construction/modification is completed, initial compliance testing on the Bleach Plant Scrubbers (A-Line and B-Line) and E_o Washers for chlorine and chlorine dioxide will be conducted using NCASI (EPA Modified Method 6) test protocols.*

E (No change)

1. (No change)

Modify to read:

a) *The No. 2 MEE's will be modified to include the addition of new effects, which will be vented to the non-condensable gas (NCG) handling system.*

b) *A storage and handling system may be installed for water transported anthraquinone, an organic catalyst, which will be used in both the batch and continuous digester systems; both systems sent to the NCG handling system; and,*

Page 11 of 11

"Written reports of the tests shall be submitted to the Department's Northeast District office within 45 days of the test completion in accordance with F.A.C. Rule 17-297.450."

Modify to read:

Written reports of the tests shall be submitted to the Department's Northwest District office within 45 days of the test completion in accordance with F.A.C. Rule 17-297.450.

Modifications to Best Available Conrol Technology (BACT) Determination

Page 1

"The applicant proposes to modify its existing pulp mill, which includes the installation of a natural gas fired power boiler rated at a maximum heat input of 533 MMBtu/hr (350,000 lbs/hr steam) and the modification of the existing Lime Kiln and the A and B Bleach Plants. The steam will be used in the processes undergoing modifications in concert with the mill's wastewater Consent Order."

Modify to read:

> *The applicant proposes to modify its existing pulp mill, which includes the installation of a natural gas fired power boiler rated at a maximum heat input of 533 MMBtu/hr (385,000 lbs/hr steam (2-hour average)) and the modification of the existing Lime Kiln and the A and B Bleach Plants. The steam will be used in the processes undergoing modifications in concert with the mill's wastewater Consent Order.*

Modify Pollutant Emissions Table as follows:

SO_2	*28.2 TPY*

Modify BACT Table as follows:

#6 Power Boiler	NO_x*	*(No change in emission limits)*
	*CO**	"
	*VOCs**	"
Lime Kiln-Mud Dryer	NO_x*	*(No change in emission limits)*
	*CO**	"
	*VOCs**	"

* *24-hour average*

Page 5

Modify Table as follows:

#6 Power Boiler	*NO_x**	*(No change in emission limits)*
	*CO**	"
	*VOCs**	"
Lime Kiln-Mud Dryer	*NO_x**	*(No change in emission limits)*
	*CO**	"
	*VOCs**	"

Note: *the Maximum Sulfur Content of the #6 Fuel oil is 2.5% by weight.*

* *24-hour average*

Best Available Copy

WESTON

SHEET 1 of [redacted] 1

CLIENT/SUBJECT ______ W.O. NO. ______

TASK DESCRIPTION ______ TASK NO. ______

PREPARED BY ______ DEPT ______ DATE ______

MATH CHECK BY ______ DEPT ______ DATE ______

METHOD REV. BY ______ DEPT ______ DATE ______

APPROVED BY ______ DEPT ______ DATE ______

Current Evaporator Production Limits (from existing NCG permit A017-212422):

No. 1 MEE – Maximum operating rate of 181 KLbs/Hr – Dry BLS ~~measure~~ determined by measuring solids and flow into the system.

No. 2 MEE – Maximum operating rate of 97 KLbs/Hr – Dry BLS determined by measuring solids and flow into the system –

Proposed Maximum Operating Rates:

181K
+97K
278K

- When the No. 1 and No. 2 MEE sets are operated simultaneously the maximum operating rate shall be 278 KLbs/Hr as a total combined input to the MEE sets. (24 Hr. avg.)

- When only one [redacted] MEE set is in operation the maximum operating rate shall be 181 KLbs/Hr – Dry BLS. (24 Hr. avg.)

- [illegible] BLS [illegible] Nos. 1 and 2 MEEs shall not increase [illegible]

[illegible]

above the [illegible]

RFW 10-05-003/A-5/85

Attachment 4

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Champion International Corporation

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PROPOSED LANGUAGE UNDER "NEW MAXIMUM OPERATING RATES:"

3rd CONDITION – MODIFY TO READ

ACTUAL BLS TOTALS FROM THE NO. 1 AND NO. 2 MEE'S SHALL NOT INCREASE ABOVE A 2 YEAR AVERAGE DETERMINED FROM THE PREVIOUS 5 YEARS FROM THE DATE OF MODIFICATION OF NO. 2 MEE.

FIGURE 2-3: CONSENT ORDER AIR PERMITTING PLAN - MILL LAYOUT

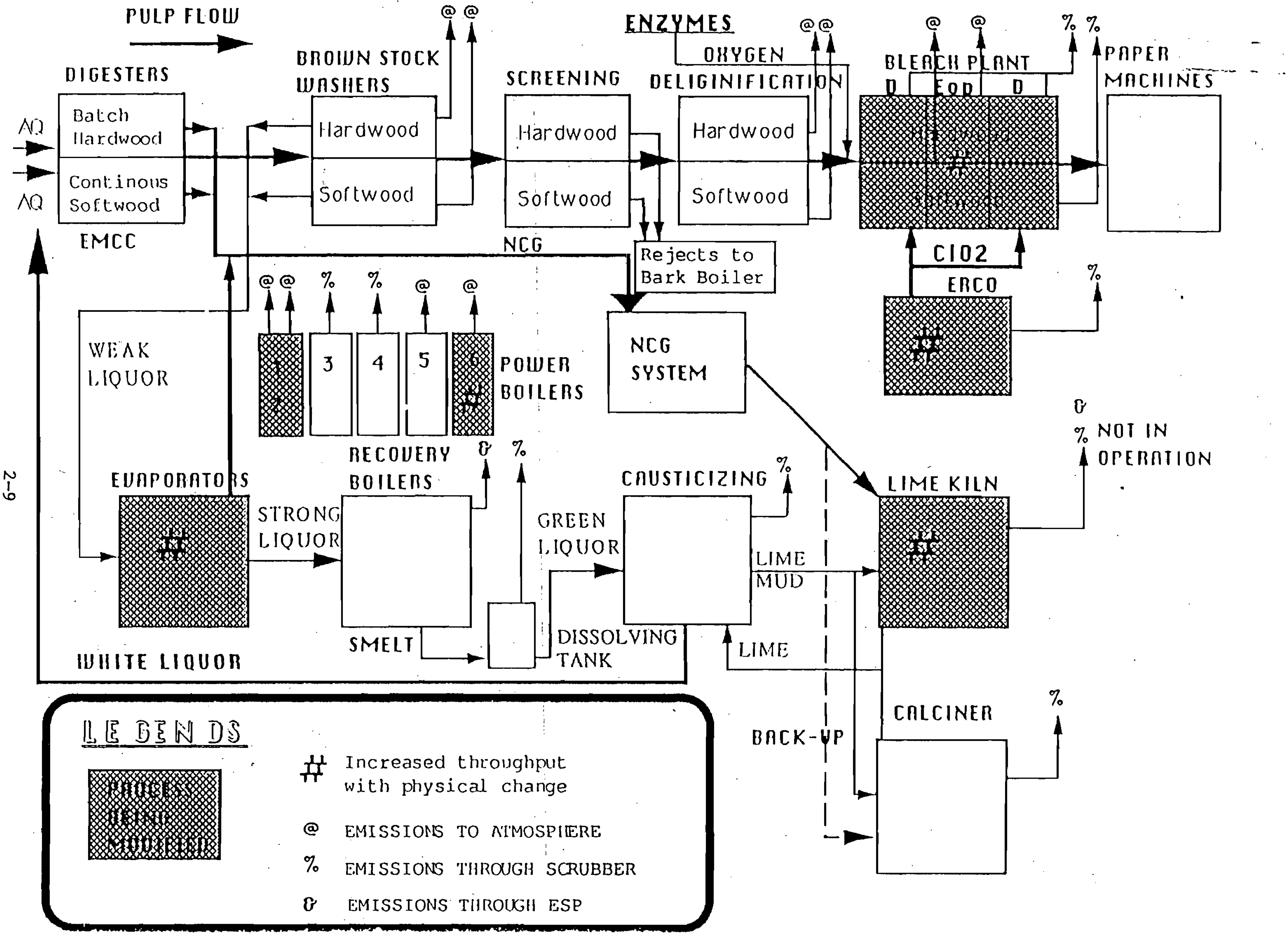
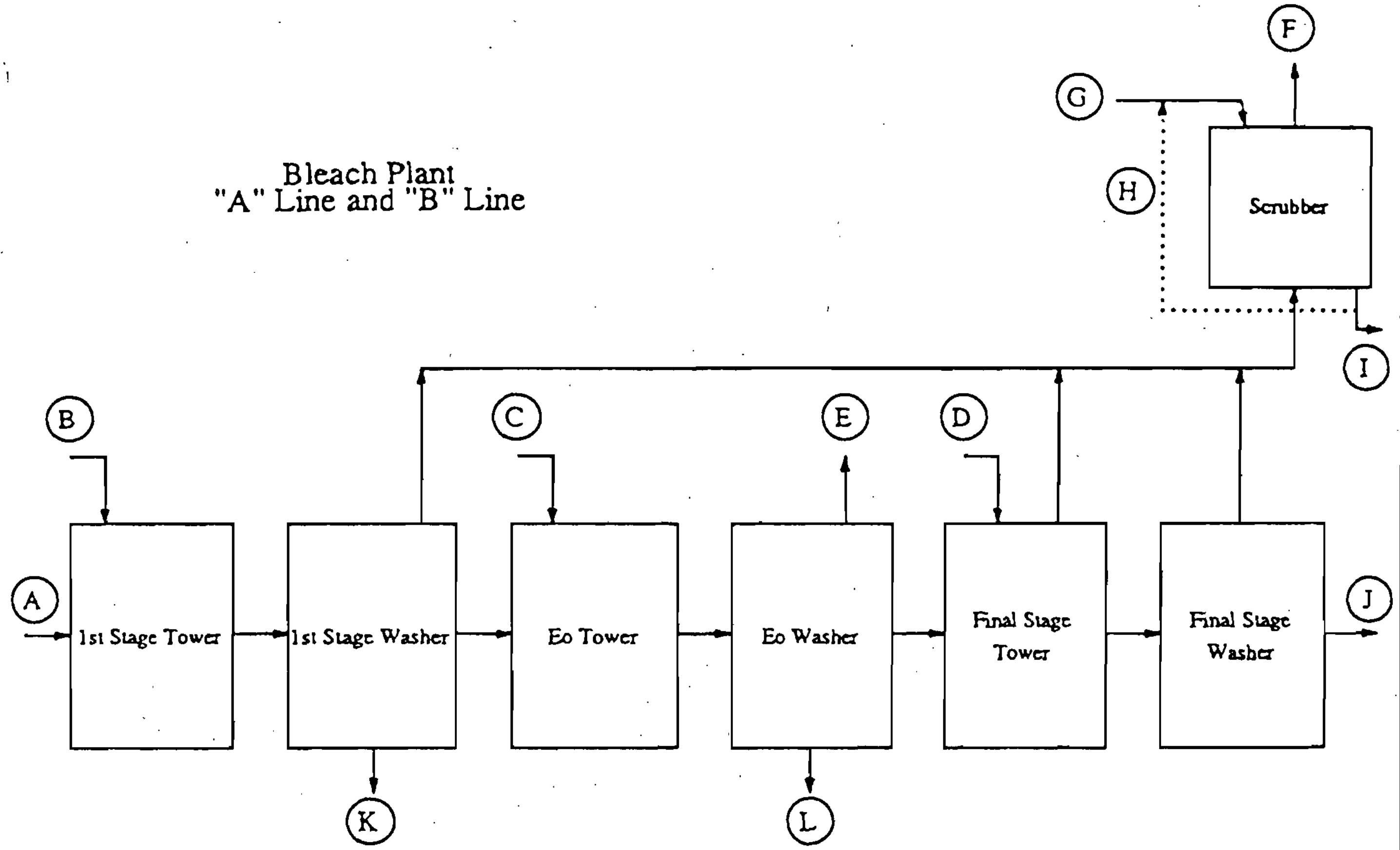


Figure 1

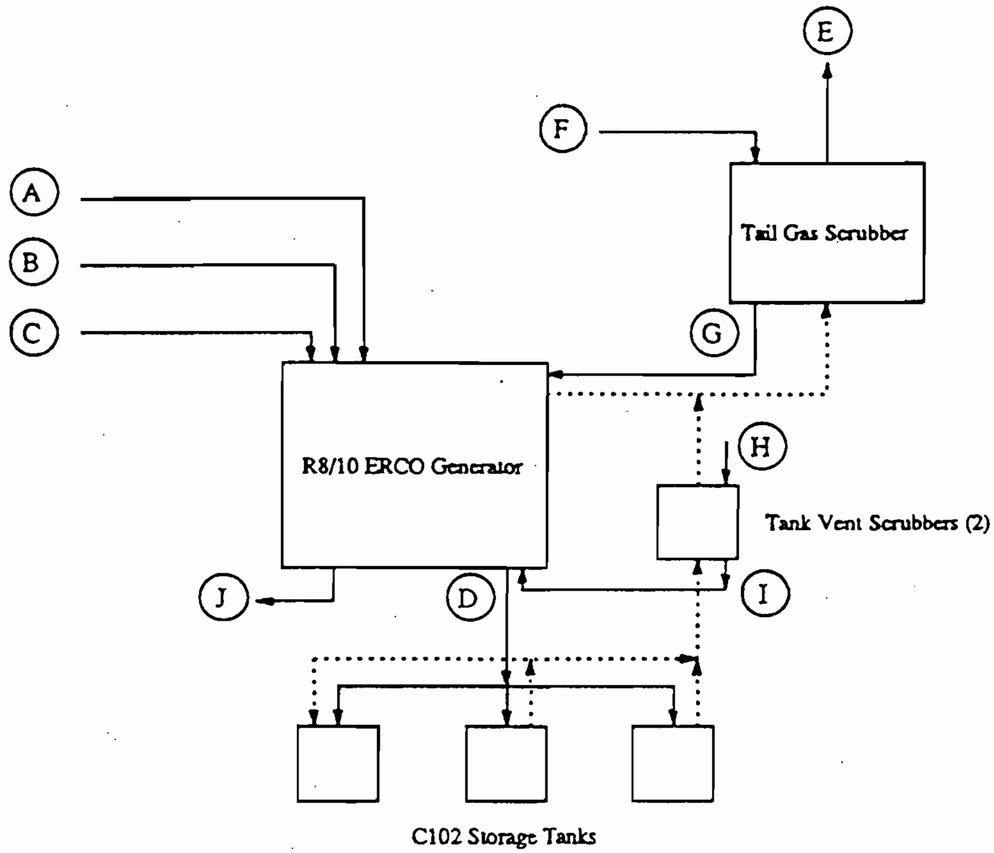


		"A" Line	"B" Line
A	Unbleached Pulp	910.8 ADT/D	851.3 ADT/D
B	CLO2	10.7 T/D	6.3 T/D
C	Peroxide	3.3 T/D	3.1 T/D
D	CLO2	8.2 T/D	5.0 T/D
E	Eo Washer Vent Gas	13,812 ACFM	8,227 ACFM
F	Scrubber Vent Gas	10,200 ACFM	7,350 ACFM
G	Scrubber Makeup Flow	1.1 GPM	.2 GPM
H	Scrubber Recirculation	225 GPM	190 GPM
I	Scrubber Blowdown	2 GPM	1 GPM
J	Bleached Pulp	888 ADT/D	830 ADT/D
K	Acidic Effluent	3.5 MGD	3.5 MGD
L	Alkaline Effluent	2.3 MGD	2.3 MGD

Process Flow Diagram 4
Bleach Plant

Chmp04-D19

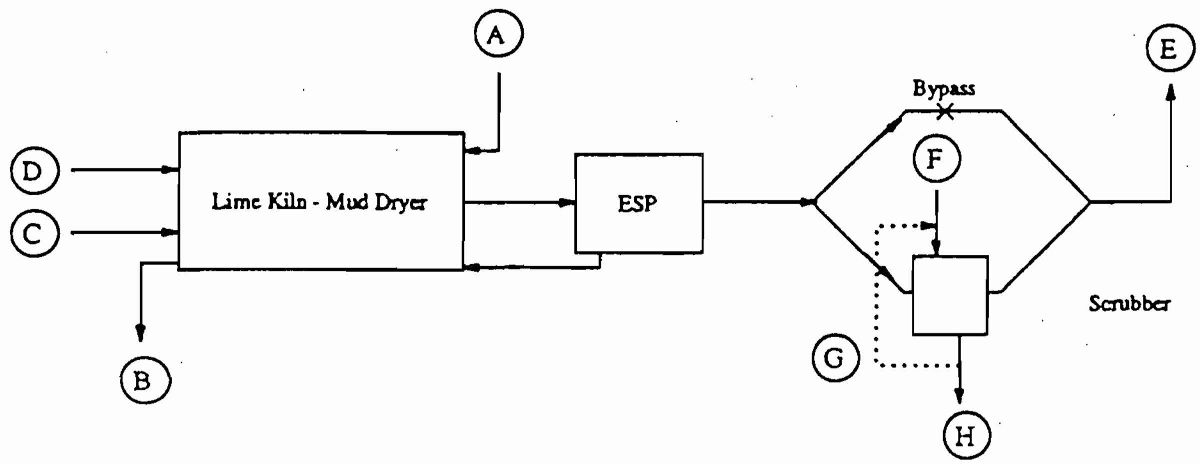
Figure 2



(A)	Methanol	5.6 T/D
(B)	Sulfuric Acid	29.6 T/D
(C)	Sodium Chlorate	61.3 T/D
(D)	Chlorine Dioxide	37.4 T/D
(E)	Stack Effluent	1,321.0 ACFM
(F)	Makeup White Liquor to Scrubber	<1.0 GPM
(G)	Scrubber Discharge	1.0 GPM
(H)	Water to Tank Vent Scrubbers	79.1 GPM
(I)	Tank Vent Scrubber Discharge	79.1 GPM
(J)	Saltcake Generation	33.6 T/D

Process Flow Diagram 3
Chlorine Dioxide Generator

Cbmp03-D19



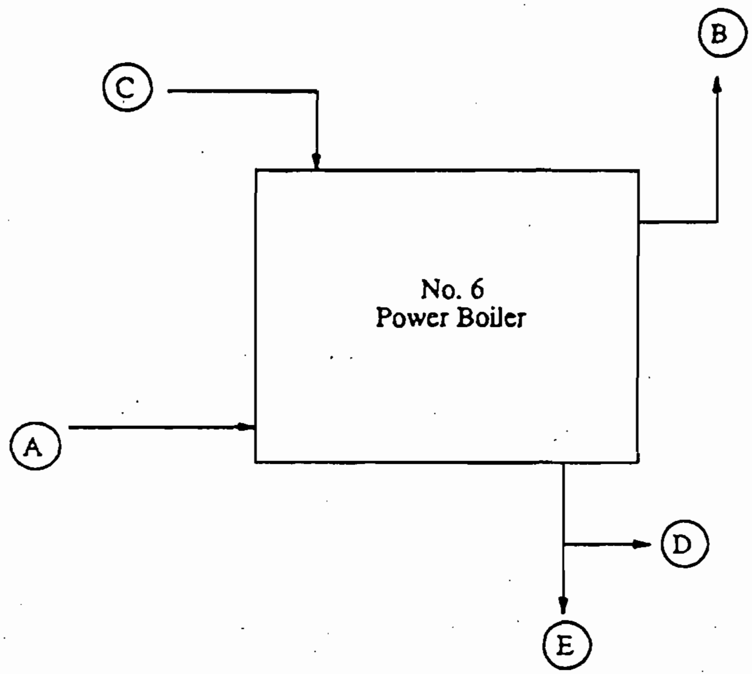
(A)	Lime Mud	893 T/D
(B)	Product Lime	500 T/D
(C)	Fuel - Natural Gas - No. 6 Oil	144.231 MCFH 1,000 GPH
(D)	NCGs	358 lb/hr *
(E)	Stack Effluent	57,208 ACFM
(F)	Scrubber Makeup	25 GPM
(G)	Scrubber Recirculation	1,700 GPM
(H)	Scrubber Blowdown	5 GPM

* Based on 1,718 ADBT/D

Process Flow Diagram 2
Lime Kiln - Mud Dryer

Cbmp02-D19

Figure 4



(A)	Natural Gas	533 MCFH
(B)	Stack Effluent	161,000 ACFM
(C)	Feed Water	6,667 lb/min
(D)	Steam	384 KPPH
(E)	Blow Down	266.7 lb/min

Process Flow Diagram 1
No. 6 Power Boiler

Table 1: Siginificant and Net Emission Rates (Tons per Year)

Pollutant	Significant Emission Rate	Proposed Net Emissions	Applicable Pollutant (Yes/No)
CO	100	189	Yes
NO_x	40	138.8	Yes
SO_2	40	28.2	No
PM	25	-1.3	No
PM10	15	-1.3	No
O_3 (VOC)	40	85.5	Yes
TRS	10	-1.9	No

Table 2. Maximum Air Quality Impacts for Comparison to the Significant and De Minimus Ambient Levels.

Pollutant	Avg. Time	Predicted Impact (ug/m_3)	Significant Imapct Level (ug/m_3)	De Minimus Level (ug/m_3)
CO	1-hour	413.7	2000.0	N/A
	8-hour	289.6	500.0	575.0
NO_2	Annual	2.4	1.0	14.0
VOC	Annual	85.5 TPY	N/A	100 TPY

Table 3. PSD Class II Increment Analysis

Pollutant	Averaging Time	Max. Predicted Impact (ug/m^3)	Allowable Increment (ug/m^3)
NO_2	Annual	2.4	25

Table 4. Ambient Air Quality Impact

Pollutant and Averaging Time	Major Sources Imapct (ug/m^3)	Background Conc. (ug/m^3)	Total Impact (ug/m^3)	Florida AAQS (ug/m^3)
NO_2 (Annual)	42.0	22.5	64.5	100

Table 5. Air Toxics Analysis

Pollutant	Averaging Time	Max. Predicted Impact (ug/m^3)	Air Toxics Reference Conc. (ug/m^3)
Chloroform	Annual	0.026	0.043
Chorine Dioxide	Annual	0.198	0.20
Chlorine	Annual	0.0384	0.40

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 25, 1993

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. F. Doug Owenby
Vice President/Operations Manager
Champion International Corporation
375 Muscogee Road
Cantonment, Florida 32533

Dear Mr. Owenby:

Attached is one copy of the Technical Evaluation and Preliminary Determination and proposed permits to allow modifications to be made to the existing pulp mill in concert with the mill's wastewater Consent Order, including the construction of a new No. 6 Power Boiler, the modification of the existing Lime Kiln's mud handling system and the existing A and B Bleach Plants's operations, the construction of a new methanol storage tank, and the surrender of the operation permits for the existing Nos. 1 and 2 Power Boilers.

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

Sincerely,

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

CHF/BM/rbm

Attachments

c: E. Middleswart, NWD
D. Smith, P.E., CE
J. Harper, EPA
J. Bunyak, NPS
J. Braswell, Esq., DER
G. Golson, ADEM
K. Moore, CIC

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

CERTIFIED MAIL

In the Matter of
Applications for Permit by:

DER File Nos. AC 17-223343
PSD-FL-200
Escambia County

Champion International Corporation
375 Muscogee Road
Cantonment, FL 32533
_______________________________/

INTENT TO ISSUE

The Department of Environmental Regulation gives notice of its intent to issue a permit (copies attached) for the proposed project as detailed in the applications specified above, for the reasons stated in the attached Technical Evaluation and Preliminary Determination.

The applicant, Champion International Corporation, applied on December 21, 1992, to the Department of Environmental Regulation for permits to be allowed to make modifications to the existing pulp mill in concert with the mill's wastewater Consent Order, including the construction of a new No. 6 Power Boiler, the modification of the existing Lime Kiln's mud handling system and the existing A and B Bleach Plants's operations, the construction of a new methanol storage tank, and the surrender of the operation permits for the existing Nos. 1 and 2 Power Boilers. The existing pulp mill is located at 375 Muscogee Road, Cantonment, Escambia County, Florida.

The Department has permitting jurisdiction under the provisions of Chapter 403, Florida Statutes (F.S.) and Florida Administrative Code (F.A.C.) Chapters 17-210 thru 17-297, and 17-4. The project is not exempt from permitting procedures. The Department has determined that a construction permit is required for the proposed work.

Pursuant to Section 403.815, F.S., and Rule 17-103.150, F.A.C., you (the applicant) are required to publish at your own expense the enclosed Notice of Intent to Issue Permits. The notice shall be published one time only within 30 days in the legal ad section of a newspaper of general circulation in the area affected. For the purpose of this rule, "publication in a newspaper of general circulation in the area affected" means publication in a newspaper meeting the requirements of Sections 50.011 and 50.031, F.S., in the county where the activity is to take place. Where there is more than one newspaper of general circulation in the county, the newspaper used must be the one with significant circulation in the area that may be affected by the permitting action. If you are uncertain that a newspaper meets these requirements, please contact the Department at the address or telephone number listed below. The applicant shall provide proof of publication to the Department's Bureau of Air Regulation, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400 (904-488-1344), within seven days of publication. Failure to publish the notice and provide proof of publication within the allotted time may result in the denial of the permit.

The Department will issue the permit with the attached conditions unless a petition for an administrative proceeding (hearing) is filed pursuant to the provisions of Section 120.57, F.S.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Petitions filed by the permit applicant and the parties listed below must be filed within 14 days of receipt of this intent. Petitions filed by other persons must be filed within 14 days of publication of the public notice or within 14 days of their receipt of this intent, whichever first occurs. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, F.S.

The Petition shall contain the following information;

(a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;
(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;
(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;
(d) A statement of the material facts disputed by Petitioner, if any;
(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;
(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and,

(g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this intent. Persons whose substantial interests will be affected by any decision of the Department with regard to the applications have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of receipt of this intent in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

C. H. Fancy, P.E., Chief
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399
904-488-1344

cc: E. Middleswart, NWD
D. Smith, P.E., CE
J. Harper, EPA
J. Bunyak, NPS
J. Braswell, Esq., DER
G. Golson, ADEM
K. Moore, CIC

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this INTENT TO ISSUE and all copies were mailed by certified mail before the close of business on 2-26-93 to the listed persons.

Clerk Stamp

FILING AND ACKNOWLEDGMENT
FILED, on this date, pursuant to §120.52(11), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Kim Tober
Clerk

2-26-93
Date

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
NOTICE OF INTENT TO ISSUE PERMIT

Champion International Corporation

AC 17-223343

PSD-FL-200

The Department of Environmental Regulation gives notice of its intent to issue a permit to Champion International Corporation, 375 Muscogee Road, P. o. Box 87, Cantonment, Florida 32533, to allow modifications to be made to the existing pulp mill in concert with the mill's wastewater Consent Order, including the construction of a new No. 6 Power Boiler, the modification of the existing Lime Kiln's mud handling system and the existing A and B Bleach Plants's operations, the construction of a new methanol storage tank, and the surrender of the operation permits for the existing Nos. 1 and 2 Power Boilers. A determination of Best Available Control Technology (BACT) was required. The proposed project is subject to the Prevention of Signification Deterioration (PSD) regulations. Approximately 10 percent of the annual NOx PSD increment will be consumed. The Department is issuing this Intent to Issue for the reasons stated in the Technical Evaluation and Preliminary Determination.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes (F.S.). The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within 14 days of publication of this notice. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, F.S.

The Petition shall contain the following information;

(a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;
(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;
(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;
(d) A statement of the material facts disputed by Petitioner, if any;

(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;
(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and,
(g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this Notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the applications have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

The applications are available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Department of Environmental Regulation
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Department of Environmental Regulation
Northwest District
160 Government Center
Penscaola, Florida 32501-5794

Any person may send written comments on the proposed action to Mr. Preston Lewis at the Department's Tallahassee address. All comments received within 30 days of the publication of this notice will be considered in the Department's final determination. Further, a public hearing can be requested by any person. Such requests must be submitted within 30 days of this notice.

Technical Evaluation
and
Preliminary Determination

Champion International Corporation
Escambia County, Florida

Permit Numbers: AC 17-223343
PSD-FL-200

Department of Environmental Regulation
Division of Air Resources Management
Bureau of Air Regulation

February 25, 1993

I. Application

A. Applicant

Champion International Corporation
375 Muscogee Road
Cantonment, FL 32533

B. Project Description and Location

The applicant proposes to modify the existing pulp mill in concert with the mill's wastewater Consent Order, including the construction of a new No. 6 Power Boiler, the modification of the existing Lime Kiln's mud handling system and the existing A and B Bleach Plants's operations, the construction of a new methanol storage tank, and the surrender of the operation permits for the existing Nos. 1 and 2 Power Boilers. Also, the applicant stated that this activity will not result in a mill production increase, thereby eliminating the need to address actual emissions from other mill sources (source annual operation reports will be used to verify).

The existing facility is located in Escambia County, Florida. The UTM coordinates are Zone 17, 469.0 km East and 3,385.8 km North.

C. Process and Controls

1. General

The kraft cooking process is used to separate the lignin and wood fiber to produce brown pulp from wood chips (see Figure 2-3). After the wood chips have been cooked with an alkaline liquor in the batch digesters (hard wood) and the continuous digester (soft wood) and washed, the pulp is screened to separate rejects. The pulp is then further delignified in separate oxygen delignification reactors, washed, and sent to the A and B Bleach Plants, where it is reacted with various chemicals in a sequence for purification, brightening and viscosity control. Chemicals are added in retention towers, and reactants are removed in washers. After being bleached, the pulp is dried on the Nos. 3 and 5 Paper Machines and finished for customer specifications. Market pulp is dried on a pulp drying machine as bales or rolls for final sale.

2. Chemical Cooking

Improved delignification in the cooking processes is proposed for the soft wood chips, which are cooked in the continuous digester, by an extended modified continuous cooking. By adding cooking liquor at different stages and using different cooking conditions, the proposed process is expected to produce a pulp which is easier to wash and, therefore, improving lignin extraction. The continuous digester system is a sealed system and its emissions are collected and transported to an incinerator system (i.e., lime kiln: primary; calciner: backup) for control. No increase in throughput should occur due to the proposed changes to the continuous digester system.

The project will include the installation of storage and handling equipment for anthraquinone (AQ), which is water soluble; and, therefore, Champion proposes to utilize a system designed for transporting and storing water-soluble anthraquinone. AQ is an organic catalyst which accelerates and increases the selectivity of the wood cooking chemicals in the delignification of the pulp fiber. It will be used in both the batch digester system and the continuous digester system for the purpose of reducing the organic loading, the color, and the conductivity in the bleach plant effluent.

It is believed that emissions from the digesters should not change following implementation of these new methods. Since feed rate to the digesters will not change, the material flow rate from the digesters to the brown stock washers will also be unchanged. No net change in black liquor solids to the recovery boilers is anticipated.

As is the continuous digester system, the batch digester system is a closed system and its emissions are collected and transported to an incinerator system (i.e., lime kiln or calciner) for control.

3. O_2 Delignification

The washed brown pulp from the cooking processes goes through further delignification in O_2 reactors on each line (i.e., soft wood and hard wood). If the proposed improvements in the digester cooking processes occur, then less fiber may be wasted, which could result in an increase in the fiber processed through the O_2 delignification systems. Since there could also be reduced levels of lignin in the brown pulp, the actual emissions from the pre- and post-O_2 washers and the O_2 blow tank are not expected to change, even if fiber throughput increases.

4. A and B Bleach Plants

The existing A and B Bleach Plants are identical and use a three stage bleaching sequence commonly referred to as CED (C: a chlorination stage with chlorine dioxide added; E: an oxidative caustic extraction stage; and, D: a final chlorine dioxide bleaching stage). The final bleaching sequence will be referred to as DED (see Figure 1).

The chlorine dioxide (ClO_2) is manufactured on site in a chemical generator employing the R3H process, which reacts salt, sulfuric acid, hydrochloric acid, and sodium chlorate to form a chlorine dioxide/chlorine gas mixture that is absorbed in chilled water and stored in storage tanks for use by both plants.

There are five vent sources associated with the ClO_2 generator, which includes a tail gas scrubber using a sodium hydroxide media to control ClO_2, two ClO_2 storage tanks using chilled water scrubbers to control ClO_2; and two salt unloading/pneumatic transfer systems using separate water spray towers to control particulate emissions.

The proposal will eliminate the existing chlorine gas handling system, add a hydrogen peroxide handling system, add a methanol storage tank, and modify the ClO_2 generator. In addition, enzymes (i.e., xylanase) may be added to the high density storage tanks between the oxygen delignification systems and the bleach plants.

The mill will eliminate the use of molecular chlorine as a bleaching agent, and the first stage of each plant will be 100% ClO_2, which will require a modification to the existing ClO_2 generator. The generator will be modified to an R8/R10 process (see Figure 2), which uses methanol, sulfuric acid, and sodium chlorate to generate ClO_2. The modified reactor's capacity will be increased from 16 tons per day to 37.4 tons per day of ClO_2. A third ClO_2 storage tank will be installed and the existing chlorine absorption towers will be converted to ClO_2 absorption towers.

The storage tank scrubbers will continue to vent the existing two tanks and will also vent the new storage tank. The exhaust from the two tank vent scrubbers will be directed to the tail gas scrubber. The tail gas scrubber will be modified by installing an extra 10 feet of tower and the scrubbing media will be changed from sodium hydroxide to white liquor (sodium hydroxide plus sodium sulfide).

A hydrogen peroxide storage and handling system will be installed. Hydrogen peroxide is an oxidizing agent that works optimally in alkaline conditions and is typically applied to the pulp in a 50% solution. The peroxide is applied in the oxidative extraction stage and is completely reacted. There are no emissions associated with the use of hydrogen peroxide.

The proposal to use the enzyme, xylanase, as a bleach boosting technique is not completely proven. By adding the enzyme prior to pulp bleaching, it is hoped that it will modify the chemical structure to make subsequent bleach stages more efficient and resulting in fewer non-desirable by-products, improved process yields, and significant reductions in ClO_2 required to bleach pulp. Installation of enzyme storage and handling facilities will be required. Since enzymes are water soluble, there will be no air emissions associated with these systems.

A new 21,880 gallon methanol storage tank will be installed. The tank will be nitrogen blanketed and equipped with a conservation vent.

The existing salt unloading and handling system will be shut down and dismantled.

The existing bleach plant scrubbers are equally effective for Cl_2 and ClO_2 removal, and the scrubber systems have adequate capacity for the expected emissions. Therefore, no changes are planned for these scrubber systems.

5. Evaporators

Additional loading (i.e., ~ 50%) is expected on the No. 2 Multiple Effect Evaporator (MEE) system by the processing of reclaimed sewer effluent. This will be accomplished by the addition of two new evaporator effects to the existing No. 2 MEE system. Although the color and B.O.D. reclaimed represents a significant portion of the wastewater load, the associated solids contribution to the chemical recovery system is insignificant. Therefore, the recovery boilers and associated equipment are not impacted.

6. Foul Condensate Stripper System

An upgrade of the existing contaminated condensate stripper and the installation of an additional steam stripper is planned . With added stripper capacity, initial estimates have shown that the mill effluent B.O.D. load to the wastewater treatment plant could be reduced by as much as 15%. Since a steam stripper directly reduces volatile organic compounds (VOCs) released from the digester steam after the cooking of wood chips, this will decrease the amount of VOCs previously released to the wastewater treatment system. The existing emissions, as well as the new emissions, from the condensate stripper system will be collected and transported to an incinerator (i.e., lime kiln) for control.

7. Lime Kiln-Mud Dryer

The lime kiln and calciner cannot process all of the lime mud produced by the causticizing system, thus discharging the excess mud to the sewer in a weak wash solution. This sewered lime mud with settled mill sludge is collected and landfilled from decanting basins, with the resulting weak wash alkaline solution requiring neutralization using CO_2 injection. The alkaline solution does increase mill effluent conductivity.

The proposal will add a lime mud dryer system (see Figure 3) in order to eliminate the sewering of the excess lime mud in weak wash solution from the causticizing process, reduce landfilling requirements, and reduce conductivity by about 20%.

The upgrade will increase the capacity to 500 tons of CaO per day. A new multifield electrostatic precipitator will be installed between the lime kiln and the existing caustic scrubber will be modified to provide SO_2 scrubbing capability (the packed column will utilize recirculating NaOH as the scrubbing medium). A minimum pH of 8.0 will be maintained.

A slight increase in non-condensible gases (i.e., total reduced sulfur compounds) will be burned in the lime kiln, resulting in an increase in SO_2 emissions. These SO_2 emissions will be subjected to the lime mud in the lime kiln and a caustic scrubber system. Projected emissions are not significant. A performance test will be required to substantiate this.

8. New No. 6 Power Boiler

Added steam capacity will be required to support the proposed process modifications. The specific added steam demand will come from an increase in evaporation and contaminated condensate stripping capacity, black liquor heaters, the cooking modifications, and bleach plant load reduction technologies.

The new No. 6 Power Boiler will be permitted to fire only natural gas as a fuel, with a maximum heat input of 533 MMBtu/hr. The new boiler will permit the retirement of the existing Nos. 1 and 2 Power Boilers. The new boiler will provide 350,000 pounds per hour of steam product.

D. The Standard Industrial Codes are:

Major Group No. 26 - Paper and Allied Products
Industry Group No. 2611 - Pulp Mills

II. Rule Applicability

The proposed project is subject to preconstruction review in accordance with Chapter 403, Florida Statutes; Florida Administrative Code (F.A.C.) Chapters 17-210 thru 17-297, and 17-4; and, the 40 CFR (July, 1991 version).

The application package was deemed complete on January 20, 1993.

The plant is located in an area designated as attainment for all pollutants in accordance with F.A.C. Rule 17-275.400.

The existing mill is a major emitting facility in accordance with F.A.C. Rule 17-212.200, Definitions, for the pollutants particulate matter (PM/PM10), sulfur dioxide (SO_2), nitrogen oxides (NOx), carbon monoxide (CO), TRS, and volatile organic compounds (VOCs).

The proposed mill modification will result in a net significant increase for the pollutants NOx, CO and VOCs (see Tables 1 & 2), thus requiring new source review for Prevention of Significant Deterioration (PSD) in accordance with F.A.C. Rule 17-212.400. This review consists of a determination of Best Available Control Technology (BACT) pursuant to F.A.C. Rule 17-212.410 and an analysis of the air quality impact of the increased emissions. The review also includes an analysis of the project's impacts on soils, vegetation and visibility, along with air quality impacts resulting from associated commercial, residential and industrial growth.

The proposed new sources and modified sources shall be in compliance with all applicable provisions of F.A.C. Chapters 17-210 thru 17-297 and 17-4; and, the 40 CFR (July, 1991 version). The proposed source shall be in compliance with all applicable provisions of F.A.C. Rules 17-210.650: Circumvention; 17-210.700: Excess Emissions; 17-296.800: Standards of Performance for New Stationary Sources (NSPS); 17-297: Stationary Point Source Emission Test Procedures; and, 17-4.130: Plant Operation-Problems.

This proposed new No. 6 Power Boiler shall be in compliance with the NSPS for Industrial Steam Generating Units, 40 CFR 60, Subpart Db, and BACT.

The new methanol storage tank shall be in compliance with the NSPS for Storage Vessels for Petroleum Liquids, 40 CFR 60, Subpart Kb.

As a first tier level of review, the pollutants chlorine, chlorine dioxide, and chloroform, were evaluated with considerations given to carcinogenicity and toxicity using risk assessment guidelines. Through these considerations, initial property line acceptable ambient concentrations were established for each pollutant along with the appropriate averaging times.

Since neither State nor Federal ambient standards for chlorine, chlorine dioxide, and chloroform have yet been adopted, post-modification performance tests will be required to quantify the emissions, which might result in additional rule evaluation requirements.

III. Emission Limitations and Impact Analysis

A. Emission Limitations

The proposed project is subject to emission limitations for the pollutants NOx, SO2, CO, VOC, TRS, and PM/PM10. Applicable visible emission (VE) standards will also be imposed. The following table will reflect the allowable emission standards/limitations:

Table A

Source	Pollutant	Allowable Emission Standard/Limitation
1. No. 6 Power Boiler: maximum 533 MMBtu/hr heat input		
	NOx	0.06 lb/MMBtu (32.0 lbs/hr, 140.1 TPY)
	CO	0.1 lb/MMBtu (53.3 lbs/hr, 233.5 TPY)
	PM/PM_{10}	2.67 lbs/hr, 11.7 TPY
	SO_2	Not Applicable: Natural gas usage (for PSD tracking purposes: 2.2 TPY projected potential emissions)
	VOC	0.01 lb/MMBtu (5.33 lbs/hr, 23.4 TPY)
	VE	$\leq$ 20 % opacity (6-min avg), except for one 6-min period/hr @ $\leq$ 27% opacity
2. Lime Kiln-Mud Dryer System: maximum 500 TPD CaO; 34,383 dscfm		
	NOx	No. 6 fuel oil: 200 ppmvd @ 10% O_2 (49.3 lbs/hr, 215.9 TPY) Natural Gas: 175 ppmvd @ 10% O_2 (43.1 lbs/hr, 188.8 TPY)
	PM/PM_{10}	10.9 lbs/hr, 47.7 TPY
	CO	45 ppmvd @ 10% O_2 (6.75 lbs/hr, 29.6 TPY)
	VOC	104 ppmvd @ 10% O_2 (as propane) (24.5 lbs/hr, 107.3 TPY)
	TRS	8 ppmvd @ 10% O_2 (1.46 lbs/hr, 6.4 TPY)
	SO_2	6.49 lbs/hr, 28.4 TPY
	VE	< 20% opacity
3. A-Line Bleach Plant		
a. E_O Washer	$CHCl_3$	0.038 lb/hr, 0.16 TPY
b. Tail Gas Scrubber	CL_2	1.45 lbs/hr, 6.4 TPY
	ClO_2	0.45 lb/hr, 2.0 TPY
	$CHCl_3$	0.34 lb/hr, 1.5 TPY
4. B-Line Bleach Plant		
a. E_O Washer	$CHCl_3$	0.038 lb/hr, 0.16 TPY
b. Tail Gas Scrubber	Cl_2	1.45 lbs/hr, 6.4 TPY
	ClO_2	0.45 lb/hr, 2.0 TPY
	$CHCl_3$	0.34 lb/hr, 1.5 TPY

Table A cont.

5. R8/R10 ClO_2 Generator: 37.6 TPD
   Tail Gas Scrubber
   Cl_2 0.1 lb/hr, 0.44 TPY
   ClO_2 0.25 lb/hr, 1.1 TPY

6. Methanol Storage Tank: 21,880 gallons - horizontal fixed roof
   VOC Not Applicable (for PSD tracking purposes: 2.2 TPY projected potential emissions)

NOTE:
1. Natural gas usage only in the No. 6 PB.
3. Hours of operation at 8760 per year.
3. Maximum heat input:
   a. No. 6 PB: 533 MMBtu/hr.
   b. Lime kiln: 150 MMBtu/hr.
4. Steam production:
   a. No. 6 PB: 350,000 pounds per hour.
5. Pollutant basis: #6 PB and Lime Kiln-Mud Dryer
   a. NOx: BACT
   b. CO: BACT
   c. PM/PM_{10}: #6 PB: vendor guarantee of 0.037 gr/dscf
      LK-MD: AP-42 Emission Factors, Table 1.4-1
   d. VOC: BACT (basis: 750 ADTP/day each hard and soft wood)
6. The maximum sulfur content of the No. 6 Fuel Oil is 1.0%, by weight.

The following table will present the initial property line acceptable ambient concentrations and their averaging times for chloroform, chlorine, and chlorine dioxide:

Table B

Chemical	Acceptable Ambient Conc.	Averaging Time
1. Chloroform	0.043 ug/m^3	annual
2. Chlorine	15.0 ug/m^3 (5 ppb)	8-hour
	3.57 ug/m^3 (1.2 ppb)	24-hour
3. Chlorine Dioxide	3.0 ug/m^3 (1 ppb)	8-hour
	0.71 ug/m^3 (0.24 ppb)	24-hour

Note:

1. Since chloroform is a carcinogen with an EPA unit risk value (a measure of its carcinogenic potency) and the facility will continuously emit this chemical, the initial acceptable ambient concentration is based on providing protection from the long-term exposure to chloroform. The level of protection, that corresponds to a one-in-a-million increased risk of developing cancer from continuous exposure to chloroform, is

calculated by dividing 1.0E-6 by 2.3E-5 (the unit risk factor for chloroform). The resulting quotient (0.043 ug/m^3) is the initial acceptable ambient concentration. Since the health concern is for long-term exposure (and the unit risk factor reflects a 70-year exposure), the averaging time should be on an annual basis.

2. Chlorine is not a carcinogen, but has an occupational exposure level (TLV) of 0.5 ppm (1.5 mg/m^3). The initial acceptable ambient concentration is based on providing two orders of magnitude below the occupational level. The two orders of magnitude represent protection for the differences between healthy workers and the more sensitive public, and the public's potential exposure to multiple chemicals, which may exert synergistic effects, or may produce exposures through other environmental media.

   The first ambient guideline is based on an 8-hour average concentration, as is the occupational exposure level. An additional protection factor which takes into account the public's continuous exposure, compared to a worker's exposure, which ceases in 8 hours, is provided by the longer-term 24-hour guideline. For the 24-hour guideline, the 8-hour guideline is divided by 4.2, which is the ratio between a 168-hour week of public exposure to a continuous emission and a worker's exposure to 40 hours of the toxic. The 24-hour guideline does not need to be used for batch operations or processes which operate for less than 8 hours. If a process can pass the 8-hour ambient guideline and does not operate more than 8 hours, then its average ambient concentration for 24 hours will be well below the 24-hour guideline.

3. The initial acceptable ambient concentration for chlorine dioxide* is derived by the same methodology as was used for chlorine. The occupational exposure level is 0.3 mg/m^3 (0.1 ppm). Dividing the TLV by 100 gives the 8-hour acceptable ambient concentration, and dividing the TLV by 420 gives the 24-hour concentration.

* Facility representatives indicated that chlorine dioxide is very reactive and rapidly breaks down to chlorine in the atmosphere. Therefore, an acceptable ambient concentration guideline may not be appropriate for chlorine dioxide.

4. Testing will be required to verify the emissions from all sources.

B. Air Quality Impact Analysis

1. Introduction

The proposed No.6 Power Boiler and the modification of the Lime Kiln-Mud Dryer will emit three pollutants in PSD-significant amounts. These pollutants include the criteria pollutants carbon monoxide (CO), nitrogen oxides (NOx), and ozone (O3) (as volatile organic compounds). (see Table 1)

The air quality impact analysis required by the PSD regulations for these pollutants includes:

* An analysis of existing air quality;
* A PSD increment analysis (for NO2);
* An Ambient Air Quality Standards (AAQS) analysis;
* An analysis of impacts on soils, vegetation, and visibility and of growth-related air quality impacts; and,
* A "Good Engineering Practice" (GEP) stack height determination.

The analysis of existing air quality generally relies on preconstruction monitoring data collected with EPA-approved methods. The PSD increment and AAQS analysis depends on air quality dispersion modeling carried out in accordance with EPA guidelines.

Based on the required analyses, the Department has reasonable assurance that the proposed mill modification, as described in this report and subject to the conditions of approval proposed herein, will not cause or contribute to a violation of any ambient air quality standard or PSD increment. A discussion of the modeling methodology and required analysis follows.

2. Analysis of Existing Air Quality

Preconstruction ambient air quality monitoring is required for all pollutants subject to PSD review.

An exemption to the monitoring requirement can be obtained if the maximum air quality impact, as determined by air quality modeling, is less than a pollutant-specific "de minimus" concentration.

The predicted ambient impact of the the proposed project for those pollutants subject to the PSD review is listed in Table 2.

The predicted maximum impacts for CO and NO2 are less than their respective de minimus impact levels. Therefore, no additional monitoring is required for these pollutants.

Preconstruction monitoring review is not required for ozone concentrations either, because the maximum potential VOC emissions from the proposed plant are less than 100 TPY.

However, a background NO_2 concentration of 22.5 ug/m3 annual average was developed by the Department for use in the ambient air quality analysis. This value was based on data from sites in

Jacksonville and Tarpon Springs both about equally distant from Champion. There were no quality assured NO_2 monitoring sites in the Pensacola area.

3. Modeling Methodology

The modeling analysis included both screening and refined EPA-approved models. Screening models were used to determine the "worst case" loaded conditions associated with the No.6 Power Boiler and to evaluate the No.6 Power Boiler and Lime Kiln-Mud Dryer impacts due to CO emissions. The EPA-approved Industrial Source Complex Long-Term (ISCLT2) dispersion model was used to evaluate NO_2 impacts. All recommended EPA default options were used. Direction-specific downwash parameters were used because the stacks were less than the GEP stack height.

Meteorological data used in the modeling consisted of five years (1985-1989) of hourly surface and upper air meteorological data taken at Pensacola, Florida. These data were input into the National Climatic Data Center (NCDC) stability array (STAR) preprocessor program for use as input to the ISCLT2 model. The STAR program converts the hourly data into the joint frequency of occurrence of wind direction, wind speed, and atmospheric stability. The STAR program can produce monthly, seasonal and annual stability arrays of input into ISCLT2.

The highest predicted yearly impact from the proposed NOx emissions was compared with the standards.

4. Modeling Results

The applicant performed screening modeling to determine the "worst case" load conditions for the proposed boiler. The worst case ambient impacts were predicted to occur during the 100% load condition. Based on the results above, all refined modeling included the 100% load emission parameters and emission rates for the No.6 Power Boiler.

The Screening model was also used to demonstrate that the CO impacts from the No.6 Power Boiler and the modification to the Lime Kiln were below the 1-hour and 8-hour significance levels of 2,000 ug/m3 and 500 ug/m3, respectively. The maximum combined impact from these two sources was 413.7 ug/m3 on a 1-hour basis. The 8-hour impact was 289.6 ug/m3. Therefore, since the proposed mill modification will not result in a significant ambient CO air quality impact, no further air quality modeling for CO is required. The proposed facility is located in a Class II area. The applicant evaluated the potential increases in ambient ground-level concentrations associated with the project and determined that the maximum projected ambient concentration increase would be greater than the PSD significant level for NO_2, thus requiring the applicant to perform a full impact analysis for NO_2. The significant impact area was determined to be 2.4 km and an emissions inventory for NOx sources was developed for the Champion mill and other major sources.

A combination of polar coordinate receptors and rectangular coordinate receptors was established for the ISCLT2 modeling. The polar grid was centered on the location of the No.5 Boiler stack. The following downwind receptor rings for every 10 degrees of arc from 0 degrees to 360 degrees were included: 4250m, 4500m, 4750m, 5000m, 6000m, 7000m, 8000m, and 10,000m. Due to the narrow boundary of Champion's property, an extensive network of discrete receptors along the boundary was used to supplement the polar grid. Since the polar receptor grid was centered on the No.5 Boiler, additional discrete receptors were required to adequately fill in the area between the property and the start of the grid. These additional receptors included points at 100m spacing out to 1000m and 250m spacing from 1000m to 4500m where the full polar grid started. Receptors were also placed at approximately 100m intervals along the perimeter of the facility boundary.

Atmospheric dispersion modeling, as previously described, was performed to quantify the amount of PSD increment consumed. The modeling results are summarized in Table 3. Based on these modeling results, the impacts from the proposed facility will not violate any of the Class II increments.

No PSD Class I increment analysis was done since the project is located more than 160 km from the nearest Class I area.

For the pollutants subject to an AAQS review, the total impact on ambient air is obtained by adding a "background" concentration to the maximum modeled concentration. This "background" concentration takes into account all sources of a particular pollutant that are not explicitly modeled. The "background" concentrations are taken from areas that are much more industrialized than the proposed facilities location. Therefore, these background values are considered to be conservative. A background NO_2 concentration of 22.5 ug/m3 annual average was developed by the Department based on the data from sites in Jacksonville and Tarpon Springs.

Given existing air quality in the area of the proposed facility, emissions from the proposed facility are not expected to cause or contribute to a violation of an AAQS. The results of the AAQS analysis are summarized in Table 4.

There is currently no acceptable method to model VOCs for ozone formation. Consequently, the control of the VOC emissions are addressed in the BACT review.

Chlorine, chlorine dioxides, and chloroform do not have an AAQS. However, these pollutants were modeled and the results were compared to the Department's air toxics reference concentrations. Table 5 summarizes the results of this analysis. The predicted concentrations for each of these pollutants is less than their respective reference concentrations.

5. Additional Impacts Analysis

a. Impacts on Soils and Vegetation

The maximum ground-level concentration predicted to occur for each pollutant as a result of the proposed project, including a background concentration, will be below the applicable AAQS including the national secondary standards developed to protect public welfare-related values. As such, this project is not expected to have a harmful impact on soils and vegetation.

b. Impact on Visibility

The mill modifications are estimated to result in a decrease in annual particulate matter emissions and an increase of less than 28 tons of SO2. Hence, it is not anticipated that any perceptible reduction in visibility will occur due to the emission of primary or secondary aerosols by the proposed mill modification. And the ambient ground level concentration of nitrogen oxides (in the form of NO_2) is anticipated to decrease due to the shutdown and removal of the No.1 and No.2 Power Boilers. Hence, visibility impairment should not occur.

c. Growth-Related Air Quality Impacts

The proposed facility is not expected to significantly change employment, population, housing or commercial or industrial development in the area to the extent that an air quality impact will result.

IV. CONCLUSION

Based on the information provided by Champion International Corporation, the Department has reasonable assurance that the proposed mill modification, as described in this evaluation, and subject to the conditions proposed herein, will not cause or contribute to a violation of any air quality standard, PSD increment, or any other technical provision of Chapters 17-210 thru 17-297 of the Florida Administrative Code.

#41755

FIGURE 2-3: CONSENT ORDER AIR PERMITTING PLAN - MILL LAYOUT

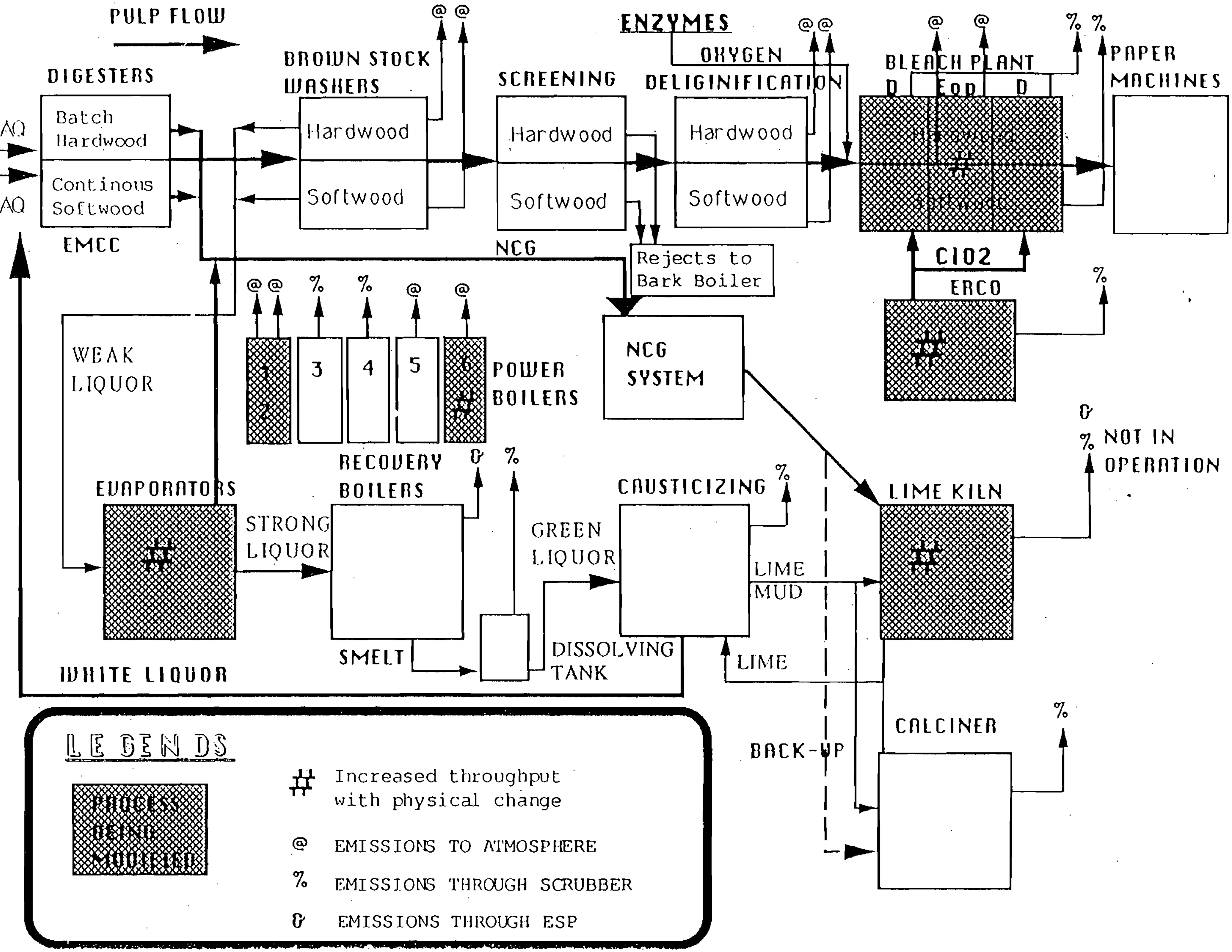
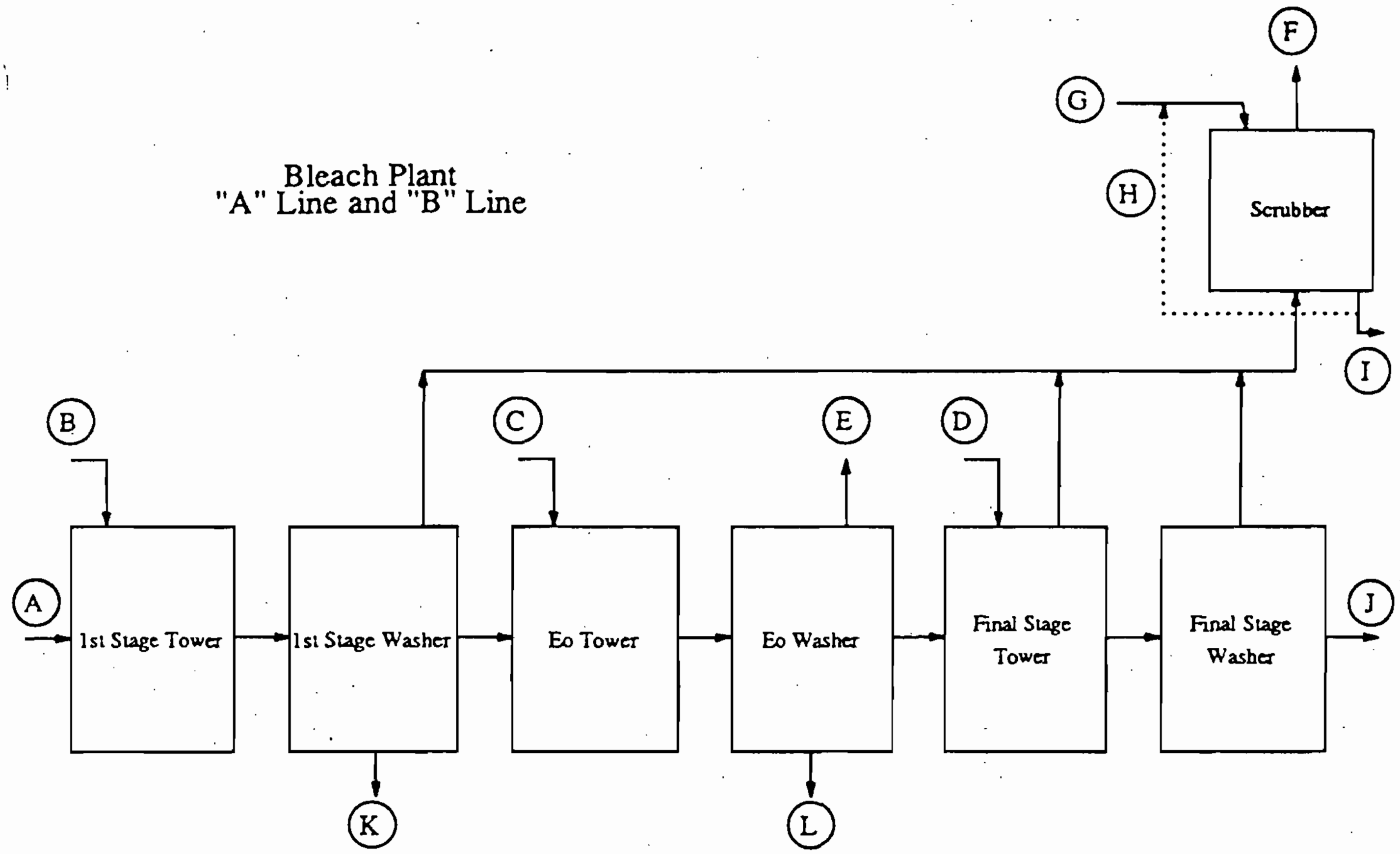


Figure 1

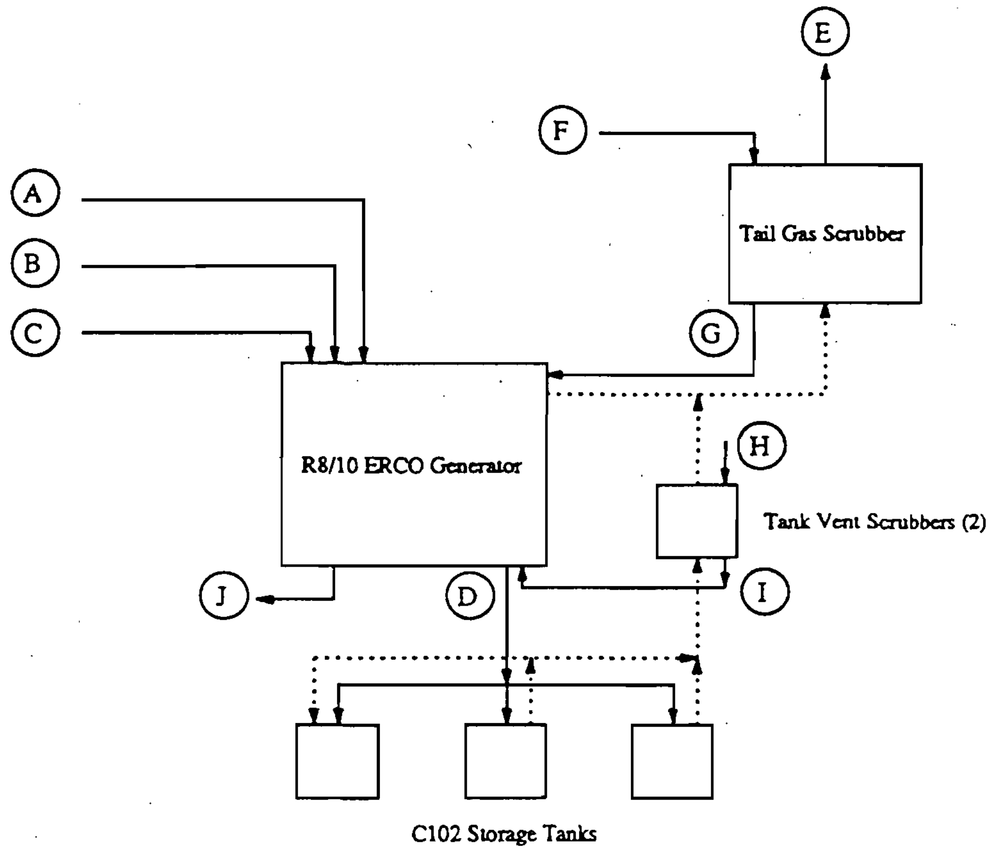


		"A" Line	"B" Line
(A)	Unbleached Pulp	910.8 ADT/D	851.3 ADT/D
(B)	CLO2	10.7 T/D	6.3 T/D
(C)	Peroxide	3.3 T/D	3.1 T/D
(D)	CLO2	8.2 T/D	5.0 T/D
(E)	Eo Washer Vent Gas	13,812 ACFM	8,227 ACFM
(F)	Scrubber Vent Gas	10,200 ACFM	7,350 ACFM
(G)	Scrubber Makeup Flow	1.1 GPM	.2 GPM
(H)	Scrubber Recirculation	225 GPM	190 GPM
(I)	Scrubber Blowdown	2 GPM	1 GPM
(J)	Bleached Pulp	888 ADT/D	830 ADT/D
(K)	Acidic Effluent	3.5 MGD	3.5 MGD
(L)	Alkaline Effluent	2.3 MGD	2.3 MGD

Process Flow Diagram 4
Bleach Plant

Chmp04-D19

Figure 2

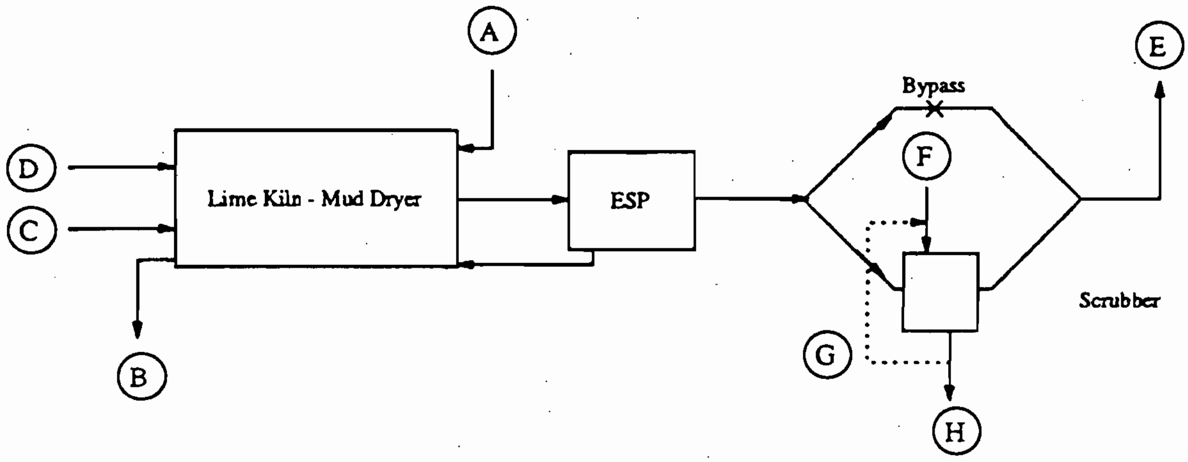


A	Methanol	5.6 T/D
B	Sulfuric Acid	29.6 T/D
C	Sodium Chlorate	61.3 T/D
D	Chlorine Dioxide	37.4 T/D
E	Stack Effluent	1,321.0 ACFM
F	Makeup White Liquor to Scrubber	<1.0 GPM
G	Scrubber Discharge	1.0 GPM
H	Water to Tank Vent Scrubbers	79.1 GPM
I	Tank Vent Scrubber Discharge	79.1 GPM
J	Saltcake Generation	33.6 T/D

Process Flow Diagram 3
Chlorine Dioxide Generator

Cbmp03-D19

Figure 3



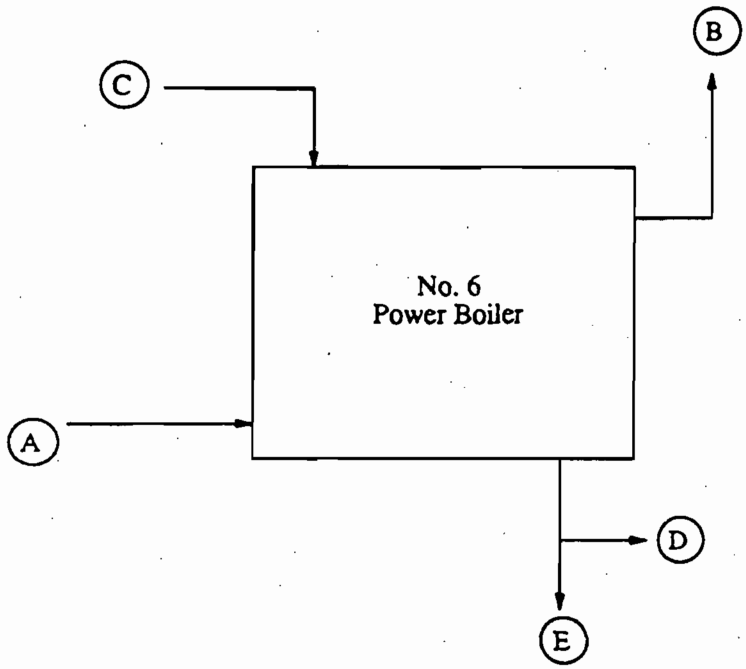
(A)	Lime Mud	893 T/D
(B)	Product Lime	500 T/D
(C)	Fuel - Natural Gas - No. 6 Oil	144.231 MCFH 1,000 GPH
(D)	NCGs	358 lb/hr *
(E)	Stack Effluent	57,208 ACFM
(F)	Scrubber Makeup	25 GPM
(G)	Scrubber Recirculation	1,700 GPM
(H)	Scrubber Blowdown	5 GPM

* Based on 1,718 ADBT/D

Process Flow Diagram 2
Lime Kiln - Mud Dryer

Chmp02-D19

Figure 4



A	Natural Gas	533 MCFH
B	Stack Effluent	161,000 ACFM
C	Feed Water	6,667 lb/min
D	Steam	384 KPPH
E	Blow Down	266.7 lb/min

Process Flow Diagram 1
No. 6 Power Boiler

Chmp01-D19

Table 1: Siginificant and Net Emission Rates (Tons per Year)

Pollutant	Significant Emission Rate	Proposed Net Emissions	Applicable Pollutant (Yes/No)
CO	100	189	Yes
NO_x	40	138.8	Yes
SO_2	40	27.4	No
PM	25	-1.3	No
PM10	15	-1.3	No
O_3 (VOC)	40	85.5	Yes
TRS	10	-1.9	No

Table 2. Maximum Air Quality Impacts for Comparison to the Significant and De Minimus Ambient Levels.

Pollutant	Avg. Time	Predicted Impact (ug/m_3)	Significant Imapct Level (ug/m_3)	De Minimus Level (ug/m_3)
CO	1-hour	413.7	2000.0	N/A
	8-hour	289.6	500.0	575.0
NO_2	Annual	2.4	1.0	14.0
VOC	Annual	85.5 TPY	N/A	100 TPY

Table 3. PSD Class II Increment Analysis

Pollutant	Averaging Time	Max. Predicted Impact (ug/m^3)	Allowable Increment (ug/m^3)
NO_2	Annual	2.4	25

Table 4. Ambient Air Quality Impact

Pollutant and Averaging Time	Major Sources Imapct (ug/m^3)	Background Conc. (ug/m^3)	Total Impact (ug/m^3)	Florida AAQS (ug/m^3)
NO_2 (Annual)	42.0	22.5	64.5	100

Table 5. Air Toxics Analysis

Pollutant	Averaging Time	Max. Predicted Impact (ug/m^3)	Air Toxics Reference Conc. (ug/m^3)
Chloroform	Annual	0.026	0.043
Chorine Dioxide	Annual	0.198	0.20
Chlorine	Annual	0.0384	0.40

PSD Permit Application for Proposed Pulp Mill Modifications

Champion International Corporation Pensacola Florida Mill

December 1992

Prepared for:
Champion International Corporation
Cantonment, Florida

Submitted to:
Florida Department of Environmental Regulation
Division of Air Resources Management
Tallahassee, Florida

Prepared by:
Roy F. Weston, Inc.
West Chester, Pennsylvania

TABLE OF CONTENTS

I. PERMIT APPLICATION

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATIONS

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: **Major stationary industrial** [ ] NEW[1] [X] Existing[1]

APPLICATION TYPE: [ ] CONSTRUCTION [ ] OPERATION [X] MODIFICATION

COMPANY NAME: **Champion International Corporation** COUNTY: **Escambia**

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peaking Unit No. 2, Gas Fired) **Refer to Table 3-1 in attached narrative**

SOURCE LOCATION: Street **375 Muscogee Road** City **Cantonment**

UTM: East **469** North **3386**

Latitude **30** ° **36** ' **30** "N Longitude **87** ° **19** ' **13** "W

APPLICANT NAME AND TITLE: **Champion International Corp.**

APPLICANT ADDRESS: **P.O. Box 87 Cantonment, Florida 32533**

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of **Champion International**

I certify that the statements made in this application for a **modification** permit are true, correct and complete to the best of my knowledge and belief. Further I agree to maintain and operate the pollution control facilities in such a manner as to comply with the provision of Chapter 403, Florida Statutes, and all the rules and regulations of the department and revisions thereof. I also understand that a permit, if granted by the department, will be non-transferable and I will promptly notify the department upon sale or legal transfer of the permitted establishment.

*Attach letter of authorization

Signed: F. D. Owenby

F. Doug Owenby, Vice President/Operations Manager
Name and Title (Please Type)

Date: 12/17/92 Telephone No. 904-968-2121

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

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

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

375 Muscogee Road
P.O. Box 87
Cantonment, Florida 32533-0087
904 968-2121

Champion
Champion International Corporation

RECEIVED
MAR 16 1993
Division of Air
Resources Management

March 15, 1993

Mr. C. H. Fancy, P.E., Chief
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee FL 32399

Dear Mr. Fancy:

Please find attached a photostatic copy of the intent to issue public notice for Champion's mill modifications in conjunction with the wastewater consent order. This notice was published in the Pensacola News Journal on March 13, 1993. It is Champion's understanding that receipt of this letter and copy of the public notice by the department constitutes proof of publication for this construction permit (AC17-223343).

If further information is required please contact myself or Mr. W. C. Tims at (904) 968-2121.

Sincerely,

Kyle J. Moore
Environmental Supervisor

KJM:sa

Attachment

cc: W. C. Tims, Jr., Champion International Corp.
Terry Cole, Esq., Oertel, Hoffman, Fernandez & Cole
Frank Westmark, Champion International Corp.
Bruce Mitchell, DER, Tallahassee
Ed Middleswart, DER, Northwest District

FEDERAL EXPRESS

[redacted]

QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL
PACKAGE
TRACKING NUMBER 6261657732

2335M 6261657732

[redacted] Date 3/25/93

RECIPIENT'S COPY

From (Your Name) Please Print: Kyle Moore	Your Phone Number (Very Important): (904-)968-4214
Company: CHAMPION INTERNATIONAL	Department/Floor No.
Street Address: 375 MUSCOGEE RD	
City: CANTONMENT	State: FL / ZIP Required: 3 2 5 3 3

2

To (Recipient's Name) Please Print: MR. C. H. FANCY, P.E., CHIEF	Recipient's Phone Number (Very Important):)
Company: BUREAU OF AIR REGULATION	Department/Floor No.
Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes.): 2600 BLAIR STONE ROAD	
City: TALLAHASSEE	State: FL / ZIP Required: 32399

YOUR INTERNAL BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice.)

H IF HOLD FOR PICK-UP, Print FEDEX Address Here
Street Address
City State ZIP Required

3 PAYMENT 1 [X] Bill Sender 2 [ ] Bill Recipient's FedEx Acct. No. 3 [ ] Bill 3rd Party FedEx Acct. No. 4 [ ] Bill Credit Card
5 [ ] Cash/Check [redacted]

4 SERVICES (Check only one box)

Priority Overnight (Delivery by next business morning†)
- 11 [ ] OTHER PACKAGING
- 16 [X] FEDEX LETTER*
- 12 [ ] FEDEX PAK*
- 13 [ ] FEDEX BOX
- 14 [ ] FEDEX TUBE

Standard Overnight (Delivery by next business afternoon. No Saturday delivery†)
- 51 [ ] OTHER PACKAGING
- 56 [ ] FEDEX LETTER*
- 52 [ ] FEDEX PAK*
- 53 [ ] FEDEX BOX
- 54 [ ] FEDEX TUBE

Economy Two-Day (Delivery by second business day †)
- 30 [ ] ECONOMY

Government Overnight (Restricted for authorized users only)
- 46 [ ] GOV'T LETTER
- 41 [ ] GOV'T PACKAGE

Freight Service (for packages over 150 lbs.)
- 70 [ ] OVERNIGHT FREIGHT** (Confirmed reservation required)
- 80 [ ] TWO-DAY FREIGHT**

† Delivery commitment may be later in some areas
*Declared Value Limit $500.
**Call for delivery schedule

5 DELIVERY AND SPECIAL HANDLING (Check services required)

HOLD FOR PICK-UP (Fill in Box H) 1 [ ] WEEKDAY or 31 [ ] SATURDAY
DELIVER 2 [X] WEEKDAY or 3 [ ] SATURDAY (Extra charge) (Not available to all locations)
- 4 [ ] DANGEROUS GOODS (Extra charge)
- 5 [ ]
- 6 [ ] DRY ICE Dangerous Goods Shipper's Declaration not required. Dry Ice, 9, UN 1845 ______ x ______ kg. III
- 7 [ ] OTHER SPECIAL SERVICE ______
- 9 [ ] SATURDAY PICK-UP (Extra charge)
- [ ] DESCRIPTION
- 12 [ ] HOLIDAY DELIVERY (If offered) (Extra charge)

6

PACKAGES	WEIGHT In Pounds Only	YOUR DECLARED VALUE (See right)
Total	Total	Total

DIM SHIPMENT (Chargeable Weight)
[ ] ______ lbs.
L x W x H

Received At
1 [X] Regular Stop 3 [ ] Drop Box
4 [ ] B.S.C.
2 [ ] On-Call Stop 5 [ ] Station

Emp. No. Date
[ ] Cash Received
[ ] Return Shipment
[ ] Third Party [ ] Chg. To Del. [ ] Chg. To Hold
Street Address
City State Zip
Received By:
X
Date/Time Received FedEx Employee Number

7 Release Signature:

Federal Express Use
Base Charges
Declared Value Charge
Other 1
Other 2
Total Charges

REVISION DATE 6/92
PART #137204 FXEM 11/92
FORMAT #136
136

MULTIPLE PACKAGE SERVICE

IF YOU ARE MAKING AN MPS SHIPMENT, APPLY THE SELF ADHESIVE MPS COPY HERE

TERMS AND CONDITIONS

DEFINITIONS

On this Airbill, we, our and us refer to Federal Express Corporation, its employees and agents. You and your refer to the sender, its employees and agents.

AGREEMENT TO TERMS

By giving us your package to deliver, you agree to all the terms on this Airbill and in our current Service Guide, which is available on request. If there is a conflict between the current Service Guide and this Airbill, the Service Guide will control. No one is authorized to alter or modify the terms of our Agreement.

RESPONSIBILITY FOR PACKAGING AND COMPLETING AIRBILL

You are responsible for adequately packaging your goods and for properly *filling* out ths *Airbill*. Omission of the number of packages and weight per package from this Airbill will result in a billing based on our best estimate of the number of packages received from you and an estimated "default" weight per package, as determined and periodically adjusted by us.

AIR TRANSPORTATION TAX INCLUDED

Our basic rate includes a federal tax required by Internal Revenue Code Section 4271 on the air transportation portion of this service.

LIMITATIONS ON OUR LIABILITY AND LIABILITIES NOT ASSUMED

Our liability for loss or damage to your package is limited to your actual damages or $100, whichever is less, unless you pay for and declare a higher authorized value. We do not provide cargo liability insurance, but you may pay an additional charge for each additional $100 of declared value. If you declare a higher value and pay the additional charge, our liability will be the lesser of your declared value or the actual value of your package.

In any event we will not be liable for any damages, whether direct, incidental, special or consequential in excess of the declared value of a shipment, whether or not Federal Express had knowledge that such damages might be incurred including, but not limited to, loss of income or profits.

We won't be liable for your acts or omissions, including but not limited to improper or insufficient packing, securing, marking or addressing, or for the acts or omissions of the recipient or anyone else with an interest in the package. Also, we won't be liable, if you or the recipient violates any of the terms of our agreement. We won't be liable for loss of or damage to shipments of prohibited items.

We won't be liable for loss, damage or delay caused by events we cannot control, including but not limited to acts of God, perils of the air, weather conditions, acts of public enemies, war, strikes, civil commotions, or acts or omissions of public authorities (including customs and quarantine officials) with actual or apparent authority.

DECLARED VALUE LIMITS

The highest declared value we allow for FedEx Letter and FedEx Pak shipments is $500. For other shipments, the highest declared value we allow is $25,000 unless your package contains items of "extraordinary value," in which case the highest declared value we allow is $500. Items of "extraordinary value," include artwork, jewelry, furs, precious metals, negotiable instruments, and other items listed in our current Service Guide.

If you send more than one package on this Airbill, you may fill in the total declared value for all packages, not to exceed the $100, $500 or $25,000 per package limit described above. (Example: 5 packages can have a total declared value of up to $125,000.)

If more than one package is shipped on this airbill, our liability for loss or damage will be limited to the actual value of the package(s) lost or damaged (not to exceed the lesser of the total declared value or the per package limits described above). You have the responsibility of proving the actual loss or damage.

FILING A CLAIM

ALL CLAIMS MUST BE MADE BY YOU IN WRITING. You must notify us of your claim within strict time limits. See current Service Guide.

We'll consider your claim filed if you call and notify our Customer Service Department at 800-238-5355 and notify us in writing as soon as possible.

Within 90 days after you notify us of your claim, you must send us all relevant information about it. We are not obligated to act on any claim until you have paid all transportation charges, and you may not deduct the amount of your claim from those charges.

If the recipient accepts your package without noting any damage on the delivery record, we will assume that the package was delivered in good condition. In order for us to process your claim, you must, to the extent possible, make the original shipping cartons and packing available for inspection.

RIGHT TO INSPECT

We may, at our option, open and inspect your packages prior to or after you give them to us to deliver.

NO C.O.D. SERVICES

NO C.O.D. SERVICES ON THIS AIRBILL. If C.O.D Service is required, please use a Federal Express C.O.D. airbill for this purpose.

RESPONSIBILITY FOR PAYMENT

Even if you give us different payment instructions, you will always be primarily responsible for all delivery costs, as well as any cost we may incur in either returning your package to you or warehousing it pending disposition.

RIGHT OF REJECTION

We reserve the right to reject a shipment at any time, when such shipment would be likely to cause damage or delay to other shipments, equipment or personnel, or if the transportation of which is prohibited by law or is in violation of any rules contained in this Airbill or our current Service Guide.

MONEY-BACK GUARANTEE

In the event of untimely delivery, Federal Express will at your request and with some limitations, refund or credit all transportation charges. See current Service Guide for further information.

Part # 137204/137205
Rev. 6/92

STATE OF FLORIDA
DEPARTMENT OF
ENVIRONMENTAL REGULATION

NOTICE OF INTENT TO ISSUE PERMIT
Champion International Corporation
AC 17-223343
PSD-FL-200

The Department of Environmental Regulation gives notice of its intent to issue a permit to Champion International Corporation, 375 Muscogee Road, P. O. Box 87, Cantonment, Florida 32533, to allow modifications to be made to the existing pulp mill in concert with the mill's wastewater Consent Order, including the construction of a new No. 6 Power Boiler, the modification of the existing Lime Kiln's mud handling system, the modificatin of the existing A and B Bleach Plant Lines and their operations, the modificatin of the No. 2 Multiple Effect Evaporator set by adding new effects, the construction of a new methanol storage tank, and the surrender of the operation permits for the existing Nos. 1 and 2 Power Boilers. A determination of Best Available Control Technology (BACT) was required. The proposed project is subject to the Prevention of Signification Deterioration (PSD) regulations. Approximately 10 percent of the annual NOx PSD increment will be consumed. The Department is issuing this Intent to Issue for the reasons stated in the Revised Technical Evaluation and Preliminary determination (original draft dated February 25, 1993).

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes (F.S.) The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within 14 days of publication of this notice. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, F.S.

The petition shall contain the following information;

(a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;
(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;
(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;
(d) A statement of the material facts disputed by Petitioner, if any;
(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;
(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and
(g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the positon taken by it in this notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the applications have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

The applications are available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Department of Environmental Regulation
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Department of Environmental Regulation
Northwest District
160 Government Center
Pensacola, Florida 32501-5794

Any person may send written comments on the proposed action to Mr. Preston Lewis at the Department's Tallahassee address. All comments received within 30 days of the publication of this notice will be considered in the Department's final determination. Further, a public hearing can be requested by any person. Such requests must be submitted within 30 days of this notice.

Legal No. 42634 1T
March 13, 1993

Florida Department of Environmental Regulation

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

Lawton Chiles, Governor

Carol M. Browner, Secretary

December 21, 1992

Mr. Richard E. Grusnick, Chief
Air Division
Alabama Dept. of Environmental Management
State Capitol
Montgomery, AL 36130

Dear Mr. Grusnick:

RE: Champion International Corp.
Pulp Mill Modifications
Escambia County, PSD-FL-200

The Department has received the above referenced PSD application package. Please review this package and forward your comments to the Department's Bureau of Air Regulation by January 15, 1993. The Bureau's FAX number is (904)922-6979.

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

Sincerely,

Patricia G. Adams

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

CHF/pa

Enclosures

Florida Department of Environmental Regulation

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

Lawton Chiles, Governor

Carol M. Browner, Secretary

December 21, 1992

Ms. Jewell A. Harper, Chief
Air Enforcement Branch
U.S. EPA, Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30308

Dear Ms. Harper:

RE: Chamption International Corp.
Pulp Mill Modifications
Escambia County, PSD-FL-200

The Department has received the above referenced PSD application package. Please review this package and forward your comments to the Department's Bureau of Air Regulation by January 15, 1993. The Bureau's FAX number is (904)922-6979.

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

Sincerely,

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

CHF/pa

Enclosures

Printing and Writing Papers
375 Muscogee Road
P.O. Box 87
Cantonment, Florida 32533-0087
904 968-2121

Champion
Champion International Corporation

October 14, 1992

RECEIVED
OCT 15 1992
Division of Air
Resources Management

Mr. Clair Fancy
State of Florida
Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dear Mr. Fancy:

Per your request, Champion would like to pre-submit sections of an air construction permit application. This application address required air impact assessment associated with planned process changes to comply with an effluent consent order with the Department. Champion is submitting these sections ahead of the full application to allow the Department additional time to review the application.

The sections being submitted today include a description of the proposed modifications and a partial summary of existing emissions. Not included in the existing emissions summary are the data from the existing bleach plant. Enclosed are two copies of Section 2 and Section 3 of the application.

Champion intends to submit the bleach plant emissions summary along with the emissions associated with the proposed modification by the end of October. The complete application will be submitted by the middle of November.

If you or your staff have any questions concerning this material, please call me at the mill. My phone number is (904) 968-2121, Extension 2519.

Sincerely,

David T. Arceneaux
Permitting Coordinator

DTA:sa

Enclosures

cc: Ed Middleswart, Northwest District

FEDERAL EXPRESS [redacted]

QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL
PACKAGE TRACKING NUMBER 2208873682

206

2208873682

RECIPIENT'S COPY

1 [redacted] Date 10/14/92

From (Your Name) Please Print: DAVID ARCENEAUX
Your Phone Number (Very Important): (904)-968-2121
Company: AMPION INTERNATIONAL
Department/Floor No.
Street Address: 5 MUSCOGEE RD
City: MIGNMENT State: FL ZIP Required: 32533

2 To (Recipient's Name) Please Print: MR. CLAIR FANCY
Recipient's Phone Number (Very Important): ( )
Company: FLA. DEPT. OF ENVIRONMENTAL REGULATION
Department/Floor No.
Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes.): 2600 BLAIR STONE ROAD
City: TALLAHASSEE State: FL ZIP Required: 32399-24

YOUR INTERNAL BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice.)

H IF HOLD FOR PICK-UP, Print FEDEX Address Here
Street Address
City State ZIP Required

3 PAYMENT 1 [x] Bill Sender 2 [ ] Bill Recipient's FedEx Acct. No. 3 [ ] Bill 3rd Party FedEx Acct. No. 4 [ ] Bill Credit Card
5 [ ] Cash/Check [redacted]

4 SERVICES (Check only one box)

Priority Overnight (Delivery by next business morning†)	Standard Overnight (Delivery by next business afternoon†)
11 [ ] YOUR PACKAGING	51 [ ] YOUR PACKAGING
16 [ ] FEDEX LETTER *	56 [ ] FEDEX LETTER *
12 [ ] FEDEX PAK *	52 [ ] FEDEX PAK *
13 [ ] FEDEX BOX	53 [ ] FEDEX BOX
14 [ ] FEDEX TUBE	54 [ ] FEDEX TUBE
Economy Two-Day (Delivery by second business day†)	**Government Overnight** (Restricted for authorized users only)
30 [ ] ECONOMY	46 [ ] GOVT LETTER
	41 [ ] GOVT PACKAGE

Freight Service (for Extra Large or any package over 150 lbs.)
70 [ ] OVERNIGHT FREIGHT ** (Confirmed reservation required) 80 [ ] TWO-DAY FREIGHT **
† Delivery commitment may be later in some areas.
*Declared Value Limit $100.
**Call for delivery schedule.

5 DELIVERY AND SPECIAL HANDLING (Check services required)

1 [ ] HOLD FOR PICK-UP (Fill in Box H)
2 [x] 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 [ ] DESCRIPTION
12 [ ] HOLIDAY DELIVERY (If offered) (Extra charge)

6

PACKAGES	WEIGHT In Pounds Only	YOUR DECLARED VALUE
1	3	
Total 1	Total 3	Total

DIM SHIPMENT (Chargeable Weight) [ ] ______ lbs.
L x W x H =

Received At
1 [ ] Regular Stop 3 [ ] Drop Box
4 [ ] B.S.C.
2 [ ] On-Call Stop 5 [ ] Station

Emp. No. Date
[ ] Cash Received
[ ] Return Shipment
[ ] Third Party [ ] Chg. To Del. [ ] Chg. To Hold
Street Address
City State Zip
Received By:
X
Date/Time Received FedEx Employee Number

7 Release Signature:
FedEx Emp. No. Date/Time

Federal Express Use
Base Charges
Declared Value Charge
Other 1
Other 2
Total Charges

REVISION DATE 6/91
PART #137204 FXEM 2/92
FORMAT #099
099

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

Signed ____________

DAN SMITH
Name (Please Type)

CORNERSTONE ENGINEERING
Company Name (Please Type)

125 S. ALCANIZE, ST., SUITE 2 PENSACOLA, FA 32501
Mailing Address (Please Type)

DANIEL SMITH, REGISTERED ENGINEER, STATE OF FLORIDA

Florida Registration No. **35633** Date: ________ Telephone No. **904-438-3449**

SECTION II: GENERAL PROJECT INFORMATION

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

Pulp mill modifications as described in the attached narrative text associated with the mills wastewater Consent order including; construction of new gas fired No. 6 Power Boiler, modification of existing Lime Kiln, modification of bleach plant operations, construction of a methanol storage tank and shut down of existing No. 1 and No. 2 Power Boilers.

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

Start of Construction **March 1993** Completion of Construction **JUNE 1995**

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

No. 6 Power Boiler - low NO_x burner and flue gas recirculation - $400,000

Lime Kiln - Mud Dryer - electrostatic precipitator and scrubber - $1,500,000

Bleach Plant - ClO_2 generator and tail gas scrubber - $4,500,000

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

Lime Kiln - A017-181738; issued 7/18/90, expires 7/1/95. Bleach Plant - A017-142570; issued 2/8/88, expires 1/1/93. ClO_2 generator system - A017-142566; issued 2/8/88, expires 1/1/93. No. 1 Power Boiler - A017-181-726; issued 7/9/90, expires 6/1/95, No. 2 Power Boiler - A017-18127; issued 7/9/90, expires 6/1/95. Salt unloading - A017-142572, issued 2/8/88, expires 1/1/93.

E. Requested permitted equipment operating time: hrs/day __24__; days/wk __7__; wks/yr __52__; if power plant, hrs/yr __8760__; if seasonal, describe:

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

1. Is this source in a non-attainment area for a particular pollutant? **NO**
   a. If yes, has "offset" been applied? **NA**
   b. If yes, has "Lowest Achievable Emission Rate" been applied? **NA**
   c. If yes, list non-attainment pollutants. **NA**
2. Does best available control technology (BACT) apply to this source? **YES**
3. Does the State "Prevention of Significant Deterioration" (PSD) requirement apply to this source? If yes, see Section VI and VII. **YES**
4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? **YES**
5. Do "National Emission Standards or Hazardous Air Pollutants" (NESHAP) apply to this source? **NO**

H. Do "Reasonably Available control Technology" (RACT) requirements apply to this source? **NO**

   a. If yes, for what pollutants? ____________________
   b. If yes, in addition to the information required in this form, any information requested in Rule 17-2.650 must be submitted.

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

REFER TO DETAILS IN THE ATTACHED NARRATIVE TEXT

NO. 6 POWER BOILER

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

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

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		
		(NOT APPLICABLE)		

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

1. Total Process Input Rate (lb/hr): NA
2. Product Weight (lbs/hr): NA

C. Airborne Contaminants Emitted: (Information in this table must be submitted for each emission point, use additional sheets as necessary)

Name of Contaminant	Emission[1]		Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission lbs/hr	Potential[4] Emission		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/hr	T/yr	
PM/PM10	2.67	11.67	NA	NA	2.67	11.67	1-B
NO_x*	32 24 HR AVG	140.07	NSPS - .1 lb/MMBTU	53.3 30 DAY AVG	32 24 HR AVG	140.07	1-B
CO*	53.3	233.45	NA	NA	53.3	233.45	1-B
SO_2*	0.32	1.40	NA	NA	0.32	1.40	1-B
HYDROCARBONS*	5.33	23.35	NA	NA	5.33	23.35	1-B

*Emission rates are based upon 24 hour average.

REFER TO ATTACHED NARRATIVE TEXT, SECTION 3.

[1]See Section V, Item 2.

[2] Reference applicable emission standards and units (e.g. Rule 17-2.600 (5)(b)2. Table II, E. (1) - 0.1 pounds per million BTU heat input)

[3]Calculated from operating rate and applicable standard.

[4]Potential equals actual emission per DER direction.

NO. 6 POWER BOILER

D. Control Devices: (See Section V, Item 4)

Name and Type (Model and Serial No.)	Contaminant	Efficiency	Range of Particles Size Collected (in microns) (If applicable)	Basis for Efficiency (Section V Item 5)
		(NOT APPLICABLE)		

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
Natural Gas	.533 MMCF/HR	.533 MMCF/HR	533 MMBTU/HR

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

Fuel Analysis:

Percent Sulfur: **10.7 ppm typical** Percent Ash: **NEGLIGIBLE**

Density: **NA** lbs/gal Typical Percent Nitrogen: **1.1 to 3.2 (vol)**

Heat Capacity: **APPROX. 1000 BTU/C.F.** BTU/lb **NA** BTU/gal

Other Fuel Contaminants (which may cause air pollution): **(NA)**

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

Annual Average **NA** Maximum **NA**

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

BLOWDOWN FROM BOILER DISCHARGED TO WASTEWATER TREATMENT FACILITY.

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

Stack Height: 125 ft. Stack Diameter: 8.5 ft.

Gas Flow Rate: 161,000 ACFM 87226 DSCFM Gas Exit Temperature: 350 °F.

Water Vapor Content: 17.2 % Velocity: 47.3 FPS

SECTION IV: INCINERATOR INFORMATION

Type of Waste	Type 0 (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Patholog-ical)	Type V (Liq. & Gas By-prod.)	Type VI (Solid by-prod.)
Actual lb/hr Incinerated			(NOT APPLICABLE)				
Uncon-trolled (lbs/hr)							

Description of Waste ____

Total Weight Incinerated (lbs/hr) ____ Design Capacity (lbs/hr) ____

Approximate Number of Hours of Operation per day ____ day/wk ____ wks/yr. ____

Manufacturer ____

Date Constructed ____ Model No. ____

	Volume $(ft)^3$	Heat Release (BTU/hr)	Fuel		Temperature (°F)
			Type	BTU/hr	
Primary Chamber					
Secondary Chamber					

Stack Height: ____ ft. Stack Diameter: ____ Stack Temp. ____

Gas Flow Rate: ____ ACFM ____ DSCFM* Velocity: ____ FPS

Type of pollution control device: [ ] Cyclone [ ] Wet Scrubber [ ] Afterburner

[ ] Other (specify) ____

* If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air.

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

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

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		
LIME MUD	SULFUR	0.1%	893 ton/day	2-A
NCG'S	SULFUR	82%	358	2-D

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

1. Total Process Input Rate (lb/hr): **LIME MUD - 893 ton/day**

2. Product Weight (lbs/hr): **CaO - 500 ton/day**

C. Airborne Contaminants Emitted: (Information in this table must be submitted for each emission point, use additional sheets as necessary)

Name of Contaminant	Emission[1]		Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission lbs/hr	Potential[4] Emission		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/hr	T/yr	
PM/PM10	10.9	47.74	17-2.610	23.6	10.9	47.74	2-E
NO_x*	49.3	215.93	NA	NA	49.3	215.93	2-E
CO*	6.75	29.57	NA	NA	6.75	29.57	2-E
SO_2*	6.49	28.43	NA	NA	6.49	28.43	2-E
VOC*	24.5	107.31	NA	NA	24.5	107.31	2-E
TRS*	1.46 12 HR AVG	6.39	20 PPM 12 HR AVG-FAC	3.64 12 HR AVG	1.46 12 HR AVG	6.39	2-E

*Emission rates are based upon 24 hour average.

REFER TO ATTACHED NARRATIVE TEXT, SECTION 3.

[1]See Section V, Item 2.

[2]Reference applicable emission standards and units (e.g. Rule 17-2.600 (5)(b)2. Table II, E. (1) - 0.1 pounds per million BTU heat input)

[3]Calculated from operating rate and applicable standard.

[4]Potential equals actual emission per DER direction.

D. Control Devices: (See Section V, Item 4)

Name and Type (Model and Serial No.)	Contaminant	Efficiency	Range of Particles Size Collected (in microns) (If applicable)	Basis for Efficiency (Section V Item 5)
Multi-field Electrostatic Precipitator	PM/PM10	99.9%+	NA	VENDOR
Packed Tower Scrubber	SO_2	95%	NA	VENDOR

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
NATURAL GAS	0.144	0.144	144.2
NO. 6 FUEL OIL	1,000	1,000	150.0

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

Fuel Analysis:

Percent Sulfur: **Gas -Trace; Oil - 2.5%** Percent Ash: **Gas - Trace; Oil - Trace**

Density: **Gas - 5.0, Oil - 8.1** lbs/gal Typical Percent Nitrogen: **Gas ~1.1-3.2%, Oil ~0.3 %**

Heat Capacity: **Gas - 1000 BTU/Ft^3 ±** BTU/lb **Oil - 150,000 ±** BTU/gal

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

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

Annual Average **NA** Maximum **NA**

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

Scrubber Blowdown 5 gpm to Wastewater Treatment Facility .

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

Stack Height: **136** ft. Stack Diameter: **6.5** ft.

Gas Flow Rate: **57208** ACFM **34383** DSCFM Gas Exit Temperature: **156.7** °F.

Water Vapor Content: **SATURATED** % Velocity: **28.73** FPS

SECTION IV: INCINERATOR INFORMATION

Type of Waste	Type 0 (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Patholog-ical)	Type V (Liq. & Gas By-prod.)	Type VI (Solid by-prod.)
Actual lb/hr Incinerated			**(NOT APPLICABLE)**				
Uncon-trolled (lbs/hr)							

Description of Waste ____________

Total Weight Incinerated (lbs/hr) ____________ Design Capacity (lbs/hr) ____________

Approximate Number of Hours of Operation per day ________ day/wk ________ wks/yr. ________

Manufacturer ____________

Date Constructed ________ Model No. ____________

	Volume (ft)^3	Heat Release (BTU/hr)	Fuel		Temperature (°F)
			Type	BTU/hr	
Primary Chamber					
Secondary Chamber					

Stack Height: ________ ft. Stack Diameter: ________ Stack Temp. ________

Gas Flow Rate: ________ ACFM ________ DSCFM* Velocity: ________ FPS

Type of pollution control device: [ ] Cyclone [ ] Wet Scrubber [ ] Afterburner

[ ] Other (specify) ____________

* If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air.

ERCO R8/10 GENERATOR

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

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

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		
METHANOL	NA	NA	5.6 ton/day	3-A
SULFURIC ACID	NA	NA	29.6 ton/day	3-B
SODIUM CHLORATE	NA	NA	61.3 ton/day	3-C

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

1. Total Process Input Rate (lb/hr): **96.5 ton/day**

2. Product Weight (lbs/hr): **37.4 ton/day**

C. Airborne Contaminants Emitted: (Information in this table must be submitted for each emission point, use additional sheets as necessary)

Name of Contaminant	Emission[1]		Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission lbs/hr	Potential[4] Emission		Relate to Flow Diagram
	Maximum lb/hr	Actual T/yr			lbs/hr	T/yr	
Cl_2	0.1	0.44	NA	NA	0.1	0.44	3-E
ClO_2	0.25	1.1	NA	NA	0.25	1.1	3-E

REFER TO ATTACHED NARRATIVE TEXT, SECTION 2, PAGES 2-15 AND 2-16 AND APPENDIX D.

[1]See Section V, Item 2.

[2]Reference applicable emission standards and units (e.g. Rule 17-2.600 (5)(b)2. Table II, E. (1) - 0.1 pounds per million BTU heat input)

[3]Calculated from operating rate and applicable standard.

[4]Potential equals actual emission per DER direction.

ERCO R8/10 GENERATOR

D. Control Devices: (See Section V, Item 4)

Name and Type (Model and Serial No.)	Contaminant	Efficiency	Range of Particles Size Collected (in microns) (If applicable)	Basis for Efficiency (Section V Item 5)
Tail Gas Scrubber	Cl_2, ClO_2	90%+	NA	ESTIMATE

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
	(NOT APPLICABLE)		

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

Fuel Analysis: **(NA)**

Percent Sulfur: ____________ Percent Ash: ____________

Density: ____________ lbs/gal Typical Percent Nitrogen: ____________

Heat Capacity: ____________ BTU/lb ____________ BTU/gal

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

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

Annual Average **NA** Maximum **NA**

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

No waste, all scrubber liquor recycled to process.

ERCO R8/10 GENERATOR

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

Stack Height: **60** ft. Stack Diameter: **0.7** ft.

Gas Flow Rate: **1321** ACFM **1250** DSCFM Gas Exit Temperature: **100** °F.

Water Vapor Content: **SATURATED** % Velocity: **57** FPS

SECTION IV: INCINERATOR INFORMATION

Type of Waste	Type 0 (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Patholog-ical)	Type V (Liq. & Gas By-prod.)	Type VI (Solid by-prod.)
Actual lb/hr Incinerated			**(NOT APPLICABLE)**				
Uncon-trolled (lbs/hr)							

Description of Waste ______

Total Weight Incinerated (lbs/hr) ______ Design Capacity (lbs/hr) ______

Approximate Number of Hours of Operation per day ______ day/wk ______ wks/yr. ______

Manufacturer ______

Date Constructed ______ Model No. ______

	Volume $(ft)^3$	Heat Release (BTU/hr)	Fuel		Temperature (°F)
			Type	BTU/hr	
Primary Chamber					
Secondary Chamber					

Stack Height: ______ ft. Stack Diameter: ______ Stack Temp. ______

Gas Flow Rate: ______ ACFM ______ DSCFM* Velocity: ______ FPS

Type of pollution control device: [ ] Cyclone [ ] Wet Scrubber [ ] Afterburner

[ ] Other (specify) ______

* If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air.

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

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

Description	Contaminants		Utilization Rate - lbs/hr		Relate to Flow Diagram
	Type	% Wt	A LINE	B LINE	
UNBLEACHED PULP	NA	NA	910.8 ADT/day	851.3 ADT/day	4-A
CHLORINE DIOXIDE	NA	NA	18.9 ton/day	11.3 ton/day	4-B
HYDROGEN PEROXIDE	NA	NA	3.3 ton/day	3.1 ton/day	4-C

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

1. Total Process Input Rate (lb/hr): A-LINE 924.8 ton/day B-LINE 860.7 ton/day

2. Product Weight (lbs/hr): A-LINE 888 ADT/day B-LINE 830 ADT/day

C. Airborne Contaminants Emitted: (Information in this table must be submitted for each emission point, use additional sheets as necessary)

Bleach Line	Name of Contaminant	Emission[1]		Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission lbs/hr	Potential[4] Emission		Relate to Flow Diagram
		Maximum lbs/hr	Actual T/yr			lbs/hr	T/yr	
A	$CHCl_3$[5]	.34	1.5	NA	NA	.34	1.5	4-F
A	Cl_2[5]	1.45	6.4	NA	NA	1.45	6.4	4-F
A	ClO_2[5]	.45	2.0	NA	NA	.45	2.0	4-F
A	$CHCl_3$[6]	.04	0.18	NA	NA	.04	.018	4-E

REFER TO ATTACHED NARRATIVE TEXT, APPENDIX D.

[1]See Section V, Item 2.

[2]Reference applicable emission standards and units (e.g. Rule 17-2.600 (5)(b)2. Table II, E. (1) - 0.1 pounds per million BTU heat input)

[3]Calculated from operating rate and applicable standard.

[4]Potential equals actual emission per DER direction.

[5]A Line Scrubber.

[6]A Line E_o Washer.

C. Airborne Contaminants Emitted: (Continued)

Bleach Line	Name of Contaminant	Emission[1] Maximum lb/hr	Emission[1] Actual T/yr	Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission lbs/hr	Potential[4] Emission lbs/hr	Potential[4] Emission T/yr	Relate to Flow Diagram
B	$CHCl_3$[5]	.34	1.5	NA	NA	.34	1.5	4-F
B	Cl_2[5]	1.0	4.38	NA	NA	1.0	4.38	4-F
B	ClO_2[5]	.45	2.0	NA	NA	.45	2.0	4-F
B	$CHCl_3$[6]	.04	0.18	NA	NA	.04	0.18	4-E

REFER TO ATTACHED NARRATIVE TEXT, APPENDIX D.

[1]See Section V, Item 2.

[2]Reference applicable emission standards and units (e.g. Rule 17-2.600 (5)(b)2. Table II, E. (1) - 0.1 pounds per million BTU heat input)

[3]Calculated from operating rate and applicable standard.

[4]Potential equals actual emission per DER direction.

[5]B Line Scrubber.

[6]B Line E_o Washer.

D. Control Devices: (See Section V, Item 4)

Name and Type (Model and Serial No.)	Contaminant	Efficiency	Range of Particles Size Collected (in microns) (If applicable)	Basis for Efficiency (Section V Item 5)
A Line Scrubber	Cl_2, ClO_2	90%+	NA	PREVIOUS TESTING
B Line Scrubber	Cl_2, ClO_2	90%+	NA	PREVIOUS TESTING

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
	(NOT APPLICABLE)		

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

Fuel Analysis: **(NA)**

Percent Sulfur: ____________ Percent Ash: ____________

Density: ____________ lbs/gal Typical Percent Nitrogen: ____________

Heat Capacity: ____________ BTU/lb ____________ BTU/gal

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

F. If applicable, indicate the percent of fuel used for space heating. **(NA)**

Annual Average ____________ Maximum ____________

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

Acid and Alkaline Effluent Discharged to Wastewater Treatment Facility.

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

Stack Height: **98** ft. Stack Diameter: **2.0** ft.

Gas Flow Rate: **10200** ACFM **9000** DSCFM Gas Exit Temperature: **100** °F.

Water Vapor Content: **SATURATED** % Velocity: **54.1** FPS

SECTION IV: INCINERATOR INFORMATION

Type of Waste	Type 0 (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Patholog-ical)	Type V (Liq. & Gas By-prod.)	Type VI (Solid by-prod.)
Actual lb/hr Inciner-ated			**(NOT APPLICABLE)**				
Uncon-trolled (lbs/hr)							

Description of Waste __________

Total Weight Incinerated (lbs/hr) __________ Design Capacity (lbs/hr) __________

Approximate Number of Hours of Operation per day ______ day/wk ______ wks/yr. ______

Manufacturer __________

Date Constructed ______ Model No. __________

	Volume $(ft)^3$	Heat Release (BTU/hr)	Fuel		Temperature (°F)
			Type	BTU/hr	
Primary Chamber					
Secondary Chamber					

Stack Height: ______ ft. Stack Diameter: ______ Stack Temp. ______

Gas Flow Rate: ______ ACFM ______ DSCFM* Velocity: ______ FPS

Type of pollution control device: [ ] Cyclone [ ] Wet Scrubber [ ] Afterburner

[ ] Other (specify) __________

* If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air.

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

Stack Height: **67** ft. Stack Diameter: **2.3** ft.

Gas Flow Rate: **13812** ACFM **9932** DSCFM Gas Exit Temperature: **128** °F.

Water Vapor Content: **SATURATED** % Velocity: **55** FPS

SECTION IV: INCINERATOR INFORMATION

Type of Waste	Type 0 (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Patholog-ical)	Type V (Liq. & Gas By-prod.)	Type VI (Solid by-prod.)
Actual lb/hr Inciner-ated			**(NOT APPLICABLE)**				
Uncon-trolled (lbs/hr)							

Description of Waste ______

Total Weight Incinerated (lbs/hr) ______ Design Capacity (lbs/hr) ______

Approximate Number of Hours of Operation per day ______ day/wk ______ wks/yr. ______

Manufacturer ______

Date Constructed ______ Model No. ______

	Volume $(ft)^3$	Heat Release (BTU/hr)	Fuel		Temperature (°F)
			Type	BTU/hr	
Primary Chamber					
Secondary Chamber					

Stack Height: ______ ft. Stack Diameter: ______ Stack Temp. ______

Gas Flow Rate: ______ ACFM ______ DSCFM* Velocity: ______ FPS

Type of pollution control device: [ ] Cyclone [ ] Wet Scrubber [ ] Afterburner

[ ] Other (specify) ______

* If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air.

BLEACH PLANT - B LINE SCRUBBER

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

Stack Height: **97** ft. Stack Diameter: **1.8** ft.

Gas Flow Rate: **7350** ACFM **6500** DSCFM Gas Exit Temperature: **100** °F.

Water Vapor Content: **SATURATED** % Velocity: **51** FPS

SECTION IV: INCINERATOR INFORMATION

Type of Waste	Type 0 (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq. & Gas By-prod.)	Type VI (Solid by-prod.)
Actual lb/hr Incinerated			**(NOT APPLICABLE)**				
Uncontrolled (lbs/hr)							

Description of Waste ______

Total Weight Incinerated (lbs/hr) ______ Design Capacity (lbs/hr) ______

Approximate Number of Hours of Operation per day ______ day/wk ______ wks/yr. ______

Manufacturer ______

Date Constructed ______ Model No. ______

	Volume $(ft)^3$	Heat Release (BTU/hr)	Fuel		Temperature (°F)
			Type	BTU/hr	
Primary Chamber					
Secondary Chamber					

Stack Height: ______ ft. Stack Diameter: ______ Stack Temp. ______

Gas Flow Rate: ______ ACFM ______ DSCFM* Velocity: ______ FPS

Type of pollution control device: [ ] Cyclone [ ] Wet Scrubber [ ] Afterburner

[ ] Other (specify) ______

* If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air.

BLEACH PLANT - B LINE E_o WASHER VENT

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

Stack Height: 67 ft. Stack Diameter: 1.5 ft.

Gas Flow Rate: 8227 ACFM 5633 DSCFM Gas Exit Temperature: 158 °F.

Water Vapor Content: SATURATED % Velocity: 78 FPS

SECTION IV: INCINERATOR INFORMATION

Type of Waste	Type 0 (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Patholog-ical)	Type V (Liq. & Gas By-prod.)	Type VI (Solid by-prod.)
Actual lb/hr Inciner-ated			(NOT APPLICABLE)				
Uncon-trolled (lbs/hr)							

Description of Waste ____

Total Weight Incinerated (lbs/hr) ____ Design Capacity (lbs/hr) ____

Approximate Number of Hours of Operation per day ____ day/wk ____ wks/yr. ____

Manufacturer ____

Date Constructed ____ Model No. ____

	Volume $(ft)^3$	Heat Release (BTU/hr)	Fuel		Temperature (°F)
			Type	BTU/hr	
Primary Chamber					
Secondary Chamber					

Stack Height: ____ ft. Stack Diameter: ____ Stack Temp. ____

Gas Flow Rate: ____ ACFM ____ DSCFM* Velocity: ____ FPS

Type of pollution control device: [ ] Cyclone [ ] Wet Scrubber [ ] Afterburner

[ ] Other (specify) ____

* If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air.

METHANOL STORAGE TANK

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

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

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		
METHANOL	NA	NA	467 Max., 327.5 Avg.	NA

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

1. Total Process Input Rate (lb/hr): **300 gpm Max Fill Rate**

2. Product Weight (lbs/hr): **467**

C. Airborne Contaminants Emitted: (Information in this table must be submitted for each emission point, use additional sheets as necessary)

Name of Contaminant	Emission[1]		Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission lbs/hr	Potential[4] Emission		Relate to Flow Diagram
	Maximum lb/hr	Actual T/yr			lbs/hr	T/yr	
METHANOL	0.073	0.32	NA	NA	0.073	0.32	NA

REFER TO APPENDIX B PAGE B-19, B-20

[1]See Section V, Item 2.

[2]Reference applicable emission standards and units (e.g. Rule 17-2.600 (5)(b)2. Table II, E. (1) - 0.1 pounds per million BTU heat input)

[3]Calculated from operating rate and applicable standard.

[4]Emission, if source operated without control (See Section V, Item 3).

METHANOL STORAGE TANK

D. Control Devices: (See Section V, Item 4)

Name and Type (Model and Serial No.)	Contaminant	Efficiency	Range of Particles Size Collected (in microns) (If applicable)	Basis for Efficiency (Section V Item 5)
		(NOT APPLICABLE)		

E. Fuels NA

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
	(NOT APPLICABLE)		

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

Fuel Analysis: **(NA)**

Percent Sulfur: ________________ Percent Ash: ________________

Density: ________________ lbs/gal Typical Percent Nitrogen: ________________

Heat Capacity: ________________ BTU/lb ________________ BTU/gal

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

F. If applicable, indicate the percent of fuel used for space heating. **(NA)**

Annual Average **NA** Maximum **NA**

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

METHANOL STORAGE TANK

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

Stack Height: 25 ft. Stack Diameter: .17 ft.

Gas Flow Rate: ________ ACFM ~50 DSCFM Gas Exit Temperature: AMBIENT °F.

Water Vapor Content: ________ % Velocity: 38 FPS

SECTION IV: INCINERATOR INFORMATION

Type of Waste	Type 0 (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Patholog-ical)	Type V (Liq. & Gas By-prod.)	Type VI (Solid by-prod.)
Actual lb/hr Incinerated			(NOT APPLICABLE)				
Uncon-trolled (lbs/hr)							

Description of Waste ________

Total Weight Incinerated (lbs/hr) ________ Design Capacity (lbs/hr) ________

Approximate Number of Hours of Operation per day ________ day/wk ________ wks/yr. ________

Manufacturer ________

Date Constructed ________ Model No. ________

	Volume (ft)^3	Heat Release (BTU/hr)	Fuel		Temperature (°F)
			Type	BTU/hr	
Primary Chamber					
Secondary Chamber					

Stack Height: ________ ft. Stack Diameter: ________ Stack Temp. ________

Gas Flow Rate: ________ ACFM ________ DSCFM* Velocity: ________ FPS

Type of pollution control device: [ ] Cyclone [ ] Wet Scrubber [ ] Afterburner

[ ] Other (specify) ________

* If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air.

Brief description of operating characteristics of control devices:

(NA)

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

(NA)

NOTE: Items 2, 3, 4, 6, 7, 8, and 10 in Section V must be included where applicable.

SECTION V: SUPPLEMENTAL REQUIREMENTS

REFER TO ATTACHED NARRATIVE TEXT AND SUPPLEMENTAL INFORMATION AS NOTED

Please provide the following supplements where required for this application.

1. Total process input rate and product weight -- show derivation [Rule 17-2.100(127)]

   Refer to Part II, Process Flow Diagrams.

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

   Refer to attached Narrative, Section 3.

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

   Refer to attached Narrative, Section 3.

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

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

   Refer to attached Narrative, Section 3.

6. An 8 1/2" x 11" flow diagram which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate where raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particles are evolved and where finished products are obtained.

   Refer to Part II, Process Flow Diagrams.

7. An 8 1/2" x 11" plot plan showing the location of the establishment, and points if airborne emissions, in relation to the surrounding area, residences and other permanent structure and roadways (Example: Copy of relevant portion of USGS topographic map).

   Refer to attached Narrative, Section 2, Figures 2-1, 2-2.

8. An 8 1/2" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.

   Refer to attached Narrative, Section 2, Figure 2-1, 2-2.

9. The appropriate application fee in accordance with Rule 17-4.05. The check should be made payable to the Department of Environmental Regulation.

10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit.

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

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

[X] Yes [ ] No *REFER TO SECTIONS 4 OF TEXT, PAGES 4-1, 4-2*

Contaminant	Rate or Concentration
No. 6 Power Boiler - NO_x, Subpart Db	**0.1 lbs/MMBtu, 30 day rolling average**

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

[ ] Yes [X] No *REFER TO SECTION 5 OF TEXT*

Contaminant	Rate or Concentration

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

REFER TO SECTION 5, OF TEXT, PAGES 5-5 AND 5-26

Contaminant	Rate or Concentration
No. 6 Power Boiler	**NO_x - 0.06 lb/MMBtu, CO - 0.1 lb**
	MMBtu; VOC 0.01 lb/MMBtu - all 24 hr. avg.
Lime Kiln - Mud Dryer	**NO_x - 200 ppmv @ 10% O_2; CO - 45 ppmv @ 10%**
	O_2; VOC - 104 ppmv - all 24 hr. avg.

D. Describe the existing control and treatment technology (if any). *REFER TO SECTION 5 OF TEXT*

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

*Explain method of determining

5. Useful Life:

6. Operating Costs:

7. Energy:

8. Maintenance Cost:

9. Emissions:

Contaminant	Rate or Concentration

10. Stack Parameters

a. Height: ft.

b. Diameter: ft.

c. Flow Rate: ACFM

d. Temperature: °F

e. Velocity: FPS

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

1. *REFER TO SECTION 5 OF TEXT*

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Costs:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

2.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Costs:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

[1]Explain method of determining efficiency.

[2]Energy to be reported in units of electrical power - KWH design rate.

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

3.

a. Control Device: b. Operating Principles:

c. Efficiency:[1] d. Capital Cost:

e. Useful Life: f. Operating Costs:

g. Energy:[2] h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

4.

a. Control Device: b. Operating Principles:

c. Efficiency:[1] d. Capital Cost:

e. Useful Life: f. Operating Costs:

g. Energy:[2] h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

F. Describe the control technology selected: *REFER TO SECTION 5 OF TEXT; P. 5-20, 21 FOR NO. 6 POWER BOILER; P. 5-25, 26, 27 FOR LIME KILN - MUD DRYER*

1. Control Device: 2. Efficiency:[1]

3. Capital Cost: 4. Useful Life:

5. Operating Costs: 6. Energy:[2]

7. Maintenance Cost: 8. Manufacturer:

9. Other locations where employed on similar processes

a. (1) Company:

(2) Mailing address:

(3) City: (4) State:

[1]Explain method of determining efficiency.

[2]Energy to be reported in units of electrical power - KWH design rate.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

b. (1) Company:

(2) Mailing Address:

(3) City: (4) State:

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

10. Reason for selection and description of systems:

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

REFER TO SECTION 5 OF TEXT

SECTION VII - PREVENTION OF SIGNIFICANT DETERIORATION

A. Company Monitored Data *NOT APPLICABLE*

1. ________ no. sites ________ TSP ______( ) SO_2* ______ Wind spd/dir

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

Other data recorded ________________________________

Attach all data or statistical summaries to this application.

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

2. Instrumentation, Field and Laboratory

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

b. Was instrumentation calibrated in accordance with Department procedures?

[ ] Yes [ ] No [ ] Unknown

B. Meteorological Data Used for Air Quality Modeling *REFER TO SECTION 6 OF TEXT*

1. **5** Year(s) of data from **01 / 01 / 85** (month / day / year) to **12 / 31 / 89** (month / day / year)

2. Surface data obtained from (location) **Pensacola, Florida**

3. Upper air (mixing height) data obtained from (location) **Pensacola, Florida**

4. Stability wind rose (STAR) data obtained from (location) **Pensacola, Florida**

C. Computer Models Used *REFER TO SECTION 6 OF TEXT*

1. **EPA-SCREEN** Modified? **NO** If yes, attach description.

2. **EPA ISCLT-2** Modified? **NO** If yes, attach description.

3. ______________ Modified? If yes, attach description.

4. ______________ Modified? If yes, attach description.

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

D. Applicants Maximum Allowable Emission Data *REFER TO SECTION 6 OF TEXT, PAGE 6-9, TABLE 6-2*

Pollutant	Source	Emission Rate		Source	Emission Rate	
NO_x	**No. 6 PB**	**4.03**	grams/sec;	**Lime Kiln - Mud Dryer**	**6.21**	grams/sec
CO	**No. 6 PB**	**6.72**	grams/sec;	**Lime Kiln - Mud Dryer**	**0.85**	grams/sec

E. Emission Data Used in Modeling

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

Refer to attached Narrative, pages 6-9, 6-12, 6-15, 6-17, 6-18 and 6-19.

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

Refer to attached Narrative Text.

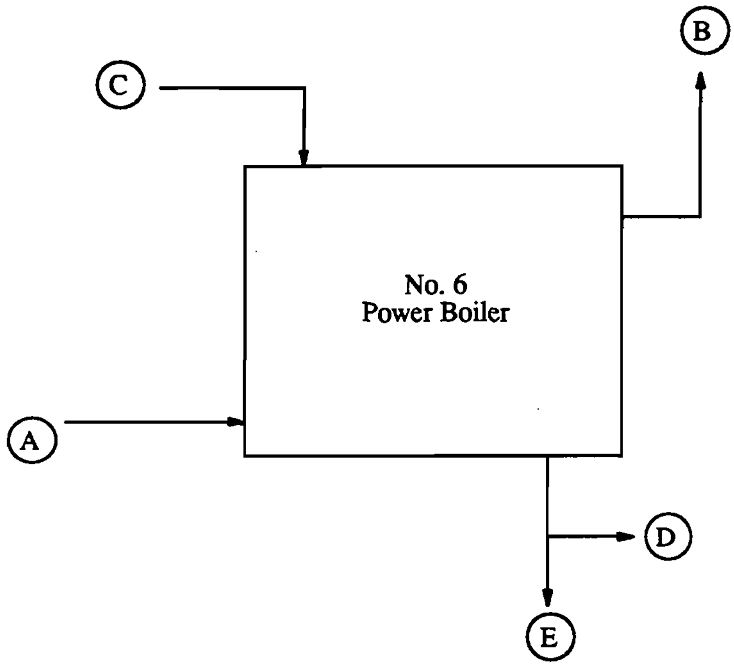
G. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll , production, taxes, energy, etc.). Include assessment of the environmental impact of the sources.

Refer to attached Narrative Text, Subsection 6.7, page 6-26.

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

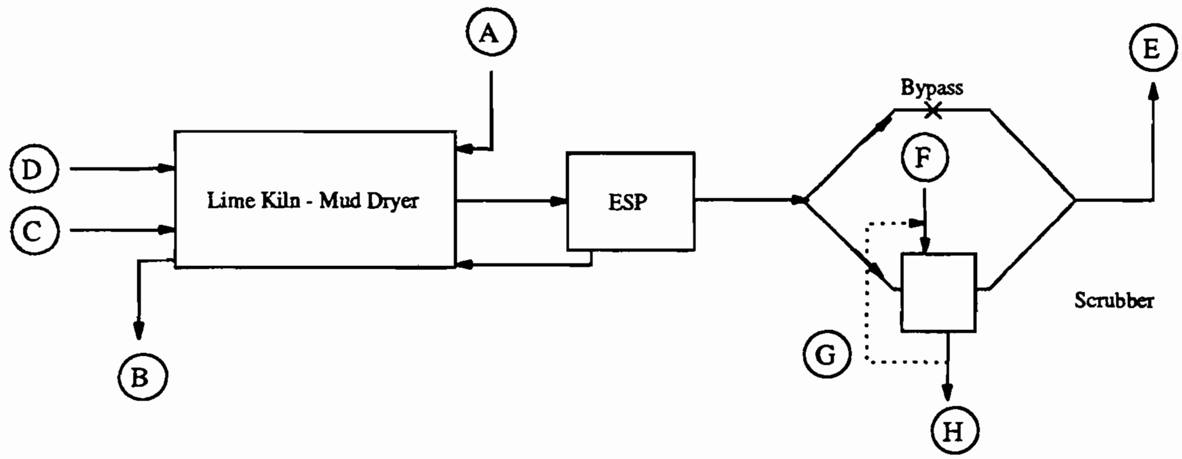
Refer to attached Narrative Text.

II. PROCESS FLOW DIAGRAMS



A	Natural Gas	533 MCFH
B	Stack Effluent	161,000 ACFM
C	Feed Water	6,667 lb/min
D	Steam	384 KPPH
E	Blow Down	266.7 lb/min

Process Flow Diagram 1
No. 6 Power Boiler

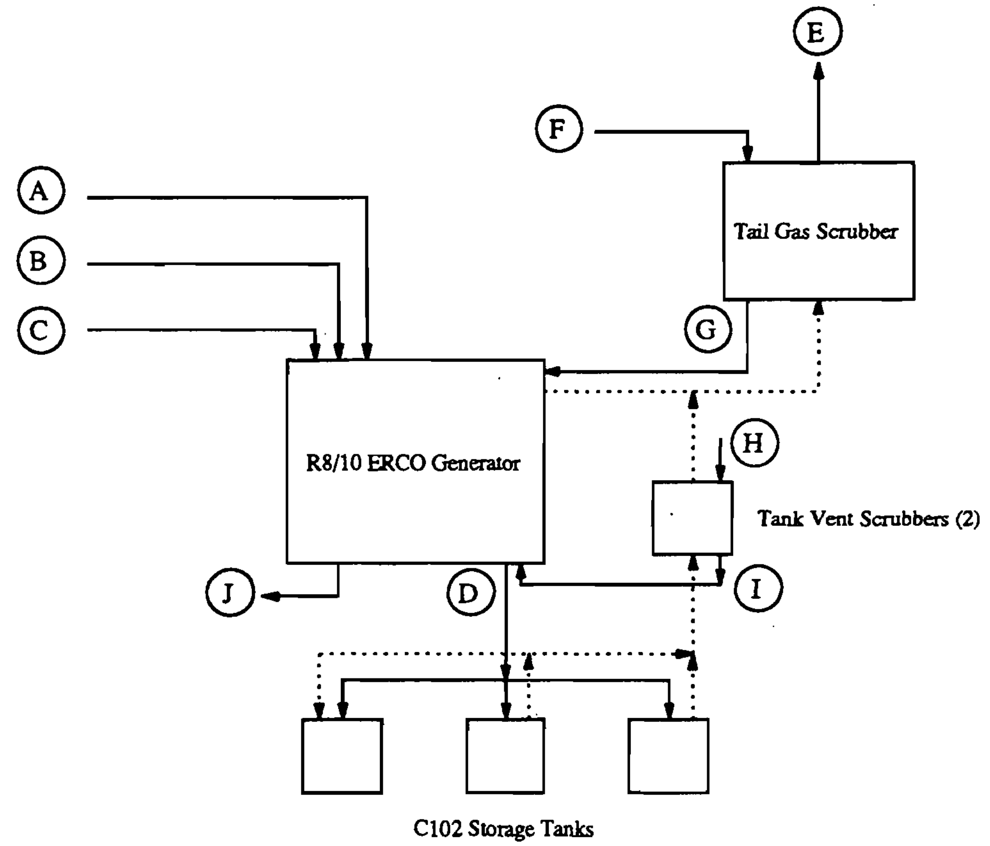


(A)	Lime Mud	893 T/D
(B)	Product Lime	500 T/D
(C)	Fuel - Natural Gas - No. 6 Oil	144.231 MCFH 1,000 GPH
(D)	NCGs	358 lb/hr *
(E)	Stack Effluent	57,208 ACFM
(F)	Scrubber Makeup	25 GPM
(G)	Scrubber Recirculation	1,700 GPM
(H)	Scrubber Blowdown	5 GPM

* Based on 1,718 ADBT/D

Process Flow Diagram 2
Lime Kiln - Mud Dryer

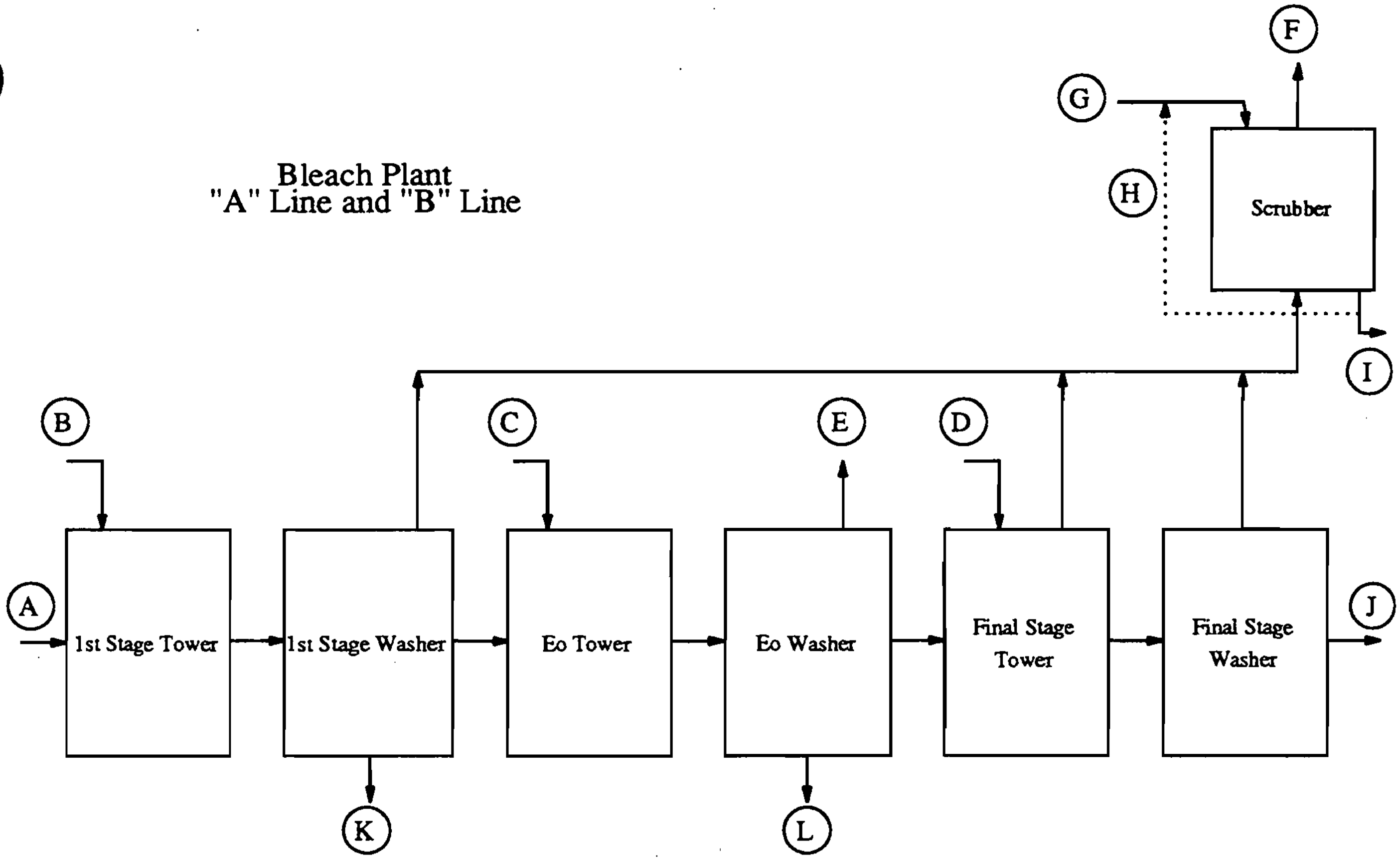
Chmp02-D19



A	Methanol	5.6 T/D
B	Sulfuric Acid	29.6 T/D
C	Sodium Chlorate	61.3 T/D
D	Chlorine Dioxide	37.4 T/D
E	Stack Effluent	1,321.0 ACFM
F	Makeup White Liquor to Scrubber	<1.0 GPM
G	Scrubber Discharge	1.0 GPM
H	Water to Tank Vent Scrubbers	79.1 GPM
I	Tank Vent Scrubber Discharge	79.1 GPM
J	Saltcake Generation	33.6 T/D

Process Flow Diagram 3
Chlorine Dioxide Generator

Chmp03-D19



		"A" Line	"B" Line
A	Unbleached Pulp	910.8 ADT/D	851.3 ADT/D
B	CLO2	10.7 T/D	6.3 T/D
C	Peroxide	3.3 T/D	3.1 T/D
D	CLO2	8.2 T/D	5.0 T/D
E	Eo Washer Vent Gas	13,812 ACFM	8,227 ACFM
F	Scrubber Vent Gas	10,200 ACFM	7,350 ACFM
G	Scrubber Makeup Flow	1.1 GPM	.2 GPM
H	Scrubber Recirculation	225 GPM	190 GPM
I	Scrubber Blowdown	2 GPM	1 GPM
J	Bleached Pulp	888 ADT/D	830 ADT/D
K	Acidic Effluent	3.5 MGD	3.5 MGD
L	Alkaline Effluent	2.3 MGD	2.3 MGD

Process Flow Diagram 4
Bleach Plant

Chmp04-D19

III. APPLICATION NARRATIVE

APPLICATION NARRATIVE
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SECTION 1
INTRODUCTION AND SUMMARY

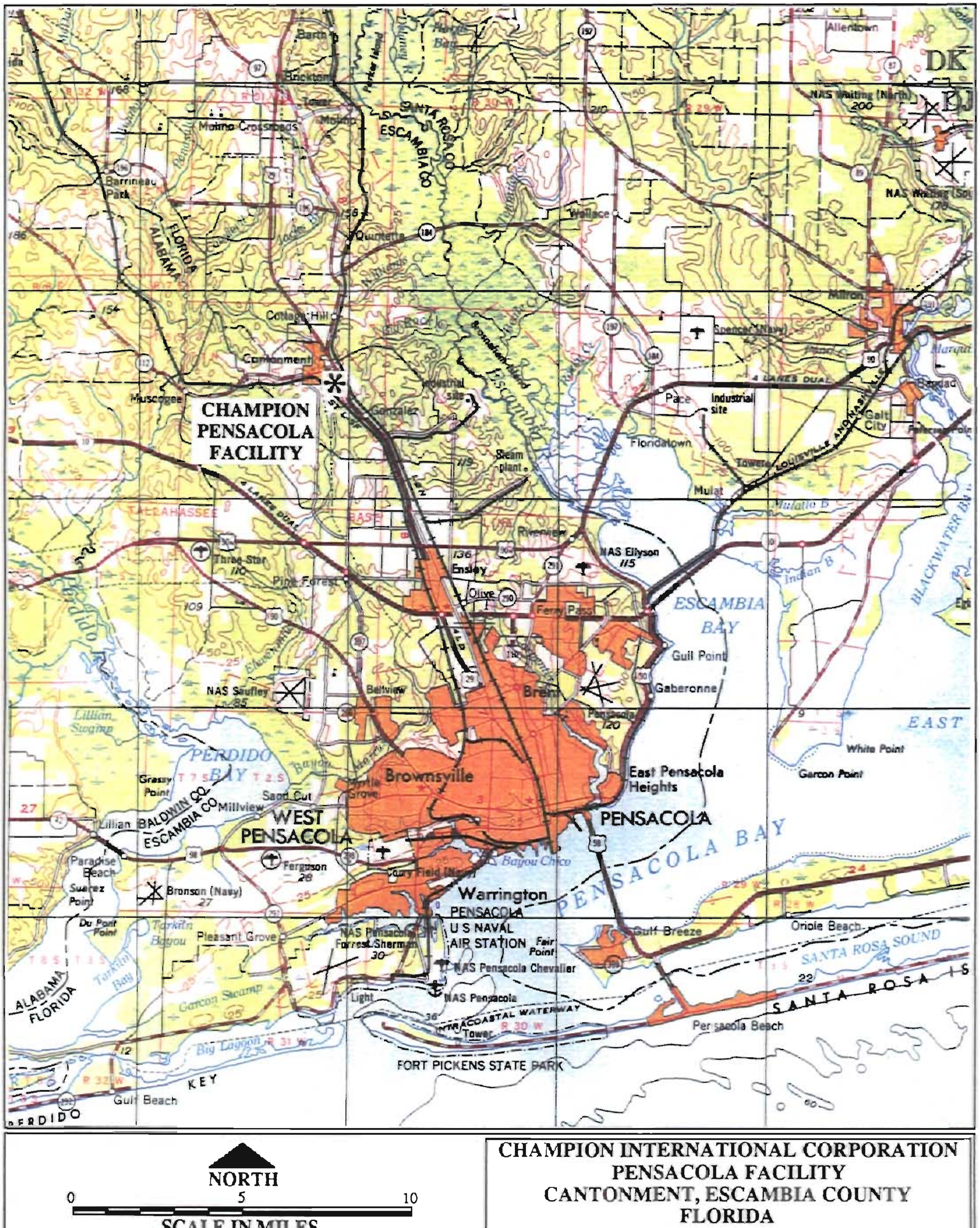
1.1 PROJECT DESCRIPTION

Champion International Corporation (CHAMPION) owns and operates a kraft pulp mill near Pensacola in Cantonment, Escambia County, Florida. The Mill produces bleached kraft pulp and fine paper. Figure 1-1 is a location map of CHAMPION's existing Pensacola Mill. The Mill is presently operating under a water permit consent order from the Florida Department of Environmental Regulation (DER). Under the terms of the consent order, the Mill must meet water quality standards by December, 1994. In order to meet the water quality standards, CHAMPION has developed a Mill strategy aimed at reducing wastewater loads and minimizing waste load constituents to the Mill's wastewater treatment system.

Certain aspects of the Mill's strategy for minimizing wastewater and waste loads to the treatment plant impact air emission sources at the Mill. Steam generating equipment, chemical recovery systems, and bleaching processes will be replaced or modified as part of the strategy. CHAMPION has compiled the necessary information and determined the air permitting requirements for the proposed air source changes.

This report provides all of the necessary supporting documentation to meet the information requirements of the Florida Department of Environmental Regulation for permits to construct the proposed mill modification. This report specifically addresses the Prevention of Significant Deterioration (PSD) and New Source Review Requirements. The Florida DER Permit Application Forms for the proposed mill modifications are appended.

The approach taken is extremely conservative in demonstrating compliance with all applicable state and Federal emission limitations and ambient air quality standards. More specifically, the



SOURCE: BASE MAP ADAPTED FROM USGS 1:250,000 SERIES, PENSACOLA, FLA-ALA QUADRANGLE, 1957, REVISED 1970.

CHAMPION INTERNATIONAL CORPORATION
PENSACOLA FACILITY
CANTONMENT, ESCAMBIA COUNTY
FLORIDA

FIGURE 1-1
GENERAL LOCATION MAP OF THE PENSACOLA FACILITY

values selected for emission rates, the assumptions used in computer modeling analyses, and the interpretation of model results are all deliberately prejudiced on the side of demonstrating the maximum practical "worst-case" conditions.

CHAMPION is committed to achieving the stringent emission limitations identified in this report as Best Available Control Technology (BACT). The proposed BACT emission rates meet or exceed the most stringent applicable New Source Performance Standards (NSPS). The actual impacts of the proposed project on ambient air quality are expected to be lower than those presented.

1.2 APPLICATION ORGANIZATION

The permit application has been organized into the following sections:

- Section 2 - Description of Existing Mill and Proposed Modification presents site information; the proposed facility; the general plans and specifications for the proposed project.

- Section 3 - Summary of Emissions provides the baseline and proposed future emissions inventory for the mill modification. The basis for the development of the emissions inventory is also provided.

- Section 4 - Applicable Regulations identifies applicable Federal and state regulations including PSD regulations, and Florida emission and ambient air quality regulations.

- Section 5 - Best Available Control Technology identifies the proposed Best Available Control Technology (BACT), reviews alternative control technologies, and provides support for the selection of BACT using EPA's "Top Down" approach.

- Section 6 - Air Quality Impact Analysis presents an analysis of the incremental increases in ambient pollutant concentrations anticipated from the proposed mill modification. An analysis of other major sources with the proposed modification is included to demonstrate compliance with NAAQS. An ambient hazardous air pollutants (HAPs) analysis in accordance with Florida DER requirements is also included. A discussion is presented on the effects that the incremental increases in ambient pollutant concentrations are anticipated to have on air quality related values including visibility, acidification of rainfall and soils, aquatic and terrestrial ecology and associated growth.

1.3 SUMMARY

Based on the results of the BACT determination for the pollutant(s) of concern, the emissions from the proposed modifications will meet all applicable state and Federal emission regulations. The maximum "worst-case" contemporaneous emissions increase of criteria pollutants from the proposed mill modifications are:

	Annual Emissions** (tons/yr)
TSP/PM-10*	-1.3
SO_2	28.2
NO_x	138.8
CO	189.8
VOC	85.5
TRS	-1.9

* It was conservatively assumed that all particulate matter emissions are in the form of PM-10.

** Emission rates are based upon maximum hourly emission rates and 8,760 total annual hours of operation.

The existing Pensacola Mill presently constitutes a major stationary source under the PSD regulations. Therefore, based upon the annual emission increases associated with the proposed modifications, a significant net emission increase is predicted for nitrogen dioxide, carbon monoxide, and volatile organic compounds.

Based on the ambient air quality impact analysis for NO_x described in Section 6, the facility will have the following impacts on ambient air quality:

PSD Increment	
Federal PSD Increment for NO_x	25 ug/m^3
Proposed Mill Modification and No. 5 Package Boiler	2.4 $\mu g/m^3$
% of Federal Increment	10%

National Ambient Air Quality Standards	
National Ambient Air Quality Standard for NO_x	100 $\mu g/m^3$
All Major Sources Impact*	42.0 $\mu g/m^3$
Background Concentration	22.5 $\mu g/m^3$
Total Impact	64.5 $\mu g/m^3$

* Includes the proposed mill modifications, the No. 5 Package Boiler, all other CHAMPION sources, and all other major sources in Escambia and Santa Rosa counties.

It is important to point out that the proposed project will result in a net air quality benefit. The PSD increment consumed and the ambient air quality impact associated with the proposed mill modification is predicted to be less than that predicted for CHAMPION's No. 5 Boiler Permit (February 1991 application). As shown in Section 6 of the application, the PSD increment consumption will be reduced from 4.9 $\mu g/m^3$ to 2.4 $\mu g/m^3$ and the impact from all sources will be reduced from 94.3 $\mu g/m^3$ to 64.5 $\mu g/m^3$ (NAAQS analysis). Hence, the proposed project will result in both air and water quality improvements in the Pensacola, Florida area.

SECTION 2

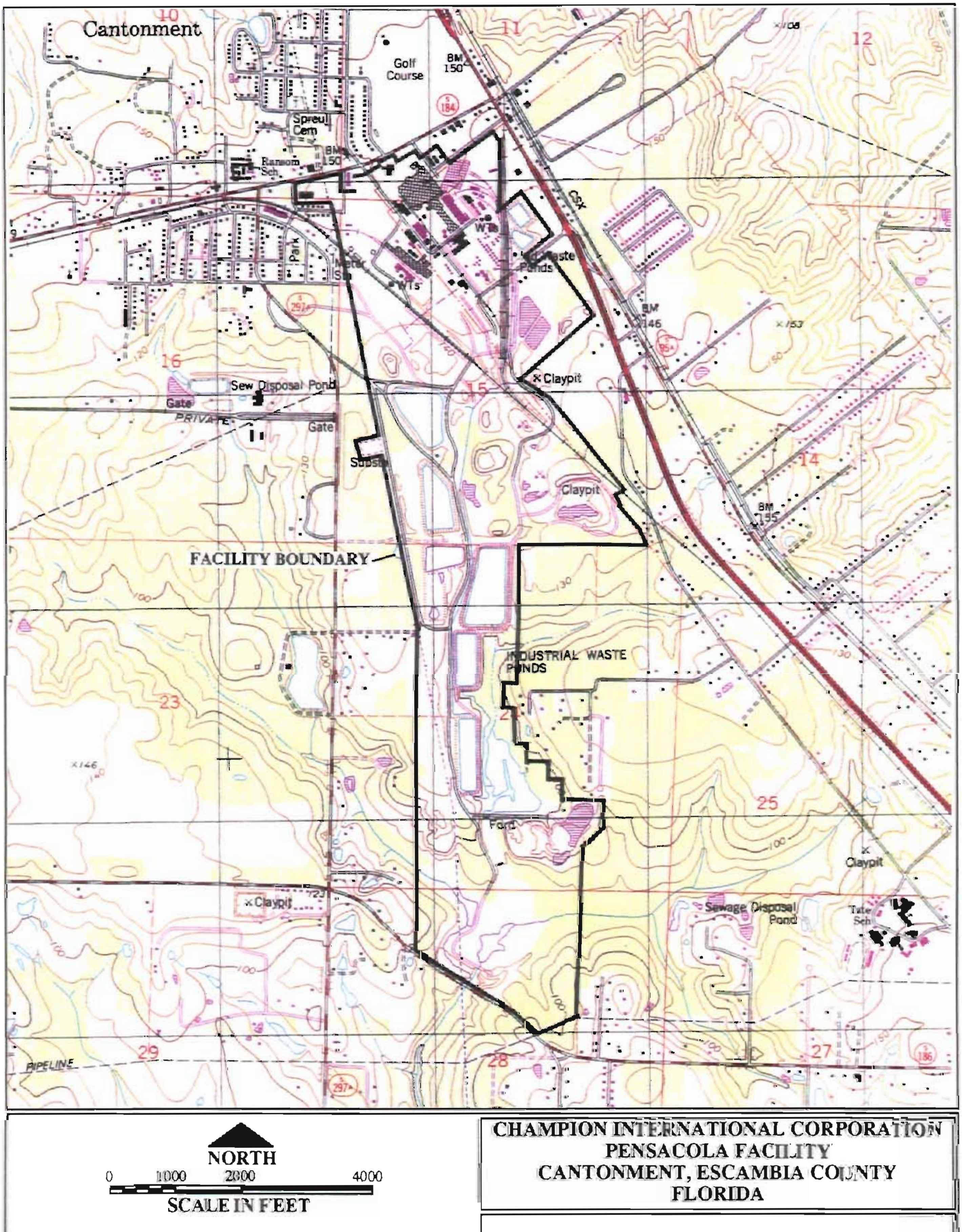
DESCRIPTION OF EXISTING MILL AND PROPOSED MODIFICATION

2.1 INTRODUCTION

The CHAMPION Pensacola Mill is located in Escambia County, Florida, near the town of Cantonment. Figure 2-1 is a site location map showing the proximity of the facility to the town of Cantonment. The land area around the site is relatively flat terrain and would be classified as a rural land use pattern based on EPA's classification scheme. The air quality in the area has been designated as attainment or unclassifiable for all ambient air quality standards.

CHAMPION's existing pulp mill has been in operation since 1941. Major mill expansion projects were completed in 1981 and 1986. The 1986 expansion resulted in a complete conversion to production of bleached kraft fine paper. The existing facilities were permitted by the Florida Department of Environmental Regulation (DER) in 1985. In 1991 a PSD Permit application was submitted to Florida DER for a new package gas-fired boiler. The CHAMPION Pensacola Mill is currently permitted for 1400 air-dried, bleached tons of pulp per calendar day.

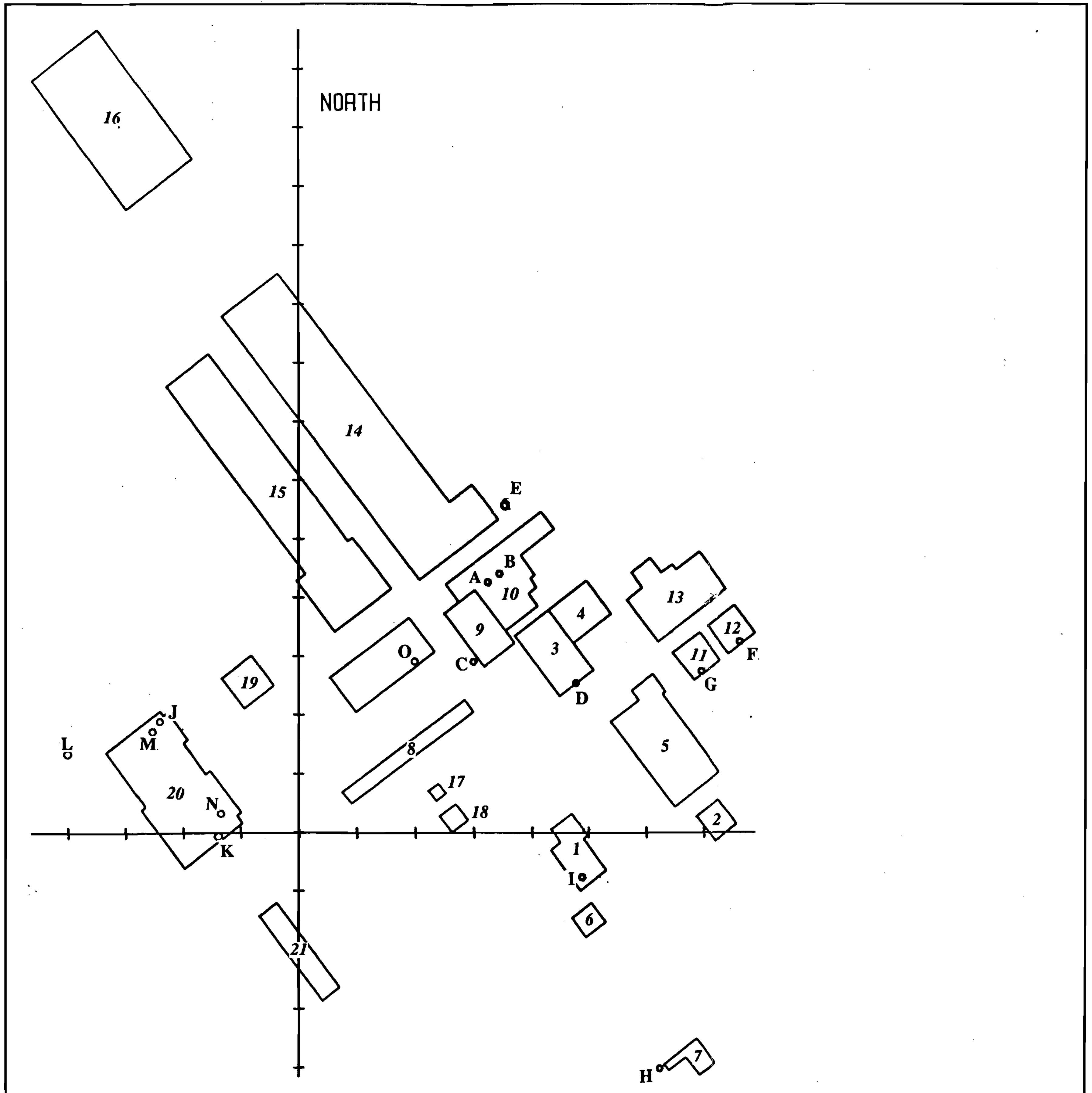
The existing bleached kraft pulp mill includes wood preparation and storage, coal/wood fuel handling and storage, batch digesters, a continuous digester, brown stock washing, oxygen delignification, pulp bleaching facilities, recovery furnaces, power boilers, black liquor evaporators, smelt dissolving tanks, a Lime Kiln and calciner, recausticizing facility, and tall oil and turpentine byproducts facilities. Figure 2-2 presents a plot plan of the facility identifying the location of major emission points.



SOURCE: BASE MAP ADAPTED FROM USGS 7.5 MINUTE SERIES, CANTONMENT, FLA. QUADRANGLE, 1978, PHOTOREVISED 1987.

CHAMPION INTERNATIONAL CORPORATION
PENSACOLA FACILITY
CANTONMENT, ESCAMBIA COUNTY
FLORIDA

FIGURE 2-1
LOCATION MAP OF THE PENSACOLA FACILITY



BUILDING/STRUCTURE

1. - LIME RECOVERY BUILDING
2. - COOLING TOWER
3. - NO. 4 POWER BOILER
4. - TURBINE GENERATOR BUILDING
5. - EVAPORATORS
6. - LIME KILN NORTH
7. - LIME KILN SOUTH
8. - BATCH DIGESTERS
9. - NO. 3 POWER BOILER
10. - NO.1 & 2 BOILER
11. - RECOVERY BOILER PRECIPITATOR 1
12. - RECOVERY BOILER PRECIPITATOR 2
13. - RECOVERY BOILERS
14. - PAPER MACHINE COMPLEX
15. - HIGH BAY STORAGE BUILDING
16. - WAREHOUSE
17. - KAMYR DIGESTER
18. - KAMYR DIFFUSER
19. - NO. 9 H. D. STORAGE
20. - BLEACH PLANT
21. - CHIP SILO

SOURCES:

A. - NO. 1 POWER BOILER STACK
B. - NO. 2 POWER BOILER STACK
C. - NO. 3 POWER BOILER STACK
D. - NO. 4 POWER BOILER STACK
E. - NO. 5 POWER BOILER STACK
F. - RECOVERY BOILER STACK 1
G. - RECOVERY BOILER STACK 2
H. - LIME KILN STACK
I. - CALCINER STACK
J. - BLEACH PLANT A (SOFT WOOD)
K. - BLEACH PLANT B (HARDWOOD)
L. - ERCO
M. - Eo WASHER (SOFTWOOD)
N. - Eo WASHER (HARDWOOD)
O. - NO. 6 POWER BOILER

NORTH

0 100 200 400

SCALE IN FEET

SOURCE: BASE MAP ADAPTED FROM DRAWINGS SUPPLIED BY CHAMPION IMTERNATIONAL CORPORATION

CHAMPION INTERNATIONAL CORPORATION
PENSACOLA FACILITY
CANTONMENT, ESCAMBIA COUNTY
FLORIDA

CHAMP202-G/DM-12/92

FIGURE 2-2
LOCATION OF STACKS AND PRIMARY BUILDINGS IDENTIFIED FOR SCHULMAN-SCIRE DOWNWASH ANALYSIS

2.2 MILL CONSENT ORDER

The Pensacola Mill is currently operating under a water permit consent order from the Florida DER. Compliance with water quality standards must be attained by December 1994 to meet the schedule contained in the consent agreements. The proposed mill modifications, contained in this air permit application, involve process changes aimed at reducing wastewater loads or minimizing waste load constituents to CHAMPION's treatment system in order to meet the requirements of the consent order.

It is important to point out that the proposed modification would not be undertaken if not for the consent order. The changes are not aimed at increasing mill production, nor are they intended to increase throughput on individual units other than to handle additional materials generated as a result of the wastewater load reduction program. However, the modifications will increase pulp production through the bleach plant due to minimization of fiber losses and fiber degradation. The expected bleached pulp production which will result from the modifications is 1500 tons per day, annual average (based upon 24 hours per day, 365 days per year). The maximum daily bleached pulp production rate is 1718 tons (see Process Flow Diagram 4 presented in Part II of the Permit Application).

The proposed program can be characterized as follows:

- Modifications to the bleach plant operations to reduce effluent load to the wastewater treatment facilities.
- Process modifications to improve delignification in the pulping operation, and reduce bleach chemical requirements.
- Process modifications to minimize spills and leaks.
- Process modifications to reduce sewering of high concentration waste streams.

A description of the existing mill processes and the proposed modification to these processes follows.

2.3 EXISTING PROCESS DESCRIPTION

An even mix of hardwood and softwood pulp is produced from wood furnished by on-site and satellite chip mills. The wood chips are stored and screened in separate hardwood and softwood storage yards. The kraft cooking process is used to separate the lignin and wood fiber to produce brown pulp from wood chips. Softwood pulp is produced in a continuous digester, washed by a two-stage atmospheric diffusion washer, separated from wood knots by a disc knotter, and screened to separate rejects. Hardwood chips are cooked in twelve conventional direct steam batch digesters and discharged into two blow tanks common to all twelve digesters. The hardwood brown pulp is separated from wood knots by vibratory knotters and washed by two parallel lines of drum-type brown stock washers, and then screened to separate rejects. The softwood and hardwood pulps are further delignified in separate oxygen delignification reactors. After oxygen delignification, the hardwood and softwood pulps are further washed and bleached in a three-stage bleach plant. The hardwood and softwood bleach plants are identical and include:

- A chlorination stage with chlorine dioxide added;
- An oxidative caustic extraction stage; and
- A final chlorine dioxide bleaching stage.

The chlorine dioxide is generated on site in a unit designed to produce sixteen tons per day. Liquid chlorine, caustic soda, and liquid oxygen are all delivered to the site by rail or truck prior to use in the process. The chlorine and oxygen are vaporized prior to use.

The organic or lignin laden filtrates (black liquor) from the pulping, oxygen delignification, and washing processes are concentrated through two sets of evaporators. The No. 1 Evaporator Set mainly processes black liquor from the softwood pulp mill, while the No. 2 Evaporator Set processes hardwood black liquor. The black liquor is concentrated to about 65% solids and burned in two identical Babcock and Wilcox recovery furnaces (No. 1 and No. 2). The recovery furnaces produce steam for energy generation and heat for the pulp and paper making processes. The molten inorganic ash (smelt) from the recovery furnaces is dissolved in water to make green liquor which is then reprocessed into reusable cooking chemicals in the mill's causticizing plant. The causticizing process combines lime with the green liquor in a slaker reactor to produce a sodium hydroxide and sodium sulfide solution (white liquor), which is the principle wood chip cooking chemical. A by-product from the slaking reaction is calcium carbonate or lime mud. The lime mud is washed and then reburned in an Allis Chalmers type rotary kiln, and a Dorr-Oliver type fluidized bed calciner to produce reusable lime for the slaking reaction.

The mill utilizes five power boilers to produce steam for energy generation and provide heat for the pulping and paper making processes. Through cogeneration by utilization of two steam-driven turbines, the mill can produce nearly all of the electricity and steam required to run the mill operations. Power Boiler Nos. 1, 2, and 5 are natural gas fired. Power Boiler No. 3 is coal fired with natural gas as an alternate fuel. No. 4 Power Boiler is coal and bark fired with natural gas as an alternate fuel.

Product paper is produced from the pulp on two paper machines. Copy paper is produced on the No. 5 Paper Machine and is cut, sized, and packaged in a side processing plant for final sale. The paper produced on the No. 3 Paper Machine is shipped in either sheet or roll form to final customers. Market pulp is dried on a pulp drying machine as bales or rolls for final sale.

The mill utilizes sump systems in selected areas which are activated by conductivity to reclaim process losses into collection tanks. The reclaimed losses are reintroduced into the chemical recovery process. Distributed process control systems are used in nearly all the major process areas to improve process stability and control.

2.4 EXISTING MILL AIR SOURCES

The Pensacola Mill currently operates a total of twenty-nine (29) air sources which are covered by twenty-one (21) DER air permits. Table 2-1 is a summary list of the sources, the source ID number, and the permit number under which the source operates. The majority of the mill sources will not be impacted by the proposed consent order modifications. The sources which will be affected by the project include some sources which will be physically modified and will experience throughput increases, and other sources which will not be modified but will experience throughput increases.

The sources impacted by the project fall within three main areas of the mill pulping process as follows:

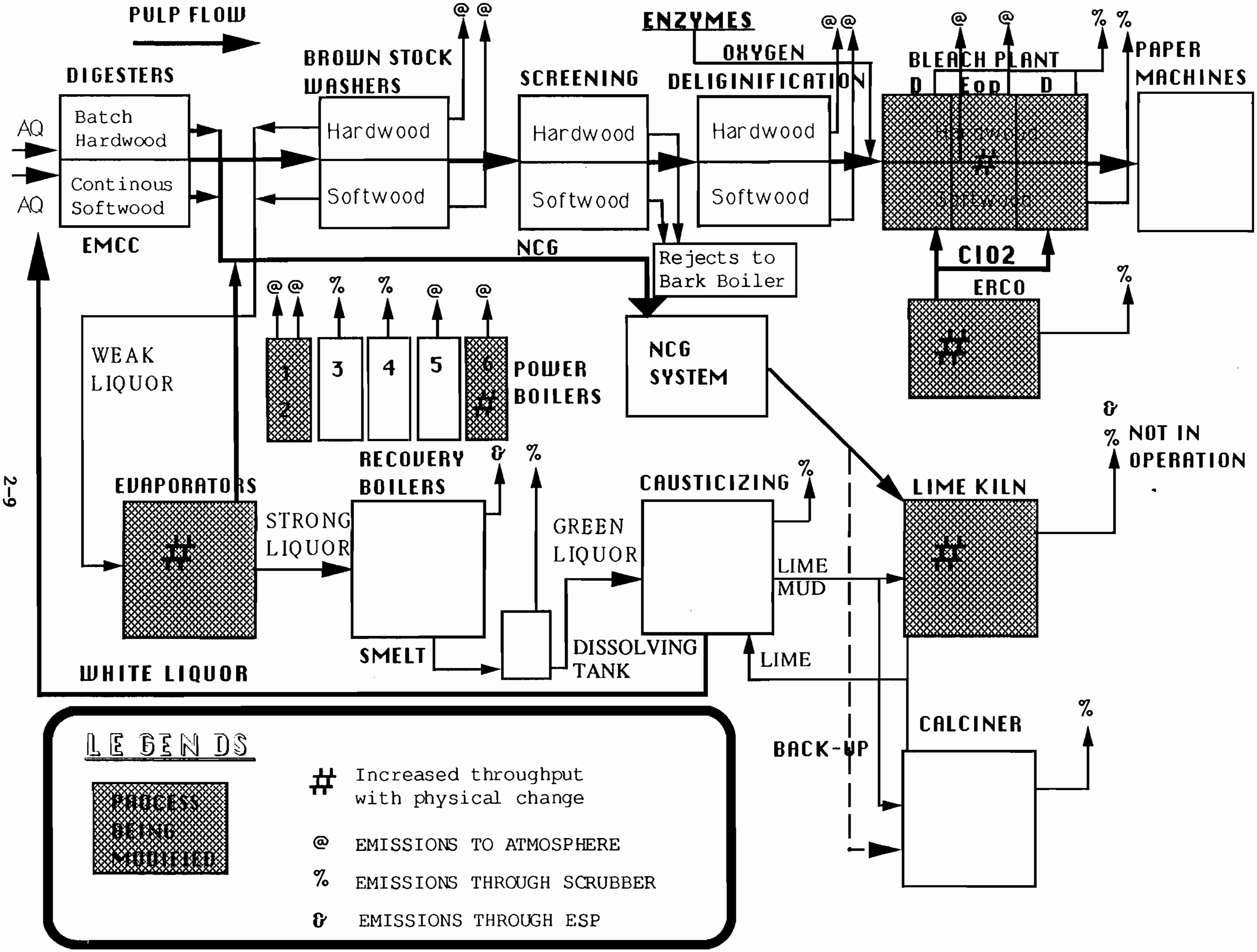
- Chemical cooking
- O_2 delignification and bleaching
- Chemical recovery and power generation

The existing sources in each area which will be affected by the project are depicted in Figure 2-3 and are discussed below.

TABLE 2-1
CHAMPION INTERNATIONAL CORPORATION - PENSACOLA MILL
FLORIDA DER AIR PERMITS

SOURCE	PERMIT #	SOURCE ID #
Wooodyard	AO17170657	10PEN1700 4252 & 58
Kamyr Digesters	AO17212422	10PEN1700 4254
Kamyr Diffusion Washer	AO17212422	10PEN1700 4254
Condensate Stripper	AO17212422	10PEN1700 4254
Batch Digesters	AO17212422	10PEN1700 4253
Brown Stock Washers	AO17212422	10PEN1700 4253
A Line 0_2 Delignification	AO17142570	10PEN1700 4250
B Line 0_2 Delignification	AO17142570	10PEN1700 4251
A Line Bleach Plant	AO17142570	10PEN1700 4250
B Line Bleach Plant	AO17142570	10PEN1700 4251
Salt Unloading	AO17142572	10PEN1700 4256 & 57
Chlorine Dioxide Generator	AO17142566	10PEN1700 4247, 48, & 49
Multiple Effect Evaporators	AO17212422	10PEN1700 4255
No. 1 Recovery Furnace	AO17181730	10PEN1700 4230
No. 1 Smelt Dissolving Tank	AO17181734	10PEN1700 4232
No. 2 Recovery Furnace	AO17181732	10PEN1700 4229
No. 2 Smelt Dissolving Tank	AO17181735	10PEN1700 4238
Lime Slaker	AO17137615	10PEN1700 4246
Lime Kiln	AO17181738	10PEN1700 4228
Fluo-Solids Unit (Calciner)	AO17151541	10PEN1700 4236
Tall Oil Plant	AO17181741	10PEN1700 4201
No. 1 Power Boiler	AO17181726	10PEN1700 4224
No. 2 Power Boiler	AO17181727	10PEN1700 4214
No. 3 Power Boiler	AO17146028	10PEN1700 4233
No. 4 Power Boiler	AO17145038	10PEN1700 4237
No. 5 Power Boiler	AO17203050	10PEN1700 4202
Coal Crushing and Handling	AO17143517	10PEN1700 4239 & 40
P5 Dry Additives	AO17213490	10PEN1700 4245
P5 Starch	AO17213492	10PEN1700 4244

FIGURE 2-3: CONSENT ORDER AIR PERMITTING PLAN - MILL LAYOUT



Chemical Cooking

The air emission sources in the chemical cooking area include the digesters, the brown stock washers, and the non-condensible gas (NCG) system. The digester systems on both the hardwood and softwood lines are closed systems which vent off-gases to the NCG system. Condensate from the cooking process is stripped to remove as much of the organic fraction as possible, and the off-gas from the condensate stripper is also vented to the NCG system. The NCG system itself vents to either the Lime Kiln or the lime calciner. The Lime Kiln is used as the primary control device for incinerating the NCGs with the calciner serving as backup.

The other sources in the cooking area include the diffusion washer on the softwood line and the brown stock washers on the hardwood line. The washers on both lines vent directly to the atmosphere.

O_2 Delignification and Bleaching

The washed brown stock from the cooking processes are further delignified using oxygen in separate O_2 reactors on each line. The O_2 delignification systems on each line are identical and include three vents each, as follows:

- The pre-O_2 decker washer vent
- The O_2 blow tank vent
- The post-O_2 washer vent

Following O_2 delignification, the pulp is processed through the bleaching system. The existing Pensacola bleaching operations are similar for each line and include the following sources:

- Cl/ClO_2 scrubber - This scrubber uses white liquor to control the emissions from the chlorination stage and chlorine dioxide stage of the existing bleaching sequence.

- E_o tower and washer vents - These sources are direct atmospheric vents from the oxidative extraction stages of the existing bleaching sequence.

ClO_2 for the existing mill bleaching sequence is generated on site in an ERCO R3H generator. The unit uses salt, sulfuric acid, and sodium chlorate to generate ClO_2 and Cl_2. The current bleaching sequence includes chlorine and chlorine dioxide in the first stage, an oxygen extractive stage, and chlorine dioxide in the final stage (C_DE_OD). There are five vent sources associated with the ClO_2 generator as follows:

- One tail gas scrubber - This scrubber uses sodium hydroxide to control Cl_2 and ClO_2 from the generator.

- Two ClO_2 storage tanks controlled by chilled water scrubbers.

- Two salt unloading/pneumatic transfer systems controlled by separate water spray towers.

Chemical Recovery and Power Generation Operations

The chemical recovery and power generation area includes the process equipment associated with recovering the cooking chemicals and the power boilers which generate the necessary process steam. Each of the sources affected by the proposed project are detailed below.

- *Multiple Effect Evaporators* - The evaporators are used to concentrate the weak black liquor prior to firing in the recovery furnaces. The off-gas from the evaporators is vented into the NCG system previously described and is ultimately combusted in the Lime Kiln or calciner.

- *Lime Kiln* - The Lime Kiln is used to calcine lime mud from the slaking process in the chemical recovery area. The kiln is permitted to burn natural gas and fuel oil. It is rated to produce up to 328 tons of CaO per day. It also serves as the primary control device for the NCGs generated in the pulping process. Particulate emissions from the kiln are controlled by a venturi scrubber and mist separator.

- *No. 1 Power Boiler* - This boiler is a natural gas-fired boiler originally rated to produce 140,000 pounds of steam per hour and having a derated heat input of 175mm BTU per hour.

- *No. 2 Power Boiler* - This boiler is a natural gas-fired boiler originally rated to produce 140,000 pounds of steam per hour and having a derated heat input of 170mm BTU per hour.

2.5 MODIFIED AND NEW AIR SOURCES

The project will affect the various air sources outlined in Section 2.4 on a source-specific basis. The following information is intended to provide details on the changes which each of the existing affected sources will experience, and also to provide information on the proposed new No. 6 Power Boiler which will replace the No. 1 and No. 2 Power Boilers as part of the project. The information is presented based upon the production area groupings previously identified in Section 2.4.

Chemical Cooking

Improved delignification in the cooking processes will play a role in reducing the wastewater treatment load. CHAMPION has identified two potential changes to be made to the digester processes to improve delignification, including:

- Extended modified continuous cooking (EMCC)
- Anthraquinone cooking (AQ)

It is important to understand that these are both changes in the cooking process which should not impact air emissions from the system. Therefore, by themselves EMCC and AQ do not require air permitting. Both methods have undergone trial efforts at the Pensacola Mill and process feasibility continues to be evaluated.

EMCC can only be considered in the continuous digester serving the softwood line. It involves changes in feeding the cooking liquor into the digester in stages and different cooking conditions. If successfully implemented, it is expected to produce a pulp which is easier to wash, therefore, improving lignin extraction. While some changes in piping are required for the digester, it is a sealed unit with any emissions ultimately vented directly to the NCG system. No increase in throughput occurs in the digester as a result of EMCC.

Anthraquinone (AQ) is an organic catalyst which accelerates and increases the selectivity of the wood cooking chemicals in the delignification of the pulp fiber. It can potentially be used in both the batch digesters serving the hardwood line and the continuous digester serving the softwood line. The ultimate goal of applying AQ is a reduction in the organic loading, the color, and the conductivity in the bleach plant effluent.

The project will require the installation of storage and handling equipment for AQ. AQ is water soluble and, therefore, CHAMPION proposes to utilize a system designed for transporting and storing water-soluble anthraquinone (SAQ). AQ is not on the Clean Air List of 189 Hazardous Air Pollutants. It is a reportable substance under CERCLA and adequate containment of the storage and unloading facility will be provided.

While both EMCC and AQ are changes in the digester cooking processes, it is believed that there will be no changes resulting in the emissions from the digesters following implementation of these methods. Since feed rate to the digesters will not change, the material flow rate from the digesters to the brown stock washers will also be unchanged. The increase in black liquor solids from improved pulp delignification is offset by a reduction in solids due to improved digester selectivity and fiber preservation. Therefore no net change in liquor solids to recovery is anticipated. Furthermore, air emissions from the brown stock washers should be no different following implementation of the improved cooking methods.

<u>O_2 Delignification and Bleaching</u>

The washed brown pulp from the cooking processes goes through further delignification in O_2 reactors on each line. If these improvements in the digester cooking processes occur, less fiber may be wasted which could result in an increase in the fiber processed through the O_2 delignification systems. Since there could also be reduced levels of lignin in the brown pulp, the emissions from the pre- and post-O_2 washers and the O_2 blow tank are not expected to change as a result of the project, even if fiber throughput increases.

The most significant change in the pulp production process will be the conversion of the existing C_DE_OD bleach plant. This will be accomplished by elimination of the existing chlorine gas handling system, the addition of a hydrogen peroxide handling system, and the modification of the chlorine dioxide generator. In addition, enzymes may be added to the high density storage tanks between the oxygen delignification systems and the bleach plants. Each of these changes is detailed below.

- *Enzyme Bleach Boosting* - Enzyme bleach boosting is a new technique which must still undergo field trials. It involves the application of xylanase enzyme prior to pulp bleaching with the purpose of modifying the chemical structure to make subsequent bleach stages more efficient. The high degree of specificity of action and mild working conditions generally result in fewer non-desirable byproducts. This tends to give a more efficient process and should lead to improved process yields. Significant reductions in chlorine dioxide required to bleach pulp are possible with no significant impact on pulp properties.

  From an environmental viewpoint, enzymes are safe and quite desirable. They are easy to handle, require mild conditions for reaction, are effective in small amounts, biodegradable, and non-toxic. The xylanase enzymes to be used in pulp bleaching are categorized as food grade products.

  The use of enzymes will require the installation of enzyme storage and handling facilities. Since enzymes are water soluble, there will be no air emission associated with this system.

- *Chlorine Dioxide Substitution for Chlorine* - The mill will eliminate the use of molecular chlorine as a bleaching agent, and the first stage of each bleach plant will be 100% chlorine dioxide. This will require a modification of the existing chlorine dioxide generator.

The existing generator is an ERCO R3H which uses salt, sulfuric acid, hydrochloric acid, and sodium chlorate to generate chlorine dioxide and chlorine. The generator will be modified to an R8/R10 process which uses methanol, sulfuric acid, and sodium chlorate to generate chlorine dioxide. The conversion to R8/R10 is necessary to eliminate the chlorine gas byproduct which is currently generated in the R3H process. The modified reactor capacity will be increased from the present 16 tons per day to 37.4 tons per day of chlorine dioxide. A third ClO_2 storage tank will be added and the existing chlorine absorption towers will be converted to chlorine dioxide absorption towers.

The existing storage tank scrubbers will continue to vent the existing two tanks and will also vent the new third tank. The exhaust from the two tank vent scrubbers will be rerouted to the tail gas scrubber. The tail gas scrubber will be modified by installing an extra 10 feet of tower and the scrubbing media will be changed from sodium hydroxide to white liquor (sodium hydroxide plus sodium sulfide), as depicted on Process Flow Diagram 3 presented in Part II of the permit application.

A new 21,000 gallon methanol storage tank will be installed as part of the project. The tank will be nitrogen blanketed and equipped with a conservation vent.

The existing salt unloading and storage system will be shut down and dismantled.

The existing bleach plant scrubbers are equally effective for chlorine and chlorine dioxide removal, and the scrubber systems have adequate capacity for the expected emissions. Therefore, no change in the bleach plant scrubber system is planned.

- *Peroxide Fortified Oxidative Caustic Extraction* - Hydrogen peroxide is an oxidizing agent that works optimally in alkaline conditions and is typically applied to the pulp in a 50% solution. The peroxide is applied in the oxidative extraction stage. The hydrogen peroxide is a non-specific oxidizer that reacts as readily with the extracted lignin as it does with the pulp. Because of the non-specificity, half of the peroxide decolorizes the extraction filtrate. The other half of the charge increases the brightness of the pulp leaving the extraction stage. Because of the higher brightness achievable, chlorine dioxide charged to either the first stage or the final bleaching stage is reduced.

  The use of hydrogen peroxide will require the installation of a storage and handling system for the chemical. The peroxide will completely react in the extraction tower. There are no air emissions associated with the use of hydrogen peroxide.

Evaporators and Power Generation

Mill improvements aimed at reducing the amount of wastewater generated by minimizing process losses will increase the overall liquid load to the multiple effect evaporators. Due to the increase in load, the evaporators will be upgraded. Other improvements to the existing facility associated with minimizing process losses include upgrading the evaporator foul condensate stripper and modifying the Lime Kiln. Each of the affected air emission sources are discussed below.

- *Evaporation Capacity Upgrade* - Reclaimed process chemicals are processed through the black liquor evaporators. These evaporators are currently at capacity. Any added volume for evaporating reclaimed sewer losses will require added capacity.

With the planned process loss containment project and pulp-mill process changes, it is estimated that a 50% increase in evaporation capacity of the No. 2 set evaporator will be needed. This will be accomplished by the addition of two new evaporator effects.

The primary purpose of this capacity upgrade is to evaporate the water contained in these streams. Although the color and B.O.D. reclaimed represents a significant portion of the waste water load, the associated solids contribution to the chemical recovery system is insignificant. The recovery boilers and associated equipment are not impacted.

- *Evaporator Foul Condensate Stripping Upgrade* - Various volatile organic compounds are released with digester steam after the cooking of wood chips. Some of the volatile compounds or non-condensible gases are piped to the Lime Kiln and burned. The remaining portion is dissolved and carried in the digester steam (contaminated) condensate to a heat recovery system. Condensates from the black liquor evaporation process are also rich in dissolved organic compounds. Most of the organic component in digester steam and evaporator condensates is methanol and other low molecular weight compounds. These compounds produce a very large biochemical oxygen demand on the wastewater treatment facility. The mill currently collects and steam strips most of the more concentrated or "foul" condensates. The liberated volatile organic compounds are then burned with the non-condensible gases in the Lime Kiln. However, a significant BOD load is discharged to the waste treatment plant due to an excess of less contaminated condensates and the lack of stripping capacity.

CHAMPION has evaluated the upgrade of the existing contaminated condensate stripper and the installation of an additional steam stripper. With added stripper capacity, initial estimates have shown that the mill effluent BOD load to the wastewater treatment plant could be reduced by as much as 15%. The evaluation is currently not completed, and the exact configuration has not been determined.

The installation of a stripper will not directly affect air emissions except to the extent these materials are being stripped in the wastewater treatment system. In that regard, a steam stripper will directly reduce the emissions of volatile compounds.

- *Lime Reburning Capacity - Lime Kiln-Mud Dryer Upgrade* - Currently, the Lime Kiln and calciner cannot process all of the lime mud produced by the causticizing process. The difference between the current lime reburning capability and the requirements to produce white liquor for the pulping process is made up with purchased fresh lime. The excess lime mud (calcium carbonate) produced in the causticizing operation is discharged to the sewer in a weak wash solution. The sewered lime mud flows to the waste treatment primary settling basin, is dredged with other mill settled sludge, and pumped to the decanting basins. The combined mud and mill sludge is reclaimed from the decanting basins and hauled to the landfill. The weak wash solution sewered with the lime mud is an alkaline solution that has to be neutralized in the settling basin by carbon dioxide injection. However, the alkaline solution increases the mill effluent conductivity.

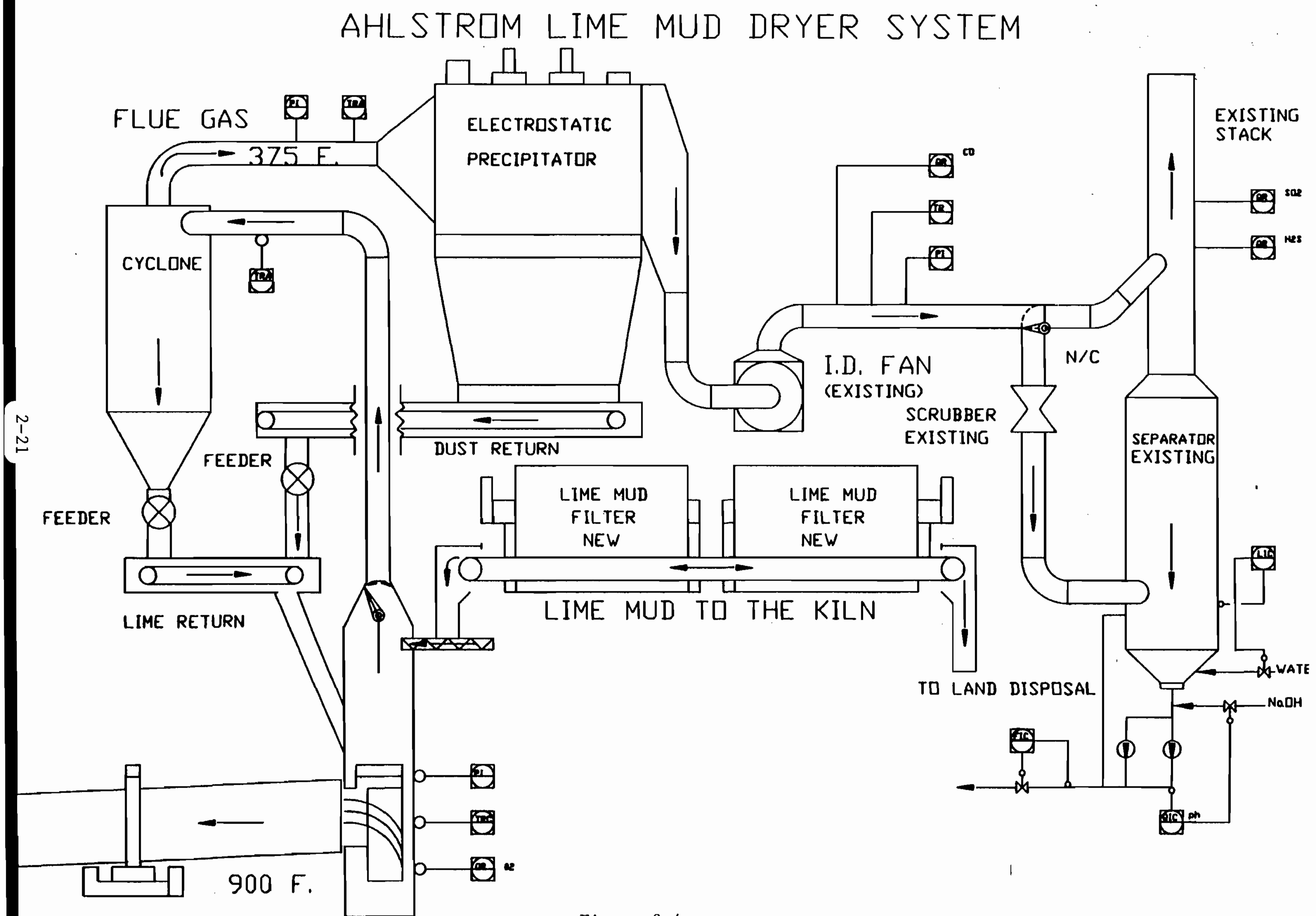
An upgraded kiln capacity will supply the total lime requirements eliminating the sewering of lime mud in weak wash solution as part of daily operation. Initial estimates indicate that the required capacity increase will reduce daily landfill by approximately 100 tons and reduce the conductivity by about 20%.

The increase in Lime Kiln capacity will be accomplished by the installation of a lime mud dryer. The upgraded Lime Kiln-Mud Dryer system will be capable of producing up to 500 tons of CaO per day. A new multifield electrostatic precipitator will be added and the existing scrubber will be modified to provide SO_2 scrubbing capability. The separator will be physically modified as a packed column utilizing recirculating NaOH as the scrubbing medium. The scrubber will be used only on an as needed basis to meet the proposed SO_2 emission limits. Figure 2-4 shows a representation of the system.

The fluid bed calciner will not be changed, and the normal throughput will not change.

The amount of lime added to the green liquor in the slaker will not change. The additional reburned lime from the modified Lime Kiln will allow the reduction of purchased fresh lime.

There will be a slight increase in non-condensible gases (NCGs) burned in the Lime Kiln-Mud Dryer. The only impact will be to increase the amount of sulfur dioxide formed in the kiln due to the sulfur in the NCGs. Any increase in sulfur dioxide will be captured within the kiln and/or by the sulfur dioxide scrubber. The increase in sulfur dioxide emissions from the lime kiln-mud dryer is not PSD significant.



AHLSTROM LIME MUD DRYER SYSTEM
FLUE GAS
375 F.
ELECTROSTATIC
PRECIPITATOR
CYCLONE
FEEDER
FEEDER
LIME RETURN
DUST RETURN
I.D. FAN
(EXISTING)
SCRUBBER
EXISTING
N/C
EXISTING
STACK
SEPARATOR
EXISTING
LIME MUD
FILTER
NEW
LIME MUD
FILTER
NEW
LIME MUD TO THE KILN
TO LAND DISPOSAL
900 F.
NaOH

Figure 2-4

- *Steam Capacity Upgrade (No. 6 Package Boiler)* - Added steam capacity will be required to support the process modifications. The specific added steam demand will come from an increase in evaporation and contaminated condensate stripping capacity, black liquor heaters, the cooking modifications, and bleach plant load reduction technologies.

  With the addition of the No. 6 Power Boiler, CHAMPION will shut down No. 1 and No. 2 power boilers. These boilers, built in the early 50s, are in poor repair and poor efficiency.

  A new high pressure steam boiler to supply 350,000 pounds per hour additional steam load for consent order projects and replacement of the two obsolete power boilers will be installed.

SECTION 3
SUMMARY OF EMISSIONS

3.1 INTRODUCTION

A baseline and proposed future emissions inventory has been developed for the Pensacola mill sources affected by the proposed modifications. A list of the affected sources is included in Table 3-1. The inventory includes baseline emission rates from the existing affected sources and future emission rates for the proposed new and modified sources. A comparison of baseline and future emissions is presented in Table 3-2.

The baseline emission rates have been developed based on the two year period dating from July 1, 1990 through June 30, 1992. The baseline rates were determined using individual source operating information including: fuel use data, process throughput data, actual source operating hours, and continuous emission monitoring (CEM) data where available. For each affected source, emission factors were developed from available emission tests or CEM data or from applicable literature. The factors were then used with the operating data to calculate annual baseline emission rates. Future emissions were projected using vendor data or guarantees, where available.

Presently, there is very limited data available for determining VOC emissions from the Bleach Plant sources. However, a good data base is available for chloroform emissions including testing performed by the National Council of the Paper Industry for Air and Stream Improvement (NCASI) at the mill in 1990. Therefore, as discussed with Florida DER, CHAMPION is using chloroform as a surrogate for total VOC emissions from the Bleach Plant for the purposes of this application.

TABLE 3-1

CHAMPION - PENSACOLA
SUMMARY OF AFFECTED SOURCES

BASELINE SOURCES	
	No. 1 Power Boiler
	No. 2 Power Boiler
	Lime Kiln
A-Line	Softwood Bleach Plant Scrubber Softwood Bleach Plant E_o Washer
B-Line	Hardwood Bleach Plant Scrubber Hardwood Bleach Plant E_o Washer
FUTURE SOURCES	
	No. 6 Power Boiler
	Lime Kiln-Mud Dryer
A-Line	Softwood Bleach Plant Scrubber Softwood Bleach Plant E_o Washer
B-Line	Hardwood Bleach Plant Scrubber Hardwood Bleach Plant E_o Washer

CH233F.TAB

TABLE 3-2
CHAMPION
PENSACOLA, FLA
SUMMARY OF BASELINE ANNUAL EMISSIONS VS FUTURE MAXIMUM ANNUAL EMISSIONS

(tons/yr)

SOURCE	NO_x			SO_2			CO		
	ACTUAL	FUTURE	CHANGE	ACTUAL	FUTURE	CHANGE	ACTUAL	FUTURE	CHANGE
#6 POWER BOILER	NA	140.07	140.07	NA	2.17	2.17	NA	233.45	233.45
LIME KILN MUDDRYER(3)	63.46	215.93	152.48	1.76	28.43	26.67	5.73	29.57	23.83
#1 POWER BOILER	40.57	NA	-40.57	0.38	NA	-0.38	40.57	NA	-40.57
#2 POWER BOILER	113.20	NA	-113.20	0.25	NA	-0.25	26.95	NA	-26.95
LINE A- Cl_2 SCRUBBER(1)	NA	NA	NA	NA	NA	NA	NA	NA	NA
LINE A- E_o WASHER(1)	NA	NA	NA	NA	NA	NA	NA	NA	NA
LINE B- Cl_2 SCRUBBER(2)	NA	NA	NA	NA	NA	NA	NA	NA	NA
LINE B- E_o WASHER(2)	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOTALS	**217.23**	**356.01**	**138.78**	**2.39**	**30.60**	**28.21**	**73.26**	**263.02**	**189.76**

SOURCE	PM/PM_{10}			VOC			TRS		
	ACTUAL	FUTURE	CHANGE	ACTUAL	FUTURE	CHANGE	ACTUAL	FUTURE	CHANGE
#6 POWER BOILER	NA	11.67	11.67	NA	23.35	23.35	NA	NA	NA
LIME KILN MUDDRYER(3)	57.32	47.74	-9.58	1.68	107.31	105.63	8.27	6.39	-1.88
#1 POWER BOILER	2.03	NA	-2.03	10.84	NA	-10.84	NA	NA	NA
#2 POWER BOILER	1.35	NA	-1.35	6.72	NA	-6.72	NA	NA	NA
LINE A- Cl_2 SCRUBBER(1)	NA	NA	NA	10.72	1.48	-9.24	NA	NA	NA
LINE A- E_o WASHER(1)	NA	NA	NA	1.16	0.16	-1.00	NA	NA	NA
LINE B- Cl_2 SCRUBBER(2)	NA	NA	NA	15.30	1.48	-13.82	NA	NA	NA
LINE B- E_o WASHER(2)	NA	NA	NA	2.04	0.16	-1.88	NA	NA	NA
TOTALS	**60.69**	**59.41**	**-1.28**	**48.45**	**133.94**	**85.49**	**8.27**	**6.39**	**-1.88**

(1) Softwood
(2) Hardwood
(3) 95% control efficiency is assumed for the future case SO_2 condition.

As a result of the proposed modifications, there may be a slight (1-2%) increase in fiber throughput in the oxygen delignification process on each line. However, available VOC emission data is extremely limited for this source. The variability in the available test data suggests that the actual difference between existing and future VOC emissions would likely not be measurable using the available test methods. CHAMPION will commit to testing these sources following the mill modifications to clearly identify future emission rates.

The following sections briefly identify the basis for each emission factor and source in the emissions inventory. The emission factor development calculations and sample emission rate calculations are included in Appendix A. Appendix B includes source test summary data and other information supporting the emission data. Appendix C includes the source operating data, fuel use data, and annual emission summaries for each of the baseline years.

3.2 BASELINE EMISSION RATES

A summary of the emission factors utilized for baseline emissions is presented in Table 3-3. The calculated baseline emission rates for the two year averaging period for the affected sources are presented in Table 3-4.

The following subsections provide a brief source-by-source description of the development of individual emission factors.

3.2.1 No. 1 Power Boiler

The No. 1 Power Boiler has a design heat input rating of 180 MMBtu per hour. The primary fuel fired in the boiler is natural gas. However, the boiler is also equipped to burn No. 6 fuel oil for emergency use. For the baseline period, natural gas was the only fuel fired and emissions are based on natural gas usage for the period. The following information presents the basis for the selected emission factors for each pollutant.

TABLE 3-3
CHAMPION
PENSACOLA, FLA
SUMMARY OF EMISSION FACTORS AND HOURLY EMISSION RATES

BASELINE EMISSIONS

SOURCE	NO_x		SO_2		CO	
	EMISSION FACTOR	HOURLY RATE (lb/hr)[5]	EMISSION FACTOR	HOURLY RATE (lb/hr)[5]	EMISSION FACTOR	HOURLY RATE (lb/hr)[5]
#1 POWER BOILER	0.1 lb/MMBtu	10.11	0.00093 lb/MMBtu	0.09	0.1 lb/MMBtu	10.11
#2 POWER BOILER	0.42 lb/MMBtu	45.18	0.00093 lb/MMBtu	0.10	0.1 lb/MMBtu	10.76
LIME KILN	15.5 lb/hr	15.5	0.43 lb/hr	0.43	1.4 lb/hr	1.4
LINE A- Cl_2 SCRUBBER[1]	NA	NA	NA	NA	NA	NA
LINE A- E_o WASHER[1]	NA	NA	NA	NA	NA	NA
LINE B- Cl_2 SCRUBBER[2]	NA	NA	NA	NA	NA	NA
LINE B- E_o WASHER[2]	NA	NA	NA	NA	NA	NA

SOURCE	PM/PM_{10}		VOC		TRS	
	EMISSION FACTOR	HOURLY RATE (lb/hr)[5]	EMISSION FACTOR	HOURLY RATE (lb/hr)[5]	EMISSION FACTOR	HOURLY RATE (lb/hr)[5]
#1 POWER BOILER	0.005 lb/MMBtu	0.51	2.70 lb/hr	2.7	NA	NA
#2 POWER BOILER	0.005 lb/MMBtu	0.54	2.68 lb/hr	2.68	NA	NA
LIME KILN	14.0 lb/hr	14	0.41 lb/hr	0.41	2.02 lb/hr	2.02
LINE A- Cl_2 SCRUBBER[1]	NA	NA	0.083 lb/ADTP	2.77 [3]	NA	NA
LINE A- E_o WASHER[1]	NA	NA	0.009 lb/ADTP	0.30 [3]	NA	NA
LINE B- Cl_2 SCRUBBER[2]	NA	NA	0.120 lb/ADTP	3.00 [4]	NA	NA
LINE B- E_o WASHER[2]	NA	NA	0.016 lb/ADTP	0.40 [4]	NA	NA

(1) Softwood
(2) Hardwood
(3) The hourly rate is based on the current annual average permit limit of 800 ADTP/day (softwood) and pulp production 24 hr/day.
(4) The hourly rate is based on the current annual average permit limit of 600 ADTP/day (hardwood) and pulp production 24 hr/day.
(5) The hourly emission rate is an average hourly emission rate for the two year period.

TABLE 3-4
CHAMPION
PENSACOLA, FLA
SUMMARY OF BASELINE EMISSION RATES
JULY 1990 - JUNE 1992
(tons/year)

SOURCE	NO_x	SO_2	CO	PM/PM_{10}	VOC	TRS
#1 POWER BOILER	40.57	0.38	40.57	2.03	10.84	NA
#2 POWER BOILER	113.20	0.25	26.95	1.35	6.72	NA
LIME KILN	63.46	1.76	5.73	57.32	1.68	8.27
LINE A- Cl_2 SCRUBBER(1) (3)	NA	NA	NA	NA	10.72	NA
LINE A- E_o WASHER(1) (3)	NA	NA	NA	NA	1.16	NA
LINE B- Cl_2 SCRUBBER(2) (4)	NA	NA	NA	NA	15.30	NA
LINE B- E_o WASHER(2) (4)	NA	NA	NA	NA	2.04	NA
TOTAL	217.23 tons	2.39 tons	73.26 tons	60.69 tons	48.45 tons	8.27 tons

(1) Softwood
(2) Hardwood
(3) VOC emission rates are based on the lb/ADTP emission factor and actual softwood pulp (ADTP) production.
(4) VOC emission rates are based on the lb/ADTP emission factor and actual hardwood pulp (ADTP) production.

- Nitrogen Oxides (NO_x)

The NO_x emission factor is based upon the average NO_x mass emission rates and total heat input rates measured during a series of three test runs conducted on 8 February 1991. The NO_x emission factor is 0.10 lb/MMBtu. The baseline NO_x emission rate is 10.11 lb/hr.

- Sulfur Dioxide (SO_2)

The SO_2 emission factor is based upon the typical sulfur content of the natural gas burned in the No. 1 Power Boiler as supplied by the gas vendor and the assumption of 100% conversion to SO_2. The SO_2 emission factor is 0.00093 lbs/MMBtu. The baseline SO_2 emission rate is 0.09 lb/hr.

- Carbon Monoxide (CO)

The CO emission factor used is the same emission factor reported in CHAMPION's PSD permit application for the No. 5 Power Boiler submitted in February 1991. This factor was based on testing conducted on CHAMPION's No. 5 Power Boiler on 16-17 May 1989. The CO emission factor is 0.1 lb/MMBtu. The baseline CO emission rate is 10.11 lb/hr.

- Total Suspended Particulate Matter and Particulate Matter less than 10 microns (PM/PM_{10})

  The PM/PM_{10} emission factor is based on the AP-42 emission factor for natural gas (Table 1.4-1, utility boiler size). This factor is 5 $lb/10^6$ cf. Assuming a natural gas heating value of 1000 Btu/scf, the PM/PM_{10} emission factor is 0.005 lb/MMBtu. The baseline PM/PM_{10} emission rate is 0.51 lb/hr.

- Volatile Organic Compounds (VOC)

  The VOC emission factor used is based upon the same VOC concentration reported in CHAMPION's PSD permit application for the No. 5 Power Boiler submitted in February 1991. This concentration of 20 ppm (as carbon) was established by testing conducted on 16-17 May 1989 and is used in conjunction with volumetric flow rate data from the NO_x testing on the No. 1 Power Boiler conducted on 8 February 1991. The baseline VOC emission rate is 2.70 lb/hr (as propane).

3.2.2 No. 2 Power Boiler

The No. 2 Power Boiler has a design heat input rating of 220 MMBtu per hour. The primary fuel fired in the boiler is natural gas. However, the boiler is also equipped to burn No. 6 fuel oil for emergency use. For the baseline period, natural gas was the only fuel fired and emissions are based on natural gas usage. The following information presents the basis for the selected emission factors for each pollutant.

- Nitrogen Oxides (NO_x)

  The NO_x emission factor is based upon the average NO_x mass emission rates and total heat input rates measured during a series of three test runs conducted on 9 February 1991. The NO_x emission factor is 0.42 lb/MMBtu. The baseline NO_x emission rate is 45.18 lb/hr.

- Sulfur Dioxide (SO_2)

  The SO_2 emission factor is based upon the typical sulfur content of the natural gas burned in the No. 2 Power Boiler as supplied by the gas vendor and the assumption of 100% conversion to SO_2. The SO_2 emission factor is .00093 lb/MMBtu. The baseline SO_2 emission rate is 0.10 lb/hr.

- Carbon Monoxide (CO)

  The CO emission factor used is the same emission factor reported in CHAMPION's PSD permit application for the No. 5 Power Boiler submitted in February 1991. This factor was based on testing conducted on CHAMPION's No. 5 Power Boiler on 16-17 May 1989. The CO emission factor is 0.1 lb/MMBtu. The baseline CO emission rate is 10.76 lb/hr.

- Total Suspended Particulate Matter and Particulate Matter less than 10 microns (PM/PM_{10})

  The PM/PM_{10} emission factor is based on the AP-42 emission factor for natural gas (Table 1.4-1, utility boiler size). This factor is 5 lb/10^6 cf of natural gas. Assuming a natural gas heating value of 1000 Btu/scf, the PM/PM_{10} emission factor is 0.005 lb/MMBtu. The baseline PM/PM_{10} emission rate is 0.54 lb/hr.

- Volatile Organic Compounds (VOC)

  The VOC emission factor used is based upon the same VOC concentration reported in CHAMPION's PSD permit application for the No. 5 Power Boiler submitted in February 1991. This concentration of 20 ppm (as carbon) was established by testing conducted 16-17 May 1989 and is used in conjunction with volumetric flow rate data from the NO_x testing on the No. 2 Power Boiler conducted on 9 February 1991. The baseline VOC emission rate is 2.68 lb/hr (as propane).

3.2.3 Lime Kiln

The Pensacola Lime Kiln is rated to produce approximately 328 tons of lime per day. The kiln fires natural gas and has a maximum heat input rate of approximately 123 MMBtu per hour. The kiln is also used to incinerate non-condensible gases (NCG) from the Kraft mill process.

- Nitrogen Oxides (NO_x)

  The NO_x emission factor is based on the average of two series of tests conducted on 13 December 1989 and 11-12 April 1990. The baseline NO_x emission rate is 15.5 lb/hr.

- Sulfur Dioxide (SO_2)

  The SO_2 emission factor is an average of four series of tests conducted 26 April, 16 May, 13 December 1989 and 11-12 April 1990. The 16 May 1989 test results included in the average only include the test runs during which all NCG streams were ducted to the Lime Kiln. The results included are the most representative of normal kiln operations. The baseline SO_2 emission rate is 0.43 lb/hr.

- Carbon Monoxide (CO)

  The CO emission factor is an average of two series of tests conducted on 13 December 1989 and 11-12 April 1990. The baseline CO emission rate is 1.4 lb/hr.

- Total Suspended Particulate Matter and Particulate Matter less than 10 microns (PM/PM_{10})

  The PM/PM_{10} emission factor is based on an average of four series of tests conducted 26 April 1989, 12 December 1989, 19 March 1991, and 27 March 1992. The baseline PM/PM_{10} emission rate is 14.0 lb/hr.

- Volatile Organic Compounds (VOC)

  The VOC emission factor is based on an average of two series of tests conducted 13 December 1989 and 11-12 April 1990. The baseline VOC emission rate is 0.41 lb/hr (as propane).

- Total Reduced Sulfur Compounds (TRS)

  The TRS emission factor is based on the 2-year average CEM data and the average gas stream volumetric flow rate from the Lime Kiln particulate testing conducted 19 March 1991 and 27 March 1992. The TRS value is assumed to be 100% H_2S for calculating a mass emission rate. The baseline TRS emission rate is 2.02 lb/hr.

3.2.4 Bleach Plant Sources

As previously discussed, there is very limited data available for determining emissions from the Bleach Plant sources identified in Table 3-1. Data is available, however, for chloroform emissions from these sources including testing by the National Council of the Paper Industry for Air and Stream Improvement (NCASI) at the mill in 1990. The proposed Pensacola Mill Bleach Plant modification entails 100% substitution of chlorine dioxide for molecular chlorine and is predicted to result in a 90% or greater reduction in the chloroform generation rate and subsequent emissions.

EPA is presently developing standard test methods and will be conducting extensive testing to identify and quantify VOC and hazardous air pollutant (HAP) emissions from pulp mill processes including Bleach Plants. This effort is intended to support the development over the next several years of industry MACT standards. However, there is presently no data available which CHAMPION can use to identify either baseline or future VOC emissions from the Pensacola bleaching processes other than the chloroform data. CHAMPION is therefore using chloroform as a surrogate for total VOC emissions from the Bleach Plant for the purposes of this application.

The Bleach Plant sources included in this analysis are the scrubber and the Eo washer for both the A-line (softwood) and B-line (hardwood). The VOC emissions are based on the NCASI testing at the Mill in 1990. A summary of the actual test results are included in Appendix D.

3.2.4.1 A-Line Scrubber

- Volatile Organic Compounds (VOC)

  The VOC emissions factor is 0.083 lb/ADTP. The associated baseline VOC emission rate is 2.77 lb/hr.

3.2.4.2 A-Line E_o Washer

- Volatile Organic Compounds (VOC)

  The VOC emission factor is 0.009 lb/ADTP. This corresponds to a baseline VOC emission rate of 0.30 lb/hr.

3.2.4.3 B-Line Scrubber

- Volatile Organic Compounds (VOC)

  The VOC emission factor is 0.120 lb/ADTP. The baseline VOC emission rate is 3.00 lb/hr.

3.2.4.4 B-Line E_o Washer

- Volatile Organic Compounds (VOC)

  The VOC emission factor is 0.016 lb/ADTP. This corresponds to a baseline VOC emission rate of 0.40 lb/hr.

3.3 FUTURE EMISSION RATES

A summary of the emission factors utilized for calculating future emissions and the projected hourly emission rates are presented in Table 3-5. The calculated annual future emission rates for the affected sources are presented in Table 3-6.

The following subsections provide a brief source-by-source description of the development of individual emission factors.

3.3.1 Lime Kiln-Mud Dryer

The modified Lime Kiln-Mud Dryer is rated to produce 450 tons of lime per day and may be capable of achieving a production rate of up to 500 tons of lime per day. The kiln will fire natural gas or fuel oil and has a maximum heat input rate of 150 MMBtu/hr. The Lime Kiln-Mud Dryer will continue to be used to incinerate NCGs from the kraft mill process in the future. Projected emission rates are based upon the vendor's guaranteed production rate of 450 tons per day. CHAMPION will commit to meeting the emission limits based upon the rated capacity at peak production rates of up to 500 tons per day.

TABLE 3-5
CHAMPION
PENSACOLA, FLA
SUMMARY OF EMISSION FACTORS AND HOURLY EMISSION RATES

FUTURE MAXIMUM ANNUAL EMISSIONS

SOURCE	NO_x		SO_2		CO	
	EMISSION FACTOR	HOURLY RATE (lb/hr)	EMISSION FACTOR	HOURLY RATE (lb/hr)	EMISSION FACTOR	HOURLY RATE (lb/hr)
#6 POWER BOILER	0.06 lb/MMBtu	32.0	0.00093 lb/MMBtu	0.50	0.1 lb/MMBtu	53.3
LIME KILN MUDDRYER	49.3 lb/hr	49.3	6.49 lb/hr	6.49	6.75 lb/hr	6.75
LINE A- Cl_2 SCRUBBER(1) (3)	NA	NA	NA	NA	NA	NA
LINE A- E_0 WASHER(1) (3)	NA	NA	NA	NA	NA	NA
LINE B- Cl_2 SCRUBBER(2) (4)	NA	NA	NA	NA	NA	NA
LINE B- E_0 WASHER(2) (4)	NA	NA	NA	NA	NA	NA

SOURCE	PM/PM_{10}		VOC		TRS	
	EMISSION FACTOR	HOURLY RATE (lb/hr)	EMISSION FACTOR	HOURLY RATE (lb/hr)	EMISSION FACTOR	HOURLY RATE (lb/hr)
#6 POWER BOILER	0.005 lb/MMBtu	2.67	0.01 lb/MMBtu	5.33	NA	NA
LIME KILN MUDDRYER	10.9 lb/hr	10.9	24.5 lb/hr	24.5	1.46 lb/hr	1.46
LINE A- Cl_2 SCRUBBER(1) (3)	NA	NA	0.3375 lb/hr	0.3375	NA	NA
LINE A- E_0 WASHER(1) (3)	NA	NA	0.0375 lb/hr	0.0375	NA	NA
LINE B- Cl_2 SCRUBBER(2) (4)	NA	NA	0.3375 lb/hr	0.3375	NA	NA
LINE B- E_0 WASHER(2) (4)	NA	NA	0.0375 lb/hr	0.0375	NA	NA

(1) Softwood
(2) Hardwood
(3) The VOC emission factor is based on 750 ADTP/day (softwood) and pulp production 24 hr/day.
(4) The VOC emission factor is based on 750 ADTP/day (hardwood) and pulp production 24 hr/day.

TABLE 3-6
CHAMPION
PENSACOLA, FLA

SUMMARY OF FUTURE MAXIMUM ANNUAL EMISSIONS

SOURCE	NO_x	SO_2	CO	PM/PM_{10}	VOC	TRS
#6 POWER BOILER	140.07 tons	2.17 tons	233.45 tons	11.67 tons	23.35 tons	NA
LIME KILN MUDDRYER	215.93 tons	28.43 tons	29.57 tons	47.74 tons	107.31 tons	6.39 tons
LINE A- Cl_2 SCRUBBER(1)	NA	NA	NA	NA	1.48 tons	NA
LINE A- E_o WASHER(1)	NA	NA	NA	NA	0.16 tons	NA
LINE B- Cl_2 SCRUBBER(2)	NA	NA	NA	NA	1.48 tons	NA
LINE B- E_o WASHER(2)	NA	NA	NA	NA	0.16 tons	NA
TOTAL	356.01 tons	30.60 tons	263.02 tons	59.41 tons	133.94 tons	6.39 tons

(1) Softwood
(2) Hardwood

- Nitrogen Oxides (NO_x)

  The NO_x emission factor is based on the vendor guarantee of 200 ppm when firing fuel oil. The projected NO_x emission rate is 49.3 lb/hr. When firing natural gas the vendor guarantees 175 ppm or 43.1 lbs/hr of NO_x.

- Sulfur Dioxide (SO_2)

  SO_2 emissions from the Lime Kiln-Mud Dryer originate from several sources in the process. These sources include the lime mud which is fed to the kiln and the combustion of both fuel oil and NCG's. When combined the corresponding potential uncontrolled SO_2 emission rate is 130 lb/hr. The lime calcining process has been shown to remove a substantial portion of potential SO_2 emissions. However, CHAMPION is proposing to utilize a caustic scrubber when necessary to meet the proposed SO_2 emission rate. A scrubber SO_2 removal efficiency of 95% has been assumed for calculating the allowable SO_2 emission rate. The proposed SO_2 emission rate based upon the 95% reduction associated with the scrubber is 6.49 lb/hr.

- Carbon Monoxide (CO)

  The CO emission factor is based on the vendor guarantee of 45 ppm. The CO emission rate is 6.75 lb/hr.

- Total Suspended Particulate Matter and Particulate Matter less than 10 microns (PM/PM_{10})

  The PM/PM_{10} emission factor is based upon meeting a grain loading of 0.037 gr/dscf per the vendor guarantee for the new control equipment. The PM/PM_{10} emission rate is 10.90 lb/hr.

- Volatile Organic Compounds (VOC)

  The VOC emission factor is based on CHAMPION's anticipated "maximum load" condition at the Pensacola Mill. CHAMPION believes that the "maximum load" condition occurs when B-Condensate is used in the mud washer and on the mud filter. This leads to the highest VOC concentrations in the lime mud and consequently the Lime Kiln-Mud Dryer, as this lime mud is comprised of materials from both the mud washer and the mud filter. CHAMPION has analyzed the B-Condensate for VOCs and has determined a "maximum load" VOC concentration of 104 ppm as propane in the Lime Kiln-Mud Dryer. The VOC emission rate is 24.5 lb/hr.

- Total Reduced Sulfur Compounds (TRS)

  The TRS emission factor is based on the vendor guarantee of 8 ppm at 10% O_2. The TRS emission rate is 1.46 lb/hr.

3.3.2 No. 6 Power Boiler

The No. 6 Power Boiler has a design heat input rating of 533 MMBtu/hr. The designated fuel fired in the boiler is natural gas. The emission factors are based upon vendor guarantees except for PM/PM_{10} which is based on AP-42.

- Nitrogen Oxides (NO_x)

  The NO_x emission factor of 0.06 lb/MMBtu is based on the BACT analysis. The NO_x emission rate is 32.0 lb/hr.

- Sulfur Dioxide (SO_2)

  The SO_2 emission factor is based on the sulfur content of natural gas (Table 1.4-1, utility size boiler). This factor is .00093 lb/MMBtu of natural gas. Assuming a natural gas heating value of 1000 Btu/scf, the sulfur dioxide emission rate is 0.5 lb/hr.

- Carbon Monoxide (CO)

  The CO emission factor of 0.1 lb/MMBtu is based on the BACT analysis. The CO emission rate is 53.3 lb/hr.

- Total Suspended Particulate Matter and Particulate Matter less than 10 microns (PM/PM_{10})

  The PM/PM_{10} emission factor is based on the AP-42 emission factor for natural gas (Table 1.4-1, Utility Boiler Size). This factor is 5 $lb/10^6$ cf of natural gas. Assuming a natural gas heating value of 1000 Btu/scf, the PM/PM_{10} emission factor is 0.005 lb/MMBtu. The PM/PM_{10} emission rate is 2.67 lb/hr.

- Volatile Organic Compounds (VOC)

  The VOC emission factor of 0.01 lb/MMBtu is based on the BACT analysis. The VOC emission rate is 5.33 lb/hr.

3.3.3 Bleach Plant Sources

The total future emission factors are based upon laboratory tests at 100% substitution of chlorine dioxide for molecular chlorine in the Bleach Plant process. These laboratory results were then apportioned between the Bleach Plant sources according to relationships established from the NCASI 1990 test program. A detailed presentation of the methodology used to develop these factors is presented in Appendix D.

3.3.3.1 A-Line Scrubber

- Volatile Organic Compounds (VOC)

  The emission rate is based upon the laboratory test of 100% substitution of chlorine dioxide for molecular chlorine. The VOC emission rate is 0.3375 lb/hr.

3.3.3.2 A-Line E_o Washer

- Volatile Organic Compounds (VOC)

  The emission rate is based upon the laboratory test of 100% substitution of chlorine dioxide for molecular chlorine. The VOC emission rate is 0.0375 lb/hr.

3.3.3.3 B-Line Scrubber

- Volatile Organic Compounds (VOC)

  The emission rate is based upon the laboratory test of 100% substitution of chlorine dioxide for molecular chlorine. The VOC emission rate is 0.3375 lb/hr.

3.3.3.4 B-Line E_o Washer

- Volatile Organic Compounds (VOC)

  The emission rate is based upon the laboratory test of 100% substitution of chlorine dioxide for molecular chlorine. The VOC emission rate is 0.0375 lb/hr.

SECTION 4
APPLICABLE REGULATIONS

The following subsections contain a summary of applicable Federal and State of Florida air regulations effecting the proposed project.

4.1 FEDERAL STANDARDS

The proposed project is potentially subject to the following Federal Regulations. These include:

- New Source Performance Standards (NSPS)
- Prevention of Significant Deterioration (PSD) Regulations
- New Source Review (NSR) which includes a demonstration of compliance with National Ambient Air Quality Standards (NAAQS)

These regulations are discussed below.

4.1.1 New Source Performance Standards (NSPS) - Emission Standards

4.1.1.1 Industrial - Commercial - Institutional Steam Generating Units

The United States Environmental Protection Agency (U.S. EPA) has promulgated standards of performance for industrial - commercial - institutional steam generating units at 40 CFR 60.40b, Subpart Db. These NSPS regulations apply to steam generating units on which construction, modification, or reconstruction commenced after June 19, 1984 and that have a heat input capacity from fuels combusted in the steam generating unit of greater than 100 million Btu/hour.

The maximum heat input capacity to the No. 6 Power Boiler is 533 million Btu's per hour. The boiler is a new ABB/CE boiler which will be field erected at the Pensacola facility. This boiler is subject to the NSPS Subpart Db requirements and will meet the emission limits contained within the NSPS for NO_x. The NSPS NO_x limit for a natural gas fired boiler is based on whether the heat release rate is equal to or less than 70,000 Btu/hr-ft^3 or greater than 70,000 Btu/hr-ft^3. The proposed CHAMPION boiler has a heat release rate of approximately 61,000 Btu/hr-ft^3, therefore, the NSPS NO_x limit is 0.1 lb/MMBtu. CHAMPION's proposed boiler is designed to meet a NO_x emission rate of 0.06 lb/MMBtu. No other emission limits for natural gas fired boilers are specified as NSPS requirements.

4.1.1.2 Kraft Pulp Mills

Standards of performance have also been established for Kraft Pulp Mill Lime Kilns at 40 CFR 60.280 Subpart BB. Standards have been established for both particulate matter emissions and total reduced sulfur compounds (TRS).

CHAMPION is proposing to modify the Lime Kiln and convert it to a Lime Kiln - Mud Dryer as previously described in Section 2. The proposed modification will result in a decrease in both particulate matter emissions as well as TRS emissions, the two pollutants regulated by the NSPS. Therefore the modified Lime Kiln - Mud Dryer will not be subject ot the Subpart BB of the NSPS for Kraft Pulp Mills.

4.1.1.3 Volatile Organic Liquid Storage Vessels for which Construction, Reconstruction, or Modification Commenced after 23 July 1984.

Standards of performance for volatile organic liquid (VOL) storage results have been established at 40 CFR 60.110b, Subpart Kb. These NSPS set forth requirements for VOC emission limits, recordkeeping and reporting, based upon the capacity of the storage vessel and the vapor pressure of the organic liquid stored. For storage vessels located outdoors, the vapor pressure to be used to determine the applicable standards is that corresponding to the highest average monthly temperature to which the tank is exposed. CHAMPION will be constructing a 21,000 gallon methanol storage tank (79.5 cubic meters) as part of the Pulp Mill modifications. From the National Oceanic and Atmospheric Administration publication, "Comparative Climatic Data for the United States through 1982", the highest average monthly temperature for Pensacola, Florida occurs during both July and August and is 81.8°F. The vapor pressure of methanol at the temperature, using Antoines Equation is 144 mmHg or 19.2 kPa. Under those conditions for a 79.5 cubic meter vessel, no emissions standards apply, however, recordkeeping is required as follows:

- Maintain a permanent readily accessible record showing the dimensions of the storage vessel and an analysis showing the capacity of the storage vessel.

- Maintain a rolling two year record of the liquid stored, the period of the storage and the maximum true vapor pressure of the liquid during the respective storage period.

4.1.2 Prevention of Significant Deterioration (PSD) and New Source Review (NSR)

The only sources subject to the PSD regulations are "major stationary sources" and "major modifications" located in areas designated as attainment or unclassifiable for NAAQS. Escambia County, Florida is designated as unclassifiable or in attainment for all the criteria pollutants.

CHAMPION's Pensacola mill already qualifies as a major stationary source. It is a kraft pulp mill, one of the 28 major source categories listed in the regulations, and emits more than 100 tons per year of a criteria pollutant. Therefore the task at hand is to determine whether the proposed mill modifications will constitute a major modification under the regulations. Major modification is defined in the regulations as:

"any physical change in or change in the method of operation of a major stationary source that would result in a significant net emissions increase of any pollutant subject to the regulations under the Act."

Table 4-1 identifies the significant net emissions increase levels for the PSD pollutants and compares them to the estimated emissions increases from the modified mill sources which were detailed in Section 3. As shown in the table, there will be significant net emission increases for NO_x, CO, and VOC resulting from the proposed mill modifications. Therefore, the proposed project constitutes a major modification and is subject to PSD review.

Under PSD, each pollutant for which a significant net emission increase occurs must undergo a PSD analysis. This involves the following:

- Best Available Control Technology (BACT) analysis.
- PSD Increment Consumption Analysis, including other increment consuming sources in the area.
- National Ambient Air Quality Standards (NAAQS) impact analysis.
- Impacts on Class I areas analysis.
- Additional impact analysis.

BACT Analysis

The PSD regulations require that a BACT analysis be conducted for each emissions unit at which a net emissions increase in the pollutant will occur as a result of a physical change or change on the method of operation in the unit. As described in Section 3, for the proposed Pensacola

TABLE 4-1

PSD POLLUTANT SIGNIFICANCE LEVELS[1]

POLLUTANT	PSD SIGNIFICANT INCREASE LEVEL (ton/yr)	PROPOSED NET EMISSION RATE CHANGES (ton/yr)[2]	CHAMPION'S PROPOSED CHANGES SIGNIFICANT (yes/no)
PM_{10}	15	-1.3	no
Total Suspended Particulate	25	-1.3	no
Sulfur Dioxide	40	27.4	no
Nitrogen Oxides	40	138.8	yes
Volatile Organic Compound	40	85.5	yes
Carbon Monoxide	100	189.8	yes
Total Reduced Sulfur Compounds	10	-1.9	no

1 From EPA PSD regulations.

2 The proposed emission rate changes are based upon the addition of the No. 6 Power Boiler, modification of the Lime Kiln-Mud Dryer and the deletion of the No. 1 Power Boiler, and No. 2 Power Boilers.

mill modifications, both the new No. 6 Power Boiler and the modified Lime Kiln-Mud Dryer will require BACT analysis for NO_x, CO and VOC. While the Bleach Plant sources will undergo modifications there will be a net reduction in VOC emissions from these sources and, therefore, a BACT analysis will not be required.

For the new No. 6 Power Boiler and the modified Lime Kiln-Mud Dryer a control technology must be selected and defended that will result in the maximum reduction in pollutant emissions considered achievable using current technology while considering energy requirements, environmental impacts, and economic impacts. The methodology used in this study to determine BACT follows the "Top Down" approach previously recommended by the EPA. However, it should be noted that pursuant to a settlement of litigation between EPA and industry trade groups, the "Top Down" requirements are not legally enforceable until established by a formal rulemaking procedure (56F.R. 34202 26, July 1991).

The "Top Down" methodology requires beginning the technology evaluation by looking at the control technology which results in the maximum level of emission reduction for a similar source which is currently available. If it is demonstrated that this level of control is not technically or economically feasible for the source under evaluation then the next most stringent level of control is evaluated. The process continues until an acceptable level is identified.

PSD Increment Consumption

Federal PSD increments are established only for TSP, SO_2, and NO_x as shown in Table 4-2. An ambient air quality analysis will be required to demonstrate that the PSD increments for NO_x will not be exceeded by the mill modification project. Other PSD sources of NO_x in the area must also be considered in the increment analysis. As previously detailed this is the only pollutant of the three for which a significant emission increase is predicted. The CHAMPION Pensacola Mill is located in a Class II area. Hence, the Class II increment for NO_x must be met by the proposed project.

National Ambient Air Quality Standards

An ambient air quality analysis must be conducted to demonstrate that the project's air quality impact plus applicable background levels do not exceed the NAAQS shown in Table 4-3. The only pollutants for which this demonstration is required are the criteria pollutants emitted in excess of the PSD significance levels identified in Table 4-1. Therefore, for this project, the NAAQS analysis is required for nitrogen dioxide, carbon monoxide, and volatile organic compounds. Florida has adopted the NAAQS for these pollutants; hence, by complying with the Federal standards, the state standards are also met.

Impacts on Class I Areas

Any source within 100 kilometers of a Class I area must also comply with the significant levels for air quality impacts. Since the proposed facility is not within 100 kilometers of any Class I area, (see Figure 4-1) and no significant impact is anticipated at any Class I area, the proposed modification is not subject to this provision of the PSD review process. Furthermore, Florida DER discussions with the National Park Service indicated that the National Park Service will not require any additional air quality input analysis since the projected increase in emission is small and the distance to the nearest Class I area is so great.

TABLE 4-2

ALLOWABLE PSD INCREMENTS[1]
($\mu g/m^3$)

	CLASS I	CLASS II	CLASS III
SULFUR DIOXIDE			
• Annual[2]	2	20	40
• 24-hour[3]	5	91	182
• 3-hour[3]	25	512	700
TOTAL SUSPENDED PARTICULATE MATTER AND PM_{10}			
• Annual[2]	5	19	37
• 24-hour[3]	10	37	75
NITROGEN DIOXIDE			
• Annual[2]	2.5	25	50

[1] From EPA PSD Regulations

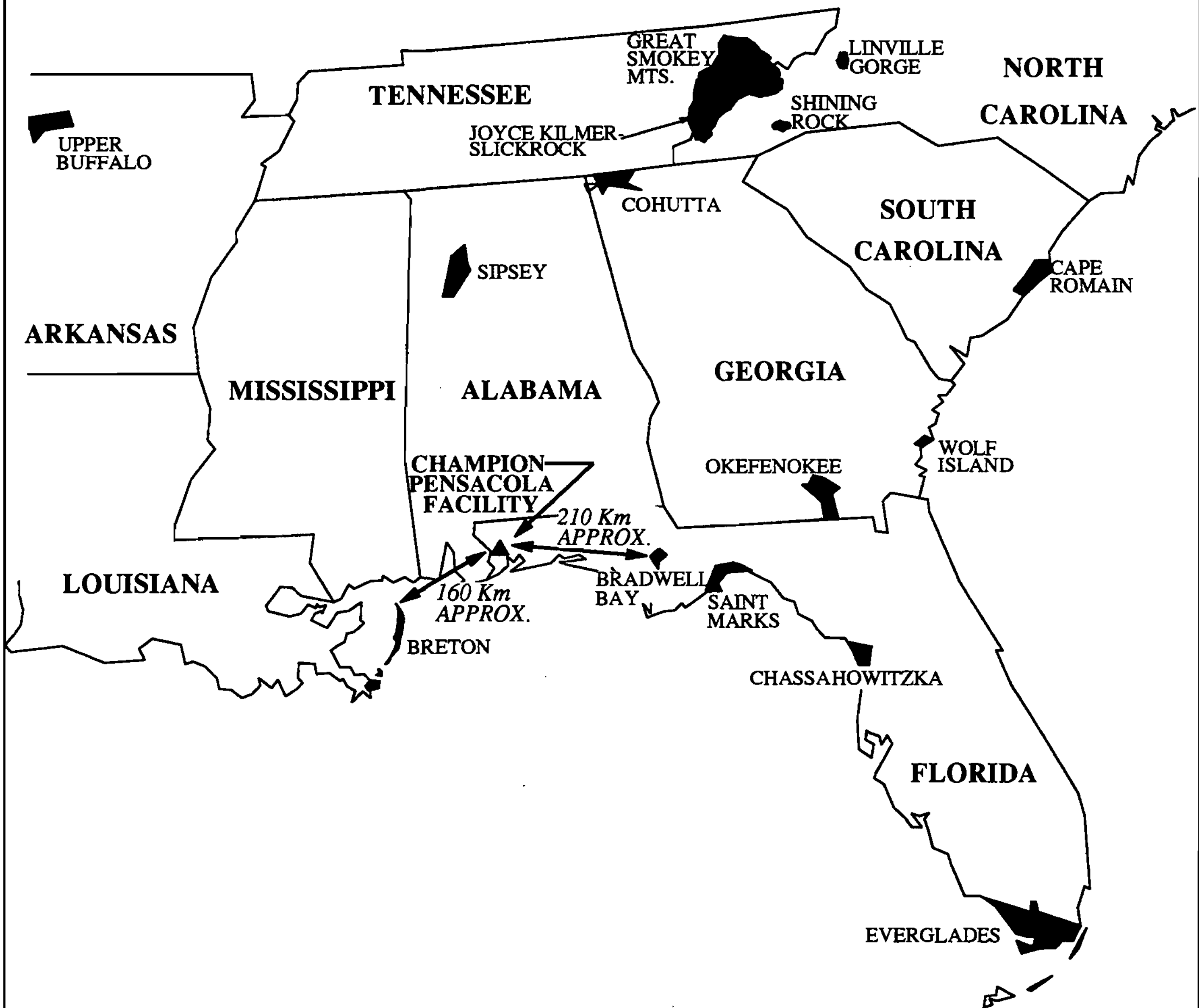
[2] Never to be exceeded.

[3] Not to be exceeded more than once per year.

TABLE 4-3

FEDERAL NATIONAL PRIMARY AND SECONDARY AMBIENT AIR QUALITY STANDARDS

POLLUTANT	TYPE OF STANDARD	AVERAGING TIME	COMPLIANCE FREQUENCY PARAMTER	CONCENTRATION	
				$\mu g/m^3$	ppm
Sulfur Oxides (as sulfur dioxide)	Primary	24 hour 1 hour	Annual Maximum Arithmetic Mean	367 80	0.14 0.03
	Secondary	3 hour	Annual Maximum	1,300	0.5
PM_{10}	Primary and	24 hour	Annual Maximum	150	---
	Secondary	24 hour	Annual Arithmetic Average	60	---
Carbon Monoxide	Primary and	1 hour	Annual Maximum	40,000	35
	Secondary	8 hour	Annual Maximum	10,000	9
Ozone	Primary and Secondary	1 hour	Annual Maximum	235	0.12
Nitrogen Dioxide	Primary and Secondary	1 year	Arithmetic Mean	100	0.05
Lead	Primary and Secondary	3 months	Arithmetic Mean	1.5	---



MAP IS NOT TO SCALE AND IS MEANT TO BE REPRESENTATIONAL OF DISTANCES ONLY

SOURCE:BASE MAP ADAPTED FROM U.S. EPA

CHAMPION INTERNATIONAL CORPORATION
PENSACOLA FACILITY
CANTONMENT, ESCAMBIA COUNTY
FLORIDA

FIGURE 4-1
FEDERAL MANDATORY CLASS I AREAS IN THE VICINITY OF THE FACILITY

CHAMP401-G:/DM-12/92

Additional PSD Impacts Analysis

Any source subject to PSD must also provide an analysis of any adverse impacts that might occur due to the project on:

- Visibility
- Soils
- Vegetation
- Growth

This analysis must be conducted for the area in which the proposed facility will have an impact.

4.2 FLORIDA DER REGULATIONS

4.2.1 Part II General Provisions

Section 17-2.210 requires that a permit be obtained prior to construction of an air emissions source unless specifically exempted. The proposed CHAMPION modifications are not exempted.

4.2.2 Part III Ambient Air Quality

The State of Florida Section at 17-2.300, has adopted ambient air quality standards that are equivalent to the NAAQS requirements for TSP, PM_{10}, Carbon Monoxide, Ozone, Lead, and NO_x. The 24-hour and annual standards for SO_2 are lower than those required by the NAAQS. A summary of the Florida Ambient Air Quality Standards for SO_2 are shown in Table 4-4.

TABLE 4-4

FLORIDA DER SULFUR DIOXIDE AMBIENT AIR QUALITY STANDARDS

POLLUTANT	TYPE OF STANDARD	AVERAGING TIME	COMPLIANCE FREQUENCY PARAMETER	CONCENTRATION	
				$\mu g/m^3$	ppm
Sulfur Oxides (as sulfur dioxide)	Primary	24-hour	Annual Maximum	260	0.10
		1-year	Arithmetic Mean	60	0.02
	Secondary	3-hour	Annual Maximum	1300	0.5

4.2.3 Part IV Area Designation and Attainment Dates

This part establishes areas in Florida that are not in attainment with ambient air quality standards presented in Part III of the state regulations. In addition, Class I, II, and III areas are established. The Pensacola Florida area is not considered to be in nonattainment of the ambient air standards and is designated as a Class II area.

4.2.4 Part V New and Modified Source Review Requirements

Section 17-2.510 details PSD regulations which are equivalent to the Federal program described in Section 4.1 of this report.

4.2.5 Part VI Emission Limiting and Performance Standards

Section 17-2.600 sets emissions limits for specific sources. The standards applicable to the CHAMPION mill modifications follow.

17-2.600 paragraph (4)(c)5 establishes a total reduced sulfur (TRS) limit of 20 ppm by volume on a dry basis at standard conditions corrected to 10% oxygen on a 12-hour average for the Lime Kiln. Further a TRS continuous emission monitor (CEM) will be required. Specific information for the TRS CEM is provided at 17-2.710 of the state regulations.

17-2.600 paragraph (5)(b)1-4 establishes limits for visible emissions, particulate matter, sulfur dioxide, and nitrogen oxides for new fossil fuel steam generators with more than 250 million Btu per hour heat input. The limits are in the form of specific references to the appropriate NSPS discussed in Section 4-1 of this report.

17-2.620 makes provisions that any storing, pumping handling, processing, loading, unloading or use in any process or installation of VOC shall have vapor emission control devices or systems deemed necessary by the agency. The methanol storage vessels will be equipped with a conservation vent and nitrogen blanketing.

17-2.630 establishes guidelines for Best Available Control Technology (BACT) analysis for sources required to report such an analysis (e.g., the proposed CHAMPION mill modifications subject to PSD). The state gives consideration to the following in its review of BACT determinations:

- Any US EPA BACT determination for the applicable source category.
- New Source Performance Standards.
- All scientific, engineering, and technical information available to DER.
- Emission limits on BACT determinations for applicable source categories of other states.
- The social and economic impact of the application of such technology.

17-2.660 makes provisions to adopt all Federal NSPS.

SECTION 5
DETERMINATION OF BEST AVAILABLE CONTROL TECHNOLOGY

5.1 BEST AVAILABLE CONTROL TECHNOLOGY

The Clean Air Act, as amended in 1977 and 1990, prescribes several technology-based limitations affecting new or modified sources of air pollutant emissions. One such limitation is that of the New Source Performance Standards (NSPS) set by the United States EPA and adopted by the Florida DER. NSPS require that specific categories of new or modified stationary sources meet uniform national standards for specific pollutants based on the degree of emission limitation achievable through utilization of the best demonstrated technology available at the time of their promulgation.

In addition to the technology-specific requirements, as presented in the NSPS, overall facility emissions of criteria pollutants, of significant quantity, from any pollutant source will be regulated under provisions found in the Prevention of Significant Deterioration (PSD) regulation. The PSD regulation requires that the Best Available Control Technology (BACT) be used to control triggering pollutant emissions. BACT is defined in 40 CFR 52.21 (b)(12) as:

> An emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under the Act which would be emitted from any proposed major stationary source or major modification which the Administrator, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant. In no event shall application of best available control technology result in emissions of any pollutant which would exceed the emissions

allowed by any applicable standard under 40 CFR Parts 60 and 61. If the Administrator determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard, or combination thereof, may be prescribed instead to satisfy the requirement for the application of BACT. Such standard shall, to the degree possible, set forth the emissions reduction achievable by implementation of such design, equipment, work practice, or operation, and shall provide for compliance by means which achieve equivalent results.

Basically, a BACT determination is a case-by-case analysis that addresses the technological question of whether a proposed control technique can be considered BACT for the particular application or whether a more stringent level of emission control should be used. This determination involves an assessment of the availability of applicable technologies capable of sufficiently reducing a specific pollutant emission, as well as weighing the economic, energy, and environmental impacts of using each technology.

The methodology used in this study to determine BACT follows the "top-down" approach previously recommended by the EPA. However, it should be noted that pursuant to a settlement of litigation between EPA and industry trade groups, the "top-down" BACT requirements are not legally enforceable until established by a formal rulemaking procedure (56 F.R. 34202 26, July 1991). The "top-down" BACT contains the following elements:

- Determination of the most stringent control alternatives potentially available.

- Discussion of the technical and economic feasibility of each alternative.

- Assessment of energy and environmental impacts, including toxic and hazardous pollutant impacts, of feasible alternatives.

- Selection of the most stringent control alternative that is technically and economically feasible and that provides the best overall control of all pollutants.

The selected BACT must be at least as stringent as NSPS and State Implementation Plan limits for the source.

This BACT review is presented for each pollutant emitted in amounts that exceed the PSD significance levels. BACT applies to each emissions unit at which a net emissions increase in the pollutant would occur as a result of a physical change or change in the method of operation in the unit. Therefore, the BACT analysis for the proposed CHAMPION Pensacola mill modifications considers emission controls for nitrogen oxides (NO_x), carbon monoxide (CO), and volatile organic compounds (VOC) from specific sources. A listing of the sources required to undergo a BACT analysis and the PSD affected pollutants is presented below:

- No. 6 Power Boiler
  - Nitrogen Dioxide
  - Carbon Monoxide
  - Volatile Organic Compounds

- Lime Kiln - Mud Dryer
  - Nitrogen Dioxide
  - Carbon Monoxide
  - Volatile Organic Compounds

5.2 BACT ANALYSIS FOR THE NO. 6 POWER BOILER

BACT analyses on the new No. 6 Power Boiler are required for the following PSD affected pollutants: NO_x, CO, and VOC. A review of the BACT/LAER clearinghouse for natural gas fired boilers was conducted and is included in Table 5-1. The clearinghouse entries include boilers with add-on controls as well as boilers utilizing good combustion practice to minimize NO_x, CO and VOC emissions. It is important to note that emissions of these pollutants are interrelated and that combustion modifications which are directed at minimizing one pollutant (e.g., NO_x) can, alternatively, result in an increase in other pollutant emissions (e.g., VOC and/or CO). Therefore, in evaluating BACT for a combustion source without add-on controls, it is important to recognize this relationship and to develop a control strategy that results in a reasonable overall emissions control plan. It is not reasonable to expect that the lowest emission rates reported for each pollutant by any source can be met by the proposed No. 6 Power Boiler.

Based upon the information supplied in the BACT/LAER Clearinghouse and subsequent investigation it appears that none of the listed boilers incorporate add-on controls for CO or VOC. Only one of the sixteen BACT/LAER Clearinghouse entries included in Table 5-1 had add-on controls for nitrogen dioxide emissions (Westinghouse Electric, California). All other sources utilized low NO_x burners and good combustion control to meet the BACT levels identified.

However, in order to follow the "Top Down" BACT analysis procedure, Champion has evaluated add-on controls to determine if such process could be considered BACT for the proposed No. 6 Power Boiler. The applicable technologies are discussed and the cost associated with their application to the proposed No. 6 boiler is included in the following subsections.

TABLE 5-1

BACT/LAER CLEARINGHOUSE
SUMMARY OF NATURAL GAS FIRED BOILERS

FACILITY	DATE PERMIT ISSUED	BOILER HEAT INPUT (MMBtu/hr)	NO_x	CO	VOC
			(LB/MMBtu)		
Hopewell Cogen, VA	07/01/88	197	0.1	0.09	0.005
Kamine Carthage, NY	07/01/88	113	0.10	0.16	0.1
Westinghouse Elect., CA	08/17/88	380	.015[c]	----[a]	----[a]
Kamine South Glens Falls, NY	09/01/88	113	0.10	0.16	0.10
Willamette Ind., Bennettsville, SC	09/29/88	305	0.12 (LAER)	0.04	----[a]
Boise Cascade, International Falls, MN	05/12/89	#1 373 #2 205	0.05[b] 0.05	0.09 0.09	0.009 0.009
Newsprint South, Genada Ms.	08/08/89 08/08/89	227.4 176.5	0.2 0.2	0.04 0.04	0.0014 0.0014
Dupont, MS	11/28/89	231	0.12	0.065	0.0078
Consolidated Paper, WI	01/26/90	566.5	0.05	0.12	0.0018
Clark County Industrial Council, AR	04/23/90	154.7	0.1	0.04	0.0014
Nekoosa WI Region V	05/09/90	150	0.05	----[a]	-----[a]
Gaylord Cont., Bolyolusa, LA	07/11/90	235	0.12	----[a]	----[a]
Willamette Campti, LA	02/04/91	335	0.12	0.04	0.003
Minn. Corn Processing	06/25/91	178.7	0.125 (24/hr avg.)	----[a]	----[a]
James River, MI	09/17/91	226.7	0.06	0.09	0.025
Champion, Pensacola	NA	533	0.06	0.1	0.01

(a) No data provided for this pollutant.
(b) Visibility impact on Class 1 area.
(c) Lo-NO_x, FGR, SCR

5.2.1 BACT for Nitrogen Oxides

Nitrogen oxides are products of all conventional combustion processes. Nitric oxide (NO) is the predominant form of NO_x emitted by such sources with lesser amounts of nitrogen dioxide (NO_2) and nitrous oxide (N_2O). The NO can further oxidize in the atmosphere to NO_2. The aforementioned nitrogen oxides are referred to collectively as NO_x. The generation of NO_x from fuel combustion is a result of two formation mechanisms. Fuel NO_x is formed by the reaction of chemically bound nitrogen in the fuel and oxygen in the combustion air at high temperature in the combustion zone. Thermal NO_x is produced by the reaction of the molecular nitrogen and oxygen contained in the combustion air at high temperature in the combustion zone. The main factors influencing the NO_x reaction are combustion temperature, residence time within the combustion zone, amount of fuel-bound nitrogen, and oxygen levels present in the combustion zone. Since the No. 6 boiler is fueled with natural gas which is inherently low in fuel-bound nitrogen, only thermal NO_x formation is important.

A number of control techniques have been used to reduce NO_x emissions from combustion processes. Selective catalytic reduction of NO_x by ammonia (NH_3) was identified as the most stringent method of NO_x control for certain combustion processes because of the relatively high removal efficiencies that can be achieved under proper operating conditions. Selective catalytic reduction is an add-on control most commonly used in the United States on gas-fired industrial and utility boilers and combustion turbines. Relatively high NO_x removal efficiencies approaching 90 percent can be obtained with selective catalytic reduction under ideal conditions. Flue gas denitrification (FGDN) is another add-on NO_x control technology that can also approach 90 percent removal efficiency by using a wet scrubbing method.

Selective noncatalytic reduction was the next most stringent control technology identified. It is also an add-on control technology that utilizes ammonia, urea, or other reducing compounds without a catalyst present. Selective noncatalytic reduction is normally capable of attaining NO_x removal efficiencies in the range of 35 to 55 percent.

Combustion modification techniques, such as low NO_x burners, combustion controls, and flue gas recirculation can also be used to reduce NO_x emissions from natural gas firing by limiting thermal NO_x formation. Such techniques limit excess air and reduce peak flame temperatures and are more aptly described as process modifications rather than add-on (post-combustion) controls. The aforementioned technologies are generally capable of reducing NO_x emissions by up to 50 percent compared to a combustion unit without such controls.

5.2.1.1 Selective Catalytic Reduction (SCR)

In the selective catalytic reduction (SCR) process, NO_x is reduced to N_2 and H_2O by ammonia (NH_3) within a temperature range of approximately 540-840°F in the presence of a catalyst, usually a base metal. The lower end of the operating temperature range is feasible when the acid gas impurity level is relatively low. NH_3 has been used as an acceptable reducing agent for NO_x in combustion gases because it selectively reacts with NO_x while other reducing agents such as H_2, CO, and CH_4 also readily react with O_2 in the gases. In a typical configuration, flue gas from the combustion source is passed through a reactor which contains the catalyst bed. Parallel flow catalyst beds may be used in which the combustion exhaust gas flows through channels rather than pores to minimize blinding of the catalyst by particulate matter. Ammonia in vapor phase is injected into the flue gas downstream of the other control equipment that may be required for the particular combustion process for removal of pollutants such as particulate matter and sulfur dioxide. The ammonia is normally injected at a 1:1 molar ratio based upon the NO_x concentration in the flue gas. Major capital equipment for SCR consists of the reactor and catalyst, ammonia storage tanks, and an ammonia injection system using either compressed air or steam as a carrier gas. Because of the toxic characteristics of NH_3, appropriate storage and handling safety features must be provided if anhydrous NH_3 is used. NO_x removal efficiencies approaching 90 percent have been reported when using SCR systems for boiler and gas turbine applications.

Table 5-2 lists the total capital investment for an SCR system based upon information received from Engelhard for treatment of a 13,000 scfm gas stream. Basic equipment cost was then scaled up using the six-tenths factor rule based upon the 105,190 scfm flue gas flow rate from the CHAMPION Power Boiler. Total purchased equipment cost, direct installation costs, and indirect costs were based upon factors given in the U.S. EPA OAQPS Control Cost Manual. Ammonia handling and safety design costs were scaled down from an estimate for a resource recovery facility based upon the facility uncontrolled NO_x emission rates (which are directly proportional to NH_3 consumption rates) and the six-tenths factor rule. Annualized cost information is presented in Table 5-3 based upon direct and indirect operating cost factors given in the OAQPS Control Cost Manual for other types of control equipment. These factors were deemed to be the most appropriate ones to use for SCR system. Operating costs include a cost for natural gas reheat of the boiler exhaust gas from the 350°F discharge temperature to the 540°F lower limit of the SCR operating temperature range. Catalyst replacement cost was based upon a three year life given in the vendor warranty. Cost effectiveness was calculated based upon a NO_x inlet emission rate of 140 tons per year (equivalent to a flue gas concentration of approximately 50 ppmdv) to the SCR system and a vendor estimated removal efficiency of 85.5 percent. A baseline emission rate of 140 tons per year was used (0.06 lb/MM Btu @ 533 MM Btu/hr) since the power boiler is a new unit that is equipped with low NO_x burners and flue gas recirculation.

The calculated cost effectiveness of more than $7,200 per ton of NO_x removed is higher than any guidelines provided by the U.S. EPA.

This cost effectiveness value can be compared with EPA's calculated cost effectiveness values associated with the NO_x limitations contained in the NSPS for Industrial Boilers, 40 CFR 60, Subpart Db. These standards promulgated in 1986, considered an incremental cost effectiveness

Table 5-2
Champion- Pensacola Power Boiler
Capital Costs for NOx Control
Engelhard SCR System

Vendor Quote:	1.15	*(A)*		$1,575,519 [a]
Purchased Equipment Cost:				
Control device and auxillary equipment	1.00	*(A)* [b]		$1,370,000 *(A)*
Instruments and controls	0.10	*(A)*	x 1.5 (for CEM, feedback)[c]	$205,500
Taxes	0.03	*(A)*		$41,100
Freight	0.05	*(A)*		$68,500
Total purchased equipment cost :				$1,685,100 *(B)*
Direct Installation Cost:				
Foundations and supports	0.08	*(B)*		$134,800
Erection and handling	0.14	*(B)*		$235,900
Electrical	0.04	*(B)*		$67,400
Piping	0.02	*(B)*		$33,700
Insulation	0.01	*(B)*		$16,900
Painting	0.01	*(B)*		$16,900
Total direct installation costs:				$505,600
Total direct costs:				$2,190,700
Indirect Costs:				
Engineering and supervision	0.10	*(B)*		$168,500
Construction and field expenses	0.05	*(B)*		$84,300
Construction fee	0.10	*(B)*		$168,500
Startup	0.02	*(B)*		$33,700
Performance test	0.01	*(B)*		$16,900
Contingencies	0.03	*(B)*		$50,600
Total indirect costs:				$522,500
Ammonia Handling & Safety Design Cost [d] =	$300,000 x (0.5 x 140.2 tons/year of NOx / 455.2 tons/year of NOx)^0.6 =			$97,600
Total Installed Capital Costs :				$2,810,800

[a] *Based on a July, 1990 vendor cost estimate ($450,000 for 13,000 scfm) that includes auxiliary equipment, instruments and controls. Six-tenth factor scaleup was used based on 13,000 scfm quote basis vs. 105,190 scfm power boiler flue gas flow rate. The costs are also scaled to present day figures by utilizing the CE cost index. Sept 1992 CE index= 357.1, 1990 CE index= 357.6.*

[b] *Factors in this column taken from U.S. EPA OAQPS Control Cost Manual, EPA 450/3-90-006A, January 1990 for thermal and catalytic incinerators, and carbon adsorbers.*

[c] *Multiplier from Capital and Operating Costs of Selected Air Pollution Control Systems, EPA 450/5-80-002, December 1978 (GARD Manual).*

[d] *Scaled down from cost estimate for the Pennsauken Resource Recovery Project BACT Assessment for Control of NOx Emissions Top-Down Technology Consideration. Ogden Martin Systems of Pennsauken, Inc., Dec.15, 1988, adjusted to current $ and reflecting half (0.5) of the NH3 consumption of Exxon DeNOx.*

Table 5-3
Champion- Pensacola Power Boiler
Annualized Costs for NOx Control
Engelhard SCR System

Cost item	Computation method		Cost, dollars
Direct operating costs			
Operating Labor			
Operator	\$15.97 /hr x 3 shifts/day x 0.5 hrs/shift x 365 days/yr		\$8,744
Supervision	15% of operator labor cost		\$1,312
Maintenance (general)			
Labor	\$15.97 /hr x 3 shifts/day x 0.5 hrs/shift x 365 days/yr		\$8,744
Materials	100% of maintenance labor		\$8,744
Utilities			
Electricity	\$0.0420 /kWh x 287,497 kWh/yr		\$12,075
Gas	\$3.070 /M ft.^3 x 52,735 M ft^3/yr		\$161,897
Ammonia	\$350.000 /ton x 51.8 tons/yr		\$18,129
Total Direct Operating Costs (A)	Subtotal of above		\$219,600 *(A)*
Indirect operating (fixed) costs			
Overhead	60% of operating and maintenance labor & materials	\$27,542	\$16,525
Property Tax	1% of total installed capital costs,	\$2,810,800	\$28,108
Insurance	1% of total installed capital costs,	\$2,810,800	\$28,108
Administration	2% of total installed capital costs,	\$2,810,800	\$56,216
Capital Recovery	SCR Unit CRF, 0.1627 x (total installed capital costs - catalyst costs) (catalyst costs = \$259,440 x 1.08 (including taxes & freight)) (at 10% interest & 10 years)		\$411,844
	Catalyst CRF, 0.4021 x (catalyst costs = \$259440) (at 10% interest & 3 years)		\$104,325
Total Fixed Costs (B)	Subtotal of above		\$645,100 *(B)*
Total Annualized Costs (C)	(A+B)		\$864,700 *(C)*

Cost Effectiveness			
	NOx Emissions (TPY)	140.16	
	NOx Removal, %	85.5	
	Cost, \$/ton NOx Removed		\$7,200

of $4,000/ton unreasonable. Also considered unreasonable was an incremental cost effectiveness of $2,500/ton when switching from residual oil to natural gas. The NSPS for small industrial boilers, subpart Dc,. proposed in 1989, considered a cost of $6,000/ton unreasonable for national NO_x standards.

Hence, based upon the analysis given above, SCR is discounted as BACT for NO_x control on the power boiler.

5.2.1.2 Flue Gas Denitrification (FGDN)

Flue gas denitrification (FGDN) systems use wet scrubbing technology to react absorbed SO_2 with NO_x to form molecular nitrogen and can achieve NO_x removal efficiencies approaching 90 percent. Consequently, FGDN systems are designed for combustion sources that burn relatively high sulfur fuel. However, since the power boiler under consideration is fired with essentially sulfur-free natural gas fuel, there is no source of SO_2 for absorption into the scrubbing liquid. Thus, FGDN is dismissed as BACT for NO_x control on the power boiler because of technical infeasibility.

5.2.1.3 Selective Noncatalytic Reduction (SNCR)

Selective non-catalytic reduction (SNCR) involves ammonia or urea injection, but not in the presence of a catalyst. Two major SNCR systems are commercially available: the Exxon Thermal DeNO$_x$ ammonia injection system and the Nalco Fuel Tech NO$_x$OUT urea injection system. A third system, the Noell (formerly the Emcotek) Two-Stage DeNO$_x$ urea/methanol injection system, has undergone extensive pilot testing and a full scale demonstration on one MSW incinerator line in Switzerland.

5.2.1.4 Exxon Thermal $DeNO_x$

Exxon Thermal $DeNO_x$ ammonia injection, like SCR, uses the NO_x/ammonia reaction to convert NO_x to molecular nitrogen. However, without catalyst use or supplemental hydrogen injection, NO_x reduction reaction temperatures must be tightly controlled between 1,600 and 2,200°F (between 1600 and 1800°F, for higher efficiency). Below 1,600°F and without hydrogen also being injected, ammonia will not fully react, resulting in what is called ammonia breakthrough or slip. If the temperature rises above 1,800°F, a competing reaction begins to predominate:

$$NH_3 + \frac{5}{4} O_2 \longrightarrow NO + \frac{3}{2} H_2O$$

As indicated above, this reaction increases NO emissions. Therefore, the region within the boiler where ammonia is injected must be carefully selected to ensure the optimum reduction reaction temperature will be maintained.

Thermal $DeNO_x$ is an available technology that has been used on gas-fired boilers and gas turbines and commonly achieves NO_x removals up to 50 to 60% within the narrow temperature range noted previously. However, since ammonia is injected at a 2:1 molar ratio based upon the flue gas NO_x concentration, there is generally some "slip" of ammonia which does not react completely and that can potentially cause odors. At the power boiler flue gas flow rate of 105,190 scfm and a "slip" concentration of 20 ppmv, ammonia emissions could amount to 24 tons per year. The potential ammonia "slip" concentration of 20 ppmv is almost one-half the uncontrolled NO_x concentration of 50 ppmv.

Tables 5-4 and 5-5 summarize capital costs and annualized costs respectively, for an Exxon Thermal $DeNO_x$ SNCR system installed on the CHAMPION boiler. It was assumed that the ammonia injection would occur within the boiler configuration at a point where the combustion

Table 5-4
Capital Costs for Exxon Thermal DeNOx
Champion- Pensacola

Volumetric Flow Rate, acfm				161,000
			Included in Exxon cost	
Purchased Equipment Cost:				
Control device and auxillary equipment (tank, vaporizer, etc)		(provided by Exxon)	1.0	$183,200 *(A)*[a]
Instruments and controls	0.10 *(A)*	x 1.5 (CEM, feedback)	0.1	$27,500
Taxes	0.03 *(A)*		---	$5,500
Freight	0.08 *(A)*		---	$14,700
Total purchased equipment cost :			1.1 *(A)*	$230,900 *(B)*
Direct Installation Cost:				
Foundations and supports	0.06 *(B)*	(venturi scrubber, incinerator)	0.06 *(B)*	$13,900
Erection and handling	0.40 *(B)*	(absorber)	0.40 *(B)*	$92,400
Electrical	0.04 *(B)*	(incinerator, adsorber)	0.04 *(B)*	$9,200
Piping	0.03 *(B)*	(adsorber, incinerator)	0.03 *(B)*	$6,900
Insulation	0.01 *(B)*	(absorber/adsorber)	0.01 *(B)*	$2,300
Painting	0.01 *(B)*	(absorber/adsorber)	0.01 *(B)*	$2,300
Total direct installation costs:			0.55 *(B)*	$127,000
Total direct costs:				$357,900
Indirect Costs:	$324,300	(per Exxon quote)		$324,300 [b]
Engineering and supervision	0.10 (B)	(all except ESP)	Exxon Estimate	-----
Exxon engineering			Exxon Estimate	-----
Construction and field expenses	0.10 *(B)*	(absorber, venturi scrubber)	Exxon Estimate	-----
Construction fee	0.10 *(B)*		Exxon Estimate	-----
Startup	0.01 *(B)*	(absorber, venturi scrubber)		$2,300
Performance test	0.01 *(B)*			$2,300
Contingencies	0.03 *(B)*	x 5 (efficiency guarantee)		-----
Total indirect costs:				$328,900
Total installed capital costs :				$686,800
Exxon Licensing Fee:		(per Exxon quote)		$80,000

[a] *Installed equipment cost (euipment + field labor)*[b]*: ($192,200 + $120,100*) = 0.55(B) + 1.10(A) = 0.55(1.100(A)) + 1.10(A) = $312,300
solving for A : 312300 /(1.10 x 0.55 + 1.10) = $183,200

[b] *These values are scaled up using the six-tenths factor rule..*

Table 5-5
Annualized Costs for Exxon Thermal DeNOx
Champion- Pensacola

Cost item	Computation method	Cost, dollars
<u>Direct operating costs</u>		
Operating Labor		
Operator	$15.97 /hr x 3 hrs/shift x 3 shifts/day x 365 days/yr	$52,460
Supervision	15% of operator labor cost	$7,870
Operating materials	As required, (0.0% of total installed capital costs)	$0
Maintenance (general)		
Labor	$15.97 /hr x 1 hr/shift x 3 shifts/day x 365 days/yr	$17,490
Materials	100% of maintenance labor	$17,490
Replacement parts		
Materials	As required, (2.0% of total installed capital costs)	$13,740
Labor	100% of replacement materials	$13,740
Utilities		
Electricity	$0.042 /kWh x 10,193 kWh/yr	$430
Steam	$4.130 /M lb x 11,213 M lb/yr	$46,310
Ammonia	$350.000 /ton x 33.1 ton/yr	$11,600
Total Direct Operating Costs (A)	Subtotal of above	$181,130 (A)
<u>Indirect operating (fixed) costs</u>		
Overhead	60% of operating and maintenance labor and materials, $95,310	$57,190
Property Tax	1% of total installed capital costs, $686,800	$6,870
Insurance	1% of total installed capital costs, $686,800	$6,870
Administration	2% of total installed capital costs, $686,800	$13,740
Capital Recovery	CRF, 0.1627 x (total installed capital costs + licensing fee) (at 10% interest and 10 years)	$124,790
Total Fixed Costs (B)	Subtotal of above	$209,460 (B)
Total Annualized Costs (C)	(A+B)	$390,590 (C)

Tons Of NOx Emitted: *140.2*

Cost Effectiveness At Emission Reduction, $/Ton Of NOx Reduced

50% = *$5,570*

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gases are maintained in a temperature range of 1,600 to 1,800°F. Table 5-4 details the total capital investment for an Exxon Thermal $DeNO_x$ system based upon information given in an Exxon study that evaluates the technology. Basic equipment cost was derived from direct cost information provided by Exxon for treatment of a 77,800 scfm flue gas stream. The Exxon direct cost information was scaled up using the six-tenths factor rule based upon the 105,190 scfm flue gas flow rate from the CHAMPION Power Boiler. Then total purchased equipment cost, direct installation costs, and indirect costs were based upon factors given in the OAQPS Control Cost Manual for other types of control equipment as indicated in Table 5-4. As with the SCR capital cost analysis, anhydrous ammonia handling safety design costs were scaled down from an estimate for a resource recovery facility based upon the facility uncontrolled NO_x emission rates and the six-tenths factor rule.

Annualized cost information is presented in Table 5-5 based upon direct and indirect operating cost factors as suggested in the OAQPS Control Cost Manual. Compressed air was assumed to be the NH_3 carrier gas although steam could also be used. Premised upon a baseline NO_x emission rate of 140 tons per year, cost effectiveness was based on an expected NO_x removal efficiency of 50%. The cost effectiveness for 50% removal efficiency is $5,570 per ton of NO_x removed.

Having accounted for economic and energy considerations in the cost analysis above, it can be seen that Exxon Thermal $DeNO_x$ is not cost effective based upon the same reasoning given in the previous discussion for SCR. Also noteworthy is the fact that this economic analysis represents a "best case" condition. The economic analysis was preformed using the six-tenths factor scaling rule due to a lack of final design data for the proposed power boiler. The vendor relayed a serious concern regarding the feasibility of this application on the proposed boiler. This concern is based upon the fact that the inlet loading of 140 tons per year or approximately 50 ppmvd is a very low value and with this low load condition it is extremely difficult to achieve proper mixing. This leads to limited NO_x reduction without increased ammonia injection rates and the associated higher reagent costs. Furthermore, the comparatively low baseline NO_x

emission rate of 140 tons per year would yield only a 70 ton per year decrease in NO_x emissions at a removal efficiency of 50 percent while potentially creating 24 tons per year of NH_3 emissions. Therefore, Exxon Thermal $DeNO_x$ is not viable as BACT for the CHAMPION Power Boiler.

5.2.1.5 Nalco Fuel Tech NO_xOut

The Electric Power Research Institute (EPRI) discovered and patented the chemical process of using urea ($CO(NH_2)_2$) to convert nitrogen oxides to nitrogen and water. This process of urea injection has been further developed and is being marketed by Nalco Fuel Tech, Inc. as the NO_xOUT process. In routine applications, liquid urea and proprietary enhancers (oxygenated hydrocarbons) are mixed with water and pumped into the flue gas as an aqueous solution. Atomization at injection nozzles is assisted by auxiliary compressed air or steam, similarly to the Exxon Thermal $DeNO_x$ process. The NO_xOUT process is based on the following chemical reaction:

$$CO(NH_2)_2 + 2\,NO + \frac{1}{2}O_2 \longrightarrow 2N_2 + CO_2 + 2H_2O$$

In the above reaction, one mole of urea is required to react with two moles of NO (i.e., a stoichiometric ratio of 0.5:1). In order to achieve a desired level of removal, greater than stoichiometric quantities of urea must be injected. Manufacturer guidance indicates that a molar ratio of 0.75 - 1 :1 (urea to NO_x) is normally required.

The reaction is temperature dependent. Urea injected alone has a high NO_x reduction activity between 1700 and 1900°F. With process enhancers and adjusted concentrations, the NO_xOUT process is effective from 1500° to 2100°F. Enhancers alone are used between 1000 and

1500°F. A 50% urea solution is typical but solutions as low as 10% may be used. In order to optimize NO_x reduction, different urea and chemical enhancer solutions may be injected at different temperature levels.

The urea (in storage and process piping) must be kept above 70°F to avoid crystallization. Recirculation pumps are also used to prevent crystallization.

NO_xOUT technology is applicable to certain types of stationary combustion equipment. As with Thermal DeNO_x, NO_x removal efficiencies will vary depending on the combustion equipment and system configuration. Performance is based on placement of injectors and sufficient mixing of flue gases within the specified temperature range. The NO_xOUT process is generally deemed impractical for application to NO_x sources with large load variations and also to gas turbines.

The capital equipment required for the NO_xOUT process is similar to that required for Exxon Thermal DeNO_x and includes the following:

- Liquid urea storage tank.
- Feed system (pumps, controllers).
- Process monitoring equipment.
- Atomization assist system (steam or air).
- Process piping (pipes, nozzles, mixer).

Tables 5-6 and 5-7 summarize the capital costs and annualized costs respectively, for the NO_xOUT system. It was also assumed for the system that the urea injection would occur within the boiler configuration at a point where the combustion gases are maintained in a temperature range of 1700 - 1900°F. Equipment cost was derived from direct cost information provided by Nalco Fuel Tech for treatment of the 105,190 scfm flue gas flow from the CHAMPION Power Boiler. The factors in the OAQPS Control Cost Manual were once again the basis for total purchased equipment cost, direct installation costs, and indirect costs.

Table 5-6
Capital Costs for NALCO/Fuel Tech NOxOUT
Champion- Pensacola

					Included in Fuel Tech cost	
Volumetric Flow Rate, acfm						161,000
Installed Costs: From NALCO/Fuel Tech -	Equipment & Services & Licensing Fee=			$470,000		
	Installation =			$75,000		
				$545,000		$545,000
Purchased Equipment Cost:						
Control device and auxillary equipment (tank, vaporizer, etc)					1.0	$267,700 *(A)* [(a)]
Instruments and controls	0.10 *(A)*	x	1.5 (CEM, feedback)		0.1	$40,155
Taxes	0.03 *(A)*				---	$8,000
Freight	0.08 *(A)*				---	$21,400
Total purchased equipment cost :					1.10 *(A)*	$337,255 *(B)*
Direct Installation Cost:						
Foundations and supports	0.06 *(B)*	(venturi scrubber, incinerator)			---	$20,200
Erection and handling	0.40 *(B)*	(absorber)			0.40 *(B)*	$134,900
Electrical	0.04 *(B)*	(incinerator, adsorber)			0.04 *(B)*	$13,500
Piping	0.03 *(B)*	(adsorber, incinerator)			0.03 *(B)*	$10,100
Insulation	0.01 *(B)*	(absorber/adsorber)			0.01 *(B)*	$3,400
Painting	0.01 *(B)*	(absorber/adsorber)			0.01 *(B)*	$3,400
Total direct installation costs:					0.49 *(B)*	$185,500
Total direct costs:					1.49 *(B)*	$522,755
Indirect Costs:						
Engineering and supervision	0.10 *(B)*	(all except ESP)			---	$33,700
Fuel Tech process design		(363800 -	267700)		---	$96,100
Construction and field expenses	0.10 *(B)*	(absorber, venturi scrubber)			---	$33,700
Construction fee	0.10 *(B)*				---	$33,700
Startup		*(per NALCO/Fuel Tech quote)* [(b)]			---	$31,200
Performance test	0.01 *(B)*				---	$3,400
Contingencies	0.03 *(B)*	x	5 (efficiency guarantee)		---	$50,600
Total indirect costs:					0.00	$282,400
Total installed capital costs :					1.49 (B)	$805,155
NALCO/Fuel Tech Licensing Fee (per NALCO/Fuel Tech estimate) [(c)]:						*$0*

[(a)] *Total installed cost minus the start-up and licensing fee*[(c)]*: ($363,800 + $75,000)* = 1.49(B) = 1.49(1.100(A)) = *$438,800*
solving for A : 438800 /(1.100 x 1.49) = $267,700

[(b)] *These values are scaled up using the six-tenths factor rule..*
[(c)] *A licensing fee of $75,000 was assumed from a previous cost estimate.*

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Table 5-7
Annualized Costs for NALCO/Fuel Tech NOxOUT System
Champion- Pensacola

Cost item	Computation method	Cost, dollars
Direct operating costs		
Operating Labor		
Operator	$15.97 /hr x 3 workers x 3 working hrs/day x 365 days/yr	$52,460
Supervision	15% of operator labor cost	$7,870
Operating materials	As required, (0.0% of total installed capital costs)	$0
Maintenance (general)		
Labor	$15.97 /hr x 1 workers x 3 working hrs/day x 365 days/yr	$17,490
Materials	100% of maintenance labor	$17,490
Replacement parts		
Materials	As required, (2.0% of total installed capital costs)	$16,100
Labor	100% of replacement materials	$16,100
Utilities		
Electricity (including comp. air)	0.042 /kWh x 102,674 kWh/yr	$4,310
Urea (plus additive A)	0.800 /gal x 79,144 gal/yr	$63,320
Total Direct Operating Costs (A)	Subtotal of above	$195,140 (A)
Indirect operating (fixed) costs		
Overhead	80% of operating and maintenance labor and materials, $95,310	$76,250
Property Tax	1% of total installed capital costs, $805,160	$8,050
Insurance	1% of total installed capital costs, $805,160	$8,050
Administration	2% of total installed capital costs, $805,160	$16,100
Capital Recovery	CRF, 0.1627 x (total installed capital costs + licensing fee) (at 10% interest and 10 years)	$131,035
Total Fixed Costs (B)	Subtotal of above	$239,490 (B)
Total Annualized Costs (C)	(A+B)	$434,630 (C)

Tons Of Nox Emitted: *140.2*
Cost Effectiveness At Emission Reduction, $/Ton Of NOx Reduced

50% = *$6,200*

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Annualized cost information, presented in Table 5-7, is based upon direct and indirect operating cost factors as suggested in the OAQPS Control Cost Manual. The NO_x emission rate of 140 tpy and an expected NO_x removal efficiency of 50% resulted in a cost effectiveness of $6,200 per calculated ton of NO_x removed, slightly higher than that calculated for Exxon Thermal $DeNO_x$.

The economic analysis demonstrates the Nalco Fuel Tech NO_xOUT System is not cost effective based upon similar prior reasoning. In addition NH_3 slip also occurs due to the decomposition of urea. Hence, NO_xOUT is ruled out as BACT for the CHAMPION Power Boiler.

5.2.1.6 Noell Two-Stage $DeNO_x$

Noell has developed and patented the Two-Stage $DeNO_x$ process, which utilizes both urea and methanol injection. Noell's initial pilot studies on a 1 MW crude oil boiler used methanol alone to remove NO_x. The final patent involves injection of both urea and methanol through proprietary nozzle designs. In this design the primary function of the methanol is to reduce ammonia slip and air preheater deposits. Emcotek is currently marketing this technology.

The Two-Stage $DeNO_x$ system utilizes two zones of chemical injection. Bulk granular urea is mixed with water prior to injection in the first zone. Liquid methanol is injected in the second zone. The flowrates of the chemicals to the various injection zones are controlled by a sensor for flue gas temperature (or other surrogate measure determined during pilot/start-up testing).

At the present stage of development, the Noell Two-stage $DeNO_x$ system is not considered to be available control technology or technology transfer that could be installed on the power boiler. Furthermore, if it were available and technically feasible at this juncture, it would likely be even less cost effective than Thermal $DeNO_x$ or NO_xOUT. Hence, Noell Two-Stage $DeNO_x$ is not BACT.

5.2.1.7 Selected NO_x BACT - Combustion Technology

As previously discussed, thermal NO_x formation is related to combustion conditions such as excess air, operating temperature, and residence time. The previously discussed NO_x add-on control technologies remove NO_x after it has been formed. Combustion technology utilizes integral methods of minimizing NO_x formation during the combustion process. Combustion design strategies that limit NO_x emissions include reducing the available oxygen at critical stages in the combustion zone, lowering the peak flame temperature, and reducing the residence time during which nitrogen is oxidized. Burner venders and boiler manufacturers have made substantial improvements in recent years at minimizing NO_x formation through new burner technology and flue gas recirculation methods. In addition, combustion parameters can now be carefully controlled by automatic systems to maintain combustion within the operating range that will minimize NO_x production.

The CHAMPION Power Boiler incorporates combustion design and control to minimize NO_x emissions. The Coen burners together with the integral flue gas recirculation to the combustion zone results in efficient combustion at excess air levels equivalent to 2.0 - 3.0 percent oxygen levels in the flue gas. The combined design and control of the combustion system results in a NO_x emission rate guaranteed by the vendor not to exceed 0.06 lb/MM Btu.

CHAMPION believes that boiler design and combustion control to meet a NO_x emission rate of 0.06 lb/MMBtu represents BACT for NO_x control for the following reasons:

- Low NO_x emissions can be achieved without creating additional adverse impacts such as emissions of ammonia which occur with the previously discussed add-on controls such as SCR and SNCR.

- The projected NO_x emissions represent the low range of recently permitted levels for many other combustion sources. In fact, the proposed NO_x emission rate of 0.06 lb/MMBtu is in line with other natural gas-fired boilers listed in the BACT/LAER Clearinghouse Database.

- There are no available add-on controls which are cost effective.

5.2.2 <u>BACT for Carbon Monoxide (CO) and Volatile Organic Compounds (VOC)</u>

As previously noted in Section 5.2, when conducting a BACT analysis for CO and VOC it is imperative to consider the interrelationship of the pollutants most affected by combustion conditions: NO_x, CO, and VOC. Table 5-1 is a summary table of NO_x, CO, and VOC emission limits from the BACT/LAER Clearinghouse for large gas-fired boilers. The table includes CHAMPION's proposed limits for comparison with the other determinations made to date. Based upon the Clearinghouse data and subsequent investigation it does not appear that any of the listed units incorporate add-on control technology for CO or VOC.

A review of the BACT/LAER summary data supports the concern over the interrelationship of the combustion related contaminants. For all of the units identified in the Clearinghouse only one facility, Boise Cascade in International Falls, Minnesota, has identified lower emission rates for all three pollutants than those proposed for CHAMPION's No. 6 Power Boiler. However the proposed Boise Cascade limits are consistent with and only slightly lower than the limits proposed by CHAMPION for each pollutant.

For all of the other facilities in the Clearinghouse with identified NO_x, CO and VOC limits, those with both lower CO and VOC values had considerably higher NO_x limits. CHAMPION believes, therefore based upon review of Clearinghouse listed sources, that the proposed limits for both CO and VOC in conjunction with good combustion practices and process control to achieve these levels and along with the proposed NO_x level represents BACT for the No.6 Power Boiler.

5.3 BACT FOR THE LIME KILN-MUD DRYER

BACT analyses for the Lime Kiln-Mud Dryer were conducted for the following PSD significant pollutants: NO_x, CO, and VOC.

5.3.1 BACT for Nitrogen Oxides

CHAMPION proceeded with the BACT analysis by determining the applicability of NO_x control systems to Lime Kiln-Mud Dryer operations. Vendors of both SCR and SNCR control systems were contacted.

5.3.1.1 Selective Catalytic Reduction (SCR)

The SCR technology has been previously detailed in Subsection 5.2.1.1. The applicability of SCR to the Lime Kiln-Mud Dryer operations was examined. Due to the nature of the kiln process, catalyst poisoning would be a concern with a Lime Kiln. The catalysts are sensitive to particulate matter and, thus, must follow the particulate controls. As a result, the flue gas stream discharged from a particulate control device would no longer be at the optimal reaction temperature. Therefore, substantial energy costs would be incurred for flue gas reheat prior to NO_x removal. In addition, the catalysts generally suffer degradation in activity from exposure to acid gases. Since the Lime Kiln-Mud Dryer incinerates TRS compounds to form SO_2, this would be another concern. Discussions with catalyst system vendors indicate that, due to the nature of the process and resulting exhaust gas composition, they would not recommend the application of SCR to the Lime Kiln-Mud Dryer. Furthermore, it should be noted that SCR has never been installed on any lime kiln. Therefore, SCR is not considered to be an available NO_x control technology for lime kilns and thus not an available NO_x control technology for CHAMPION's proposed Lime Kiln-Mud Dryer which is a technically more complex process than a typical kraft mill lime kiln.

5.3.1.2 Selective Noncatalytic Reduction (SNCR)

Ammonia Injection

The technology associated with SNCR, usually exemplified by the Exxon Thermal $DeNO_x$ process, involves ammonia injection and has been presented in Subsection 5.2.1.4. Thermal $DeNO_x$ is an available technology that has been used on natural gas, oil-fired boilers and gas turbines. Thermal $DeNO_x$ has never been applied to a lime kiln. The requisite temperatures for the reaction to occur would be located within the kiln. The effect of injection of ammonia on CHAMPION's critical Lime Kiln-Mud Dryer production process has not been investigated. It is likely that formation of ammonium sulfate or bisulfate salts is likely and would result in quality control problems due to contamination of the lime. Because the effect of this control technique on the Lime Kiln-Mud Dryer process is unknown and the ability to reduce NO_x emissions to a greater degree than existing lime kiln NO_x control techniques is unproven, Thermal $DeNO_x$ is not considered to be an available control technology for CHAMPION's Lime Kiln-Mud Dryer.

Urea Injection

NO_xOUT technology, discussed previously in Subsection 5.2.1.5, is applicable to certain types of stationary combustion equipment. Similarly to Thermal $DeNO_x$, NO_x removal efficiencies will vary depending on the combustion equipment and system configuration. Performance is based on placement of injectors and sufficient mixing of flue gases within the specified temperature range. The NO_xOUT process is generally deemed impractical for application to NO_x sources with large load variations.

As with Thermal $DeNO_x$, the NO_xOUT process has never been applied to a kraft mill lime kiln. The effect on the chemical recovery process occurring within the kiln is unknown and the NO_x removal efficiency is unproven. Therefore, for reasons similar to those presented for Thermal $DeNO_x$, the NO_xOUT process can not be considered BACT for CHAMPION's Lime Kiln-Mud Dryer.

5.3.1.3 Combustion Technology

CHAMPION examined the BACT/LAER Clearinghouse for existing lime kiln determinations. A summary of this information is presented in Table 5-8. Also included in Table 5-8 are CHAMPION'S Proposed Lime Kiln-Mud Dryer limits. CHAMPION proposes a NO_x limit of 49.3 lb/hr based upon a NO_x concentration of 200 ppm at 10% O_2. Based upon the lime production capacity of the unit (up to 500 TPD of lime), CHAMPION believes the proposed NO_x emission rate of 49.3 lb/hr is BACT.

5.3.2 BACT for Carbon Monoxide (CO) and Volatile Organic Compounds (VOC)

CHAMPION also performed a BACT/LAER Clearinghouse search for kraft mill lime kiln CO and VOC entries. A summary of this search has been presented in Table 5-8. Comparison of the proposed CHAMPION Lime Kiln-Mud Dryer with the Clearinghouse entries shows CHAMPION's limits to be consistent with previously permitted PSD sources. The Clearinghouse entries present a wide range of limits for both CO and VOC. This can be attributed to different operating conditions and fuel sources at each facility. CHAMPION has examined their potential fuel usage scenarios. CHAMPION's potential Lime Kiln-Mud Dryer combustibles include NCG's, lime mud, and No. 6 fuel oil or natural gas. CHAMPION

TABLE 5-8
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PENSACOLA, FLA

BACT/LAER CLEARINGHOUSE
SUMMARY OF LIME KILNS

FACILITY	LOCATION	THROUGHPUT	NO_x	CO	VOC
CHAMPION	COURTLAND, AL	300 TPD CaO	175 ppmv @ 10% O_2, 29 lb/hr	200 ppmv @ 10% O_2, 20.8 lb/hr	31 ppmv @ 10% O_2, 9 lb/hr
ALABAMA RIVER PULP CO	PURDUE HILL AL	465 TPD CaO	100 ppmv @ 10% O_2, 30.1 lb/hr	52 ppmv @ 10% O_2, 9.5 lb/hr	78 ppmv @ 10% O_2
JAMES RIVER	PENNINGTON AL	500 TPD CaO	175 ppmv @ 10% O_2, 56.8 lb/hr	---	---
NEKOOSA PAPERS, INC	ASHDOWN, AR	440 TPD LIME	66.5 lb/hr	55 lb/hr	
WILLAMETTE INDUSTRIES INC	CAMPII LA	430 TPD CaO, 1740 TADP	51.5 lb/hr, 224 TPY	7 lb/hr, 30.6 TPY	17.2 lb/hr, 75.3 TPY
BOISE CASCADE	RUMFORD, ME	327 TPD PRODUCT	52 lb/hr	39 lb/hr	2 lb/hr
BOISE CASCADE	INTERNATIONAL FALLS, MN	500 TPD	42.5 lb/hr, 220 ppm	23.7 lb/hr, 240 ppm	11.4 lb/hr, 185 ppm
WEYERHAEUSER CO	COLUMBUS, MS	21 TPH	300 ppmv @ 3.6% O_2, 60.9 lb/hr	11 lb/metric TADP, 550 lb/hr	1 lb/T CaO, 21 lb/hr
WILLAMETTE INDUSTRIES	BENNETTSVILLE,SC	220 TPD CaO	35 lb/hr	3.5 lb/hr	8.8 lb/hr
UNION CAMP	SOUTH CAROLINA	265 TPD CaO(5)	0.85 lb/MMBtu	0.1 lb/ T ADP	1.6 LB/T CaO
JAMES RIVER	CAMAS, WA(6)	---	234 TPY	1798 TPY	45 TPY
CHAMPION	**PENSACOLA, FL**	**500 TPD CaO**	**200 ppmv @ 10% O_2, 49.3 lb/hr**	**45 ppmv @ 10% O_2, 6.75 lb/hr**	**104 ppm, 24.5 lb/hr**

(1) Low sulfur fuel.
(2) Caustic scrubber with 97% efficiency.
(3) Based on #6 oil with 2.5% sulfur.
(4) Process controls
(5) Chemical reaction with lime.
(6) Source was rebuilt and not PSD. Venturi scrubber is applied to the source.

considered these varying scenarios in the development of the proposed limits. It is important to note that no sources in the BACT/LAER Clearinghouse included add-on controls for CO or VOC emissions from Lime Kilns or Lime Kiln-Mud dryers.

CHAMPION examined the possibilities of applying add-on catalytic oxidation control technology to the Lime Kiln-Mud Dryer as the most stringent technique to control both CO and VOC. Once again, due to the nature of the process, catalyst poisoning would be a potential problem. The catalysts are sensitive to particulate matter and, thus, must follow the particulate control device. As a result, the flue gas stream would no longer be at the optimal reaction temperature - usually ~500°F for CO and ~1000°F for VOC. Therefore, substantial energy costs would be incurred for flue gas reheat prior to CO or VOC removal. Also, acid gases adversely affect the catalysts and can lead to poisoning even if the particulate matter concentration is sufficiently controlled.

An additional consideration regarding catalytic oxidation for control of VOC, is the composition of the VOC in the flue gas. In the case of CHAMPION's Lime Kiln-Mud Dryer, substantially all oft he VOC emitted are saturated organic compounds, e.g., organic sulfur compounds and aliphatic compounds. Oxidation catalyst vendors recommend large catalyst volumes and flue gas temperatures in excess of 1,000°F to achieve significant reductions of saturated VOC.

Based on the technical problems associated add-on controls and the fact that no such controls have been applied to similar sources CHAMPION believes that good combustion control and the emission rates proposed represent BACT for the Lime Kiln-Mud Dryer.

SECTION 6
AIR QUALITY IMPACT ANALYSIS

6.1 INTRODUCTION

This section of the application presents the air quality impacts associated with the existing mill and the proposed addition of the No. 6 Power Boiler and the modifications to the Lime Kiln and the Bleach Plant to reduce wastewater treatment loads. The following subsections address:

- The modeling approach used to identify air quality impacts.
- Identification of PSD increment consumption by the project.
- Definition of background air quality.
- Comparison of predicted impacts plus background to NAAQS.
- Identification of HAP impacts associated with the project.
- Identification of additional impacts due to the project.

The only criteria pollutants which must be modeled and will be emitted in quantities greater than the PSD significant emissions levels, as noted in Section 2, are carbon monoxide (CO) and nitrogen oxides (NO_x). Hence, based upon discussions and guidance by Florida DER, CO and NO_x emissions were included in the air quality modeling analysis. The modeling analysis conducted follows the procedures and requirements discussed with Florida DER at our 10 September and 5 November 1992 meetings. In addition the EPA's "Guideline on Air Quality Models" EPA-450/2-78-027R was followed for the analysis.

The modeling analysis included both screening and refined EPA-approved models. Screening models were used to determine worst-case load conditions for the No. 6 Power Boiler and to evaluate the No. 6 Power Boiler and Lime Kiln-Mud Dryer impacts due to carbon monoxide (CO) emissions. Refined modeling was used to evaluate nitrogen dioxide (NO_x) impacts.

In order to quantify the NO_x PSD increment consumption by the changes at the Mill and also to demonstrate compliance with the National Ambient Air Quality Standards (NAAQS), refined air quality modeling was conducted. The refined air quality modeling included a PSD analysis and a NAAQS analysis. The PSD analysis determined the increment consumption due to the addition of the No. 6 Power Boiler and the modification to the Lime Kiln, the increment consumption of the existing No. 5 Power Boiler, and the increment expansion by the removal of the No. 1 Power Boiler and No. 2 Power Boiler. In addition, the PSD analysis included other increment-consuming sources in the significant impact area. The NAAQS analysis included all NO_x sources at the Mill and all major NAAQS sources within 30 km of the Mill.

HAPs are emitted as part of the proposed mill modifications and wastewater treatment project. The HAPs evaluated include chlorine (Cl_2), chlorine dioxide (ClO_2), and chloroform ($CHCl_3$) which will be emitted from the Bleach plant sources. The Bleach Plant is the source of these HAPs. Each of these pollutants were evaluated using EPA-approved models and a comparison to applicable Florida DER Hazardous Air Pollutants Guideline values was made.

6.2 MODELING APPROACH

The air quality dispersion modeling analysis included both preliminary screening modeling and refined modeling. The screening modeling was used to determine the "worst-case" load conditions for the No. 6 Power Boiler. Screening modeling was also used to demonstrate that the impacts due to CO emissions were below the CO significance levels. The refined modeling was used to demonstrate compliance with applicable PSD increments and air quality standards for nitrogen dioxide.

6.2.1 Land Use Classification

The land use classification for the area was based on a review of land use patterns in the area conducted for a previous PSD project at the Mill in 1991. The land use analysis conducted followed the procedures recommended by EPA and the typing scheme developed by Auer. The Auer technique establishes four primary land use types: industrial, commercial, residential, and agricultural. Industrial, commercial, and compact residential areas are classified as urban, while agricultural and common residential areas are considered rural. For modeling purposes, an area is defined as urban if more than 50 percent of the surface within 3 kilometers of the source falls under an urban land use type. Otherwise, the area is determined to be rural. No major changes to land use patterns in the area have occurred, and the previous analysis indicated the area is classified rural. Therefore, models which incorporate rural dispersion coefficients were used to assess the air quality impact of Mill sources.

6.2.2 Screening Modeling

The EPA SCREEN model was used to determine the "worst-case" load conditions associated with operation of the No. 6 Power Boiler. The Lime Kiln-Mud Dryer will typically operate at load conditions of 90-100% and, therefore, no load condition analysis was conducted. The SCREEN model is an EPA approved screening tool contained in "EPA Screening Procedures for Estimating the Air Quality Impacts of Stationary Sources Volume X" EPA-450/4-88-010. The modeling analysis for the No. 6 Power Boiler was conducted for three different load conditions: 100%, 75%, and 50%. The appropriate exit velocity, emission rate, and temperature are shown in Table 6-1.

Based on the results of the SCREEN modeling analysis, the worst case ambient impacts were predicted to occur when the No. 6 Power Boiler was operating at the 100% load condition. The results are summarized below and represent the concentrations associated with the corresponding boiler load condition.

Load Condition	1-Hour Impact
100%	213.2 $\mu g/m^3$
75%	136.2 $\mu g/m^3$
50%	70.9 $\mu g/m^3$

TABLE 6-1

SCREEN EMISSION PARAMTERS FOR NO. 6 POWER BOILER
CHAMPION MILL PENSACOLA, FLORIDA

SOURCE	100% LOAD	75% LOAD	50% LOAD
Stack Height (m)	38.10	38.10	38.10
Stack Diameter (m)	2.59	2.59	2.59
Temperature (°K)	449.8	440.9	431.5
Velocity (m/sec)*0	14.41	10.79	6.85
NO_2 (g/sec)	4.03	3.02	2.02

* Velocity is based on flows of 160,693 acfm, 120,520 acfm, and 76,489 acfm, for 100%, 75%, and 50% loads, respectively.

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Based on the results above, all subsequent refined modeling included the 100% load emission parameters and emission rates for the No. 6 Power Boiler.

The SCREEN Model was also used to demonstrate that the CO impacts from the No. 6 Power Boiler and the modification to the Lime Kiln were below the 1-hour and 8-hour significance levels of 2,000 $\mu g/m^3$ and 500 $\mu g/m^3$, respectively. The maximum combined impact from these two sources was 413.7 $\mu g/m^3$ on a 1-hour basis. The 1-hour impacts were scaled to an 8-hour impact using the EPA approved SCREEN scaling factor (0.7 x 1-hour concentration). The 8-hour impact was calculated to be 289.6 $\mu g/m^3$. Therefore, since the proposed mill modification will not result in a significant ambient CO air quality impact, no further air quality modeling analysis for CO is required.

The SCREEN outputs for the load condition analysis and the CO significant impact area analysis are contained in Appendix E.

6.2.3 Refined Modeling

The modeling procedures used for the refined air quality modeling analysis followed the recommended techniques described in "Guidelines on Air Quality Models (Revised)". Based upon this guideline, the Industrial Source Complex Long-Term 2 Model (ISCLT2 Version 92062) was used for the analysis. The ISCLT2 model is an EPA approved model.

The ISCLT2 model was used to calculate ambient pollutant concentrations for simple (flat) terrain receptors surrounding the CHAMPION facility. Annual concentrations for nitrogen dioxide, chlorine, chlorine dioxide, and chloroform were calculated. Since stacks at the Mill are less than Good Engineering Practice (GEP) stack height, the ISCLT2 direction specific downwash option was used in the modeling analysis.

In addition to utilizing the direction specific downwash routine, all of the options associated with the "regulatory default" mode in the ISCLT2 model were used. These default options are listed below.

- Stack Tip Downwash
- Final Plume Rise
- Buoyancy-Induced Dispersion
- Default Vertical Potential Temperature Gradient
- Default Wind Profile Exponents
- Upper Bound Value for Supersquat Buildings
- No Exponential Decay for Rural Mode

A polar receptor grid with discrete receptors along the plant boundary was used in the modeling analysis. Five years of surface data from Pensacola, Florida were used in the analysis. The details of the refined modeling analysis are described in greater detail in the following subsections.

6.2.4 Receptor Grid

A combination of polar coordinate receptors and rectangular coordinate receptors were established for the ISCLT2 modeling. The area surrounding the Mill is flat and, therefore, as agreed by the Florida DER, no terrain elevations were included for any of the receptors.

The polar grid was centered on the location of the No. 5 Boiler stack. The following downwind receptor rings for every 10 degrees of arc from 0° to 360° were included: 4250m, 4500m, 4750m, 5000m, 6000m, 7000m, 8000m, 9000m, and 10,000m. Due to the long narrow boundary of CHAMPION's property, an extensive array of discrete receptors was required to supplement the polar grid.

Since the polar receptor grid was centered on the No. 5 Boiler stack, additional discrete receptors were required to adequately evaluate the area between the property boundary and the start of the polar grid. These additional receptors included points at 100 meter spacing out to 1000m and 250m spacing from 1000m to 4250m where the full polar grid started. Receptors were also placed at approximately 100 meter intervals along the perimeter of the facility boundary. The entire receptor grid is shown in Figure 6-1.

6.2.5 Source Emission Parameters

The new or modified sources of criteria pollutants at the Mill include the No. 6 Power Boiler and the Lime Kiln-Mud Dryer. The emission parameters used for these sources are shown in Table 6-2. The additional PSD increment consuming and increment expanding sources as well as all the NAAQS sources are described in Section 6.3, Emission Inventory.

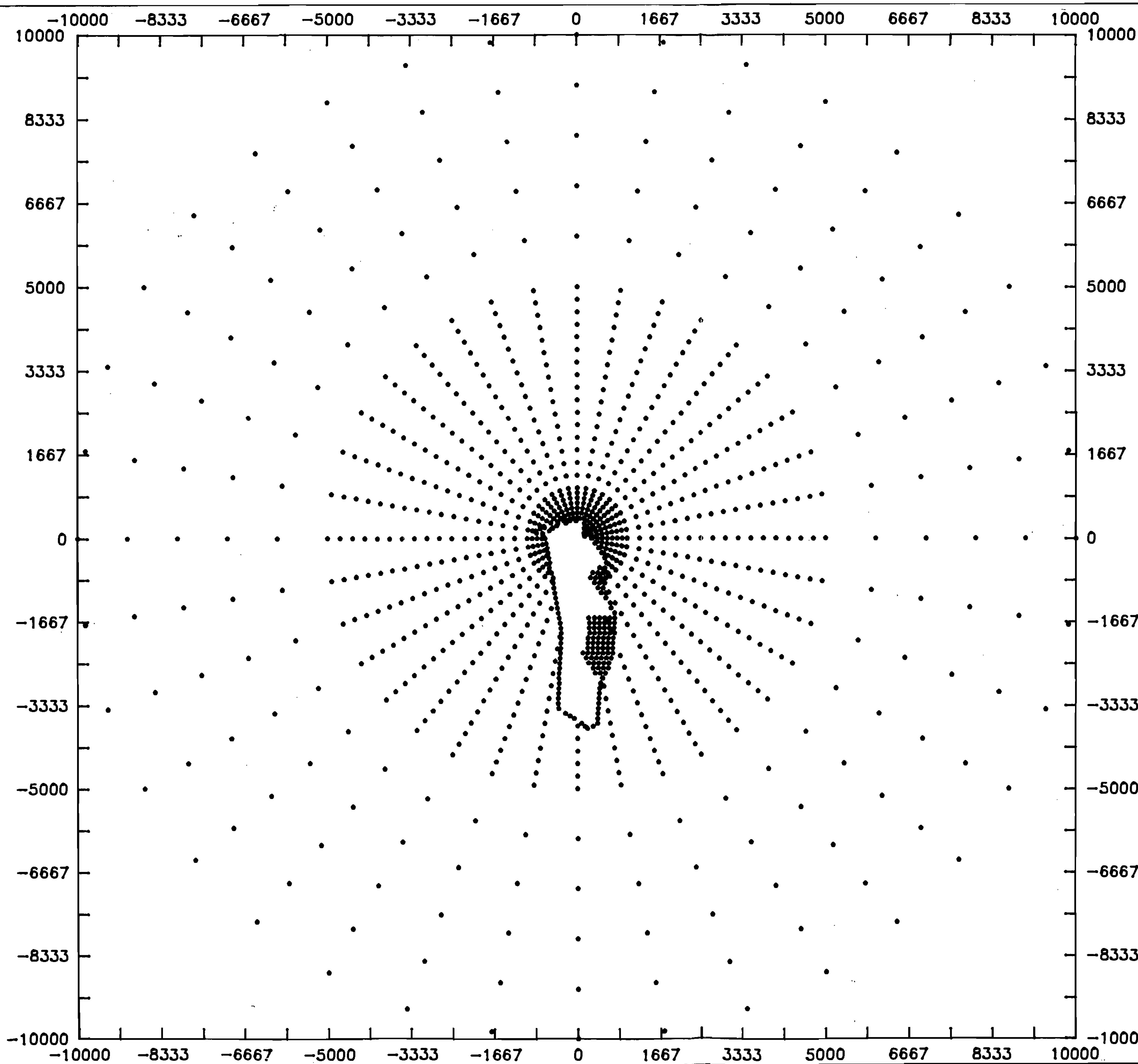
6.2.6 Downwash From Building Wakes

The GEP stack height is the minimum height required by a stack in order to always avoid structural or building wake-effect induced downwash. Downwash brings pollutants closer to ground-level at a shorter downwind distance than would be the case for a GEP stack. Thus, downwash often causes higher impacts. There are two downwash algorithms which are approved by EPA: Huber-Snyder and Schulman-Scire which are defined below. Both of these algorithms are direction specific.

Huber-Snyder Downwash:

$H_{gep} = H_b + 1.5L$, where

H_{gep} = GEP stack height



NORTH

SOURCE: MAP DEVELOPED BY WESTON, INC. WEST CHESTER,PA. FROM DATA ANALYSIS

CHAMP801-G/DM-12/92

CHAMPION INTERNATIONAL CORPORATION
PENSACOLA FACILITY
CANTONMENT, ESCAMBIA COUNTY
FLORIDA

FIGURE 6-1
MILL RECEPTOR GRID SYSTEM

TABLE 6-2

EMISSION PARAMETERS FOR NO. 6 POWER BOILER AND LIME KILN - MUD DRYER CHAMPION MILL PENSACOLA, FLORIDA

SOURCE	STACK HEIGHT (m)	STACK DIAMETER (m)	TEMPERATURE (°K)	VELOCITY (m/sec)	NO_2 (g/sec)	CO (g/sec)
No. 6 Power Boiler	38.10	2.59	449.8	14.41	4.03	6.72
Lime Kiln Mud Dryer	41.45	1.98	342.3	8.76	6.21	0.85

H_b = Height of nearby structure

L = Lesser dimension, height or projected width.

Schulman-Scire Downwash:

$H_{geps} = H_b + 0.5L$, where

H_{geps} = GEP stack height for Schulman-Scire downwash

H_b = Height of nearby structure

L = Lesser dimension, height or direction specific projected width.

WESTON used the following procedures to analyze the Mill for downwash. The Mill stacks and influencing buildings were first located on a plant map. Figure 2-2 in Section 2 of this application is a diagram of Mill buildings and sources which were used for the analysis. The GEP heights and relevant building dimensions were evaluated by a computer program developed by WESTON. This program incorporates the EPA guideline procedures for determining, in each of the 16 wind directions (22.5° sectors), which building may cause downwash of stack emissions. All of the stacks are subject to either Huber-Snyder or Schulman-Scire downwash and, as a result, direction-specific building dimensions were calculated. The results of this analysis for all sources at the CHAMPION Mill are included in Appendix E.

6.2.7 Meteorological Data Base

The meteorological data base used in the modeling analysis included five years of representative surface and upper air meteorologic data. The five year period from 1985-1989 was used in the modeling analysis. Surface data from Pensacola, Florida were used to generate the joint frequency distribution of wind speed, direction, and stability required for the ISCLT2 model (STAR distribution). This is the same meteorologic data used in CHAMPION's 1991 PSD Permit Application for the No. 5 Power Boiler.

6.2.8 Significant Air Quality Impacts

The ISCLT2 Model and the five years of meteorology were used determine the significant impact area associated with the No. 6 Power Boiler and Lime Kiln-Mud Dryer NO_x emissions. Based upon this analysis, the significant impact area for the No. 6 Power Boiler and the Lime Kiln-Mud Dryer was predicted to be less than 2.4 km for all five years of meteorology. The highest impacts were predicted to be just off plant property.

6.3 EMISSIONS INVENTORY

The emissions inventory for NO_x sources was developed for CHAMPION Mill sources and other major sources in the area. Table 6-3 provides a summary of the emission parameters and emission rates used in the modeling analysis for CHAMPION Mill PSD and NAAQS sources.

6.3.1 Mill PSD and NAAQS Emission Sources

As part of the overall project which includes the addition of the No. 6 Power Boiler and the modification to the Lime Kiln, the No. 1 and No. 2 Power Boilers will be removed. The No. 1 and No. 2 Power Boilers will be increment expanding sources. In addition, the existing Lime Kiln emissions do not consume increment. Hence, only the differences between the existing Lime Kiln emissions and the Lime Kiln-Mud Dryer emissions after modification will consume increment. The emission rates associated with the PSD increment expanding sources and the existing Lime Kiln were based on actual emissions for the past two years of operation. The PSD

TABLE 6-3

CHAMPION MILL EMISSIONS DATA USED IN THE MODELING ANALYSIS FOR CRITERIA POLLUTANTS

SOURCE	ISC SOURCE IDENTIFICATION	NO_x EMISSION RATE (g/sec)	CO EMISSION RATE (g/sec)	COORDINATE (m)		HEIGHT (m)	TEMPERATURE (°K)	EXIT VELOCITY (m/sec)	DIAMETER (m)
				X	Y				
No. 1 Power Boiler	# 1PB	-1.27	-1.27	-3.3	-37.2	20.42	524.7	16.92	1.98
No. 2 Power Boiler	# 2PB	-5.69	-1.36	-9.4	-41.8	20.42	466.3	15.09	1.98
No. 3 Power Boiler	# 2PB	23.64	3.024	-16.6	-82.8	45.11	335.8	7.62	2.44
No. 4 Power Boiler	# 4PB	58.74	20.16	37.7	-94.1	67.36	335.2	10.24	3.66
No. 5 Power Boiler	# 5PB	2.46	2.457	0.0	0.0	14.30	533.0	26.27	1.22
Lime Kiln	LK	-1.95	-0.18	81.4	-293.9	41.45	349.6	7.65	1.98
Calciner	CALC	1.93	1.88	41.0	-194.7	35.84	346.3	9.17	1.22
No. 6 Power Boiler	# 6PB	4.03	6.72	-50.8	-83.0	38.10	449.8	14.41	2.59
Lime Kiln Mud Dryer	LMD	6.21	0.85	81.4	-293.9	41.45	342.3	8.76	1.98
No. 1 Recovery Boiler	# 1RB	12.6	51.04	124.5	-72.6	55.4	516.3	24.38	2.74
No. 2 Recovery Boiler	# 2RB	12.6	51.04	103.8	-88.2	55.4	500.0	24.38	2.74

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increment consuming sources are the No. 6 Power Boiler, the Lime Kiln-Mud Dryer, and the No. 5 Power Boiler (permitted in 1991). The emission rates used in the modeling analysis for the No. 6 Power Boiler, Lime Kiln-Mud Dryer, and No. 5 Power Boiler are based on proposed allowable permit limits.

In addition to the NO_x sources at the Mill that consume PSD increment, there are several sources which affect ambient air quality and must be included in the NAAQS analysis. These sources include the No. 1 and No. 2 Recovery Boilers, the Calciner, and the No. 3 and No. 4 Power Boilers. The PSD increment consuming sources at the Mill were also included in the NAAQS analysis.

6.3.2 Local PSD and NAAQS Emission Sources

Data regarding other major NO_x sources to be included in the modeling analysis to demonstrate compliance with PSD increments and NAAQS were obtained from Florida DER and Alabama Department of Environmental Management (DEM). In accordance with Florida DER guidance, all major sources in DER's emission data base for Escambia and Santa Rosa counties were evaluated for the modeling analysis. The data provided by DER included potential, allowable, estimated and actual emission rates of NO_x for these additional sources. Not all sources had each of the emission rates identified above. Based on discussions with Florida DER, allowable emissions are based on permit limits. If allowable emission rates were identified, they were used in the modeling analysis. Potential emissions are controlled emission rates which were used if allowable rates were not provided. Estimated emissions which were developed by the Florida DER for sources without permit limits were used if potential emission rates were not identified. Finally, actual emission rates were used if estimated emissions were not provided.

A screening procedure suggested by Florida DER's meteorologist was used to eliminate small facilities from the modeling study which are not likely to have significant impacts near CHAMPION's Mill. The criteria utilized was based on the distance from the Mill to the facility and the annual emission rates associated with the source being evaluated.

In general facilities were eliminated on the following basis:

- Sources with emissions less than 100 tons per year and greater than 5 km from the Mill.
- Sources with emissions less than 200 tons per year and greater than 10 km from the Mill.
- Sources with emissions less than 300 tons per year and greater than 15 km from the Mill.
- Sources with emissions less than 400 tons per year and greater than 20 km from the Mill.
- Sources with emissions less than 500 tons per year and greater than 25 km from the Mill.
- Sources with emissions less than 600 tons per year and greater than 30 km from the Mill.

Table 6-4 identifies facilities which were excluded from the modeling analysis based upon this criteria.

TABLE 6-4

FACILITIES EXCLUDED FROM THE AMBIENT AIR QUALITY MODELING ANALYSIS

	SOURCES IN SANTA ROSA AND ESCAMBIA COUNTY, FLORIDA ELIMINATED FROM NO_x MODELING		
	TOTAL FACILITY NO_x EMISSIONS (tons/year)	DISTANCE FROM CHAMPION MILL SIGNIFICANCE AREA (km*)	20 "D" EXCLUSION (tons/year)
Coastal Fuels	5.20	22.6	452
Escambia County Utilities	42.0	22.9	458
Puritan-Bennett	1.48	4.5	90
Reichhold Chemicals	75.81	21.2	424
Armstrong World Industries	3.22	21.1	422
Exxon @ McLellan Field	85.18	59.9	1198
Petro Acquisitions	23.0	30.8	616
Exxon @ Santa Rosa	139.0	40.7	814

* The significant impact area for the mill modification is a circle 2.4 Km in diameter from the No. 5 Boiler Stack.

In addition, the Alabama DEM was contacted for a list of any NAAQS sources located in Alabama. According to Alabama DEM no new NAAQS or PSD increment consuming sources are present. Appendix D includes a letter from WESTON to Alabama DEM confirming that no new major sources or PSD increment consuming sources are present in the area near CHAMPION's Mill.

Table 6-5 provides the emission rates and emission parameters for all other major sources included in the air quality modeling analysis. For sources with similar emission parameters, a representative source was identified and all emissions from the similar sources were

summed and assumed to be emitted from the representative stack. Table 6-6 identifies the sources which were grouped into a representative stack for modeling purposes.

6.4 PSD INCREMENT ANALYSIS

Based on a review of data provided by Florida DER, the only NO_x PSD increment consuming sources in the vicinity of the CHAMPION Mill are the existing No. 5 Power Boiler, the proposed No. 6 Power Boiler, and the modified Lime Kiln-Mud Dryer. Table 6-7 provides the annual NO_x increment consumption due to these sources for the five year air quality modeling analysis. Less than 10% of the annual PSD increment is consumed by the proposed modification to the Mill. Hence, the facility will neither cause nor contribute to an exceedance of the Federal PSD increment for nitrogen dioxide. It should also be noted that the maximum predicted annual impact for the modification at the Mill is less than the PSD monitoring exemption de-minimis concentration of 14 ug/m^3. Therefore, pre-construction monitoring is not required for this project.

It is important to point out that the removal of the No. 1 and No. 2 Power Boilers will result in a significant PSD increment expansion in the vicinity of the Mill. Previously, the No. 5 Boiler was predicted to consume nearly 5 $\mu g/m^3$ of increment by itself (see CHAMPION's 1991

TABLE 6-5

OTHER MAJOR NO_x SOURCES USED IN THE MODELING ANALYSIS

Source	ISC Source Number	Emission Rate (g/sec.)	Coordinate X (m)	Coordinate Y (m)	Height (m)	Temp. (°k)	Exit Velocity (m/sec.)	Diameter (m)
American Cyanamid	301	1.9300E-01	20200	-5800	15.24	544.00	15.54	1.37
	302	2.1040E+00	20200	-5800	15.24	477.00	9.14	1.68
	303	1.1329E+01	20200	-5800	15.24	436.00	14.32	1.46
	309	8.9650E+00	20200	-5800	15.24	450.00	10.06	1.92
Air Products Chemicals	401	1.9310E+00	18000	-2600	12.50	394.00	7.92	12.5
	402	6.9480E+00	18000	-2600	12.50	650.00	10.67	1.43
	404	1.4400E+00	18000	-2600	7.62	477.00	0.61	0.24
	408	3.8860E+00	18000	-2600	24.99	505.00	29.57	1.13
	410	5.6410E+00	18000	-2600	27.43	436.00	39.32	2.29
	411	2.3494E+01	18000	-2600	7.62	450.00	19.04	0.76
	422	2.6230E+00	18000	-2600	21.64	450.00	29.87	0.91
	423	3.9200E+00	18000	-2600	28.65	444.00	30.87	0.76
	426	2.0554E+01	18000	-2600	6.10	755.00	41.18	0.52
Exxon at St. Regis	510	6.0500E-01	13800	39600	15.24	422.00	32.31	0.61
	515	6.4400E+00	13800	39600	12.19	719.00	24.69	1.68
	516	2.2918E+01	13800	39600	6.10	616.00	24.69	0.3
	518	6.9190E+00	13800	39600	10.67	496.00	25.51	2.65
	519	1.2511E+01	13800	39600	9.14	616.00	7.86	0.91
	514	1.2970E+00	13800	39600	12.19	452.00	17.37	0.76
Monsanto Chemical	4002	6.0250E+00	7000	-1000	18.29	497.00	28.65	1.22
	4003	1.4500E+01	7000	-1000	38.10	383.00	10.36	3.66
	4005	2.3150E+00	7000	-1000	38.10	613.00	5.49	0.82
	4012	6.1000E-02	7000	-1000	21.34	1033.00	1.52	0.24
	4014	5.2750E+00	7000	-1000	45.72	455.00	10.67	3.05
	4042	1.5783E+01	7000	-1000	36.58	429.00	34.14	1.37
	4049	4.6100E+01	7000	-1000	27.43	474.00	14.02	1.46
	4053	8.6000E+02	7000	-1000	18.29	1089.00	1.22	0.91
	4067	1.1500E+01	7000	-1000	9.14	1089.00	3.96	0.3
Gulf Power Co.	4501	1.8841E+02	9500	-4600	137.16	416.00	15.85	5.49
	4506	1.0149E+03	9500	-4600	137.16	405.00	29.57	7.07
Pensacola Christian College	11401	1.2850E+01	8500	-15000	2.29	884.00	22.41	0.33

CH237A.TBL

TABLE 6-6

COMBINED LOCAL SOURCES FOR SANTA ROSA AND ESCAMBIA COUNTY, FLORIDA FACILITIES

Facility Id	Source #	NO_2 Emission Rate (g/sec)	Stack Height (m)	Temperature (°K)	Velocity (m/sec)	Stack Diameter (m)	Representative ISC Source #
American Cyanamid	303	6.515	15.24	436	14.63	1.46	303
	304	4.814	15.24	436	14.32	1.46	303
Air Products Chemicals	402	3.430	12.50	650	10.97	1.43	402
	403	3.815	12.19	672	10.67	1.52	402
	404	1.127	8.84	477	1.83	1.07	404
	405	0.011	13.72	1,144	3.66	0.24	404
	406	0.106	7.62	565	0.61	0.24	404
	407	0.199	7.62	977	0.61	0.85	404
	408	1.939	24.99	505	29.57	1.13	408
	425	1.927	24.99	505	29.65	1.13	408
Exxon St. Regis	510	0.201	15.24	422	32.31	0.61	510
	511	0.201	15.24	422	32.31	0.61	510
	512	0.201	15.24	422	32.31	0.61	510
	516	0.086	6.10	616	24.69	0.30	516
	517	22.784	6.10	616	24.69	0.30	516
Monsanto Chemical	4,003	8.199	38.10	383	10.36	3.66	4,003
	4,004	6.271	38.10	383	10.36	3.66	4,003
	4,005	1.007	38.10	613	5.49	0.82	4,005
	4,007	0.135	38.10	613	5.49	0.82	4,005
	4,008	0.135	38.10	613	5.49	0.82	4,005
	4,009	0.187	38.10	613	5.49	0.82	4,005
	4,010	0.187	38.10	613	5.49	0.82	4,005
	4,011	0.187	38.10	613	5.49	0.82	4,005
	4,013	0.472	38.10	428	8.53	0.82	4,005
	4,014	2.963	45.72	455	10.67	3.05	4,014
	4,015	0.777	45.72	455	10.67	3.05	4,014
	4,016	1.525	45.72	455	10.67	3.05	4,014
	4,053	0.029	18.29	1,144	1.22	1.01	4,053
	4,054	0.058	18.29	1,089	6.40	0.91	4,053

TABLE 6-6
(continued)

Facility Id	Source #	NO_2 Emission Rate (g/sec)	Stack Height (m)	Temperature (°K)	Velocity (m/sec)	Stack Diameter (m)	Representative ISC Source #
Gulf Power Co.	4,501	18.005	137.16	416	15.85	5.49	4,501
	4,502	18.005	137.16	416	15.85	5.49	4,501
	4,503	30.959	137.16	416	15.85	5.49	4,501
	4,504	60.443	137.16	416	15.85	5.49	4,501
	4,505	60.607	137.16	416	15.85	5.49	4,501
	4,506	371.107	137.16	405	29.57	7.07	4,506
	4,507	641.717	137.16	405	29.57	7.07	4,506
Pensacola Christian College	11,401	4.28	2.29	884	22.41	0.33	11,401
	11,402	4.28	2.29	884	22.41	0.33	11,401
	11,403	4.28	2.29	884	22.41	0.33	11,401

TABLE 6-7

PSD INCREMENT CONSUMPTION BY CHAMPION'S PENSACOLA MILL'S PROPOSED MODIFICATIONS

	1985	1986	1987	1988	1989
Impact ($\mu g/m^3$)	2.24	2.41	2.24	2.25	2.32
Receptor (x,y)(m)	256, -800	256, -800	256, -800	256, -800	256, -800
% of PSD Increment	9%	10%	9%	9%	9%

CH237A.TAB

PSD Permit Application). However, as a result of the shutdown and removal of the No. 1 and No. 2 Boilers, the total increment consumption for the proposed mill modification, in conjunction with the No. 5 Power Boiler, is only predicted to be 2.4 $\mu g/m^3$.

6.5 NATIONAL AMBIENT AIR QUALITY STANDARDS DEMONSTRATION

The National Ambient Air Quality Standards (NAAQS) demonstration was based on modeling all sources of nitrogen dioxide emissions from the Mill in combination with other major sources of nitrogen dioxide in the area (Table 6-5 sources). In addition, a background concentration from nearby monitors which represents distant source plus uninventoried source impacts, was added to the modeled concentration. This conservative approach does not account for the impact of major sources, included in the modeling analysis, on the monitored values used. Hence, the demonstration is likely to over-predict the actual air quality impacts in the area.

6.5.1 Background Nitrogen Dioxide

Data on the background concentration to be used in the ambient air quality analysis was provided by the Florida DER. Currently the state has no NO_2 SLAMS site operating in the Pensacola or Cantonment, Florida areas. Data were collected at a site in Escambia County near Pensacola in 1982-1985. This site (3540004F01) was located at the Ellyson Industrial Park in northern Pensacola. Concentrations measured at this site were:

	Nitrogen Dioxide Annual Average Concentration (ug/m^3)		
	1982	1983	1984
Escambia County, FL	13	14	21

In addition, data have been collected by Gulf Power Company for 1990 at two stations (CRIST #4 Brunson, CRIST #2 Monsanto). The annual average concentrations measured at these stations were 19 ug/m^3 and 10 ug/m^3, respectively. Based on these data and the previous data collected by Florida DER, a conservative background concentration would be 21 ug/m^3. Florida DER also provided data for sites in Jacksonville (Site No. 1960-032H02) and Tarpon Springs, Florida (Site No. 4380-002G03). The annual average background concentrations measured at these sites in 1990 were 28 ug/m^3 and 17 ug/m^3, respectively. Florida DER has requested that the average of these values (22.5 ug/m^3) be used as an extremely conservative regional background concentration for the NAAQS demonstration.

6.5.2 NAAQS Modeling Results

The results of the modeling analysis for all major sources in the area in combination with CHAMPION Mill sources including the No. 5 Power Boiler, No. 6 Power Boiler, Lime Kiln-Mud Dryer, No. 1 and No. 2 Recovery Boilers, Calciner, and the No. 3 and No. 4 Power Boilers are shown in Table 6-8 for the five years of modeling. Also shown in the table is the conservative background air quality level identified by Florida DER. The maximum annual combined impact (modeled sources plus background) is 64.5 ug/m^3. Therefore, based upon the conservative analysis conducted, the Mill modification will neither cause nor contribute to an exceedance of the NAAQS for nitrogen dioxide.

As noted in the PSD increment analysis, the shutdown and removal of the No. 1 and No. 2 Power Boilers result in a net air quality benefit to the area. The proposed mill modification, in conjunction with other major sources and the regional background NO_x concentration, is predicted to result in an ambient NO_2 concentration nearly 30 $\mu g/m^3$ less than previously predicted in CHAMPION's 1991 Permit Application for the No. 5 Boiler. Hence, the proposed modification will result in a net air quality benefit to the area surrounding the Mill.

TABLE 6-8

COMPARISON OF MAJOR SOURCE IMPACTS PLUS BACKGROUND TO NAAQS

	CONCENTRATION $\mu g/m^3$				
	1985	**1986**	**1987**	**1988**	**1989**
Major Sources Impact	38.8	40.7	37.7	39.2	42.0
Background Concentration	22.5	22.5	22.5	22.5	22.5
Total Impact	61.3	63.2	60.2	61.7	64.5
NAAQS	100	100	100	100	100

6.6 HAZARDOUS AIR POLLUTANTS (HAPs)

CHAMPION has conducted an HAPs modeling analysis, in accordance with discussions with Florida DER during a meeting on 5 November 1992. The analysis includes emissions of HAP compounds identified for the modified sources at the Mill. Three HAP pollutants were evaluated:

- Chlorine
- Chlorine Dioxide
- Chloroform

These pollutants are emitted by sources associated with the Mill's Bleach Plant. It is important to note that the proposed mill modifications will result in a reduction in emissions of these pollutants.

Table 6-9 includes the emission rates and emission parameters associated with the Bleach Plant point sources. All three of the HAP substances evaluated are emitted from these sources. The emission rates for chlorine, chlorine dioxide, and chloroform are based on the proposed modifications to the Bleach Plant and a conversion to 100% chlorine dioxide bleaching. The basis for partitioning of emissions for the various sources is included in Appendix D.

The information available on the chloroform generation rate associated with 100% chlorine dioxide substitution for chlorine in the bleaching sequence is laboratory test results. These data provide an estimate of the amount of chloroform which is emitted into the atmosphere by bleach plant point sources (i.e., scrubbers and vents), versus the chloroform which remains in the bleach plant effluent (wastewater). In addition, NCASI test data on the scrubber and vent sources of chloroform at the Pensacola Mill are available which provides a means by which a further refinement or partitioning of chloroform emissions between these atmospheric vents can be estimated. Similar information on chloroform emissions from the wastewater treatment

TABLE 6-9

AIR TOXICS MODELING ANALYSIS EMISSION PARAMETERS
CHAMPION MILL PENSACOLA, FLORIDA

POINT SOURCE	STACK HEIGHT (m)	STACK DIAMETER (m)	STACK TEMP. (°K)	VELOCITY (m/s)	CHLORINE (g/s)	CHLORIINE DIOXIDE (g/s)	CHLOROFORM (g/s)
Bleach Plant Softwood Scrubber	29.8	0.61	311	16.5	0.183	0.057	0.043
Bleach Plant Hardwood Scrubber	29.7	0.53	311	15.5	0.126	0.057	0.043
ERCO Tail Gas Scrubber	18.3	0.21	311	17.4	0.013	0.032	No Emissions
Eo Softwood Hood Vent	20.4	0.71	326	16.4	No Emissions	No Emissions	0.005
Eo Hardwood Hood Vent	20.4	0.46	343	23.7	No Emissions	No Emissions	0.005

sources (i.e., fugitive atmospheric chloroform emissions) is not available. The anticipated low concentration of chloroform in the wastewater at a 100% chlorine dioxide substitution rate further complicates the estimation of such atmospheric releases. Therefore, CHAMPION has only modeled those sources for which adequate information is available to characterize chloroform emission rates (i.e., the point sources of chloroform from the mill).

Once the modifications to the mill bleach plant have been completed, CHAMPION is committed to conducting a study to evaluate the emission rate of chloroform from the wastewaster treatment system. The study will, at a minimum, involve collection and analysis of wastewater samples at various locations in the treatment process. This information, along with appropriate process data and other wastewater characteristics, will be used to determine atmospheric losses of chloroform in the wastewater treatment process.

The annual air quality impact associated with each of these pollutants was based on the ISCLT2 model. All modeling parameters, receptors, meteorology, and analysis techniques are consistent with those described previously in subsection 6.2 for the refined nitrogen dioxide modeling.

The results of the modeling analysis for each of the pollutants is presented in Table 6-10. The table also provides a comparison between Florida Air Toxic Guideline value and the peak predicted annual concentrations by the ISCLT2 model. As noted above, only bleach plant point sources of chloroform were included in the modeling analysis. As shown in the table, all impacts are predicted to be below the applicable Florida Guideline value.

6.7 IMPACT ON GROWTH, VISIBILITY, SOILS, AND VEGETATION

PSD regulations require that an analysis be conducted to determine whether any impairment to visibility and other adverse impacts on soils and vegetation in the vicinity of the source would occur. Specifically, five areas have been examined: associated growth, visibility, acidification

TABLE 6-10

AIR TOXIC MODELING ANNUAL AMBIENT AIR QUALITY IMPACT
(micro grams per cubic meter)

POLLUTANT	1985	1986	1987	1988	1989	ANNUAL FLORIDA GUIDELINE VALUE
Chloroform	0.026	0.022	0.021	0.026	0.026	0.043
Chorine Dioxide	0.198	0.170	0.165	0.187	0.164	0.20
Chlorine	0.384	0.355	0.326	0.366	0.326	0.40

CH237A.TAB

of rainfall, soils, and vegetation. The proposed mill modifications should not cause any of these adverse impacts; however, it is important to recognize their potential existence.

6.7.1 Associated Growth

It is estimated that the Mill modifications will not require any additional staff. Thus, there will be no perceptible negative growth impacts resulting from the project.

6.7.2 Visibility

Pollutants responsible for visibility reduction are classified into three major groups:

- Hygroscopic particulates.
- Opaque agglomerates (e.g., carbon, metal particulate).
- Transparent crystals (e.g., silicon, calcium).

The Mill modifications are estimated to result in a decrease in annual particulate matter emissions and an increase of less than 28 tons of sulfur dioxide. Hence, it is not anticipated that any perceptible reduction in visibility will occur due to the emission of primary or secondary aerosols by the proposed mill modification.

Nitrogen dioxide absorbs light energy over the entire visible spectrum, although primarily in the shorter, blue wave length regions; thus, nitrogen dioxide can by itself reduce visibility. In addition, visibility reducing aerosols are formed by photochemical processes involving oxides of nitrogen and hydrocarbons. However, the ambient ground level concentration of nitrogen oxides (in the form of nitrogen dioxide) is anticipated to decrease due to the shutdown and removal of the No. 1 and No. 2 Power Boilers. Hence, visibility impairment should not occur.

6.7.3 Acidification of Rainfall

Sulfuric acid may be formed in the natural atmospheric removal process associated with sulfur dioxide. Acidity levels of precipitation can be increased with this addition of hydrogen ions and potentially may have an adverse impact on biotic communities.

As previously indicated, the emission rate of SO_2 from the proposed project is estimated to be less than 28 tons per year. At this relatively low emission rate, no significant degree of rainfall acidification is anticipated due to the proposed project.

6.7.4 Soils

Operation of the facility must be addressed to determine the impacts of its emissions on soils in the nearby vicinity by such mechanisms as (1) dry deposition of emitted particulate; (2) washout deposition of particulate and water soluble gases; (3) dry reaction of gaseous compounds to the soil via metabolic incorporation into plant root systems; and (5) deposition of combustion particulate.

It is extremely difficult to quantify any of the potential impacts delineated above. However, at the low estimated emission rates for the proposed mill modifications, adverse impacts are unlikely.

Atmospheric washout will remove some particulate, SO_2, and NO_2. The amounts removed and initially deposited on the soil will be quite small in comparison to deposition due to emissions or sources in urban areas. It is doubtful that the pH of the rainfall in the region will be measurably lowered. Some field experiments at other locations using simulated rainfall at a pH of as low as 4 have shown only small effects on soil chemical properties. These same studies have shown that forested areas absorbed much of the deposited nitrogen and benefitted therefrom.[1]

Dry deposition acts continuously to reduce atmospheric concentrations of SO_2 by chemical reaction and adsorption by vegetation. Although rainfall is much more efficient at removing SO_2, dry deposition and reaction are probably responsible for removing twice as much atmospheric sulfur.[2] The small amount of SO_2 available for reaction (from the proposed boiler) will not result in any significant chemical alteration of the regional soils, and some of that which does react will be removed by subsequent rainfall.

NO_2, on the other hand, is dry deposited to a significant degree only after further atmospheric oxidation. Its atmospheric life is therefore longer than that of SO_2, and longer life means greater dispersion. When deposited, it is rapidly consumed by vegetation which increases its likelihood of eventually reacting with soils.[3] Its chemical impact on the soils,however, will likely be even less than that for SO_2 because it is dispersed over a greater distance.

6.7.5 Vegetation

The emission of common atmospheric pollutants such as SO_2, and NO_2, has the potential to cause damage to vegetation.[4] The proposed mill modifications must be addressed to determine if it has a potential impact on vegetation.

The sensitivity of vegetation to air pollution injury varies greatly with such factors as plant species and variety, climatic and seasonal conditions, soil composition, and the nature or combinations of pollutants.[5] In general, plants tend to be more susceptible to damage during spring and summer growing seasons and when exposed to short-term high concentrations as opposed to continuous lower levels of pollution.[6]

A summary of research on air pollution effects on vegetation divides air pollution injuries to plants into three general categories: acute, chronic, and subtle.[7] Acute injury is caused by exposure to a high concentration of a deleterious substance resulting in rapid visible death of some tissue. Chronic injury is caused by long-term exposure to low pollutant levels which gradually disrupts physiological processes and retards growth or yield.

Long-term subtle effects on vegetation are difficult to define and little is known to date as to the threshold concentrations and exposure times which may cause damage. The following paragraphs will, therefore, focus on acute injuries for which exposures and effects are known.

SO_2 will be emitted at relatively low levels resulting in a minimal SO_2 loading to the atmosphere. Hence, emissions of SO_2 from the modified facility are not expected to have an adverse impact on vegetation.

Potential NO_2 damage to vegetation in the area is also unlikely. In general, acute NO_2 damage to vegetation is not likely to occur at levels found outdoors although some reduction in growth might occur at continuous levels of 200 - 500 ug/m^3. Sensitive species may be damaged by 4-hour concentrations of 3800 - 13,3000 ug/m^3. Soybeans are considered to have intermediate sensitivity (4-hour injury threshold of 9,400 - 18,800 ug/m^3), while corn is rated as resistant (4-hold injury threshold of 16,900 ug/m^3). In view of the current background NO_2 levels and the decrease anticipated as a result of operation of the proposed modified mill, no adverse effects on vegetation are expected to occur.

6.8 REFERENCES

[1]R. A. Barnes, "The Long Range Transport of Air Pollution" in Journal of the Air Pollution Control Association, Volume 29, Number 12, December, 1979.

[2]Ibid

[3]Ibid

[4]George H. Hepting, "Air Pollution and Trees" in Man's Impact on Terrestrial and Oceanic Ecosystems, Matthews, Smith, and Goldberg, Editors, MIT Press, 1974.

[5]H. E. Heggest ad, "Air Pollution and Plants" in Matthews, et al., 1974.

[6]Wisconsin Public Service Corporation, "Air Pollution Effects on the Terrestrial Environment," Section 4.7.7.2 of Weston Generating Station Unit 3 Environmental Report, Vol. 2, 1975.

[7]Ibid

EPA "Screening Procedures for Estimating the Air Quality Impacts of Stationary Sources: EPA-450/4-88-010 August 1988

EPA "New Source Review Workshop Manual" DRAFT 1990.

EPA "Guideline on Air Quality Models (Revised)" EPA-450/2-78-027R 1986, 1987, 1990.

"PSD Permit Application for A Proposed Package Boiler" Champion International Corporation, Pensacola, Florida Mill, February 1991.

APPENDIX A
SUMMARY OF EMISSION FACTORS

APPENDIX A

CHAMPION - PENSACOLA
SUMMARY OF EMISSION FACTORS
BASELINE EMISSIONS

#1 POWER BOILER

- NO_x - Stack test 2/91 (Appendix B, pg. B-2), 3 test runs conducted and the NO_x emission rate reported for each run was 0.10 lbs/MMBtu, the average emission rate was 0.10 lb/MMBtu.

  Emission Factor = 0.10 lb/MMBtu

- SO_2 - Natural gas sulfur content reported as 10.7 ppm by weight (Appendix B, pg. B-3). SO_2 emission factor calculated as follows:

  10.7 ppm (by wt.) of S in natural gas

$$\frac{10.7 \text{ lb S}}{10^6 \text{ lb N.G.}} = 10.7 \text{ ppm S in N.G.}$$

Natural gas consumption

% volume		MW		
93.9	CH_4	16	⇒	15.02
3.6	C_2H_6	30	⇒	1.08
1.2	C_3H_8	44	⇒	.53
1.3	C_4H_{10}	58	⇒	.75
				17.38 g/mole of N.G.

for ideal gas at 68°F

$$\rho = 41.57 \ \frac{\text{mole}}{\text{m}^3}$$

Therefore:

$$\rho_{\text{N.G.}} = \left[\frac{41.57 \text{ mole}}{\text{m}^3}\right]\left[\frac{17.38 \text{ g}}{\text{mole}}\right]\left[\frac{2.832 \times 10^{-2} \text{ m}^3}{\text{ft}^3}\right]\left[\frac{1\text{lb m}}{454 \text{ g}}\right]$$

$$= .0451 \ \frac{\text{lb}}{\text{ft}^3}$$

$$\frac{10.7 \text{ lb S}}{10^6 \text{ lb N.G.}} \times .0451 \ \frac{\text{lb}}{\text{ft}^3} \text{ N.G.} = \frac{.482 \text{ lb S}}{10^6 \text{ ft}^3 \text{ N.G.}}$$

$$= \frac{0.482 \text{ lb S}}{10^6 \text{ ft}^3 \text{ N.G.}} \times \frac{\text{ft}^3 \text{ N.G.}}{1{,}000 \text{ Btu}} \times \frac{64 \text{ lb-moles } SO_2}{32 \text{ lb-moles S}}$$

$$= 0.00093 \ \frac{\text{lbs } SO_2}{\text{MMBtu}}$$

Emission factor = 0.00093 lb/MMBtu

- CO - PSD Permit Application for Proposed Package Boiler - Pensacola 2/91, (Appendix B, pg. B-4)

Emission Factor = 0.1 lb/MMBtu

- PM/PM_{10} - The AP-42 emission factor estimate for PM/PM10 for utility boilers burning natural gas (Appendix B, pg. B-5) is 5 lbs per 10^6 ft^3 of natural gas. Assuming 1,000 BTU per ft^3, the PM/PM10 emission factor is calculated as follows:

$$\frac{5 \text{ lbs PM/PM10}}{1 \times 10^6 \text{ ft}^3 \text{ N.G.}} \times \frac{1 \text{ ft}^3 \text{ N.G.}}{1{,}000 \text{ BTU}} = \frac{.005 \text{ lbs PM/PM10}}{\text{MMBtu}}$$

Emission Factor = 0.005 lb/MMBtu

- VOC

Emission Factor = 2.70 lb/hr

Emission Factor Based on 20 ppm as carbon and 5.71×10^4 dscfm - PSD Permit App - Pensacola 2/91, Appendix B, pg. B-7
- Stack Test 2/91

20 ppm as carbon = 6.9 ppm as propane

$$\frac{\text{lb}}{\text{hr}} = \frac{\text{ppm}}{385.35 \times 10^6} \times Q_{dscfm} \times \frac{60 \text{ min}}{\text{hr}} \times \text{MW}$$

Where:

385.35×10^6 = A conversion factor relating cf/l (0.03531), g/lb (453.6), l/g-mole (24.06), and ppm (10^6)

44 = Molecular Weight as Propane

$$= \frac{6.9 \text{ ppm}}{385.35 \times 10^6} \times (5.71 \times 10^4) \times 60 \times 44 = 2.70 \text{ lb/hr}$$

= 2.70 lb/hr

#2 POWER BOILER

- NO_x - Results of three separate NO_x emission test runs during 2/91 were 0.40 lb/MMBtu, 0.42 lb/MMBtu and 0.44 lb/MMBtu. Mean value from the testing was 0.42 lb/MMBtu (Appendix B, pg. B-6).

Emission Factor = 0.42 lb/MMBtu

- SO_2 - Natural gas sulfur content reported as 10.7 ppm by weight (Appendix B, pg. B-3). SO_2 emission factor calculated as above for #1 Power Boiler.

  Emission Factor = 0.00093 lb/MMBtu

- CO - PSD Permit Application for Proposed Package Boiler - Pensacola 2/91, (Appendix B, pg. B-4).

  Emission Factor = 0.1 lb/MMBtu

- PM/PM_{10} - The AP-42 emission factor estimate for PM/PM10 from utility boilers burning natural gas (Appendix B, pg. B-5) is 5 lbs per 10^6 ft^3 of natural gas. Assuming 1,000 BTU per ft^3, the PM/PM10 emission factor is calculated as above for #1 Power Boiler.

  Emission Factor = 0.005 lb/MMBtu

- VOC

  Emission Factor = 2.68 lb/hr

  Emission Factor Based on 20 ppm as carbon and 5.67×10^4 dscfm - PSD Permit App - Pensacola 2/91, Appendix B, pg. B-7 - Stack Test 2/91

  20 ppm as carbon = 6.9 ppm as propane

  Where:

  385.35×10^6 = A conversion factor relating cf/l (0.03531), g/lb (453.6), l/g-mole (24.06), and ppm (10^6)

  44 = molecular weight as propane

$$\frac{lb}{hr} = \frac{6.9 \text{ ppm}}{385.35 \times 10^6} \times (5.67 \times 10^4) \times 60 \times 44 = 2.68 \text{ lb/hr}$$

  Emission Factor = 2.68 lb/hr

LIME KILN

- NO_x - The NO_x emission factor is based upon the average NO_x emission rate from seven one-hour tests conducted December 1989 and one twelve-hour test conducted in April 1990. (Appendix B, pgs. B-8 and B-9)

Average

14.2 lb/hr	Stack Test	12/89
16.8 lb/hr	Stack Test	4/90

Emission Factor = 15.5 lb/hr

- SO_2 - The SO_2 emission factor is based upon the average of four series of tests as indicated below (Appendix B, pgs. B-8, B-9, B-10, and B-11)

Average

0.2 lb/hr	Stack Test	4/89
0.7 lb/hr	Stack Test	5/89
0.1 lb/hr	Stack Test	12/89
0.7 lb/hr	Stack Test	4/90

Emission Factor = 0.43 lb/hr

- CO - The CO emission factor is based upon the average of two series of tests as indicated below (Appendix B, pgs. B-8, B-9)

Average

1.0 lb/hr	Stack Test	12/89
1.8 lb/hr	Stack Test	4/90

Emission Factor = 1.4 lb/hr

- PM/PM_{10} - The PM/PM10 emission factor is based upon four series of stack tests as indicated below (Appendix B, pgs. B-10, B-12, B-13, and B-14)

Average

10.8 lb/hr	Stack Test	4/89
23.2 lb/hr	Stack Test	12/89
14.8 lb/hr	Stack Test	3/91
7.2 lb/hr	Stack Test	3/92

Emission Factor = 14.0 lb/hr

- VOC - The VOC emission factor is based upon two series of stack tests as indicated below (Appendix B, pgs. B-8 and B-9)

Average (As Propane)

0.700 lb/hr	Stack Test	12/89
0.119 lb/hr	Stack Test	4/90

Average Emission Factor = 0.41 lb/hr as propane

- TRS

Emission Factor = 2.02 lb/hr

Emission Factor Based on 12.8 ppm @ 10% O_2 - 2-year average based on CEM data using average gas stream volumetric flow data from stack tests in March 91 and March 92 (Appendix B, pgs. B-13 and B-14)

27,100 dscfm @ 8.9% O_2

$$27{,}100 \text{ dscfm} \times \left[\frac{20.9 - 8.9}{20.9 - 10}\right] = 29{,}835 \text{ dscfm @ } 10\%\ O_2$$

Where:

20.9 = O_2 concentration at standard conditions

$$\frac{lb}{hr} = \frac{ppm}{385.35 \times 10^6} \times Q_{dscfm} \times \frac{60 \text{ min}}{hr} \times MW$$

Where:

385.35×10^6 = A conversion factor relating cf/l (0.03531), g/lb (453.6), l/g-mole (24.06), and ppm (10^6)

$$= 12.8 \text{ ppm} \times \frac{29{,}835 \text{ dscfm}}{385.35 \times 10^6} \times 34 \times 60 = 2.02 \text{ lb/hr}$$

$= 2.02$ lb/hr as H_2S

CHAMPION - PENSACOLA
SUMMARY OF EMISSION FACTORS
FUTURE EMISSIONS

LIME KILN - MUD DRYER

- NO_x - Based upon an Ahlstrom Guarantee of 200 ppm NO_x when firing oil (Appendix B, pg. B-15) and a scrubber outlet flow rate of 34,383 dscfm (Appendix B, p B-18).

Emission Factor = 49.3 lb/hr

VENDOR INFORMATION

$$Q_{DSCFM} = 34{,}383$$

$$NO_x = 200 \text{ ppm - oil fired}$$

$$\text{lb/hr} = Q_{DSCFM} \times \frac{\text{ppm}}{385.35 \times 10^6} \times \text{M.W.} \times 60 \text{ min/hr}$$

$$= 34{,}383 \times \frac{200 \text{ ppm}}{385.35 \times 10^6} \times 46 \times 60$$

$$= 49.3 \text{ lb/hr}$$

- SO_2 - Based upon CHAMPION's anticipated worst case SO_2 loading to the scrubber (Appendix B, p B-16), a scrubber control efficiency of 95%, and a scrubber outlet flow rate of 34,383 dscfm (Appendix B, p B-18).

Emission Factor = 6.49 lb/hr

Emission Factor Based on inlet scrubber loading of 129.85 lb/hr.

$$= 129.85\ (1 - 0.95) = 6.49 \text{ lb/hr}$$

Assume a scrubber control efficiency of 95%.

- CO - Based upon an Ahlstrom guarantee of 45 ppm CO when firing either oil or natural gas (Appendix B, pg. B-15) and a scrubber outlet flow rate of 34,383 dscfm (Appendix B, p B-18).

Emission Factor = 6.75 lb/hr

Emission Factor Based on 45 ppm

$$\frac{lb}{hr} = \frac{45\ ppm}{385.35 \times 10^6} \times (34{,}383) \times 28 \times 60$$

$$= 6.75\ lb/hr$$

- PM/PM_{10} - Based upon the Vendor guarantee of 0.037 gr/dscf and a scrubber outlet flow rate of 34,383 dscfm (Appendix B, p B-18).

Emission Factor = 10.90 lb/hr

Emission Factor Based on 0.037 gr/dscf *per vendor*

$$\frac{lb}{hr} = \frac{gr/dscf}{7000\ gr/lb} \times Q_{DSCFM} \times 60$$

$$= \frac{0.037}{7000} \times (34{,}383) \times (60) = 10.90\ lb/hr$$

- VOC - Based upon CHAMPION's maximum estimated VOC loading to the Lime Kiln-Mud Dryer (Appendix B, p B-17).

Emission Factor = 24.5 lb/hr

Emission Factor Based on 104 ppm

160 ppm as propane

$$\frac{lb}{hr} = \frac{ppm}{385.35 \times 10^6} \times MW \times Q_{DSCFM} \times 60$$

$$\frac{lb}{hr} = \frac{104}{385.35 \times 10^6} \times 44 \times 34{,}383 \times 60 = 24.5\ lb/hr$$

- TRS - Based upon the Ahlstrom guarantee of 8 ppm @ 10% O_2 (Appendix B, pg. B-15) and a scrubber outlet flow rate of 34,383 dscfm (Appendix B, p B-18).

Emission Factor = 1.46 lb/hr

Emission factor based on 8 ppm TRS @ 10% O_2 and Q_{dscfm} = 34,383

$$8 \text{ ppm} \times \frac{34{,}383}{385.35 \times 10^6} \times 34 \times 60 = 1.46 \text{ lb/hr as } H_2S$$

POWER BOILER #6

- NO_x - Based upon the BACT Analysis

Emission Factor = 0.06 lb/MMBtu

- SO_2 - Natural gas sulfur content reported as 10.7 ppm by weight (Appendix B, pg. B-3). SO_2 emission factor calculated as above for #1 Power Boiler baseline emission rates.

Emission Factor = 0.00093 lb/MMBtu

- CO - Based upon the BACT Analysis

Emission Factor = 0.1 lb/MMBtu

- PM/PM_{10} - Based upon the AP-42 factor for utility size natural gas-fired boilers; AP-42 Table 1.4-1 (Appendix B, pg. B-20).

Emission Factor = 0.005 lb/MMBtu

- VOC - Based upon the BACT Analysis

Emission Factor = 0.01 lb/MMBtu

CHAMPION - PENSACOLA
SUMMARY OF BASELINE EMISSIONS CALCULATIONS

NO. 1 POWER BOILER

Baseline Fuel Usage

$$\frac{\left[745{,}897\frac{Mcf}{yr} + 877{,}13\frac{Mcf}{yr}\right]}{2} = 811{,}55\ \frac{Mcf}{yr}$$

$$= 811.46\ \frac{MMcf\ NG}{yr}$$

$$= 811.46\ \frac{MMcf\ NG}{yr} \times \frac{1000\ MMBtu}{1\ MMcf\ NG} = 811{,}455\ \frac{MMBtu}{yr}$$

$$= 811{,}455\ \frac{MMBtu}{yr}$$

- NO_x

$$\frac{tons\ NO_x}{yr} = 0.1\ \frac{lb\ NO_x}{MMBtu} \times 811{,}455\ \frac{MMBtu}{yr} \times \frac{1\ ton}{2000\ lb}$$

$$= 40.57\ \frac{tons\ NO_x}{yr}$$

- SO_2

$$\frac{tons\ SO_2}{yr} = 0.00093\ \frac{lb\ SO_2}{MMBtu} \times 811{,}455\ \frac{MMBtu}{yr} \times \frac{1\ ton}{2000\ lb}$$

$$= 0.38\ \frac{tons\ SO_2}{yr}$$

- CO

$$\frac{\text{tons CO}}{\text{yr}} = 0.1 \frac{\text{lb CO}}{\text{MMBtu}} \times 811{,}455 \frac{\text{MMBtu}}{\text{yr}} \times \frac{\text{1 ton}}{\text{2000 lb}}$$

$$= 40.57 \frac{\text{tons CO}}{\text{yr}}$$

- PM/PM_{10}

$$\frac{\text{tons } PM/PM_{10}}{\text{yr}} = 0.005 \frac{\text{lb } PM/PM_{10}}{\text{MMBtu}} \times 811{,}455 \frac{\text{MMBtu}}{\text{yr}} \times \frac{\text{1 ton}}{\text{2000 lb}}$$

$$= 2.03 \frac{\text{tons } PM/PM_{10}}{\text{yr}}$$

- VOC

$$\frac{\text{tons VOC}}{\text{yr}} = 2.70 \frac{\text{lb VOC}}{\text{hr}} \times \left[\frac{7{,}410 \text{ hr} + 8{,}646 \text{ hr}}{2}\right] \times \frac{\text{1 ton}}{\text{2000 lb}}$$

$$= 10.84 \frac{\text{tons VOC}}{\text{yr}}$$

NO.2 POWER BOILER

Baseline Fuel Usage

$$\frac{\left[438{,}901 \frac{\text{Mcf}}{\text{yr}} + 639{,}177 \frac{\text{Mcf}}{\text{yr}}\right]}{2} = 539{,}039 \frac{\text{Mcf}}{\text{yr}}$$

$$= 539.04 \frac{\text{MMcf NG}}{\text{yr}}$$

$$= 539.04 \frac{\text{MMcf NG}}{\text{yr}} \times 1000 \frac{\text{MMBtu}}{\text{1 MMcf NG}} = 539{,}039 \frac{\text{MMBtu}}{\text{yr}}$$

$$= 539{,}039 \frac{\text{MMBtu}}{\text{yr}}$$

- NO_x

$$\frac{\text{tons } NO_x}{\text{yr}} = 0.42 \frac{\text{lb } NO_x}{\text{MMBtu}} \times 539{,}039 \frac{\text{MMBtu}}{\text{yr}} \times \frac{\text{1 ton}}{\text{2000 lb}}$$

$$= 113.2 \frac{\text{tons } NO_x}{\text{yr}}$$

- SO_2

$$\frac{\text{tons } SO_2}{\text{yr}} = 0.00093 \frac{\text{lb } SO_2}{\text{MMBtu}} \times 539{,}039 \frac{\text{MMBtu}}{\text{yr}} \times \frac{\text{1 ton}}{\text{2000 lb}}$$

$$= 0.25 \frac{\text{tons } SO_2}{\text{yr}}$$

- CO

$$\frac{\text{tons CO}}{\text{yr}} = 0.1 \frac{\text{lb CO}}{\text{MMBtu}} \times 539{,}039 \frac{\text{MMBtu}}{\text{yr}} \times \frac{\text{1 ton}}{\text{2000 lb}}$$

$$= 26.95 \frac{\text{tons CO}}{\text{yr}}$$

- PM/PM_{10}

$$\frac{\text{tons PM/PM}_{10}}{\text{yr}} = 0.005 \frac{\text{lb PM/PM}_{10}}{\text{MMBtu}} \times 539{,}039 \frac{\text{MMBtu}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lb}}$$

$$= 1.35 \frac{\text{tons PM/PM}_{10}}{\text{yr}}$$

- VOC

$$\frac{\text{tons VOC}}{\text{yr}} = 2.68 \frac{\text{lb VOC}}{\text{hr}} \times \left[\frac{3{,}619 \text{ hr} + 6{,}404 \text{ hr}}{2}\right] \times \frac{1 \text{ ton}}{2000 \text{ lb}}$$

$$= 6.72 \frac{\text{tons VOC}}{\text{yr}}$$

LIME KILN

Hours of Operation

$$\text{Hours of Operation} = \left[\frac{8{,}072 \text{ hr} + 8{,}305 \text{ hr}}{2}\right] = 8{,}188.5 \text{ hr}$$

$$= 8{,}188.5 \text{ hr}$$

- NO_x

$$\frac{\text{tons NO}_x}{\text{yr}} = 15.5 \frac{\text{lb NO}_x}{\text{hr}} \times 8{,}188.5 \text{ hr} \times \frac{1 \text{ ton}}{2000 \text{ lb}}$$

$$= 63.46 \frac{\text{tons NO}_x}{\text{yr}}$$

- SO_2

$$\frac{\text{tons } SO_2}{\text{yr}} = 0.43 \frac{\text{lb } SO_2}{\text{hr}} \times 8188.5 \text{ hr} \times \frac{1 \text{ ton}}{2000 \text{ lb}}$$

$$= 1.76 \frac{\text{tons } SO_2}{\text{yr}}$$

- CO

$$\frac{\text{tons CO}}{\text{yr}} = 1.4 \frac{\text{lb CO}}{\text{hr}} \times 8188.5 \text{ hr} \times \frac{1 \text{ ton}}{2000 \text{ lb}}$$

$$= 5.73 \frac{\text{tons CO}}{\text{yr}}$$

- PM/PM_{10}

$$\frac{\text{tons } PM/PM_{10}}{\text{yr}} = 14.0 \frac{\text{lb } PM/PM_{10}}{\text{hr}} \times 8188.5 \text{ hr} \times \frac{1 \text{ ton}}{2000 \text{ lb}}$$

$$= 57.32 \frac{\text{tons } PM/PM_{10}}{\text{yr}}$$

- VOC

$$\frac{\text{tons VOC}}{\text{yr}} = 0.41 \frac{\text{lb VOC}}{\text{hr}} \times 8188.5 \text{ hr} \times \frac{1 \text{ ton}}{2{,}000 \text{ lb}}$$

$$= 1.68 \frac{\text{tons VOC}}{\text{yr}}$$

- TRS

$$\frac{\text{tons TRS}}{\text{yr}} = 2.02 \frac{\text{lb TRS}}{\text{hr}} \times 8188.5 \text{ hr} \times \frac{1 \text{ ton}}{2000 \text{ lb}}$$

$$= 8.27 \frac{\text{tons TRS}}{\text{yr}}$$

CHAMPION - PENSACOLA

SUMMARY OF FUTURE EMISSIONS CALCULATIONS

Lime Kiln - Mud Dryer

- NO_x

$$\frac{\text{tons } NO_x}{\text{yr}} = 49.3 \frac{\text{lb } NO_X}{\text{hr}} \times 8760 \frac{\text{hrs}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lb}}$$

$$= 215.93 \frac{\text{tons } NO_x}{\text{yr}}$$

- SO_2

$$\frac{\text{tons } SO_2}{\text{yr}} = 6.49 \frac{\text{lb } SO_2}{\text{hr}} \times 8760 \frac{\text{hrs}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lb}}$$

$$= 28.43 \frac{\text{tons } SO_2}{\text{yr}} \quad \text{(CONTROLLED)}$$

- CO

$$\frac{\text{tons CO}}{\text{yr}} = 6.75 \frac{\text{lb CO}}{\text{hr}} \times 8760 \frac{\text{hrs}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lb}}$$

$$= 29.57 \frac{\text{tons CO}}{\text{yr}}$$

- PM/PM_10

$$\frac{\text{tons } PM/PM_{10}}{\text{yr}} = 10.9 \frac{\text{lb } PM/PM_{10}}{\text{hr}} \times 8760 \frac{\text{hrs}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lb}}$$

$$= 47.74 \frac{\text{tons } PM/PM_{10}}{\text{yr}}$$

- VOC

$$\frac{\text{tons VOC}}{\text{yr}} = 24.5\ \frac{\text{lb VOC}}{\text{hr}} \times 8760\ \frac{\text{hrs}}{\text{yr}} \times \frac{1\ \text{ton}}{2000\ \text{lb}}$$

$$= 107.31\ \frac{\text{tons VOC}}{\text{yr}}$$

- TRS

$$\frac{\text{tons TRS}}{\text{yr}} = 1.46\ \frac{\text{lb TRS}}{\text{hr}} \times 8760\ \frac{\text{hrs}}{\text{yr}} \times \frac{1\ \text{ton}}{2000\ \text{lb}}$$

$$= 6.39\ \frac{\text{tons TRS}}{\text{yr}}$$

No. 6 Power Boiler

Boiler Heat Input Rating 533 MMBtu/hr

$$\frac{533\ \text{MMBtu}}{\text{hr}} \times 8760\ \frac{\text{hr}}{\text{yr}} = 4{,}669{,}080\ \frac{\text{MMBtu}}{\text{yr}}$$

- NO_x

$$\frac{\text{tons } NO_x}{\text{yr}} = 0.06\ \frac{\text{lb } NO_x}{\text{MMBtu}} \times 4{,}669{,}080\ \frac{\text{MMBtu}}{\text{yr}} \times \frac{1\ \text{ton}}{2000\ \text{lb}}$$

$$= 140.07\ \frac{\text{tons } NO_x}{\text{yr}}$$

- SO_2

$$\frac{\text{tons } SO_2}{\text{yr}} = 0.00093\ \frac{\text{lb } SO_2}{\text{MMBtu}} \times 4{,}669{,}080\ \frac{\text{MMBtu}}{\text{yr}} \times \frac{1\ \text{ton}}{2000\ \text{lb}}$$

$$= 2.17\ \frac{\text{tons } SO_2}{\text{yr}}$$

- CO

$$\frac{\text{tons CO}}{\text{yr}} = 0.1 \frac{\text{lb CO}}{\text{MMBtu}} \times 4{,}669{,}080 \ \frac{\text{MMBtu}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lb}}$$

$$= 233.45 \ \frac{\text{tons CO}}{\text{yr}}$$

- PM/PM_{10}

$$\frac{\text{tons } PM/PM_{10}}{\text{yr}} = 0.005 \ \frac{\text{lb } PM/PM_{10}}{\text{MMBtu}} \times 4{,}669{,}080 \ \frac{\text{MMBtu}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lb}}$$

$$= 11.67 \ \frac{\text{tons } PM/PM_{10}}{\text{yr}}$$

- VOC

$$\frac{\text{tons VOC}}{\text{yr}} = 0.01 \ \frac{\text{lb VOC}}{\text{MMBtu}} \times 4{,}669{,}080 \ \frac{\text{MMBtu}}{\text{yr}} \times \frac{1 \text{ ton}}{2000 \text{ lb}}$$

$$= 23.35 \text{ tons } \frac{\text{VOC}}{\text{yr}}$$

APPENDIX B

EMISSION DATA SUPPORTING INFORMATION

SECTION 2. RESULTS AND DISCUSSION

Emission testing on the No. 1 and No. 2 Power Boilers was performed on 08 and 09 February 1991. The results of this testing are summarized in Tables 2.1 and 2.2. Field and process data are located in Appendices B, C, and D, respectively. Sample calculations are illustrated in Appendix E.

TABLE 2.1. SUMMARY OF NO_x EMISSION - NO. 1 POWER BOILER

	RUN 1	RUN 2	RUN 3	MEAN
Date	02/08/91	02/08/91	02/08/91	----
Time Begin	1246	1417	1545	----
Time Ended	1346	1517	1645	----
Stack Gas				
Temperature, °F	485	486	490	487
Velocity, ft/sec	47.9	52.7	52.3	51.0
Moisture, %	5.4	5.4	5.4	5.4
Oxygen, %	9.8	9.9	9.8	9.8
Carbon Dioxide, %	5.9	5.9	6.1	6.0
Volumetric Flow Rate				
at Stack Conditions,				
x 10^5 ft^3/min	0.98	1.08	1.07	1.04
at Standard Conditions,				
x 10^4 ft^3/min	5.19	5.71	5.65	5.5
Nitrogen Oxides				
Concentration, ppm	31	29	28	29
Emission Rate, lb/hr	11.5	11.9	11.3	11.6
Emission Rate, lb/mmBTU	0.10	0.10	0.10	0.10

Champion
Champion International Corporation

BEST AVAILABLE COPY

DATE 8/23 TIME 4:30 NO OF PAGES 2

TO: John Egan FROM: Steve Webb

LOCATION: LOCATION:

COMMENTS: Total S component analysis from one of our suppliers.
Other component analysis included as well –

FC-1129

PETROLEUM ANALYST INC.

ANALYTICAL CONSULTANTS

GAS ANALYSIS REPORT NO: 007-050892-02 DATE: 05-08-92

FOR: FIVE FLAGS PIPELINE
ATTN: MR. N. SMITH
P.O. BOX 1062
PACE FL 32570

SAMPLE IDENTIFICATION:
COMPANY: FIVE FLAGS PIPELINE
FIELD: PACE FLORIDA
LEASE: CHAMPION

SAMPLE DATA: DATE: 04-29-92 BY: R. SMITH
PSIG: 68 TEMP: DEG.F. GRAV:
MCF/D: DIF: IN. DP: LBS H2O

REMARKS: COMPOSITE SAMPLE FROM 03-30-92 TO 04-29-92.

CYL. # 1024

COMPONENT ANALYSIS

TOTAL SULFUR = 10.7 PPM (BY WEIGHT)

Post-it™ brand fax transmittal memo 7671 | # of pages ▸ 1

To Steve Webb | From Nathan Smith
Co. Champion | Five Flags Pipeline
Dept.

PSD Permit Application for A Proposed Package Boiler

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February 1991

2.5 Other Criteria Pollutants

A summary of the expected emission rates from the No. 5 Package Boiler of particulate matter, PM-10, sulfur dioxide, carbon monoxide, and hydrocarbons is presented in Table 2-2. The emissions of the above criteria pollutants are less than the PSD threshold levels requiring new source review.

Particulate matter emissions were derived using Table 1.4-1, Uncontrolled Emission Factors for Natural Gas Combustion in U.S. EPA Publication AP-42. A conservative factor for utility boilers of 5 lbs per million cubic feet of natural gas was used. Based on the maximum heat input of 195 MMBtu/hr and 8,760 hours of operation per year maximum hourly and annual particulate matter emissions are 0.98 lbs/hr and 4.3 tons/year respectively. All of the particulate matter generated is assumed to be PM-10.

Sulfur dioxide emissions were derived using Table 1.4-1, Uncontrolled Emission Factors for Natural Gas Combustion in U.S. EPA Publication AP-42. A conservative factor for utility boilers of 0.60 lbs per million cubic feet of natural gas was used. Based on the maximum heat input of 195 MMBtu/hr and 8,760 hours of operation per year, maximum hourly and annual sulfur dioxide emissions are estimated to be 0.12 lbs/hr and 0.53 tons/year respectively.

The carbon monoxide emission rate in Table 2-2 was derived from actual emission tests conducted on the No. 5 Package Boiler in May of 1989. Based on a "worst case" measured mass emission rate approximately 0.1 pounds of CO per MMBtu, a maximum heat input of 195 MMBtu/hr and 8,760 hours of operation per year, annual CO emissions are estimated to be 85.41 tons/year.

TABLE 1.4-1. UNCONTROLLED EMISSION FACTORS FOR NATURAL GAS COMBUSTION[a]

Furnace Size & Type (10^6 Btu/hr heat input)	Particulates[b]		Sulfur Dioxide[c]		Nitrogen Oxide[d,e]		Carbon Monoxide[f,g]		Volatile Organics Nonmethane		Volatile Organics Methane	
	$kg/10^6m^3$	$lb/10^6ft^3$	$kg/10^6m^3$	$lb/10^6ft^3$	$kg/10^6m^3$	$lb/10^6ft^3$	$kg/10^6m^3$	$lb/10^6ft^3$	$kg/10^6m^3$	$lb/10^6ft^3$	$kg/10^6m^3$	$lb/10^6ft^3$
Utility boilers (>100)	16-80	1-5	9.6	0.6	8800[h]	550[h]	640	40	23	1.4	4.8	0.3
Industrial boilers (10 - 100)	16-80	1-5	9.6	0.6	2240	140	560	35	44	2.8	48	3
Domestic and commercial boilers (<10)	16-80	1-5	9.6	0.6	1600	100	320	20	84	5.3	43	2.7

[a] All emission factors are expressed as weight per volume fuel fired.
[b] References 15-18.
[c] Reference 4 (based on an average sulfur content of natural gas of 4600 $g/10^6$ Nm^3 (2000 $gr/10^6$ scf).
[d] References 4-5,7-8,11,14,18-19,21.
[e] Expressed as NO_2. Test results indicate that about 95 weight % of NO_x is NO.
[f] References 4,7-8,16,18,22-25.
[g] References 16 and 18. May increase 10 to 100 times with improper operation or maintenance.
[h] Use 4400 $kg/10^6$ m^3 (275 $lb/10^6ft^3$) for tangentially fired units. At reduced loads, multiply this factor by the load reduction coefficient given in Figure 1.4-1. See text for potential NO_x reductions by combustion modifications. Note that the NO_x reduction from these modifications will also occur at reduced load conditions.

TABLE 2.2. SUMMARY OF NO_x EMISSION - NO. 2 POWER BOILER

	RUN 1	RUN 2	RUN 3	MEAN
Date	02/09/91	02/09/91	02/09/91	----
Time Begin	0938	1100	1221	----
Time Ended	1039	1200	1321	----
Stack Gas				
Temperature, °F	373	379	382	378
Velocity, ft/sec	43.5	44.1	47.0	44.9
Moisture, %	6.1	6.1	6.1	6.1
Oxygen, %	9.5	9.4	9.5	9.5
Carbon Dioxide, %	6.5	6.4	6.5	6.5
Volumetric Flow Rate				
at Stack Conditions, x 10^4 ft^3/min	8.88	9.00	9.60	9.16
at Standard Conditions, x 10^4 ft^3/min	5.30	5.34	5.67	5.44
Nitrogen Oxides				
Concentration, ppm	173	179	178	177
Emission Rate, lb/hr	66	69	72	69
Emission Rate, lb/mmBTU	0.40	0.42	0.44	0.42

The hydrocarbon emission rate in Table 2-2 was derived from actual emission tests conducted on the No. 5 Package Boiler in May of 1989. Based on a measured hydrocarbon concentration of 20 ppm (vol, dry), a volumetric flow rate of 33,000 dscfm (0°C, 1 atm) and 8,760 hours of operation per year, the hourly and annual hydrocarbon emissions are estimated to be 1.8 lbs/hr and 7.9 tons/year respectively.

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1989

TABLE 2.3. ONE HOUR SUMMARY OF O_2, CO, NO_x, SO_2, AND THC EMISSION, LIME KILN

	TIME PERIOD							
	1	2	3	4	5	6	7	AVG
Date[a]	12/13	12/13	12/13	12/13	12/13	12/13	12/13	---
Time Began	1201	1300	1400	1500	1600	1700	1800	---
Time Ended	1259	1359	1459	1559	1659	1759	1859	---
Volumetric Flow Rate x 10^4 ft^3/min at Standard Conditions	2.72	2.72	2.72	2.72	2.72	2.72	2.72	2.72
Carbon Dioxide Concentration, %	16.6	17.2	17.9	14.9	18.4	16.7	17.5	17.0
Oxygen Concentration, %	6.0	5.9	5.7	7.7	5.6	6.9	6.2	6.3
Carbon Monoxide								
Concentration, ppm	11.0	8	8	7	9	9	9	9
Emission Rate, lb/hr	1.3	1.0	1.0	0.9	1.1	1.0	1.0	1.0
Nitrogen Oxides[b]								
Concentration, ppm	76	72	73	70	72	70	73	72
Emission Rate, lb/hr	14.8	14.1	14.2	13.6	14.1	13.6	14.8	14.2
Sulfur Dioxide								
Concentration, ppm	1	<1	1	0	0	0	0	<1
Emission Rate, lb/hr	0.3	0.1	0.2	0.0	0.0	0.0	0.0	0.1
Total Hydrocarbons[c]								
Concentration, ppm	5	7	7	2	2	1	2	4
Emission Rate, lb/hr	0.9	1.2	1.3	0.4	0.3	0.2	0.3	0.7

[a]1989.
[b]as NO_x.
[c]as propane.

II. **SUMMARY**

Tabulated below are data collected on the Lime Kiln emissions during testing on April 11-12, 1990.

CHAMPION INTERNATIONAL CORPORATION

LIME KILN

PARAMETER	PERMIT LIMIT	RUN 1 (12 hr avg.)
DATE		4/11-12/90
TIME		1720-2104
		2251- 728
SULFUR DIOXIDE		
(PPM)		~~2.08~~
(lb/hr)		0.666
OXIDES OF NITROGEN		
(PPM)		73.08
(lb/hr)		16.791
CARBON MONOXIDE		
(PPM)		12.95
(lb/hr)		1.811
TOTAL HYDROCARBON**		
(PPM)		1.63
(lb/hr)		0.131
OPERATING RATE		
(ton lime mud/hr)	24.5	na
OXYGEN - test monitor		
(%)		6.84
STACK GAS DATA - *		
TEMPERATURE, F		182
MOISTURE, %		38.10
VELOCITY, ft/ sec		31.37
FLOW RATE, ACFM		62460.8
, DSCFM		32049.7

* - Average of three particulate tests conducted on 4-11-90
** - AS METHANE

WESTON

SECTION 2.

RESULTS AND DISCUSSION

2.1. LIME KILN

Emission testing on the Lime Kiln was performed on 26 April 1989. The results of this testing are summarized in Tables 2.1 and 2.2. Supporting field, process, and laboratory data are provided in Appendices B and C, respectively. Example calculations are illustrated in Appendix F.

TABLE 2.1

LIME KILN
SUMMARY OF PARTICULATE, NITROGEN OXIDES, AND SULFUR DIOXIDE EMISSIONS

	RUN 1	RUN 2	RUN 3	MEAN
Date	4/26/89	4/26/89	4/26/89	----
Time Began	1028	1220	1423	----
Time Ended	1132	1329	1525	----
Stack Gas				
Temperature, °F	172	170	172	171
Velocity, ft/sec	24.4	23.4	24.4	24.1
Moisture, %	41.1	37.6	38.7	39.2
Oxygen, %	6.7	4.8	5.0	5.5
Carbon Dioxide, %	16.0	18.9	17.8	17.6
Volumetric Flow Rate				
At Stack Conditions $\times 10^4$ ft^3/min	4.85	4.66	4.87	4.79
At Standard Conditions $\times 10^4$ ft^3/min	2.40	2.45	2.50	2.45
Particulate				
Isokinetic Sampling Rate, %	87	90	93	90
Concentration[a], gr/ft^3	0.071	0.050	0.035	0.052
Emission Rate, lb/hr	14.6	10.4	7.4	10.8
Allowable Limit, lb/hr	----	----	----	26.1
Nitrogen Oxides				
Concentration[a], ppm	82	82	81	82
Emission Rate, lb/hr	14.1	14.4	14.5	14.3
Sulfur Dioxide				
Concentration[a], ppm	1.1	0.2	0.2	0.5
Emission Rate, lb/hr	0.3	0.1	0.1	0.2

[a]At standard conditions 68° F and 29.92 inches of mercury.

N:100/224625R2

2.2. LIME KILN CONDITION 1 - ALL NGC SOURCES

Sulfur Dioxide testing on the Lime Kiln with All NCG Sources feed was performed on 16 May 1989. The results of this testing are summarized in Table 2.2. Supporting field and laboratory data are provided in Appendix B. Example calculations are illustrated in Appendix I.

TABLE 2.2

SUMMARY OF EMISSIONS - LIME KILN CONDITION 1
ALL NCG SOURCES

	RUN 1	RUN 2	RUN 3	MEAN
Date	5/16/89	5/16/89	5/16/8	---
Time Began	1000	1108	1200	---
Time Ended	1030	1138	1230	---
Stack Gas				
Temperature, °F	166	166	166	166
Velocity, ft/sec	20.9	21.1	20.7	20.9
Moisture, %	37.2	37.2	37.2	37.2
Oxygen, %	19.0	19.0	18.0	18.7
Carbon Dioxide, %	6.0	6.5	4.5	5.7
Volumetric Flow Rate				
At Stack Conditions $\times 10^4$ ft^3/min	4.16	4.21	4.13	4.17
At Standard Conditions $\times 10^4$ ft^3/min	2.21	2.23	2.19	2.21
Sulfur Dioxide				
Concentration[a], ppm	4.4	3.3	2.4	3.3
Emission Rate, lb/hr	1.0	0.7	0.5	0.7

[a]At standard condition - 68° F and 29.92 inches of mercury.

2.2. LIME KILN

This section summarizes the results of the emission testing on the lime kiln. Table 2.2 summarizes the three one-hour particulate emission tests performed at the outlet of the kiln. Table 2.3 summarizes the results of the continuous emission monitoring system (CEMS) for CO_2, O_2, CO, THC, NO_x, and SO_2 on an hourly basis. These results for the CEMS are then provided in graphical form in Figures 2.1 and 2.2. Particulate and CEMS field data are located in Appendices B and C, respectively. Laboratory and process data are provided in Appendices D and E, respectively. Example calculations are illustrated in Appendix G.

TABLE 2.2. LIME KILN
SUMMARY OF PARTICULATE EMISSIONS

	RUN 1	RUN 2	RUN 3	MEAN
Date	12-12-89	12-12-89	12-12-89	---
Time Began	0930	1230	1510	---
Time Ended	1030	1330	1610	---
Stack Gas				
Temperature, °F	160	162	161	161
Velocity, ft/sec	26.5	25.2	26.9	26.2
Moisture, %	37.3	34.7	36.2	36.0
Oxygen, %	6.5	7.0	6.5	6.7
Carbon Dioxide, %	16.5	16.0	16.5	16.3
Volumetric Flow Rate $x10^4$ ft^3/min				
At Stack Conditions	5.08	4.82	5.16	5.02
At Standard Conditions	2.71	2.66	2.79	2.72
Particulate				
Isokinetic Sampling Rate, %	95	97	95	96
Concentration[a], gr/ft^3	0.099	0.103	0.097	0.100
Emission Rate, lb/hr	22.8	23.6	23.1	23.2

[a]At standard conditions 68°F and 29.92 inches of mercury.

2.6. LIME KILN

Table 2.6 summarizes the results of the particulate emission testing performed on 19 March 1991 on the Lime Kiln. Field and laboratory data are provided in Appendices G and K, respectively. Sample calculations are presented in Appendix N.

TABLE 2.6. EMISSION DATA - LIME KILN

	RUN 1	RUN 2	RUN 3	MEAN
Date	03/19/91	03/19/91	03/19/91	---
Time Began	1005	1138	1310	---
Time Ended	1108	1240	1412	---
Stack Gas				
Temperature, °F	166	167	167	167
Velocity, ft/sec	24.0	26.1	24.6	24.9
Moisture, %	36.6	36.9	37.8	37.1
CO_2 Concentration, %	16.5	16.5	16.0	16.3
O_2 Concentration, %	11.0	9.0	9.3	9.8
Volumetric Flow Rate				
At Stack Conditions, x 10^4 ft^3/min	4.77	5.19	4.89	4.95
At Standard Conditions[a], x 10^4 ft^3/min	2.56	2.77	2.57	2.63
Particulate				
Isokinetic Sampling Rate, %	95	91	96	94
Concentration, gr/ft^3 @ Standard Cond.[a]	0.058	0.070	0.069	0.065
Emission Rate, lb/hr	12.6	16.5	15.2	14.8
Permit Limit, lb/hr	---	---	---	26.1

[a]68°F, 29.92 in. Hg.

2.5. LIME KILN

Table 2.5 summarizes the results of the particulate emission testing performed on 27 March 1992 on the Lime Kiln. Field and laboratory data are provided in Appendices F and G, respectively. Sample calculations are presented in Appendix H.

TABLE 2.5. EMISSION DATA - LIME KILN

	RUN 1	RUN 2	RUN 3	MEAN
Date	03/27/92	03/27/92	03/27/92	----
Time Began	1002	1138	1302	----
Time Ended	1102	1238	1402	----
Stack Gas				
Temperature, °F	165	165	165	165
Velocity, ft/sec	25.1	26.3	25.9	25.8
Moisture, %	36.2	36.2	35.7	36.0
CO_2 Concentration, %	16.0	18.0	18.0	17.3
O_2 Concentration, %	8.0	8.0	8.0	8.0
Volumetric Flow Rate				
@ Stack Conditions, x 10^4 ft^3/min	5.00	5.24	5.16	5.14
@ Standard Conditions[a], x 10^4 ft^3/min	2.71	2.84	2.82	2.79
Particulate				
Isokinetic Sampling Rate, %	98	96	95	96
Concentration, gr/ft^3 @ Standard Cond.[a]	0.029	0.032	0.030	0.030
Emission Rate, lb/hr	6.7	7.7	7.2	7.2
Permit Limit, lb/hr	----	----	----	26.1

[a]68°F, 29.92 in. Hg.

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AHLSTROM

J. Deschane
P. Muehlame
J. Kappai

GUARANTEE AND WARRANTY
(Revised November 3, 1992)
PERFORMANCE GUARANTEES

- Production — 450 STPD of Kiln Product
- Lime Kiln Fuel Consumption — 6.5 MMBTU/ST Product Net; 7.2 MMBTU/ST Product Gross on Natural Gas
- Product CaO Content ($CaCO_3$ in dry lime mud at 93%) — 85% or Higher
- Emission guarantee for flue gases with Ahlstrom Pyroprocessing burner:
  - TRS — 8 ppm (12 hour average)
  - NO_x — 200 ppm with oil firing (11/3/92); 175 ppm with gas firing (11/3/92)
  - CO — 45 ppm
  - Particulate load to ESP — 280 lb/min

Emissions are to be corrected to 10% O_2
All levels are given on a dry gas basis

Champion– Pensacola
Lime Kiln–Mud Dryer
SO_2 Emission Projection

Condition/Variable	
Operating Days	365
Mill Production Rate (ADBT)	1500
Lime Production	500
Mud Feed Rate (ton/day)	892.86
Mud Solids to Kiln (%)	75
Mud Na_2O Content	0.8
% Sulfidity	25.5
SO_2 to Kiln from Mud (lb/hr)	156.68
MMBtu/ton Lime	7.2
MMBtu/day	3600
MMBtu/lb Oil	0.02
lb Oil/day	198950
Fuel Oil %S	2.5
lb SO_2/hr	414.48
NCG H_2S Input (lb/ADBT)	5
NCG SO_2 In (lb/hr)	588.24
Total SO_2 Input (lb/hr)	1159.4
Total SO_2 Input (lb/day)	27825.52
Total SO_2 Input (ton/day)	13.91
Sulfur Capture Efficiency (%)	88.8
SO_2 to Scrubber (lb/hr)	129.85
SO_2 to Scrubber (lb/day)	3116.46
SO_2 to Scrubber (ton/day)	1.56
SO_2 to Scrubber (ton/year)	568.75
SO_2 Scrubber Efficiency (%)	95
SO_2 Emission Rate (lb/hr)	6.49
SO_2 Emission Rate (lb/day)	155.82
SO_2 Emission Rate (ton/day)	0.08
SO_2 Emission Rate (ton/year)	28.44

12/16 g:\..\champen\lmd.wk3

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Printing and Writing Papers
375 Muscogee Road
P. O. Box 87
Cantonment, Florida 32533-0087
904 968-2121

Champion
Champion International Corporation

To: Charles Ayer

Date: 11/10/92

From: Steve Webb

Subject: LMD VOC Prediction

As requested, the following information is provided to show an expected worst case for VOC emissions from the LMD.

Assumptions & Basis:

B-Condensate is used in the mud washer and on the mud filter.
B-Condesate TOC is approximately 300ppm.
450TPD LMD production ARI guarantee.
Assume all TOC is volatilized.
Assume all TOC is converted to propane.
Assume 75% cake solids entering the LMD.
LMD stack volumetric flow rate is ~~32300 dscfm.~~
34,323 dscfm 12/3/92

Calculations:

$$450\text{TPD lime} \times \frac{2000\#}{\text{Ton}} \times \frac{100\text{ mw}}{56\text{ mw}} \times \frac{0.25\#\text{ cond.}}{0.75\#\text{ mud}} \times \frac{300\#\text{ TOC}}{10^6\#\text{ Cond.}} = 160.7\#/\text{Day TOC}$$

$$\frac{160.7\#\text{ TOC}}{\text{Day}} \times \frac{44\text{ mw}}{12\text{ mw}} = 589\#/\text{Day VOC's as propane} ==== 24.5\#/\text{Hr}$$

$$\frac{589\#\text{ VOC's}}{\text{Day}} \times \frac{454\text{g}}{\#} \times \frac{1\text{ mole}}{44\text{g mw}} \times \frac{24.04\text{L}}{\text{mole}} \times \frac{3.53\times10^{-2}\text{ft}^3}{\text{L}} \times \frac{\text{Day}}{24\text{Hr}} \times$$

$$\frac{\text{Hr}}{60\text{min}} \times \frac{\text{min}}{\sout{32300\text{dscf}}\ 34{,}323\text{dscf}} \times \frac{10^6\mu\text{l}}{\text{L}} = \sout{110\text{ ppm as propane}}$$

104 ppm as propane cw/k 12/3/92

Lime mud dryer VOC emissions could be safely expected to be less than 110 ppm since dilution and fugitive emissions are not taken into account. A total conversion and volatilization of all TOC is being assumed as well. This extremely conservative prediction should help in our evaluation of BACT requirements for LMD VOC's.

If there are any questions please give me a call at 968-2121 ext. 2498.

CC:
John Barone, Ph.D. - Weston
John Egan - Weston
Paul Johnson
Kyle Moore
Janet Price
Willie Tims, Jr.

PRELIMINARY SCRUBBER DATA

SAT.GAS VOL., TEMP.,& OTHER DATA¶

12-02-1992 Job no: 2160 16:21:2

JOB/PROPOSAL NAME: Champion Int'l Page No: 4 of
DESCRIPTION: Lime Kiln Scrubber

SYSTEM SUMMARY

			INLET	OUTLET
GAS FLOW RATE	- ACFM		67,405.0000	57,208.1500 ✓
DRY @ 68 DEG F	- SCFMD		34,381.7119	34,381.7119 ✓
14.696 PSIA	- LBS/HR		164,802.4622	164,802.4622
WET @ 68 DEG F	- SCFMW		45,842.2826	48,976.5073
14.696 PSIA	- LBS/HR		196,949.1349	205,740.5729
TEMPERATURE	- DEG F		320.0000	156.6872 ✓SATURATED
	- DEG R		779.6700	616.3572
PRESSURE	- PSIA		14.7680	14.6960
(Pamb=14.696 PSIA)	- in wc		+1.996	+0.000
MOISTURE	- LBS/HR		32,146.6727	40,938.1107
	- VOL %		25.00000	29.79958
	- WT %		16.32232	19.89793
HUMIDITY	- LBS H2O/LB-DG		0.19506	0.24841
DENSITY	- LBS/FT3		0.04870	0.05994
ENTHALPY (32 DEG F)	- BTU/LB-DG		304.17488	304.17504 SATURATED
HEAT CAPACITY	- BTU/LB-DEG R		0.2804	0.2810
ADIABATIC FACTOR	= CP/CV = CP/(CP-R)		1.3456	1.3551
HEAT CAPACITY	- BTU/LB-DEG R	DG	0.2452	0.2389
		H2O	0.4608	0.4506
MOLECULAR WEIGHT	- LBS/LB-MOLE	WET	27.5926	26.9797
		DRY	30.7851	30.7851
OXYGEN (O2)	- VOLUME %	WET	4.00000	3.74402
		DRY	5.33333	5.33333
CARBON DIOXIDE (CO2)	- VOLUME %	WET	12.00000	11.23207
		DRY	16.00000	16.00000

EVAPORATION RATE 8,791.4380 LBS/HR <=> 17.590 GPM

DEW POINT OF INLET GAS: 149.7085 DEG F @ 14.7680 PSIA

LIQUID SPRAY: 1,700.00 GPM AT 150.0000 DEG F

Storage Tank
Emission Report
Friday, December 11 1992
4:26 PM

---- Tank Characteristics ----

Identification

Identification No.:	CHAMP
City:	Mobile
State:	Alabama
Company:	CHAMPION

Input Parameters

Type of Tank:	Horizontal Fixed Roof

Tank Dimensions

Shell Length (ft):	25
Diameter (ft):	13
Liquid Height (ft):	0
Volume (gallons):	21880
Turnovers:	20
Net Throughput (bbl/yr):	437600
Is tank underground? (Y/N):	N

Paint Characteristics

Paint Color:	White
Paint Shade:	White
Condition:	Good

Breather Vent Settings

Vacuum Setting(psig):	-0.14
Pressure Setting(psig):	0.14

---- Storage Tank Contents Temperature Data ----

Daily Average Ambient Temperature (Degrees Farenheit) =	67.50
Daily Minimum Ambient Temperature (Degrees Farenheit) =	57.60
Daily Maximum Ambient Temperature (Degrees Farenheit) =	77.40
Daily Ambient Temperature Range =	19.80
Solar Insolation Factor =	1384.00
Alpha (Shell) =	0.17
Liquid Bulk Temperature (Degrees Farenheit) =	67.52
Average Liquid Surface Temperature (Degrees Farenheit) =	69.37
Daily Maximum Liquid Surface Temperature (Degrees Farenheit) =	74.58
Daily Minimum Liquid Surface Temperature (Degrees Farenheit) =	64.16
Daily Vapor Temperature Range =	20.84

---- Storage Tank Vapor Pressure Information ----

Speciation Option: None
Chemical Liquid: Methyl Alcohol

Vapor Pressure of total mixture =	1.925290
Minimum Vapor Pressure of total mixture =	1.641939
Maximum Vapor Pressure of total mixture =	2.249324
Vapor Molecular Weight of Mixture =	32.040000

Storage Tank
Emission Report
Friday, December 11 1992
4:26 PM

---- Storage Tank Working Loss Information (AP-42) ----

Net Throughput (gal/year) =	437600
Liquid Volume (cubic feet) =	2925
Turnovers =	20
Turnover Factor =	1.0000
Working Loss Product Factor =	1.00
Total Working Losses =	642.71

APPENDIX C

SUMMARY OF OPERATING DATA

TABLE C-1
CHAMPION PAPER
PENSACOLA, FLA
SUMMARY OF FUEL USAGE AND BLS FIRING RATES
BASELINE EMISSIONS

	#1 POWER BOILER NAT GAS MCF	#2 POWER BOILER NAT GAS MCF	#1 RECOVERY BOILER NAT GAS MCF	#1 RECOVERY BOILER BLS TONS	#2 RECOVERY BOILER NAT GAS MCF	#2 RECOVERY BOILER BLS TONS	LIME KILN NAT GAS MCF
JULY 1990 - JUNE 1991							
JULY	68255	29824	3791	28250	11378	39500	66014
AUGUST	59233	23397	4387	31250	2601	35000	38205
SEPTEMBER	17573	36018	942	37500	3758	35750	59954
OCTOBER	22428	72631	5367	37000	5713	35500	59954
NOVEMBER	60138	79234	677	37500	3115	10750	48243
DECEMBER	72004	23764	3131	38250	4604	39400	71857
JANUARY	77658	20639	4278	36687	4795	40505	68545
FEBUARY	62558	20639	2914	36240	3074	34701	60673
MARCH	79126	25355	6410	27100	4449	35151	55633
APRIL	70618	79987	7737	37115	6695	37411	67532
MAY	78319	11796	6303	36932	8707	32162	64778
JUNE	77987	15617	5749	35543	5330	39439	62870
TOTAL	745897	438901	51686	419367	64219	415269	724258
JULY 1991 - JUNE 1992							
JULY	85896	12759	1936	35990	2885	39333	60628
AUGUST	90188	18899	4420	39632	4253	39212	60054
SEPTEMBER	84396	31455	4201	32887	4081	38109	51897
OCTOBER	85672	28729	2057	38166	4268	38952	61132
NOVEMBER	77255	86364	3058	36070	3607	31551	56137
DECEMBER	82502	90904	3574	36524	3002	38640	55669
JANUARY	79989	90904	1101	38541	4780	38514	58747
FEBUARY	60252	58326	4385	27542	2087	33818	44198
MARCH	56035	49474	1022	36658	4596	38177	62085
APRIL	58854	57331	2207	36403	5719	31902	56431
MAY	54785	52559	1609	38673	3444	38057	60342
JUNE	61189	61473	3462	35577	6958	37610	56258
TOTAL	877013	639177	33032	432663	49680	443875	683578

TABLE C-2
CHAMPION PAPER
PENSACOLA, FLA
SUMMARY OF HOURS OF OPERATION AND PULP PRODUCTION
BASELINE EMISSIONS

	#1 POWER BOILER (hrs)	#2 POWER BOILER (hrs)	#1 RECOVERY BOILER (hrs)	#2 RECOVERY BOILER (hrs)	LIME KILN (hrs)	PULP PRODUCTION (ADUBT)[1] HARDWOOD	SOFTWOOD
JULY 1990 - JUNE 1991							
JULY	711	198	744	744	729	22725	24516
AUGUST	741	198	624	744	570	22968	19358
SEPTEMBER	245	477	715	713	675	21951	23578
OCTOBER	194	685	732	670	735	20988	24053
NOVEMBER	615	712	223	714	556	18054	16839
DECEMBER	741	222	744	743	717	22572	23842
JANUARY	707	172	697	744	716	21423	21103
FEBUARY	625	97	671	662	643	19205	20367
MARCH	737	217	606	741	599	21741	18485
APRIL	635	420	713	700	713	21402	21780
MAY	742	88	711	650	722	17875	22867
JUNE	717	133	701	720	697	22480	21065
TOTAL	7410	3619	7881	8545	8072	253384	257853
JULY 1991 - JUNE 1992							
JULY	730	107	709	737	738	22098	22196
AUGUST	737	141	744	740	731	22689	21920
SEPTEMBER	709	232	632	700	601	22159	17549
OCTOBER	744	191	743	734	735	21853	20756
NOVEMBER	642	638	710	580	704	18008	20927
DECEMBER	744	740	727	744	720	21545	21105
JANUARY	718	744	743	744	732	21942	23437
FEBUARY	696	696	564	692	556	16551	22327
MARCH	744	732	739	727	736	23022	23532
APRIL	720	720	711	617	709	22059	20441
MAY	744	743	736	734	729	23094	23294
JUNE	718	720	687	720	614	21604	21234
TOTAL	8646	6404	8445	8469	8305	256624	258718

[1] ADUBT - AIR DRIED UNBLEACHED TONS

TABLE C-3
CHAMPION
PENSACOLA, FLA
SUMMARY OF BASELINE EMISSIONS

JULY 1990 - JUNE 1991

SOURCE	NO_x	SO_2	CO	PM/PM_{10}	VOC	TRS
#1 POWER BOILER	37.29 tons	0.35 tons	37.29 tons	1.86 tons	10.00 tons	NA
#2 POWER BOILER	92.17 tons	0.20 tons	21.95 tons	1.10 tons	4.85 tons	NA
LIME KILN	62.56 tons	1.74 tons	5.65 tons	56.50 tons	1.65 tons	8.15 tons
LINE A- Cl_2 SCRUBBER(1) (3)	NA	NA	NA	NA	10.70 tons	NA
LINE A- E_o WASHER(1) (3)	NA	NA	NA	NA	1.16 tons	NA
LINE B- Cl_2 SCRUBBER(2) (4)	NA	NA	NA	NA	15.20 tons	NA
LINE B- E_o WASHER(2) (4)	NA	NA	NA	NA	2.03 tons	NA
TOTAL	192.02 tons	2.29 tons	64.89 tons	59.47 tons	45.60 tons	8.15 tons

(1) Softwood
(2) Hardwood
(3) VOC emission rates are based on the lb/ADTP emission factor and actual softwood pulp (ADTP) production.
(4) VOC emission rates are based on the lb/ADTP emission factor and actual hardwood pulp (ADTP) production.

TABLE C-4
CHAMPION
PENSACOLA, FLA
SUMMARY OF BASELINE EMISSIONS

JULY 1991 - JUNE 1992

SOURCE	NO_x	SO_2	CO	PM/PM_{10}	VOC	TRS
#1 POWER BOILER	43.85 tons	0.41 tons	43.85 tons	2.19 tons	11.67 tons	NA
#2 POWER BOILER	134.23 tons	0.30 tons	31.96 tons	1.60 tons	8.58 tons	NA
LIME KILN	64.36 tons	1.79 tons	5.81 tons	58.13 tons	1.70 tons	8.39 tons
LINE A- Cl_2 SCRUBBER(1) (3)	NA	NA	NA	NA	10.74 tons	NA
LINE A- E_o WASHER(1) (3)	NA	NA	NA	NA	1.16 tons	NA
LINE B- Cl_2 SCRUBBER(2) (4)	NA	NA	NA	NA	15.40 tons	NA
LINE B- E_o WASHER(2) (4)	NA	NA	NA	NA	2.05 tons	NA
TOTAL	242.44 tons	2.49 tons	81.62 tons	61.92 tons	51.31 tons	8.39 tons

(1) Softwood
(2) Hardwood
(3) VOC emission rates are based on the lb/ADTP emission factor and actual softwood pulp (ADTP) production.
(4) VOC emission rates are based on the lb/ADTP emission factor and actual hardwood pulp (ADTP) production.

APPENDIX D

BLEACH PLANT CHLOROFORM EMISSIONS

APPENDIX D

BLEACH PLANT CHLOROFORM EMISSIONS

In order to determine baseline and future chloroform emission rates from the bleach plant air emission sources, two sets of data were evaluated. These included recent laboratory studies utilizing 100% ClO_2 substitution for molecular chlorine in the bleaching sequence and NCASI chloroform emission sampling conducted at the mill in March 1990 under current bleaching conditions.

CHAMPION has conducted extensive laboratory testing to determine how the $CHCl_3$ generation rates will change with increased levels of ClO_2 substitution for molecular chlorine. The results of the lab studies indicate that for the proposed modified Pensacola bleaching process, substituting 100% ClO_2 for molecular chlorine will result in a $CHCl_3$ generation rate of 0.02 lb per ADTP or less.

The results of the NCASI testing identified the mill $CHCl_3$ generation rate of approximately 0.4 lbs per air dried ton of pulp (ADTP) for the existing bleaching operations. Furthermore, the testing identified emission rates for the various bleach plant sources which were then used in conjunction with the production data during the test period to determine $CHCl_3$ emission factors for the sources.

Table D1 summarizes the $CHCl_3$ emission factors determined during the NCASI testing. The table also includes average and maximum $CHCl_3$ emission rates at current mill pulping rates. These were used to develop annual baseline emission rates. The NCASI data also indicated that approximately 60% of the chloroform generated was emitted from the bleach plant air sources while the remaining portion was discharged with the wastewater to the treatment system.

TABLE D-1

CHAMPION PENSACOLA MILL
BASELINE CHLOROFORM EMISSION RATES

A Line - Line 2 -	softwood, permit limits:	800 ADT/day Annual Average 888 ADT/day 24-hr Average
B Line - Line 1 -	hardwood, permit limits:	600 ADT/day Annual Average 792 ADT/day 24-hr Average

I. <u>GAS PHASE</u>

SOURCE	EMISSION FACTOR (lb/ADTP)*	EMISSION RATES			
		AVERAGE		MAXIMUM	
		(lb/hr)	(g/sec)	(lb/hr)	(g/sec)
A - Cl_2 Scrubber	0.083	2.77	0.349	3.07	0.387
A - E_o Washer	0.009	0.300	0.038	0.333	0.042
B - Cl_2 Scrubber	0.120	3.00	0.378	3.96	0.499
B - E_o Washer	0.016	0.400	0.050	0.528	0.067

CHAMPION has utilized the results of the lab data in conjunction with the results of the NCASI study, to estimate new emission factors for the bleach plant air sources as identified in Table D-2. The table also includes maximum predicted $CHCl_3$ emission rates at the projected new maximum pulp production rate of 1500 ADTP per day. The new rates have been utilized to project the future annual emissions associated with the bleach plant air sources. These emission rates were used in the HAPs modeling study.

Chloride and Chlorine Dioxide Emissions

Chlorine and chlorine dioxide will potentially be emitted from the bleach plant point source vents and from the ERCO chlorine dioxide tail gas srubber. The ERCO tail gas scrubber controls the ERCO generator along with emissions from the ClO_2 tank vent scrubbers. The vendor for the ERCO generator has guaranteed that the emissions from the modified R8/R10 system will not exceed 0.25 lbs per hour of chlorine dioxide and 0.1 lb per hour of chlorine. Projected emissions of these three compounds from the bleach plant scrubbers have been provided for both the pine and hardwood lines. The projected rates are conservative estimates based upon previous testing and measured scrubber removal efficiencies for both pollutants. The projected emission rates include 1.45 lbs per hour of Cl_2 and 0.45 lbs per hour of ClO_2 from the pine bleach plant scrubber and 1.0 lbs per hour of Cl_2 and 0.45 lbs per hour of ClO_2 from the hardwood bleach plant scrubber. CHAMPION is committed to meeting these proposed permit allowable emission rates for the chlorine and chlorine dioxide point sources in the bleach plant.

TABLE D-2

CHAMPION PENSACOLA MILL
Future Chloroform Emission Rates
(100% ClO_2 Substitution)

SOURCE	EMISSION FACTOR (#/ADT)	EMISSION RATE* (lbs/yr)	EMISSION RATE* (lbs/hr)	% OF GENERATION RATE**
A-line Cl_2 Scrubber	.0054	2956.5	0.3375	27
A-line E_o Washer	.0006	328.5	0.0375	3
B-line Cl_2 Scrubber	.0054	2956.5	0.3375	27
B-line E_o Washer	.0006	328.5	0.0375	3
A + B-line Wastewater	.008	4380.0	0.50	40
Total	0.02	10,950	1.25	100

} 60% - Air Stream

} - Wastewater

* Based on 1500 ADT/day and applicable emission factor.

** Based on existing facility splits for: air vs. wastewater; scrubber vs. E_o washer; softwood vs. hardwood.

CH237A.TAB

APPENDIX E
MODELING SUPPORT INFORMATION

WESTON
MANAGERS DESIGNERS/CONSULTANTS
1 WESTON WAY
WEST CHESTER, PA 19380-1499
PHONE: 215-692-3030
FAX: 215-430-3186

23 November 1992

Mr. Glen Golson
ADEM
1751 Federal Drive
Montgomery, Alabama 36130

Work Order No. 02246-056-001

Dear Mr. Golson:

In accordance with our telecon on 20 November 1992, this is to confirm our understanding of your file search for other major sources in Alabama to be included in the NAAQS and PSD modeling study for Champion International Corporation's Pensacola Mill. As we discussed, Champion plans to modify their existing pulp and paper mill located in Cantonment, Florida.

In 1991, Champion added a boiler which required a PSD permit, due to the proposed increase in nitrogen dioxide (NO_x) emissions. At that time, an emissions inventory of NO_x sources was prepared and used in the PSD modeling analysis. We received information on Alabama sources to be included in the modeling analysis from ADEM for that permit application.

We understand, based on your review, that no new PSD increment consuming or major sources of NO_x have been permitted in Baldwin or Escambia County. Hence, the previous emissions inventory is acceptable to ADEM for this modeling study.

We appreciate your assistance in reviewing your files relative to this important project. Please call if you wish to discuss the project or if your understanding of the issues addressed in this letter is different than those presented.

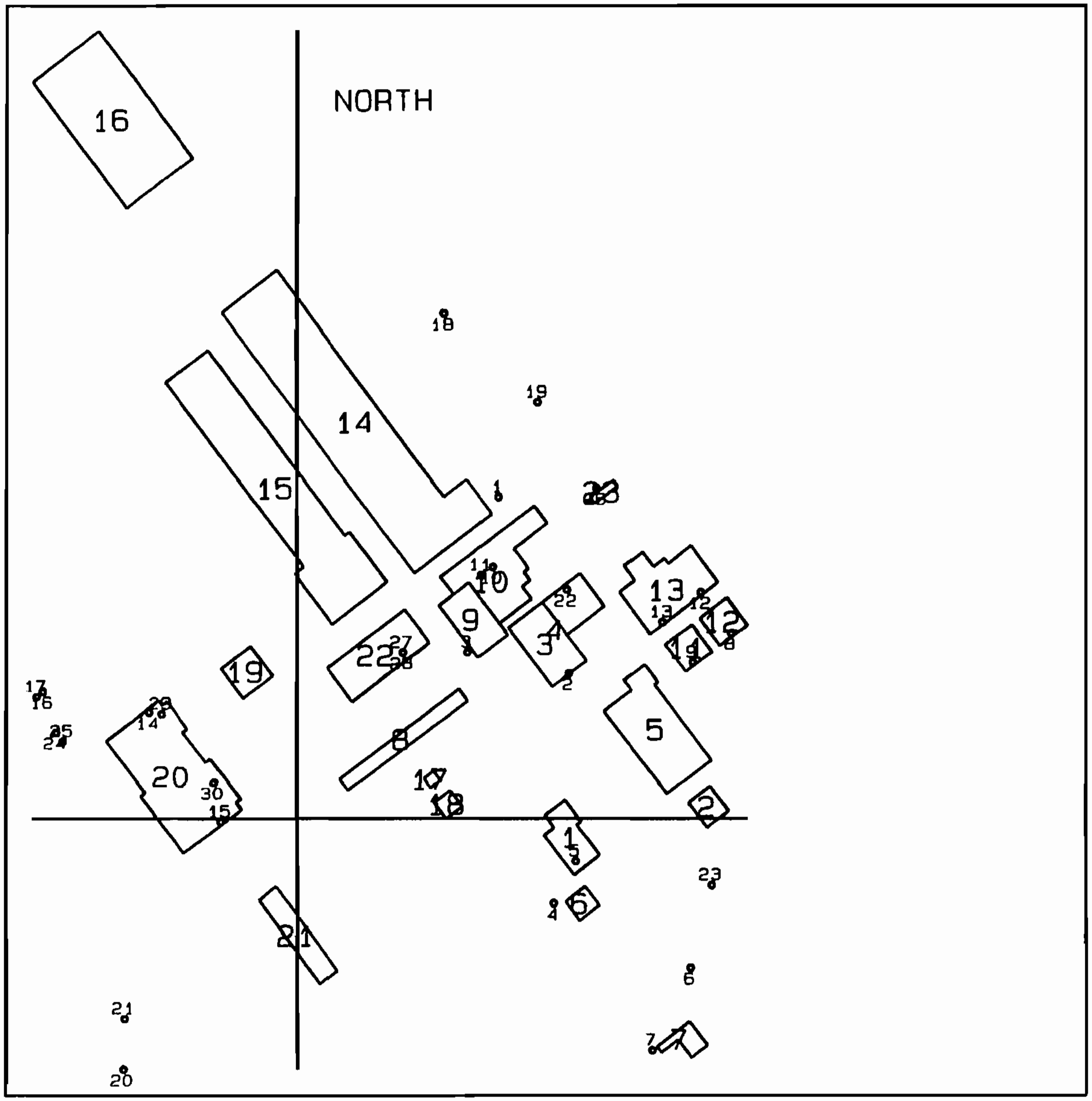
Very truly yours,

ROY F. WESTON, INC.

John B. Barone, Ph.D.
Technical Director

cc: S. Webb
K. Moore
C. Ayer
J. Egan

DOWNWASH ANALYSIS



STRUCTURES:

1 -- A-LIME RECOVERY BLDG
2 -- B-COOLING TOWER
3 -- C-NO 4 POWER BOILER
4 -- D-TURBINE GENERATOR BLDG
5 -- E-EVAPORATORS
6 -- F-LIME KILN NORTH
7 -- G-LIME KILN SOUTH
8 -- H-DIGESTER
9 -- I-NO.3 POWER BOILER
10 -- I+J+K-NO.1+2 BOILER/TURB
11 -- L-PRECIPITATORS 1
12 -- M-PRECIPITATORS 2
13 -- N-RECOVERY BOILERS
14 -- O-NO. 5 PAPER MACHINE
15 -- P-NO.3 PAPER MACHINE
16 -- Q-HIGH BAY STORAGE BLDG
17 -- R-CONT. DIGESTER
18 -- S-WASHER
19 -- T-NO 9 H.D STORAGE CHEST
20 -- U-BLEACH PLANT
21 -- V-CHIP SILOS
22 -- Y-SCREEN BLDG
23 -- No. 6 POWER BOILER BLGD

SOURCES:

1 -- NO. 5 STACK
2 -- NO. 4 STACK
3 -- NO. 3 STACK
4 -- SLAKER STACK
5 -- CALCINER STACK
6 -- COAL CRUSHER VENT
7 -- LIME KILN STACK
8 -- RECOV BOILER STACK A
9 -- RECOV BOILER STACK B
10 -- NO.1 STACK
11 -- NO.2 STACK
12 -- DISSOLV. TANK STACK A
13 -- DISSOLV. TANK STACK B
14 -- BLEACH PLANT STACK A
15 -- BLEACH PLANT STACK B
16 -- CLO2 SALT VENT NO.1
17 -- CLO2 SALT VENT NO.2
18 -- STARCH SILO VENT NO.2
19 -- P-5 PAPER MACHINE VENT
20 -- NO.1 CYCLONE
21 -- FINE CYCLONE
22 -- COAL BAGHOUSE VENT
23 -- TALL OIL STACK
24 -- TAIL GAS SCRUBBER
25 -- CLO2 STORAGE VENT
26 -- NO 6 STACK @ 75FT
27 -- REV NO. 6 STACK @ 75FT
28 -- REV NO. 6 STACK @ 150FT
29 -- PINE Eo HOOD VENT
30 -- HARDWOOD Eo HOOD VENT

DOWNWASH ANALYSIS PROGRAM, VERSION 4.0X, February 1991
ROY F. WESTON, INC. WORK ORDER NO. 22464301
RUN TITLE: CHAMPION PENSECOLA * PROGRAM RUN 12/11/92 AT 8:53

DWA: DOMINANT STRUCTURES AND DIMENSIONS FOR SOURCE

Source ID : NO. 5 STACK
Source Height : 46.90 feet [14.30 meters]
Source Diameter : 4.00 feet [1.22 meters]

INPUT SITE COORDINATES:
Easting : 622.00 feet [189.59 meters]
Northing : 236.00 feet [71.93 meters]

ROTATED SITE COORDINATES:
Easting : 354.72 feet [108.12 meters]
Northing : 562.81 feet [171.54 meters]

DOWNWASH ALGORITHM REQUIRED : Schulman-Scire

DIRECTION-SPECIFIC WIDTHS, HEIGHTS, AND DOMINANT STRUCTURES FOR THIS SOURCE, BASED ON EPA GUIDANCE RECTANGULAR AREAS OF EFFECT FOR STRUCTURES:

DIR deg	PW m	HB m	DOMINANT STRUCTURE	DIR deg	PW m	HB m	DOMINANT STRUCTURE
23	58.9	61.0	H-DIGESTER	203	58.9	61.0	H-DIGESTER
45	179.3	18.3	O-NO. 5 PAPER MACHINE	225	179.3	18.3	O-NO. 5 PAPER MACHINE
68	175.6	18.3	O-NO. 5 PAPER MACHINE	247	175.6	18.3	O-NO. 5 PAPER MACHINE
90	170.5	18.3	O-NO. 5 PAPER MACHINE	270	170.5	18.3	O-NO. 5 PAPER MACHINE
113	51.7	48.8	N-RECOVERY BOILERS	292	51.7	48.8	N-RECOVERY BOILERS
135	51.1	48.8	N-RECOVERY BOILERS	315	51.1	48.8	N-RECOVERY BOILERS
158	37.4	48.8	C-NO.4 POWER BOILER	338	37.4	48.8	C-NO.4 POWER BOILER
180	75.2	61.0	H-DIGESTER	360	75.2	61.0	H-DIGESTER

NOTES: DIR represents a wind direction, NOT A FLOW VECTOR.
Asterisks mark structures producing only Huber-Snyder effects in ISC.

INFLUENCING STRUCTURE WITH MAXIMUM FORMULA GEP HEIGHT:

H-DIGESTER
HL = HW = MPW * 0.886 = 71.10 meters
HB = 60.96 meters

DOWNWASH ANALYSIS PROGRAM, VERSION 4.0X, February 1991
ROY F. WESTON, INC. WORK ORDER NO. 22464301
RUN TITLE: CHAMPION PENSECOLA * PROGRAM RUN 12/11/92 AT 8:53

DWA: DOMINANT STRUCTURES AND DIMENSIONS FOR SOURCE

Source ID : NO. 4 STACK
Source Height : 221.00 feet [67.36 meters]
Source Diameter : 10.99 feet [3.35 meters]

INPUT SITE COORDINATES:
Easting : 535.00 feet [163.07 meters]
Northing : -85.00 feet [-25.91 meters]

ROTATED SITE COORDINATES:
Easting : 478.42 feet [145.82 meters]
Northing : 254.09 feet [77.45 meters]

DOWNWASH ALGORITHM REQUIRED : Schulman-Scire

DIRECTION-SPECIFIC WIDTHS, HEIGHTS, AND DOMINANT STRUCTURES FOR THIS SOURCE, BASED ON EPA GUIDANCE RECTANGULAR AREAS OF EFFECT FOR STRUCTURES:

DIR deg	PW m	HB m	DOMINANT STRUCTURE	DIR deg	PW m	HB m	DOMINANT STRUCTURE
23	51.1	48.8	N-RECOVERY BOILERS	203	51.1	48.8	N-RECOVERY BOILERS
45	46.6	48.8	N-RECOVERY BOILERS	225	46.6	48.8	N-RECOVERY BOILERS
68	41.5	61.0	H-DIGESTER	247	41.5	61.0	H-DIGESTER
90	64.6	61.0	H-DIGESTER	270	64.6	61.0	H-DIGESTER
113	77.9	61.0	H-DIGESTER	292	77.9	61.0	H-DIGESTER
135	34.2	48.8	C-NO.4 POWER BOILER	315	34.2	48.8	C-NO.4 POWER BOILER
158	37.4	48.8	C-NO.4 POWER BOILER	338	37.4	48.8	C-NO.4 POWER BOILER
180	44.5	48.8	C-NO.4 POWER BOILER	360	44.5	48.8	C-NO.4 POWER BOILER

NOTES: DIR represents a wind direction, NOT A FLOW VECTOR.
Asterisks mark structures producing only Huber-Snyder effects in ISC.

INFLUENCING STRUCTURE WITH MAXIMUM FORMULA GEP HEIGHT:

H-DIGESTER
HL = HW = MPW * 0.886 = 71.10 meters
HB = 60.96 meters

DOWNWASH ANALYSIS PROGRAM, VERSION 4.0X, February 1991
ROY F. WESTON, INC. WORK ORDER NO. 22464301
RUN TITLE: CHAMPION PENSECOLA * PROGRAM RUN 12/11/92 AT 8:53

DWA: DOMINANT STRUCTURES AND DIMENSIONS FOR SOURCE

Source ID : NO. 3 STACK
Source Height : 150.00 feet [45.72 meters]
Source Diameter : 8.01 feet [2.44 meters]

INPUT SITE COORDINATES:
Easting : 415.00 feet [126.49 meters]
Northing : 52.00 feet [15.85 meters]

ROTATED SITE COORDINATES:
Easting : 300.14 feet [91.48 meters]
Northing : 291.28 feet [88.78 meters]

DOWNWASH ALGORITHM REQUIRED : Schulman-Scire

DIRECTION-SPECIFIC WIDTHS, HEIGHTS, AND DOMINANT STRUCTURES FOR THIS SOURCE,
BASED ON EPA GUIDANCE RECTANGULAR AREAS OF EFFECT FOR STRUCTURES:

DIR deg	PW m	HB m	DOMINANT STRUCTURE	DIR deg	PW m	HB m	DOMINANT STRUCTURE
23	58.9	61.0	H-DIGESTER	203	58.9	61.0	H-DIGESTER
45	33.5	61.0	H-DIGESTER	225	33.5	61.0	H-DIGESTER
68	41.5	61.0	H-DIGESTER	247	41.5	61.0	H-DIGESTER
90	64.6	61.0	H-DIGESTER	270	64.6	61.0	H-DIGESTER
113	77.9	61.0	H-DIGESTER	292	77.9	61.0	H-DIGESTER
135	80.2	61.0	H-DIGESTER	315	80.2	61.0	H-DIGESTER
158	80.2	61.0	H-DIGESTER	338	80.2	61.0	H-DIGESTER
180	75.2	61.0	H-DIGESTER	360	75.2	61.0	H-DIGESTER

NOTES: DIR represents a wind direction, NOT A FLOW VECTOR.
Asterisks mark structures producing only Huber-Snyder effects in ISC.

INFLUENCING STRUCTURE WITH MAXIMUM FORMULA GEP HEIGHT:

H-DIGESTER
HL = HW = MPW * 0.886 = 71.10 meters
HB = 60.96 meters

DOWNWASH ANALYSIS PROGRAM, VERSION 4.0X, February 1991
ROY F. WESTON, INC. WORK ORDER NO. 22464301
RUN TITLE: CHAMPION PENSECOLA * PROGRAM RUN 12/11/92 AT 8:53

DWA: DOMINANT STRUCTURES AND DIMENSIONS FOR SOURCE

Source ID : CALCINER STACK
Source Height : 117.59 feet [35.84 meters]
Source Diameter : 4.00 feet [1.22 meters]

INPUT SITE COORDINATES:
Easting : 345.00 feet [105.16 meters]
Northing : -355.00 feet [-108.20 meters]

ROTATED SITE COORDINATES:
Easting : 489.17 feet [149.10 meters]
Northing : -75.89 feet [-23.13 meters]

DOWNWASH ALGORITHM REQUIRED : Schulman-Scire

DIRECTION-SPECIFIC WIDTHS, HEIGHTS, AND DOMINANT STRUCTURES FOR THIS SOURCE, BASED ON EPA GUIDANCE RECTANGULAR AREAS OF EFFECT FOR STRUCTURES:

DIR deg	PW m	HB m	DOMINANT STRUCTURE	DIR deg	PW m	HB m	DOMINANT STRUCTURE
23	51.1	48.8	N-RECOVERY BOILERS	203	36.3	21.3	A-LINE RECOVERY BLDG*
45	63.8	22.9	E-EVAPORATORS*	225	36.3	21.3	A-LINE RECOVERY BLDG*
68	40.2	21.3	A-LINE RECOVERY BLDG*	247	40.2	21.3	A-LINE RECOVERY BLDG*
90	40.3	21.3	A-LINE RECOVERY BLDG*	270	54.4	27.4	V-CHIP SILOS
113	77.9	61.0	H-DIGESTER	292	77.9	61.0	H-DIGESTER
135	80.2	61.0	H-DIGESTER	315	80.2	61.0	H-DIGESTER
158	80.2	61.0	H-DIGESTER	338	80.2	61.0	H-DIGESTER
180	33.0	21.3	A-LINE RECOVERY BLDG*	360	53.3	48.8	N-RECOVERY BOILERS

NOTES: DIR represents a wind direction, NOT A FLOW VECTOR.
Asterisks mark structures producing only Huber-Snyder effects in ISC.

INFLUENCING STRUCTURE WITH MAXIMUM FORMULA GEP HEIGHT:

H-DIGESTER
HL = HW = MPW * 0.886 = 71.10 meters
HB = 60.96 meters

DOWNWASH ANALYSIS PROGRAM, VERSION 4.0X, February 1991
ROY F. WESTON, INC. WORK ORDER NO. 22464301
RUN TITLE: CHAMPION PENSECOLA * PROGRAM RUN 12/11/92 AT 8:53

DWA: DOMINANT STRUCTURES AND DIMENSIONS FOR SOURCE

Source ID : LIME KILN STACK
Source Height : 136.00 feet [41.45 meters]
Source Diameter : 6.50 feet [1.98 meters]

INPUT SITE COORDINATES:
Easting : 255.00 feet [77.72 meters]
Northing : -695.00 feet [-211.84 meters]

ROTATED SITE COORDINATES:
Easting : 621.91 feet [189.56 meters]
Northing : -401.59 feet [-122.40 meters]

DOWNWASH ALGORITHM REQUIRED : Schulman-Scire

DIRECTION-SPECIFIC WIDTHS, HEIGHTS, AND DOMINANT STRUCTURES FOR THIS SOURCE, BASED ON EPA GUIDANCE RECTANGULAR AREAS OF EFFECT FOR STRUCTURES:

DIR deg	PW m	HB m	DOMINANT STRUCTURE	DIR deg	PW m	HB m	DOMINANT STRUCTURE
23	0.0	0.0	NO STRUCTURES	203	0.0	0.0	NO STRUCTURES
45	0.0	0.0	NO STRUCTURES	225	0.0	0.0	NO STRUCTURES
68	0.0	0.0	NO STRUCTURES	247	0.0	0.0	NO STRUCTURES
90	0.0	0.0	NO STRUCTURES	270	0.0	0.0	NO STRUCTURES
113	0.0	0.0	NO STRUCTURES	292	0.0	0.0	NO STRUCTURES
135	0.0	0.0	NO STRUCTURES	315	80.2	61.0	N-DIGESTER
158	0.0	0.0	NO STRUCTURES	338	80.2	61.0	N-DIGESTER
180	0.0	0.0	NO STRUCTURES	360	53.3	48.8	N-RECOVERY BOILERS

NOTES: DIR represents a wind direction, NOT A FLOW VECTOR.
Asterisks mark structures producing only Huber-Snyder effects in ISC.

INFLUENCING STRUCTURE WITH MAXIMUM FORMULA GEP HEIGHT:

N-DIGESTER
HL = HW = MPW * 0.886 = 71.10 meters
HB = 60.96 meters

DOWNWASH ANALYSIS PROGRAM, VERSION 4.0X, February 1991
ROY F. WESTON, INC.   WORK ORDER NO.   22464301
RUN TITLE: CHAMPION PENSECOLA * PROGRAM RUN 12/11/92 AT 8:53

DWA: DOMINANT STRUCTURES AND DIMENSIONS FOR SOURCE

Source ID : NO.1 STACK
Source Height : 67.00 feet [20.42 meters]
Source Diameter : 6.50 feet [1.98 meters]

INPUT SITE COORDINATES:
Easting : 540.00 feet [164.59 meters]
Northing : 145.00 feet [44.20 meters]

ROTATED SITE COORDINATES:
Easting : 344.00 feet [104.85 meters]
Northing : 440.78 feet [134.35 meters]

DOWNWASH ALGORITHM REQUIRED : Schulman-Scire

DIRECTION-SPECIFIC WIDTHS, HEIGHTS, AND DOMINANT STRUCTURES FOR THIS SOURCE,
BASED ON EPA GUIDANCE RECTANGULAR AREAS OF EFFECT FOR STRUCTURES:

DIR deg	PW m	HB m	DOMINANT STRUCTURE	DIR deg	PW m	HB m	DOMINANT STRUCTURE
23	58.9	61.0	H-DIGESTER	203	58.9	61.0	H-DIGESTER
45	39.4	22.9	I-NO.3 POWER BOILER	225	39.4	22.9	I-NO.3 POWER BOILER
68	40.0	22.9	I-NO.3 POWER BOILER	247	40.0	22.9	I-NO.3 POWER BOILER
90	50.1	48.8	N-RECOVERY BOILERS	270	50.1	48.8	N-RECOVERY BOILERS
113	51.7	48.8	N-RECOVERY BOILERS	292	51.7	48.8	N-RECOVERY BOILERS
135	34.2	48.8	C-NO.4 POWER BOILER	315	34.2	48.8	C-NO.4 POWER BOILER
158	37.4	48.8	C-NO.4 POWER BOILER	338	37.4	48.8	C-NO.4 POWER BOILER
180	75.2	61.0	H-DIGESTER	360	75.2	61.0	H-DIGESTER

NOTES: DIR represents a wind direction, NOT A FLOW VECTOR.
Asterisks mark structures producing only Huber-Snyder effects in ISC.

INFLUENCING STRUCTURE WITH MAXIMUM FORMULA GEP HEIGHT:

H-DIGESTER
HL = HW = MPW * 0.886 = 71.10 meters
HB = 60.96 meters

DOWNWASH ANALYSIS PROGRAM, VERSION 4.0X, February 1991
ROY F. WESTON, INC.   WORK ORDER NO. 22464301
RUN TITLE: CHAMPION PENSECOLA * PROGRAM RUN 12/11/92 AT 8:53

DWA: DOMINANT STRUCTURES AND DIMENSIONS FOR SOURCE

Source ID : NO.2 STACK
Source Height : 67.00 feet [20.42 meters]
Source Diameter : 6.50 feet [1.98 meters]

INPUT SITE COORDINATES:
Easting : 515.00 feet [156.97 meters]
Northing : 145.00 feet [44.20 meters]

ROTATED SITE COORDINATES:
Easting : 324.03 feet [98.77 meters]
Northing : 425.74 feet [129.76 meters]

DOWNWASH ALGORITHM REQUIRED : Schulman-Scire

DIRECTION-SPECIFIC WIDTHS, HEIGHTS, AND DOMINANT STRUCTURES FOR THIS SOURCE, BASED ON EPA GUIDANCE RECTANGULAR AREAS OF EFFECT FOR STRUCTURES:

DIR deg	PW m	HB m	DOMINANT STRUCTURE	DIR deg	PW m	HB m	DOMINANT STRUCTURE
23	58.9	61.0	H-DIGESTER	203	58.9	61.0	H-DIGESTER
45	39.4	22.9	I-NO.3 POWER BOILER	225	39.4	22.9	I-NO.3 POWER BOILER
68	43.5	48.8	N-RECOVERY BOILERS	247	43.5	48.8	N-RECOVERY BOILERS
90	50.1	48.8	N-RECOVERY BOILERS	270	50.1	48.8	N-RECOVERY BOILERS
113	51.7	48.8	N-RECOVERY BOILERS	292	51.7	48.8	N-RECOVERY BOILERS
135	34.2	48.8	C-NO.4 POWER BOILER	315	34.2	48.8	C-NO.4 POWER BOILER
158	37.4	48.8	C-NO.4 POWER BOILER	338	37.4	48.8	C-NO.4 POWER BOILER
180	75.2	61.0	H-DIGESTER	360	75.2	61.0	H-DIGESTER

NOTES: DIR represents a wind direction, NOT A FLOW VECTOR.
Asterisks mark structures producing only Huber-Snyder effects in ISC.

INFLUENCING STRUCTURE WITH MAXIMUM FORMULA GEP HEIGHT:

H-DIGESTER
HL = HW = MPW * 0.886 = 71.10 meters
HB = 60.96 meters

DOWNWASH ANALYSIS PROGRAM, VERSION 4.0X, February 1991
ROY F. WESTON, INC. WORK ORDER NO. 22464301
RUN TITLE: CHAMPION PENSECOLA * PROGRAM RUN 12/11/92 AT 8:54

DWA: DOMINANT STRUCTURES AND DIMENSIONS FOR SOURCE

Source ID : BLEACH PLANT STACK A
Source Height : 120.00 feet [36.58 meters]
Source Diameter : 1.75 feet [0.53 meters]

INPUT SITE COORDINATES:
Easting : -95.00 Feet [-28.96 meters]
Northing : 305.00 Feet [92.96 meters]

ROTATED SITE COORDINATES:
Easting : -259.42 Feet [-79.07 meters]
Northing : 186.41 Feet [56.82 meters]

DOWNWASH ALGORITHM REQUIRED : Schulman-Scire

DIRECTION-SPECIFIC WIDTHS, HEIGHTS, AND DOMINANT STRUCTURES FOR THIS SOURCE, BASED ON EPA GUIDANCE RECTANGULAR AREAS OF EFFECT FOR STRUCTURES:

DIR deg	PW m	HB m	DOMINANT STRUCTURE	DIR deg	PW m	HB m	DOMINANT STRUCTURE
23	81.4	18.3	U-BLEACH PLANT*	203	81.4	18.3	U-BLEACH PLANT*
45	25.2	22.9	T-NO.9 H.D. STORAGE CHEST*	225	25.2	22.9	T-NO.9 H.D. STORAGE CHEST*
68	26.4	22.9	T-NO.9 H.D. STORAGE CHEST*	247	26.4	22.9	T-NO.9 H.D. STORAGE CHEST*
90	64.6	61.0	H-DIGESTER	270	64.6	61.0	H-DIGESTER
113	77.9	61.0	H-DIGESTER	292	77.9	61.0	H-DIGESTER
135	62.3	18.3	U-BLEACH PLANT*	315	62.3	18.3	U-BLEACH PLANT*
158	64.3	18.3	U-BLEACH PLANT*	338	64.3	18.3	U-BLEACH PLANT*
180	78.2	18.3	U-BLEACH PLANT*	360	78.2	18.3	U-BLEACH PLANT*

NOTES: DIR represents a wind direction, NOT A FLOW VECTOR.
Asterisks mark structures producing only Huber-Snyder effects in ISC.

INFLUENCING STRUCTURE WITH MAXIMUM FORMULA GEP HEIGHT:

H-DIGESTER
HL = HW = MPW * 0.886 = 71.10 meters
HB = 60.96 meters

DOWNWASH ANALYSIS PROGRAM, VERSION 4.0X, February 1991
ROY F. WESTON, INC.   WORK ORDER NO. 22464301
RUN TITLE: CHAMPION PENSECOLA * PROGRAM RUN 12/11/92 AT 8:54

DWA: DOMINANT STRUCTURES AND DIMENSIONS FOR SOURCE

Source ID : BLEACH PLANT STACK B
Source Height : 120.00 feet [36.58 meters]
Source Diameter : 2.00 feet [0.61 meters]

INPUT SITE COORDINATES:
Easting : -110.00 feet [-33.53 meters]
Northing : 75.00 feet [22.86 meters]

ROTATED SITE COORDINATES:
Easting : -132.99 feet [-40.53 meters]
Northing : -6.30 feet [-1.92 meters]

DOWNWASH ALGORITHM REQUIRED : Schulman-Scire

DIRECTION-SPECIFIC WIDTHS, HEIGHTS, AND DOMINANT STRUCTURES FOR THIS SOURCE, BASED ON EPA GUIDANCE RECTANGULAR AREAS OF EFFECT FOR STRUCTURES:

DIR deg	PW m	HB m	DOMINANT STRUCTURE	DIR deg	PW m	HB m	DOMINANT STRUCTURE
23	28.0	22.9	T-NO.9 H.D. STORAGE CHEST*	203	81.4	18.3	U-BLEACH PLANT*
45	80.8	18.3	U-BLEACH PLANT*	225	80.8	18.3	U-BLEACH PLANT*
68	41.5	61.0	H-DIGESTER	247	41.5	61.0	H-DIGESTER
90	64.6	61.0	H-DIGESTER	270	64.6	61.0	H-DIGESTER
113	77.7	18.3	U-BLEACH PLANT*	292	77.7	18.3	U-BLEACH PLANT*
135	28.8	27.4	V-CHIP SILOS	315	28.8	27.4	V-CHIP SILOS
158	34.1	27.4	V-CHIP SILOS	338	34.1	27.4	V-CHIP SILOS
180	78.2	18.3	U-BLEACH PLANT*	360	28.0	22.9	T-NO.9 H.D. STORAGE CHEST*

NOTES: DIR represents a wind direction, NOT A FLOW VECTOR.
Asterisks mark structures producing only Huber-Snyder effects in ISC.

INFLUENCING STRUCTURE WITH MAXIMUM FORMULA GEP HEIGHT:

H-DIGESTER
HL = HW = MPW * 0.886 = 71.10 meters
HB = 60.96 meters

DOWNWASH ANALYSIS PROGRAM, VERSION 4.0X, February 1991
ROY F. WESTON, INC. WORK ORDER NO. 22464301
RUN TITLE: CHAMPION PENSECOLA * PROGRAM RUN 12/11/92 AT 8:54

DWA: DOMINANT STRUCTURES AND DIMENSIONS FOR SOURCE

Source ID : (ERCO) TAIL GAS SCRUBBER
Source Height : 60.04 feet [18.30 meters]
Source Diameter : 0.69 feet [0.21 meters]

INPUT SITE COORDINATES:
Easting : -245.00 feet [-74.68 meters]
Northing : 375.00 feet [114.30 meters]

ROTATED SITE COORDINATES:
Easting : -421.35 feet [-128.43 meters]
Northing : 152.04 feet [46.34 meters]

DOWNWASH ALGORITHM REQUIRED : Schulman-Scire

DIRECTION-SPECIFIC WIDTHS, HEIGHTS, AND DOMINANT STRUCTURES FOR THIS SOURCE, BASED ON EPA GUIDANCE RECTANGULAR AREAS OF EFFECT FOR STRUCTURES:

DIR deg	PW m	HB m	DOMINANT STRUCTURE	DIR deg	PW m	HB m	DOMINANT STRUCTURE
23	0.0	0.0	NO STRUCTURES	203	0.0	0.0	NO STRUCTURES
45	0.0	0.0	NO STRUCTURES	225	0.0	0.0	NO STRUCTURES
68	26.4	22.9	T-NO.9 H.D. STORAGE CHEST	247	82.7	18.3	U-BLEACH PLANT
90	64.6	61.0	H-DIGESTER	270	82.8	18.3	U-BLEACH PLANT
113	77.7	18.3	U-BLEACH PLANT	292	77.7	18.3	U-BLEACH PLANT
135	62.3	18.3	U-BLEACH PLANT	315	62.3	18.3	U-BLEACH PLANT
158	0.0	0.0	NO STRUCTURES	338	0.0	0.0	NO STRUCTURES
180	0.0	0.0	NO STRUCTURES	360	0.0	0.0	NO STRUCTURES

NOTES: DIR represents a wind direction, NOT A FLOW VECTOR.
Asterisks mark structures producing only Huber-Snyder effects in ISC.

INFLUENCING STRUCTURE WITH MAXIMUM FORMULA GEP HEIGHT:

H-DIGESTER
HL = HW = MPW * 0.886 = 71.10 meters
HB = 60.96 meters

DOWNWASH ANALYSIS PROGRAM, VERSION 4.0X, February 1991
ROY F. WESTON, INC.   WORK ORDER NO.   22464301
RUN TITLE: CHAMPION PENSECOLA * PROGRAM RUN 12/11/92 AT 8:54

DWA: DOMINANT STRUCTURES AND DIMENSIONS FOR SOURCE

Source ID : PINE Eo HOOD VENT
Source Height : 67.00 feet [20.42 meters]
Source Diameter : 1.00 feet [0.30 meters]

INPUT SITE COORDINATES:
Easting : -78.00 feet [-23.77 meters]
Northing : 288.00 feet [87.78 meters]

ROTATED SITE COORDINATES:
Easting : -235.62 feet [-71.82 meters]
Northing : 183.07 feet [55.80 meters]

DOWNWASH ALGORITHM REQUIRED : Schulman-Scire

DIRECTION-SPECIFIC WIDTHS, HEIGHTS, AND DOMINANT STRUCTURES FOR THIS SOURCE, BASED ON EPA GUIDANCE RECTANGULAR AREAS OF EFFECT FOR STRUCTURES:

DIR deg	PW m	HB m	DOMINANT STRUCTURE	DIR deg	PW m	HB m	DOMINANT STRUCTURE
23	81.4	18.3	U-BLEACH PLANT	203	81.4	18.3	U-BLEACH PLANT
45	25.2	22.9	T-NO.9 H.D. STORAGE CHEST	225	25.2	22.9	T-NO.9 H.D. STORAGE CHEST
68	45.5	48.8	C-NO.4 POWER BOILER	247	26.4	22.9	T-NO.9 H.D. STORAGE CHEST
90	64.6	61.0	H-DIGESTER	270	64.6	61.0	H-DIGESTER
113	77.9	61.0	H-DIGESTER	292	77.9	61.0	H-DIGESTER
135	62.3	18.3	U-BLEACH PLANT	315	62.3	18.3	U-BLEACH PLANT
158	34.1	27.4	V-CHIP SILOS	338	64.3	18.3	U-BLEACH PLANT
180	78.2	18.3	U-BLEACH PLANT	360	78.2	18.3	U-BLEACH PLANT

NOTES: DIR represents a wind direction, NOT A FLOW VECTOR.
Asterisks mark structures producing only Huber-Snyder effects in ISC.

INFLUENCING STRUCTURE WITH MAXIMUM FORMULA GEP HEIGHT:

H-DIGESTER
HL = HW = MPW * 0.886 = 71.10 meters
HB = 60.96 meters

DOWNWASH ANALYSIS PROGRAM, VERSION 4.0X, February 1991
ROY F. WESTON, INC. WORK ORDER NO. 22464301
RUN TITLE: CHAMPION PENSECOLA * PROGRAM RUN 12/11/92 AT 8:54

DWA: DOMINANT STRUCTURES AND DIMENSIONS FOR SOURCE

Source ID : HARDWOOD Eo HOOD VENT
Source Height : 67.00 feet [20.42 meters]
Source Diameter : 1.00 feet [0.30 meters]

INPUT SITE COORDINATES:
Easting : -78.00 feet [-23.77 meters]
Northing : 138.00 feet [42.06 meters]

ROTATED SITE COORDINATES:
Easting : -145.34 feet [-44.30 meters]
Northing : 63.27 feet [19.28 meters]

DOWNWASH ALGORITHM REQUIRED : Schulman-Scire

DIRECTION-SPECIFIC WIDTHS, HEIGHTS, AND DOMINANT STRUCTURES FOR THIS SOURCE,
BASED ON EPA GUIDANCE RECTANGULAR AREAS OF EFFECT FOR STRUCTURES:

DIR deg	PW m	HB m	DOMINANT STRUCTURE	DIR deg	PW m	HB m	DOMINANT STRUCTURE
23	28.0	22.9	T-NO.9 H.D. STORAGE CHEST	203	81.4	18.3	U-BLEACH PLANT
45	80.8	18.3	U-BLEACH PLANT	225	80.8	18.3	U-BLEACH PLANT
68	41.5	61.0	H-DIGESTER	247	41.5	61.0	H-DIGESTER
90	64.6	61.0	H-DIGESTER	270	64.6	61.0	H-DIGESTER
113	77.9	61.0	H-DIGESTER	292	77.9	61.0	H-DIGESTER
135	62.3	18.3	U-BLEACH PLANT	315	62.3	18.3	U-BLEACH PLANT
158	34.1	27.4	V-CHIP SILOS	338	64.3	18.3	U-BLEACH PLANT
180	28.0	22.9	T-NO.9 H.D. STORAGE CHEST	360	28.0	22.9	T-NO.9 H.D. STORAGE CHEST

NOTES: DIR represents a wind direction, NOT A FLOW VECTOR.
Asterisks mark structures producing only Huber-Snyder effects in ISC.

INFLUENCING STRUCTURE WITH MAXIMUM FORMULA GEP HEIGHT:

H-DIGESTER
HL = HW = MPW * 0.886 = 71.10 meters
HB = 60.96 meters

DOWNWASH ANALYSIS PROGRAM, VERSION 4.0X, February 1991
ROY F. WESTON, INC. WORK ORDER NO. 22464301
RUN TITLE: CHAMPION PENSECOLA * PROGRAM RUN 12/11/92 AT 8:54

DWA: DOMINANT STRUCTURES AND DIMENSIONS FOR SOURCE

Source ID : REV NO. 6 STACK @ 75FT
Source Height : 75.00 feet [22.86 meters]
Source Diameter : 1.00 feet [0.30 meters]

INPUT SITE COORDINATES:
Easting : 325.00 feet [99.06 meters]
Northing : 119.00 feet [36.27 meters]

ROTATED SITE COORDINATES:
Easting : 187.94 feet [57.28 meters]
Northing : 290.63 feet [88.58 meters]

DOWNWASH ALGORITHM REQUIRED : Schulman-Scire

DIRECTION-SPECIFIC WIDTHS, HEIGHTS, AND DOMINANT STRUCTURES FOR THIS SOURCE, BASED ON EPA GUIDANCE RECTANGULAR AREAS OF EFFECT FOR STRUCTURES:

DIR deg	PW m	HB m	DOMINANT STRUCTURE	DIR deg	PW m	HB m	DOMINANT STRUCTURE
23	58.9	61.0	H-DIGESTER	203	58.9	61.0	H-DIGESTER
45	39.4	22.9	I-NO.3 POWER BOILER	225	39.4	22.9	I-NO.3 POWER BOILER
68	45.5	48.8	C-NO.4 POWER BOILER	247	45.5	48.8	C-NO.4 POWER BOILER
90	64.6	61.0	H-DIGESTER	270	64.6	61.0	H-DIGESTER
113	77.9	61.0	H-DIGESTER	292	77.9	61.0	H-DIGESTER
135	80.2	61.0	H-DIGESTER	315	80.2	61.0	H-DIGESTER
158	80.2	61.0	H-DIGESTER	338	80.2	61.0	H-DIGESTER
180	75.2	61.0	H-DIGESTER	360	75.2	61.0	H-DIGESTER

NOTES: DIR represents a wind direction, NOT A FLOW VECTOR.
Asterisks mark structures producing only Huber-Snyder effects in ISC.

INFLUENCING STRUCTURE WITH MAXIMUM FORMULA GEP HEIGHT:

H-DIGESTER
HL = HW = MPW * 0.886 = 71.10 meters
HB = 60.96 meters

DOWNWASH ANALYSIS PROGRAM, VERSION 4.0X, February 1991
ROY F. WESTON, INC. WORK ORDER NO. 22464301
RUN TITLE: CHAMPION PENSECOLA * PROGRAM RUN 12/11/92 AT 8:53

DWA: DOWNWASH CALCULATIONS FOR AN ISOLATED SIMPLE STRUCTURE

A-LINE RECOVERY BLDG

SITE COORDINATES (NW CORNER OR CENTER):
Easting : 350.00 feet [106.68 meters]
Northing : -258.00 feet [-78.64 meters]
Rotation Angle : -37.0 degrees

STRUCTURE DIMENSIONS:
Corners : 8
Height (HB) : 70.00 feet [21.34 meters]

Maximum projected width (MPW) : 132.23 feet [40.30 meters]
Building correction angle : 0.0 degrees

CRITICAL HEIGHT INFORMATION:
Radius of effect of structure : 350.00 feet [106.68 meters]
Huber-Snyder critical height^ : 175.00 feet [53.34 meters]
Schulman-Scire critical height : 105.00 feet [32.00 meters]

^ - Maximum GEP stack height for the structure.

HUBER-SNYDER DOWNWASH DIMENSIONS:
HL = HW = MPW * 0.886 = 35.71 meters

SCHULMAN-SCIRE DOWNWASH CALCULATIONS:

Attack Angle (deg)	Wind Direction Sectors (deg)		Proj. Width PW^ (m)	Critical Height^^ (m)	Widths for ISC (PW) (m)	Min(HB,PW)* 0.5 XWND (m)	2.0 UPWND (m)	5 DNWND (m)
0	180	360	33.0	32.0	33.0	10.7	42.7	106.7
23	23	203	36.3	32.0	36.3	10.7	42.7	106.7
45	45	225	36.3	32.0	36.3	10.7	42.7	106.7
68	68	247	40.2	32.0	40.2	10.7	42.7	106.7
90	90	270	40.3	32.0	40.3	10.7	42.7	106.7
113	113	292	38.3	32.0	38.3	10.7	42.7	106.7
135	135	315	30.6	32.0	30.6	10.7	42.7	106.7
158	158	338	27.1	32.0	27.1	10.7	42.7	106.7

^ - Maximum projected width at 1 degree intervals in each sector.
^^ - Schulman-Scire GEP height based on directional PW.

DOWNWASH ANALYSIS PROGRAM, VERSION 4.0X, February 1991
ROY F. WESTON, INC. WORK ORDER NO. 22464301
RUN TITLE: CHAMPION PENSECOLA * PROGRAM RUN 12/11/92 AT 8:53

DWA: DOWNWASH CALCULATIONS FOR AN ISOLATED SIMPLE STRUCTURE

B-COOLING TOWER

SITE COORDINATES (NW CORNER OR CENTER):
Easting : 565.00 feet [172.21 meters]
Northing : -392.00 feet [-119.48 meters]
Rotation Angle : -37.0 degrees

STRUCTURE DIMENSIONS:
Corners : 4
Height (HB) : 40.00 feet [12.19 meters]

Maximum projected width (MPW) : 72.25 feet [22.02 meters]
Building correction angle : 0.0 degrees

CRITICAL HEIGHT INFORMATION:
Radius of effect of structure : 200.00 feet [60.96 meters]
Huber-Snyder critical height^ : 100.00 feet [30.48 meters]
Schulman-Scire critical height : 60.00 feet [18.29 meters]

^ - Maximum GEP stack height for the structure.

HUBER-SNYDER DOWNWASH DIMENSIONS:
HL = HW = MPW * 0.886 = 19.51 meters

SCHULMAN-SCIRE DOWNWASH CALCULATIONS:

Attack Angle (deg)	Wind Direction Sectors (deg)	Proj. Width PW^ (m)	Critical Height^^ (m)	Widths for ISC (PW) (m)	Min(HB,PW)* 0.5 XWND (m)	Min(HB,PW)* 2.0 UPWND (m)	Min(HB,PW)* 5 DNWND (m)
0	180 360	22.0	18.3	22.0	6.1	24.4	61.0
23	23 203	22.0	18.3	22.0	6.1	24.4	61.0
45	45 225	20.3	18.3	20.3	6.1	24.4	61.0
68	68 247	21.2	18.3	21.2	6.1	24.4	61.0
90	90 270	22.0	18.3	22.0	6.1	24.4	61.0
113	113 292	21.9	18.3	21.9	6.1	24.4	61.0
135	135 315	19.2	18.3	19.2	6.1	24.4	61.0
158	158 338	20.3	18.3	20.3	6.1	24.4	61.0

^ - Maximum projected width at 1 degree intervals in each sector.
^^ - Schulman-Scire GEP height based on directional PW.

DOWNWASH ANALYSIS PROGRAM, VERSION 4.0X, February 1991
ROY F. WESTON, INC. WORK ORDER NO. 22464301
RUN TITLE: CHAMPION PENSECOLA * PROGRAM RUN 12/11/92 AT 8:53

DWA: DOWNWASH CALCULATIONS FOR AN ISOLATED SIMPLE STRUCTURE

C-NO.4 POWER BOILER

SITE COORDINATES (NW CORNER OR CENTER):
Easting : 498.00 feet [151.79 meters]
Northing : 44.00 feet [13.41 meters]
Rotation Angle : -37.0 degrees

STRUCTURE DIMENSIONS:
Corners : 4
Height (HB) : 160.00 feet [48.77 meters]

Maximum projected width (MPW) : 149.59 feet [45.59 meters]
Building correction angle : 0.0 degrees

CRITICAL HEIGHT INFORMATION:
Radius of effect of structure : 747.93 feet [227.97 meters]
Huber-Snyder critical height^ : 384.38 feet [117.16 meters]
Schulman-Scire critical height : 234.79 feet [71.56 meters]

^ - Maximum GEP stack height for the structure.

HUBER-SNYDER DOWNWASH DIMENSIONS:
HL = HW = MPW * 0.886 = 40.40 meters

SCHULMAN-SCIRE DOWNWASH CALCULATIONS:

Attack Angle (deg)	Wind Direction Sectors (deg)	Proj. Width PW^ (m)	Critical Height^^ (m)	Widths for ISC (PW) (m)	Min(HB,PW)* 0.5 XWND (m)	2.0 UPWND (m)	5 DNWND (m)
0	180 360	44.5	71.0	44.5	22.3	89.1	222.7
23	23 203	45.6	71.6	45.6	22.8	91.2	228.0
45	45 225	44.8	71.2	44.8	22.4	89.6	224.0
68	68 247	45.5	71.5	45.5	22.7	90.9	227.4
90	90 270	45.6	71.6	45.6	22.8	91.2	228.0
113	113 292	43.1	70.3	43.1	21.6	86.3	215.7
135	135 315	34.2	65.9	34.2	17.1	68.5	171.1
158	158 338	37.4	67.5	37.4	18.7	74.8	187.1

^ - Maximum projected width at 1 degree intervals in each sector.
^^ - Schulman-Scire GEP height based on directional PW.

DOWNWASH ANALYSIS PROGRAM, VERSION 4.0X, February 1991
ROY F. WESTON, INC. WORK ORDER NO. 22464301
RUN TITLE: CHAMPION PENSECOLA * PROGRAM RUN 12/11/92 AT 8:53

DWA: DOWNWASH CALCULATIONS FOR AN ISOLATED SIMPLE STRUCTURE

D-TURBINE GENERATOR BLDG

SITE COORDINATES (NW CORNER OR CENTER):
Easting : 498.00 feet [151.79 meters]
Northing : 44.00 feet [13.41 meters]
Rotation Angle : -37.0 degrees

STRUCTURE DIMENSIONS:
Corners : 6
Height (HB) : 70.00 feet [21.34 meters]

Maximum projected width (MPW) : 203.84 feet [62.13 meters]
Building correction angle : 0.0 degrees

CRITICAL HEIGHT INFORMATION:
Radius of effect of structure : 350.00 feet [106.68 meters]
Huber-Snyder critical height^ : 175.00 feet [53.34 meters]
Schulman-Scire critical height : 105.00 feet [32.00 meters]

^ - Maximum GEP stack height for the structure.

HUBER-SNYDER DOWNWASH DIMENSIONS:
HL = HW = MPW * 0.886 = 55.05 meters

SCHULMAN-SCIRE DOWNWASH CALCULATIONS:

Attack Angle (deg)	Wind Direction Sectors (deg)		Proj. Width PW^ (m)	Critical Height^^ (m)	Widths for ISC (PW) (m)	Min(HB,PW)* 0.5 XWND (m)	2.0 UPWND (m)	5 DNWND (m)
0	180	360	52.6	32.0	52.6	10.7	42.7	106.7
23	23	203	48.1	32.0	48.1	10.7	42.7	106.7
45	45	225	44.8	32.0	44.8	10.7	42.7	106.7
68	68	247	56.4	32.0	56.4	10.7	42.7	106.7
90	90	270	62.1	32.0	62.1	10.7	42.7	106.7
113	113	292	62.1	32.0	62.1	10.7	42.7	106.7
135	135	315	58.1	32.0	58.1	10.7	42.7	106.7
158	158	338	52.6	32.0	52.6	10.7	42.7	106.7

^ - Maximum projected width at 1 degree intervals in each sector.
^^ - Schulman-Scire GEP height based on directional PW.

DOWNWASH ANALYSIS PROGRAM, VERSION 4.0X, February 1991
ROY F. WESTON, INC. WORK ORDER NO. 22464301
RUN TITLE: CHAMPION PENSECOLA * PROGRAM RUN 12/11/92 AT 8:53

DWA: DOWNWASH CALCULATIONS FOR AN ISOLATED SIMPLE STRUCTURE

E-EVAPORATORS

SITE COORDINATES (NW CORNER OR CENTER):
Easting : 544.00 feet [165.81 meters]
Northing : -174.00 feet [-53.04 meters]
Rotation Angle : -37.0 degrees

STRUCTURE DIMENSIONS:
Corners : 8
Height (HB) : 75.00 feet [22.86 meters]

Maximum projected width (MPW) : 229.89 feet [70.07 meters]
Building correction angle : 0.0 degrees

CRITICAL HEIGHT INFORMATION:
Radius of effect of structure : 375.00 feet [114.30 meters]
Huber-Snyder critical height^ : 187.50 feet [57.15 meters]
Schulman-Scire critical height : 112.50 feet [34.29 meters]

^ - Maximum GEP stack height for the structure.

HUBER-SNYDER DOWNWASH DIMENSIONS:
HL = HW = MPW * 0.886 = 62.08 meters

SCHULMAN-SCIRE DOWNWASH CALCULATIONS:

Attack Angle (deg)	Wind Direction Sectors (deg)	Proj. Width PW^ (m)	Critical Height^^ (m)	Widths for ISC (PW) (m)	Min(HB,PW)* 0.5 XWND (m)	2.0 UPWND (m)	5 DNWND (m)
0	180 360	61.2	34.3	61.2	11.4	45.7	114.3
23	23 203	63.0	34.3	63.0	11.4	45.7	114.3
45	45 225	63.8	34.3	63.8	11.4	45.7	114.3
68	68 247	70.0	34.3	70.0	11.4	45.7	114.3
90	90 270	70.1	34.3	70.1	11.4	45.7	114.3
113	113 292	65.4	34.3	65.4	11.4	45.7	114.3
135	135 315	50.8	34.3	50.8	11.4	45.7	114.3
158	158 338	50.8	34.3	50.8	11.4	45.7	114.3

^ - Maximum projected width at 1 degree intervals in each sector.
^^ - Schulman-Scire GEP height based on directional PW.

DOWNWASH ANALYSIS PROGRAM, VERSION 4.0X, February 1991
ROY F. WESTON, INC. WORK ORDER NO. 22464301
RUN TITLE: CHAMPION PENSECOLA * PROGRAM RUN 12/11/92 AT 8:53

DWA: DOWNWASH CALCULATIONS FOR AN ISOLATED SIMPLE STRUCTURE

F-LINE KILN NORTH

SITE COORDINATES (NW CORNER OR CENTER):
Easting : 288.00 feet [87.78 meters]
Northing : -400.00 feet [-121.92 meters]
Rotation Angle : -37.0 degrees

STRUCTURE DIMENSIONS:
Corners : 4
Height (HB) : 50.00 feet [15.24 meters]

Maximum projected width (MPW) : 59.41 feet [18.11 meters]
Building correction angle : 0.0 degrees

CRITICAL HEIGHT INFORMATION:
Radius of effect of structure : 250.00 feet [76.20 meters]
Huber-Snyder critical height^ : 125.00 feet [38.10 meters]
Schulman-Scire critical height : 75.00 feet [22.86 meters]

^ - Maximum GEP stack height for the structure.

HUBER-SNYDER DOWNWASH DIMENSIONS:
HL = HW = MPW * 0.886 = 16.04 meters

SCHULMAN-SCIRE DOWNWASH CALCULATIONS:

Attack Angle (deg)	Wind Direction Sectors (deg)	Proj. Width PW^ (m)	Critical Height^^ (m)	Widths for ISC (PW) (m)	Min(HB,PW)* 0.5 XWND (m)	2.0 UPWND (m)	5 DWWND (m)
0	180 360	18.1	22.9	18.1	7.6	30.5	76.2
23	23 203	18.0	22.9	18.0	7.6	30.5	76.2
45	45 225	16.1	22.9	16.1	7.6	30.5	76.2
68	68 247	16.9	22.9	16.9	7.6	30.5	76.2
90	90 270	18.1	22.9	18.1	7.6	30.5	76.2
113	113 292	18.1	22.9	18.1	7.6	30.5	76.2
135	135 315	16.5	22.9	16.5	7.6	30.5	76.2
158	158 338	17.2	22.9	17.2	7.6	30.5	76.2

^ - Maximum projected width at 1 degree intervals in each sector.
^^ - Schulman-Scire GEP height based on directional PW.

DOWNWASH ANALYSIS PROGRAM, VERSION 4.0X, February 1991
ROY F. WESTON, INC. WORK ORDER NO. 22464301
RUN TITLE: CHAMPION PENSECOLA * PROGRAM RUN 12/11/92 AT 8:53

DWA: DOWNWASH CALCULATIONS FOR AN ISOLATED SIMPLE STRUCTURE

S-LIME KILN SOUTH

SITE COORDINATES (NW CORNER OR CENTER):
Easting : 265.00 feet [80.77 meters]
Northing : -695.00 feet [-211.84 meters]
Rotation Angle : -37.0 degrees

STRUCTURE DIMENSIONS:
Corners : 6
Height (HB) : 50.00 feet [15.24 meters]

Maximum projected width (MPW) : 88.81 feet [27.07 meters]
Building correction angle : 0.0 degrees

CRITICAL HEIGHT INFORMATION:
Radius of effect of structure : 250.00 feet [76.20 meters]
Huber-Snyder critical height^ : 125.00 feet [38.10 meters]
Schulman-Scire critical height : 75.00 feet [22.86 meters]

^ - Maximum GEP stack height for the structure.

HUBER-SNYDER DOWNWASH DIMENSIONS:
HL = HW = MPW * 0.886 = 23.98 meters

SCHULMAN-SCIRE DOWNWASH CALCULATIONS:

Attack Angle (deg)	Wind Direction Sectors (deg)	Proj. Width PW^ (m)	Critical Height^^ (m)	Widths For ISC (PW) (m)	Min(HB,PW)* 0.5 XWND (m)	2.0 UPWND (m)	5 DNWND (m)
0	180 360	27.1	22.9	27.1	7.6	30.5	76.2
23	23 203	26.4	22.9	26.4	7.6	30.5	76.2
45	45 225	22.1	22.9	22.1	7.6	30.5	76.2
68	68 247	18.9	22.9	18.9	7.6	30.5	76.2
90	90 270	19.1	22.9	19.1	7.6	30.5	76.2
113	113 292	22.0	22.9	22.0	7.6	30.5	76.2
135	135 315	22.7	22.9	22.7	7.6	30.5	76.2
158	158 338	26.6	22.9	26.6	7.6	30.5	76.2

^ - Maximum projected width at 1 degree intervals in each sector.
^^ - Schulman-Scire GEP height based on directional PW.

DOWNWASH ANALYSIS PROGRAM, VERSION 4.0X, February 1991
ROY F. WESTON, INC. WORK ORDER NO. 22464301
RUN TITLE: CHAMPION PENSECOLA * PROGRAM RUN 12/11/92 AT 8:53

DWA: DOWNWASH CALCULATIONS FOR AN ISOLATED SIMPLE STRUCTURE

H-DIGESTER

SITE COORDINATES (NW CORNER OR CENTER):
Easting : 102.00 feet [31.09 meters]
Northing : 10.00 feet [3.05 meters]
Rotation Angle : -37.0 degrees

STRUCTURE DIMENSIONS:
Corners : 4
Height (HB) : 200.00 feet [60.96 meters]

Maximum projected width (MPW) : 263.29 feet [80.25 meters]
Building correction angle : 0.0 degrees

CRITICAL HEIGHT INFORMATION:
Radius of effect of structure : 1000.00 feet [304.80 meters]
Huber-Snyder critical height^ : 500.00 feet [152.40 meters]
Schulman-Scire critical height : 300.00 feet [91.44 meters]

^ - Maximum GEP stack height for the structure.

HUBER-SNYDER DOWNWASH DIMENSIONS:
HL = HW = MPW * 0.886 = 71.10 meters

SCHULMAN-SCIRE DOWNWASH CALCULATIONS:

Attack Angle (deg)	Wind Direction Sectors (deg)		Proj. Width PW^ (m)	Critical Height^^ (m)	Widths for ISC (PW) (m)	Min(HB,PW)* 0.5 XWND (m)	2.0 UPWND (m)	5 DNWND (m)
0	180	360	75.2	91.4	75.2	30.5	121.9	304.8
23	23	203	58.9	90.4	58.9	29.4	117.7	294.3
45	45	225	33.5	77.7	33.5	16.7	67.0	167.5
68	68	247	41.5	81.7	41.5	20.8	83.1	207.7
90	90	270	64.6	91.4	64.6	30.5	121.9	304.8
113	113	292	77.9	91.4	77.9	30.5	121.9	304.8
135	135	315	80.2	91.4	80.2	30.5	121.9	304.8
158	158	338	80.2	91.4	80.2	30.5	121.9	304.8

^ - Maximum projected width at 1 degree intervals in each sector.
^^ - Schulman-Scire GEP height based on directional PW.

DOWNWASH ANALYSIS PROGRAM, VERSION 4.0X, February 1991
ROY F. WESTON, INC. WORK ORDER NO. 22464301
RUN TITLE: CHAMPION PENSECOLA * PROGRAM RUN 12/11/92 AT 8:53

DWA: DOWNWASH CALCULATIONS FOR AN ISOLATED SIMPLE STRUCTURE

I-NO.3 POWER BOILER

SITE COORDINATES (NW CORNER OR CENTER):
Easting : 424.00 feet [129.24 meters]
Northing : 148.00 feet [45.11 meters]
Rotation Angle : -37.0 degrees

STRUCTURE DIMENSIONS:
Corners : 4
Height (HB) : 75.00 feet [22.86 meters]

Maximum projected width (MPW) : 131.73 feet [40.15 meters]
Building correction angle : 0.0 degrees

CRITICAL HEIGHT INFORMATION:
Radius of effect of structure : 375.00 feet [114.30 meters]
Huber-Snyder critical height^ : 187.50 feet [57.15 meters]
Schulman-Scire critical height : 112.50 feet [34.29 meters]

^ - Maximum GEP stack height for the structure.

HUBER-SNYDER DOWNWASH DIMENSIONS:
HL = HW = MPW * 0.886 = 35.57 meters

SCHULMAN-SCIRE DOWNWASH CALCULATIONS:

Attack Angle (deg)	Wind Direction Sectors (deg)	Proj. Width PW^ (m)	Critical Height^^ (m)	Widths For ISC (PW) (m)	Min(HB,PW)* 0.5 XWND (m)	Min(HB,PW)* 2.0 UPWND (m)	Min(HB,PW)* 5 DNWND (m)
0	180 360	39.3	34.3	39.3	11.4	45.7	114.3
23	23 203	40.1	34.3	40.1	11.4	45.7	114.3
45	45 225	39.4	34.3	39.4	11.4	45.7	114.3
68	68 247	40.0	34.3	40.0	11.4	45.7	114.3
90	90 270	40.2	34.3	40.2	11.4	45.7	114.3
113	113 292	38.1	34.3	38.1	11.4	45.7	114.3
135	135 315	30.3	34.3	30.3	11.4	45.7	114.3
158	158 338	33.1	34.3	33.1	11.4	45.7	114.3

^ - Maximum projected width at 1 degree intervals in each sector.
^^ - Schulman-Scire GEP height based on directional PW.

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DWA: DOWNWASH CALCULATIONS FOR AN ISOLATED SIMPLE STRUCTURE

I+J+K-NO.1+2 BOILER/TURB

SITE COORDINATES (NW CORNER OR CENTER):
Easting : 424.00 feet [129.24 meters]
Northing : 148.00 feet [45.11 meters]
Rotation Angle : -37.0 degrees

STRUCTURE DIMENSIONS:
Corners : 14
Height (HB) : 55.00 feet [16.76 meters]

Maximum projected width (MPW) : 282.40 feet [86.07 meters]
Building correction angle : 0.0 degrees

CRITICAL HEIGHT INFORMATION:
Radius of effect of structure : 275.00 feet [83.82 meters]
Huber-Snyder critical height^ : 137.50 feet [41.91 meters]
Schulman-Scire critical height : 82.50 feet [25.15 meters]

^ - Maximum GEP stack height for the structure.

HUBER-SNYDER DOWNWASH DIMENSIONS:
HL = HW = MPW * 0.886 = 76.26 meters

SCHULMAN-SCIRE DOWNWASH CALCULATIONS:

Attack Angle (deg)	Wind Direction Sectors (deg)	Proj. Width PW^ (m)	Critical Height^^ (m)	Widths for ISC (PW) (m)	Min(HB,PW)* 0.5 XWND (m)	Min(HB,PW)* 2.0 UPWND (m)	Min(HB,PW)* 5 DNWND (m)
0	180 360	65.2	25.1	65.2	8.4	33.5	83.8
23	23 203	50.3	25.1	50.3	8.4	33.5	83.8
45	45 225	50.1	25.1	50.1	8.4	33.5	83.8
68	68 247	73.0	25.1	73.0	8.4	33.5	83.8
90	90 270	84.9	25.1	84.9	8.4	33.5	83.8
113	113 292	86.1	25.1	86.1	8.4	33.5	83.8
135	135 315	83.7	25.1	83.7	8.4	33.5	83.8
158	158 338	72.4	25.1	72.4	8.4	33.5	83.8

^ - Maximum projected width at 1 degree intervals in each sector.
^^ - Schulman-Scire GEP height based on directional PW.

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DWA: DOWNWASH CALCULATIONS FOR AN ISOLATED SIMPLE STRUCTURE

L-PRECIPITATORS 1

SITE COORDINATES (NW CORNER OR CENTER):
Easting   :   700.00 feet [213.36 meters]
Northing   : -145.00 feet [-44.20 meters]
Rotation Angle :   -37.0 degrees

STRUCTURE DIMENSIONS:
Corners   :   4
Height (HB) :   100.00 feet [30.48 meters]

Maximum projected width (MPW) :   83.45 feet [25.44 meters]
Building correction angle   :   0.0 degrees

CRITICAL HEIGHT INFORMATION:
Radius of effect of structure :   417.25 feet [127.18 meters]
Huber-Snyder critical height^ :   225.18 feet [68.63 meters]
Schulman-Scire critical height :   141.73 feet [43.20 meters]

^ - Maximum GEP stack height for the structure.

HUBER-SNYDER DOWNWASH DIMENSIONS:
HL = HW = MPW * 0.886 = 22.54 meters

SCHULMAN-SCIRE DOWNWASH CALCULATIONS:

Attack Angle (deg)	Wind Direction Sectors (deg)	Proj. Width PW^ (m)	Critical Height^^ (m)	Widths For ISC (PW) (m)	Min(HB,PW)* 0.5 XWND (m)	2.0 UPWND (m)	5 DNWND (m)
0	180 360	25.4	43.2	25.4	12.7	50.9	127.2
23	23 203	25.4	43.2	25.4	12.7	50.8	127.1
45	45 225	23.0	42.0	23.0	11.5	46.1	115.2
68	68 247	24.1	42.5	24.1	12.1	48.2	120.6
90	90 270	25.4	43.2	25.4	12.7	50.9	127.2
113	113 292	25.4	43.2	25.4	12.7	50.7	126.8
135	135 315	22.7	41.8	22.7	11.3	45.3	113.3
158	158 338	23.8	42.4	23.8	11.9	47.7	119.1

^ - Maximum projected width at 1 degree intervals in each sector.
^^ - Schulman-Scire GEP height based on directional PW.

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DWA: DOWNWASH CALCULATIONS FOR AN ISOLATED SIMPLE STRUCTURE

N-PRECIPITATORS 2

SITE COORDINATES (NW CORNER OR CENTER):
Easting : 776.00 feet [236.52 meters]
Northing : -145.00 feet [-44.20 meters]
Rotation Angle : -37.0 degrees

STRUCTURE DIMENSIONS:
Corners : 4
Height (HB) : 100.00 feet [30.48 meters]

Maximum projected width (MPW) : 84.15 feet [25.65 meters]
Building correction angle : 0.0 degrees

CRITICAL HEIGHT INFORMATION:
Radius of effect of structure : 420.73 feet [128.24 meters]
Huber-Snyder critical height^ : 226.22 feet [68.95 meters]
Schulman-Scire critical height : 142.07 feet [43.30 meters]

^ - Maximum GEP stack height for the structure.

HUBER-SNYDER DOWNWASH DIMENSIONS:
HL = HW = MPW * 0.886 = 22.72 meters

SCHULMAN-SCIRE DOWNWASH CALCULATIONS:

Attack Angle (deg)	Wind Direction Sectors (deg)	Proj. Width PW^ (m)	Critical Height^^ (m)	Widths for ISC (PW) (m)	Min(HB,PW)* 0.5 XWND (m)	2.0 UPWND (m)	5 DNWND (m)
0	180 360	25.6	43.3	25.6	12.8	51.3	128.2
23	23 203	25.6	43.3	25.6	12.8	51.2	128.1
45	45 225	23.1	42.1	23.1	11.6	46.3	115.7
68	68 247	24.2	42.6	24.2	12.1	48.5	121.2
90	90 270	25.6	43.3	25.6	12.8	51.3	128.2
113	113 292	25.6	43.3	25.6	12.8	51.2	127.9
135	135 315	23.0	42.0	23.0	11.5	45.9	114.8
158	158 338	24.1	42.5	24.1	12.1	48.2	120.5

^ - Maximum projected width at 1 degree intervals in each sector.
^^ - Schulman-Scire GEP height based on directional PW.

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DWA: DOWNWASH CALCULATIONS FOR AN ISOLATED SIMPLE STRUCTURE

N-RECOVERY BOILERS

SITE COORDINATES (NW CORNER OR CENTER):
Easting : 690.00 feet [210.31 meters]
Northing : -24.00 feet [-7.32 meters]
Rotation Angle : -37.0 degrees

STRUCTURE DIMENSIONS:
Corners : 10
Height (HB) : 160.00 feet [48.77 meters]

Maximum projected width (MPW) : 174.93 feet [53.32 meters]
Building correction angle : 0.0 degrees

CRITICAL HEIGHT INFORMATION:
Radius of effect of structure : 800.00 feet [243.84 meters]
Huber-Snyder critical height^ : 400.00 feet [121.92 meters]
Schulman-Scire critical height : 240.00 feet [73.15 meters]

^ - Maximum GEP stack height for the structure.

HUBER-SNYDER DOWNWASH DIMENSIONS:
HL = HW = MPW * 0.886 = 47.24 meters

SCHULMAN-SCIRE DOWNWASH CALCULATIONS:

Attack Angle (deg)	Wind Direction Sectors (deg)	Proj. Width PW^ (m)	Critical Height^^ (m)	Widths for ISC (PW) (m)	Min(HB,PW)* 0.5 XWND (m)	Min(HB,PW)* 2.0 UPWND (m)	Min(HB,PW)* 5 DNWND (m)
0	180 360	53.3	73.2	53.3	24.4	97.5	243.8
23	23 203	51.1	73.2	51.1	24.4	97.5	243.8
45	45 225	46.6	72.1	46.6	23.3	93.1	232.9
68	68 247	43.5	70.5	43.5	21.8	87.1	217.7
90	90 270	50.1	73.2	50.1	24.4	97.5	243.8
113	113 292	51.7	73.2	51.7	24.4	97.5	243.8
135	135 315	51.1	73.2	51.1	24.4	97.5	243.8
158	158 338	53.1	73.2	53.1	24.4	97.5	243.8

^ - Maximum projected width at 1 degree intervals in each sector.
^^ - Schulman-Scire GEP height based on directional PW.

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DWA: DOWNWASH CALCULATIONS FOR AN ISOLATED SIMPLE STRUCTURE

O-NO. 5 PAPER MACHINE

SITE COORDINATES (NW CORNER OR CENTER):
Easting : 424.00 feet [129.24 meters]
Northing : 782.00 feet [238.35 meters]
Rotation Angle : -37.0 degrees

STRUCTURE DIMENSIONS:
Corners : 6
Height (HB) : 60.00 feet [18.29 meters]

Maximum projected width (MPW) : 588.40 feet [179.34 meters]
Building correction angle : 0.0 degrees

CRITICAL HEIGHT INFORMATION:
Radius of effect of structure : 300.00 feet [91.44 meters]
Huber-Snyder critical height^ : 150.00 feet [45.72 meters]
Schulman-Scire critical height : 90.00 feet [27.43 meters]

^ - Maximum GEP stack height for the structure.

HUBER-SNYDER DOWNWASH DIMENSIONS:
HL = HW = MPW * 0.886 = 158.90 meters

SCHULMAN-SCIRE DOWNWASH CALCULATIONS:

Attack Angle (deg)	Wind Direction Sectors (deg)	Proj. Width PW^ (m)	Critical Height^^ (m)	Widths for ISC (PW) (m)	Min(HB,PW)* 0.5 XWND (m)	2.0 UPWND (m)	5 DNWND (m)
0	180 360	162.4	27.4	162.4	9.1	36.6	91.4
23	23 203	179.2	27.4	179.2	9.1	36.6	91.4
45	45 225	179.3	27.4	179.3	9.1	36.6	91.4
68	68 247	175.6	27.4	175.6	9.1	36.6	91.4
90	90 270	170.5	27.4	170.5	9.1	36.6	91.4
113	113 292	141.6	27.4	141.6	9.1	36.6	91.4
135	135 315	91.0	27.4	91.0	9.1	36.6	91.4
158	158 338	120.9	27.4	120.9	9.1	36.6	91.4

^ - Maximum projected width at 1 degree intervals in each sector.
^^ - Schulman-Scire GEP height based on directional PW.

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DWA: DOWNWASH CALCULATIONS FOR AN ISOLATED SIMPLE STRUCTURE

P-NO.3 PAPER MACHINE

SITE COORDINATES (NW CORNER OR CENTER):
Easting : 275.00 feet [83.82 meters]
Northing : 745.00 feet [227.08 meters]
Rotation Angle : -37.0 degrees

STRUCTURE DIMENSIONS:
Corners : 8
Height (HB) : 60.00 feet [18.29 meters]

Maximum projected width (MPW) : 522.15 feet [159.15 meters]
Building correction angle : 0.0 degrees

CRITICAL HEIGHT INFORMATION:
Radius of effect of structure : 300.00 feet [91.44 meters]
Huber-Snyder critical height^ : 150.00 feet [45.72 meters]
Schulman-Scire critical height : 90.00 feet [27.43 meters]

^ - Maximum GEP stack height for the structure.

HUBER-SNYDER DOWNWASH DIMENSIONS:
HL = HW = MPW * 0.886 = 141.01 meters

SCHULMAN-SCIRE DOWNWASH CALCULATIONS:

Attack Angle (deg)	Wind Direction Sectors (deg)	Proj. Width PW^ (m)	Critical Height^^ (m)	Widths for ISC (PW) (m)	Min(HB,PW)* 0.5 XWND (m)	Min(HB,PW)* 2.0 UPWND (m)	Min(HB,PW)* 5 DNWND (m)
0	180 360	136.3	27.4	136.3	9.1	36.6	91.4
23	23 203	156.9	27.4	156.9	9.1	36.6	91.4
45	45 225	158.5	27.4	158.5	9.1	36.6	91.4
68	68 247	159.2	27.4	159.2	9.1	36.6	91.4
90	90 270	154.7	27.4	154.7	9.1	36.6	91.4
113	113 292	128.6	27.4	128.6	9.1	36.6	91.4
135	135 315	82.9	27.4	82.9	9.1	36.6	91.4
158	158 338	95.0	27.4	95.0	9.1	36.6	91.4

^ - Maximum projected width at 1 degree intervals in each sector.
^^ - Schulman-Scire GEP height based on directional PW.

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DWA: DOWNWASH CALCULATIONS FOR AN ISOLATED SIMPLE STRUCTURE

Q-HIGH BAY STORAGE BLDG

SITE COORDINATES (NW CORNER OR CENTER):
Easting : 400.00 feet [121.92 meters]
Northing : 1300.00 feet [396.24 meters]
Rotation Angle : -37.0 degrees

STRUCTURE DIMENSIONS:
Corners : 4
Height (HB) : 75.00 feet [22.86 meters]

Maximum projected width (MPW) : 309.53 feet [94.35 meters]
Building correction angle : 0.0 degrees

CRITICAL HEIGHT INFORMATION:
Radius of effect of structure : 375.00 feet [114.30 meters]
Huber-Snyder critical height^ : 187.50 feet [57.15 meters]
Schulman-Scire critical height : 112.50 feet [34.29 meters]

^ - Maximum GEP stack height for the structure.

HUBER-SNYDER DOWNWASH DIMENSIONS:
HL = HW = MPW * 0.886 = 83.59 meters

SCHULMAN-SCIRE DOWNWASH CALCULATIONS:

Attack Angle (deg)	Wind Direction Sectors (deg)	Proj. Width PW^ (m)	Critical Height^^ (m)	Widths For ISC (PW) (m)	Min(HB,PW)* 0.5 XWND (m)	2.0 UPWND (m)	5 DNWND (m)
0	180 360	91.4	34.3	91.4	11.4	45.7	114.3
23	23 203	94.3	34.3	94.3	11.4	45.7	114.3
45	45 225	93.3	34.3	93.3	11.4	45.7	114.3
68	68 247	94.3	34.3	94.3	11.4	45.7	114.3
90	90 270	94.3	34.3	94.3	11.4	45.7	114.3
113	113 292	88.2	34.3	88.2	11.4	45.7	114.3
135	135 315	68.7	34.3	68.7	11.4	45.7	114.3
158	158 338	75.6	34.3	75.6	11.4	45.7	114.3

^ - Maximum projected width at 1 degree intervals in each sector.
^^ - Schulman-Scire GEP height based on directional PW.

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DWA: DOWNWASH CALCULATIONS FOR AN ISOLATED SIMPLE STRUCTURE

R-CONT. DIGESTER

SITE COORDINATES (NW CORNER OR CENTER):
Easting : 220.00 feet [67.06 meters]
Northing : -78.00 feet [-23.77 meters]
Rotation Angle : -37.0 degrees

STRUCTURE DIMENSIONS:
Corners : 4
Height (HB) : 200.00 feet [60.96 meters]

Maximum projected width (MPW) : 31.11 feet [9.48 meters]
Building correction angle : 0.0 degrees

CRITICAL HEIGHT INFORMATION:
Radius of effect of structure : 155.56 feet [47.42 meters]
Huber-Snyder critical height^ : 246.67 feet [75.18 meters]
Schulman-Scire critical height : 215.56 feet [65.70 meters]

^ - Maximum GEP stack height for the structure.

HUBER-SNYDER DOWNWASH DIMENSIONS:
HL = HW = MPW * 0.886 = 8.40 meters

SCHULMAN-SCIRE DOWNWASH CALCULATIONS:

Attack Angle (deg)	Wind Direction Sectors (deg)	Proj. Width PW^ (m)	Critical Height^^ (m)	Widths for ISC (PW) (m)	Min(HB,PW)* 0.5 XWND (m)	2.0 UPWND (m)	5 DNWND (m)
0	180 360	9.5	65.7	9.5	4.7	19.0	47.4
23	23 203	9.5	65.7	9.5	4.7	18.9	47.3
45	45 225	8.5	65.2	8.5	4.3	17.0	42.6
68	68 247	8.9	65.4	8.9	4.5	17.9	44.7
90	90 270	9.5	65.7	9.5	4.7	19.0	47.4
113	113 292	9.5	65.7	9.5	4.7	18.9	47.3
135	135 315	8.5	65.2	8.5	4.3	17.0	42.6
158	158 338	8.9	65.4	8.9	4.5	17.9	44.7

^ - Maximum projected width at 1 degree intervals in each sector.
^^ - Schulman-Scire GEP height based on directional PW.

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DWA: DOWNWASH CALCULATIONS FOR AN ISOLATED SIMPLE STRUCTURE

S-WASHER

SITE COORDINATES (NW CORNER OR CENTER):
Easting : 210.00 feet [64.01 meters]
Northing : -124.00 feet [-37.80 meters]
Rotation Angle : -37.0 degrees

STRUCTURE DIMENSIONS:
Corners : 4
Height (HB) : 100.00 feet [30.48 meters]

Maximum projected width (MPW) : 49.50 feet [15.09 meters]
Building correction angle : 0.0 degrees

CRITICAL HEIGHT INFORMATION:
Radius of effect of structure : 247.49 feet [75.43 meters]
Huber-Snyder critical height^ : 174.25 feet [53.11 meters]
Schulman-Scire critical height : 124.75 feet [38.02 meters]

^ - Maximum GEP stack height for the structure.

HUBER-SNYDER DOWNWASH DIMENSIONS:
HL = HW = MPW * 0.886 = 13.37 meters

SCHULMAN-SCIRE DOWNWASH CALCULATIONS:

Attack Angle (deg)	Wind Direction Sectors (deg)	Proj. Width PW^ (m)	Critical Height^^ (m)	Widths for ISC (PW) (m)	Min(HB,PW)* 0.5 XWND (m)	2.0 UPWND (m)	5 DNWND (m)
0	180 360	15.1	38.0	15.1	7.5	30.2	75.4
23	23 203	15.1	38.0	15.1	7.5	30.1	75.3
45	45 225	13.6	37.3	13.6	6.8	27.1	67.8
68	68 247	14.2	37.6	14.2	7.1	28.4	71.1
90	90 270	15.1	38.0	15.1	7.5	30.2	75.4
113	113 292	15.1	38.0	15.1	7.5	30.1	75.3
135	135 315	13.6	37.3	13.6	6.8	27.1	67.8
158	158 338	14.2	37.6	14.2	7.1	28.4	71.1

^ - Maximum projected width at 1 degree intervals in each sector.
^^ - Schulman-Scire GEP height based on directional PW.

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DWA: DOWNWASH CALCULATIONS FOR AN ISOLATED SIMPLE STRUCTURE

T-NO.9 H.D. STORAGE CHEST

SITE COORDINATES (NW CORNER OR CENTER):
Easting   :   52.00 feet [15.85 meters]
Northing   : 290.00 feet [88.39 meters]
Rotation Angle :   -37.0 degrees

STRUCTURE DIMENSIONS:
Corners   :   4
Height (HB) :   75.00 feet [22.86 meters]

Maximum projected width (MPW) :   91.92 feet [28.02 meters]
Building correction angle   :   0.0 degrees

CRITICAL HEIGHT INFORMATION:
Radius of effect of structure :   375.00 feet [114.30 meters]
Huber-Snyder critical height^ :   187.50 feet [57.15 meters]
Schulman-Scire critical height :   112.50 feet [34.29 meters]

^ - Maximum GEP stack height for the structure.

HUBER-SNYDER DOWNWASH DIMENSIONS:
HL = HW = MPW * 0.886 = 24.82 meters

SCHULMAN-SCIRE DOWNWASH CALCULATIONS:

Attack Angle (deg)	Wind Direction Sectors (deg)	Proj. Width PW^ (m)	Critical Height^^ (m)	Widths For ISC (PW) (m)	Min(HB,PW)* 0.5 XWND (m)	Min(HB,PW)* 2.0 UPWND (m)	Min(HB,PW)* 5 DNWND (m)
0	180 360	28.0	34.3	28.0	11.4	45.7	114.3
23	23 203	28.0	34.3	28.0	11.4	45.7	114.3
45	45 225	25.2	34.3	25.2	11.4	45.7	114.3
68	68 247	26.4	34.3	26.4	11.4	45.7	114.3
90	90 270	28.0	34.3	28.0	11.4	45.7	114.3
113	113 292	28.0	34.3	28.0	11.4	45.7	114.3
135	135 315	25.2	34.3	25.2	11.4	45.7	114.3
158	158 338	26.4	34.3	26.4	11.4	45.7	114.3

^ - Maximum projected width at 1 degree intervals in each sector.
^^ - Schulman-Scire GEP height based on directional PW.

DOWNWASH ANALYSIS PROGRAM, VERSION 4.0X, February 1991
ROY F. WESTON, INC. WORK ORDER NO. 22464301
RUN TITLE: CHAMPION PENSECOLA * PROGRAM RUN 12/11/92 AT 8:53

DWA: DOWNWASH CALCULATIONS FOR AN ISOLATED SIMPLE STRUCTURE

U-BLEACH PLANT

SITE COORDINATES (NW CORNER OR CENTER):
Easting : -185.00 feet [-56.39 meters]
Northing : 310.00 feet [94.49 meters]
Rotation Angle : -37.0 degrees

STRUCTURE DIMENSIONS:
Corners : 14
Height (HB) : 60.00 feet [18.29 meters]

Maximum projected width (MPW) : 271.53 feet [82.76 meters]
Building correction angle : 0.0 degrees

CRITICAL HEIGHT INFORMATION:
Radius of effect of structure : 300.00 feet [91.44 meters]
Huber-Snyder critical height^ : 150.00 feet [45.72 meters]
Schulman-Scire critical height : 90.00 feet [27.43 meters]

^ - Maximum GEP stack height for the structure.

HUBER-SNYDER DOWNWASH DIMENSIONS:
HL = HW = MPW * 0.886 = 73.33 meters

SCHULMAN-SCIRE DOWNWASH CALCULATIONS:

Attack Angle (deg)	Wind Direction Sectors (deg)	Proj. Width PW^ (m)	Critical Height^^ (m)	Widths for ISC (PW) (m)	Min(HB,PW)* 0.5 XWND (m)	2.0 UPWND (m)	5 DNWND (m)
0	180 360	78.2	27.4	78.2	9.1	36.6	91.4
23	23 203	81.4	27.4	81.4	9.1	36.6	91.4
45	45 225	80.8	27.4	80.8	9.1	36.6	91.4
68	68 247	82.7	27.4	82.7	9.1	36.6	91.4
90	90 270	82.8	27.4	82.8	9.1	36.6	91.4
113	113 292	77.7	27.4	77.7	9.1	36.6	91.4
135	135 315	62.3	27.4	62.3	9.1	36.6	91.4
158	158 338	64.3	27.4	64.3	9.1	36.6	91.4

^ - Maximum projected width at 1 degree intervals in each sector.
^^ - Schulman-Scire GEP height based on directional PW.

DOWNWASH ANALYSIS PROGRAM, VERSION 4.0X, February 1991
ROY F. WESTON, INC. WORK ORDER NO. 22464301
RUN TITLE: CHAMPION PENSECOLA * PROGRAM RUN 12/11/92 AT 8:53

DWA: DOWNWASH CALCULATIONS FOR AN ISOLATED SIMPLE STRUCTURE

V-CHIP SILOS

SITE COORDINATES (NW CORNER OR CENTER):
Easting : -140.00 feet [-42.67 meters]
Northing : -74.00 feet [-22.56 meters]
Rotation Angle : -37.0 degrees

STRUCTURE DIMENSIONS:
Corners : 4
Height (HB) : 90.00 feet [27.43 meters]

Maximum projected width (MPW) : 183.97 feet [56.07 meters]
Building correction angle : 0.0 degrees

CRITICAL HEIGHT INFORMATION:
Radius of effect of structure : 450.00 feet [137.16 meters]
Huber-Snyder critical height^ : 225.00 feet [68.58 meters]
Schulman-Scire critical height : 135.00 feet [41.15 meters]

^ - Maximum GEP stack height for the structure.

HUBER-SNYDER DOWNWASH DIMENSIONS:
HL = HW = MPW * 0.886 = 49.68 meters

SCHULMAN-SCIRE DOWNWASH CALCULATIONS:

Attack Angle (deg)	Wind Direction Sectors (deg)	Proj. Width PW^ (m)	Critical Height^^ (m)	Widths for ISC (PW) (m)	Min(HC,PW)* 0.5 XWND (m)	2.0 UPWND (m)	5 DNWND (m)
0	180 360	48.5	41.1	48.5	13.7	54.9	137.2
23	23 203	55.6	41.1	55.6	13.7	54.9	137.2
45	45 225	56.1	41.1	56.1	13.7	54.9	137.2
68	68 247	56.1	41.1	56.1	13.7	54.9	137.2
90	90 270	54.4	41.1	54.4	13.7	54.9	137.2
113	113 292	45.0	41.1	45.0	13.7	54.9	137.2
135	135 315	28.8	41.1	28.8	13.7	54.9	137.2
158	158 338	34.1	41.1	34.1	13.7	54.9	137.2

^ - Maximum projected width at 1 degree intervals in each sector.
^^ - Schulman-Scire GEP height based on directional PW.

DOWNWASH ANALYSIS PROGRAM, VERSION 4.0X, February 1991
ROY F. WESTON, INC. WORK ORDER NO. 22464301
RUN TITLE: CHAMPION PENSECOLA * PROGRAM RUN 12/11/92 AT 8:53

DWA: DOWNWASH CALCULATIONS FOR AN ISOLATED SIMPLE STRUCTURE

Y-SCREEN BLDG

SITE COORDINATES (NW CORNER OR CENTER):
Easting : 202.00 feet [61.57 meters]
Northing : 178.00 feet [54.25 meters]
Rotation Angle : -37.0 degrees

STRUCTURE DIMENSIONS:
Corners : 4
Height (HB) : 60.00 feet [18.29 meters]

Maximum projected width (MPW) : 185.01 feet [56.39 meters]
Building correction angle : 0.0 degrees

CRITICAL HEIGHT INFORMATION:
Radius of effect of structure : 300.00 feet [91.44 meters]
Huber-Snyder critical height^ : 150.00 feet [45.72 meters]
Schulman-Scire critical height : 90.00 feet [27.43 meters]

^ - Maximum GEP stack height for the structure.

HUBER-SNYDER DOWNWASH DIMENSIONS:
HL = HW = MPW * 0.886 = 49.96 meters

SCHULMAN-SCIRE DOWNWASH CALCULATIONS:

Attack Angle (deg)	Wind Direction Sectors (deg)	Proj. Width PW^ (m)	Critical Height^^ (m)	Widths for ISC (PW) (m)	Min(HB,PW)* 0.5 XWND (m)	2.0 UPWND (m)	5 DNWND (m)
0	180 360	56.3	27.4	56.3	9.1	36.6	91.4
23	23 203	51.0	27.4	51.0	9.1	36.6	91.4
45	45 225	37.9	27.4	37.9	9.1	36.6	91.4
68	68 247	42.4	27.4	42.4	9.1	36.6	91.4
90	90 270	53.4	27.4	53.4	9.1	36.6	91.4
113	113 292	56.4	27.4	56.4	9.1	36.6	91.4
135	135 315	56.2	27.4	56.2	9.1	36.6	91.4
158	158 338	56.4	27.4	56.4	9.1	36.6	91.4

^ - Maximum projected width at 1 degree intervals in each sector.
^^ - Schulman-Scire GEP height based on directional PW.

DOWNWASH ANALYSIS PROGRAM, VERSION 4.0X, February 1991
ROY F. WESTON, INC.   WORK ORDER NO. 22464301
RUN TITLE: CHAMPION PENSECOLA * PROGRAM RUN 12/11/92 AT 8:53

DWA: DOWNWASH CALCULATIONS FOR AN ISOLATED SIMPLE STRUCTURE

No. 6 POWER BOILER BLDG

SITE COORDINATES (NW CORNER OR CENTER):
Easting : 750.00 feet [228.60 meters]
Northing : 138.00 feet [42.06 meters]
Rotation Angle : -37.0 degrees

STRUCTURE DIMENSIONS:
Corners : 4
Height (HB) : 21.00 feet [6.40 meters]

Maximum projected width (MPW) : 51.66 feet [15.75 meters]
Building correction angle : 0.0 degrees

CRITICAL HEIGHT INFORMATION:
Radius of effect of structure : 105.00 feet [32.00 meters]
Huber-Snyder critical height^ : 52.50 feet [16.00 meters]
Schulman-Scire critical height : 31.50 feet [9.60 meters]

^ - Maximum GEP stack height for the structure.

HUBER-SNYDER DOWNWASH DIMENSIONS:
HL = HW = MPW * 0.886 = 13.95 meters

SCHULMAN-SCIRE DOWNWASH CALCULATIONS:

Attack Angle (deg)	Wind Direction Sectors (deg)	Proj. Width PW^ (m)	Critical Height^^ (m)	Widths For ISC (PW) (m)	Min(HB,PW)* 0.5 XWND (m)	2.0 UPWND (m)	5 DNWND (m)
0	180 360	15.4	9.6	15.4	3.2	12.8	32.0
23	23 203	13.1	9.6	13.1	3.2	12.8	32.0
45	45 225	8.7	9.6	8.7	3.2	12.8	32.0
68	68 247	10.1	9.6	10.1	3.2	12.8	32.0
90	90 270	14.0	9.6	14.0	3.2	12.8	32.0
113	113 292	15.7	9.6	15.7	3.2	12.8	32.0
135	135 315	15.7	9.6	15.7	3.2	12.8	32.0
158	158 338	15.7	9.6	15.7	3.2	12.8	32.0

^ - Maximum projected width at 1 degree intervals in each sector.
^^ - Schulman-Scire GEP height based on directional PW.

NO. 6 POWER BOILER
LOAD CONDITION MODELING

12-11-92
09:32:52

*** SCREEN-1.1 MODEL RUN ***
*** VERSION DATED 88300 ***

36 POWER BOILER 100% LOAD CONDITION 12/11/92

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	1.000
STACK HEIGHT (M)	=	38.10
STK INSIDE DIAM (M)	=	2.59
STK EXIT VELOCITY (M/S)	=	14.41
STK GAS EXIT TEMP (K)	=	449.80
AMBIENT AIR TEMP (K)	=	293.00
RECEPTOR HEIGHT (M)	=	.00
IOPT (1=URB,2=RUR)	=	2
BUILDING HEIGHT (M)	=	61.00
MIN HORIZ BLDG DIM (M)	=	19.00
MAX HORIZ BLDG DIM (M)	=	80.20

BUOY. FLUX = 82.61 M**4/S**3; MOM. FLUX = 226.84 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
100.	.0000	0	.0	.0	.0	.0	.0	.0	NA
200.	51.37	5	1.0	1.6	5000.0	77.3	11.6	36.8	SS
300.	52.93	5	1.0	1.6	5000.0	77.3	16.9	42.4	SS
400.	51.70	5	1.0	1.6	5000.0	77.3	22.0	48.0	SS
500.	48.76	5	1.0	1.6	5000.0	77.3	27.0	53.7	SS
600.	45.03	5	1.0	1.6	5000.0	77.3	31.9	59.3	SS
700.	40.17	5	1.0	1.6	5000.0	77.3	36.8	61.9	SS
800.	35.71	5	1.0	1.6	5000.0	77.3	41.5	62.4	SS
900.	32.20	5	1.0	1.6	5000.0	77.3	46.3	62.9	SS
1000.	29.36	5	1.0	1.6	5000.0	77.3	50.9	63.4	SS
1100.	27.02	5	1.0	1.6	5000.0	77.3	55.6	63.9	SS
1200.	25.05	5	1.0	1.6	5000.0	77.3	60.2	64.4	SS
1300.	23.36	5	1.0	1.6	5000.0	77.3	64.7	64.9	SS
1400.	21.90	5	1.0	1.6	5000.0	77.3	69.2	65.4	SS
1500.	20.63	5	1.0	1.6	5000.0	77.3	73.7	65.8	SS
1600.	19.50	5	1.0	1.6	5000.0	77.3	78.1	66.3	SS
1700.	18.51	5	1.0	1.6	5000.0	77.3	82.6	66.8	SS
1800.	17.61	5	1.0	1.6	5000.0	77.3	87.0	67.3	SS
1900.	16.80	5	1.0	1.6	5000.0	77.3	91.3	67.7	SS
2000.	16.19	6	1.0	2.1	5000.0	56.5	98.2	67.9	SS
2100.	15.74	6	1.0	2.1	5000.0	56.5	101.0	68.0	SS
2200.	15.32	6	1.0	2.1	5000.0	56.5	103.7	68.0	SS
2300.	14.93	6	1.0	2.1	5000.0	56.5	106.4	68.1	SS
2400.	14.55	6	1.0	2.1	5000.0	56.5	109.1	68.2	SS
2500.	14.19	6	1.0	2.1	5000.0	56.5	111.8	68.3	SS
2600.	13.85	6	1.0	2.1	5000.0	56.5	114.5	68.3	SS
2700.	13.53	6	1.0	2.1	5000.0	56.5	117.2	68.4	SS
2800.	13.22	6	1.0	2.1	5000.0	56.5	119.9	68.5	SS
2900.	12.93	6	1.0	2.1	5000.0	56.5	122.6	68.6	SS
3000.	12.65	6	1.0	2.1	5000.0	56.5	125.3	68.6	SS

3500.	11.44	6	1.0	2.1	5000.0	56.5	138.5	68.7	SS
4000.	10.43	6	1.0	2.1	5000.0	56.5	151.6	69.0	SS
4500.	9.596	6	1.0	2.1	5000.0	56.5	164.6	69.3	SS
5000.	8.889	6	1.0	2.1	5000.0	56.5	177.4	69.6	SS
5500.	8.282	6	1.0	2.1	5000.0	56.5	190.1	69.9	SS
6000.	7.756	6	1.0	2.1	5000.0	56.5	202.7	70.2	SS
6500.	7.294	6	1.0	2.1	5000.0	56.5	215.2	70.5	SS
7000.	6.886	6	1.0	2.1	5000.0	56.5	227.6	70.8	SS
7500.	6.523	6	1.0	2.1	5000.0	56.5	239.9	71.1	SS
8000.	6.198	6	1.0	2.1	5000.0	56.5	252.2	71.4	SS
8500.	5.904	6	1.0	2.1	5000.0	56.5	264.3	71.7	SS
9000.	5.637	6	1.0	2.1	5000.0	56.5	276.4	72.0	SS
9500.	5.395	6	1.0	2.1	5000.0	56.5	288.4	72.2	SS
10000.	5.173	6	1.0	2.1	5000.0	56.5	300.3	72.5	SS

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 100. M:

301.	52.93	5	1.0	1.6	5000.0	77.3	17.0	42.5	SS

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

*** CAVITY CALCULATION - 1 ***
CONC (UG/M**3) = 136.3
CRIT WS @10M (M/S) = 1.00
CRIT WS @ HS (M/S) = 1.31
DILUTION WS (M/S) = 1.00
CAVITY HT (M) = 126.10
CAVITY LENGTH (M) = 198.91
ALONGWIND DIM (M) = 19.00

*** CAVITY CALCULATION - 2 ***
CONC (UG/M**3) = 513.5
CRIT WS @10M (M/S) = 1.71
CRIT WS @ HS (M/S) = 2.24
DILUTION WS (M/S) = 1.12
CAVITY HT (M) = 78.67
CAVITY LENGTH (M) = 25.16
ALONGWIND DIM (M) = 80.20

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)	
SIMPLE TERRAIN	52.93	301.	0.	
BUILDING CAVITY-1	136.3	199.	--	(DIST = CAVITY LENGTH)
BUILDING CAVITY-2	513.5	25.	--	(DIST = CAVITY LENGTH)

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

12-11-92
09:32:56

*** SCREEN-1.1 MODEL RUN ***
*** VERSION DATED 88300 ***

U6 POWER BOILER 75% LOAD CONDITION 12/11/92

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	.7500
STACK HEIGHT (M)	=	38.10
STK INSIDE DIAM (M)	=	2.59
STK EXIT VELOCITY (M/S)	=	10.79
STK GAS EXIT TEMP (K)	=	449.80
AMBIENT AIR TEMP (K)	=	293.00
RECEPTOR HEIGHT (M)	=	.00
IOPT (1=URB,2=RUR)	=	2
BUILDING HEIGHT (M)	=	61.00
MIN HORIZ BLDG DIM (M)	=	19.00
MAX HORIZ BLDG DIM (M)	=	80.20

BUOY. FLUX = 61.86 M**4/S**3; MOM. FLUX = 127.18 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
100.	.0000	0	.0	.0	.0	.0	.0	.0	NA
200.	43.86	6	1.0	2.1	5000.0	50.9	30.0	42.7	SS
300.	37.08	6	1.0	2.1	5000.0	50.9	36.7	49.3	SS
400.	31.15	6	1.0	2.1	5000.0	50.9	43.4	55.8	SS
500.	26.80	5	1.0	1.6	5000.0	66.4	50.1	58.5	SS
600.	24.03	5	1.0	1.6	5000.0	66.4	56.8	64.7	SS
700.	21.60	5	1.0	1.6	5000.0	66.4	63.2	67.4	SS
800.	20.15	5	1.0	1.6	5000.0	66.4	67.7	67.9	SS
900.	18.89	5	1.0	1.6	5000.0	66.4	72.2	68.4	SS
1000.	17.78	5	1.0	1.6	5000.0	66.4	76.7	68.8	SS
1100.	16.97	6	1.0	2.1	5000.0	50.9	73.1	71.6	SS
1200.	16.33	6	1.0	2.1	5000.0	50.9	75.9	71.7	SS
1300.	15.74	6	1.0	2.1	5000.0	50.9	78.7	71.8	SS
1400.	15.19	6	1.0	2.1	5000.0	50.9	81.6	71.8	SS
1500.	14.68	6	1.0	2.1	5000.0	50.9	84.4	71.9	SS
1600.	14.20	6	1.0	2.1	5000.0	50.9	87.1	71.9	SS
1700.	13.76	6	1.0	2.1	5000.0	50.9	89.9	72.0	SS
1800.	13.34	6	1.0	2.1	5000.0	50.9	92.7	72.0	SS
1900.	12.95	6	1.0	2.1	5000.0	50.9	95.5	72.1	SS
2000.	12.58	6	1.0	2.1	5000.0	50.9	98.2	72.1	SS
2100.	12.24	6	1.0	2.1	5000.0	50.9	101.0	72.2	SS
2200.	11.91	6	1.0	2.1	5000.0	50.9	103.7	72.3	SS
2300.	11.60	6	1.0	2.1	5000.0	50.9	106.4	72.3	SS
2400.	11.31	6	1.0	2.1	5000.0	50.9	109.1	72.4	SS
2500.	11.03	6	1.0	2.1	5000.0	50.9	111.8	72.4	SS
2600.	10.76	6	1.0	2.1	5000.0	50.9	114.5	72.5	SS
2700.	10.51	6	1.0	2.1	5000.0	50.9	117.2	72.5	SS
2800.	10.27	6	1.0	2.1	5000.0	50.9	119.9	72.6	SS
2900.	10.04	6	1.0	2.1	5000.0	50.9	122.6	72.6	SS
3000.	9.826	6	1.0	2.1	5000.0	50.9	125.3	72.7	SS

3500.	8.869	6	1.0	2.1	5000.0	50.9	138.5	73.0	SS
4000.	8.088	6	1.0	2.1	5000.0	50.9	151.6	73.2	SS
4500.	7.437	6	1.0	2.1	5000.0	50.9	164.6	73.5	SS
5000.	6.886	6	1.0	2.1	5000.0	50.9	177.4	73.8	SS
5500.	6.414	6	1.0	2.1	5000.0	50.9	190.1	74.0	SS
6000.	6.004	6	1.0	2.1	5000.0	50.9	202.7	74.3	SS
6500.	5.645	6	1.0	2.1	5000.0	50.9	215.2	74.5	SS
7000.	5.328	6	1.0	2.1	5000.0	50.9	227.6	74.8	SS
7500.	5.045	6	1.0	2.1	5000.0	50.9	239.9	75.0	SS
8000.	4.792	6	1.0	2.1	5000.0	50.9	252.2	75.3	SS
8500.	4.564	6	1.0	2.1	5000.0	50.9	264.3	75.5	SS
9000.	4.356	6	1.0	2.1	5000.0	50.9	276.4	75.8	SS
9500.	4.168	6	1.0	2.1	5000.0	50.9	288.4	76.0	SS
10000.	3.995	6	1.0	2.1	5000.0	50.9	300.3	76.3	SS

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 100. M:

183.	45.05	6	1.0	2.1	5000.0	50.9	28.9	41.7	SS

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

*** CAVITY CALCULATION - 1 ***		*** CAVITY CALCULATION - 2 ***	
CONC (UG/M**3) =	102.2	CONC (UG/M**3) =	431.4
CRIT WS @10M (M/S) =	1.00	CRIT WS @10M (M/S) =	1.32
CRIT WS @ HS (M/S) =	1.31	CRIT WS @ HS (M/S) =	1.73
DILUTION WS (M/S) =	1.00	DILUTION WS (M/S) =	1.00
CAVITY HT (M) =	126.10	CAVITY HT (M) =	78.67
CAVITY LENGTH (M) =	198.91	CAVITY LENGTH (M) =	25.16
ALONGWIND DIM (M) =	19.00	ALONGWIND DIM (M) =	80.20

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)	
SIMPLE TERRAIN	45.05	183.	0.	
BUILDING CAVITY-1	102.2	199.	--	(DIST = CAVITY LENGTH)
BUILDING CAVITY-2	431.4	25.	--	(DIST = CAVITY LENGTH)

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

*** SCREEN-1.1 MODEL RUN ***
*** VERSION DATED 88300 ***

G6 POWER BOILER 50% LOAD CONDITION 12/11/92

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	.5000
STACK HEIGHT (M)	=	38.10
STK INSIDE DIAM (M)	=	2.59
STK EXIT VELOCITY (M/S)	=	6.85
STK GAS EXIT TEMP (K)	=	449.80
AMBIENT AIR TEMP (K)	=	293.00
RECEPTOR HEIGHT (M)	=	.00
IOPT (1=URB,2=RUR)	=	2
BUILDING HEIGHT (M)	=	61.00
MIN HORIZ BLDG DIM (M)	=	19.00
MAX HORIZ BLDG DIM (M)	=	80.20

BUOY. FLUX = 39.27 M**4/S**3; MOM. FLUX = 51.26 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
100.	.0000	0	.0	.0	.0	.0	.0	.0	NA
200.	34.33	5	1.0	1.6	5000.0	55.2	30.0	43.8	SS
300.	29.61	5	1.0	1.6	5000.0	55.2	36.7	50.5	SS
400.	25.21	5	1.0	1.6	5000.0	55.2	43.4	57.2	SS
500.	21.44	5	1.0	1.6	5000.0	55.2	50.1	63.9	SS
600.	18.31	5	1.0	1.6	5000.0	55.2	56.8	70.6	SS
700.	16.17	5	1.0	1.6	5000.0	55.2	63.2	73.6	SS
800.	15.05	5	1.0	1.6	5000.0	55.2	67.7	74.0	SS
900.	14.08	5	1.0	1.6	5000.0	55.2	72.2	74.4	SS
1000.	13.23	5	1.0	1.6	5000.0	55.2	76.7	74.9	SS
1100.	12.47	5	1.0	1.6	5000.0	55.2	81.1	75.3	SS
1200.	11.80	5	1.0	1.6	5000.0	55.2	85.5	75.7	SS
1300.	11.19	5	1.0	1.6	5000.0	55.2	89.9	76.1	SS
1400.	10.65	5	1.0	1.6	5000.0	55.2	94.3	76.5	SS
1500.	10.15	5	1.0	1.6	5000.0	55.2	98.6	76.9	SS
1600.	9.751	6	1.0	2.1	5000.0	46.2	87.1	73.7	SS
1700.	9.445	6	1.0	2.1	5000.0	46.2	89.9	73.8	SS
1800.	9.159	6	1.0	2.1	5000.0	46.2	92.7	73.8	SS
1900.	8.890	6	1.0	2.1	5000.0	46.2	95.5	73.9	SS
2000.	8.637	6	1.0	2.1	5000.0	46.2	98.2	73.9	SS
2100.	8.399	6	1.0	2.1	5000.0	46.2	101.0	74.0	SS
2200.	8.174	6	1.0	2.1	5000.0	46.2	103.7	74.0	SS
2300.	7.961	6	1.0	2.1	5000.0	46.2	106.4	74.1	SS
2400.	7.760	6	1.0	2.1	5000.0	46.2	109.1	74.1	SS
2500.	7.569	6	1.0	2.1	5000.0	46.2	111.8	74.2	SS
2600.	7.387	6	1.0	2.1	5000.0	46.2	114.5	74.2	SS
2700.	7.214	6	1.0	2.1	5000.0	46.2	117.2	74.3	SS
2800.	7.050	6	1.0	2.1	5000.0	46.2	119.9	74.3	SS
2900.	6.893	6	1.0	2.1	5000.0	46.2	122.6	74.4	SS
3000.	6.743	6	1.0	2.1	5000.0	46.2	125.3	74.5	SS

3500.	6.085	6	1.0	2.1	5000.0	46.2	138.5	74.7	SS
4000.	5.548	6	1.0	2.1	5000.0	46.2	151.6	75.0	SS
4500.	5.100	6	1.0	2.1	5000.0	46.2	164.6	75.2	SS
5000.	4.722	6	1.0	2.1	5000.0	46.2	177.4	75.5	SS
5500.	4.397	6	1.0	2.1	5000.0	46.2	190.1	75.7	SS
6000.	4.115	6	1.0	2.1	5000.0	46.2	202.7	75.9	SS
6500.	3.869	6	1.0	2.1	5000.0	46.2	215.2	76.2	SS
7000.	3.651	6	1.0	2.1	5000.0	46.2	227.6	76.4	SS
7500.	3.456	6	1.0	2.1	5000.0	46.2	239.9	76.7	SS
8000.	3.282	6	1.0	2.1	5000.0	46.2	252.2	76.9	SS
8500.	3.125	6	1.0	2.1	5000.0	46.2	264.3	77.1	SS
9000.	2.983	6	1.0	2.1	5000.0	46.2	276.4	77.4	SS
9500.	2.854	6	1.0	2.1	5000.0	46.2	288.4	77.6	SS
10000.	2.735	6	1.0	2.1	5000.0	46.2	300.3	77.8	SS

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 100. M:

183.	35.10	5	1.0	1.6	5000.0	55.2	28.9	42.8	SS

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

*** CAVITY CALCULATION - 1 ***		*** CAVITY CALCULATION - 2 ***	
CONC (UG/M**3) =	68.14	CONC (UG/M**3) =	287.6
CRIT WS @10M (M/S) =	1.00	CRIT WS @10M (M/S) =	1.00
CRIT WS @ HS (M/S) =	1.31	CRIT WS @ HS (M/S) =	1.31
DILUTION WS (M/S) =	1.00	DILUTION WS (M/S) =	1.00
CAVITY HT (M) =	126.10	CAVITY HT (M) =	78.67
CAVITY LENGTH (M) =	198.91	CAVITY LENGTH (M) =	25.16
ALONGWIND DIM (M) =	19.00	ALONGWIND DIM (M) =	80.20

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	35.10	183.	0.
BUILDING CAVITY-1	68.14	199.	-- (DIST = CAVITY LENGTH)
BUILDING CAVITY-2	287.6	25.	-- (DIST = CAVITY LENGTH)

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

CO SIGNIFICANT IMPACT AREA MODELING

12-08-92
15:54:05

*** SCREEN-1.1 MODEL RUN ***
*** VERSION DATED 88300 ***

LIME MUD DRYER CO SCREENING FOR SIGNIFICANCE 12/08/92

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	.8500
STACK HEIGHT (M)	=	41.45
STK INSIDE DIAM (M)	=	1.98
STK EXIT VELOCITY (M/S)	=	8.76
STK GAS EXIT TEMP (K)	=	342.30
AMBIENT AIR TEMP (K)	=	293.00
RECEPTOR HEIGHT (M)	=	.00
IOPT (1=URB,2=RUR)	=	2
BUILDING HEIGHT (M)	=	61.00
MIN HORIZ BLDG DIM (M)	=	19.00
MAX HORIZ BLDG DIM (M)	=	80.20

BUOY. FLUX = 12.13 M**4/S**3; MOM. FLUX = 64.38 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
100.	.0000	0	.0	.0	.0	.0	.0	.0	NA
200.	68.53	5	1.0	1.6	5000.0	47.7	30.0	41.9	SS
300.	57.05	5	1.0	1.6	5000.0	47.7	36.7	48.3	SS
400.	47.42	5	1.0	1.6	5000.0	47.7	43.4	54.7	SS
500.	39.66	5	1.0	1.6	5000.0	47.7	50.1	61.1	SS
600.	33.45	5	1.0	1.6	5000.0	47.7	56.8	67.5	SS
700.	29.41	5	1.0	1.6	5000.0	47.7	63.2	70.3	SS
800.	27.35	5	1.0	1.6	5000.0	47.7	67.7	70.8	SS
900.	25.56	5	1.0	1.6	5000.0	47.7	72.2	71.2	SS
1000.	23.99	5	1.0	1.6	5000.0	47.7	76.7	71.6	SS
1100.	22.60	5	1.0	1.6	5000.0	47.7	81.1	72.1	SS
1200.	21.37	5	1.0	1.6	5000.0	47.7	85.5	72.5	SS
1300.	20.26	5	1.0	1.6	5000.0	47.7	89.9	72.9	SS
1400.	19.25	5	1.0	1.6	5000.0	47.7	94.3	73.4	SS
1500.	18.35	5	1.0	1.6	5000.0	47.7	98.6	73.8	SS
1600.	17.52	5	1.0	1.6	5000.0	47.7	102.9	74.2	SS
1700.	16.76	5	1.0	1.6	5000.0	47.7	107.2	74.7	SS
1800.	16.06	5	1.0	1.6	5000.0	47.7	111.5	75.1	SS
1900.	15.42	5	1.0	1.6	5000.0	47.7	115.8	75.5	SS
2000.	14.83	5	1.0	1.6	5000.0	47.7	120.0	75.9	SS
2100.	14.28	5	1.0	1.6	5000.0	47.7	124.2	76.3	SS
2200.	13.76	5	1.0	1.6	5000.0	47.7	128.4	76.7	SS
2300.	13.28	5	1.0	1.6	5000.0	47.7	132.6	77.2	SS
2400.	12.84	5	1.0	1.6	5000.0	47.7	136.8	77.6	SS
2500.	12.51	6	1.0	2.2	5000.0	44.0	111.8	74.2	SS

2600.	12.21	6	1.0	2.2	5000.0	44.0	114.5	74.2	SS
2700.	11.93	6	1.0	2.2	5000.0	44.0	117.2	74.3	SS
2800.	11.65	6	1.0	2.2	5000.0	44.0	119.9	74.3	SS
2900.	11.39	6	1.0	2.2	5000.0	44.0	122.6	74.4	SS
3000.	11.15	6	1.0	2.2	5000.0	44.0	125.3	74.5	SS
3500.	10.06	6	1.0	2.2	5000.0	44.0	138.5	74.7	SS
4000.	9.168	6	1.0	2.2	5000.0	44.0	151.6	75.0	SS
4500.	8.428	6	1.0	2.2	5000.0	44.0	164.6	75.2	SS
5000.	7.801	6	1.0	2.2	5000.0	44.0	177.4	75.5	SS
5500.	7.264	6	1.0	2.2	5000.0	44.0	190.1	75.7	SS
6000.	6.798	6	1.0	2.2	5000.0	44.0	202.7	75.9	SS
6500.	6.390	6	1.0	2.2	5000.0	44.0	215.2	76.2	SS
7000.	6.029	6	1.0	2.2	5000.0	44.0	227.6	76.4	SS
7500.	5.708	6	1.0	2.2	5000.0	44.0	239.9	76.7	SS
8000.	5.420	6	1.0	2.2	5000.0	44.0	252.2	76.9	SS
8500.	5.160	6	1.0	2.2	5000.0	44.0	264.3	77.1	SS
9000.	4.924	6	1.0	2.2	5000.0	44.0	276.4	77.4	SS
9500.	4.710	6	1.0	2.2	5000.0	44.0	288.4	77.6	SS
10000.	4.514	6	1.0	2.2	5000.0	44.0	300.3	77.8	SS

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 100. M:

183.	70.62	5	1.0	1.6	5000.0	47.7	28.9	40.8	SS

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

*** CAVITY CALCULATION - 1 ***

CONC (UG/M**3)	=	115.8
CRIT WS @10M (M/S)	=	1.00
CRIT WS @ HS (M/S)	=	1.33
DILUTION WS (M/S)	=	1.00
CAVITY HT (M)	=	126.10
CAVITY LENGTH (M)	=	198.91
ALONGWIND DIM (M)	=	19.00

*** CAVITY CALCULATION - 2 ***

CONC (UG/M**3)	=	488.9
CRIT WS @10M (M/S)	=	1.03
CRIT WS @ HS (M/S)	=	1.37
DILUTION WS (M/S)	=	1.00
CAVITY HT (M)	=	78.67
CAVITY LENGTH (M)	=	25.16
ALONGWIND DIM (M)	=	80.20

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)	
SIMPLE TERRAIN	70.62	183.	0.	
BUILDING CAVITY-1	115.8	199.	--	(DIST = CAVITY LENGTH)
BUILDING CAVITY-2	488.9	25.	--	(DIST = CAVITY LENGTH)

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

*** SCREEN-1.1 MODEL RUN ***
*** VERSION DATED 88300 ***

#6 POWER BOILER CO SCREENING FOR SIGNIFICANCE 12/08/92

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	6.720
STACK HEIGHT (M)	=	38.10
STK INSIDE DIAM (M)	=	2.59
STK EXIT VELOCITY (M/S)	=	14.41
STK GAS EXIT TEMP (K)	=	449.80
AMBIENT AIR TEMP (K)	=	293.00
RECEPTOR HEIGHT (M)	=	.00
IOPT (1=URB,2=RUR)	=	2
BUILDING HEIGHT (M)	=	61.00
MIN HORIZ BLDG DIM (M)	=	19.00
MAX HORIZ BLDG DIM (M)	=	80.20

BUOY. FLUX = 82.61 M**4/S**3; MOM. FLUX = 226.84 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
100.	.0000	0	.0	.0	.0	.0	.0	.0	NA
200.	345.2	5	1.0	1.6	5000.0	77.3	11.6	36.8	SS
300.	355.7	5	1.0	1.6	5000.0	77.3	16.9	42.4	SS
400.	347.4	5	1.0	1.6	5000.0	77.3	22.0	48.0	SS
500.	327.6	5	1.0	1.6	5000.0	77.3	27.0	53.7	SS
600.	302.6	5	1.0	1.6	5000.0	77.3	31.9	59.3	SS
700.	270.0	5	1.0	1.6	5000.0	77.3	36.8	61.9	SS
800.	240.0	5	1.0	1.6	5000.0	77.3	41.5	62.4	SS
900.	216.4	5	1.0	1.6	5000.0	77.3	46.3	62.9	SS
1000.	197.3	5	1.0	1.6	5000.0	77.3	50.9	63.4	SS
1100.	181.6	5	1.0	1.6	5000.0	77.3	55.6	63.9	SS
1200.	168.3	5	1.0	1.6	5000.0	77.3	60.2	64.4	SS
1300.	157.0	5	1.0	1.6	5000.0	77.3	64.7	64.9	SS
1400.	147.2	5	1.0	1.6	5000.0	77.3	69.2	65.4	SS
1500.	138.6	5	1.0	1.6	5000.0	77.3	73.7	65.8	SS
1600.	131.1	5	1.0	1.6	5000.0	77.3	78.1	66.3	SS
1700.	124.4	5	1.0	1.6	5000.0	77.3	82.6	66.8	SS
1800.	118.3	5	1.0	1.6	5000.0	77.3	87.0	67.3	SS
1900.	112.9	5	1.0	1.6	5000.0	77.3	91.3	67.7	SS
2000.	108.8	6	1.0	2.1	5000.0	56.5	98.2	67.9	SS
2100.	105.8	6	1.0	2.1	5000.0	56.5	101.0	68.0	SS
2200.	103.0	6	1.0	2.1	5000.0	56.5	103.7	68.0	SS
2300.	100.3	6	1.0	2.1	5000.0	56.5	106.4	68.1	SS
2400.	97.77	6	1.0	2.1	5000.0	56.5	109.1	68.2	SS

2500.	95.37	6	1.0	2.1	5000.0	56.5	111.8	68.3	SS
2600.	93.09	6	1.0	2.1	5000.0	56.5	114.5	68.3	SS
2700.	90.92	6	1.0	2.1	5000.0	56.5	117.2	68.4	SS
2800.	88.85	6	1.0	2.1	5000.0	56.5	119.9	68.5	SS
2900.	86.88	6	1.0	2.1	5000.0	56.5	122.6	68.6	SS
3000.	85.00	6	1.0	2.1	5000.0	56.5	125.3	68.6	SS
3500.	76.86	6	1.0	2.1	5000.0	56.5	138.5	68.7	SS
4000.	70.10	6	1.0	2.1	5000.0	56.5	151.6	69.0	SS
4500.	64.49	6	1.0	2.1	5000.0	56.5	164.6	69.3	SS
5000.	59.73	6	1.0	2.1	5000.0	56.5	177.4	69.6	SS
5500.	55.66	6	1.0	2.1	5000.0	56.5	190.1	69.9	SS
6000.	52.12	6	1.0	2.1	5000.0	56.5	202.7	70.2	SS
6500.	49.02	6	1.0	2.1	5000.0	56.5	215.2	70.5	SS
7000.	46.28	6	1.0	2.1	5000.0	56.5	227.6	70.8	SS
7500.	43.84	6	1.0	2.1	5000.0	56.5	239.9	71.1	SS
8000.	41.65	6	1.0	2.1	5000.0	56.5	252.2	71.4	SS
8500.	39.67	6	1.0	2.1	5000.0	56.5	264.3	71.7	SS
9000.	37.88	6	1.0	2.1	5000.0	56.5	276.4	72.0	SS
9500.	36.25	6	1.0	2.1	5000.0	56.5	288.4	72.2	SS
10000.	34.76	6	1.0	2.1	5000.0	56.5	300.3	72.5	SS

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 100. M:

301.	355.7	5	1.0	1.6	5000.0	77.3	17.0	42.5	SS

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

*** CAVITY CALCULATION - 1 ***

CONC (UG/M**3)	=	915.7
CRIT WS @10M (M/S)	=	1.00
CRIT WS @ HS (M/S)	=	1.31
DILUTION WS (M/S)	=	1.00
CAVITY HT (M)	=	126.10
CAVITY LENGTH (M)	=	198.91
ALONGWIND DIM (M)	=	19.00

*** CAVITY CALCULATION - 2 ***

CONC (UG/M**3)	=	3451.
CRIT WS @10M (M/S)	=	1.71
CRIT WS @ HS (M/S)	=	2.24
DILUTION WS (M/S)	=	1.12
CAVITY HT (M)	=	78.67
CAVITY LENGTH (M)	=	25.16
ALONGWIND DIM (M)	=	80.20

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)	
SIMPLE TERRAIN	355.7	301.	0.	
BUILDING CAVITY-1	915.7	199.	--	(DIST = CAVITY LENGTH)
BUILDING CAVITY-2	3451.	25.	--	(DIST = CAVITY LENGTH)

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

SECTION 2

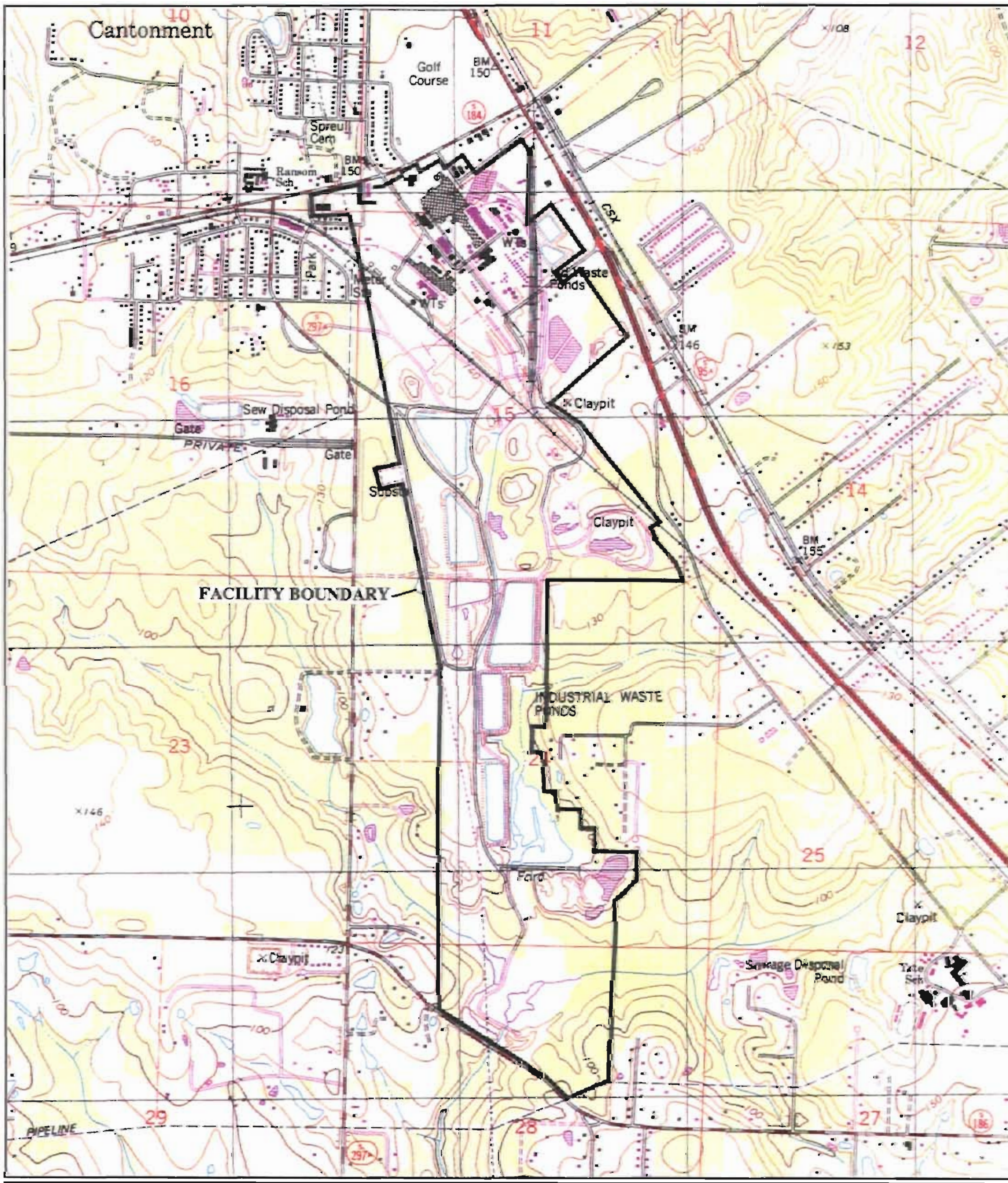
DESCRIPTION OF EXISTING MILL AND PROPOSED MODIFICATION

2.1 INTRODUCTION

The CHAMPION Pensacola Mill is located in Escambia County, Florida, near the town of Cantonment. Figure 2-1 is a site location map showing the proximity of the facility to the town of Cantonment. The land area around the site is relatively flat terrain and would be classified as a rural land use pattern based on EPA's classification scheme. The air quality in the area has been designated as attainment or unclassifiable for all ambient air quality standards.

CHAMPION's existing pulp mill has been in operation since 1941. Major mill expansion projects were completed in 1981 and 1986. The 1986 expansion resulted in a complete conversion to production of bleached kraft fine paper. The existing facilities were permitted by the Florida Department of Environmental Regulation (DER) in 1985. In 1991 a PSD Permit application was submitted to Florida DER for a new package gas-fired boiler. The CHAMPION Pensacola Mill is currently permitted for 1400 air-dried, bleached tons of pulp per calendar day.

The existing bleached kraft pulp mill includes wood preparation and storage, coal/wood fuel handling and storage, batch digesters, a continuous digester, brown stock washing, oxygen delignification, pulp bleaching facilities, recovery furnaces, power boilers, black liquor evaporators, smelt dissolving tanks, a lime kiln and calciner, recausticizing facility, and tall oil and turpentine byproducts facilities. Figure 2-2 presents a plot plan of the facility identifying the location of major emission points.



NORTH

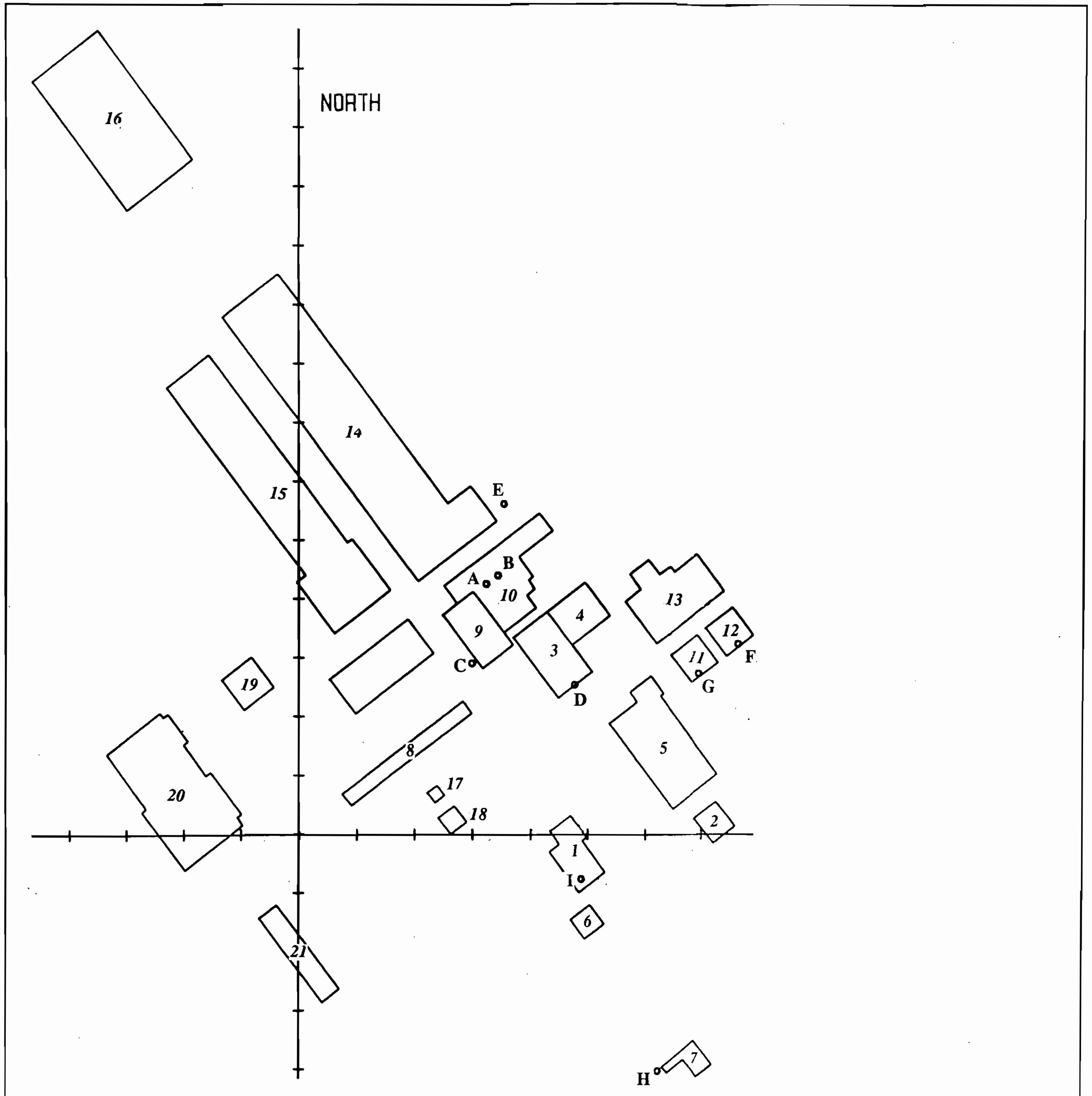
0 1000 2000 4000

SCALE IN FEET

SOURCE: BASE MAP ADAPTED FROM USGS 7.5 MINUTE SERIES, CANTONMENT, FLA., QUADRANGLE, 1978, PHOTOREVISED 1987.

CHAMPION INTERNATIONAL CORPORATION
PENSACOLA FACILITY
CANTONMENT, ESCAMBIA COUNTY
FLORIDA

FIGURE 2-1
LOCATION MAP OF THE PENSACOLA FACILITY



BUILDING/STRUCTURE

1. - LIME RECOVERY BUILDING
2. - COOLING TOWER
3. - NO. 4 POWER BOILER
4. - TURBINE GENERATOR BUILDING
5. - EVAPORATORS
6. - LIME KILN NORTH
7. - LIME KILN SOUTH
8. - BATCH DIGESTERS
9. - NO. 3 POWER BOILER
10. - NO.1 & 2 BOILER
11. - RECOVERY BOILER PRECIPITATOR 1
12. - RECOVERY BOILER PRECIPITATOR 2
13. - RECOVERY BOILERS
14. - PAPER MACHINE COMPLEX
15. - HIGH BAY STORAGE BUILDING
16. - WAREHOUSE
17. - KAMYR DIGESTER
18. - KAMYR DIFFUSER
19. - NO. 9 H. D. STORAGE
20. - BLEACH PLANT
21. - CHIP SILO

SOURCES:

A. - NO. 1 POWER BOILER STACK
B. - NO. 2 POWER BOILER STACK
C. - NO. 3 POWER BOILER STACK
D. - NO. 4 POWER BOILER STACK
E. - NO. 5 POWER BOILER STACK
F. - RECOVERY BOILER STACK 1
G. - RECOVERY BOILER STACK 2
H. - LIME KILN STACK
I. - CALCINER STACK

NORTH

0 100 200 400

SCALE IN FEET

SOURCE: BASE MAP ADAPTED FROM DRAWINGS SUPPLIED BY CHAMPION

CHAMPION INTERNATIONAL CORPORATION
PENSACOLA FACILITY
CANTONMENT, ESCAMBIA COUNTY
FLORIDA

CHAMPEN2-H/DM-2/91

FIGURE 2-2
LOCATION OF STACKS AND PRIMARY BUILDINGS IDENTIFIED FOR SCHULMAN-SCIRE DOWNWASH ANALYSIS

2.2 MILL CONSENT ORDER

The Pensacola Mill is currently operating under a water permit consent order from the Florida DER. Compliance with water quality standards must be attained by 1994 to meet the schedule contained in the consent agreements. The proposed mill modifications, contained in this air permit application, involve process changes aimed at reducing wastewater loads or minimizing waste load constituents to CHAMPION's treatment system in order to meet the requirements of the consent order.

It is important to point out that the proposed modification would not be undertaken if not for the consent order. The changes are not aimed at increasing mill production, nor are they intended to increase throughput on individual units other than to handle additional materials generated as a result of the wastewater load reduction program. However, the modifications will increase pulp production through the bleach plant due to minimization of fiber losses and fiber degradation. While the actual increase in pulp production which will result from the modifications cannot be quantified at this time, it is anticipated to be less than 10%.

The proposed program can be characterized as follows:

- Modifications to the bleach plant operations to reduce effluent load to the wastewater treatment facilities.

- Process modifications to improve delignification, decrease waste and improve chemical recovery.

- Process modifications to minimize spills and leaks.

- Process modifications to reduce sewering of high concentration waste streams.

A description of the existing mill processes and the proposed modification to these processes follows.

2.3 EXISTING PROCESS DESCRIPTION

An even mix of hardwood and softwood pulp is produced from wood furnished by on-site and satellite chip mills. The wood chips are stored and screened in separate hardwood and softwood storage yards. The kraft cooking process is used to separate the lignin and wood fiber to produce brown pulp from wood chips. Softwood pulp is produced in a continuous digester, washed by a two-stage atmospheric diffusion washer, separated from wood knots by a disc knotter, and screened to separate rejects. Hardwood chips are cooked in twelve conventional direct steam batch digesters and discharged into two blow tanks common to all twelve digesters. The hardwood brown pulp is separated from wood knots by vibratory knotters and washed by two parallel lines of drum-type brown stock washers, and then screened to separate rejects. The softwood and hardwood pulps are further delignified in separate oxygen delignification reactors. After oxygen delignification, the hardwood and softwood pulps are further washed and bleached in a three-stage bleach plant. The hardwood and softwood bleach plants are identical and include:

- A chlorination stage with chlorine dioxide added;
- An oxidative caustic extraction stage; and
- A final chlorine dioxide bleaching stage.

The chlorine dioxide is generated on site in a unit designed to produce sixteen tons per day. Liquid chlorine, caustic soda, and liquid oxygen are all delivered to the site by rail or truck prior to use in the process. The chlorine and oxygen are vaporized prior to use.

The organic or lignin laden filtrates (black liquor) from the pulping, oxygen delignification, and washing processes are concentrated through two sets of evaporators. The No. 1 Evaporator Set mainly processes black liquor from the softwood pulp mill, while the No. 2

Evaporator Set processes hardwood black liquor. The black liquor is concentrated to about 65% solids and burned in two identical Babcock and Wilcox recovery furnaces (No. 1 and No. 2). The recovery furnaces produce steam for energy generation and heat for the pulp and paper making processes. The molten inorganic ash (smelt) from the recovery furnaces is dissolved in water to make green liquor which is then reprocessed into reusable cooking chemicals in the mill's causticizing plant. The causticizing process combines lime with the green liquor in a slaker reactor to produce a sodium hydroxide and sodium sulfide solution (white liquor), which is the principle wood chip cooking chemical. A by-product from the slaking reaction is calcium carbonate or lime mud. The lime mud is washed and then reburned in an Allis Chalmers type rotary kiln, and a Dorr-Oliver type fluidized bed calciner to produce reusable lime for the slaking reaction.

The mill utilizes five power boilers to produce steam for energy generation and provide heat for the pulping and paper making processes. Through cogeneration by utilization of two steam-driven turbines, the mill can produce nearly all of the electricity and steam required to run the mill operations. Power Boiler Nos. 1, 2, and 5 are natural gas fired. Power Boiler No. 3 is coal fired with natural gas as an alternate fuel. No. 4 Power Boiler is coal and bark fired with natural gas as an alternate fuel.

Product paper is produced from the pulp on two paper machines. Copy paper is produced on the No. 5 Paper Machine and is cut, sized, and packaged in a side processing plant for final sale. The paper produced on the No. 3 Paper Machine is shipped in either sheet or roll form to final customers. Market pulp is dried on a pulp drying machine as bales or rolls for final sale.

The mill utilizes sump systems in selected areas which are activated by conductivity to reclaim process losses into collection tanks. The reclaimed losses are reintroduced into the chemical recovery process. Distributed process control systems are used in nearly all the major process areas to improve process stability and control.

2.4 EXISTING MILL AIR SOURCES

The Pensacola Mill currently operates a total of twenty-nine (29) air sources which are covered by twenty-one (21) DER air permits. Table 2-1 is a summary list of the sources, the source ID number, and the permit number under which the source operates. The majority of the mill sources will not be impacted by the proposed consent order modifications. The sources which will be affected by the project include some sources which will be physically modified and will experience throughput increases, and other sources which will not be modified but will experience throughput increases.

The sources impacted by the project fall within three main areas of the mill pulping process as follows:

- Chemical cooking
- O_2 delignification and bleaching
- Chemical recovery and power generation

The existing sources in each area which will be affected by the project are depicted in Figure 2-3 and are discussed below.

Chemical Cooking

The air emission sources in the chemical cooking area include the digesters, the brown stock washers, and the non-condensible gas (NCG) system. The digester systems on both the hardwood and softwood lines are closed systems which vent off-gases to the NCG system. Condensate from the cooking process is stripped to remove as much of the organic fraction as possible, and the off-gas from the condensate stripper is also vented to the NCG system. The NCG system itself vents to either the lime kiln or the lime calciner. The lime kiln is used as the primary control device for incinerating the NCGs with the calciner serving as backup.

TABLE 2-1
CHAMPION INTERNATIONAL CORPORATION - PENSACOLA MILL
FLORIDA DER AIR PERMITS

SOURCE	PERMIT #	SOURCE ID #
Wooodyard	AO17170657	10PEN1700 4252 & 58
Kamyr Digesters	AO17212422	10PEN1700 4254
Kamyr Diffusion Washer	AO17212422	10PEN1700 4254
Condensate Stripper	AO17212422	10PEN1700 4254
Batch Digesters	AO17212422	10PEN1700 4253
Brown Stock Washers	AO17212422	10PEN1700 4253
A Line 0_2 Delignification	AO17142570	10PEN1700 4250
B Line 0_2 Delignification	AO17142570	10PEN1700 4251
A Line Bleach Plant	AO17142570	10PEN1700 4250
B Line Bleach Plant	AO17142570	10PEN1700 4251
Salt Unloading	AO17142572	10PEN1700 4256 & 57
Chlorine Dioxide Generator	AO17142566	10PEN1700 4247, 48, & 49
Multiple Effect Evaporators	AO17212422	10PEN1700 4255
No. 1 Recovery Furnace	AO17181730	10PEN1700 4230
No. 1 Smelt Dissolving Tank	AO17181734	10PEN1700 4232
No. 2 Recovery Furnace	AO17181732	10PEN1700 4229
No. 2 Smelt Dissolving Tank	AO17181735	10PEN1700 4238
Lime Slaker	AO17137615	10PEN1700 4246
Lime Kiln	AO17181738	10PEN1700 4228
Fluo-Solids Unit (Calciner)	AO17151541	10PEN1700 4236
Tall Oil Plant	AO17181741	10PEN1700 4201
No. 1 Power Boiler	AO17181726	10PEN1700 4224
No. 2 Power Boiler	AO17181727	10PEN1700 4214
No. 3 Power Boiler	AO17146028	10PEN1700 4233
No. 4 Power Boiler	AO17145038	10PEN1700 4237
No. 5 Power Boiler	AO17203050	10PEN1700 4202
Coal Crushing and Handling	AO17143517	10PEN1700 4239 & 40
P5 Dry Additives	AO17213490	10PEN1700 4245
P5 Starch	AO17213492	10PEN1700 4244

CONSENT ORDER AIR PERMITTING PLAN - MILL LAYOUT

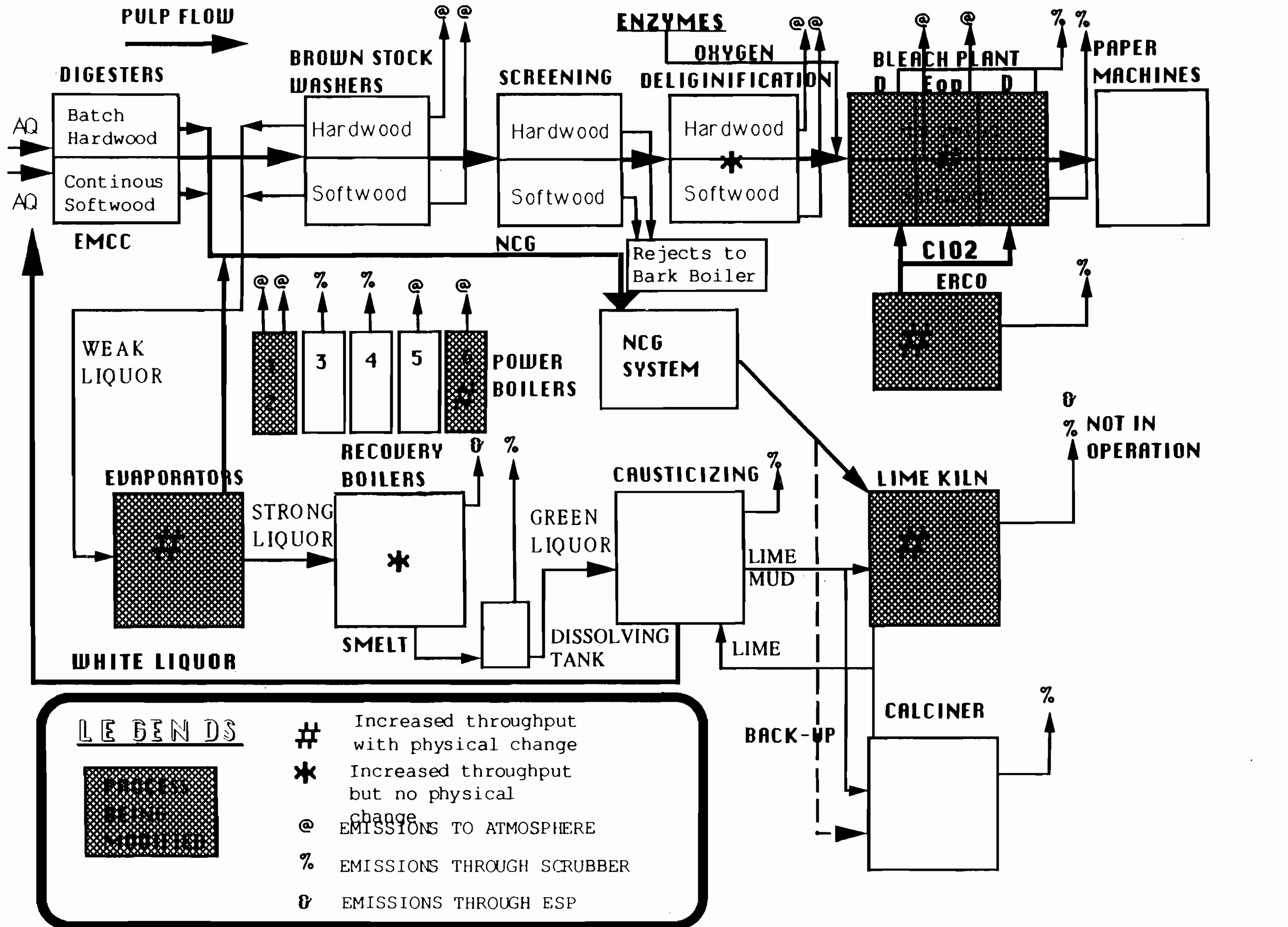


Figure 2-3

The other sources in the cooking area include the diffusion washer on the softwood line and the brown stock washers on the hardwood line. The washers on both lines vent directly to the atmosphere.

O_2 Delignification and Bleaching

The washed brown stock from the cooking processes are further delignified using oxygen in separate O_2 reactors on each line. The O_2 delignification systems on each line are identical and include three vents each, as follows:

- The pre-O_2 decker washer vent
- The O_2 blow tank vent
- The post-O_2 washer vent

Following O_2 delignification, the pulp is processed through the bleaching system. The existing Pensacola bleaching operations are similar for each line and include the following sources:

- Cl/ClO_2 scrubber - This scrubber uses white liquor to control the emissions from the chlorination stage and chlorine dioxide stage of the existing bleaching sequence.

- E_o tower vent and E_o washer vent - These sources are direct atmospheric vents from the oxidative extraction stages of the existing bleaching sequence.

ClO_2 for the existing mill bleaching sequence is generated on site in an ERCO R3H generator. The unit uses salt, sulfuric acid, and sodium chlorate to generate ClO_2 and Cl_2. The current bleaching sequence includes chlorine and chlorine dioxide in the first stage, an oxygen extractive stage, and chlorine dioxide in the final stage (C_DE_OD). There are five vent sources associated with the ClO_2 generator as follows:

- One tail gas scrubber - This scrubber uses sodium hydroxide to control Cl_2 and ClO_2 from the generator.

- Two ClO_2 storage tanks controlled by chilled water scrubbers.

- Two salt unloading/pneumatic transfer systems controlled by separate water spray towers.

<u>**Chemical Recovery and Power Generation**</u>

The chemical recovery and power generation area includes the process equipment associated with recovering the cooking chemicals and the power boilers which generate the necessary process steam. Each of the sources affected by the proposed project are detailed below.

- *Multiple Effect Evaporators* - The evaporators are used to concentrate the weak black liquor prior to firing in the recovery furnaces. The off-gas from the evaporators is vented into the NCG system previously described and is ultimately combusted in the lime kiln or calciner.

- *No. 1 and No. 2 Recovery Furnaces* - These boilers burn the concentrated black liquor to generate process steam and to recover smelt for further reprocessing. The boilers are identical Babcock and Wilcox low-odor design units equipped with dual-chamber multifield electrostatic precipitators (EPs) to control particulate matter emissions.

- *Lime Kiln* - The lime kiln is used to calcine lime mud from the slaking process in the chemical recovery area. The kiln is permitted to burn natural gas and is rated to produce up to 328 tons of CaO per day. It also serves as the primary control device for the NCGs generated in the pulping process. Particulate emissions from the kiln are controlled by a venturi scrubber and mist separator.

- *No. 1 Power Boiler* - This boiler is a natural gas-fired boiler originally rated to produce 140,000 pounds of steam per hour and having a derated heat input of 175mm BTU per hour.

- *No. 2 Power Boiler* - This boiler is a natural gas-fired boiler originally rated to produce 140,000 pounds of steam per hour and having a derated heat input of 170mm BTU per hour.

2.5 MODIFIED AND NEW AIR SOURCES

The project will affect the various air sources outlined in Section 2.4 on a source-specific basis. The following information is intended to provide details on the changes which each of the existing affected sources will experience, and also to provide information on the proposed new No. 6 Power Boiler which will replace the No. 1 and No. 2 Power Boilers as part of the project. The information is presented based upon the production area groupings previously identified in Section 2.4.

Chemical Cooking

Improved delignification in the cooking processes might play a role in reducing the wastewater treatment load. CHAMPION has identified two potential changes to be made to the digester processes to improve delignification, including:

- Extended modified continuous cooking (EMCC)
- Anthraquinone cooking (AQ)

It is important to understand that these are both changes in the cooking process which should not impact air emissions from the system. Therefore, by themselves EMCC and AQ do not require air permitting. Both methods have undergone trial efforts at the Pensacola Mill and continue to be evaluated.

EMCC can only be considered in the continuous digester serving the softwood line. It involves changes in feeding the cooking liquor into the digester in stages and different cooking conditions. If successfully implemented, it is expected to produce a pulp which is easier to wash, therefore, improving lignin extraction. While some changes in piping are required for the digester, it is a sealed unit with any emissions ultimately vented directly to the NCG system. No increase in throughput occurs in the digester as a result of EMCC.

Anthraquinone (AQ) is an organic catalyst which accelerates and increases the selectivity of the wood cooking chemicals in the delignification of the pulp fiber. It can potentially be used in both the batch digesters serving the hardwood line and the continuous digester serving the softwood line. The ultimate goal of applying AQ is a reduction in the organic loading, the color, and the conductivity in the bleach plant effluent and further reduction in the chlorine usage in the bleach plant.

The project will require the installation of storage and handling equipment for AQ. AQ is water soluble and, therefore, CHAMPION proposes to utilize a system designed for transporting and storing water-soluble anthraquinone (SAQ). AQ is not on the Clean Air List of 189 Air Toxics. It is a reportable substance and adequate containment of the storage and unloading facility will be provided.

While both EMCC and AQ are changes in the digester cooking processes, it is believed that there will be no changes resulting in the emissions from the digesters following implementation of these methods. Since feed rate to the digesters will not change the material flow rate from the digesters to the brown stock, washers will also be unchanged. Air emissions from the brown stock washers should be no different following implementation of these improved cooking methods.

O_2 Delignification and Bleaching

The washed brown pulp from the cooking processes goes through further delignification in

O_2 reactors on each line. If these improvements in the digester cooking processes occur, less fiber may be wasted which could result in an increase in the fiber processed through the O_2 delignification systems. Since there could also be reduced levels of lignin in the brown pulp, the emissions from the pre- and post-O_2 washers and the O_2 blow tank are not expected to change as a result of the project, even if fiber throughput increases.

The most significant change in the pulp production process will be the conversion of the existing C_DE_OD bleach plant. This will be accomplished by elimination of the existing chlorine gas handling system, the addition of a hydrogen peroxide handling system, and the modification of the chlorine dioxide generator. In addition, enzymes may be added to the high density storage tanks between the oxygen delignification systems and the bleach plants. Each of these changes is detailed below.

- *Enzyme Bleach Boosting* - Enzyme bleach boosting is a new technique which must still undergo field trails. It involves the application of xylanase enzyme prior to pulp bleaching with the purpose of modifying the chemical structure to make subsequent bleach stages more efficient. The high degree of specificity of action and mild working conditions generally result in fewer non-desirable byproducts. This tends to give a more efficient process and should lead to improved process yields. Significant reductions in chlorine dioxide required to bleach pulp are possible with no significant impact on pulp properties.

  From an environmental viewpoint, enzymes are safe and quite desirable. They are easy to handle, require mild conditions for reaction, are effective in small amounts, biodegradable, and non-toxic. The xylanase enzymes to be used in pulp bleaching are categorized as food grade products.

  The use of enzymes will require the installation of enzyme storage and handling facilities. Since enzymes are water soluble, there will be no air emission associated with this system.

- *Chlorine Dioxide Substitution for Chlorine* - The mill will eliminate the use of molecular chlorine as a bleaching agent, and the first stage of each bleach plant will be 100% chlorine dioxide. This will require a modification of the existing chlorine dioxide generator.

  The existing generator is an ERCO R3H which uses salt, sulfuric acid, hydrochloric acid, and sodium chlorate to generate chlorine dioxide and chlorine. The generator will be modified to an R8 process which uses methanol, sulfuric acid, and sodium chlorate to generate chlorine dioxide. The conversion to R8 is necessary to eliminate the chlorine gas byproduct which is currently generated in the R3H process. The modified reactor capacity will be increased from the present 16 tons per day to 37.4 tons per day of chlorine dioxide. A new storage tank will also be installed, as well as modification of the existing chlorine absorption towers to chlorine dioxide absorption towers.

  The existing tail gas scrubber will be modified by installing an extra 10 feet of tower and the scrubbing media will be changed from sodium hydroxide to white liquor (sodium hydroxide plus sodium sulfide). The existing storage tank scrubbers, as well as the new storage tank scrubber will be rerouted to the tail gas scrubber.

  The existing salt unloading and storage system will be shut down and dismantled.

  The existing bleach plant scrubbers are equally effective for chlorine and chlorine dioxide removal, and the scrubber systems have adequate capacity for the expected emissions. Therefore, no change in the bleach plant scrubber system is planned.

- *Peroxide Fortified Oxidative Caustic Extraction* - Hydrogen peroxide is an oxidizing agent that works optimally in alkaline conditions and is typically applied to the pulp in a 50% solution. The peroxide is applied in the oxidative extraction stage. The hydrogen peroxide is a non-specific oxidizer that reacts as readily with the extracted lignin as it does with the pulp. Because of the non-specificity, half of the peroxide decolorizes the extraction filtrate. The other half of the charge increases the brightness of the pulp leaving the extraction stage. Because of the higher brightness achievable, chlorine dioxide charged to either the first stage or the final bleaching stage is reduced.

The use of hydrogen peroxide will require the installation of a storage and handling system for the chemical. The peroxide will completely react in the extraction tower. There are no air emissions associated with the use of hydrogen peroxide.

Chemical Recovery and Power Generation

The improvements in the chemical cooking processes will result in increased organic levels in the weak liquor. Furthermore, the other mill improvements aimed at reducing the amount of wastewater generated by minimizing process losses will increase the overall load to the multiple effect evaporators and through the subsequent chemical recovery process. Other improvements to the existing facility associated with minimizing process losses include upgrading the evaporator foul condensate stripper and modifying the lime kiln. Each of the affected air emission sources are discussed below.

- *Evaporation Capacity Upgrade* - Reclaimed process or liquor losses eventually are processed through the black liquor evaporators. These evaporators are currently at capacity during normal operation. Any added liquor volume for evaporating reclaimed process losses will require added capacity.

  With the planned process loss containment project and pulp-mill process changes, it is estimated that a 50% increase in evaporation capacity of the No. 2 set evaporator will be needed. This will be accomplished by the addition of two new evaporator effects.

- *Recovery Furnace Operations* - The resulting solids generated from the evaporation of contained spills will be sent to the two recovery furnaces. As a result, the overall annual solids throughput to the recovery furnaces will increase. However, the furnaces will continue to be operated at or below the black liquor solids firing rate limit of 111,000 pounds per hour (virgin plus makeup) contained in the current air permits.

  In order to improve the furnace availability, the existing direct steam injection black liquor heaters associated with the liquor feed systems will be converted to indirect heaters. The indirect heaters will allow more heat to be transferred to the liquor without affecting the heating value of the liquor, in turn allowing more efficient use of the existing limited vertical sweep (LVS) burners in the furnaces, and improving furnace uptime. CHAMPION does not believe that the change in the type of liquor heaters is a modification to the furnaces, but rather is a modification to the fuel delivery system.

  The smelt dissolving tanks associated with each recovery furnace will not experience increased throughput. The majority of additional solids burned in the recovery furnaces will be organic, i.e., lignin from the wood. The small amount of inorganic solids (sodium and sulfur compounds) collected will be offset by the reduction of purchased makeup chemicals. Since the lignin will be burned in the boiler, the throughput of smelt to the dissolving tank will not change.

- *Evaporator Foul Condensate Stripping Upgrade* - Various volatile organic compounds are released with digester steam after the cooking of wood chips. Some of the volatile compounds or non-condensible gases are piped to the lime kiln and burned. The remaining portion is dissolved and carried in the digester steam (contaminated) condensate to a heat recovery system. Condensates from the black liquor evaporation process are also rich in dissolved organic compounds. Most of the organic component in digester steam and evaporator condensates is methanol and other low molecular weight compounds. These compounds produce a very large biochemical oxygen demand on the wastewater treatment facility. The mill currently collects and steam strips most of the more concentrated or "foul" condensates. The liberated volatile organic compounds are then burned with the non-condensible gases in the lime kiln. However, a significant BOD load is discharged to the waste treatment plant due to an excess of less contaminated condensates and the lack of stripping capacity.

CHAMPION has evaluated the upgrade of the existing contaminated condensate stripper and the installation of an additional steam stripper. With added stripper capacity, initial estimates have shown that the mill effluent BOD load to the wastewater treatment plant could be reduced by as much as 15%. The evaluation is currently not completed, and the exact configuration has not been determined.

The installation of a stripper will not directly affect air emission except to the extent these chemicals are being stripped in the wastewater treatment system. In that regard, a steam stripper will directly reduce the emissions of volatile compounds. There will be an indirect impact on air emissions since the collected compounds will be burned in the lime kiln and/or calciner.

- *Lime Reburning Capacity - Lime Mud Dryer Upgrade* - Currently, the lime kiln and calciner cannot process all of the lime mud produced by the causticizing process. The difference between the current lime reburning capability and the requirements to produce white liquor for the pulping process is made up with purchased fresh lime. The excess lime mud (calcium carbonate) produced in the causticizing operation is discharged to the sewer in a weak wash solution. The sewered lime mud flows to the waste treatment primary settling basin, is dredged with other mill settled sludge, and pumped to the decanting basins. The combined mud and mill sludge is reclaimed from the decanting basins and hauled to the landfill. The weak wash solution sewered with the lime mud is an alkaline solution that has to be neutralized in the settling basin by carbon dioxide injection. However, the alkaline solution increases the mill effluent conductivity.

An upgraded kiln capacity will supply the total lime requirements eliminating the sewering of lime mud in weak wash solution as part of daily operation. Initial estimates indicate that the required capacity increase will reduce daily landfill by approximately 100 tons and reduce the conductivity by about 20%.

The increase in lime kiln capacity will be accomplished by the installation of a lime mud dryer. Figure 2-4 shows a representation of the system.

The fluid bed calciner will not be changed, and the normal throughput will not change.

The amount of lime added to the green liquor in the slaker will not change. The additional reburned lime from the modified lime kiln will allow the reduction of purchased fresh lime.

There will be a slight increase in non-condensible gases (NCGs) and rectifier gases (methanol) being burned in the lime kiln. The only impact will be to increase the amount of sulfur dioxide formed in the kiln due to the sulfur in the NCGs. Since testing has shown a near 100% removal of sulfur dioxide by the system, there should be no impact on air emissions.

- *Steam Capacity Upgrade (No. 6 Package Boiler)* - Added steam capacity will be required to support the process modifications. The specific added steam demand will come from an increase in evaporation and contaminated condensate stripping capacity, black liquor heaters, the cooking modifications, and bleach plant load reduction technologies.

In addition to the added steam demand, CHAMPION will shut down No. 1 and No. 2 power boilers. These boilers, built in the early 50s, are in poor repair and poor efficiency.

A new high pressure steam boiler to supply 350,000 pounds per hour additional steam load for consent order projects and replacement of the two obsolescent power boilers will be installed.

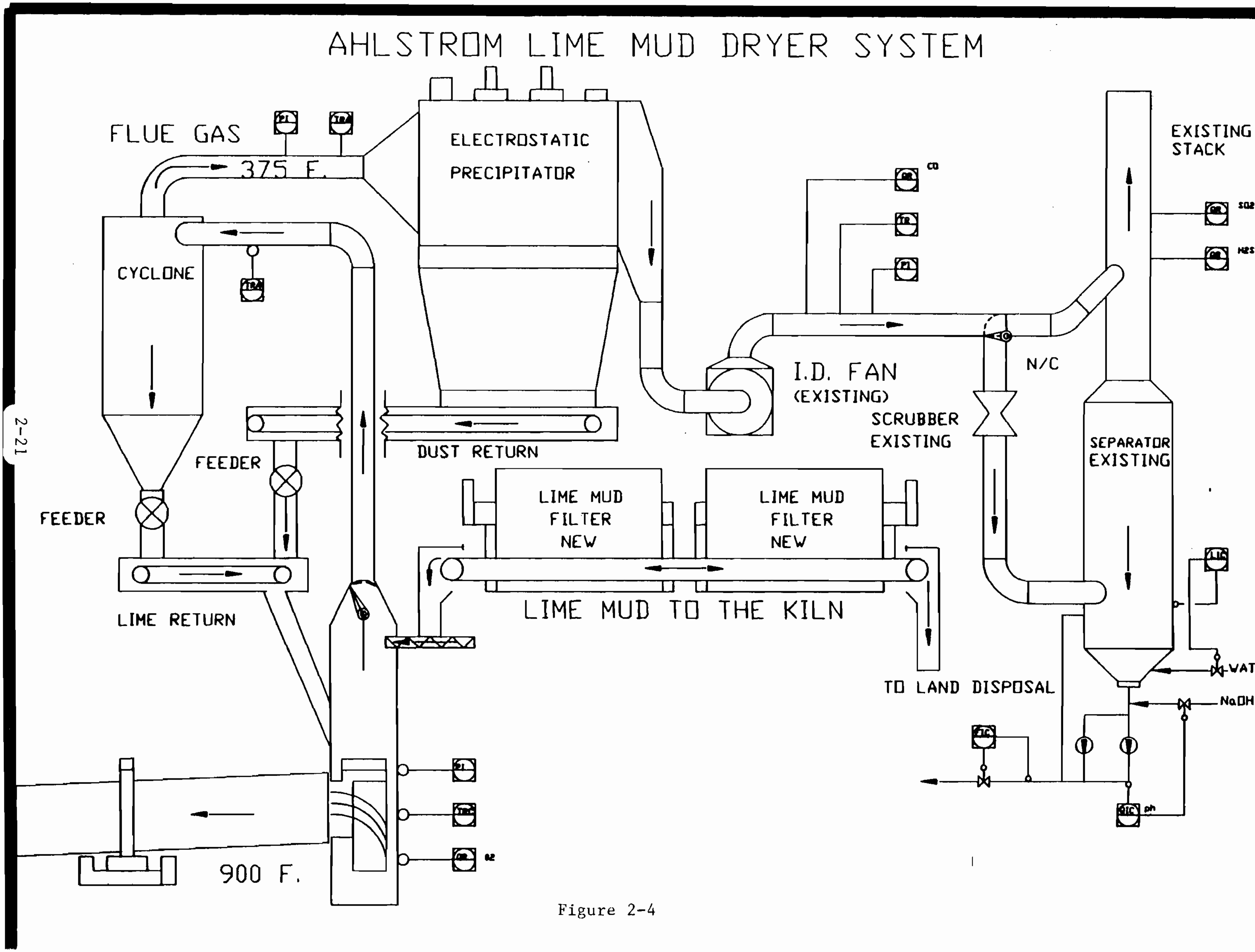

AHLSTROM LIME MUD DRYER SYSTEM
FLUE GAS
375 F.
ELECTROSTATIC
PRECIPITATOR
EXISTING
STACK
CYCLONE
I.D. FAN
(EXISTING)
N/C
SCRUBBER
EXISTING
SEPARATOR
EXISTING
DUST RETURN
FEEDER
FEEDER
LIME MUD
FILTER
NEW
LIME MUD
FILTER
NEW
LIME RETURN
LIME MUD TO THE KILN
TO LAND DISPOSAL
NaOH
900 F.

Figure 2-4

SECTION 3
SUMMARY OF EMISSIONS

3.1 INTRODUCTION

A baseline and proposed future emissions inventory has been developed for the Pensacola mill sources affected by the proposed modifications. A list of the affected sources is included in Table 3-1. The inventory includes baseline emission rates from the existing affected sources and future emission rates for the proposed new and modified sources.

The baseline emission rates have been developed based on the two year period dating from July 1, 1990 through June 30, 1992. The baseline rates were determined using the individual source operating information including: fuel use data, process throughput data, actual source operating hours, and continuous emission monitoring (CEM) data where available. For each affected source, emission factors were developed from available emission tests or CEM data or from applicable literature. The factors were then used with the operating data to calculate annual baseline emission rates. Future emissions were projected using vendor data or guarantees, where available.

The following sections briefly identify the basis for each emission factor and source in the emissions inventory. The actual calculations, source operating data, and detailed monthly emission rates for the period July 1990 - June 1992 are included in Appendix A. Appendix B includes the backup documentation for the data used in the emission calculations.

TABLE 3-1

CHAMPION - PENSACOLA
SUMMARY OF AFFECTED SOURCES

BASELINE SOURCES
No. 1 Power Boiler
No. 2 Power Boiler
Lime Kiln
No. 1 Recovery Boiler
No. 2 Recovery Boiler

3.2 BASELINE EMISSION RATES

A summary of the emission factors utilized for baseline emissions is presented in Table 3-2. The calculated baseline emission rates for the two year averaging period for the affected sources are presented in Table 3-3.

The following subsections provide a brief source-by source description of the development of individual emission factors.

3.2.1 No. 1 Power Boiler

The No. 1 power boiler has a design heat input rating of 180 MMBtu per hour. The primary fuel fired in the boiler was natural gas. However, the boiler is also equipped to burn No. 6 fuel oil for emergency use. For the baseline period, natural gas was the only fuel fired and emissions are based on natural gas usage for the period. The following information presents the basis for the selected emission factors for each pollutant.

- Nitrogen Oxides (NO_x)

  The NO_x emission factor is based upon the average NO_x mass emission rates and total heat input rates measured during a series of three test runs conducted on 8 February 1991. The NO_x emission factor is 0.10 lb/MMBtu.

- Sulfur Dioxide (SO_2)

  The SO_2 emission factor is based upon the typical sulfur content of the natural gas burned in the No. 1 power boiler as supplied by the gas vendor and the assumption of 100% conversion to SO_2. The SO_2 emission factor is 0.0018 lbs/MMBtu.

TABLE 3-2
CHAMPION
PENSACOLA, FLA
SUMMARY OF EMISSION FACTORS
BASELINE EMISSIONS

SOURCE	NO_x	SO_2	CO	PM/PM_{10}	VOC	TRS
#1 POWER BOILER	0.1 lb/MMBtu	0.0018 lb/MMBtu	0.1 lb/MMBtu	0.005 lb/MMBtu	7.82 lb/hr	NA
#2 POWER BOILER	0.42 lb/MMBtu	0.0018 lb/MMBtu	0.1 lb/MMBtu	0.005 lb/MMBtu	7.77 lb/hr	NA
LIME KILN	15.5 lb/hr	0.43 lb/hr	1.4 lb/hr	14.0 lb/hr	0.41 lb/hr	2.02 lb/hr
#1 RECOVERY BOILER(1)	1.5 lb/ton BLS	1.33 lb/ton BLS	7.25 lb/ton BLS	1.12 lb/ton BLS	0.144 lb/ton BLS	0.019 lb/ton BLS
#2 RECOVERY BOILER(1)	1.5 lb/ton BLS	1.33 lb/ton BLS	7.25 lb/ton BLS	1.12 lb/ton BLS	0.144 lb/ton BLS	0.013 lb/ton BLS

(1) BLS represents "as-fired" black liquor solids content.

TABLE 3-3
CHAMPION
PENSACOLA, FLA
SUMMARY OF BASELINE EMISSION RATES
JULY 1990 - JUNE 1992
(tons/year)

SOURCE	NO_x	SO_2	CO	PM/PM_{10}	VOC	TRS
#1 POWER BOILER	40.57	0.73	40.57	2.03	31.39	NA
#2 POWER BOILER	113.20	0.49	26.95	1.35	19.47	NA
LIME KILN	63.46	1.76	5.73	57.32	1.68	8.27
#1 RECOVERY BOILER	319.51	283.30	1544.30	238.57	30.67	4.05
#2 RECOVERY BOILER	322.18	285.67	1557.20	240.56	30.93	2.79

- Carbon Monoxide (CO)

  The CO emission factor used is the same emission factor reported in Champion's PSD permit application for the No. 5 Package Boiler submitted in February 1991. This factor was based on testing conducted on Champions No. 5 Package Boiler on 16-17 May 1989. The CO emission factor is 0.1 lb/MMBtu.

- Total Suspended Particulate Matter and Particulate Matter less than 10 microns (PM/PM_{10})

  The PM/PM_{10} emission factor is based on the AP-42 emission factor for natural gas (Table 1.4-1, utility boiler size). This factor is 5 $lb/10^6$ cf. Assuming a natural gas heating value of 1000 Btu/scf, the PM/PM_{10} emission factor is 0.005 lb/MMBtu.

- Volatile Organic Compounds (VOC)

  The VOC emission factor used is based upon the same VOC concentration reported in Champion's PSD permit application for the No. 5 Package Boiler submitted in February 1991. This concentration of 20 ppm (as propane) was established by testing conducted on 16-17 May 1989 and is used in conjunction with volumetric flow rate data from testing on 8 February 1991. The VOC emission factor is 7.82 lb/hr.

3.2.2 No. 2 Power Boiler

The No. 2 power boiler has a design heat input rating of 220 MMBtu per hour. The primary fuel fired in the boiler is natural gas. However, the boiler is also equipped to burn

No. 6 fuel oil for emergency use. For the baseline period, natural gas was the only fuel fired and emissions are based on natural gas usage. The following information presents the basis for the selected emission factors for each pollutant.

- Nitrogen Oxides (NO_x)

  The NO_x emission factor is based upon the average NO_x mass emission rates and total heat input rates measured during a series of three test runs conducted on 9 February 1991. The NO_x emission factor is 0.42 lb/MMBtu.

- Sulfur Dioxide (SO_2)

  The SO_2 emission factor is based upon the typical sulfur content of the natural gas burned in the No. 1 power boiler as supplied by the gas vendor and the assumption of 100% conversion to SO_2. The SO_2 emission factor is .0018 lb/MMBtu.

- Carbon Monoxide (CO)

  The CO emission factor used is the same emission factor reported in Champion's PSD permit application for the No. 5 Package Boiler submitted in February 1991. This factor was based on testing conducted on Champion's No. 5 Package Boiler on 16-17 May 1989. The CO emission factor is 0.1 lb/MMBtu.

- Total Suspended Particulate Matter and Particulate Matter less than 10 microns (PM/PM_{10})

  The PM/PM_{10} emission factor is based on the AP-42 emission factor for natural gas (Table 1.4-1, utility boiler size). This factor is 5 $lb/10^6$ cf of natural gas. Assuming a natural gas heating value of 1000 Btu/scf, the PM/PM_{10} emission factor is 0.005 lb/MMBtu.

- Volatile Organic Compounds (VOC)

  The VOC emission factor used is based upon the same VOC concentration reported in Champion's PSD permit application for the No. 5 Package Boiler submitted in February 1991. This concentration of 20 ppm as propane was established by testing conducted 16-17 May 1989 and is used in conjunction with volumetric flow rate data from 9 February 1991. The VOC emission factor is 7.77 lb/hr.

3.2.3 Lime Kiln

The Pensacola lime kiln is rated to produce approximately 320 tons of lime per day. The kiln fires natural gas and has a maximum heat input rate of approximately 123 MMBtu per hour. The kiln is also used to incinerate non-condensible gases (NCG) from the Kraft mill process.

- Nitrogen Oxides (NO_x)

  The NO_x emission factor is based on the average of two series of tests conducted on 13 December 1989 and 11-12 April 1990. The NO_x emission factor is 15.5 lb/hr.

- Sulfur Dioxide (SO_2)

  The SO_2 emission factor is an average of four series of tests conducted 26 April, 16 May, 13 December 1989 and 11-12 April 1990. The 16 May 1989 test results included in the average only include the test runs during which all noncondensible gas streams were ducted to the lime kiln. The results included are the most representative of normal kiln operations. The SO_2 emission factor is 0.43 lb/hr.

- Carbon Monoxide (CO)

  The CO emission factor is an average of two series of tests conducted on 13 December 1989 and 11-12 April 1990. The CO emission factor is 1.4 lb/hr.

- Total Suspended Particulate Matter and Particulate Matter less than 10 microns (PM/PM_{10})

  The PM/PM_{10} emission factor is based on an average of four series of tests conducted 26 April 1989, 12 December 1989, 19 March 1991, and 27 March 1992. The PM/PM_{10} emission factor is 14.0 lb/hr.

- Volatile Organic Compounds (VOC)

  The VOC emission factor is based on an average of two series of tests conducted 13 December 1989 and 11-12 April 1990. The VOC emission factor is 0.42 lb/hr.

- Total Reduced Sulfur Compounds (TRS)

  The TRS emission factor is based on the 2-year average CEM data and the average gas stream volumetric flow rate from testing conducted 19 March 1991 and 27 March 1992. The TRS value is assumed to be 100% H_2S for calculating a mass emission rate. The TRS emission factor is 2.02 lb/hr.

3.2.4 No. 1 Recovery Boiler

The No. 1 recovery boiler was manufactured by B&W and is rated to fire up to 111,000 pounds of black liquor solids per hour. The No. 1 recovery boiler emission factors for NO_x, SO_2, CO, and VOC are all based on the upper 95% confidence interval values for a series of tests conducted in February 1989. A total of 25 individual test runs were conducted for NO_x, CO, SO_2, and VOC. This approach to calculating an emission factor for recovery boiler emissions was dictated by the wide variability in the test results. The upper 95% confidence interval value provides a more conservative indication of the potential emission factor for these sources. For PM only six separate test runs were conducted; therefore, the emission factor is based upon the mean test value. The TRS emission rate was based on CEM data for this source.

It is important to note that for some test runs, 0 ppm was reported. In these cases, where a one-hour test average was 0 ppm, one half of the mass rate corresponding to 1 ppm was utilized in the calculations. All of the factors are based upon the pounds of pollutant generated per ton of BLS fired.

- Nitrogen Oxides (NO_x)

  The NO_x emission factor is based on the 95% confidence interval (95% CI) value for the tests conducted 23-24 February 1989. The NO_x emission factor is 1.50 lb/ton BLS.

- Sulfur Dioxide (SO_2)

  The SO_2 emission factor is based on the 95% CI value for the tests conducted 23-24 February 1989. The SO_2 emission factor is 1.33 lb/ton BLS.

- Carbon Monoxide (CO)

  The CO emission factor is based on the 95% CI value for the tests conducted 23-24 February 1989. The CO emission factor is 7.25 lb/ton/BLS.

- Total Suspended Particulate Matter and Particulate Matter less than 10 microns (PM/PM_{10})

  The PM/PM_{10} emission factor is based on the mean value for the tests conducted 23-24 February 1989. The PM/PM_{10} emission factor is 1.12 lb/ton BLS.

- Volatile Organic Compounds (VOC)

  The VOC emission factor is based on the 95% CI value for the tests conducted 23-24 February 1989. The VOC emission factor is 0.144 lb/ton BLS.

- Total Reduced Sulfur Compounds (TRS)

  The TRS emission factor is based on the 2-year average CEM data and the average gas stream volumetric flow rate from stack tests conducted 23-24 February 1989. The TRS value is assumed to be 100% H_2S when calculating a mass emission rate. The TRS emission factor is 0.019 lb/ton BLS.

3.2.5 No. 2 Recovery Boiler

The No. 2 recovery boiler is essentially identical to the No. 1 boiler. It is also a B&W boiler rated to fire up to 111,000 pounds of black liquor solids (BLS) per hour. The emission factors for the No. 2 recovery boiler are based on the same approach and test results as the No. 1 recovery boiler. The TRS emission factor differs from the No. 1 recovery boiler factor because the No. 2 recovery boiler has an independent TRS CEM system. All emission factors are based upon the pounds of pollutant generated per ton of BLS fired.

- Nitrogen Oxides (NO_x)

  The NO_x emission factor is based on the 95% confidence interval (95% CI) value for the tests conducted 23-24 February 1989. The NO_x emission factor is 1.50 lb/ton BLS.

- Sulfur Dioxide (SO_2)

  The SO_2 emission factor is based on the 95% CI value for the tests conducted 23-24 February 1989. The SO_2 emission factor is 1.33 lb/ton BLS.

- Carbon Monoxide (CO)

  The CO emission factor is based on the 95% CI value for the tests conducted 23-24 February 1989. The CO emission factor is 7.25 lb/ton/BLS.

- Total Suspended Particulate Matter and Particulate Matter less than 10 microns (PM/PM_{10})

  The PM/PM_{10} emission factor is based on the mean value for the tests conducted 23-24 February 1989. The PM/PM_{10} emission factor is 1.12 lb/ton BLS.

- Volatile Organic Compounds (VOC)

  The VOC emission factor is based on the 95% CI value for the tests conducted 23-24 February 1989. The VOC emission factor is 0.144 lb/ton BLS.

- Total Reduced Sulfur Compounds (TRS)

  The TRS emission factor is based on the 2-year average CEM data and the average gas stream volumetric flow rate from tests conducted 19 March 1991 and 27 March 1992. The TRS value is assumed to be 100% H_2S for calculating a mass emission rate. The TRS emission factor is 0.013 lb/ton BLS.

APPENDIX A

APPENDIX A

CHAMPION - PENSACOLA
SUMMARY OF EMISSION FACTORS
BASELINE EMISSIONS

#1 POWER BOILER

- NO_x - Stack test 2/91 (Appendix B, pg. B-2), 3 test runs conducted and the NO_x emission rate reported for each run was 0.10 lbs/MMBtu, the average emission rate was 0.10 lb/MMBtu.

Emission Factor = 0.10 lb/MMBtu

- SO_2 - Natural gas sulfur content reported as 10.7 ppm by weight (Appendix B, pg. B-3). SO_2 emission factor calculated as follows:

$$\frac{10.7 \text{ parts S}}{1 \times 10^6 \text{ ft}^3 \text{ N.G.}} \times \frac{32 \text{ lbs}}{\text{lb-mole}} \times \frac{1 \text{ lb-mole}}{385.35 \text{ ft}^3} = \frac{0.89 \text{ lbs S}}{1 \times 10^6 \text{ ft}^3 \text{ N.G.}}$$

assume 1,000 BTU/ft^3 N.G.

$$\frac{.89 \text{ lbs S}}{1 \times 10^6 \text{ ft}^3 \text{ N.G.}} \times \frac{\text{ft}^3 \text{ N.G.}}{1{,}000 \text{ BTU}} \times \frac{64 \text{ lbs-moles } SO_2}{32 \text{ lbs-moles S}} =$$

$$\frac{.0018 \text{ lbs } SO_2}{\text{MMBtu}}$$

Emission Factor = 0.0018 lb/MMBtu

- CO - PSD Permit Application for Proposed Package Boiler - Pensacola 2/91, (Appendix B, pg. B-4)

  Emission Factor = 0.1 lb/MMBtu

- PM/PM_{10} - The AP-42 emission factor estimate for PM/PM10 for utility boilers burning natural gas (Appendix B, pg. B-5) is 5 lbs per 10^6 ft^3 of natural gas. Assuming 1,000 BTU per ft^3, the PM/PM10 emission factor is calculated as follows:

$$\frac{5 \text{ lbs PM/PM10}}{1 \times 10^6 \text{ ft}^3 \text{ N.G.}} \times \frac{1 \text{ ft}^3 \text{ N.G.}}{1{,}000 \text{ BTU}} = \frac{.005 \text{ lbs PM/PM10}}{\text{MMBtu}}$$

  Emission Factor = 0.005 lb/MMBtu

- VOC

  Emission Factor = 7.82 lb/hr

  Emission Factor Based on 20 ppm and 5.71×10^4 dscfm - PSD Permit App - Pensacola 2/91, Appendix B, pg. B-7
  - Stack Test 2/91

$$\frac{\text{lb}}{\text{hr}} = \frac{\text{ppm}}{385.35 \times 10^6} \times Q_{dscfm} \times \frac{60 \text{ min}}{\text{hr}} \times \text{MW}$$

Where:

385.35×10^6 = A conversion factor relating cf/l (0.03531), g/lb (453.6), l/g-mole (24.06), and ppm (10^6)

44 = Molecular Weight as Propane

$$= \frac{20 \text{ ppm}}{385.35 \times 10^6} \times (5.71 \times 10^4) \times 60 \times 44 = 7.82 \text{ lb/hr}$$

= 7.82 lb/hr

#2 POWER BOILER

- NO_x - Results of three separate NO_x emission test runs during 2/91 were 0.40 lb/MMBtu, 0.42 lb/MMBtu and 0.44 lb/MMBtu. Mean value from the testing was 0.42 lb/MMBtu (Appendix B, pg. B-6).

  Emission Factor = 0.42 lb/MMBtu

- SO_2 - Natural gas sulfur content reported as 10.7 ppm by weight (Appendix B, pg. B-3). SO_2 emission factor calculated as above for #1 Power Boiler.

  Emission Factor = 0.0018 lb/MMBtu

- CO - PSD Permit Application for Proposed Package Boiler - Pensacola 2/91, (Appendix B, pg. B-4).

  Emission Factor = 0.1 lb/MMBtu

- PM/PM_{10} - The AP-42 emission factor estimate for PM/PM10 from utility boilers burning natural gas (Appendix B, pg. B-5) is 5 lbs per $10^6 \cdot ft^3$ of natural gas. Assuming 1,000 BTU per ft^3, the PM/PM10 emission factor is calculated as above for #1 Power Boiler.

  Emission Factor = 0.005 lb/MMBtu

- VOC

  Emission Factor = 7.77 lb/hr

  Emission Factor Based on 20 ppm and 5.67×10^4 dscfm - PSD Permit App - Pensacola 2/91, Appendix B, pg. B-7
  - Stack Test 2/91

  Where:

  385.35×10^6 = A conversion factor relating cf/l (0.03531), g/lb (453.6), l/g-mole (24.06), and ppm (10^6)

  44 = molecular weight as propane

$$\frac{lb}{hr} = \frac{20\ ppm}{385.35 \times 10^6} \times (5.67 \times 10^4) \times 60 \times 44 = 7.77\ lb/hr$$

Emission Factor = 7.77 lb/hr

LIME KILN

- NO_x - The NO_x emission factor is based upon the average NO_x emission rate from seven one-hour tests conducted December 1989 and one twelve-hour test conducted in April 1990. (Appendix B, pgs. B-8 and B-9)

Average

14.2 lb/hr	Stack Test	12/89
16.8 lb/hr	Stack Test	4/90

Emission Factor = 15.5 lb/hr

- SO_2 - The SO_2 emission factor is based upon the average of four series of tests as indicated below (Appendix B, pgs. B-8, B-9, B-10, and B-11)

Average

0.2 lb/hr	Stack Test	4/89
0.7 lb/hr	Stack Test	5/89
0.1 lb/hr	Stack Test	12/89
0.7 lb/hr	Stack Test	4/90

Emission Factor = 0.43 lb/hr

- CO - The CO emission factor is based upon the average of two series of tests as indicated below (Appendix B, pgs. B-8, B-9)

Average

1.0 lb/hr	Stack Test	12/89
1.8 lb/hr	Stack Test	4/90

Emission Factor = 1.4 lb/hr

- PM/PM_{10} - The PM/PM10 emission factor is based upon four series of stack tests as indicated below (Appendix B, pgs. B-10, B-12, B-13, and B-14)

Average

10.8 lb/hr	Stack Test	4/89
23.2 lb/hr	Stack Test	12/89
14.8 lb/hr	Stack Test	3/91
7.2 lb/hr	Stack Test	3/92

Emission Factor = 14.0 lb/hr

- VOC - The VOC emission factor is based upon two series of stack tests as indicated below (Appendix B, pgs. B-8 and B-9)

Average (As Propane)

0.700 lb/hr	Stack Test	12/89
0.119 lb/hr	Stack Test	4/90

Average Emission Factor = 0.41 lb/hr as propane

- TRS

Emission Factor = 2.02 lb/hr

Emission Factor Based on 12.8 ppm @ 10% O_2 - 2-year average based on CEM data using average gas stream volumetric flow data from stack tests in March 91 and March 92 (Appendix B, pgs. B-13 and B-14)

27,100 dscfm @ 8.9% O_2

$$27{,}100 \text{ dscfm} \times \left[\frac{20.9 - 8.9}{20.9 - 10}\right] = 29{,}835 \text{ dscfm @ } 10\% \; O_2$$

Where:

20.9 = O_2 concentration at standard conditions

$$\frac{lb}{hr} = \frac{ppm}{385.35 \times 10^6} \times Q_{dscfm} \times \frac{60 \text{ min}}{hr} \times MW$$

Where:

385.35×10^6 = A conversion factor relating cf/l (0.03531), g/lb (453.6), l/g-mole (24.06), and ppm (10^6)

$$= 12.8 \text{ ppm} \times \frac{29{,}835 \text{ dscfm}}{385.35 \times 10^6} \times 34 \times 60 = 2.02 \text{ lb/hr}$$

$= 2.02 \text{ lb/hr}^2$ *as* H_2S

#1 RECOVERY BOILER

- NO_x - The emission factor is based upon the results of the February 1989 stack tests (Appendix B, pg. B-15 and B-16) and the 95% confidence interval value as determined in Table A-1. All tests were conducted at 260 gpm BLS firing rate.

Black Liquor Solids Firing Rate

$$= \frac{260 \text{ gal as-fired Black Liquor}}{\text{min}} \times \frac{11.2 \text{ lb Black Liquor}}{\text{gal Black Liquor}} \times \frac{60 \text{ min}}{\text{hr}} \times (0.65)$$

$= 113{,}568$ lb as-fired BLS/hr $= 56.78$ tons BLS/hr $= 1.50$ lb NO_x/ton BLS

0.65 = Solids Fraction in Black Liquor

85.3 lbs/hr NO_x $\div$ 56.78 tons BLS/hr = 1.5 lb/ton BLS

Emission Factor = 1.50 lb/ton BLS

- SO_2 - The emission factor is based upon the results of the February 1989 stack tests (Appendix B, pg. B-15 and B-16), and the 95% confidence interval value as determined in Table A-1. All tests were conducted at 260 gpm BLS firing rate.

$$\frac{\frac{75.4 \text{ lb } SO_2}{\text{hr}}}{\frac{56.78 \text{ tons BLS}}{\text{hr}}} = 1.33 \text{ lb/ton BLS}$$

Emission Factor = 1.33 lb/ton BLS

- CO - The emission factor is based upon the results of the February 1989 stack tests, the 95% confidence interval value as determined in Table A-1. All tests were conducted at 260 gpm BLS firing rate. (Appendix B, pg. B-15 and B-16)

$$\frac{\frac{411.6 \text{ lb CO}}{\text{hr}}}{\frac{56.78 \text{ tons BLS}}{\text{hr}}} = 7.25 \text{ lb/ton BLS}$$

Emission Factor = 7.25 lb/ton BLS

- PM/PM_{10} - The emission factor is based upon the average PM/PM10 emission rate for the stack tests conducted February 1989 (Appendix B, pg. B-17)

63.4 lb/hr @ 260 gpm BLS

$$\frac{\frac{63.4 \text{ lb PM/PM10}}{\text{hr}}}{\frac{56.78 \text{ tons BLS}}{\text{hr}}} = 1.12 \text{ lb/ton BLS}$$

Emission Factor = 1.12 lb/ton BLS

- VOC - The emission factor is based upon the results of the February 1989 stack tests (Appendix B, pg. B-15 and B-16), and the 95% confidence interval value as determined in Table A-1. All tests were conducted at 260 gpm BLS firing rate.

$$\frac{\frac{8.2 \text{ lb VOC}}{\text{hr}}}{\frac{56.78 \text{ tons BLS}}{\text{hr}}} = 0.144 \text{ lb/ton BLS}$$

Emission Factor = 0.144 lb/ton BLS

- TRS

Emission Factor = 0.019 lb TRS/ton BLS

Emission factor based on 1.3 ppm @ 8% O_2 - 2 yr average based on CEM data.

Using average flow data from Stack Test 2/89 (Appendix B, pg. B-17)

139,000 dscfm @ 6.4% O_2 and 113, 568 lb BLS/hr

$$\frac{139{,}000 \text{ dscf}}{\text{min}} \times \left[\frac{20.9 - 6.4}{20.9 - 8}\right] = 156{,}240 \text{ dscfm @ } 8\%\ O_2$$

Where:

20.9 = O_2 concentration @ standard conditions

$$\frac{\text{lb}}{\text{hr}} = \frac{\text{ppm}}{385.35 \times 10^6} \times Q_{dscfm} \times \frac{60 \text{ min}}{\text{hr}} \times \text{MW}$$

Where:

385.35×10^6 = A conversion factor relating cf/l (0.03531), g/lb (453.6), l/g-mole (24.06), and ppm (10^6)

$$1.3 \text{ ppm @ } 8\%\ O_2 \times \frac{156{,}240 \text{ dscfm}}{385.35 \times 10^6} \times 34 \times 60 = 1.08 \text{ lb/hr}^2$$

$$\frac{\frac{1.08 \text{ lb TRS}}{\text{hr}}}{\frac{56.78 \text{ tons BLS}}{\text{hr}}} = 0.019 \text{ lb/ton BLS}$$

#2 RECOVERY BOILER

- NO_x - The emission factor is based upon the results of the February 1989 stack tests (Appendix B, pg. B-15 and B-16), and the 95% confidence interval value as determined in Table A-1. All tests were conducted at 260 gpm BLS firing rate.

Black Liquor Solids Firing Rate

$$= \frac{260 \text{ gal as-fired Black Liquor}}{\text{min}} \times \frac{11.2 \text{ lb Black Liquor}}{\text{gal Black Liquor}} \times \frac{60 \text{ min}}{\text{hr}} \times (0.65)$$

= 113,568 lb as-fired BLS/hr = 56.78 tons BLS/hr = 1.50 lb NO_x/ton BLS

0.65 = Solids Fraction in Black Liquor

85.3 lbs/hr NO_x ÷ 56.78 tons BLS/hr = 1.5 lb/ton BLS

Emission Factor = 1.50 lb/ton BLS

- SO_2 - The emission factor is based upon the results of the February 1989 stack tests (Appendix B, pg. B-15 and B-16), and the 95% confidence interval value as determined in Table A-1. All tests were conducted at 260 gpm BLS firing rate.

$$\frac{\frac{75.4 \text{ lb } SO_2}{\text{hr}}}{\frac{56.78 \text{ tons BLS}}{\text{hr}}} = 1.33 \text{ lb/ton BLS}$$

Emission Factor = 1.33 lb/ton BLS

- CO - The emission factor is based upon the results of the February 1989 stack tests (Appendix B, pg. B-15 and B-16), and the 95% confidence interval value as determined in Table A-1. All tests were conducted at 260 gpm BLS firing rate.

$$\frac{\frac{411.6 \text{ lb CO}}{\text{hr}}}{\frac{56.78 \text{ tons BLS}}{\text{hr}}} = 7.25 \text{ lb/ton BLS}$$

Emission Factor = 7.25 lb/ton BLS

- PM/PM_{10} - The emission factor is based upon the average PM/PM10 emission rate for the stack tests conducted February 1989 (Appendix B, pg. B-17)

63.4 lb/hr @ 260 gpm BL Stack Test 2/89

$$\frac{\frac{63.4 \text{ lb PM/PM10}}{\text{hr}}}{\frac{56.78 \text{ tons BLS}}{\text{hr}}} = 1.12 \text{ lb/ton BLS}$$

Average Emission Factor = 1.12 lb/ton BLS

- VOC - The emission factor is based upon the results of the February 1989 stack tests (Appendix B, pg. B-15 and B-16), and the 95% confidence interval value as determined in Table A-1. All tests were conducted at 260 gpm BLS firing rate.

$$\frac{\frac{8.2 \text{ lb VOC}}{\text{hr}}}{\frac{56.78 \text{ tons BLS}}{\text{hr}}} = 0.144 \text{ lb/ton BLS}$$

Emission Factor = 0.144 lb/ton BLS

- TRS

Emission Factor = 0.013 lb/ton BLS

Emission factor based on 0.9 ppm @ 8.1% O_2 - 2 yr average based on CEM data.

Using Average gas stream volumetric flow data from stack tests in March 91 and March 92 (Appendix B, pg. B-18 and B-19)

131,000 dscfm @ 8% O_2 and 96406 lb BLS/hr

$$\frac{131{,}000 \text{ dscf}}{\text{min}} \times \left[\frac{20.9 - 8.1}{20.9 - 8}\right] = 129{,}985 \text{ dscfm @ } 8\% \ O_2$$

Where:

20.9 = O_2 concentration @ standard conditions

$$\frac{\text{lb}}{\text{hr}} = \frac{\text{ppm}}{385.35 \times 10^6} \times Q_{dscfm} \times \frac{60 \text{ min}}{\text{hr}} \times \text{MW}$$

Where:

385.35×10^6 = A conversion factor relating cf/l (0.03531), g/lb (453.6), l/g-mole (24.06), and ppm (10^6)

$$0.9 \text{ ppm} \times \frac{129{,}985 \text{ dscfm}}{385.35 \times 10^6} \times 34 \times 60 = 0.62 \text{ lb/hr}^2$$

$$\frac{\dfrac{0.62 \text{ lb}}{\text{hr}}}{\dfrac{48.20 \text{ tons BLS}}{\text{hr}}} = 0.013 \text{ lb/ton BLS}$$

TABLE A-1
CHAMPION PAPER
PENSACOLA, FLA
SUMMARY OF EMISSION FACTORS USING A 95% CONFIDENCE INTERVAL

NO_x

n =	25	t =	1.711		
x =	74.9	95% Confidence Interval = 74.9 + (1.711 * 6.08) =		**85.3**	**#/hr**
				1.50	**#/ton BLS**
s =	6.08				

CO

n =	25	t =	1.711		
x =	158.2	95% Confidence Interval = 158.2 + (1.711 * 148.1) =		**411.6**	**#/hr**
				7.25	**#/ton BLS**
s =	148.1				

SO_2

n =	25	t =	1.711		
x =	28.0	95% Confidence Interval = 28.0 + (1.711 * 27.7) =		**75.4**	**#/hr**
				1.33	**#/ton BLS**
s =	27.7				

VOC

n =	25	t =	1.711		
x =	3.1	95% Confidence Interval = 3.1 + (1.711 * 2.96) =		**8.2**	**#/hr**
				0.14	**#/ton BLS**
s =	2.96				

where:

n =	number of test runs
x =	mean test value
s =	standard deviation

TABLE A-2
CHAMPION PAPER
PENSACOLA, FLA
SUMMARY OF FUEL USAGE AND BLS FIRING RATES
BASELINE EMISSIONS

	#1 POWER BOILER NAT GAS MCF	#2 POWER BOILER NAT GAS MCF	#1 RECOVERY BOILER NAT GAS MCF	#1 RECOVERY BOILER BLS TONS	#2 RECOVERY BOILER NAT GAS MCF	#2 RECOVERY BOILER BLS TONS	LIME KILN NAT GAS MCF
JULY 1990 – JUNE 1991							
JULY	68255	29824	3791	28250	11378	39500	66014
AUGUST	59233	23397	4387	31250	2601	35000	38205
SEPTEMBER	17573	36018	942	37500	3758	35750	59954
OCTOBER	22428	72631	5367	37000	5713	35500	59954
NOVEMBER	60138	79234	677	37500	3115	10750	48243
DECEMBER	72004	23764	3131	38250	4604	39400	71857
JANUARY	77658	20639	4278	36687	4795	40505	68545
FEBUARY	62558	20639	2914	36240	3074	34701	60673
MARCH	79126	25355	6410	27100	4449	35151	55633
APRIL	70618	79987	7737	37115	6695	37411	67532
MAY	78319	11796	6303	36932	8707	32162	64778
JUNE	77987	15617	5749	35543	5330	39439	62870
TOTAL	745897	438901	51686	419367	64219	415269	724258
JULY 1991 – JUNE 1992							
JULY	85896	12759	1936	35990	2885	39333	60628
AUGUST	90188	18899	4420	39632	4253	39212	60054
SEPTEMBER	84396	31455	4201	32887	4081	38109	51897
OCTOBER	85672	28729	2057	38166	4268	38952	61132
NOVEMBER	77255	86364	3058	36070	3607	31551	56137
DECEMBER	82502	90904	3574	36524	3002	38640	55669
JANUARY	79989	90904	1101	38541	4780	38514	58747
FEBUARY	60252	58326	4385	27542	2087	33818	44198
MARCH	56035	49474	1022	36658	4596	38177	62085
APRIL	58854	57331	2207	36403	5719	31902	56431
MAY	54785	52559	1609	38673	3444	38057	60342
JUNE	61189	61473	3462	35577	6958	37610	56258
TOTAL	877013	639177	33032	432663	49680	443875	683578

TABLE A-3
CHAMPION PAPER
PENSACOLA, FLA
SUMMARY OF HOURS OF OPERATION AND PULP PRODUCTION
BASELINE EMISSIONS

	#1 POWER BOILER (hrs)	#2 POWER BOILER (hrs)	#1 RECOVERY BOILER (hrs)	#2 RECOVERY BOILER (hrs)	LIME KILN (hrs)	PULP PRODUCTION (ADUBT)[1]
JULY 1990 – JUNE 1991						
JULY	711	198	744	744	729	47241
AUGUST	741	198	624	744	570	42326
SEPTEMBER	245	477	715	713	675	45529
OCTOBER	194	685	732	670	735	45041
NOVEMBER	615	712	223	714	556	34893
DECEMBER	741	222	744	743	717	46414
JANUARY	707	172	697	744	716	42526
FEBUARY	625	97	671	662	643	39572
MARCH	737	217	606	741	599	40226
APRIL	635	420	713	700	713	43182
MAY	742	88	711	650	722	40742
JUNE	717	133	701	720	697	43545
TOTAL	7410	3619	7881	8545	8072	511237
JULY 1991 – JUNE 1992						
JULY	730	107	709	737	738	44294
AUGUST	737	141	744	740	731	44609
SEPTEMBER	709	232	632	700	601	39708
OCTOBER	744	191	743	734	735	42609
NOVEMBER	642	638	710	580	704	38935
DECEMBER	744	740	727	744	720	42650
JANUARY	718	744	743	744	732	45379
FEBUARY	696	696	564	692	556	38878
MARCH	744	732	739	727	736	46554
APRIL	720	720	711	617	709	42500
MAY	744	743	736	734	729	46388
JUNE	718	720	687	720	614	42838
TOTAL	8646	6404	8445	8469	8305	515342

[1] ADUBT – AIR DRIED UNBLEACHED TONS

TABLE A-4
CHAMPION
PENSACOLA, FLA
SUMMARY OF ACTUAL EMISSIONS

JULY 1990 – JUNE 1991

SOURCE	NO_x	SO_2	CO	PM/PM_{10}	VOC	TRS
#1 POWER BOILER	37.29 tons	0.67 tons	37.29 tons	1.86 tons	28.97 tons	NA
#2 POWER BOILER	92.17 tons	0.40 tons	21.95 tons	1.10 tons	14.06 tons	NA
LIME KILN	62.56 tons	1.74 tons	5.65 tons	56.50 tons	1.65 tons	8.15 tons
#1 RECOVERY BOILER	314.53 tons	278.88 tons	1520.21 tons	234.85 tons	30.19 tons	3.98 tons
#2 RECOVERY BOILER	311.45 tons	276.15 tons	1505.35 tons	232.55 tons	29.90 tons	2.70 tons
TOTAL	818.00 tons	557.83 tons	3090.45 tons	526.86 tons	104.78 tons	14.84 tons

TABLE A-5
CHAMPION
PENSACOLA, FLA
SUMMARY OF ACTUAL EMISSIONS

JULY 1991 – JUNE 1992

SOURCE	NO_x	SO_2	CO	PM/PM_{10}	VOC	TRS
#1 POWER BOILER	43.85 tons	0.79 tons	43.85 tons	2.19 tons	33.80 tons	NA
#2 POWER BOILER	134.23 tons	0.58 tons	31.96 tons	1.60 tons	24.88 tons	NA
LIME KILN	64.36 tons	1.79 tons	5.81 tons	58.13 tons	1.70 tons	8.39 tons
#1 RECOVERY BOILER	324.50 tons	287.72 tons	1568.40 tons	242.29 tons	31.15 tons	4.11 tons
#2 RECOVERY BOILER	332.91 tons	295.18 tons	1609.05 tons	248.57 tons	31.96 tons	2.89 tons
TOTAL	899.84 tons	586.05 tons	3259.07 tons	552.78 tons	123.50 tons	15.38 tons

APPENDIX B

SECTION 2. RESULTS AND DISCUSSION

Emission testing on the No. 1 and No. 2 Power Boilers was performed on 08 and 09 February 1991. The results of this testing are summarized in Tables 2.1 and 2.2. Field and process data are located in Appendices B, C, and D, respectively. Sample calculations are illustrated in Appendix E.

TABLE 2.1. SUMMARY OF NO_x EMISSION - NO. 1 POWER BOILER

	RUN 1	RUN 2	RUN 3	MEAN
Date	02/08/91	02/08/91	02/08/91	----
Time Begin	1246	1417	1545	----
Time Ended	1346	1517	1645	----
Stack Gas				
Temperature, °F	485	486	490	487
Velocity, ft/sec	47.9	52.7	52.3	51.0
Moisture, %	5.4	5.4	5.4	5.4
Oxygen, %	9.8	9.9	9.8	9.8
Carbon Dioxide, %	5.9	5.9	6.1	6.0
Volumetric Flow Rate				
at Stack Conditions, $x\ 10^5\ ft^3/min$	0.98	1.08	1.07	1.04
at Standard Conditions, $x\ 10^4\ ft^3/min$	5.19	5.71	5.65	5.5
Nitrogen Oxides				
Concentration, ppm	31	29	28	29
Emission Rate, lb/hr	11.5	11.9	11.3	11.6
Emission Rate, lb/mmBTU	0.10	0.10	0.10	0.10

Champion
Champion International Corporation

Best Available Copy

DATE 9/23 TIME 4:30 NO OF PAGES 2

TO: John Egan FROM: Steve Webb

LOCATION: LOCATION:

COMMENTS: Total S component analysis from one of our suppliers.
Other component analysis included as well —

FC-1129

PETROLEUM ANALYST INC.

ANALYTICAL CONSULTANTS

GAS ANALYSIS REPORT NO: 007-050892-02 DATE: 05-08-92

FOR: FIVE FLAGS PIPELINE	SAMPLE IDENTIFICATION:
ATTN: MR. N. SMITH	COMPANY: FIVE FLAGS PIPELINE
P.O. BOX 1062	FIELD: PACE FLORIDA
PACE FL 32570	LEASE: CHAMPION

SAMPLE DATA: DATE: 04-29-92 BY: N. SMITH
PSIG: 68 TEMP: DEG.F. GRAV:
MCF/D: DIF: IN. DP: LBS H2O

REMARKS: COMPOSITE SAMPLE FROM 03-30-92 TO 04-29-92.

CYL # 1024

COMPONENT ANALYSIS

TOTAL SULFUR = 10.7 PPM (BY WEIGHT)

Post-it™ brand fax transmittal memo 7671 # of pages ▸ 1

To Steve Webb	From Nathan Smith
Co. Champion	Co. Five Flags Pipeline
Dept.	

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Champion International Corporation Pensacola Florida Mill

February 1991

2.5 Other Criteria Pollutants

A summary of the expected emission rates from the No. 5 Package Boiler of particulate matter, PM-10, sulfur dioxide, carbon monoxide, and hydrocarbons is presented in Table 2-2. The emissions of the above criteria pollutants are less than the PSD threshold levels requiring new source review.

Particulate matter emissions were derived using Table 1.4-1, Uncontrolled Emission Factors for Natural Gas Combustion in U.S. EPA Publication AP-42. A conservative factor for utility boilers of 5 lbs per million cubic feet of natural gas was used. Based on the maximum heat input of 195 MMBtu/hr and 8,760 hours of operation per year maximum hourly and annual particulate matter emissions are 0.98 lbs/hr and 4.3 tons/year respectively. All of the particulate matter generated is assumed to be PM-10.

Sulfur dioxide emissions were derived using Table 1.4-1, Uncontrolled Emission Factors for Natural Gas Combustion in U.S. EPA Publication AP-42. A conservative factor for utility boilers of 0.60 lbs per million cubic feet of natural gas was used. Based on the maximum heat input of 195 MMBtu/hr and 8,760 hours of operation per year, maximum hourly and annual sulfur dioxide emissions are estimated to be 0.12 lbs/hr and 0.53 tons/year respectively.

The carbon monoxide emission rate in Table 2-2 was derived from actual emission tests conducted on the No. 5 Package Boiler in May of 1989. Based on a "worst case" measured mass emission rate approximately 0.1 pounds of CO per MMBtu, a maximum heat input of 195 MMBtu/hr and 8,760 hours of operation per year, annual CO emissions are estimated to be 85.41 tons/year.

TABLE 1.4-1. UNCONTROLLED EMISSION FACTORS FOR NATURAL GAS COMBUSTION[a]

Furnace Size & Type (10^6 Btu/hr heat input)	Particulates[b]		Sulfur[c] Dioxide		Nitrogen[d,e] Oxide		Carbon[f,g] Monoxide		Volatile Organics Nonmethane		Volatile Organics Methane	
	$kg/10^6m^3$	$lb/10^6ft^3$	$kg/10^6m^3$	$lb/10^6ft^3$	$kg/10^6m^3$	$lb/10^6ft^3$	$kg/10^6m^3$	$lb/10^6ft^3$	$kg/10^6m^3$	$lb/10^6ft^3$	$kg/10^6m^3$	$lb/10^6ft^3$
Utility boilers (>100)	16-80	1-5	9.6	0.6	8800[h]	550[h]	640	40	23	1.4	4.8	0.3
Industrial boilers (10 - 100)	16-80	1-5	9.6	0.6	2240	140	560	35	44	2.8	48	3
Domestic and commercial boilers (<10)	16-80	1-5	9.6	0.6	1600	100	320	20	84	5.3	43	2.7

[a] All emission factors are expressed as weight per volume fuel fired.
[b] References 15-18.
[c] Reference 4 (based on an average sulfur content of natural gas of 4600 $g/10^6 Nm^3$ (2000 $gr/10^6$ scf).
[d] References 4-5,7-8,11,14,18-19,21.
[e] Expressed as NO_2. Test results indicate that about 95 weight % of NO_x is NO.
[f] References 4,7-8,16,18,22-25.
[g] References 16 and 18. May increase 10 to 100 times with improper operation or maintenance.
[h] Use 4400 $kg/10^6 m^3$ (275 $lb/10^6ft^3$) for tangentially fired units. At reduced loads, multiply this factor by the load reduction coefficient given in Figure 1.4-1. See text for potential NO_x reductions by combustion modifications. Note that the NO_x reduction from these modifications will also occur at reduced load conditions.

TABLE 2.2. SUMMARY OF NO_x EMISSION - NO. 2 POWER BOILER

	RUN 1	RUN 2	RUN 3	MEAN
Date	02/09/91	02/09/91	02/09/91	----
Time Begin	0938	1100	1221	----
Time Ended	1039	1200	1321	----
Stack Gas				
Temperature, °F	373	379	382	378
Velocity, ft/sec	43.5	44.1	47.0	44.9
Moisture, %	6.1	6.1	6.1	6.1
Oxygen, %	9.5	9.4	9.5	9.5
Carbon Dioxide, %	6.5	6.4	6.5	6.5
Volumetric Flow Rate				
at Stack Conditions, x 10^4 ft^3/min	8.88	9.00	9.60	9.16
at Standard Conditions, x 10^4 ft^3/min	5.30	5.34	5.67	5.44
Nitrogen Oxides				
Concentration, ppm	173	179	178	177
Emission Rate, lb/hr	66	69	72	69
Emission Rate, lb/mmBTU	0.40	0.42	0.44	0.42

The hydrocarbon emission rate in Table 2-2 was derived from actual emission tests conducted on the No. 5 Package Boiler in May of 1989. Based on a measured hydrocarbon concentration of 20 ppm (vol, dry), a volumetric flow rate of 33,000 dscfm (0°C, 1 atm) and 8,760 hours of operation per year, the hourly and annual hydrocarbon emissions are estimated to be 1.8 lbs/hr and 7.9 tons/year respectively.

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Champion International Corporation Pensacola Florida Mill

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TABLE 2.3. ONE HOUR SUMMARY OF O_2, CO, NO_x, SO_2, AND THC EMISSION, LIME KILN

	TIME PERIOD							
	1	2	3	4	5	6	7	AVG
Date[a]	12/13	12/13	12/13	12/13	12/13	12/13	12/13	---
Time Began	1201	1300	1400	1500	1600	1700	1800	---
Time Ended	1259	1359	1459	1559	1659	1759	1859	---
Volumetric Flow Rate x 10^4 ft^3/min at Standard Conditions	2.72	2.72	2.72	2.72	2.72	2.72	2.72	2.72
Carbon Dioxide Concentration, %	16.6	17.2	17.9	14.9	18.4	16.7	17.5	17.0
Oxygen Concentration, %	6.0	5.9	5.7	7.7	5.6	6.9	6.2	6.3
Carbon Monoxide								
Concentration, ppm	11.0	8	8	7	9	9	9	9
Emission Rate, lb/hr	1.3	1.0	1.0	0.9	1.1	1.0	1.0	1.0
Nitrogen Oxides[b]								
Concentration, ppm	76	72	73	70	72	70	73	72
Emission Rate, lb/hr	14.8	14.1	14.2	13.6	14.1	13.6	14.8	14.2
Sulfur Dioxide								
Concentration, ppm	1	<1	1	0	0	0	0	<1
Emission Rate, lb/hr	0.3	0.1	0.2	0.0	0.0	0.0	0.0	0.1
Total Hydrocarbons[c]								
Concentration, ppm	5	7	7	2	2	1	2	4
Emission Rate, lb/hr	0.9	1.2	1.3	0.4	0.3	0.2	0.3	0.7

[a]1989.
[b]as NO_x.
[c]as propane.

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II. SUMMARY

Tabulated below are data collected on the Lime Kiln emissions during testing on April 11-12, 1990.

CHAMPION INTERNATIONAL CORPORATION

LIME KILN

PARAMETER	PERMIT LIMIT	RUN 1 (12 hr avg.)
DATE		4/11-12/90
TIME		1720-2104
		2251- 728
SULFUR DIOXIDE		
(PPM)		~~2.08~~
(lb/hr)		0.666
OXIDES OF NITROGEN		
(PPM)		73.08
(lb/hr)		16.791
CARBON MONOXIDE		
(PPM)		12.95
(lb/hr)		1.811
TOTAL HYDROCARBON**		
(PPM)		1.63
(lb/hr)		0.131
OPERATING RATE		
(ton lime mud/hr)	24.5	na
OXYGEN - test monitor		
(%)		6.84
STACK GAS DATA - *		
TEMPERATURE, F		182
MOISTURE, %		38.10
VELOCITY, ft/ sec		31.37
FLOW RATE, ACFM		62460.8
, DSCFM		32049.7

* - Average of three particulate tests conducted on 4-11-90

** - AS METHANE

WESTON

SECTION 2.

RESULTS AND DISCUSSION

2.1. LIME KILN

Emission testing on the Lime Kiln was performed on 26 April 1989. The results of this testing are summarized in Tables 2.1 and 2.2. Supporting field, process, and laboratory data are provided in Appendices B and C, respectively. Example calculations are illustrated in Appendix F.

TABLE 2.1

LIME KILN
SUMMARY OF PARTICULATE, NITROGEN OXIDES,
AND SULFUR DIOXIDE EMISSIONS

	RUN 1	RUN 2	RUN 3	MEAN
Date	4/26/89	4/26/89	4/26/89	----
Time Began	1028	1220	1423	----
Time Ended	1132	1329	1525	----
Stack Gas				
Temperature, °F	172	170	172	171
Velocity, ft/sec	24.4	23.4	24.4	24.1
Moisture, %	41.1	37.6	38.7	39.2
Oxygen, %	6.7	4.8	5.0	5.5
Carbon Dioxide, %	16.0	18.9	17.8	17.6
Volumetric Flow Rate				
At Stack Conditions x 10^4 ft^3/min	4.85	4.66	4.87	4.79
At Standard Conditions x 10^4 ft^3/min	2.40	2.45	2.50	2.45
Particulate				
Isokinetic Sampling Rate, %	87	90	93	90
Concentration[a], gr/ft^3	0.071	0.050	0.035	0.052
Emission Rate, lb/hr	14.6	10.4	7.4	10.8
Allowable Limit, lb/hr	----	----	----	26.1
Nitrogen Oxides				
Concentration[a], ppm	82	82	81	82
Emission Rate, lb/hr	14.1	14.4	14.5	14.3
Sulfur Dioxide				
Concentration[a], ppm	1.1	0.2	0.2	0.5
Emission Rate, lb/hr	0.3	0.1	0.1	0.2

[a]At standard conditions 68° F and 29.92 inches of mercury.

N:100/224625R2

WESTON MANAGERS DESIGNERS CONSULTANTS

2.2. LIME KILN CONDITION 1 - ALL NGC SOURCES

Sulfur Dioxide testing on the Lime Kiln with All NCG Sources feed was performed on 16 May 1989. The results of this testing are summarized in Table 2.2. Supporting field and laboratory data are provided in Appendix B. Example calculations are illustrated in Appendix I.

TABLE 2.2

SUMMARY OF EMISSIONS - LIME KILN CONDITION 1
ALL NCG SOURCES

	RUN 1	RUN 2	RUN 3	MEAN
Date	5/16/89	5/16/89	5/16/8	---
Time Began	1000	1108	1200	---
Time Ended	1030	1138	1230	---
Stack Gas				
Temperature, °F	166	166	166	166
Velocity, ft/sec	20.9	21.1	20.7	20.9
Moisture, %	37.2	37.2	37.2	37.2
Oxygen, %	19.0	19.0	18.0	18.7
Carbon Dioxide, %	6.0	6.5	4.5	5.7
Volumetric Flow Rate				
At Stack Conditions $\times 10^4$ ft^3/min	4.16	4.21	4.13	4.17
At Standard Conditions $\times 10^4$ ft^3/min	2.21	2.23	2.19	2.21
Sulfur Dioxide				
Concentration[a], ppm	4.4	3.3	2.4	3.3
Emission Rate, lb/hr	1.0	0.7	0.5	0.7

[a]At standard condition - 68° F and 29.92 inches of mercury.

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2.2. LIME KILN

This section summarizes the results of the emission testing on the lime kiln. Table 2.2 summarizes the three one-hour particulate emission tests performed at the outlet of the kiln. Table 2.3 summarizes the results of the continuous emission monitoring system (CEMS) for CO_2, O_2, CO, THC, NO_x, and SO_2 on an hourly basis. These results for the CEMS are then provided in graphical form in Figures 2.1 and 2.2. Particulate and CEMS field data are located in Appendices B and C, respectively. Laboratory and process data are provided in Appendices D and E, respectively. Example calculations are illustrated in Appendix G.

TABLE 2.2. LIME KILN
SUMMARY OF PARTICULATE EMISSIONS

	RUN 1	RUN 2	RUN 3	MEAN
Date	12-12-89	12-12-89	12-12-89	---
Time Began	0930	1230	1510	---
Time Ended	1030	1330	1610	---
Stack Gas				
Temperature, °F	160	162	161	161
Velocity, ft/sec	26.5	25.2	26.9	26.2
Moisture, %	37.3	34.7	36.2	36.0
Oxygen, %	6.5	7.0	6.5	6.7
Carbon Dioxide, %	16.5	16.0	16.5	16.3
Volumetric Flow Rate $x10^4$ ft^3/min				
At Stack Conditions	5.08	4.82	5.16	5.02
At Standard Conditions	2.71	2.66	2.79	2.72
Particulate				
Isokinetic Sampling Rate, %	95	97	95	96
Concentration[a], gr/ft^3	0.099	0.103	0.097	0.100
Emission Rate, lb/hr	22.8	23.6	23.1	23.2

[a]At standard conditions 68°F and 29.92 inches of mercury.

2.6. LIME KILN

Table 2.6 summarizes the results of the particulate emission testing performed on 19 March 1991 on the Lime Kiln. Field and laboratory data are provided in Appendices G and K, respectively. Sample calculations are presented in Appendix N.

TABLE 2.6. EMISSION DATA - LIME KILN

	RUN 1	RUN 2	RUN 3	MEAN
Date	03/19/91	03/19/91	03/19/91	---
Time Began	1005	1138	1310	---
Time Ended	1108	1240	1412	---
Stack Gas				
Temperature, °F	166	167	167	167
Velocity, ft/sec	24.0	26.1	24.6	24.9
Moisture, %	36.6	36.9	37.8	37.1
CO_2 Concentration, %	16.5	16.5	16.0	16.3
O_2 Concentration, %	11.0	9.0	9.3	9.8
Volumetric Flow Rate				
At Stack Conditions, x 10^4 ft^3/min	4.77	5.19	4.89	4.95
At Standard Conditions[a], x 10^4 ft^3/min	2.56	2.77	2.57	2.63
Particulate				
Isokinetic Sampling Rate, %	95	91	96	94
Concentration, gr/ft^3 @ Standard Cond.[a]	0.058	0.070	0.069	0.065
Emission Rate, lb/hr	12.6	16.5	15.2	14.8
Permit Limit, lb/hr	---	---	---	26.1

[a]68°F, 29.92 in. Hg.

2.5. LIME KILN

Table 2.5 summarizes the results of the particulate emission testing performed on 27 March 1992 on the Lime Kiln. Field and laboratory data are provided in Appendices F and G, respectively. Sample calculations are presented in Appendix H.

TABLE 2.5. EMISSION DATA - LIME KILN

	RUN 1	RUN 2	RUN 3	MEAN
Date	03/27/92	03/27/92	03/27/92	----
Time Began	1002	1138	1302	----
Time Ended	1102	1238	1402	----
Stack Gas				
Temperature, °F	165	165	165	165
Velocity, ft/sec	25.1	26.3	25.9	25.8
Moisture, %	36.2	36.2	35.7	36.0
CO_2 Concentration, %	16.0	18.0	18.0	17.3
O_2 Concentration, %	8.0	8.0	8.0	8.0
Volumetric Flow Rate				
@ Stack Conditions, x 10^4 ft^3/min	5.00	5.24	5.16	5.14
@ Standard Conditions[a], x 10^4 ft^3/min	2.71	2.84	2.82	2.79
Particulate				
Isokinetic Sampling Rate, %	98	96	95	96
Concentration, gr/ft^3 @ Standard Cond.[a]	0.029	0.032	0.030	0.030
Emission Rate, lb/hr	6.7	7.7	7.2	7.2
Permit Limit, lb/hr	----	----	----	26.1

[a]68°F, 29.92 in. Hg.

300/22462AR2

TABLE 2.8

ONE-HOUR SUMMARY OF O_2, CO, NO_x, SO_2, AND THC EMISSION

	TIME PERIOD												
	1	2	3	4	5	6	7	8	9	10	11	12	13
Date[a]	2/23	2/23	2/23	2/23	2/23	2/23	2/23	2/23	2/23	2/24	2/24	2/24	2/24
Time Began	1403	1500	1600	1700	1906	2000	2100	2200	2300	0000	0100	0200	0300
Time Ended	1459	1559	1659	1752	1959	2059	2159	2259	2359	0059	0159	0259	0359
Volumetric Flow Rate $x10^5$ ft^3/min at Standard Conditions	1.36	1.36	1.37	1.37	1.37	1.38	1.38	1.38	1.38	1.43	1.43	1.43	1.43
Carbon Dioxide Concentration, %	16.3	16.7	16.6	16.2	13.4	14.6	15.9	15.8	15.6	15.2	14.6	15.0	15.2
Oxygen Concentration, %	4.5	4.8	5.0	5.2	7.2	6.4	5.2	5.4	5.5	5.6	6.2	5.8	5.6
Carbon Monoxide Concentration, ppm	323	940	281	302	69	6	31	36	50	24	16	71	295
Emission Rate, lb/hr	191.7	557.9	168.0	180.6	41.3	3.6	18.7	21.7	30.1	15.0	10.0	44.3	184.1
Nitrogen Oxides[b] Concentration, ppm	80	75	81	78	79	80	81	79	81	85	80	80	79
Emission Rate, lb/hr	78.0	73.1	79.6	76.6	77.6	79.1	80.1	78.2	80.1	87.1	82.0	82.0	81.0
Sulfur Dioxide Concentration, ppm	0	0	0	0	0	3	1	0	3	0	28	28	5
Emission Rate, lb/hr	0.0	0.0	0.0	0.0	0.0	4.1	1.4	0.0	4.1	0.0	40.0	40.0	7.1
Total Hydrocarbons[c] Concentration, ppm	4	13	3	2	1	1	1	1	1	0	0	1	3
Emission Rate, lb/hr	3.7	12.1	2.8	1.9	0.9	0.9	0.9	0.9	0.9	0.0	0.0	1.0	2.9

[a] 1989
[b] as NO_2
[c] as Propane

TABLE 2.8

ONE-HOUR SUMMARY OF O_2, CO, NO_x, SO_2, AND THC EMISSION
(Continued)

	TIME PERIOD												
	14	15	16	17	18	19	20	21	22	23	24	25	AVG.
Date[a]	2/24	2/24	2/24	2/24	2/24	2/24	2/24	2/24	2/24	2/24	2/24	2/24	---
Time Began	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	---
Time Ended	0459	0559	0659	0759	0859	0959	1059	1159	1259	1359	1459	1512	---
Volumetric Flow Rate $x10^5$ ft^3/min at Standard Conditions	1.41	1.41	1.41	1.41	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.38
Carbon Dioxide													
Concentration, %	14.9	14.6	15.0	15.5	14.9	14.8	14.6	15.0	15.0	15.2	14.9	15.0	15.2
Oxygen													
Concentration, %	5.8	6.2	5.7	4.9	5.2	5.1	5.0	5.2	5.6	5.1	5.3	5.5	5.5
Carbon Monoxide													
Concentration, ppm	63	88	469	836	467	470	467	206	291	213	342	225	263
Emission Rate, lb/hr	38.8	54.2	288.6	514.4	277.2	279.0	277.2	122.3	172.7	126.4	203.0	133.5	147.1 158.2
Nitrogen Oxides[b]													
Concentration, ppm	78	72	71	73	67	69	68	70	69	73	69	70	75
Emission Rate, lb/hr	78.8	72.8	71.8	73.8	65.3	67.3	66.3	68.2	67.3	71.2	67.3	68.2	74.9
Sulfur Dioxide													
Concentration, ppm	13	56	22	19	40	35	40	39	27	28	62	55	20
Emission Rate, lb/hr	18.3	78.8	31.0	26.7	54.3	47.5	54.3	52.9	36.7	38.0	84.2	74.7	31.9 27.8
Total Hydrocarbons[c]													
Concentration, ppm	1	1	7	10	5	6	6	2	4	2	4	3	3
Emission Rate, lb/hr	1.0	1.0	6.8	9.7	4.7	5.6	5.6	1.9	3.7	1.9	3.7	2.8	3.1

[a] 1989
[b] as NO_2
[c] as Propane

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TABLE 2.6

PARTICULATE EMISSION DATA - PRECIPITATOR INLET AND OUTLET AT CONDITION 2

	RUN 7		RUN 8		RUN 9		RUN 10		RUN 11		RUN 12		MEAN	
	INLET	OUTLET	INLET	OUTLET	INLET	OUTLET	INLET	OUTLET	INLET	OUTLET	INLET	OUTLET	INLET	OUTLET
Date	2/23/89	2/23/89	2/23/89	2/23/89	2/23/89	2/23/89	2/24/89	2/24/89	2/24/89	2/24/89	2/24/89	2/24/89	---	---
Time Began	1413	1330	1738	1730	2140	2130	0130	0130	0535	0530	0930	0930		
Time Ended	1540	1430	1852	1830	2300	2230	0255	0230	0655	0630	1025	1030		
Stack Gas														
Temperature, °F	487	461	490	462	484	457	484	458	488	459	491	468	487	461
Velocity, ft/sec	57.9	83.9	56.7	82.9	56.1	84.0	57.0	84.2	57.5	85.2	58.4	83.1	57.3	83.9
Moisture, %	34.4	25.4	26.4	24.4	25.5	24.9	24.4	27.5	24.6	27.3	26.0	27.3	26.9	26.1
Oxygen, %	7.0	7.0	7.0	7.5	6.0	5.6	6.4	6.4	6.0	6.0	7.0	6.0	6.6	6.4
Carbon Dioxide, %	12.0	13.0	12.0	12.9	13.2	14.0	13.0	13.0	13.0	13.0	12.0	13.0	12.5	13.2
Volumetric Flow Rate $\times 10^5$ ft^3/min														
At Stack Conditions	3.26	3.14	3.19	3.10	3.16	3.15	3.21	3.15	3.24	3.19	3.29	3.11	3.23	3.14
At Standard Conditions	1.19	1.36	1.31	1.37	1.32	1.38	1.36	1.43	1.37	1.41	1.36	1.36	1.32	1.39
Particulate														
Isokinetic Sampling Rate, %	115	101	104	102	99	97	99	95	100	100	101	97	103	99
Concentration @ STP, gr/ft^3	6.812	0.058	6.730	0.066	5.363	0.053	5.877	0.049	5.375	0.045	6.589	0.049	6.124	0.053
Emission Rate, lb/hr	6928	67.9	7147	77.7	6068	63.0	6857	59.4	6291	55.1	7657	57.2	6825	63.4
Removal Efficiency, %	---	99.0	---	98.9	---	99.0	---	99.1	---	99.1	---	99.3	---	99.1

2.7. NO. 2 RECOVERY FURNACE

Table 2.7 summarizes the results of the particulate emission testing performed on 20 March 1991 on the No. 2 Recovery Furnace. Field and laboratory data are provided in Appendices H and K, respectively. Sample calculations are presented in Appendix N.

TABLE 2.7. EMISSION DATA - NO. 2 RECOVERY FURNACE

	RUN 1	RUN 2	RUN 3	MEAN
Date	03/20/91	03/20/91	03/20/91	---
Time Began	0934	1120	1258	---
Time Ended	1039	1223	1401	---
Stack Gas				
Temperature, °F	421	427	425	424
Velocity, ft/sec	78.9	81.0	78.9	79.6
Moisture, %	26.9	28.8	27.8	27.8
CO_2 Concentration, %	12.5	12.5	13.0	12.7
O_2 Concentration, %	8.5	8.0	7.5	8.0
Volumetric Flow Rate				
At Stack Conditions, x 10^5 ft^3/min	2.98	3.06	2.98	3.01
At Standard Conditions[a], x 10^5 ft^3/min	1.31	1.31	1.29	1.30
Production Rate, lbBLS[b]/hr	96,120	96,120	96,120	96,120
Particulate				
Isokinetic Sampling Rate, %	98	100	97	99
Concentration, gr/ft^3 @ Standard Cond.[a]	0.058	0.056	0.057	0.057
Emission Rate,				
lb/hr	65.8	63.2	62.8	63.9
lb/3000 lbBLS[b]	2.1	2.0	2.0	2.0
Permit Limit, lb/3000 lbBLS[b]	---	---	---	3

[a]68°F, 29.92 in. Hg.

[b]Pounds black liquor solids.

2.3. NO. 2 RECOVERY FURNACE

Table 2.3 summarizes the results of the particulate emission testing performed on 26 March 1992 on the No. 2 Recovery Furnace. Field and laboratory data are provided in Appendices D and G, respectively. Sample calculations are presented in Appendix H.

TABLE 2.3. EMISSION DATA - NO. 2 RECOVERY FURNACE

	RUN 1	RUN 2	RUN 3	MEAN
Date	03/26/92	03/26/92	03/26/92	----
Time Began	1235	1444	1616	----
Time Ended	1410	1600	1721	----
Stack Gas				
Temperature, °F	441	453	451	448
Velocity, ft/sec	81.0	83.1	83.6	82.6
Moisture, %	27.2	26.5	28.7	27.5
CO_2 Concentration, %	16.0	14.5	15.0	15.2
O_2 Concentration, %	8.5	7.0	9.0	8.2
Volumetric Flow Rate				
@ Stack Conditions, x 10^5 ft^3/min	3.06	3.14	3.16	3.12
@ Standard Conditions[a], x 10^5 ft^3/min	1.31	1.34	1.31	1.32
Production Rate, lb BLS[b]/hr	97,187	96,445	96,445	96,692
Particulate				
Isokinetic Sampling Rate, %	94	97	99	97
Concentration, gr/ft^3 @ Standard Cond.[a]	0.058	0.054	0.048	0.053
Emission Rate,				
lb/hr	65.2	61.4	54.3	60.3
lb/3000 lb BLS[b]	2.0	1.9	1.7	1.9
Permit Limit, lb/3000 lb BLS[b]	----	----	----	3

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